Allen-Bradley

1203-EN1 EtherNet/IP-to-SCANport Module

FRN 1.xxx

User Manual

Rockwell Automation

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.ab.com/manuals/gi**) 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.

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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 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.

Summary of Changes

This is the first release of the 1203-EN1 EtherNet/IP-to-SCANport module FRN 1.xxx.

Table of Contents

About This Manual

Related Documentation

For:	Refer to:	Publication
EtherNet/IP	*EtherNet/IP Planning and Installation Manual* *EtherNet/IP Performance and Application Guide*	ENET-IN001… ENET-AP001…
DriveExplorer™	http://www.ab.com/drives/driveexplorer, and DriveExplorer Online help (installed with the software)	—
DriveExecutive™	http://www.ab.com/drives/drivetools, and DriveExecutive Online help (installed with the software)	—
1336 Plus II Drive	*1336 Plus II User Manual*	1336 PLUS-5.3
1336 IMPACT Drive	*1336 IMPACT User Manual*	1336 IMPACT-5.0
1336 FORCE Drive	*1336 FORCE User Manual*	1336 FORCE-5.0
1305 Drive	*1305 User Manual*	1305-5.2
RSLinx™ or RSLinx Lite	*Getting Results with RSLinx Guide*, and RSLinx Online help (installed with the software)	LINX-GR001…
RSLogix™ 5	*RSLogix 5 Getting Results Guide* RSLogix 5 Online help (installed with the software)	LG5-GR001…
RSLogix™ 500	*RSLogix 500 Getting Results Guide*, and RSLogix 500 Online help (installed with the software)	LG500-GR001…
ControlLogix® and 1756-ENBT or 1756-ENET/B	*ControlLogix Ethernet Bridge Module User Manual* *ControlLogix Ethernet Communications Module User Manual*	1756-UM050… 1756-UM051…

Documentation can be obtained online at **http://www.ab.com/manuals**.

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 - [SCANport Adapter]**.
- 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.
- RSNetWorx for EtherNet/IP (version 4.01), RSLinx (version 2.41), and RSLogix5000 (version 12) were used for the screen shots in this manual. Different versions of the software may differ in appearance and procedures.
- This manual provides information about the 1203-EN1 EtherNet/IP-to-SCANport module and using it with SCANport drives. The module can also be used with other products that support SCANport. Refer to the documentation for your product for specific information about how it works with the module.

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Contact your local Rockwell Automation, Inc. representative for:

- Sales and order support
- Product technical training
- Warranty support
- Support service agreements

Technical Product Assistance

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

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

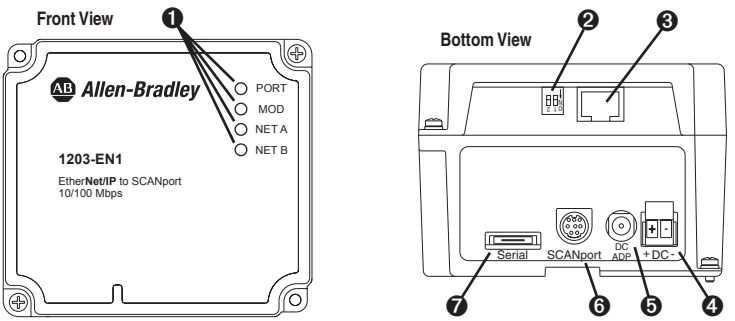
Notes:

Getting Started

The 1203-EN1 EtherNet/IP-to-SCANport module is a communication option intended for use with Allen-Bradley drives and other products that support SCANport.

Components

Figure 1.1 Components of the Module



Item	Part	Description
❶	Status Indicators	Four LEDs that indicate the status of the EtherNet/IP connection, SCANport, and the module itself. Refer to Chapter 7, Troubleshooting.
❷	Web Pages Switch (SW2)	Enables and disables the module web pages. Refer to Chapter 2, Setting the Web Pages Switch. SW1 is unused.
❸	Ethernet Connector	An RJ-45 connector for the Ethernet cable. The connector is CAT-5 compliant to ensure reliable data transfer on 100Base-TX Ethernet connections.
❹	24 VDC Power Terminal Block	24 VDC (+15% / -25%) power connection. If the 20-XCOMM-AC-PS1 is used, this terminal block can be used to daisy-chain 24 VDC to other 1203-EN1's.
❺	AC-to-DC Converter Connector	Connection for optional 20-XCOMM-AC-PS1 AC-to-DC converter.
❻	SCANport Connector	A 20-pin, single-row shrouded male header. An interface cable is factory-connected to this connector and to a connector on the power supply board in the 1203-EN1 enclosure base.
❼	RS232 DF1 Port	Used to connect software tools using 1203-SFC cable.

Features

The EtherNet/IP-to-SCANport module features the following:

- The module is an external module only. It requires DC power from either an appropriate DC power source or AC-to-DC converter. Connectors for both are provided.
- A number of configuration tools can be used to configure the module and connected drive. These include drive-configuration software tools such as DriveExplorer (version 4.03 or higher) or DriveExecutive (version 3.01 or higher). In addition, you can use a BOOTP server to configure some of the network features on the module (for example, the IP address).
- Status indicators report the status of the drive, module, and network.
- I/O, including Logic Command/Reference and up to four pairs of Datalinks, may be configured for your application using parameters.
- Explicit messages (parameter read/write, etc.) are supported.
- Master-Slave and/or Peer-to-Peer hierarchies can be set up so that the module and connected SCANport drive transmit data to and from a scanner and/or another SCANport drive on the network.
- User-defined fault actions determine how the module and SCANport drive respond to communication disruptions on the network.
- Each module has Web pages that display information about the module and the connected drive.
- The module can be configured to send e-mail messages to desired addresses when selected drive faults occur and/or are cleared, and/or when the module takes a communication or idle fault action.

Compatible Products

The EtherNet/IP-to-SCANport module is compatible with Allen-Bradley drives and other products that support SCANport. SCANport is a standard peripheral communication interface. At the time of publication, compatible products include:

- 1305 Drives
- 1336 PLUS Drives
- 1336 PLUS II Drives
- 1336 IMPACT Drives
- 1336 FORCE Drives
- 1336 REGEN Units
- 1336 SPIDER Drives
- 1397 DC Drives
- 1394 Servo Drives
- 1557 Drives
- SMC Dialog Plus
- SMP-3 Smart Motor Protectors
- 2364F RGU Units

Required Equipment

Equipment Shipped with the Module

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

- ❑ One EtherNet/IP-to-SCANport module in metal enclosure
- ❑ This manual

User-Supplied Equipment

To install and configure the 1203-EN1 module, you must supply:

- ❑ A small flathead screwdriver (for wiring the DC power connector)
- ❑ Bulletin 1202 Communication Cable (1202-Cxx)
- ❑ Ethernet cable (refer to the *EtherNet/IP Media Planning and Installation Manual*, Publication ENET-IN001…, for details.)
- ❑ Configuration tool, such as:
  - DriveExplorer (version 4.03 or higher)
  - DriveExecutive (version 3.01 or higher)
  - BOOTP Server (version 2.1 or higher) (for network setup only)
- ❑ Controller configuration software (Example: RSLogix 5000)
- ❑ A PC connection to the EtherNet/IP network or serial connection via 1203-SFC serial cable
- ❑ An AC/DC converter such as Allen-Bradley AC Power Adapter (Catalog # 20-XCOMM-AC-PS1) when DC supply is unavailable.

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 an EtherNet/IP module. Failure to comply may result in injury and/or equipment damage.

ATTENTION: Risk of equipment damage exists. The EtherNet/IP module 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 module. 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 EtherNet/IP module is transmitting control I/O to the drive, the drive may fault when you reset the module. Determine how your drive will respond before resetting an module.

ATTENTION: Risk of injury or equipment damage exists. **Parameters 30 - [Comm Flt Action]**, **31 - [Idle Flt Action]**, and **51 - [Peer Flt Action]** let you determine the action of the module and connected drive if communications are disrupted or the controller is idle. By default, these parameters fault the drive. You can set these parameters so that the drive continues to run. 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 faulted controller).

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

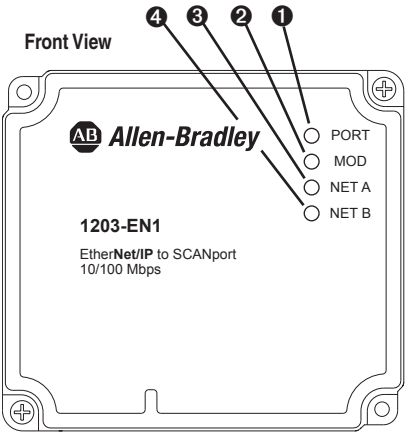
This section is provided to help experienced users quickly start using the EtherNet/IP module. If you are unsure how to complete a step, refer to the referenced chapter.

Step		Refer to . . .
1	**Review the safety precautions for the module.**	Throughout This Manual
2	**Verify that the drive is properly installed.**	Drive User Manual
3	**Install the module.** Panel or DIN rail mount the module. Verify that the drive is not powered. Then, connect the module to the network using an Ethernet cable and to the drive using a 1202 communications cable (1202-Cxx).	Chapter 2, Installing the Module
4	**Apply power to the module (and drive).** The module requires DC power, either from a DC power source or from an AC/DC converter. Apply power to the module. Then apply power to the drive. The status indicators should be green. If they flash red, there is a problem. Refer to Chapter 7, Troubleshooting.	Chapter 2, Installing the Module
5	**Configure the module for your application.** Set the parameters for the following module features as required by your application: • IP address, subnet mask, and gateway address • EtherNet/IP data rate • I/O configuration • Master-Slave or Peer-to-Peer hierarchy • Fault actions	Chapter 3, Configuring the Module
6	**Configure the scanner or bridge to communicate with the module.** Use a software tool such as RSLogix 5000 to configure the master on the EtherNet/IP network to recognize the module and drive.	Chapter 4, Configuring the Scanner or Bridge
7	**Create a ladder logic program.** Use a programming tool such as RSLogix to create a ladder logic program that enables you to: • Control the module and connected drive using I/O. • Monitor or configure the drive using Explicit messages.	Chapter 5, Using I/O Messaging Chapter 6, Using Explicit Messaging

Modes of Operation

The module uses four status indicators to report its operating status. They can be viewed on the 1203-EN1 enclosure cover. See Figure 1.2.

Figure 1.2 Status Indicators



Item	Status Indicator	Normal Status (1)	Description
❶	PORT	Green	Normal Operation. The module is properly connected and is communicating with the drive.
❷	MOD	Green	Normal Operation. The module is operational and is transferring I/O data.
		Flashing Green	Normal Operation. The module is operational but is not transferring I/O data.
❸	NET A	Green	Normal Operation. The module is properly connected and communicating on the network.
		Flashing Green	Normal Operation. The module is properly connected but does not have an I/O or Explicit Messaging connection.
❹	NET B	Flashing Green	Normal Operation. The module is properly connected and is transmitting data packets on the network.
		Off	Normal Operation. The module is not transmitting data packets.

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

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

Installing the Module

Chapter 2 provides instructions for installing the module.

Preparing for an Installation

Before installing the EtherNet/IP-to-SCANport module:

- Read the *EtherNet/IP Performance and Application Guide*, Publication ENET-AP001…, and *EtherNet/IP Media Planning and Installation Manual*, Publication ENET-IN001….
- Verify that you have all required equipment. Refer to Chapter 1, Getting Started.

Important: To guard against device malfunction, use a grounding wrist strap when installing the EtherNet/IP module.

Setting the Web Pages Switch

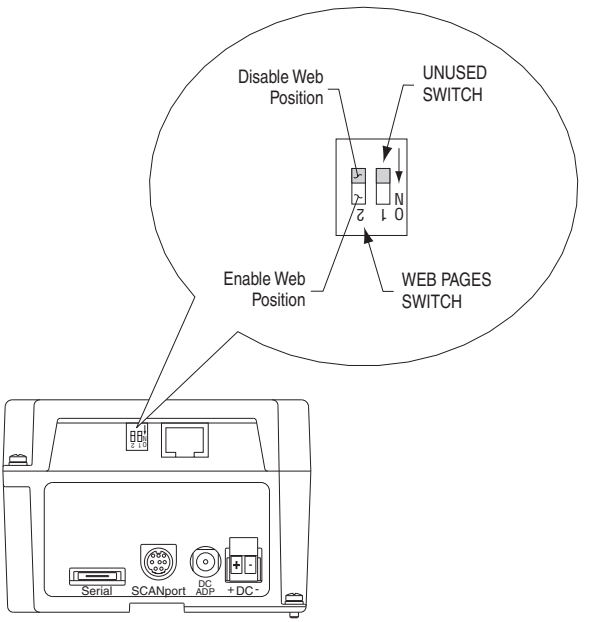
To use the module web pages, the Web Pages Switch must be set to its "Enable Web" position.

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

ATTENTION: Risk of equipment damage exists. The EtherNet/IP module 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 module. If you are unfamiliar with static control procedures, refer to *Guarding Against Electrostatic Damage*, Publication 8000-4.5.2.

Set the Web Pages Switch (SW2) to enable or disable the module web pages (see Figure 2.1 and setting descriptions below). By default, the module web pages are disabled. For complete details on module web pages, see Chapter 8, Viewing the Module's Web Pages.

Figure 2.1 Setting Web Pages Switch



SW2 Setting	Description
Up position (UP = OFF)	Disables the module web pages (default setting).
Down position (DN = ON)	Enables the module web pages.

Mounting the Module

ATTENTION: Risk of equipment damage exists. During panel or DIN rail mounting, be sure that all debris (metal chips, wire strands, etc.) is kept from falling into the module enclosure. Debris that falls into the enclosure could cause damage on power up.

Panel or DIN rail mount the module before connecting the module to the network and drive.

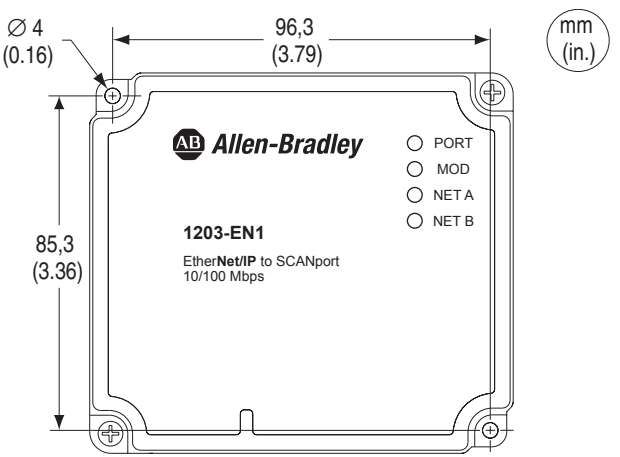
Minimum Spacing

1203-EN1's can be zero-stacked (side-by-side mounting). Allow 75 mm (3 in.) of space on the bottom of the module for cable entry. Allow at least 85 mm (3.2 in.) of enclosure clearance depth to accommodate the module.

Panel Mounting Using the Dimensional Drawing

Mount the module to a panel using two M4 or #8 panhead screws (supplied separately).

Figure 2.2 Panel Mounting Dimensions



Panel Mounting Procedure Using Module as a Template

The following procedure enables you to use the assembled module as a template for drilling holes in the panel.

1. Using the assembled module as a template, carefully mark the center of both holes on the panel.
2. Remove the module to a clean location.
3. Drill and tap the mounting holes for the recommended M4 or #8 panhead screws (supplied separately).
4. Place the module back on the panel, and check for proper hole alignment.
5. Attach the module to the panel using the mounting screws.

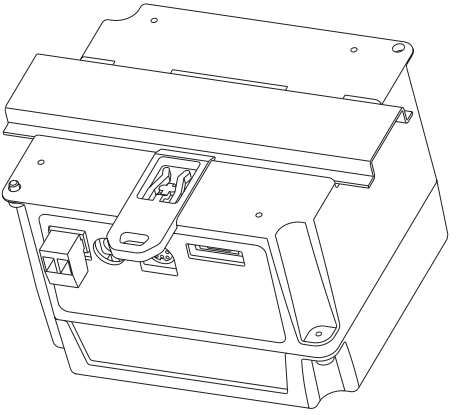
DIN Rail Mounting

The module can be mounted using the following DIN rails:

- 35 x 7.5 mm (EN 50 022 - 35 x 7.5)
- 35 x 15 mm (EN 50 022 - 35 x 15)

Before mounting the module on a DIN rail, open the DIN rail latch. Press the DIN rail mounting area of the module against the DIN rail, and manually lock the DIN rail latch (Figure 2.3).

Figure 2.3 DIN Rail Mounting



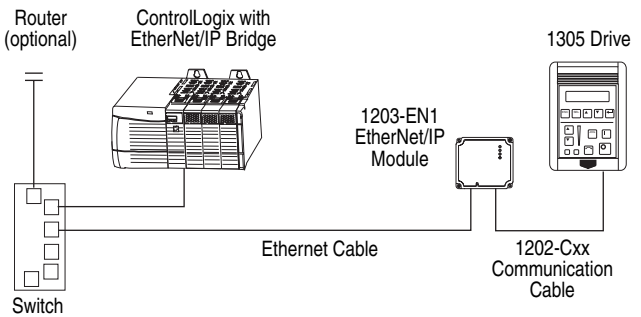
Connecting the Module to the Network and Drive

ATTENTION: Risk of injury or death exists. The 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 module.

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

1. Remove power from the drive.
2. Connect an Ethernet cable to the EtherNet/IP network. See Figure 2.4 for an example of wiring to an EtherNet/IP network.
3. Route the Ethernet cable to the module, and insert the cable's plug into the mating module receptacle.
4. Connect a 1202-Cxx Communication Cable to the mating connector on the module, and then to the port on the drive.

Figure 2.4 Connecting the Ethernet Cable to the Network



Applying Power

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

The 1203-EN1 module requires DC power from either an appropriate DC power source or an AC-to-DC converter. Connectors for both are provided.

Important: In either case, the DC power source or AC-to-DC converter that you use must be capable of providing 150 mA @ 18-27 VDC .

Using 24 VDC Power Terminal Block

1. Connect the “+” and “-” wires of your DC power source to the 2-pin linear plug (provided with the 1203-EN1 module), matching the respective polarity.
2. Insert the 2-pin linear plug into the mating 24 VDC power terminal block (Figure 2.1).

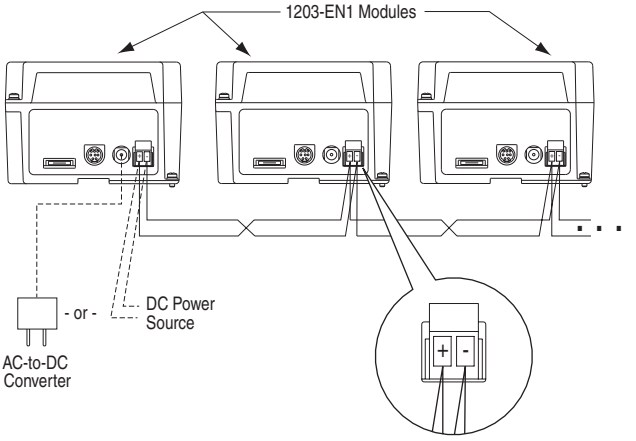
Using AC-to-DC Converter Connector

Plug the AC-to-DC converter such as an Allen-Bradley 20-XCOMM-AC-PS1 AC Power Adapter into the mating DC ADP receptacle (Figure 2.1).

Powering Daisy-Chained 1203-EN1 Modules

You can power additional modules by daisy-chaining them together. For each module in the chain, connect all DC “+” terminals together and all DC “-” terminals together (Figure 2.5). We highly recommend using twisted wire pairs for better noise immunity.

Figure 2.5 Powering Multiple Modules via Daisy Chaining



The number of 1203-EN1's that can be daisy-chained together is dependent on the available output capacity of the DC power source or AC-to-DC converter. The following example illustrates how to determine the number of daisy-chained 1203-EN1's that can be powered.

Example: Suppose the 1203-EN1's being daisy-chained will be powered by the Allen-Bradley AC-to-DC Converter 20-XCOMM-AC-PS1, which has an output capacity of 830 mA. Since the current consumed by the 1203-EN1 is 150 mA at 24 VDC, divide the power source's available output capacity by this consumption (830 mA ÷ 150 mA = 5.533), and round down the result. For this example, 5 daisy-chained 1203-EN1's can be powered.

LED Status Indication at Power-Up

After making the appropriate power wiring connection(s) to the module(s), apply power. When power is applied to a module for the first time, the status indicators should be green or off after an initialization. If the status indicators go red, there is a problem. Refer to Chapter 7, Troubleshooting.

Commissioning the Module

To commission the module, you must set a unique IP address. (Refer to the Glossary for details about IP addresses.) After installing the module and applying power, you can set the IP address by using a BOOTP server or by setting module parameters.

By default, the module is configured so that you must set the IP address using a BOOTP server. To set the IP address using module parameters, you must disable the BOOTP feature. Refer to Chapter 3, Configuring the Module, for details.

Important: New settings for some parameters (for example, **Parameters 03 - [IP Addr Cfg 1]** through **06 - [IP Addr Cfg 4]**) are recognized only when power is applied to the module or the module is reset. After you change parameter settings, cycle power or reset the module.

Configuring the Module

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

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

Configuration Tools

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

Using DriveExplorer Software

DriveExplorer can be used with the 1203-EN1 via two connection methods: RS-232 Serial and EtherNet/IP.

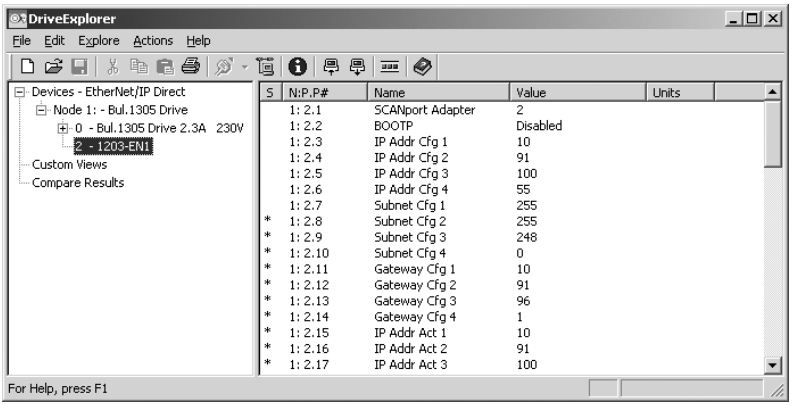
RS-232 Serial (DriveExplorer Lite and Full versions)

A 1203-SFC cable (comes with 1203-SSS AnaCANda and available separately) is used to connect a PC to the DF1 serial port on the 1203-EN1. The user can adjust parameters on the 1203-EN1 and the connected Host drive. The Full version of DriveExplorer can also route out over EtherNet/IP and access other Allen-Bradley drives on the network. Refer to DriveExplorer documentation for details on establishing a serial connection.

EtherNet/IP (DriveExplorer Full Version)

Most PC's today come with a built-in Ethernet port. EtherNet/IP connectivity allows high speed communications (10/100 Mbps) and faster updates versus an RS-232 serial connection. Refer to DriveExplorer documentation for details on establishing an EtherNet/IP connection.

Figure 3.1 Launched DriveExplorer Window for Configuring 1203-EN1 Module



After launching DriveExplorer, access the appropriate configuration screens to set module parameters. Refer to the respective sections in this chapter for setup details.

Using BOOTP

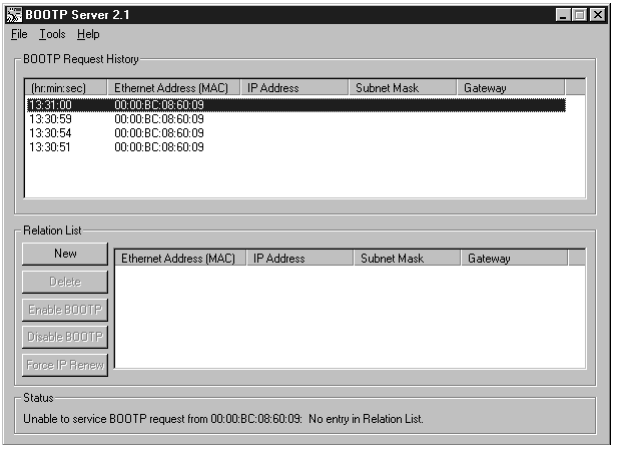
By default, the module is configured so that you can set its IP address, subnet mask, and gateway address by using a BOOTP utility. You can select from a variety of BOOTP utilities. These instructions use Rockwell's BOOTP Server (version 2.1), a stand-alone program that incorporates the functionality of standard BOOTP utilities with a graphical interface. It is available from http://www.ab.com/networks. Refer to the Readme file and online Help for detailed directions and information.

TIP: If desired, you can disable BOOTP and configure the IP address, subnet mask, and gateway address by setting parameters. For details, refer to Setting the IP Address, Subnet Mask, and Gateway Address in this chapter.

To configure the module IP address, subnet mask, and gateway address using BOOTP Server

1. On the module label, locate and note the module's hardware address.
2. On a computer connected to the EtherNet/IP network, start the BOOTP software. The BOOTP Server window appears. Devices on the network issuing BOOTP requests appear in the BOOTP Request History list.

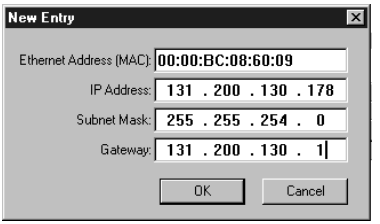
Figure 3.2 BOOTP Server Window



3. In the BOOTP Request History list, double-click the hardware address (Ethernet MAC address) of the module.

The New Entry dialog box appears.

Figure 3.3 New Entry Dialog Box



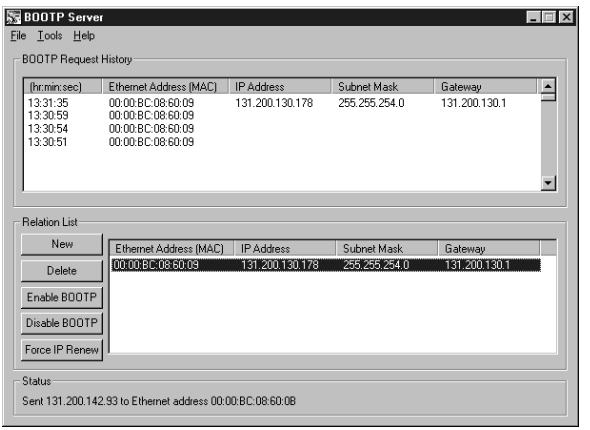
4. Enter in the following data:

Box [1]	Type
IP Address	A unique IP address for the module
Subnet Mask	The subnet mask for the module's network
Gateway	The IP address of the gateway device on the module's network

[1] For definitions, refer to the Glossary.

5. Click **OK** to apply the settings. The module appears in the Relation List with the new settings.

Figure 3.4 BOOTP Server Window with a Module in the Relation List



6. To assign this configuration to the module permanently, click **Disable BOOTP**. When power is cycled on the module, it will use the configuration you assigned it and not issue new BOOTP requests.

TIP: To enable BOOTP for an module that has had BOOTP disabled, first select the module in the Relation List (add if necessary), then click **Enable BOOTP**, and finally reset the module.

7. To save the Relation List, select **File > Save**.

Setting the IP Address, Subnet Mask, and Gateway Address

By default, the module is configured so that you set its IP address, subnet mask, and gateway address using a BOOTP server. If you want to set these features using the module's parameters instead, you must disable BOOTP and then set the appropriate parameters in the module using a serial connection.

DriveExplorer (version 4.03) was used for set up examples in this chapter. Different versions of software may differ in appearance and procedures.

To disable the BOOTP feature

1. Set the value of **Parameter 02 - [BOOTP]** to **Disabled**.

Table 3.A Parameter 02 - [BOOTP] Setup Values

Value	Setting
0	Disabled
1	Enabled (Default)

2. Reset the module. See Resetting the Module section in this chapter.

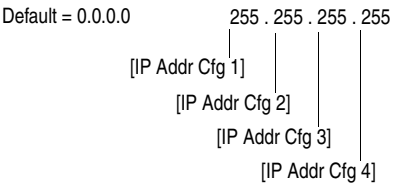
After disabling the BOOTP feature, you can then configure the IP address, subnet mask, and gateway using the module's parameters.

To set an IP address using parameters

1. Verify that **Parameter 02 - [BOOTP]** is set to **Disabled**. This parameter must be set to Disabled to configure the IP address using parameters.

2. Set the value of **Parameters 03 - [IP Addr Cfg 1]** through **06 - [IP Addr Cfg 4]** to a unique IP address.

Figure 3.5 Example IP Address Parameter Setup Values



3. Reset the module. See Resetting the Module section in this chapter.

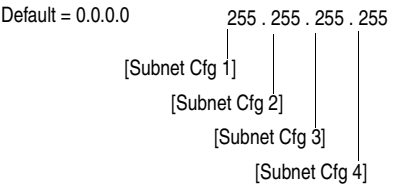
   The Net A status indicator will be solid green or flashing green if the IP address is correctly configured.

To set a subnet mask using parameters

1. Verify that **Parameter 02 - [BOOTP]** is set to **Disabled**. This parameter must be set to Disabled to configure the subnet mask using parameters.

2. Set the value of **Parameters 07 - [Subnet Cfg 1]** through **10 - [Subnet Cfg 4]** to the desired value for the subnet mask.

Figure 3.6 Example Subnet Mask Parameter Setup Values



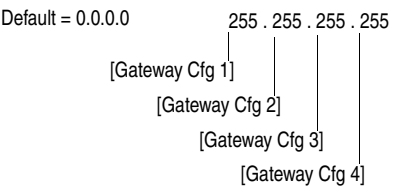
3. Reset the module. See Resetting the Module section in this chapter.

To set a gateway address for the module using parameters

1. Verify that **Parameter 02 - [BOOTP]** is set to **Disabled**. This parameter must be set to Disabled to configure the gateway address using parameters.

2. Set the value of **Parameters 11 - [Gateway Cfg 1]** through **14 - [Gateway Cfg 4]** to the IP address of the gateway device.

Figure 3.7 Example Gateway Parameter Setup Values



3. Reset the module. See Resetting the Module section in this chapter.

Setting the Data Rate

By default, the module is set to autodetect, so it automatically detects the data rate and duplex setting used on the network. If you need to set a specific data rate and duplex setting, the value of **Parameter 27 - [EN Rate Cfg]** determines the Ethernet data rate and duplex setting that the module will use to communicate. For definitions of data rate and duplex, refer to the Glossary.

1. Set the value of **Parameter 27 - [EN Rate Cfg]** to the data rate at which your network is operating.

Table 3.B Parameter 27 - [EN Rate Cfg] Data Rate Setup Values

Value	Data Rate
0	Autodetect (default)
1	10 Mbps Full
2	10 Mbps Half
3	100 Mbps Full
4	100 Mbps Half

2. Reset the module. See Resetting the Module section in this chapter.

Setting the I/O Configuration

The I/O configuration determines the data that is sent to and from the drive. Logic Command/Status, Reference/Feedback, and Datalinks may be enabled or disabled. A “1” enables the I/O. A “0” disables the I/O.

1. Set the bits in **Parameter 32 - [SP I/O Cfg]**.

Table 3.C Parameter 32 - [SP I/O Cfg] Bit Assignments

Bit	Description
0	Logic Command/Reference (Default)
1	Datalink A
2	Datalink B
3	Datalink C
4	Datalink D
5 - 7	Not Used

Bit 0 is the right-most bit.

2. If Logic Command/Reference is enabled, configure the parameters in the drive to accept the Logic Command and Reference from the module. For example, set **Parameter 5 - [Freq Select 1]** in a 1305

drive to “Adapter 2” so that the drive uses the Reference from the module. Also, verify that the mask parameters (for example, **Parameter 92 - [Logic Mask]**) in the drive are configured to receive the desired logic from the module. Refer to the documentation for your drive for details.

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). For example, configure the datalinks in 1305 drives by setting **Parameters 111 - [Data In A1]** to **126 - [Data Out D2]**. Also, ensure that the EtherNet/IP module is the only module using the enabled Datalink(s).

4. Reset the module. See Resetting the Module section in this chapter.

The module is ready to receive I/O. You must now configure the module to receive I/O from a master or peer device. Refer to Selecting Master-Slave or Peer-to-Peer in this chapter. If you select a Master-Slave hierarchy, you must also configure the master to communicate with the module. Refer to Chapter 4, Configuring the Scanner or Bridge.

Setting the Reference Adjustment

A Reference Adjustment is a percent scaling factor for the Reference from the network and can be set from 0 to 200%. This allows the drive’s Reference to either match the network Reference (=100%), scale below the network Reference (<100%), or scale above the network Reference (>100%).

ATTENTION: To guard against equipment damage and/or personal injury, note that changes to **Parameter 47 - [Ref Adjust]** take effect immediately. A drive receiving its Reference from the module will receive the newly scaled Reference, resulting in a change of speed.

If the module is receiving a Reference, adjust the scale using **Parameter 47 - [Ref Adjust]**. It can be scaled between 0.00 and 200.00%. The default is 100.00%.

The adjustment takes effect as soon as it is entered.

Selecting Master-Slave or Peer-to-Peer

A hierarchy determines the type of device with which the module exchanges data. In a Master-Slave hierarchy, a module exchanges data with a master, such as a scanner or bridge. In a Peer-to-Peer hierarchy, a module exchanges data with one or more EtherNet/IP modules connected to devices that have compatible Logic Command/Status words.

For both master-slave and peer-to-peer hierarchies, the devices exchanging data must be on the same IP subnet. See “IP Addresses” in the Glossary for information about IP subnets.

To set a Master-Slave hierarchy

1. Enable the desired I/O in **Parameter 32 - [SP I/O Cfg]**. Refer to Setting the I/O Configuration in this chapter.

2. Set the bits in **Parameter 45 - [M-S Input]**. This parameter determines the data received from the master by the drive. A “1” enables the I/O. A “0” disables the I/O.

Table 3.D Parameter 45 - [M-S Input] Bit Assignments

Bit	Description
0	Logic Command/Reference (Default)
1	Datalink A Input
2	Datalink B Input
3	Datalink C Input
4	Datalink D Input
5 - 7	Not Used

Bit 0 is the right-most bit.

3. Set the bits in **Parameter 46 - [M-S Output]**. This parameter determines the data transmitted from the drive to the scanner. A “1” enables the I/O. A “0” disables the I/O.

Table 3.E Parameter 46 - [M-S Output] Bit Assignments

Bit	Description
0	Status/Feedback (Default)
1	Datalink A Output
2	Datalink B Output
3	Datalink C Output
4	Datalink D Output
5 - 7	Not Used

Bit 0 is the right-most bit.

4. Reset the module. See Resetting the Module section in this chapter.

The module 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 module. Refer to Chapter 4, Configuring the Scanner or Bridge.

To set a module to transmit Peer-to-Peer data

1. Verify that **Parameter 61 - [Peer Out Enable]** is set to **Off**. This parameter must be Off while you configure peer output parameters.

Table 3.F Parameter 61 - [Peer Out Enable] Setup Values

Value	Setting
0	Off (Default)
1	On

2. Select the source of the data to output to the network in **Parameter 59 - [Peer A Output]**.

Table 3.G Parameter 59 - [Peer A Output] Setup Values

Value	Description
0	Off (Default)
1	Logic Command/Reference
2 - 5	Datalink A, B, C, or D Input
6 - 9	Datalink A, B, C, or D Output

3. If desired, select an additional source of the data to output to the network in **Parameter 60 - [Peer B Output]**.

Table 3.H Parameter 60 - [Peer B Output] Setup Values

Value	Description
0	Off (Default)
1	Logic Command/Reference
2 - 5	Datalink A, B, C, or D Input
6 - 9	Datalink A, B, C, or D Output

4. Set **Parameters 62 - [Peer Out Time]** and **63 - [Peer Out Skip]** to establish the minimum and maximum intervals between Peer messages. Because the module transmits Peer messages when a change-of-state condition occurs, minimum and maximum intervals are required.

   – The minimum interval ensures that the module does not transmit messages on the network too often, thus minimizing network traffic. It is set in **Parameter 62 - [Peer Out Time]**. The default is 10.00 seconds.

– The maximum interval ensures that the module transmits messages often enough so that the receiving module(s) can receive recent data and verify that communications are working or, if communications are not working, can timeout. The maximum interval is the value of **Parameter 62 - [Peer Out Time]** multiplied by the value of **Parameter 63 - [Peer Out Skip]**, which has a default of 1.

For example, suppose the minimum interval (**Parameter 62 - [Peer Out Time]**) is set to 2.00 seconds, and the desired maximum interval is 4.00 seconds. Then, the **Parameter 63 - [Peer Out Skip]** value would be "2" (2.00 x 2 = 4.00).

5. Set **Parameter 61 - [Peer Out Enable]** to **On** (value = 1). The module will transmit the data selected in **Parameters 59 - [Peer A Output]** and **60 - [Peer B Output]** to the network. Another module must be configured to receive the Peer I/O data.

To set a module to receive Peer-to-Peer data

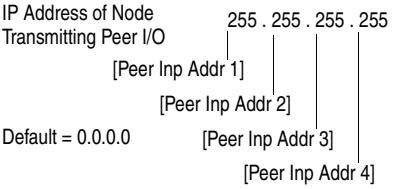
1. Verify that **Parameter 57 - [Peer Inp Enable]** is set to **Off**. This parameter must be set to Off while you configure the peer input parameters.

Table 3.I Parameter 57 - [Peer Inp Enable] Setup Values

Value	Setting
0	Off (Default)
1	On

2. In **Parameters 52 - [Peer Inp Addr 1]** through **55 - [Peer Inp Addr 4]**, set the IP address of the node from which you want to receive data. Valid nodes must have 1203-EN1 modules connected to drives with compatible Logic Command/Status words.

Figure 3.8 Example Peer Input Address 1 Parameter Setup Values



3. Select the destination of the data that is input to the drive as Peer A in **Parameter 48 - [Peer A Input]**.

Table 3.J Parameter 48 - [Peer A Input] Setup Values

Value	Description
0	Off (Default)
1	Logic Command/Reference
2 - 5	Datalink A, B, C, or D Input

4. If desired, select the destination of the data to input to the drive as Peer B in **Parameter 49 - [Peer B Input]**.

Table 3.K Parameter 49 - [Peer B Input] Setup Values

Value	Description
0	Off (Default)
1	Logic Command/Reference
2 - 5	Datalink A, B, C, or D Input

5. If the module receives a Logic Command, set the bits in **Parameter 50 - [Peer Cmd Mask]** that the drive should use. The bit definitions for the Logic Command word will depend on the drive to which the module is connected. Refer to Appendix D or drive documentation.

ATTENTION: If the module receives a Logic Command from both a Master device and a Peer device, each command bit must have only one source. This includes the stop bit. The source of command bits set to "0" will be the Master device. The source of command bits set to "1" will be the Peer device.

Table 3.L Parameter 50 - [Peer Cmd Mask] Setup Values

Value	Description
0	Ignore this command bit. (Default)
1	Use this command bit.

6. Set **Parameter 56 - [Peer Inp Timeout]** to the maximum amount of time the module will wait for a message before timing out. The default is 10.00 seconds.

Important: This value must be greater than the product of **Parameter 62 - [Peer Out Time]** multiplied by **Parameter 63 - [Peer Out Skip]** in the module from which you are receiving I/O.

For example, if the value of **Parameter 62 - [Peer Out Time]** is 2.00 and the value of **Parameter 63 - [Peer Out Skip]** is 2 (2.00 x 2 =

4.00), then **Parameter 56 - [Peer Inp Timeout]** needs to have a value greater than 4.00, such as 5.00.

7. Set the action in **Parameter 51 - [Peer Flt Action]** that the module will take if it times out.

ATTENTION: Risk of injury or equipment damage exists. **Parameter 51 - [Peer Flt Action]** lets you determine the action of the module 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 of injury or equipment damage. When commissioning the drive, verify that your system responds correctly to various situations (for example, a disconnected cable).

Table 3.M Parameter 51 - [Peer Flt Action] Setup Values

Value	Description
0	Fault (Default)
1	Zero Data
2	Hold Last
3	Send Flt Cfg

For details, see Setting a Fault Action section in this chapter.

8. Set **Parameter 57 - [Peer Inp Enable]** to On (value = 1).

9. Reset the module. See Resetting the Module section in this chapter.

The module is now configured to receive Peer I/O from the specified node. Ensure that the specified node is configured to transmit Peer I/O. **Parameter 58 - [Peer Inp Status]** will display “Running” if Peer I/O is working.

Setting a Fault Action

By default, when communications are disrupted (for example, a cable is disconnected) or the scanner is idle (for example, in program mode or its controller is faulted), 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 30 - [Comm Flt Action]** and a different response to an idle scanner using **Parameter 31 - [Idle Flt Action]**.

ATTENTION: Risk of injury or equipment damage exists. **Parameters 30 - [Comm Flt Action]** and **31 - [Idle Flt Action]** let you determine the action of the module and connected drive if communications are disrupted or the scanner is idle. By default, these parameters fault the drive. You can set these parameters so that the drive continues to run. 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 faulted controller).

To change the fault action

Set the values of **Parameters 30 - [Comm Flt Action]** and **31 -[Idle Flt Action]** to the desired responses:

Table 3.N Parameters 30 - [Comm Flt Action] and 31 - [Idle Flt Action] Setup Values

Value	Action	Description
0	Fault	The drive is faulted and stopped. (Default)
1	Zero Data	The drive is sent 0 for output data after a communications disruption. This does not command a stop.
2	Hold Last	The drive continues in its present state after a communications disruption.
3	Send Flt Cfg	The drive is sent the data that you set in the fault configuration parameters (Parameters 34 - [Flt Cfg Logic] through 43 - [Flt Cfg D2 In]).

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

To set the fault configuration parameters

If you set **Parameter 30 - [Comm Flt Action]** or **31 - [Idle Flt Action]** to "Send Flt Cfg," the values in the following parameters are sent to the drive after a communications fault and/or idle fault occurs. You must set these parameters to values required by your application.

Parameter	Name	Description
34	Flt Cfg Logic	A 16-bit value sent to the drive for Logic Command.
35	Flt Cfg Ref	A 16-bit value (0 – 65535) sent to the drive as a Reference or Datalink.
36 – 43	Flt Cfg x1 In or Flt Cfg x2 In	

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

Setting Web Features Access

By accessing the IP address set for the module using a web browser, you can view the module's web pages for information about the module and the drive to which it is connected. Additionally, the module can be configured to automatically send e-mail messages to desired addresses when selected drive faults occur and/or are cleared, and/or when the module takes a communication or idle fault action. For more details on the module's web pages, refer to Chapter 8, Viewing the Module's Web Pages.

By default, the module web pages are disabled.

To enable the module web pages

- Refer to Figure 2.1 and set the Web Pages Switch (SW2) to the "Enable Web" (down) position.

  Important: For a change to the switch setting to take effect, the module must be reset (see Resetting the Module section in this chapter).

Bit 0 of **Parameter 65 - [Web Features]** is used to protect the configured settings for e-mail notification. By default, settings are not protected. To protect an e-mail configuration, set the value of E-mail Cfg Bit 0 to "0" (Disabled). You can unprotect the configuration by changing Bit 0 back to "1" (Enabled). E-mail notification will always remain active regardless of whether or not its settings are protected — unless e-mail notification was *never* configured. For more information about configuring module e-mail notification or stopping e-mail messages, refer to Chapter 8, Configure E-mail Notification Web Page).

Table 3.O Parameter 65 - [Web Features] Bit Assignments

Bit	Description
0 (right-most bit)	E-mail Cfg (Default = 1 = Enabled)
1 - 7	Not Used

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

Resetting the Module

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

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

Set **Parameter 29 - [Reset Module]** to **Reset Module**.

Table 3.P Parameter 29 - [Reset Module] Setup Values

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

When you enter **1 = Reset Module**, the module will be immediately reset. When you enter **2 = Set Defaults**, the module will set all module parameters to their factory-default settings. After performing a Set Defaults, enter **1 = Reset Module** so that the new values take effect. The value of this parameter will be restored to **0 = Ready** after the module is reset.

Viewing the Module Configuration

The following parameters provide information about how the module is configured. You can view these parameters at any time using DriveExplorer (version 4.03 or higher) or DriveExecutive (version 3.01 or higher) software.

Param Number	Name	Description
28	EN Rate Act	The data rate used by the module.
15 – 18	IP Addr Act 1 – 4	The actual IP address used by the module.
19 – 22	Subnet Act 1 – 4	The actual subnet mask used by the module.
23 – 26	Gateway Act 1 – 4	The actual gateway address used by the module.
33	SP I/O Act	The Reference/Feedback and Datalinks used by the module. This value is the same as Parameter 32 - [SP I/O Cfg] unless the parameter was changed and the module was not reset.
58	Peer Inp Status	The status of the consumed peer input connection: Values 0 = Off 1 = Waiting 2 = Running 3 = Faulted

Notes:

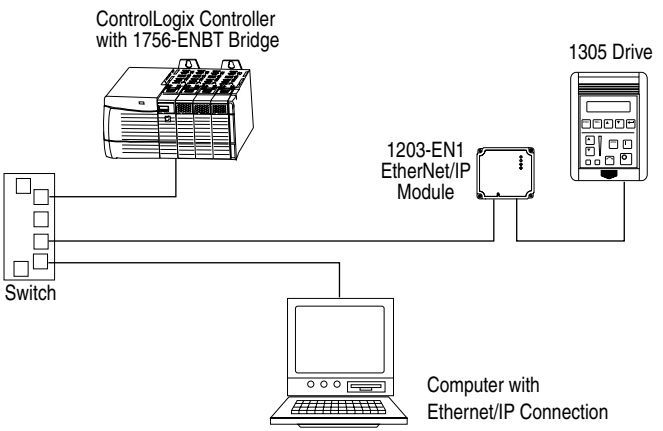
Configuring the Scanner or Bridge

Chapter 4 provides instructions on how to configure a ControlLogix bridge to communicate with the module and connected 1305 drive.

Example Network

After the module is configured, the connected drive and module will be a single node on the network. This chapter provides the steps that are needed to configure a simple network like the network in Figure 4.1. In our example, we will configure a 1756-ENBT bridge to communicate with a drive using Logic Command/Status, Reference/Feedback, and four 16-bit datalinks over the network.

Figure 4.1 Example EtherNet/IP Network

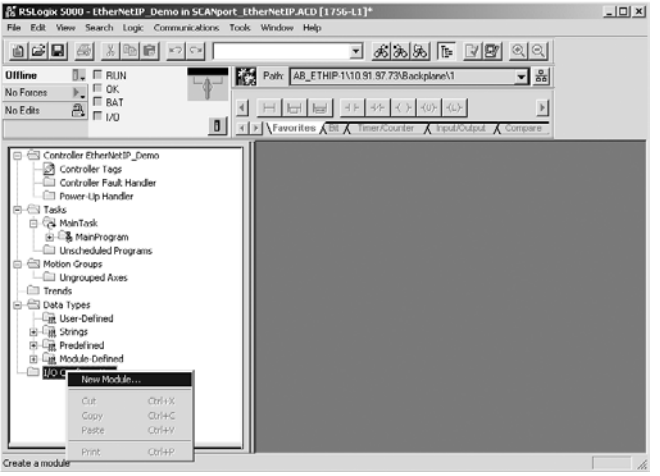


Adding a Bridge or Scanner to the I/O Configuration

To establish communications over an EtherNet/IP network, you must first add the controller and its scanner or bridge to the I/O configuration.

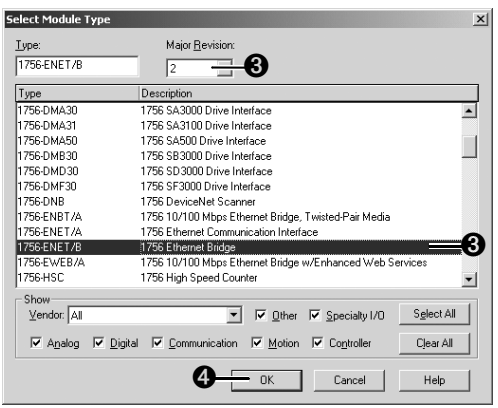
1. Start RSLogix 5000. The RSLogix 5000 window appears.

Figure 4.2 RSLogix 5000 Window



2. In the Control Organizer pane, right-click the **I/O Configuration** folder and select **New Module** (Figure 4.2). The Select Module Type dialog box (Figure 4.3) appears.

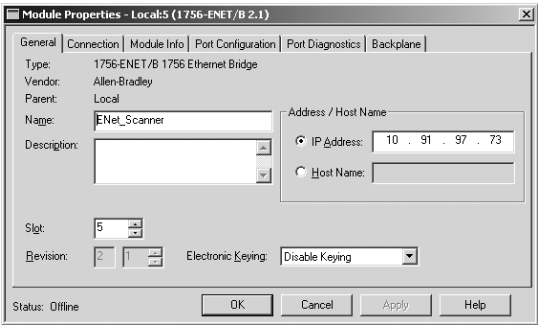
Figure 4.3 Select Module Type Dialog Box



3. In the list, select the EtherNet/IP scanner or bridge used by your controller and then select the major revision of its firmware in the Major Revision box. In this example (Figure 4.3), we use a 1756-ENBT EtherNet/IP Bridge (Series B), so the 1756-ENBT/B option is selected.

4. Click **OK**. The Module Properties dialog box (Figure 4.4) appears.

Figure 4.4 Module Properties Dialog Box - Page 1

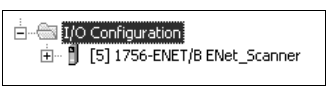


5. Edit the following:

Box	Type
Name	A name to identify the scanner or bridge.
Slot	The slot of the EtherNet/IP scanner or bridge in the rack.
Revision	The minor revision of the firmware in the scanner. (You already set the major revision in the Select Module Type dialog box, Figure 4.3.)
IP Address	The IP address of the EtherNet/IP scanner or bridge.
Electronic Keying	**Compatible Module**. This setting for Electronic Keying ensures the physical module is consistent with the software configuration before the controller and scanner or bridge make a connection. Therefore, ensure that you have set the correct revision in this dialog box. Refer to the online Help if the controller and scanner have problems making a connection and you want to change this setting.

6. Click **Finish>>**. The scanner or bridge is now configured for the EtherNet/IP network. It appears in the I/O Configuration folder. In our example, a 1756-ENBT bridge appears under the I/O Configuration folder (Figure 4.5).

Figure 4.5 RSLogix 5000: I/O Configuration Folder

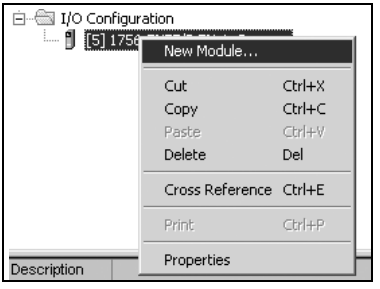


Adding the Module and Drive to the I/O Configuration

To transmit data between the scanner or bridge and the module, you must add the 1203-EN1 module as a child device of the scanner or bridge.

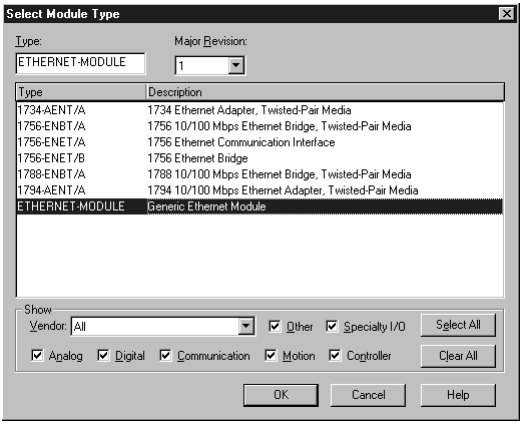
1. In the Control Organizer pane, right-click on the scanner or bridge and select **New Module** (Figure 4.6). In our example, we right-click on the 1756-ENBT/B bridge.

Figure 4.6 Right-Clicking on the Scanner



The **Select Module Type** dialog box (Figure 4.7) appears.

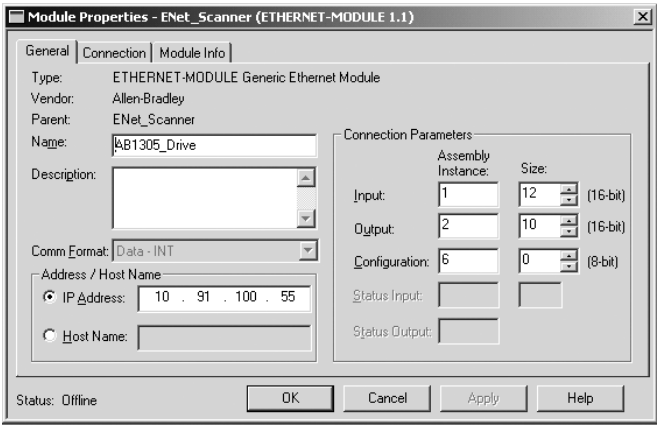
Figure 4.7 Select Module Type Dialog Box



2. Select **ETHERNET-MODULE** (Figure 4.7) to configure a 1203-EN1, and then click **OK**.

The Module Properties dialog box (Figure 4.8) appears.

Figure 4.8 Module Properties Dialog Box - Page 1



3. Edit the following information about the module:

Box	Type
Name	A name to identify the module and drive.
Comm. Format	**Data - INT**. This setting formats the data in 16-bit words.
IP Address	The IP address of the module.

4. Under Connection Parameters, edit the following:

Box	Assembly Instance	Size
Input	**1** (This value is required.)	The value will vary based on your application (setting of **Parameters 32 - [SP I/O Cfg]** and **46 - [M-S Output]**).
Output	**2** **(**This value is required.)	The value will vary based on your application (setting of **Parameters 32 - [SP I/O Cfg]** and **45 - [M-S Input]**).
Configuration	**6** **(**This value is required.)	**0** **(**This value is required.)

The following table defines the number of 16-bit words that you need for input and output depending on your configuration.

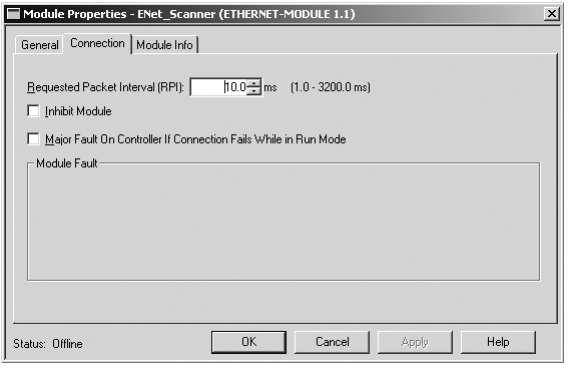
Table 4.A 1305 Drive (16-bit Reference/Feedback and Datalinks)

Input Size	Output Size	Logic Command/ Status	Reference/ Feedback (16-bit)	Datalinks (16-bit)			
				A	B	C	D
4	2	✔	✔				
6	4	✔	✔	✔			
8	6	✔	✔	✔	✔		
10	8	✔	✔	✔	✔	✔	
12	10	✔	✔	✔	✔	✔	✔

TIP: For instructions on configuring the I/O for the module (**Parameter 32 - [SP I/O Cfg]**) and the Master-Slave Hierarchy (**Parameters 45 - [M-S Input]** and **46 - [M-S Output]**), refer to Chapter 3, Configuring the Module.

5. Click **Next >** to display the next page.

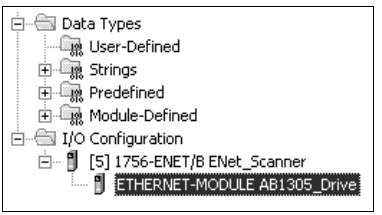
Figure 4.9 Module Properties Dialog Box - Page 2



6. In the **Requested Packet Interval (RPI)** box, set the value to 5.0 milliseconds or greater. This value determines the maximum interval that a controller should use to move data to or from the module. To conserve bandwidth, use higher values for communicating with low priority devices.

7. Click **Finish>>**. The new node ("AB1305_Drive" in this example) now appears under the scanner or bridge ("ENet_Scanner" in this example) in the I/O Configuration folder. If you double-click the **Data Types** folder and then double-click on the **Module-Defined** folder, you will see that module-defined data types and tags have been automatically created. After you save and download the configuration, these tags allow you to access the Input and Output data of the module via the controller's ladder logic.

Figure 4.10 RSLogix 5000 - Data Types and I/O Configuration Folders

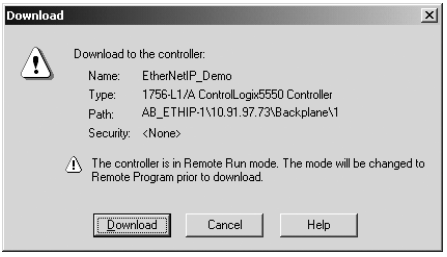


Saving the Configuration

After adding the scanner or bridge and the module to the I/O configuration, you must download the configuration to the controller. You should also save the configuration to a file on your computer.

1. Select **Communications > Download**. The **Download** dialog box (Figure 4.11) appears.

Figure 4.11 Download Dialog Box



TIP: If a message box reports that RSLogix is unable to go online, select **Communications > Who Active** to try to find your controller in the Who Active dialog box. If it does not appear, you need to add or configure the EtherNet/IP driver in RSLinx. Refer to the RSLinx online help.

2. Click **Download** to download the configuration to the controller. When the download is completed successfully, RSLogix enters online mode and the I/O OK box in the upper-left part of the screen is green.

3. Select **File > Save**. If this is the first time that you saved the project, the Save As dialog box appears. Navigate to a folder, type a file name, and click **Save** to save the configuration to a file on your computer.

Notes:

Using I/O Messaging

Chapter 5 provides information and examples that explain how to use a ControlLogix controller to send I/O Messaging to control, configure, and monitor a SCANport-based drive. A 1305 drive is used for the examples in this chapter.

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Important: At the time of publication, only ControlLogix controllers can make an EtherNet/IP network I/O connection as described in this chapter; PLC-5's and SLC's cannot. However, these controllers can perform control using explicit messaging to the CIP Register object and PCCC N41: and N42: files.

About I/O Messaging

On EtherNet/IP, I/O messaging is used to transfer the data that controls the 1305 drive and sets its Reference. I/O can also be used to transfer data to and from Datalinks in 1305 drives.

The module provides many options for configuring and using I/O, including:

- The size of I/O can be configured by enabling or disabling the Logic Command/Reference and Datalinks.
- A Master-Slave hierarchy or a Peer-to-Peer hierarchy can be set up.

Chapter 3, Configuring the Module, and Chapter 4, Configuring the Scanner or Bridge, discuss how to configure the module and scanner or bridge 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 module and scanner or bridge.

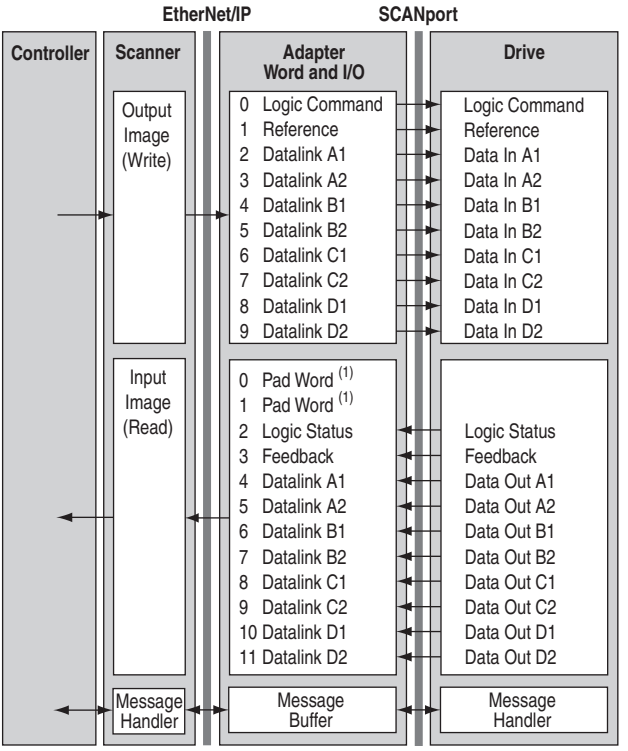
Understanding the I/O Image

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

- Configuration of I/O (**Parameter 32 - [SP I/O Cfg]**). If any of the 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 all Datalinks enabled.

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

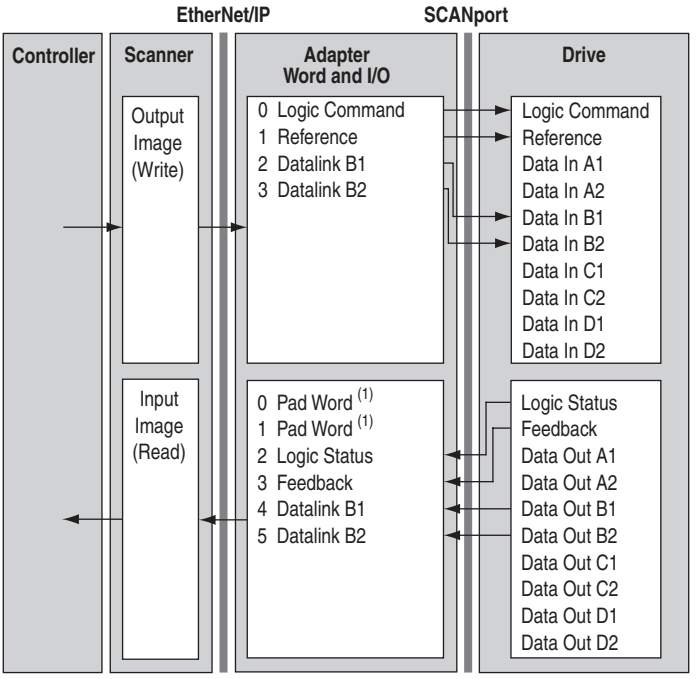


(1) Required by ControlLogix. May or may not be required by other controllers.

In Figure 5.1, the configuration is shown using 10 words of output and 12 words of input (the scanner adds two pad words at the beginning of the input). Depending on your application needs, this may vary.

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.

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



(1) Required by ControlLogix. May or may not be required by other controllers.

Using Logic Command/Status

When enabled, the Logic Command is word 0 in the output image and the Logic Status is word 2 in the input image. The *Logic Command* is a 16-bit word of control produced by the scanner and consumed by the module. The *Logic Status* is a 16-bit word of status produced by the module and consumed by the scanner.

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

Using Reference/Feedback

When enabled, Reference begins at word 1 (16-bit) in the Output image and Feedback begins at word 3 in the Input image. The *Reference* (16 bits) is produced by the controller and consumed by the module. The *Feedback* (16 bits) is produced by the module and consumed by the controller.

The Reference value is a scaled value; it is not an engineering value. For example, in 1305 drives, the Reference is scaled based on the value of **Parameter 19 - [Maximum Freq]** where “32,767” equals the Parameter 19 frequency value, and “0” equals 0 Hz. Table 5.A shows example References and their results on a 1305 drive that has its **Parameter 19 - [Maximum Freq]** set to 60 Hz (default).

Table 5.A Example Speed Reference and Feedback for a 1305 Drive

Reference Value	Scale		Output Speed	Feedback Value
	Percent	Value		
32767	100%	60 Hz	60 Hz	32767
16384	50%	30 Hz	30 Hz	16384
8192	25%	15 Hz	15 Hz	8192
0	0%	0 Hz	0 Hz	0

For Reference/Feedback details about other SCANport products, refer to their respective User Manuals.

Using Datalinks

A Datalink is a mechanism used by SCANport drives to transfer data to and from the controller. Datalinks allow parameter values to be changed without using an Explicit Message. When enabled, each Datalink occupies two 16-bit words in both the input and output image.

Rules for Using Datalinks

- Each set of Datalink parameters in a SCANport drive can be used by only one module. If more than one module is connected to a single drive, multiple modules must not try to use the same Datalink.
- Parameter settings in the drive determine the data passed through the Datalink mechanism. For example, the 1305 drive uses **Parameter 111 - [Data In A1]** and **Parameter 119 - [Data Out A1]** to configure the parameter(s) pointed to using Datalink A1. Refer to the documentation for your drive.
- 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. Thus, use Datalinks when you need to change a value of a parameter frequently.

Example Ladder Logic Program

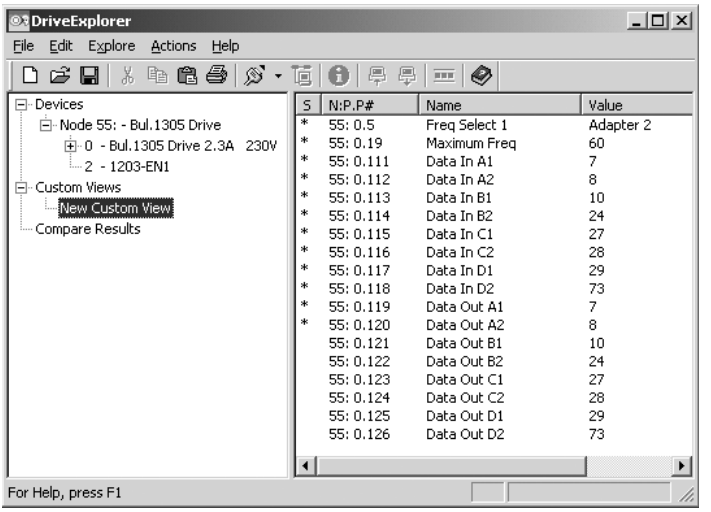
The example ladder logic program works with a ControlLogix controller and a 1305 drive. The example program will also work with a 1336 PLUS II drive.

Function of the Example Program

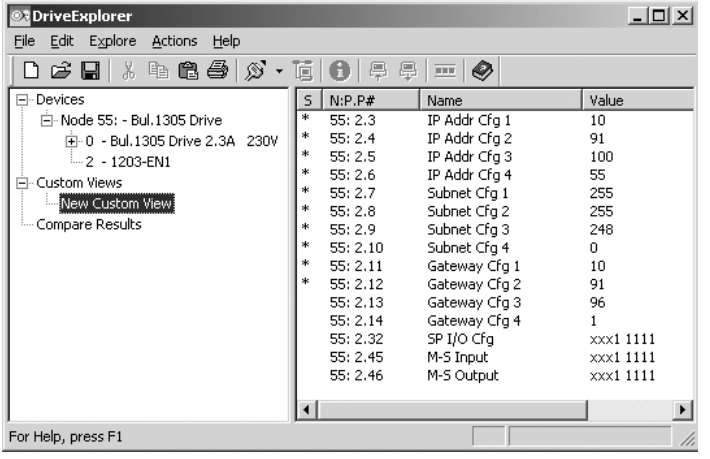
This example program enables you to:

- Obtain Logic Status information from the drive.
- Use the Logic Command to control the drive (for example, start, stop).
- Send a Reference to the drive and receive Feedback from the drive.
- Send/receive Datalink data to/from the drive.

Example Parameter Settings in the Drive



Example Parameter Settings in the Module



RSLogix 5000 Configuration

Controller Tags

When you add the module and drive to the I/O configuration (refer to Chapter 4), RSLogix 5000 automatically creates controller tags for them.

You can expand the Output and Input tags to reveal the output and input configuration. The Output tag for this example program requires ten 16-bit words of data and the Input tag for this example requires twelve 16-bit words of data (see Figure 5.3).

Figure 5.3 Input/Output Tags for the Example Ladder Program

Scope: EtherNetIP_Demo(c Show: Show All Sort: Tag Name

Tag Name	Value	Style	Type	Description
AB1305_Drive:I	{...}		AB:ETHERNET_...	
AB1305_Drive:I.Data	{...}	Decimal	INT[12]	
AB1305_Drive:I.Data[0]	0	Decimal	INT	ENBT Overhead
AB1305_Drive:I.Data[1]	0	Decimal	INT	ENBT Overhead
AB1305_Drive:I.Data[2]	3855	Decimal	INT	Logic Status
AB1305_Drive:I.Data[3]	16384	Decimal	INT	Feedback
AB1305_Drive:I.Data[4]	100	Decimal	INT	Datalink A1
AB1305_Drive:I.Data[5]	100	Decimal	INT	Datalink A2
AB1305_Drive:I.Data[6]	2	Decimal	INT	Datalink B1
AB1305_Drive:I.Data[7]	1000	Decimal	INT	Datalink B2
AB1305_Drive:I.Data[8]	1000	Decimal	INT	Datalink C1
AB1305_Drive:I.Data[9]	2000	Decimal	INT	Datalink C2
AB1305_Drive:I.Data[10]	3000	Decimal	INT	Datalink D1
AB1305_Drive:I.Data[11]	4000	Decimal	INT	Datalink D2
AB1305_Drive:O	{...}		AB:ETHERNET_...	
AB1305_Drive:O.Data	{...}	Decimal	INT[10]	
AB1305_Drive:O.Data[0]	16	Decimal	INT	Logic Command
AB1305_Drive:O.Data[1]	16384	Decimal	INT	Reference
AB1305_Drive:O.Data[2]	100	Decimal	INT	Datalink A1
AB1305_Drive:O.Data[3]	100	Decimal	INT	Datalink A2
AB1305_Drive:O.Data[4]	2	Decimal	INT	Datalink B1
AB1305_Drive:O.Data[5]	1000	Decimal	INT	Datalink B2
AB1305_Drive:O.Data[6]	1000	Decimal	INT	Datalink C1
AB1305_Drive:O.Data[7]	2000	Decimal	INT	Datalink C2
AB1305_Drive:O.Data[8]	3000	Decimal	INT	Datalink D1
AB1305_Drive:O.Data[9]	4000	Decimal	INT	Datalink D2

Program Tags

In addition to the Controller tags that are automatically created, you need to create the following tags for this example program.

Figure 5.4 MainProgram Tags for the Example Ladder Program

Scope: MainProgram Show: Show All Sort: Tag Name

Tag Name	Value	Style	Type	Description
ClearFault_Command	0	Decimal	BOOL	
Datalinks_from_Drive	{...}	Decimal	INT[8]	
Datalinks_to_Drive	{...}	Decimal	INT[8]	
Drive_Active	1	Decimal	BOOL	1305 RUNNING
Drive_At_Speed	1	Decimal	BOOL	1305 AT SPEED
Drive_Fault	0	Decimal	BOOL	1305 FAULT
Drive_Forward	1	Decimal	BOOL	1305 FORWARD
Drive_Ready	1	Decimal	BOOL	1305 ENABLED
Drive_Reverse	0	Decimal	BOOL	1305 REVERSE
Feedback	16384	Decimal	INT	1305 Feedback
Forward_Command	1	Decimal	BOOL	
PerformParameterRead	0	Decimal	BOOL	
PerformParameterWrite	0	Decimal	BOOL	
PerformScatteredRead	0	Decimal	BOOL	
PerformScatteredWrite	0	Decimal	BOOL	
Reference	16384	Decimal	INT	
Start_Command	0	Decimal	BOOL	
Stop_Command	0	Decimal	BOOL	

Logic Command/Status Words

This example uses the Logic Command word and Logic Status word for a 1305 drive. Refer to Appendix D, Logic Command/Status Words, to view these. The definition of the bits in these words may vary if you are using a different SCANport product. Refer to the documentation for your product.

Example ControlLogix Ladder Logic Program

Figure 5.5 Example ControlLogix Ladder Logic Program for I/O Messaging

ControlLogix to 1305 drive on EtherNet/IP

The ControlLogix system consists of a 1756-ENBT in slot 5 communicating over EtherNet/IP with a 1305 drive using a 1203-EN1 EtherNet/IP module.

The I/O image is as follows:

INPUT (12 INT words)	OUTPUT (10 INT words)
AB1305_Drive:I.Data[0] = ENBT Overhead	AB1305_Drive:O.Data[0] = Drive Logic Command
AB1305_Drive:I.Data[1] = ENBT Overhead	AB1305_Drive:O.Data[1] = Drive Reference
AB1305_Drive:I.Data[2] = Drive Logic Status	AB1305_Drive:O.Data[2] = Datalink A1
AB1305_Drive:I.Data[3] = Drive Feedback	AB1305_Drive:O.Data[3] = Datalink A2
AB1305_Drive:I.Data[4] = Datalink A1	AB1305_Drive:O.Data[4] = Datalink B1
AB1305_Drive:I.Data[5] = Datalink A2	AB1305_Drive:O.Data[5] = Datalink B2
AB1305_Drive:I.Data[6] = Datalink B1	AB1305_Drive:O.Data[6] = Datalink C1
AB1305_Drive:I.Data[7] = Datalink B2	AB1305_Drive:O.Data[7] = Datalink C2
AB1305_Drive:I.Data[8] = Datalink C1	AB1305_Drive:O.Data[8] = Datalink D1
AB1305_Drive:I.Data[9] = Datalink C2	AB1305_Drive:O.Data[9] = Datalink D2
AB1305_Drive:I.Data[10] = Datalink D1	
AB1305_Drive:I.Data[11] = Datalink D2	

This matches the I/O Configuration for the ETHERNET-MODULE AB1305_Drive (click on it and you will see that the connection size for Inputs is set to 12 and Outputs is set to 10).

Logic Status information rungs are provided for display purposes only. The AB1305_Drive:I.Data[2].x bits could be used directly elsewhere in the ladder program.

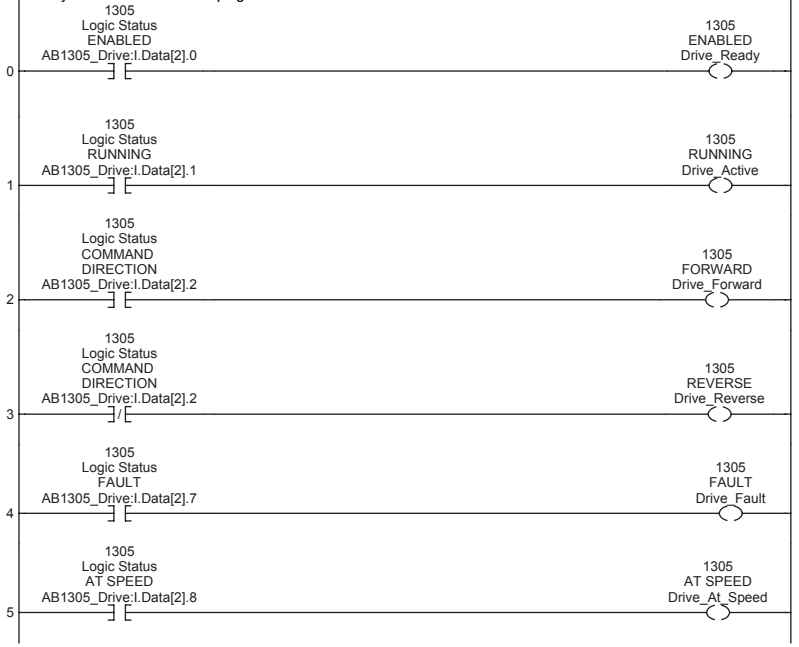


Figure 5.5 Example ControlLogix Ladder Logic Program for I/O Messaging (Cont.)

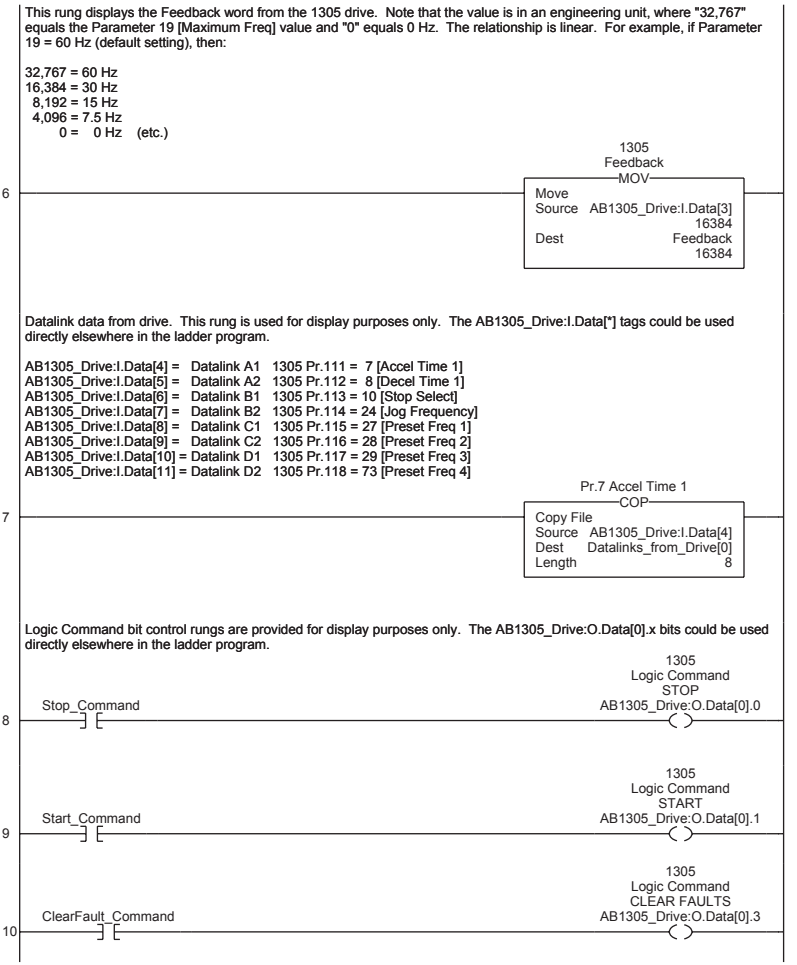
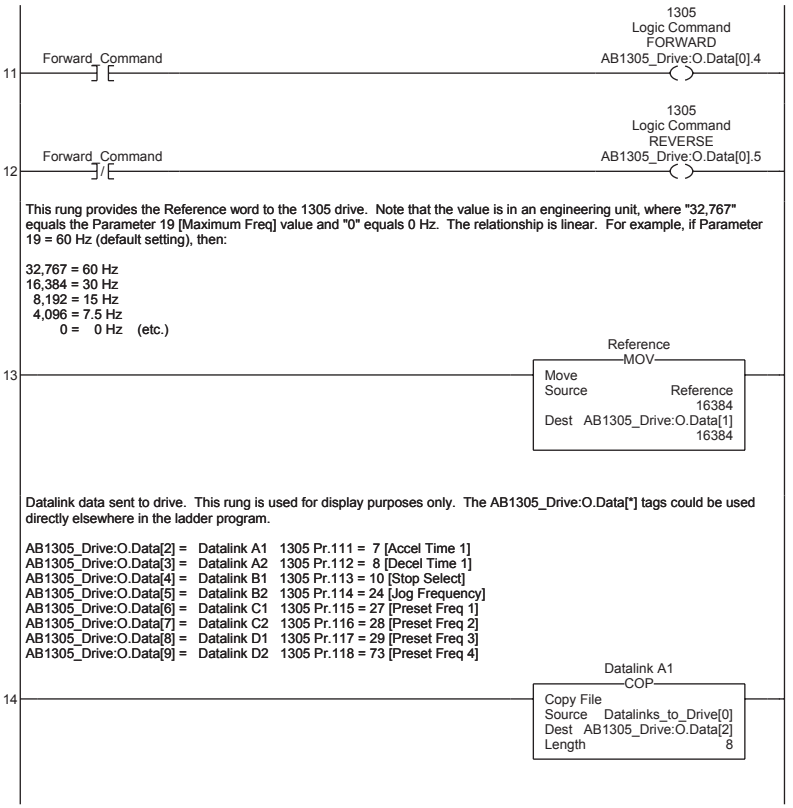


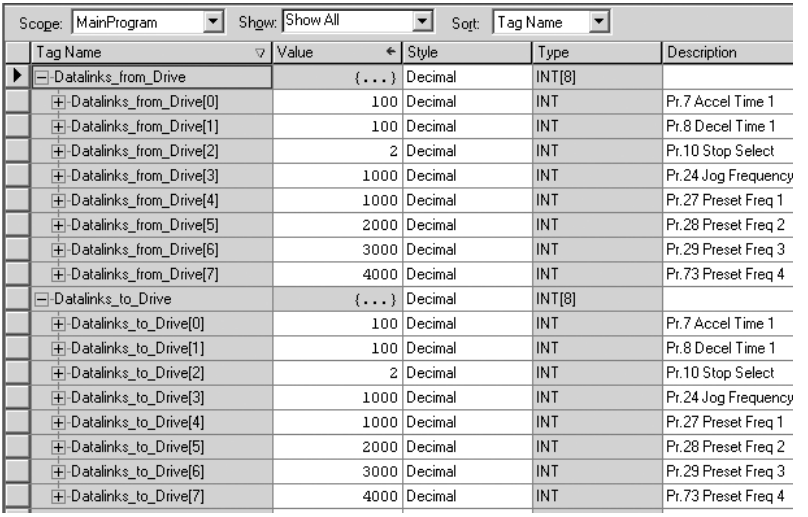
Figure 5.5 Example ControlLogix Ladder Logic Program for I/O Messaging (Cont.)



Example Datalink Data

The following figure shows the Datalink data used in the example program.

Figure 5.6 Example Datalink Data for the Example Ladder Program



Scope: MainProgram Show: Show All Sort: Tag Name

Tag Name	Value	Style	Type	Description
Datalinks_from_Drive	{...}	Decimal	INT[8]	
Datalinks_from_Drive[0]	100	Decimal	INT	Pr.7 Accel Time 1
Datalinks_from_Drive[1]	100	Decimal	INT	Pr.8 Decel Time 1
Datalinks_from_Drive[2]	2	Decimal	INT	Pr.10 Stop Select
Datalinks_from_Drive[3]	1000	Decimal	INT	Pr.24 Jog Frequency
Datalinks_from_Drive[4]	1000	Decimal	INT	Pr.27 Preset Freq 1
Datalinks_from_Drive[5]	2000	Decimal	INT	Pr.28 Preset Freq 2
Datalinks_from_Drive[6]	3000	Decimal	INT	Pr.29 Preset Freq 3
Datalinks_from_Drive[7]	4000	Decimal	INT	Pr.73 Preset Freq 4
Datalinks_to_Drive	{...}	Decimal	INT[8]	
Datalinks_to_Drive[0]	100	Decimal	INT	Pr.7 Accel Time 1
Datalinks_to_Drive[1]	100	Decimal	INT	Pr.8 Decel Time 1
Datalinks_to_Drive[2]	2	Decimal	INT	Pr.10 Stop Select
Datalinks_to_Drive[3]	1000	Decimal	INT	Pr.24 Jog Frequency
Datalinks_to_Drive[4]	1000	Decimal	INT	Pr.27 Preset Freq 1
Datalinks_to_Drive[5]	2000	Decimal	INT	Pr.28 Preset Freq 2
Datalinks_to_Drive[6]	3000	Decimal	INT	Pr.29 Preset Freq 3
Datalinks_to_Drive[7]	4000	Decimal	INT	Pr.73 Preset Freq 4

Using Explicit Messaging

Chapter 6 provides information and examples that explain how to use Explicit Messaging to read/write parameters on a SCANport-based drive. The examples used in this chapter are a continuation of the 1305 drive ladder example in Chapter 5.

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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.

Refer to Chapter 5 for information about the I/O image, using Logic Command/Status, Reference/Feedback, and Datalinks.

About Explicit Messaging

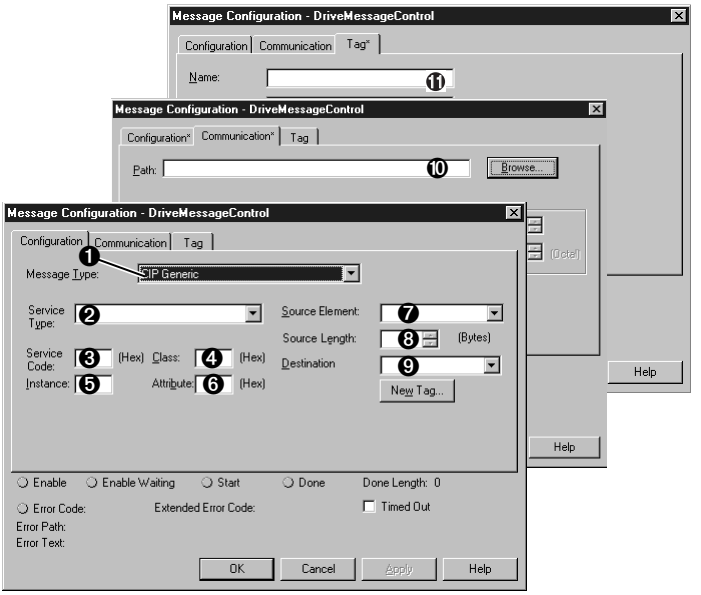
Explicit Messaging is used to transfer data that does not require continuous updates. With Explicit Messaging, you can configure and monitor a device's parameters on the EtherNet/IP network.

Formatting Explicit Messages

Explicit Messages for the ControlLogix Controller

ControlLogix scanners and bridges accommodate both downloading Explicit Message Requests and uploading Explicit Message Responses. The scanner or bridge module can accommodate one request or response for each transaction block. Each transaction block must be formatted as shown in Figure 6.1.

Figure 6.1 ControlLogix Message Format in RSLogix 5000



Refer to page 6-3 for a description of the data that is required in each box (1 – 11).

TIP: To display the Message Configuration dialog box in RSLogix 5000, add a message instruction (MSG), create a new tag for the message (properties: Base tag type, MESSAGE data type, controller scope), and click the blue box inside the message.

ControlLogix Message Requests and Responses

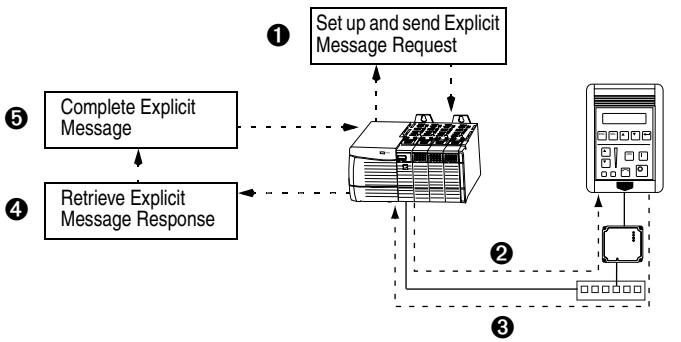
Box	Description
❶	**Message Type** The message type is usually CIP Generic.
❷	**Service Type** The service type indicates the service (for example, Get Attribute Single or Set Attribute Single) that you want to perform. Available services depend on the class and instance that you are using. Refer to Appendix C, EtherNet/IP Objects.
❸	**Service Code** The service code is the code for the requested EtherNet/IP service. This value changes based on the Service Type that has been selected. In most cases, this is a read-only box. If you select “Custom” in the Service Type box, then you need to specify a service code in this box (for example, 32 for a Get Attributes Scattered service or 34 for a Set Attributes Scattered service).
❹	**Class** The class is an EtherNet/IP class. Refer to Appendix C, EtherNet/IP Objects, for available classes.
❺	**Instance** The instance is an instance (or object) of an EtherNet/IP class. Refer to Appendix C, EtherNet/IP Objects, for available instances for each class.
❻	**Attribute** The attribute is a class or instance attribute. Refer to Appendix C, EtherNet/IP Objects, for available attributes for each class or instance.
❼	**Source Element** This box contains the name of the tag for any service data to be sent from the scanner or bridge to the module and drive.
❽	**Source Length** This box contains the number of bytes of service data to be sent in the message.
❾	**Destination** This box contains the name of the tag that will receive service response data from the module and drive.
❿	**Path** The path is the route that the message will follow. **Tip:** Click **Browse** to find the path or type in the name of an module that you previously mapped.
⓫	**Name** The name for the message.

Performing Explicit Messages

There are five basic events in the Explicit Messaging process. 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 6.2 Explicit Message Process



Event

1. You format the required data and set up the ladder logic program to send an Explicit Message request to the scanner or bridge module.
2. The scanner or bridge module transmits the Explicit Message Request to the slave device over the EtherNet/IP network.
3. The slave device transmits the Explicit Message Response back to the scanner. The data is stored in the scanner buffer.
4. The controller retrieves the Explicit Message Response from the scanner's buffer.
5. The Explicit Message is complete.

About the Example Explicit Messages

These examples show how to format and execute the following types of Explicit Messages using a ControlLogix controller:

- Get Attribute Single
- Set Attribute Single
- Get Attributes Scattered
- Set Attributes Scattered

Message Formats

When formatting an example message, refer to Formatting Explicit Messages in this chapter for an explanation of the content of each box.

Also, to format and execute these example messages, you need the Controller tags displayed in Figure 6.3.

Figure 6.3 Controller Tags for Explicit Messages

Scope: EtherNetIP_Demo(c Show: Show All Sort: Tag Name

Tag Name	Value	Style	Type	Description
AB1305_Drive:C	{...}		AB:ETHERNET_...	
AB1305_Drive:I	{...}		AB:ETHERNET_...	
AB1305_Drive:O	{...}		AB:ETHERNET_...	
MultipleReadMessage	{...}		MESSAGE	
ParameterReadMessage	{...}		MESSAGE	
ParameterReadValue	5000	Decimal	INT	Pr.74 Preset Freq 5
ParameterWriteMessage	{...}		MESSAGE	
ParameterWriteValue	5000	Decimal	INT	Pr.74 Preset Freq 5
ScatteredReadMessage	{...}		MESSAGE	
ScatteredReadRequest	{...}	Decimal	INT[8]	
ScatteredReadResponse	{...}	Decimal	INT[8]	
ScatteredWriteMessage	{...}		MESSAGE	
ScatteredWriteRequest	{...}	Decimal	INT[8]	
ScatteredWriteResponse	{...}	Decimal	INT[8]	

Ladder Logic Rungs

The ladder logic rungs for the examples in this chapter can be appended after rung 14 in the ladder logic program (Figure 5.5) in Chapter 5, Using I/O Messaging.

Source and Destination Data

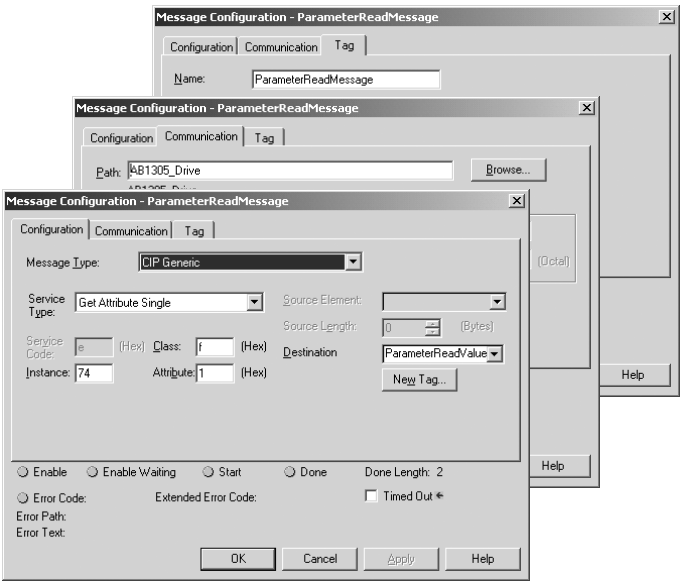
The example values for the source and destination data that appear in this chapter may vary in your application.

Example Get Attribute Single Message

A Get Attribute Single message reads a single attribute value. In this example, we read the value of a parameter in a 1305 drive.

Example Message Format

Figure 6.4 Message Format for a Get Attribute Single Message



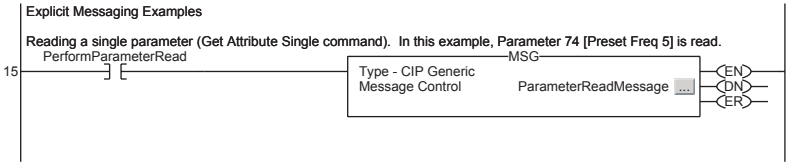
The following table identifies key settings for the message format:

Configuration	Value	Description	Refer to . . .
Service Type (1)	Get Attribute Single	Read parameter data	C-22
Service Code (1)	e (Hex.)	Get Attribute Single	C-10
Class	f (Hex.)	CIP Parameter Object	C-20
Instance	74 (Dec.)	Parameter 74 - [Preset Freq 5]	C-20
Attribute	1 (Hex.)	Parameter Value	C-21
Destination	ParameterReadValue	Controller tag for response data	—

(1) The default setting for Service Type is “Custom,” which enables you to enter a Service Code that is not available from the Service Type pull-down menu. When you select a Service Type other than “Custom” from the pull-down menu, an appropriate Hex. value is automatically assigned to the service Code box which grays out (unavailable).

Example Ladder Logic Rung

Figure 6.5 Example Get Attribute Single Message



Example Destination Data

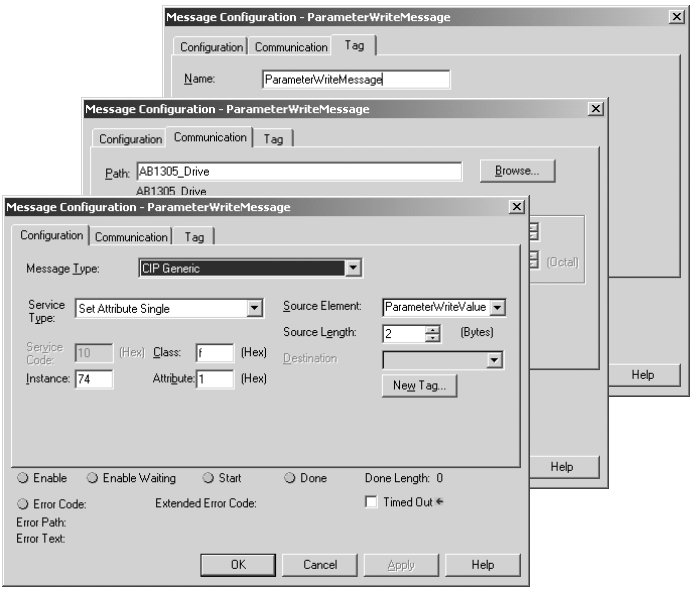
In this example, the Get Attribute Single message reads **Parameter 74 - [Preset Freq 5]** in the 1305 drive and returns its value to the destination tag named ParameterReadValue.

Example Set Attribute Single Message

A Set Attribute Single message writes a value for a single attribute. In this example, we write the value of a parameter in a 1305 drive.

Example Message Format

Figure 6.6 Message Format for a Set Attribute Single Message



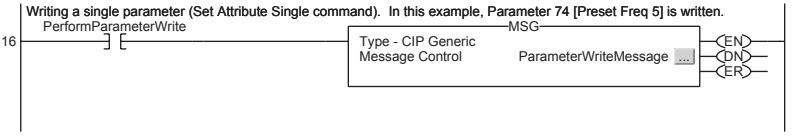
The following table identifies key settings for the data format:

Configuration	Value	Description	Refer to . . .
Service Type (1)	Set Attribute Single	Write parameter data	C-22
Service Code (1)	10 (Hex.)	Set Attribute Single	C-10
Class	f (Hex.)	CIP Parameter Object	C-20
Instance	74 (Dec.)	Parameter 74 - [Preset Freq 5]	C-20
Attribute	1 (Hex.)	Parameter Value	C-21
Source Element	ParameterWriteValue	Controller tag for write data	—
Source Length	2 bytes	One 16-bit word of data is sent	—

(1) The default setting for Service Type is “Custom,” which enables you to enter a Service Code that is not available from the Service Type pull-down menu. When you select a Service Type other than “Custom” from the pull-down menu, an appropriate Hex. value is automatically assigned to the service Code box which grays out (unavailable).

Example Ladder Logic Rung

Figure 6.7 Example Set Attribute Single Message



Example Source Data

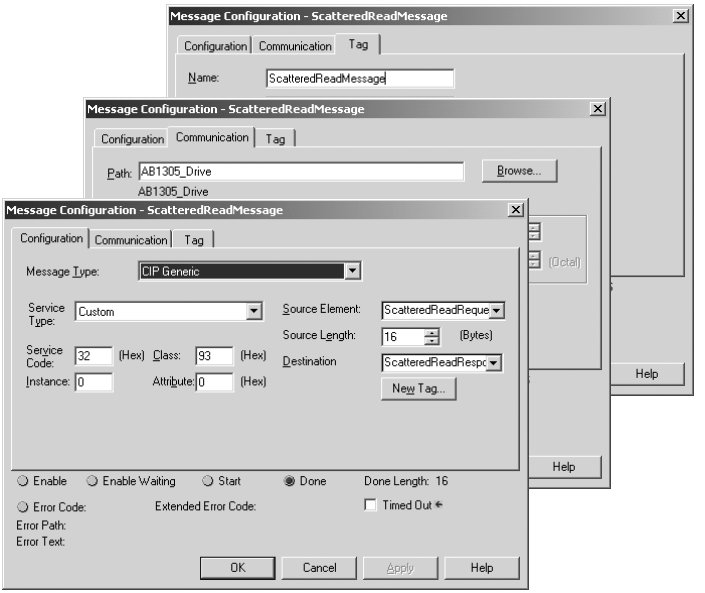
In this example, the Set Attribute Single message writes the value in the source tag named ParameterWriteValue to **Parameter 74 - [Preset Freq 5]** in the 1305 drive.

Example Get Attributes Scattered Message

A Get Attributes Scattered message reads the values of multiple attributes. In this example, we read the values of various parameters in a 1305 drive.

Example Message Format

Figure 6.8 Message Format for a Get Attributes Scattered Message

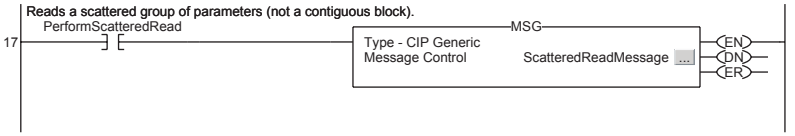


The following table identifies key settings for the message format:

Configuration	Value	Description	Refer to . . .
Service Type	Custom	Required for scattered messages	—
Service Code	32	Code for Get Attributes Scattered	C-22
Class	93 (Hex.)	SCANport Pass-Through Parameter Object	C-20
Instance	0 (Dec.)	Required for scattered messages	—
Attribute	0 (Hex.)	Required for scattered messages	—
Source Element	ScatteredReadRequest	Controller tag for request data	6-12
Source Length	16 Bytes	Eight 16-bit words of data	6-12
Destination	ScatteredReadResponse	Controller tag for response data	6-11

Example Ladder Logic Rung

Figure 6.9 Example Get Attributes Scattered Message



Explanation of Source and Destination Data

The data structures in Figure 6.10 uses 16-bit words and can get up to 40 parameters in a single message. In the Response Message, a parameter number with the high bit set indicates that the associated parameter value field contains an error code.

Figure 6.10 Data Structures for Get Scattered Attributes Messages

	Request (Source Data)
Word 0	Parameter Number
1	Pad Word
2	Parameter Number
3	Pad Word
4	Parameter Number
5	Pad Word
6	Parameter Number
7	Pad Word
8	Parameter Number
9	Pad Word
10	Parameter Number
11	Pad Word
⋮	

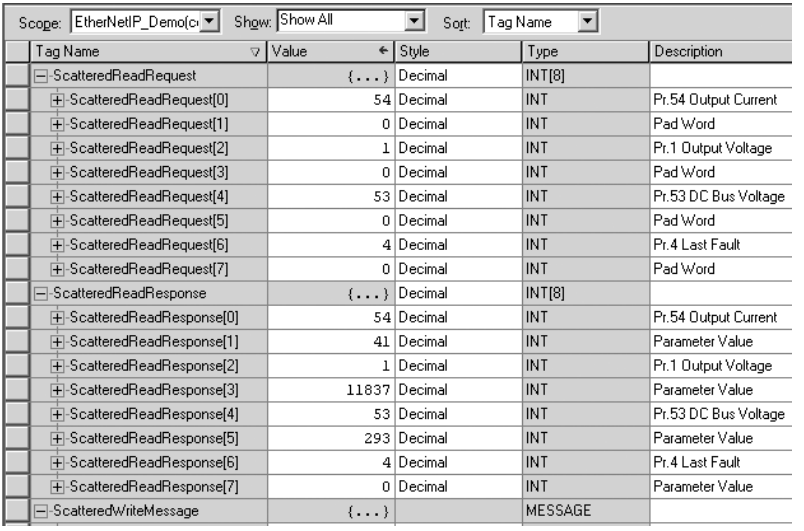
	Response (Destination Data)
Word 0	Parameter Number
1	Parameter Value
2	Parameter Number
3	Parameter Value
4	Parameter Number
5	Parameter Value
6	Parameter Number
7	Parameter Value
8	Parameter Number
9	Parameter Value
10	Parameter Number
11	Parameter Value
⋮	

Example Data

In this example, we use the data structure in Figure 6.11 in the source tag named ScatteredReadRequest to read the following four parameters: Parameter 54 - [Output Current], 1 - [Output Voltage], 53 - [DC Bus Voltage], and 4 - [Last Fault].

The Get Attributes Scattered message reads the multiple parameters and returns their values to the destination tag (ScatteredReadResponse).

Figure 6.11 Example Scattered Read Data



Scope: EtherNetIP_Demo(c Show: Show All Sort: Tag Name

Tag Name	Value	Style	Type	Description
ScatteredReadRequest	{...}	Decimal	INT[8]	
ScatteredReadRequest[0]	54	Decimal	INT	Pr.54 Output Current
ScatteredReadRequest[1]	0	Decimal	INT	Pad Word
ScatteredReadRequest[2]	1	Decimal	INT	Pr.1 Output Voltage
ScatteredReadRequest[3]	0	Decimal	INT	Pad Word
ScatteredReadRequest[4]	53	Decimal	INT	Pr.53 DC Bus Voltage
ScatteredReadRequest[5]	0	Decimal	INT	Pad Word
ScatteredReadRequest[6]	4	Decimal	INT	Pr.4 Last Fault
ScatteredReadRequest[7]	0	Decimal	INT	Pad Word
ScatteredReadResponse	{...}	Decimal	INT[8]	
ScatteredReadResponse[0]	54	Decimal	INT	Pr.54 Output Current
ScatteredReadResponse[1]	41	Decimal	INT	Parameter Value
ScatteredReadResponse[2]	1	Decimal	INT	Pr.1 Output Voltage
ScatteredReadResponse[3]	11837	Decimal	INT	Parameter Value
ScatteredReadResponse[4]	53	Decimal	INT	Pr.53 DC Bus Voltage
ScatteredReadResponse[5]	293	Decimal	INT	Parameter Value
ScatteredReadResponse[6]	4	Decimal	INT	Pr.4 Last Fault
ScatteredReadResponse[7]	0	Decimal	INT	Parameter Value
ScatteredWriteMessage	{...}		MESSAGE	

In this example, the parameters have the following values:

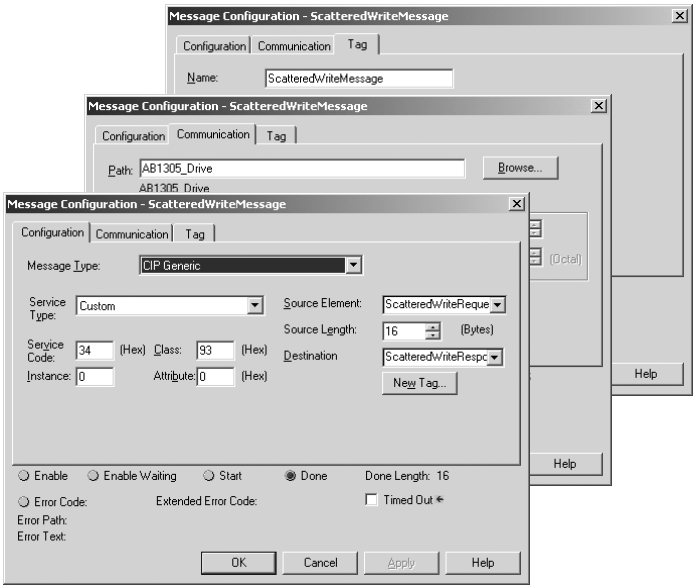
Parameter	Value
54 - [Output Current]	0.41 Amps
1 - [Output Voltage]	118.37 VAC
53 - [DC Bus Voltage]	293 VDC
4 - [Last Fault]	0 (no fault)

Example Set Attributes Scattered Message

A Set Attributes Scattered message writes values to multiple attributes. In this example, we write the values of various parameters in a 1305 drive.

Example Message Format

Figure 6.12 Message Format for a Set Attributes Scattered Message

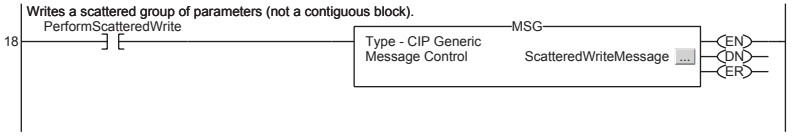


The following table identifies key settings for the message format:

Configuration	Value	Description	Refer to . . .
Service Type	Custom	Required for scattered messages	—
Service Code	34	Code for Get Attributes Scattered	C-22
Class	93 (Hex.)	SCANport Pass-Through Parameter Object	C-20
Instance	0 (Dec.)	Required for scattered messages	—
Attribute	0 (Hex.)	Required for scattered messages	—
Source Element	ScatteredWriteRequest	Controller tag for request data	6-15
Source Length	16 Bytes	Eight 16-bit words of data	6-15
Destination	ScatteredWriteResponse	Controller tag for response data	6-15

Example Ladder Logic Rung

Figure 6.13 Example Set Attributes Scattered Message



Explanation of Source and Destination Data

The data structures in Figure 6.14 use 16-bit words and can set up to 40 parameters in a single message. In the Response Message, a parameter number with the high bit set indicates that the associated pad word field contains an error code.

Figure 6.14 Data Structures for Set Attributes Scattered Messages

	Request (Source Data)
Word 0	Parameter Number
1	Parameter Value
2	Parameter Number
3	Parameter Value
4	Parameter Number
5	Parameter Value
6	Parameter Number
7	Parameter Value
8	Parameter Number
9	Parameter Value
10	Parameter Number
11	Parameter Value
⋮	

	Response (Destination Data)
Word 0	Parameter Number
1	Pad Word or Error Code
2	Parameter Number
3	Pad Word or Error Code
4	Parameter Number
5	Pad Word or Error Code
6	Parameter Number
7	Pad Word or Error Code
8	Parameter Number
9	Pad Word or Error Code
10	Parameter Number
11	Pad Word or Error Code
⋮	

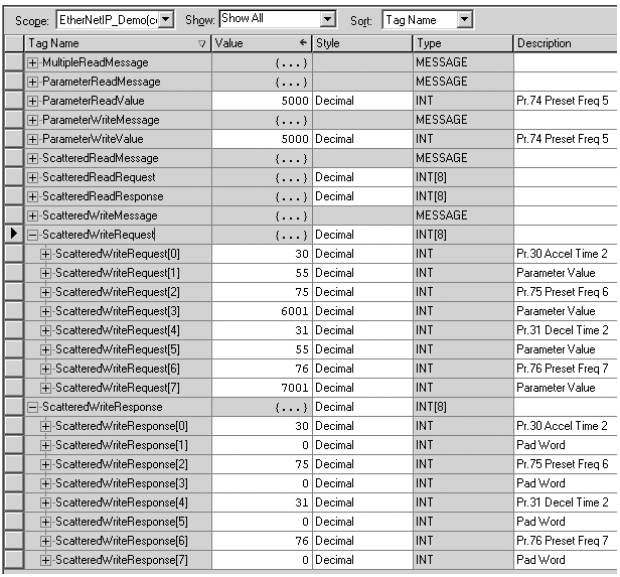
Example Data

In this example, we use the data structure in Figure 6.15 in the source tag (ScatteredWriteRequest) to write new values for the following four parameters:

Parameter	Value
30 - [Accel Time 2]	5.5 Sec.
75 - [Preset Freq 6]	60.01 Hz.
31 - [Decel Time 2]	5.5 Sec.
76 - [Preset Freq 7]	70.01 Hz.

The results of the message appear in the destination tag named ScatteredWriteResponse. Values of “0” indicate no errors occurred.

Figure 6.15 Example Scattered Write Data



Notes:

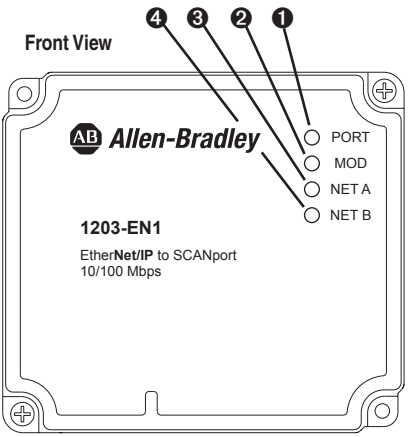
Troubleshooting

Chapter 7 provides information for diagnosing and troubleshooting potential problems with the module.

Locating the Status Indicators

The EtherNet/IP-to-SCANport module has four status indicators. They can be viewed when the 1203-EN1 enclosure cover is installed or removed. See Figure 7.1.

Figure 7.1 Status Indicators



Item	Status Indicator	Description	Page
❶	PORT	SCANport Connection Status	7-2
❷	MOD	Module Status	7-3
❸	Net A	EtherNet/IP Connection Status	7-4
❹	Net B	EtherNet/IP Transmit Status	7-5

PORT Status Indicator

Status	Cause	Corrective Action
Off	The module is not powered or is not connected properly to the drive.	• Securely connect the module to the drive using a 1202-Cxx Communication cable. • Apply power to the module.
Flashing Red	The module is not receiving a ping message from the drive.	• Verify that the 1202-Cxx Communication cable is securely connected. • Cycle power to the drive and/or module.
Solid Red	The drive has refused an I/O connection from the module. Another SCANport peripheral is using the same SCANport port as the module.	**Important:** Cycle power to the drive and/or module after making any of the following corrections: • Verify that all 1202-Cxx cables are securely connected and not damaged. Replace cables if necessary. • Verify that the SCANport Host supports Datalinks. • Configure the module to use a Datalink that is not already being used by another peripheral.
Flashing Green	The module is establishing an I/O connection to the drive.	No action required. Normal behavior if no SCANport I/O is enabled.
Solid Green	The module is properly connected and is communicating with the drive.	No action required.
Flashing Red/ Green	The module is performing a self-test.	No action required.

MOD Status Indicator

Status	Cause	Corrective Action
Off	The module is not powered.	• Securely connect the module to the drive using a 1202-Cxx Communication cable. • Apply power to the module.
Flashing Red	The module has failed the firmware test. The module is being flash upgraded.	• Clear faults in the module. • Cycle power to the drive and/or module. • If cycling power does not correct the problem, the parameter settings may have been corrupted. Reset defaults and reconfigure the module. • If resetting defaults does not correct the problem, flash the module with the latest firmware release.
Solid Red	The module has failed the hardware test.	• Cycle power to the module. • Replace the module.
Flashing Green	The module is operational, but is not transferring I/O data.	• Place the controller in RUN mode. • Program the controller to recognize and transmit I/O to the module. • Configure the module for the program in the controller. • Normal behavior if no SCANport I/O is enabled.
Solid Green	The module is operational and transferring I/O data.	No action required.
Flashing Red/ Green	The module is in boot mode.	• Flash the module with the latest firmware release over the serial port.
	If Port and Net A are also flashing Red/Green, then the module is performing a self-test.	• No action required.

Net A Status Indicator

Status	Cause	Corrective Action
Off	The module is not powered, the module is not connected properly to the network, or the module needs an IP address.	• Securely connect the module to the drive using a 1202-Cxx Communication cable. • Securely connect the Ethernet cable to the Ethernet connector. • Set a unique IP address using a BOOTP server or by disabling BOOTP and using parameters. • Apply power to the drive and module.
Solid Red	The module failed duplicated IP address detection test.	Configure the module to use a unique IP address and cycle power.
Flashing Red	An EtherNet/IP connection has timed out.	• Place the controller in RUN mode, or apply power to the peer device that will send I/O. • Check the amount of traffic on the network.
Flashing Red/ Green	The module is performing a self-test.	No action required.
Flashing Green	The module is properly connected but is not communicating with any devices on the network.	• Place the controller in RUN mode, or apply power to the peer device that will send I/O. • Program a controller or peer device to recognize and transmit I/O or make a messaging connection to the module. • Configure the module for the program in the controller or the I/O from the peer device.
Solid Green	The module is properly connected and communicating on the network.	No action required.

Net B Status Indicator

Status	Cause	Corrective Action
Off	The module is not powered or is not transmitting on the EtherNet/IP network.	If Net A is off: • Securely connect the module to the drive using a 1202-Cxx Communication cable. • Securely connect the Ethernet cable to the Ethernet connector. • Set a unique IP address using a BOOTP server or by disabling BOOTP and using parameters.
		If Net A is solid red: • Configure the module to use a unique IP address and cycle power.
		If Net A is flashing red/green or red: • Check the IP address in the module and scanner. • Ping the module. Normal condition if the module is idle.
Flashing Green	The module is transmitting on the EtherNet/IP network.	No action required.

Viewing and Clearing Events

The module maintains an event queue that reports the history of its actions. You can view the event queue using DriveExplorer (4.03 or higher) or DriveExecutive (3.01 or higher) software.

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	SCANport Bus Off Flt	A bus-off condition was detected on SCANport. This event may be caused by loose or broken cables or by noise.
3	Ping Time Flt	A ping message was not received on SCANport within the specified time.
4	Port ID Flt	The module is not connected to a correct port on a SCANport product.
5	Port Change Flt	The SCANport port changed.
6	Host Sent Reset	The drive sent a reset event message.
7	EEPROM Sum Flt	The EEPROM in the module is corrupt.
8	Online @ 125kbps	The module detected that the drive is communicating at 125 kbps.
9	Reserved	Not used.
10	Bad Host Flt	The module was connected to an incompatible product.
11	Reserved	Not used.
12	Type 2 Login	The module has logged in for type 2 control.
13	Type 2 Time Flt	The module has not received a type 2 status message within the specified time.
14	DL Login	The module has logged into a Datalink.
15	DL Reject Flt	The drive 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 module has not received a Datalink message within the specified time.
17	Reserved	Not used.
18	Reserved	Not used.
19	Reserved	Not used.
20	Reserved	Not used.
21	Reserved	Not used.
22	App Updated	Startup sequence detected new application firmware.

Code	Event	Description
23	Net Comm Flt	The module detected a communications fault on the network.
24	Net Sent Reset	The module received a reset from the network.
25	Net Close Flt	An I/O connection from the network to the module was closed.
26	Net Idle Flt	The module is receiving “Idle” packets from the network.
27	Net Open	An I/O connection to the module from the network has been opened.
28	Net Timeout Flt	An I/O connection from the network to the module has timed out.
29	PCCC IO Close	The device sending PCCC control messages to the module has sent the PCCC Control Timeout to a value of zero.
30	PCCC IO Open	The module has begun receiving PCCC control messages (the PCCC Control Timeout was previously set to a non-zero value).
31	PCCC IO Time Flt	The module has not received a PCCC control message within the specified PCCC Control Timeout interval.
32	Watchdog T/O Flt	The software detects a failure.
33	EEPROM Init	Startup sequence detected a blank EEPROM map revision. Intended to happen in factory test.
34	Normal Startup	The module successfully started up.
35	Manual Reset	The module was reset by the user.
36	ENET Link Down	The Ethernet link was removed from the module.
37	ENET Link Up	An Ethernet link is available for the module.
38	BOOTP Response	The module received a response to its BOOTP request.
39	Duplicate IP Addr	The module uses the same IP address as another device on the network.
40	Peer IO Open	The module received the first Peer I/O message.
41	Peer IO Time Flt	The module has not received a Peer I/O message for longer than the Peer I/O Timeout.
42	Email Failure	The module attempted to send an e-mail notice, but could not deliver the message to the mail server.

Notes:

Viewing the Module's Web Pages

Chapter 8 provides instructions on how to monitor the module and connected SCANport drive using the module's web interface.

Future enhancements may result in web pages that look different than the examples shown in this chapter.

Accessing the Module's Web Home Page

After configuring the module, you can view its web pages. These pages present information about the module, and the drive to which it is connected.

TIP: By default the module web pages are disabled. To enable the web pages, set the Web Pages Switch (SW2 in Figure 2.1) to its "Enable Web" position and then reset the module.

The module can be configured to automatically send e-mail messages to desired addresses when selected drive faults or warnings occur and/or are cleared, and/or when the module takes a communication or idle fault action. For more details, see the Configure E-mail Notification Web Page section in this chapter.

Bit 0 of **Parameter 65 - [Web Features]** can be used to protect the configured settings for e-mail notification. Refer to Chapter 3, Setting Web Features Access for more information.

To view the web pages of the module

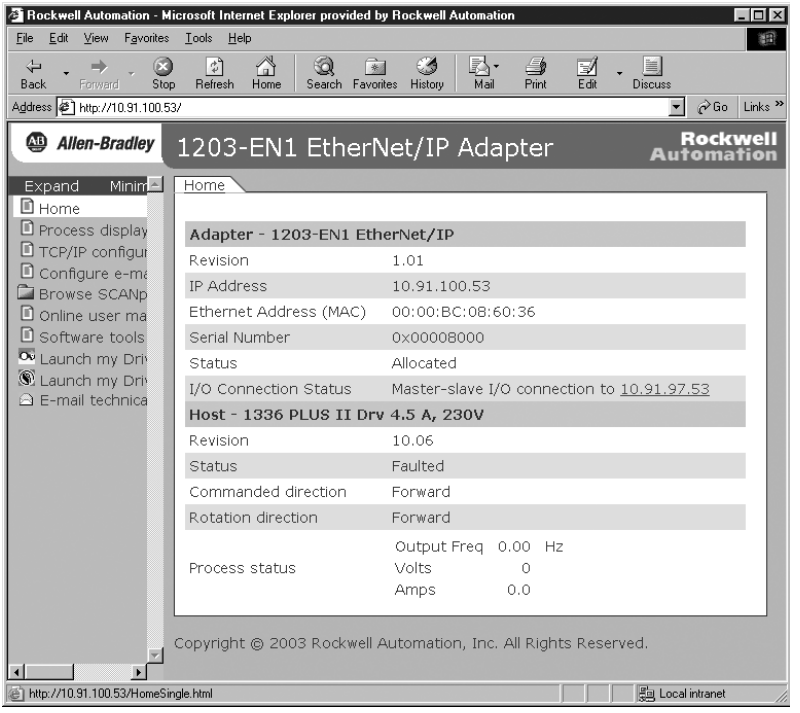
1. On a computer with access to the EtherNet/IP network on which the module is installed, launch a web browser such as Microsoft™ Internet Explorer (version 5.0 or higher) or Netscape® Navigator® (version 4.6 or higher).

   The computer can access the module web pages if it is connected to the same network as the module, or if it is connected to a network with access to the module's network via a gateway device (for example, a router).

2. In the Address (Explorer) or Location (Navigator) box, type the IP address of the module and then press ENTER. The web Home Page for the module appears.

Important: Clicking the browser's Refresh button always re-displays the Home Page even while viewing another module web page.

Figure 8.1 Module Web Home Page Example



Title Bar on Module Web Pages

The title bar appears on all module web pages, including its Home Page. It consists of three elements:

Item	Description
Allen-Bradley logo (at far left)	This logo is also a link. Click it to view the ab.com web Home Page.
Module Title (middle)	Shows the module type and title.
Rockwell Automation logo (at far right)	This logo is also a link. Click it to view the Rockwell Automation web Home Page.

Navigation Menu on Module Web Pages

The navigation menu appears on the left side of all module web pages, including its Home Page. The navigation menu consists of links and link folders which can be expanded or minimized. The following table shows all of the navigation menu's links and link folders:

Link/Folder	Description
Home link	Click this link to view the module's Home Page (Figure 8.1).
Process Display link	Click this link to view the Host's Process Display pop-up window (Figure 8.2) showing dynamic process information (updates every 3 seconds).
TCP/IP configuration link	Click this link to view the module's TCP/IP Configuration web page showing information about the TCP/IP configuration, such as the module's IP address and the number of packets being sent. Figure 8.3 shows an example TCP/IP Configuration web page.
Configure e-mail notification link	Click this link to view the module's Configure E-mail Notification web page (Figure 8.4) for configuring the module to send automatic e-mail messages. See Figure 8.5 for an example e-mail message.
Browse SCANport devices folder	Click this folder to expand and view the Port folders for the SCANport drive and module.
Port folders	Click a respective Port folder to expand and view its device's: • "Module information" link (for drive or module) • "Fault queue" link and "Warning queue" link (for drive only) • "Event queue" link (for module only) These links take you to their related information screens. See Figure 8.6 and Figure 8.8 for example screens.
Online user manuals link	Click this link to view Allen-Bradley's web page with documentation for drives and other devices.
Software tools Web site link	Click this link to view Allen-Bradley's web page with information about software tools such as DriveExplorer and DriveExecutive.
Launch my DriveExplorer software link	Click this link to launch the DriveExplorer software already installed on your PC.

Link/Folder	Description
Launch my DriveExecutive software link	Click this link to launch the DriveExecutive software already installed on your PC.
E-mail technical support link	Click this link to view a new e-mail message window to send a message to Allen-Bradley's Technical Support Team.

Information on Module Home Page

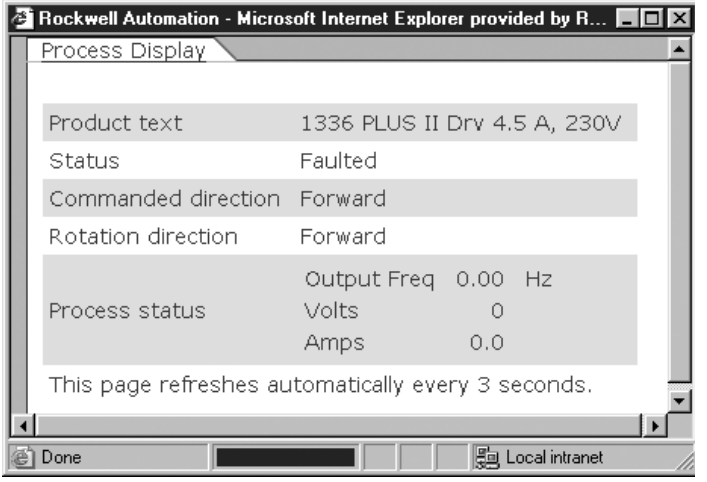
The module Home Page displays the following information for the module and host:

Item	Description
Module Information	• Device Name • Revision • IP Address • Ethernet Address (MAC) • Serial Number • Status • I/O connection status
Host Information	• Device Name • Revision • Status • Commanded direction • Rotation direction • Process status

Process Display Pop-up Windows

The Process Display pop-up window dynamically shows the SCANport product's information. To view this window, click the "Process Display" link in the navigation menu.

Figure 8.2 Example of Process Display Pop-up Window for SCANport Product



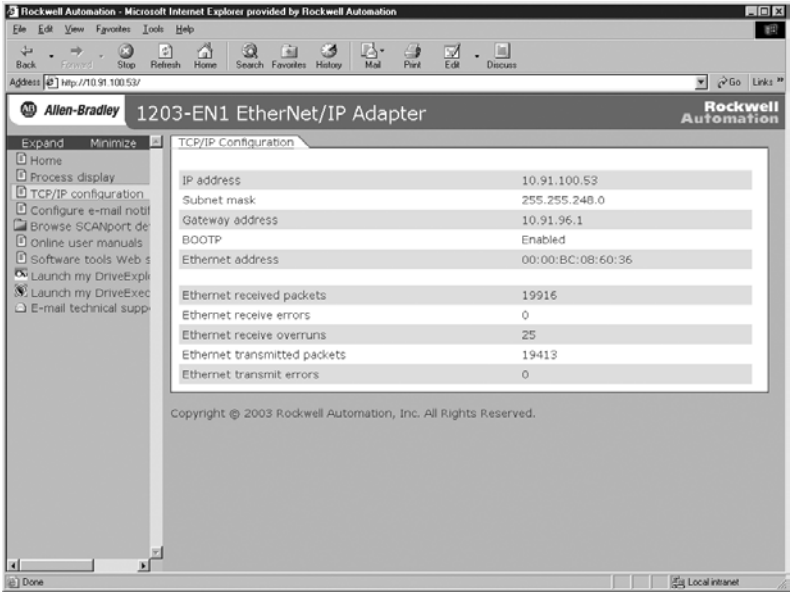
Information	Description
Product text	Description of SCANport product.
Status	Status of SCANport product.
Commanded direction	Commanded direction of SCANport product.
Rotation direction	Rotation direction of SCANport product.
Process status	Line 1 – desired parameter of SCANport product and its dynamic value. (1) Line 2 – desired parameter of SCANport product and its dynamic value. (1) Line 3 – desired parameter of SCANport product and its dynamic value. (1)

(1) The parameter whose value is shown on this line can be set by using the drive HIM. For details, refer to the drive User Manual.

TCP/IP Configuration Web Page

The TCP/IP Configuration web page provides details about the module's Ethernet settings and network activities.

Figure 8.3 Example of TCP/IP Configuration Web Page

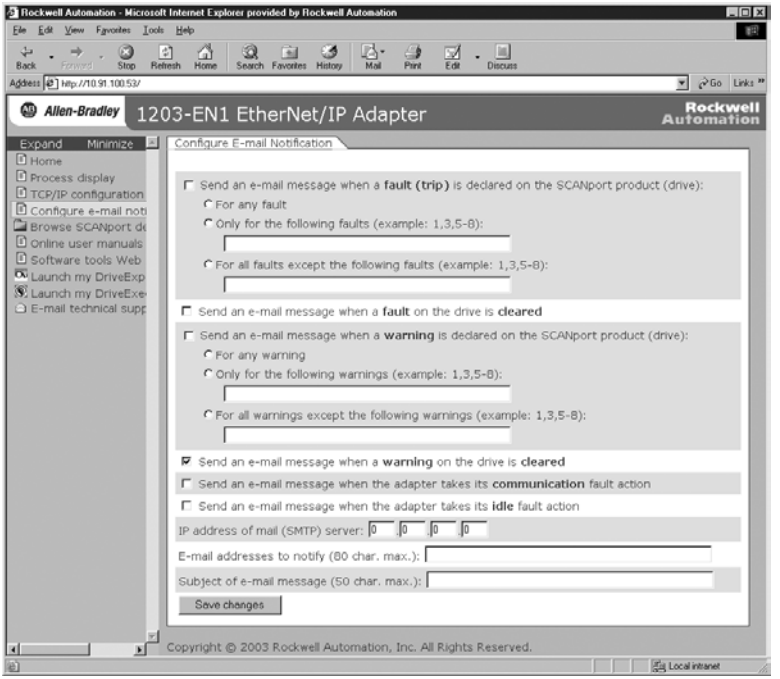


Information	Description
IP Address	IP address of the module.
Subnet Mask	Subnet mask for the module's network.
Gateway Address	Address for the gateway device on the module's network.
BOOTP	Whether BOOTP is being used to configure the module's network information.
Ethernet Address	Hardware address for the module.
Ethernet received packets	Number of packets that the module has received.
Ethernet received errors	Number of receive errors reported by the hardware.
Ethernet received overruns	Number of receive buffer overruns reported by the hardware.
Ethernet transmitted packets	Number of packets that the module has sent.
Ethernet transmit errors	Number of transmit errors reported by the hardware.

Configure E-mail Notification Web Page

The Configure E-mail Notification web page contains selections and data fields for configuring the module to automatically send e-mail messages to desired addresses when selected types of events occur. By default, this configuration is not protected. After configuration, the settings can be protected by setting the **Parameter 65 - [Web Features]** E-mail Cfg Bit 0 value to "0" (Disabled). To change a protected configuration, it must first be unprotected by setting the E-mail Cfg Bit 0 value back to "1" (Enabled). For more information, see Chapter 3, Setting Web Features Access.

Figure 8.4 Example of Configure E-mail Notification Web Page



To configure e-mail notification

1. Click the SCANport product's desired **fault** and/or **warning** check boxes you want to occur that will send e-mail notification:
   - If you only want e-mail notification when specific faults or warnings occur, click this radio button and type their numbers in the box.
   - If you only want e-mail notification when all faults or warnings except specific ones occur, click this radio button and type their

numbers in the box.

2. Click the module's desired **communication** and/or **idle** fault action check boxes you want to occur that will send e-mail notification.

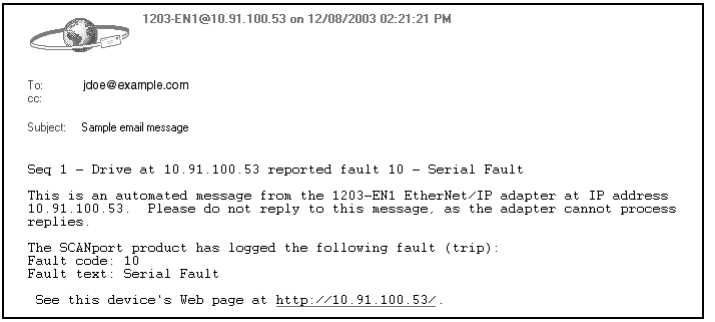
3. Type the following information in their respective boxes:

Information	Description
"IP address of …":	Type in the address of the mail server that will be used to deliver the e-mail messages.
"E-mail addresses to notify …":	Type in addresses to where you want e-mail messages to be sent. Multiple addresses can be used, but they must be separated by commas (comma delimited).
"Subject of e-mail message …":	Type in the desired subject text for the e-mail message.

4. Click **Save changes**.

Important: It is recommended that **Parameter 65 - [Web Features]** E-mail Cfg Bit 0 value be set to "0" (Disabled) after E-mail Notification has been configured. Otherwise the configuration can be changed anytime the web page is accessed with a browser.

Figure 8.5 Example of E-mail Message Sent by Module


1203-EN1@10.91.100.53 on 12/08/2003 02:21:21 PM

To: jdoe@example.com
cc:

Subject: Sample email message

Seq 1 – Drive at 10.91.100.53 reported fault 10 – Serial Fault

This is an automated message from the 1203-EN1 EtherNet/IP adapter at IP address 10.91.100.53. Please do not reply to this message, as the adapter cannot process replies.

The SCANport product has logged the following fault (trip):
Fault code: 10
Fault text: Serial Fault

See this device's Web page at http://10.91.100.53/.

TIP: To stop e-mail messages, do one of the following:

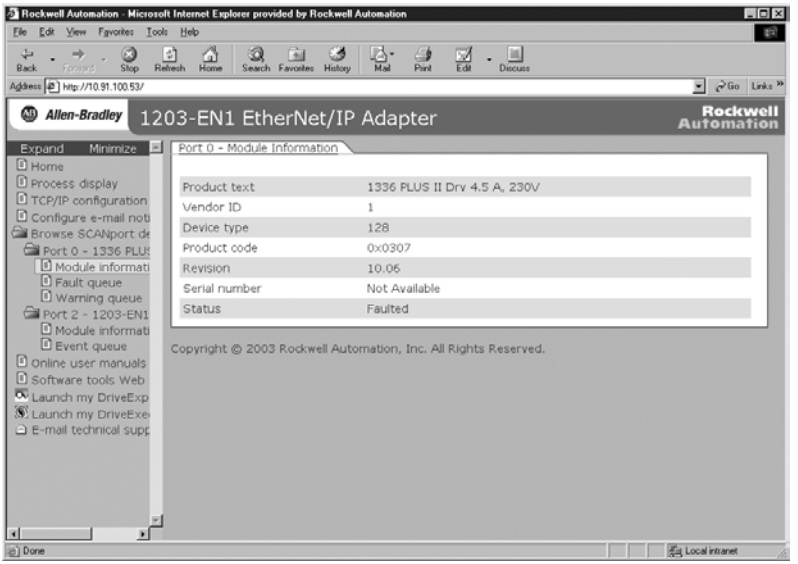
- Delete all e-mail addresses from the Configure E-mail Notification web page.
- Uncheck all of the "Send an e-mail message when …" boxes.

Disabling the module web pages by setting the Web Pages Switch (SW2 in Figure 2.1) to the "Disable Web" position will NOT stop the module from sending e-mail messages. Also, turning off the E-mail Cfg Bit 0 will NOT stop e-mail messages from being sent.

SCANport Device Information Pages

SCANport device information pages show a device's module information, and a fault and/or warning queue (for drive only) or event queue (for module only). Figure 8.6 and Figure 8.7 respectively show module information and fault queue example pages for the Port 0 device (host). Figure 8.8 shows an event queue example page for the Port 2 device (1203-EN1 module).

Figure 8.6 Example of Port 0 (1336 Plus II Drive) Module Information Page



Information	Description
Product text	Text identifying the device
Vendor ID	1 = Allen-Bradley
Device type	128
Product code	Code for the product name and its rating
Revision	Firmware revision used by the device
Serial number	Serial number of the device
Status	Operating status of the device (for example, at reference)

Figure 8.7 Example of Port 0 (1336 Plus II Drive) Fault Queue Page

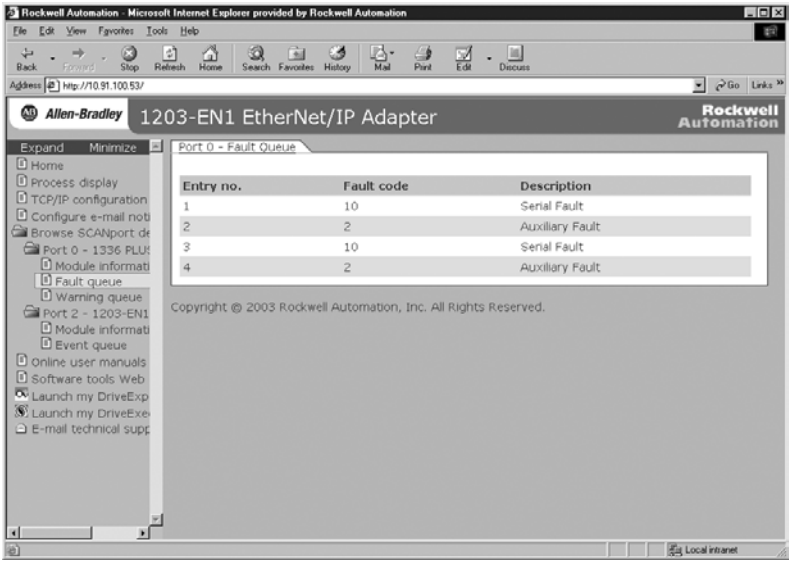
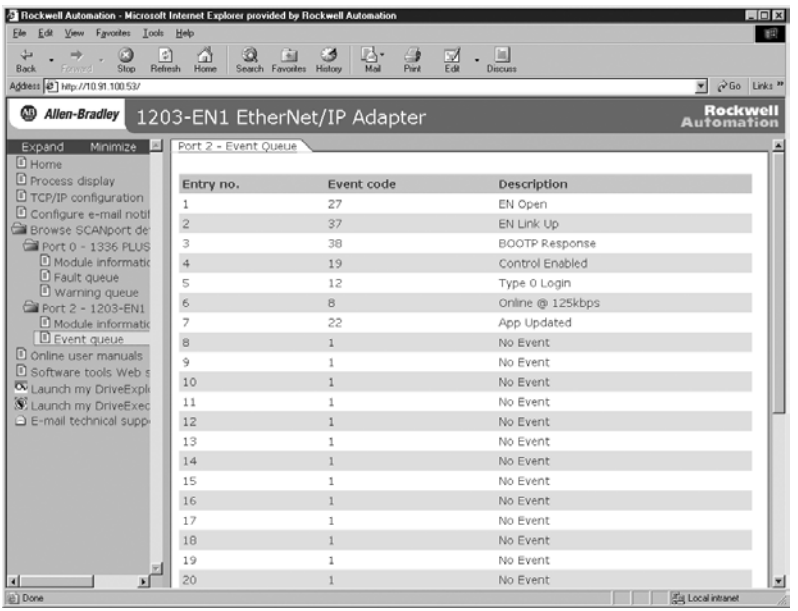


Figure 8.8 Example of Port 2 (1203-EN1 Module) Event Queue Page



Specifications

Appendix A presents the specifications for the module.

Communications

Network	
Protocol	EtherNet/IP
Data Rates	10 Mbps Full Duplex, 10 Mbps Half Duplex, 100 Mbps Full Duplex, or 100 Mbps Half Duplex
Drive	
Protocol	SCANport
Data Rates	125 kbps

Electrical

Consumption	
Drive	30 mA at 12 VDC supplied by the host (for example, drive)
Network	None
DC Power Supply	150 mA at 18-27 VDC

Mechanical

Dimensions	
Width	108 mm (4.25 inches)
Height (with terminal connector attached)	108 mm (4.25 inches)
Depth	75 mm (2.95 inches)
Weight	340g (12 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
Atmosphere	**Important:** Module **must not** be installed in an area where the ambient atmosphere contains volatile or corrosive gas, vapors or dust. If the module is not going to be installed for a period of time, it must be stored in an area where it will not be exposed to a corrosive atmosphere.
Shock	
Operational	30g, 11 ms (DIN Rail Mount) 50g, 11 ms (Panel Mount)
Non-Operational	30g, 11 ms (DIN Rail Mount) 50g, 11 ms (Panel Mount)
Vibration	
Operational	2.5g, 5 to 2000 Hz
Non-Operational	5.0g, 5 to 2000 Hz

Regulatory Compliance

UL	UL508C
cUL	CAN / CSA C22.2 No. 14-M91
CE	EN50178 and EN61800-3
CTick	EN61800-3

NOTE: In order to remain CE and CTick compliant, the SCANport cable length may not exceed 30 m (98.4 ft.).

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

Module Parameters

Appendix B provides information about the EtherNet/IP-to-SCANport module parameters.

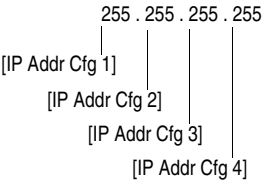
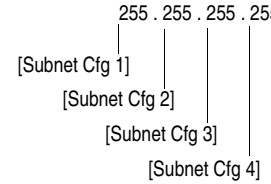
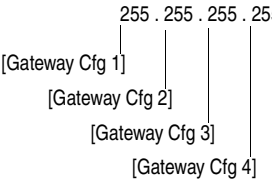
About Parameter Numbers

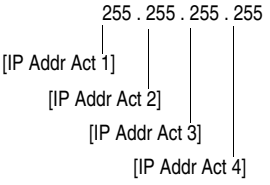
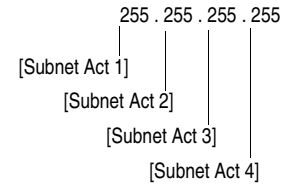
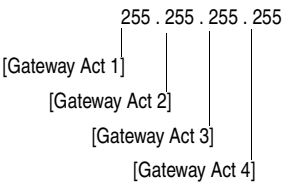
The parameters in the module are numbered consecutively. However, depending on which configuration tool you use, they may have different numbers.

Configuration Tool	Numbering Scheme
• DriveExplorer • DriveExecutive	The module parameters begin with parameter 01. For example, Parameter 01 - [SCANport Adapter] is parameter 01 as indicated by this manual.
• Explicit Messaging	Refer to Chapter 6, Using Explicit Messaging, and Appendix C, EtherNet/IP Objects, for details.

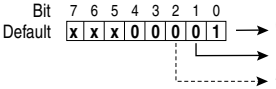
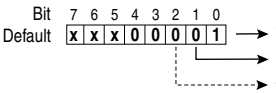
Parameter List

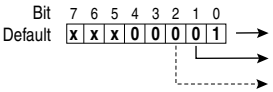
Parameter No.	Name and Description	Details	
01	**[SCANport Adapter]** Displays the port to which the module is connected.	Default: Minimum: Maximum: Type:	7 0 7 Read Only
02	**[BOOTP]** Configures the module to use BOOTP so that you can set its IP address, subnet mask, and gateway address with a BOOTP server.	Default: Values: Type: Reset Required:	1 = Enabled 0 = Disabled 1 = Enabled Read/Write Yes

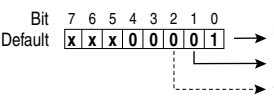
Parameter No.	Name and Description	Details
03 04 05 06	**[IP Addr Cfg 1]** **[IP Addr Cfg 2]** **[IP Addr Cfg 3]** **[IP Addr Cfg 4]** Sets the bytes of the IP address.  **Important:** To set the IP address using these parameters, Parameter 02 - [BOOTP] must be set to Disabled.	Default: 0 Default: 0 Default: 0 Default: 0 Minimum: 0 Maximum: 255 Type: Read/Write Reset Required: Yes
07 08 09 10	**[Subnet Cfg 1]** **[Subnet Cfg 2]** **[Subnet Cfg 3]** **[Subnet Cfg 4]** Sets the bytes of the subnet mask.  **Important:** To set the subnet mask using these parameters, Parameter 02 - [BOOTP] must be set to Disabled.	Default: 0 Default: 0 Default: 0 Default: 0 Minimum: 0 Maximum: 255 Type: Read/Write Reset Required: Yes
11 12 13 14	**[Gateway Cfg 1]** **[Gateway Cfg 2]** **[Gateway Cfg 3]** **[Gateway Cfg 4]** Sets the bytes of the gateway address.  **Important:** To set the gateway address using these parameters, Parameter 02 - [BOOTP] must be set to Disabled.	Default: 0 Default: 0 Default: 0 Default: 0 Minimum: 0 Maximum: 255 Type: Read/Write Reset Required: Yes

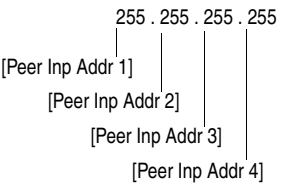
Parameter No.	Name and Description	Details
15 16 17 18	**[IP Addr Act 1]** **[IP Addr Act 2]** **[IP Addr Act 3]** **[IP Addr Act 4]** Displays the actual IP address being used by the module.  	Default: 0 Default: 0 Default: 0 Default: 0 Minimum: 0 Maximum: 255 Type: Read Only
19 20 21 22	**[Subnet Act 1]** **[Subnet Act 2]** **[Subnet Act 3]** **[Subnet Act 4]** Displays the actual subnet mask being used by the module.  	Default: 0 Default: 0 Default: 0 Default: 0 Minimum: 0 Maximum: 255 Type: Read Only
23 24 25 26	**[Gateway Act 1]** **[Gateway Act 2]** **[Gateway Act 3]** **[Gateway Act 4]** Displays the actual gateway address being used by the module.  	Default: 0 Default: 0 Default: 0 Default: 0 Minimum: 0 Maximum: 255 Type: Read Only
27	**[EN Rate Cfg]** Configures the network data rate at which the module communicates. (Updates Parameter 28 - [EN Rate Act] after reset.)	Default: 0 = Autodetect Values 0 = Autodetect 1 = 10 Mbps Full 2 = 10 Mbps Half 3 = 100 Mbps Full 4 = 100 Mbps Half Type: Read/Write Reset Required: Yes

Parameter No.	Name and Description	Details	
28	**[EN Rate Act]** Displays the data rate actually used by the module.	Default: Values Type:	0 = No Link 0 = No Link 1 = 10 Mbps Full 2 = 10 Mbps Half 3 = 100 Mbps Full 4 = 100 Mbps Half Read Only
29	**[Reset Module]** No action if set to “Ready.” Resets the module if set to “Reset Module.” Restores the module to its factory default settings if set to “Set Defaults.” This parameter is a command. It will be reset to “Ready” after the command has been performed.	Default: Values Type: Reset Required:	0 = Ready 0 = Ready 1 = Reset Module 2 = Set Defaults Read/Write No
	ATTENTION: Risk of injury or equipment damage exists. If the module is transmitting I/O that controls the drive, the drive may fault when you reset the module. Determine how your drive will respond before resetting a connected module.		
30	**[Comm Flt Action]** Sets the action that the module will take if it detects a network failure. This setting is effective only if I/O that controls the drive is transmitted through the module.	Default: Values: Type: Reset Required:	0 = Fault 0 = Fault 1 = Zero Data 2 = Hold Last 3 = Send Flt Cfg Read/Write No
	ATTENTION: Risk of injury or equipment damage exists. **Parameter 30 - [Comm Flt Action]** lets you determine the action of the module and connected drive if the 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 risk of injury or equipment damage. When commissioning the drive, verify that your system responds correctly to various situations (for example, a disconnected cable).		
31	**[Idle Flt Action]** Sets the action that the module and drive take if the module detects that the scanner is idle because the controller was switched to program mode. This setting is effective only if I/O that controls the drive is transmitted through the module.	Default: Values: Type: Reset Required:	0 = Fault 0 = Fault 1 = Zero Data 2 = Hold Last 3 = Send Flt Cfg Read/Write No
	ATTENTION: Risk of injury or equipment damage exists. **Parameter 31 - [Idle Flt Action]** lets you determine the action of the module and connected drive if the scanner is idle. 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 risk of injury or equipment damage. When commissioning the drive, verify that your system responds correctly to various situations (for example, a faulted controller).		

Parameter No.	Name and Description	Details
32	**[SP I/O Cfg]** Sets the I/O that is transferred through the module.  	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
33	**[SP I/O Act]** Displays the I/O that the module is actively transmitting. The value of this parameter will usually be equal to the value of Parameter 32 - [SP I/O Cfg]. If not, reset the EN1 or see Chapter 7.  	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
34	**[Flt Cfg Logic]** Sets the Logic Command data that is sent to the drive if any of the following is true: • Parameter 30 - [Comm Flt Action] is set to “Send Flt Cfg” and communications are disrupted. • Parameter 31 - [Idle Flt Action] is set to “Send Flt Cfg” and the scanner is idle. • Parameter 51 - [Peer Flt Action] is set to “Send Flt Cfg” and communications are disrupted. The bit definitions will depend on the product to which the module is connected.	Default: 0000 0000 0000 0000 Minimum: 0000 0000 0000 0000 Maximum: 1111 1111 1111 1111 Type: Read/Write Reset Required: No
35	**[Flt Cfg Ref]** Sets the Reference data that is sent to the drive if any of the following is true: • Parameter 30 - [Comm Flt Action] is set to “Send Flt Cfg” and communications are disrupted. • Parameter 31 - [Idle Flt Action] is set to “Send Flt Cfg” and the scanner is idle. • Parameter 51- [Peer Flt Action] is set to “Send Flt Cfg” and communications are disrupted.	Default: 0 Minimum: -32768 Maximum: 32767 Type: Read/Write Reset Required: No

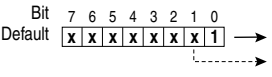
Parameter No.	Name and Description	Details	
36	**[Flt Cfg A1 In]**	Default:	0
37	**[Flt Cfg A2 In]**	Default:	0
38	**[Flt Cfg B1 In]**	Default:	0
39	**[Flt Cfg B2 In]**	Default:	0
40	**[Flt Cfg C1 In]**	Default:	0
41	**[Flt Cfg C2 In]**	Default:	0
42	**[Flt Cfg D1 In]**	Default:	0
43	**[Flt Cfg D2 In]** Sets the data that is sent to the Datalink in the drive if any of the following is true: • Parameter 30 - [Comm Flt Action] is set to "Send Flt Cfg" and communications are disrupted. • Parameter 31 - [Idle Flt Action] is set to "Send Flt Cfg" and the scanner is idle. • Parameter 51 - [Peer Flt Action] is set to "Send Flt Cfg" and communications are disrupted.	Default: Minimum: Maximum: Type: Reset Required:	0 0 65535 Read/Write No
44	**[Serial Port Rate]** Sets the data rate of the serial port.	Default: Values: Type: Reset Required:	2 = 9600 bps 0 = 2400 bps 1 = 4800 bps 2 = 9600 bps 3 = 19.2 Kbps 4 = 38.4 Kbps Read/Write Yes
45	**[M-S Input]** Sets the Master-Slave input data. This data is produced by the scanner and consumed by the module.  	Default: Bit Values: Type: Reset Required: **Bit Definitions** 0 = Cmd/Ref 1 = Datalink A Input 2 = Datalink B Input 3 = Datalink C Input 4 = Datalink D Input 5 = Not Used 6 = Not Used 7 = Not Used	xxx0 0001 0 = I/O disabled 1 = I/O enabled Read/Write Yes

Parameter No.	Name and Description	Details
46	**[M-S Output]** Sets the Master-Slave output data. This data is produced by the module and consumed by the scanner.  	Default: xxx0 0001 Bit Values: 0 = I/O disabled 1 = I/O enabled Type: Read/Write Reset Required: Yes **Bit Definitions** 0 = Status/Fdbk 1 = Datalink A Output 2 = Datalink B Output 3 = Datalink C Output 4 = Datalink D Output 5 = Not Used 6 = Not Used 7 = Not Used
47	**[Ref Adjust]** Sets the percent scale factor for the Reference from the network.	Default: 100.00 Minimum: 0.00 Maximum: 200.00 Type: Read/Write Reset Required: No
	ATTENTION: To guard against equipment damage and/or personal injury, note that changes to **Parameter 47 - [Ref Adjust]** take effect immediately. A drive receiving its Reference from the module will receive the newly scaled Reference, resulting in a change of speed.	
48 49	**[Peer A Input]** **[Peer B Input]** Configures the destination in the drive of the Peer I/O input. The module receives this data from the network and sends it to the drive. **Important:** Changes to these parameters are ignored when Parameter 57 - [Peer Inp Enable] is On. **Important:** If the parameter is set to input a Logic Command, configure the mask in Parameter 50 - [Peer Cmd Mask] so that the desired bits from the Peer device are used.	Default: 0 = Off Values: 0 = Off 1 = Cmd/Ref 2 = Datalink A Input 3 = Datalink B Input 4 = Datalink C Input 5 = Datalink D Input Type: Read/Write Reset Required: No
50	**[Peer Cmd Mask]** Configures the mask for the Logic Command word when it is received through peer input. If the mask bit is 0 (Off), the command bit is ignored and not used. If the mask bit is 1 (On), the command bit is checked and used.	Default: 0000 0000 0000 0000 Minimum: 0000 0000 0000 0000 Maximum: 1111 1111 1111 1111 Values: 0 = Ignore bit 1 = Use bit Type: Read/Write Reset Required: Yes
	ATTENTION: If the module receives a Logic Command from both a Master device and a Peer device, each command bit must have only one source. This includes the stop bit. The source of command bits set to “0” will be the Master device. The source of command bits set to “1” will be the Peer device.	

Parameter No.	Name and Description	Details
51	**[Peer Flt Action]** Sets the action that the module and drive take if the module detects that the Ethernet/IP communications with a peer have been disrupted. This setting is effective only if I/O is transmitted through the module.	Default: 0 = Fault Values: 0 = Fault 1 = Zero Data 2 = Hold Last 3 = Send Flt Cfg Type: Read/Write Reset Required: No
	 **ATTENTION:** Risk of injury or equipment damage exists. **Parameter 51 - [Peer Flt Action]** lets you determine the action of the module and connected drive if the module is unable to communicate with the designated peer. 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 risk of injury or equipment damage. When commissioning the drive, verify that your system responds correctly to various situations (for example, a disconnected cable).	
52 53 54 55	**[Peer Inp Addr 1]** **[Peer Inp Addr 2]** **[Peer Inp Addr 3]** **[Peer Inp Addr 4]** Sets the bytes in the IP address that specifies the device from which the module receives (consumes) Peer I/O data.  **Important:** The Peer Inp Addr must be on the same subnet as the 1203-EN1 module. See "IP Addresses" in the Glossary for more information. Changes to these parameters are ignored when Parameter 57 - [Peer Inp Enable] is On.	Default: 0 Default: 0 Default: 0 Default: 0 Minimum: 0 Maximum: 255 Type: Read/Write Reset Required: No
56	**[Peer Inp Timeout]** Configures the time-out for a peer connection. If the time is reached without the module receiving (consuming) a message, the module will respond with the action specified in Parameter 51 - [Peer Flt Action]. In a module receiving (consuming) Peer I/O, the value of this parameter must be greater than the product of the value of Parameter 62 - [Peer Out Time] in the module transmitting (producing) Peer I/O multiplied by the value of Parameter 63 - [Peer Out Skip] in the module transmitting (producing) Peer I/O.	Default: 10.00 Seconds Minimum: 0.01 Seconds Maximum: 10.00 Seconds Type: Read/Write Reset Required: No

Parameter No.	Name and Description	Details	
57	**[Peer Inp Enable]** Determines if Peer I/O input is on or off.	Default: Values: Type: Reset Required:	0 = Off 0 = Off 1 = On Read/Write No
58	**[Peer Inp Status]** Displays the status of the consumed peer input connection.	Default: Values: Type:	0 = Off 0 = Off 1 = Waiting 2 = Running 3 = Faulted Read Only
59 60	**[Peer A Output]** **[Peer B Output]** Selects the source of the Peer I/O output data. The module transmits this data to the network. **Important:** Changes to these parameters are ignored when Parameter 61 - [Peer Out Enable] is On.	Default: Values: Type: Reset Required:	0 = Off 0 = Off 1 = Cmd/Ref 2 = Datalink A Input 3 = Datalink B Input 4 = Datalink C Input 5 = Datalink D Input 6 = Datalink A Output 7 = Datalink B Output 8 = Datalink C Output 9 = Datalink D Output Read/Write No
61	**[Peer Out Enable]** Determines if Peer I/O output is on or off.	Default: Values: Type: Reset Required:	0 = Off 0 = Off 1 = On Read/Write No
62	**[Peer Out Time]** Determines the minimum time that a module will wait when transmitting data to a peer. **Important:** Changes to these parameters are ignored when Parameter 61 - [Peer Out Enable] is On.	Default: Minimum: Maximum: Type: Reset Required:	10.00 Seconds 0.01 Seconds 10.00 Seconds Read/Write No
63	**[Peer Out Skip]** Determines the maximum time that a module will wait when transmitting data to a peer. The value of Parameter 62 - [Peer Out Time] is multiplied by the value of this parameter to set the time. **Important:** Changes to these parameters are ignored when Parameter 61 - [Peer Out Enable] is On.	Default: Minimum: Maximum: Type: Reset Required:	1 1 16 Read/Write No
64	**[Web Enable]** Displays the setting of the Web Pages Switch (SW2) on the module when the module was last reset.	Default: Minimum: Maximum: Type:	0 = Disabled 0 = Disabled 1 = Enabled Read Only

Parameter No.	Name and Description	Details
65	**[Web Features]** Sets the access to the Web interface and Web-configurable features.	Default: xxxx xxx1 Bit Values: 0 = Disabled 1 = Enabled Type: Read/Write Reset Required: No



Bit Definitions

0 = E-mail Cfg

1-7 = Not used

EtherNet/IP Objects

Appendix C presents information about the EtherNet/IP objects that can be accessed using Explicit Messages. For information on the format of Explicit Messages and example ladder logic programs, refer to Chapter 6, Using Explicit Messaging.

TIP: Refer to the EtherNet/IP specification for more information about EtherNet/IP objects. Information about the EtherNet/IP specification is available on the ODVA web site (http://www.odva.org).

Supported Data Types

Data Type	Description
BYTE	8-bit unsigned integer
WORD	16-bit unsigned integer
DWORD	32-bit unsigned integer
LWORD	64-bit unsigned integer
SINT	8-bit signed integer
USINT	8-bit unsigned integer
INT	16-bit signed integer
UINT	16-bit unsigned integer
DINT	32-bit signed integer
UDINT	32-bit unsigned integer
BOOL	8-bit value -- low bit is true or false
BOOL[n]	Array of n bits
STRING[n]	Array of n characters
SHORT_STRING	1-byte length indicator + that many characters
STRUCT	Structure name only - no size in addition to elements
CONTAINER	32-bit parameter value - sign extended if necessary
TCHAR	8 or 16-bit character
REAL	32-bit floating point

Identity Object

Class Code

Hexadecimal	Decimal
0x01	1

Instances

The number of instances depends on the number of components in the device connected to the module. This number of components can be read in Instance 0, Attribute 2.

Instance	Description
0	Class
1	Entire device (SCANport host)
2 →(n + 1)	n firmware components of drive
(n + 2)	1203-EN1
(n + 3)	1203-EN1 application firmware
(n + 4)	1203-EN1 boot firmware

Class Attributes

Attribute ID	Access Rule	Name	Data Type	Description
2	Get	Max Instance	UINT	Total number of instances

Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description
1	Get	Vendor ID	UINT	1 = Allen-Bradley
2	Get	Device Type	UINT	128
3	Get	Product Code	UINT	Number identifying product name and rating
4	Get	Revision: Major Minor	STRUCT of: USINT USINT	 Value varies Value varies
5	Get	Status	WORD	Bit 0 = Owned Bit 2 = Configured Bit 10 = Recoverable fault Bit 11 = Unrecoverable fault
6	Get	Serial Number	UDINT	Unique 32-bit number
7	Get	Product Name	SHORT_ STRING	Product name and rating

Identity Object *(Continued)*

Services

Service Code	Implemented for:		Service Name
	Class	Instance	
0x01	Yes	Yes	Get_Attributes_All
0x05	Yes	Yes	Reset
0x0E	Yes	Yes	Get_Attribute_Single

Assembly Object

Class Code

Hexadecimal	Decimal
0x04	4

Instances

Instance	Description
1	All I/O data being read from the SCANport product (read-only)
2	All I/O data written to the SCANport product (read/write)

Class Attributes

Attribute ID	Access Rule	Name	Data Type	Description
1	Get	Revision	UINT	2
2	Get	Max Instance	UINT	2
100	Set	Control Timeout	UINT	Control timeout in seconds

Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description
1	Get	Number of Members	UINT	1
2	Get	Member List	ARRAY of STRUCT: UINT UINT Packed EPATH	 Size of member data Size of member path Member path
3	Conditional [1]	Data	Array of Bits	Data to be transferred
4	Get	Size	UINT	Size of assembly data in bits

[1] For instance 1, access rule for the data attribute is Get. For instance 2, it is Get/Set.

Important: Setting an assembly object instance attribute can be done only when the Control Timeout (class attribute 100) has been set to a non-zero value.

Assembly Object *(Continued)*

Services

Service Code	Implemented for:		Service Name
	Class	Instance	
0x0E	Yes	Yes	Get_Attribute_Single
0x10	Yes	Yes	Set_Attribute_Single

Register Object

Class Code

Hexadecimal	Decimal
0x07	7

Instances

Instance	Description
1	All I/O data being read from the SCANport product (read-only)
2	All I/O data written to the SCANport product (read/write)
3	Logic Status and Feedback data (read-only)
4	Logic Command and Reference data (read/write)
5	Datalink A (input data from device to scanner) (read only)
6	Datalink A (output data from scanner to device) (read/write)
7	Datalink B (input data from device to scanner) (read only)
8	Datalink B (output data from scanner to device) (read/write)
9	Datalink C (input data from device to scanner) (read only)
10	Datalink C (output data from scanner to device) (read/write)
11	Datalink D (input data from device to scanner) (read only)
12	Datalink D (output data from scanner to device) (read/write)
13	Logic Status and Feedback Data (read-only)
14	Mask (1) (read/write)
15	Logic Status (read-only)
16	Logic Command (read/write)
17	Feedback (read-only)
18	Reference (read/write)

(1) The mask command word is set to the value of the first word of the data where there are ones in the second word of the data. Command = (old command and not word 2) or (word 1 and word 2). This only controls specified bits in the Logic Command data to the SCANport product and does not change the Reference value.

Class Attributes

Attribute ID	Access Rule	Name	Data Type	Description
100	Set	Control Timeout	UINT	Control timeout in seconds

Register Object *(Continued)*

Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description
1	Get	Bad Flag	BOOL	If set to 1, then attribute 4 may contain invalid, bad or otherwise corrupt data. 0 = good 1 = bad
2	Get	Direction	BOOL	Direction of data transfer 0 = Producer Register (drive to EtherNet/IP) 1 = Consumer Register (EtherNet/IP to drive)
3	Get	Size	UINT	Size of register data in bits
4	Conditional (1)	Data	ARRAY of BITS	Data to be transferred

(1) The access rule of Set is optional if attribute 2, Direction = 1. If Direction = 0, the access rule is Get.

Important: Setting a Register object instance attribute can be done only when the Control Timeout (class attribute 100) has been set to a non-zero value.

Service Code	Implemented for: Class	Instance	Service Name
0x0E	Yes	Yes	Get_Attribute_Single
0x10	Yes	Yes	Set_Attribute_Single

Parameter Object

Class Code

Hexadecimal	Decimal
0x0F	15

Instances

The number of instances depends on the number of parameters in the SCANport product. The module parameters are appended to the list of drive parameters. The total number of parameters can be read in Instance 0, Attribute 2.

Instance	Description
0	Class Attributes
1	Drive Parameter 1 Attributes
⋮	⋮
n	Last Drive Parameter Attributes
n + 1	Module Parameter 1 Attributes
⋮	⋮
n + 65	Last Module Parameter Attributes

Class Attributes

Attribute ID	Access Rule	Name	Data Type	Description
1	Get	Revision	UINT	1
2	Get	Max Instance	UINT	Number of parameters
8	Get	Parameter Class Descriptor	WORD	0 = False, 1 = True Bit 0 = Supports parameter instances Bit 1 = Supports full attributes Bit 2 = Must do NVS save command Bit 3 = Parameters are stored in NVS
9	Get	Configuration Assembly Instance	UINT	0
10	Set	Native Language	USINT	0 = English 1 = French 2 = Spanish 3 = Italian 4 = German 5 = Japanese 6 = Portuguese 7 = Mandarin Chinese 8 = Russian 9 = Dutch

Parameter Object *(Continued)*

Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description
1	(1)	Parameter Value	(2)	(3)
2	Get	Link Path Size	USINT	0 = No link specified n = The size of Attribute 3 in bytes
3	Get	Link Path		(4)
4	Get	Descriptor	WORD	0 = False, 1 = True Bit 1 = Supports ENUMs Bit 2 = Supports scaling Bit 3 = Supports scaling links Bit 4 = Read only Bit 5 = Monitor Bit 6 = Extended precision scaling
5	Get	Data Type	USINT	0xC2 = SINT (8-bits) 0xC3 = INT (16-bits) 0xC4 = DINT (32-bits) 0xC6 = USINT (8-bits) 0xC7 = UINT (16-bits) 0xCA = REAL (32-bits) 0xD1 = BYTE (8-bits) 0xD2 = WORD (16-bits)
6	Get	Data Size	USINT	(3)
7	Get	Parameter Name String	SHORT_ STRING	(3)
8	Get	Units String	SHORT_ STRING	(3)
9	Get	Help String	SHORT_ STRING	Null string
10	Get	Minimum Value	(1)	(3)
11	Get	Maximum Value	(1)	(3)
12	Get	Default Value	(1)	(3)
13	Get	Scaling Multiplier	UINT	(3)
14	Get	Scaling Divisor	UINT	(3)
15	Get	Scaling Base	UINT	(3)
16	Get	Scaling Offset	UINT	(3)
17	Get	Multiplier Link	UINT	(3)
18	Get	Divisor Link	UINT	(3)
19	Get	Base Link	UINT	(3)
20	Get	Offset Link	UINT	(3)
21	Get	Decimal Precision	USINT	(3)

(1) Access rule is defined in bit 4 of instance attribute 4. 0 = Get/Set, 1 = Get.

(2) Specified in descriptor, data type, and data size.

(3) Value varies based on parameter instance.

(4) Refer to the EtherNet/IP specification for a description of the link path.

Parameter Object *(Continued)*

Services

Service Code	Implemented for:		Service Name
	Class	Instance	
0x01	No	Yes	Get_Attribute_All
0x05	Yes	No	Reset
0x0E	Yes	Yes	Get_Attribute_Single
0x10	Yes	Yes	Set_Attribute_Single
0x4B	No	Yes	Get_Enum_String

Parameter Group Object

Class Code

Hexadecimal	Decimal
0x10	16

Instances

The number of instances depends on the number of groups in the device. A group of module parameters is appended to the list of groups in the device. The total number of groups can be read in Instance 0, Attribute 2.

Number	Description
0	Class Attributes
1	Drive Group 1 Attributes
⋮	⋮
n	Last Drive Group Attributes
n + 1	Module Group Attributes

Class Attributes

Attribute ID	Access Rule	Name	Data Type	Description
1	Get	Parameter group version	UINT	1
2	Get	Max Instance	UINT	Total number of groups
8	Set	Native Language	USINT	0 = English 1 = French 2 = Spanish (Mexican) 3 = Italian 4 = German 5 = Japanese 6 = Portuguese 7 = Mandarin Chinese 8 = Russian 9 = Dutch

Parameter Group Object *(Continued)*

Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description
1	Get	Group Name String	SHORT_ STRING	Group name
2	Get	Number of Members in Group	UINT	Number of parameters in group
3	Get	1st Parameter Number in Group	UINT	(1)
4	Get	2nd Parameter Number in Group	UINT	(1)
n	Get	⋮	UINT	(1)

(1) Value varies based on group instance.

Services

	Implemented for:		
Service Code	Class	Instance	Service Name
0x0E	Yes	Yes	Get_Attribute_Single
0x01	Yes	No	Set_Attribute_Single

PCCC Object

Class Code

Hexadecimal	Decimal
0x67	103

Instances

Supports Instance 1.

Class Attributes

Not supported.

Instance Attributes

Not supported.

Services

Service Code	Implemented for:		Service Name
	Class	Instance	
0x4B	No	Yes	Execute_PCCC
0x4C	No	Yes	Execute_DH+

Message Structure for Execute_PCCC

Request		
Name	Data Type	Description
Length	USINT	Length of requestor ID
Vendor	UINT	Vendor number of requestor
Serial Number	UDINT	ASA serial number of requestor
Other	Product Specific	Identifier of user, task, etc. on the requestor
CMD	USINT	Command byte

Response		
Name	Data Type	Description
Length	USINT	Length of requestor ID
Vendor	UINT	Vendor number of requestor
Serial Number	UDINT	ASA serial number of requestor
Other	Product Specific	Identifier of user, task, etc. on the requestor
CMD	USINT	Command byte

PCCC Object *(Continued)*

Message Structure for Execute_PCCC (Continued)

Request			Response		
Name	**Data Type**	**Description**	**Name**	**Data Type**	**Description**
STS	USINT	0	STS	USINT	Status byte
TNSW	UINT	Transport word	TNSW	UINT	Transport word. Same value as the request.
FNC	USINT	Function code. Not used for all CMD's.	EXT_STS	USINT	Extended status. Not used for all CMD's.
PCCC_ params	ARRAY of USINT	CMD/FNC specific parameters	PCCC_ results	ARRAY of USINT	CMD/FNC specific result data

Message Structure for Execute_DH+

Request			Response		
Name	**Data Type**	**Description**	**Name**	**Data Type**	**Description**
DLink	UINT	Destination Link ID	DLink	UINT	Destination Link ID
DSta	USINT	Destination Station number	DSta	USINT	Destination Station number
DUser	USINT	Destination "User" number	DUser	USINT	Destination "User" number
SLink	UINT	Source Link ID	SLink	UINT	Source Link ID
SSta	USINT	Source Station number	SSta	USINT	Source Station number
SUser	USINT	Source User number	SUser	USINT	Source User number
CMD	USINT	Command byte	CMD	USINT	Command byte
STS	USINT	0	STS	USINT	Status byte
TNSW	UINT	Transport word	TNSW	UINT	Transport word. Same value as the request.
FNC	USINT	Function code; not used for all CMD's	EXT_STS	USINT	Extended Status; not used for all CMD's
PCCC_ params	ARRAY of USINT	CMD/FNC specific parameters	PCCC_ results	ARRAY of USINT	CMD/FNC specific result data

PCCC Object *(Continued)*

The module supports the following PCCC command types:

CMD	FNC	Description
0x06	0x03	Identify host and some status
0F	67	PLC-5 typed write
0F	68	PLC-5 typed read
0F	95	Encapsulate other protocol
0F	A2	SLC 500 protected typed read with 3 address fields
0F	AA	SLC 500 protected typed write with 3 address fields
0F	A1	SLC 500 protected typed read with 2 address fields
0F	A9	SLC 500 protected typed write with 2 address fields
0F	00	Word range read
0F	01	Word range write

See DF1 Protocol and Command Set Manual, Allen-Bradley Publication No. 1770-6.5.16.

N-Files

N-File	Description
N10:0	Number of SCANport Product(1) Parameters
N10:1 – N10:999 N11:0 – N11:999 N12:0 – N12:999	SCANport Product(1) Parameter Value Read/Write (Parameters 1 – 2999)
N13:0	Number of 1203-EN1 Module Parameters
N13:1 – N13:999	1203-EN1 Module Parameter Value Read/Write (Parameters 1 – 999)
N30:1 – N30:999 N31:0 – N31:999 N32:0 – N32:999	SCANport Product(1) Parameter Full/All Information Read (Parameters 1 – 2999)
N33:1 – N33:999	1203-EN1 Module Full/All Information Read (Parameters 1 – 999)

(1) SCANport Product refers to a drive or other SCANport product connected to the module.

PCCC Object *(Continued)*

N-Files (Continued)

<table>
<tr><th>N-File</th><th colspan="3">Description</th></tr>
<tr><td>N40</td><td colspan="3">This N-file lets you use Emulated Block Transfer messages to read and write many types of SCANport messages. To use Emulated Block Transfer messages, you send a Write message to N40:0 – N40:63, wait until the module responds with a reply message, and then read the response data in N40:0 – N40:63 with a Read message.

For details about Block Transfer messages and the data required for each byte in the N-File, refer to the Remote I/O Adapter User Manual, Publication 20COMM-UM004….

Bits 15 to 8 are the Most Significant Byte. Bits 7 to 0 are the Least Significant Byte.</td></tr>
<tr><td></td><td>Write</td><td colspan="2">Read</td></tr>
<tr><td>Bits</td><td>15 0</td><td colspan="2">15 0</td></tr>
<tr><td>N40:0</td><td>Length (in words)</td><td colspan="2">Length (in words)</td></tr>
<tr><td>N40:1</td><td>Header Word 1</td><td colspan="2">Error bit + Header Word 1</td></tr>
<tr><td>N40:2</td><td>Header Word 2</td><td colspan="2">Header Word 2</td></tr>
<tr><td>N40:3
⋮
N40:63</td><td>Data (variable length)
⋮</td><td colspan="2">Response data (variable length) or error code (one word)</td></tr>
<tr><td>N41</td><td colspan="3">This N-file lets you read and write control I/O messages. You can write control I/O messages only when all of the following conditions are true:
• The module is not receiving I/O from a scanner. For example, there is no scanner on the network, the scanner is in idle (program) mode, the scanner is faulted, or the module is not mapped to the scanner.
• The module is not receiving Peer I/O from another module.
• The module is configured to receive I/O (for example, the [DPI I/O Cfg] parameter).
• The value of N42:3 is set to a non-zero value.</td></tr>
<tr><td></td><td>Write</td><td colspan="2">Read</td></tr>
<tr><td>N41:0</td><td>Logic Command Word</td><td colspan="2">Logic Status Word</td></tr>
<tr><td>N41:1</td><td>Reference</td><td colspan="2">Feedback</td></tr>
<tr><td>N41:2</td><td>Datalink A1</td><td colspan="2">Datalink A1</td></tr>
<tr><td>N41:3</td><td>Datalink A2</td><td colspan="2">Datalink A2</td></tr>
<tr><td>N41:4</td><td>Datalink B1</td><td colspan="2">Datalink B1</td></tr>
<tr><td>N41:5</td><td>Datalink B2</td><td colspan="2">Datalink B2</td></tr>
<tr><td>N41:6</td><td>Datalink C1</td><td colspan="2">Datalink C1</td></tr>
<tr><td>N41:7</td><td>Datalink C2</td><td colspan="2">Datalink C2</td></tr>
<tr><td>N41:8</td><td>Datalink D1</td><td colspan="2">Datalink D1</td></tr>
<tr><td>N41:9</td><td>Datalink D2</td><td colspan="2">Datalink D2</td></tr>
</table>

PCCC Object *(Continued)*

N-Files (Continued)

N-File	Description
N42	This N-file lets you read and write some values configuring the port.
N42:3	Time-out (read/write): Time (in seconds) allowed between messages to the N41 file. If the module does not receive a message in the specified time, it performs the fault action configured in its [Comm Flt Action] parameter.
N42:7	Module Port Number (read only): SCANport port on the drive to which the module is connected.
N50:1 – N50:249 N51:0 – N51:249 N52:0 – N52:249 N53:0 – N53:249 N54:0 – N54:249 N55:0 – N55:249 N56:0 – N56:249 N57:0 – N57:249 N58:0 – N58:249 N59:0 – N59:249 N60:0 – N60:249 N61:0 – N61:249	SCANport Product(1) Parameter Value Read/Write (Parameters 1 – 2999)
N90:1 – N90:249 N91:0 – N91:249 N92:0 – N92:249 N93:0 – N93:249 N94:0 – N94:249 N95:0 – N95:249 N96:0 – N96:249 N97:0 – N97:249 N98:0 – N98:249 N99:0 – N99:249 N100:0 – N100:249 N101:0 – N101:249	SCANport Product(1) Parameter Full/All Information Read (Parameters 1 – 2999) (Each file contains a maximum of 250 parameters)

(1) SCANport Product refers to a drive or other SCANport product connected to the module.

SCANport Device Object

Class Code

Hexadecimal	Decimal
0x92	146

Instances

The number of instances depends on the number of components in the device. The total number of components can be read in Instance 0, Class Attribute 4.

Instances (Hex.)	(Dec.)	Device
0x0000 – 0x3FFF	0 – 16383	Host
0x4000 – 0x43FF	16384 – 17407	Module

Example	Description
0	Class Attributes (Drive)
1	Drive Component 1
2	Drive Component 2
⋮	⋮
16384	Class Attributes (Module)
16385	Module Component 1
⋮	⋮

Class Attributes

Attribute ID	Access Rule	Name	Data Type	Description
0	Get	Family Code	BYTE	0x00 = Communications Module 0x02 = 1336 PLUS Fractional HP 0x03 = 1336 PLUS 0x07 = 1336 PLUS II 0x10 = 1336 FORCE w/PLC Adapt. Bd. 0x11 = 2364 RGU DC Bus Regen Frt. End 0x12 = 1394 Motion Drive 0x13 = 1557 Medium Voltage AC Drive 0x14 = SMP-3 0x15 = SMC Dialog Plus 0x17 = 1305 AC Drive 0x18 = 1397 DC Drive 0x19 = 1336 Line Regeneration Pkge. 0x20 = 1336 FORCE w/Std. Adapt. Bd. 0x22 = 1336 IMPACT 0x30 = PowerFlex 70 0x38, 0x39, or 0x3A = PowerFlex 700 0x40 = PowerFlex 7000
1	Get	Family Text	STRING[16]	Text identifying the device.

SCANport Device Object *(Continued)*

Class Attributes (Continued)

Attribute ID	Access Rule	Name	Data Type	Description
2	Set	Language Code	BYTE	0 = English 1 = French 2 = Spanish 3 = Italian 4 = German 5 = Japanese 6 = Portuguese 7 = Mandarin Chinese 8 = Russian 9 = Dutch
3	Get	Product Series	BYTE	1 = A, 2 = B …
4	Get	Number of Components	BYTE	Number of components (e.g., main control board, I/O boards) in the device.
5	Set	User Definable Text	STRING[16]	Text identifying the device with a user-supplied name
6	Get	Status Text	STRING[12]	Text describing the status of the device.
7	Get	Configuration Code	BYTE	Identification of variations.
8	Get	Configuration Text	STRING[16]	Text identifying variation of family device.
9	Get	Brand Code	WORD	0x0001 = Allen-Bradley
11	Get	NVS Checksum	WORD	Checksum of the Non-Volatile Storage in a device.
128	Get	Customization Code	WORD	Code identifying the customized device.
129	Get	Customization Revision Number	WORD	Revision of the customized device.
130	Get	Customization Device Text	STRING[32]	Text identifying the customized device.

Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description
0	Get	Microprocessor Text String	STRING[8]	Name of the component
1	Get	Microprocessor Firmware Version	WORD	Firmware version = 100 x major revision + minor revision
2	Get	Microprocessor Language Module Version	WORD	Language module version = 100 x major revision + minor revision

Services

	Implemented for:		
Service Code	Class	Instance	Service Name
0x0E	Yes	Yes	Get_Attribute_Single
0x10	Yes	Yes	Set_Attribute_Single

SCANport Parameter Object

Class Code

Hexadecimal	Decimal
0x93	147

Instances

The number of instances depends on the number of parameters in the device. The total number of parameters can be read in Instance 0, Attribute 0.

Instances (Hex.)	(Dec.)	Device
0x0000 – 0x3FFF	0 – 16383	Host
0x4000 – 0x43FF	16384 – 17407	Module

Example	Description
0	Class Attributes (Drive)
1	Drive Parameter 1 Attributes
2	Drive Parameter 2 Attributes
⋮	⋮
16384	Class Attributes (Module)
16385	Module Parameter 1 Attributes
⋮	⋮

Class Attributes

Attribute ID	Access Rule	Name	Data Type	Description
0	Get	Number of Instances	WORD	Number of parameters in the device
1	Set	Write Protect Password	WORD	0 = Password disabled n = Password
2	Set	NVS Command Write	BYTE	0 = No Operation 1 = Store values in active memory to NVS 2 = Load values in NVS to active memory 3 = Load default values to active memory
3	Get	NVS Parameter Value Checksum	WORD	Checksum of all parameter values in a user set in NVS

SCANport Parameter Object *(Continued)*

Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description
0	Get	Read Full	STRUCT of:	
			UINT	Parameter value
			BOOL[16]	Descriptor (see below)
			UINT	Multiplier (1)
			UINT	Divisor (1)
			UINT	Base (1)
			UINT	Offset (1)
			STRING[16]	Parameter name
			UINT	File/Group/Element cross-reference
			UINT	Minimum value
			UINT	Maximum value
			UINT	Default value
			STRING[4]	Units (e.g., Amp, Hz)
1	Get/Set	Parameter Value	UINT	Parameter value in NVS. (2)
128	Get	Descriptor	BOOL[16]	Descriptor (see below)
130	Get	DPI Parameter Name	STRING[16]	Parameter name

(1) This value is used in the formulas used to convert the parameter value between display units and internal units. Refer to Formulas for Converting on page C-22.

(2) Do NOT continually write parameter data to NVS. Refer to the attention on page 6-1.

Descriptor Attribute

Bit	Name	Description
0	Data Type (Bit 1)	Right bit is least significant bit (0). 000 = BYTE used as an array of Boolean 001 = WORD used as an array of Boolean 010 = BYTE (8-bit integer) 011 = WORD (16-bit integer) 100 = DWORD (32-bit integer) 101 = TCHAR (8-bit (not unicode) or 16-bits (unicode) 110 = REAL (32-bit floating point value) 111 = Reserved
1	Data Type (Bit 2)	
2	Data Type (Bit 3)	
3	Sign Type	0 = unsigned 1 = signed
4	Hidden	0 = visible 1 = hidden
5	Not a Link Sink	0 = Parameter can sink a link 1 = Parameter cannot sink a link
6	Not Recallable	0 = Recallable from NVS 1 = Not Recallable from NVS
7	ENUM	0 = No ENUM text 1 = ENUM text
8	Writable	0 = Read only 1 = Read/write

SCANport Parameter Object *(Continued)*

Descriptor Attribute (Continued)

Bit	Name	Description
9	Not Writable When Enabled	0 = Writable when enabled (e.g., drive running) 1 = Not writable when enabled
10	Instance	0 = Parameter value is not a Reference to another parameter 1 = Parameter value refers to another parameter
11	Reserved	Must be zero
12	Decimal Place (Bit 0)	Number of digits to the right of the decimal point. 0000 = 0 1111 = 15
13	Decimal Place (Bit 1)	
14	Decimal Place (Bit 2)	
15	Decimal Place (Bit 3)	

Formulas for Converting

Display Value = ((Internal Value + Offset) x Multiplier x Base) / (Divisor x $10^{\text{Decimal Places}}$)

Internal Value = ((Display Value x Divisor x $10^{\text{Decimal Places}}$) / (Multiplier x Base)) - Offset

Common Services

	Implemented for:		
Service Code	Class	Instance	Service Name
0x0E	Yes	Yes	Get_Attribute_Single
0x10	Yes	Yes	Set_Attribute_Single

Object Specific Services

	Implemented for:		
Service Code	Class	Instance	Service Name
0x32	Yes	No	Get_Attributes_Scattered
0x34	Yes	No	Set_Attributes_Scattered

SCANport Fault Object

Class Code

Hexadecimal	Decimal
0x97	151

Products such as drives use this object for faults. Modules use this object for events.

Instances

The number of instances depends on the maximum number of faults or events supported in the queue. The maximum number of faults/events can be read in Instance 0, Attribute 1.

Instances (Hex.)	(Dec.)	Device
0x0000 – 0x3FFF	0 – 16383	Host
0x4000 – 0x43FF	16384 – 17407	Module

Example	Description
0	Class Attributes (Drive)
1	Most Recent Drive Fault
2	Second Most Recent Drive Fault
⋮	⋮
16384	Class Attributes (Module)
16385	Most Recent Module Event
⋮	⋮

Class Attributes

Attribute ID	Access Rule	Name	Data Type	Description
0	Set	Fault Command Write	BYTE	0 = No Operation 1 = Clear Fault/Event 2 = Clear Fault/Event Queue 3 = Reset Device
1	Get	Number of Instances	WORD	Maximum number of faults/events that the device can record in its queue
2	Get	Fault Trip Instance Read	BYTE	Fault that tripped the device. For modules, this value is always 1 when faulted.

SCANport Fault Object *(Continued)*

Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description
0	Get	Full/All Information	STRUCT of: STRING[16] WORD LWORD	 Fault text Fault code Fault time stamp

Services

	Implemented for:		
Service Code	Class	Instance	Service Name
0x0E	Yes	Yes	Get_Attribute_Single
0x10	Yes	No	Set_Attribute_Single

SCANport Warning Object

Class Code

Hexadecimal	Decimal
0x98	152

Products such as drives use this object for alarms or warnings. Modules do not support this object.

Instances

The number of instances depends on the maximum number of warnings supported by the queue. The maximum number of warnings can be read in Instance 0, Attribute 1.

Instances (Hex.)	(Dec.)	Device
0x0000 – 0x3FFF	0 – 16383	Host
Only host devices can have warnings.		

Example	Description
0	Class Attributes (Drive)
1	Most Recent Warning
2	Second Most Recent Warning
⋮	⋮

Class Attributes

Attribute ID	Access Rule	Name	Data Type	Description
0	Set	Warning Command Write	BYTE	0 = No Operation 1 = Clear Warning 2 = Clear Warning Queue 3 = Reset Device
1	Get	Number of Instances	WORD	Maximum number of warnings that the device can record in its queue

SCANport Warning Object *(Continued)*

Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description
0	Get	Full/All Information	STRUCT of: STRING[16] WORD LWORD	 Warning text Warning code Warning time stamp

Services

	Implemented for:		
Service Code	Class	Instance	Service Name
0x0E	Yes	Yes	Get_Attribute_Single
0x10	Yes	No	Set_Attribute_Single

TCP/IP Interface Object

Class Code

Hexadecimal	Decimal
0xF5	245

Instances

The module supports one instance of the TCP/IP Interface object.

Number	Description
0	Class Attributes
1	Object Attributes

Class Attributes

Attribute ID	Access Rule	Name	Data Type	Description
1	Get	Revision	UINT	The revision of this object

Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description
1	Get	Status of TCP/IP Network Interface	DWORD	0 = Not configured 1 = Valid configuration 2 to 15 = Reserved
2	Get	Configuration Capability	DWORD	Bit Value (0 = False, 1 = True) 0 = Supports BOOTP 1 = DNS Client (able to resolve host names by query to DNS server) 2 = DHCP Client (able to obtain network configuration through DHCP) 3 = DHCP-DNS Update (able to send its host name in the DHCP request) 4 = Configuration Settable (able to set the network configuration via TCP/IP) 5 to 31 = Reserved

TCP/IP Interface Object *(Continued)*

Instance Attributes (Continued)

Attribute ID	Access Rule	Name	Data Type	Description
3	Set	Configuration Control	DWORD	Bit Value 0 – 3 = Startup configuration 0 = Use configuration saved in NVS 1 = Obtain configuration via BOOTP 2 = Obtain configuration via DHCP (not supported by 1203-EN1) 3 = Reserved 4 = DNS Enabled (resolves host names by query to DNS server) (not supported by 1203-EN1) 5 to 31 = Reserved
4	Get	Physical Link Object	STRUCT of: UINT Padded EPATH	 Path size Path
5	Get	Interface Configuration	STRUCT of: UDINT UDINT UDINT UDINT UDINT STRING	 Module's IP address Module's subnet mask Module's gateway address Primary name server Secondary name server Default domain name
6	Get	Host Name	STRING	Host name when using DHCP

Services

	Implemented for:		
Service Code	Class	Instance	Service Name
0x0E	Yes	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single

Ethernet Link Object

Class Code

Hexadecimal	Decimal
0xF6	246

Instances

The module supports one instance of the TCP/IP Interface object.

Number	Description
0	Class Attributes
1	Object Attributes

Class Attributes

Attribute ID	Access Rule	Name	Data Type	Description
1	Get	Revision	UINT	The revision of this object

Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description
1	Get	Interface Speed	UDINT	Speed in megabits per second (Mbs)
2	Get	Interface Flags	DWORD	Bit | Value 0 = Link status (0 = inactive, 1 = active) 1 = Duplex (0 = half duplex, 1 = full duplex) 2 to 31 = Reserved
3	Get	Physical Address	USINT[6]	MAC address (XX-XX-XX-XX-XX-XX) The first octet (USINT[0]) is on the left.
4	Get	Interface Counters	STRUCT of: UDINT UDINT UDINT UDINT UDINT UDINT UDINT UDINT UDINT UDINT UDINT	Octets received Unicast packets received Non-unicast packets received Inbound packets received but discarded Inbound packets with errors (not discarded) Inbound packets with unknown protocol Octets sent Unicast packets sent Non-unicast packets sent Outbound packets discarded Outbound packets with errors

Ethernet Link Object *(Continued)*

Instance Attributes (Continued)

Attribute ID	Access Rule	Name	Data Type	Description
5	Get	Media Counters	STRUCT of:	RX = Received, TX = Transmitted
			UDINT	RX frames not having integral number of octets long
			UDINT	RX frames not passing FCS check
			UDINT	TX frames having one collision
			UDINT	TX frames having multiple collisions
			UDINT	Number of times of SQE test error message
			UDINT	TX Frames delayed first attempt by busy medium
			UDINT	Collisions detected later than 512 bit-times in trans.
			UDINT	TX frames failing due to excessive collisions
			UDINT	TX frames failing due to intern MAC sublayer TX error
			UDINT	Times of carrier sense condition loss during trans.
			UDINT	RX frames exceeding the maximum frame size
			UDINT	RX frames failing due to intern MAC sublayer RX error

Services

	Implemented for:		
Service Code	Class	Instance	Service Name
0x0E	Yes	Yes	Get_Attribute_Single
0x4C	No	Yes	Get_and_Clear

Logic Command/Status Words

Appendix D presents the definitions of the Logic Command and Logic Status words that are used for some products that can be connected to the EtherNet/IP module. If you do not see the Logic Command/Logic Status for the product that you are using, refer to your product's documentation.

1336 PLUS II, 1336 PLUS, and 1305 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 [1]	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 = Not Local 1 = Local Lockout
								x								MOP Increment	0 = Not Increment 1 = Increment
						x	x									Accel Time	00 = No Command 01 = Time 1 10 = Time 2 11 = Hold Time
				x	x											Decel Time	00 = No Command 01 = Time 1 10 = Time 2 11 = Hold Time
	x	x	x													Reference Select	000 = No Command 001 = Freq Select 1 010 = Freq Select 2 011 = Preset Freq 3 100 = Preset Freq 4 101 = Preset Freq 5 110 = Preset Freq 6 111 = Preset Freq 7
x																MOP Decrement	0 = Not Decrement 1 = Decrement

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

1336 PLUS II, 1336 PLUS, and 1305 Drives *(Continued)*

Logic Status Word

Logic Bits																
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	**Status**	**Description**
															x	Enabled	0 = Not Enabled 1 = Enabled
														x		Running	0 = Not Running 1 = Running
													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 = TB3 001 = Port 1 010 = Port 2 011 = Port 3 100 = Port 4 101 = Port 5 110 = Port 6 111 = Unused
x	x	x	x													Reference	0000 = Freq Select 1 0001 = Preset Freq 1 0010 = Preset Freq 2 0011 = Preset Freq 3 0100 = Preset Freq 4 0101 = Preset Freq 5 0110 = Preset Freq 6 0111 = Preset Freq 7 1000 = Freq Select 2 1001 = Adapter 1 1010 = Adapter 2 1011 = Adapter 3 1100 = Adapter 4 1101 = Adapter 5 1110 = Adapter 6 1111 = Jog Frequency

N-File Addresses

Appendix E provides information on the N-File addresses used when accessing the PCCC object or the DF-1 serial port. When using messages, you can use the N-File addresses to locate information about the module or SCANport product.

The 1203-EN1 module supports the N-File addresses shown below:

Address	N-File Addresses
N10:0	Number of SCANport product parameters
N10:1 – 999	SCANport product parameters 1 – 999 (value only)
N11:0 – 999	SCANport product parameters 1000 – 1999 (value only)
N12:0 – 999	SCANport product parameters 2000 – 2999 (value only)
N13:0	Number of SCANport module 1203-EN1 parameters
N13:1 – 999	SCANport module 1203-EN1 parameters 1 – 999 (value only)
N30:1 – 999	SCANport product parameters 1 – 999 (all information — read only)
N31:0 – 999	SCANport product parameters 1000 – 1999 (all information — read only)
N32:0 – 999	SCANport product parameters 2000 – 2999 (all information — read only)
N33:1 – 999	SCANport module parameters 1 – 999 (all information — read only)
N40:0 – 63	Block Transfer Emulation file
N41:0 – 9	Control (Logic Command, Reference, datalink) registers – see page C-16
N42:3	Control, control timeout
N42:7	Module Port # — The SCANport module port number the module is connected to on the SCANport product
N42:8	Reserved for future use — Always zero
N50:0	Number of SCANport product parameters
N50:1 – 249	SCANport product parameters 1 – 249 (value only)

Address	N-File Addresses
N51:0 – 249	SCANport product parameters 250 – 499 (value only)
.	
.	
.	
N61:0 – 249	SCANport product parameters 2750 – 2999 (value only)
N90:1 – 249	SCANport product parameters 1 – 249 (all information read only)
N91:0 – 249	SCANport product parameters 250 – 499 (all information read only)
.	
.	
.	
N101:0 – 249	SCANport product parameters 2750 – 2999 (all information read only)

Supported Emulated Block Transfer Commands

Appendix F provides information about the Emulated Block Transfer commands supported by the EtherNet/IP-to-SCANport module. You may want to use these to set or obtain information about parameters in the SCANport product connected to the 1203-EN1. This appendix contains the following:

- List of supported emulated block transfer commands.
- Emulated block transfer error response.
- Setting up data files for listed emulated block transfer commands.
- Examples of each emulated block transfer command listed.

What is Emulated Block Transfer

Emulated block transfer is a method used by some SCANport peripherals to read and write information using PCCC messages. Some Allen-Bradley EtherNet/IP products can send PCCC messages. Other products can send PCCC messages using a DF-1 connection. This appendix assumes that you have experience using emulated block transfer commands with SCANport peripherals.

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

Supported Emulated Block Transfer Commands

The following table lists the supported emulated block transfer commands and where you can find more information on them.

Command	Page
Parameter Value Read (1)	F-3
Parameter Value Write (1)	F-4
Parameter Read Full (1)	F-6
Product ID Number Read (1)	F-9
Scattered Parameter Value Read	F-11
Scattered Parameter Value Write	F-13

Command	Page
NVS Functions	F-16
Fault Command Write (1)	F-17
Fault Queue Entry Read Full (1)	F-18
Fault Queue Size (1)	F-20
Trip Fault Queue Number (1)	F-22

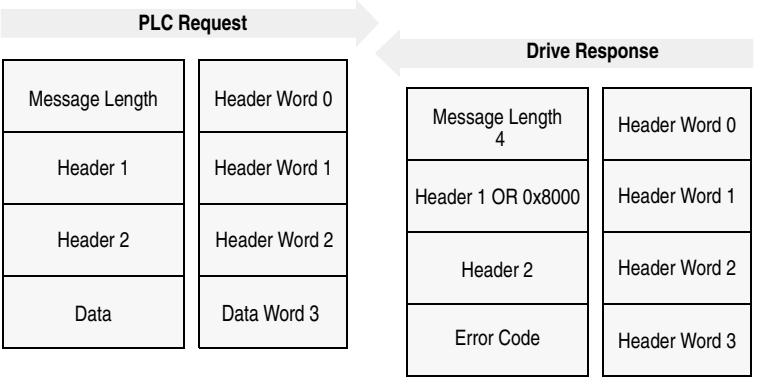
(1) This function can be accessed in the module and product. The following examples describe how to access it in the product. To do so in the module, add 16384 to the decimal value of header word 2.

Emulated Block Transfer Status Word

When an operation is unsuccessful, header word 1 of the drive response contains a negative value (bit 15 = 1).

If an error occurs, the drive also returns a status word to indicate the reason for the failure. The location of the status word is typically header word 3 in the drive response, but will depend on the message.

Figure F.1 Example Message Structure and Error Message Reply



The following table lists the error codes.

Value	Description
0	No error occurred.
1	The service failed due to an internal reason, and the drive could not perform the request (some messages are read only or write only).
2	The requested service is not supported.
3	An invalid value in the block transfer emulation request header word 1.
4	An invalid value in the block transfer emulation request header word 2.
5	An invalid value in the block transfer emulation request header word 1.
6	The data value is out of range.
7	There is a drive state conflict. The drive is in an incorrect state to perform the function. The drive cannot be running when you perform certain functions.

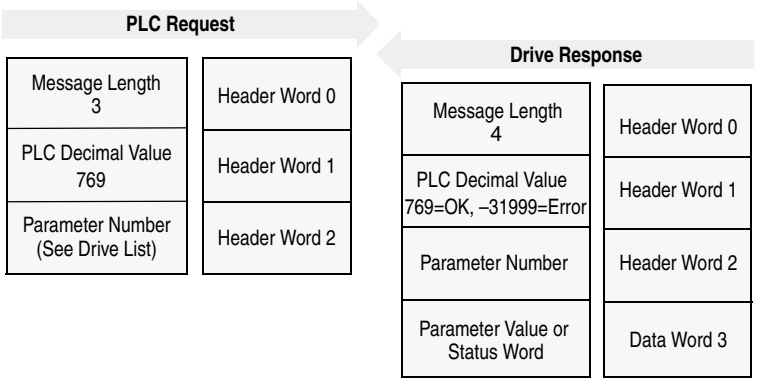
Parameter Value Read

Parameter Value Read reads the 16-bit parameter data value for the selected parameter number.

PLC Block Transfer Emulation Instruction Data

PLC request instruction length: 3 words
Drive response instruction length: 4 words

Figure F.2 Parameter Value Read Message Structure



Message Operation

Parameter Value Read reads parameter values from the drive and places that value (or an error code) in word 3 of the drive response data file. The value is shown in device units. Device units are listed in the user manual for the device you are using.

If an error occurs:

- Word 3 of the response contains the status code.
- The status area of the data file is non-zero.

Example

In this example, the value of parameter 20 was requested from a 1336 PLUS drive and a value of 4096 was returned. 4096 is the internal drive unit value for *Maximum Rated Voltage* Parameter. This corresponds to a value of 100% Drive Rated Volts in Display Units.

Data File Format

	0	1	2	3	4	5	6	7	8	9
PLC request	3	769	20*							
Drive response	4	769	20*	4096*						

* Example only — These values vary depending on parameters and products.

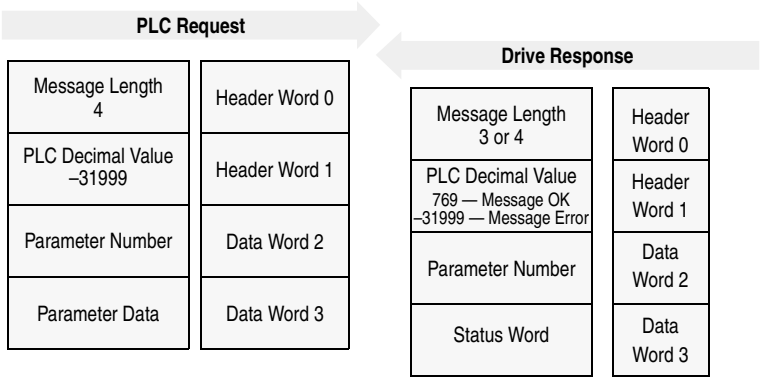
Parameter Value Write

Parameter Value Write writes a 16-bit parameter data value to the selected parameter number.

PLC Block Transfer Emulation Instruction Data

PLC request instruction length: 4 words
Drive response instruction length: 3 or 4 words

Figure F.3 Parameter Value Write Message Structure



Message Operation

Parameter Value Write sends a new value to the specified parameter. The value must be in device units. Units for each parameter are listed in the device manual.

If an error has occurred, word 1 of the response returns a value of –31999, and word 3 contains a status code.

Example

In this example, a value of 4096 was sent to Parameter 20. 4096 is in drive units and indicates a value of 100% Drive Rated Volts, as defined in P147, *Drive Rated Volts*.

Data File Format

	0	1	2	3	4	5	6	7	8	9
PLC request	4	–31999	20*	4096*						
Drive response	3	769	20*							

* Example only — These values vary depending on parameters and products.

Parameter Read Full

Parameter Read Full provides all known attributes for the parameters requested. This information includes the parameter's current value, descriptor, multiply and divide value, base value, offset value, text string, group element reference, minimum value, maximum value, default value, and unit text string.

PLC Block Transfer Emulation Instruction Data

PLC request instruction length: 3 words
Drive response instruction length: 4 or 23 words

Figure F.4 Parameter Read Full Message Structure

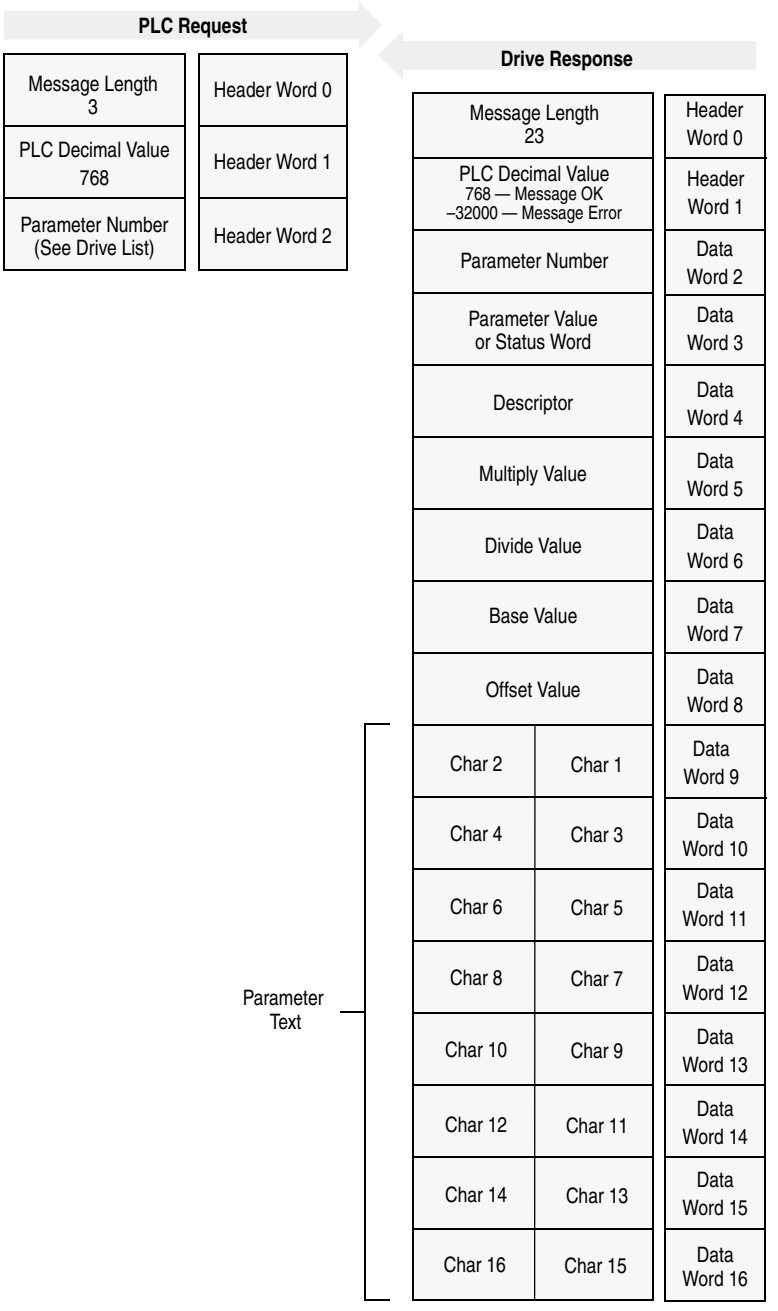
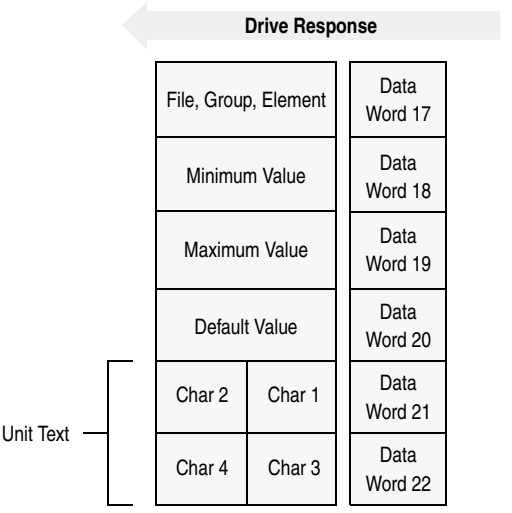


Figure F.4 Parameter Read Full Message Structure (Continued)



Message Operation

Parameter Read Full retrieves the attributes of the specified parameter. The attributes for each parameter include the data, minimum and maximum values, and the parameter text. The response message returns this information.

If an error has occurred in reading any of the values, word 3 contains the status word.

The parameter text is returned with each data word containing two ASCII characters per word. The first and second characters are in opposite order.

Example

In this example, a **Parameter Read Full** was performed through block transfer on a 1336 PLUS drive. “PLC request” shows the header message for the request. The data is returned in the response data file, starting with word 3, for parameter 20. Word 3 shows the present value in drive units. Word 4 through word 8 provide scaling information, used to convert drive units to engineering units for the Human Interface Module (HIM). Word 9 through word 16 provide the parameter name.

This example shows the response message in both binary and ASCII. Note the ASCII information beginning with word 9. The parameter name characters return in reverse order for each word. Word 9 has the ASCII value of (aM). To read this, reverse the word to read (Ma). The next word (ix), reversed, gives you (xi). These words, along with the following two words, form the word *Maximum*. You can see the parameter name *Maximum Voltage* in word 9 through word 16 of the response message. In addition, words 21 – 22 are also returned in this format. These words provide the units in which the parameter is defined. In this example it is *Vlts*.

Word 17 contains the file, group, and element which are used to reference the parameter.

Words 18 – 20 contain the minimum, maximum, and default values of this parameter.

Data File Format

	0	1	2	3	4	5	6	7	8	9
PLC request	3	768	20*							
Drive response	23	768	20*	4096*	355*	1*	4096*	460*	0*	24909*
(Decimal)	27000*	30061*	8301*	28502*	29804*	26465*	8293*	1794*	1024*	4915*
	4096*	27734*	29556*							
Drive response	\00\17	\03\00	\00\14	\10\00	\01 c	\00\01	\10\00	\01\CC	\00\00	a M
(ASCII)	i x	u m	m	o V	t l	g a	e	07 02	04 00	\13 0
	\10\00	l V	s t							

* Example only — These values vary depending on parameters and products.

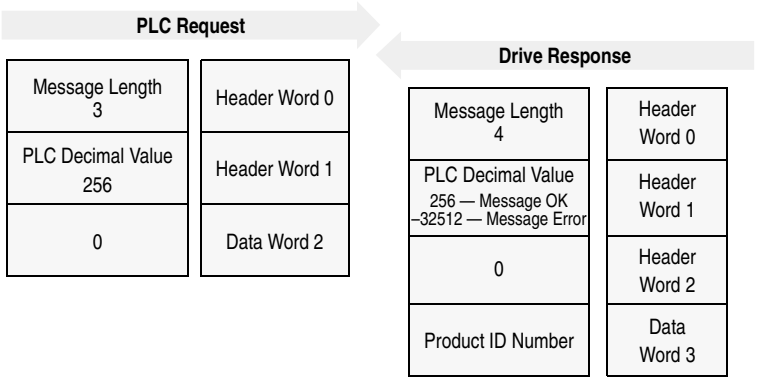
Product ID Number Read

Product ID Number Read returns the product ID of the device to which the 1203-EN1 module is connected.

PLC Block Transfer Emulation Instruction Data

PLC request instruction length: 3 words
Drive response instruction length: 4 words

Figure F.5 Product ID Number Read Message Structure



Product Code (Hex)	Product Code (Decimal)	Bulletin Number	Product
0x02	2	1336S	1336 PLUS Fractional HP
0x03	3	1336S	1336 PLUS
0x07	7	1336F	1336 PLUS II
0x10	16	1336T	1336 FORCE w/PLC Adapter Board
0x11	17	2364F	2364 RGU DC Bus Regen Front End
0x12	18	1394	1394 Motion Drive
0x13	19	1557	1557 Medium Voltage AC Drive
0x14	20	193	SMP-3
0x15	21	150	SMC Dialog Plus
0x17	23	1305	1305 AC Drive
0x18	24	1397	1397 DC Drive
0x19	25	1336R	1336 Line Regeneration Package
0x20	32	1336T	1336 FORCE w/Standard Adapter Board
0x22	34	1336E	1336 IMPACT

Message Operation

Product ID Number Read, through the drive response message word 3, indicates the type of device the 1203-EN1 module is connected to. This value is defined in the message response chart shown above.

If an error has occurred, word 1 of the response returns a negative value of –32512.

Example

In this example, the **Product ID Number Read** was requested. The drive response contained a value of 3 in word 3 of its message response, indicating a connection to a 1336 PLUS drive.

Data File Format

	0	1	2	3	4	5	6	7	8	9
PLC request	3	256	0							
Drive response	4	256	0	3*						

* Example only — These values vary depending on parameters and products.

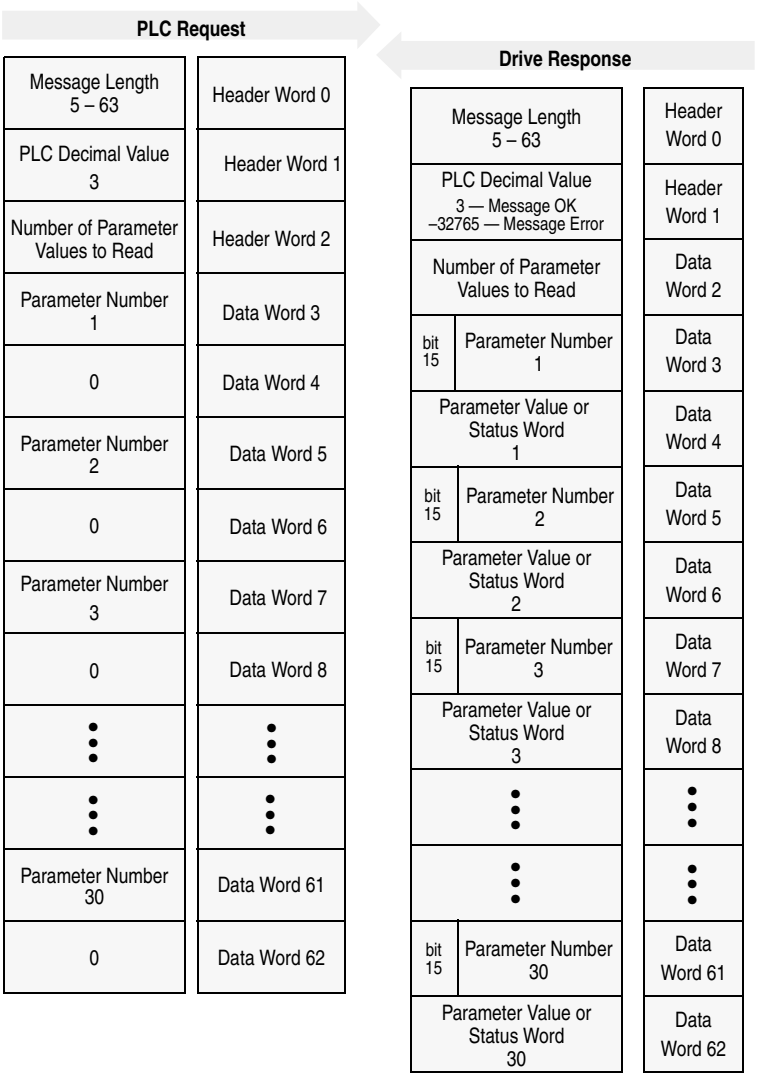
Scattered Parameter Value Read

Scattered Parameter Value Read reads a scattered list of parameters.

PLC Block Transfer Emulation Instruction Data

PLC request instruction length: 5 – 63 words
Drive response instruction length: 5 – 63 words

Figure F.6 Scattered Parameter Value Read Message Structure



Message Operation

Scattered Parameter Value Read reads a predefined group of parameter values, in any order, from the device. You define the number of parameters to read in word 2 of the request. The parameters to be read and their order is defined starting with word 3. An unused word is left between each parameter request, so the drive can respond with the parameter value, as shown.

If an error has occurred in reading any of the parameters:

- Word 1 of the drive response returns a value of –32765.
- Bit 15 of the drive response word for the number of that parameter is set.
- The drive response word for the value of that parameter returns a status word instead of returning the parameter value.

Example

In this example, eight parameters were read from a 1336 PLUS drive, as defined in word 2 of the request. Parameter numbers 5, 7, 8, 20, 18, 17, 19, and 36 were requested. The drive response returned the values of these parameters in the data file. These values are in drive units.

Data File Format

	0	1	2	3	4	5	6	7	8	9
PLC request	19	3	8*	5*	0	7*	0	8*	0	20*
	0	18*	0*	17*	0	19*	0	36*	0	

Drive response	19	3	8*	5*	6*	7*	1000*	8*	1000*	20*
	4096*	18*	4096*	17*	51*	19*	60*	36*	6144*	

* Example only — These values vary depending on parameters and products.

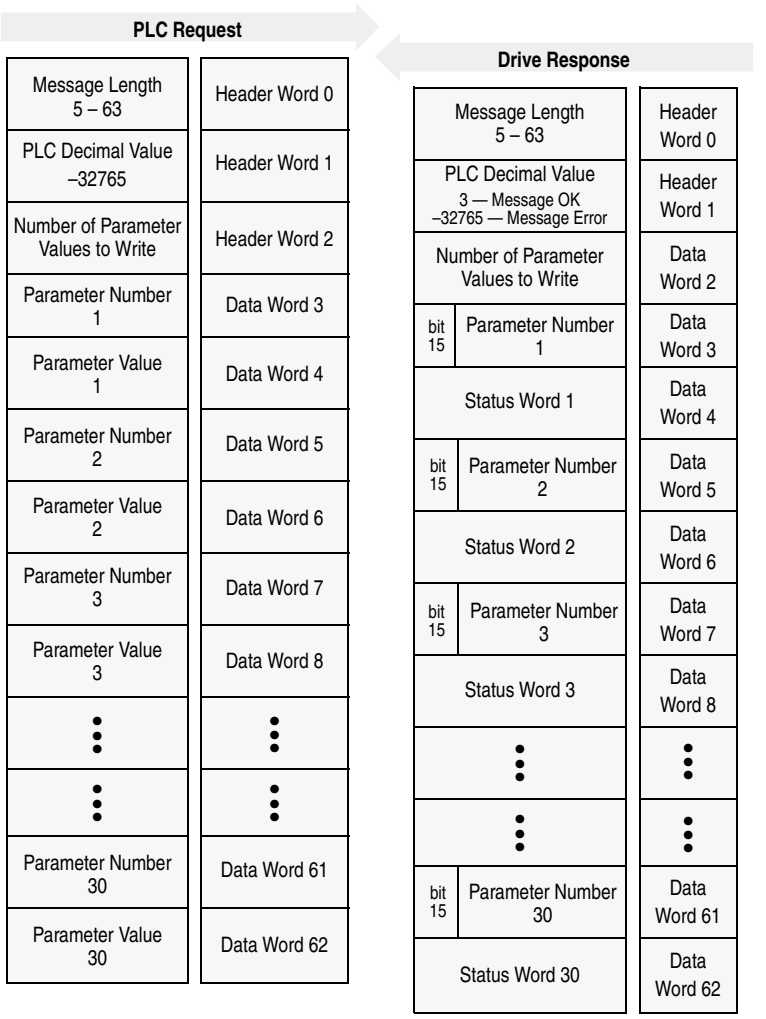
Scattered Parameter Value Write

Scattered Parameter Value Write writes to a scattered list of parameters and returns the status of each parameter. If any of the states have errors, the parameter number is negative.

PLC Block Transfer Emulation Instruction Data

PLC request instruction length: 5 – 63 words
Drive response instruction length: 5 – 63 words

Figure F.7 Scattered Parameter Value Write Message Structure



Message Operation

Scattered Parameter Value Write writes data values to a predefined group of device parameters in any order. You define the number of parameters to write in word 2. The parameters to be written to and their order is defined starting with word 3.

If an error occurs while writing to any of the parameters:

- Word 1 of the drive response returns a value of –32765.
- Bit 15 of the drive response word for that parameter's number is set.
- The drive response word for that parameter's status word is non-zero.

If no error has occurred:

- Word 1 of the drive response returns a value of 3.
- Each of the drive response's parameter numbers are the same as in the request.
- Each of the drive response status words returns a value of 0.

Example

In this example, six parameters were written to in a 1336 PLUS drive. Word 2 of the request defines the number of parameter values that are transferred. Beginning with word 3, the message lists each parameter number followed by the value of the parameter. The values are entered in device units.

The drive response returns the status of each parameter write. If the request was successful, a zero is returned. If an error has occurred, the response returns a status word code for the error.

Data File Format

	0	1	2	3	4	5	6	7	8	9
PLC request	15	–32765	6*	90*	1*	150*	4*	30*	20*	31*
	10*	10*	2*	12*	5*					
Drive response	15	3	6*	90*	0*	150*	0*	30*	0*	31*
	0*	10*	0*	12*	0*					

* Example only — These values vary depending on parameters and products.

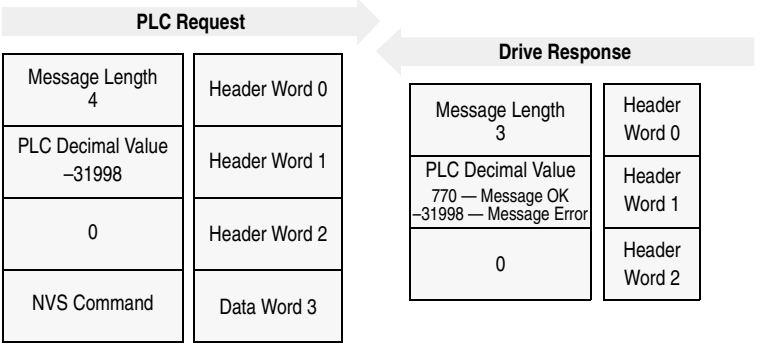
NVS Functions

NVS (Non-Volatile Storage) Functions activates the specified NVS functions.

PLC Block Transfer Emulation Instruction Data

PLC request instruction length: 4 words
Drive response instruction length: 3 words

Figure F.8 NVS Functions Message Structure



Value	NVS Command
00	Not Used
01	NVS Save
02	NVS Recall
03	NVS Default Initialize

Message Operation

The NVS storage function allows three different message requests:

- NVS Save saves parameter information from the working memory or RAM to NVS Storage.
- NVS Recall retrieves the last saved data from NVS Storage and places it in the working memory or RAM.
- NVS Default Initialize clears the RAM and NVS Storage and sets all parameter values to default.

If an error has occurred, response word 1 returns a value of -31998.

Example

This example requests the NVS Storage Save function be performed.

Data File Format

	0	1	2	3	4	5	6	7	8	9
PLC request	4	–31998	0	0, 1, 2, or 3						
Drive response	3	770	0							

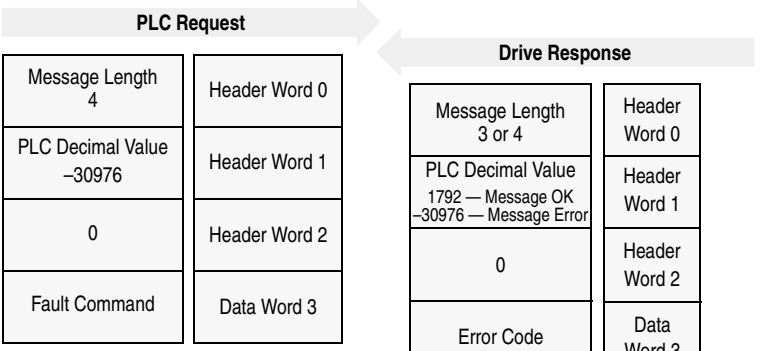
Fault Command Write

Fault Command Write activates the Clear Fault, Clear Fault Queue, and Drive Reset functions.

PLC Block Transfer Emulation Instruction Data

PLC request instruction length: 4 words
Drive response instruction length: 3 or 4 words

Figure F.9 Fault Command Write Message Structure



Value	Fault Command
00	Not Used
01	Clear Fault
02	Clear Fault Queue
03	Drive Reset (1336 FORCE Only)

Message Operation

The specified fault Clear/Reset function sends a fault handling request to the device.

- A Clear Fault request clears the last fault that occurred.
- A Clear Fault Queue clears the entire fault buffer. Certain devices may store more than one fault.
- A Drive Reset is used with the 1336 FORCE drive product only. This function resets the drive; it clears the fault queue and writes the parameter information stored in NVS Storage to RAM.

Data File Format

	0	1	2	3	4	5	6	7	8	9
PLC request	4	–30976	0	0, 1, 2, or 3						
Drive response	3	1792	0							

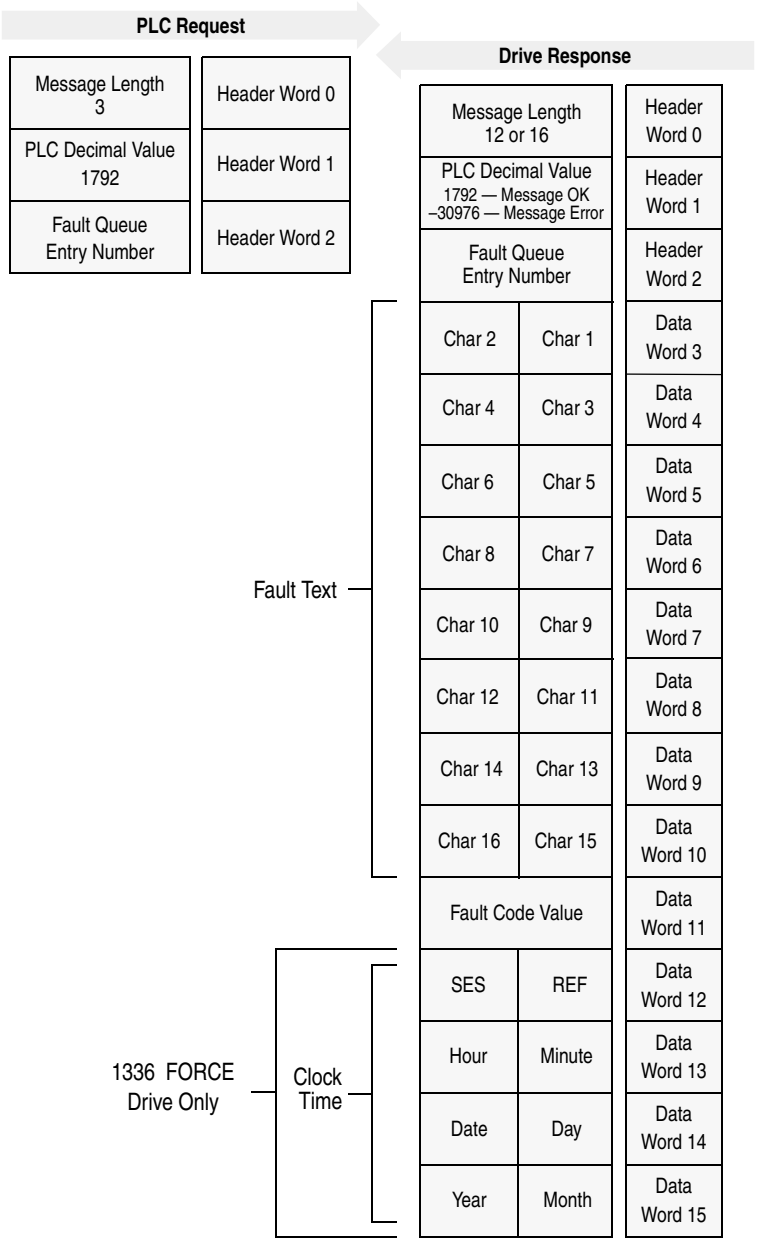
Fault Queue Entry Read Full

Fault Queue Entry Read Full reads the contents of the specified fault queue entry. A message is returned which includes the fault text and fault code associated with the specified fault queue entry. The 1336 FORCE drive also returns the time stamp associated with the fault.

PLC Block Transfer Emulation Instruction Data

PLC request instruction length: 3 words
Drive response instruction length: 12 or 16 words

Figure F.10 Fault Queue Entry Read Full Message Structure



Message Operation

Fault Queue Entry Read Full reads the contents of the fault queue specified in word 3 of the request. The response returns the fault text which can be ASCII text. Every two characters of text are in reverse order. Also, the 1336 FORCE drive returns a time stamp, indicating the day and time the fault occurred.

If an error has occurred, word 1 of the response returns a negative value.

Example

In this example, Fault Queue Entry number 3 was retrieved from a 1336 PLUS drive. The drive response returned the ASCII text *Drive Reset Flt*, with each character reversed. The fault code for this example is 22.

Data File Format

	0	1	2	3	4	5	6	7	8	9
PLC request	3	1792	3*							
Drive response	12	1792	3*	29252*	20313*	8293*	25938*	25971*	8308*	27718*
	8303*	22*								
Drive response	\00\0C	\07\00	\03\00	r D	v i	e	e R	e s	t	l F
	t	\00\16								

* Example only — These values vary depending on parameters and products.

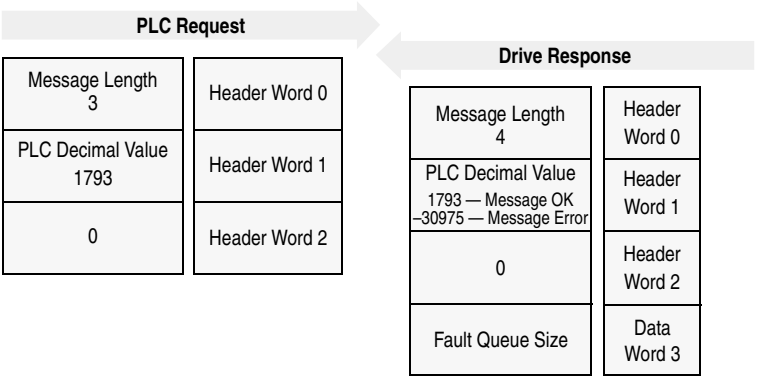
Fault Queue Size

Fault Queue Size gets the number of fault entries allowed in the fault queue.

PLC Block Transfer Emulation Instruction Data

PLC request instruction length: 3 words
Drive response instruction length: 4 words

Figure F.11 Fault Queue Size Message Structure



Message Operation

Fault Queue Size reads back the size of the fault queue available in the product. Each product may have a different number of fault queue entries available for storage.

If an error has occurred, word 1 of the response returns a value of -30975.

Example

In this example, a 1336 PLUS drive was used. This product has a fault queue of four storage locations available to store faults. This value is seen in word 3 of the response header message.

Data File Format

	0	1	2	3	4	5	6	7	8	9
PLC request	3	1793	0							
Drive response	4	1793	0	4*						

* Example only — These values vary depending on parameters and products.

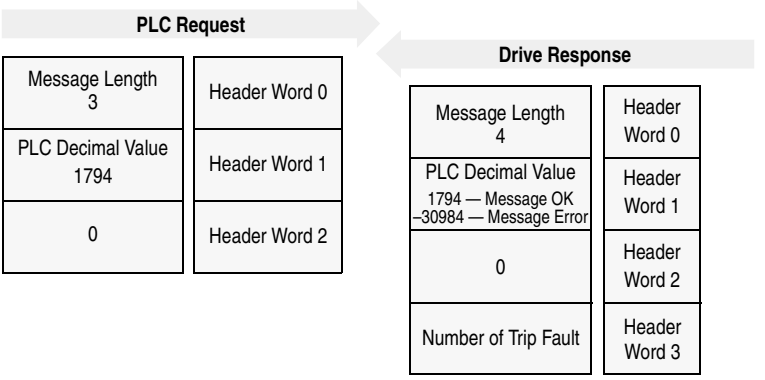
Trip Fault Queue Number

Trip Fault Queue Number provides the fault queue number of the fault that caused the device to trip.

PLC Block Transfer Emulation Instruction Data

PLC request instruction length: 3 words
Drive response instruction length: 4 words

Figure F.12 Trip Fault Queue Number Message Structure



Message Operation

Trip Fault Queue Number provides the number of the entry in the fault queue that tripped the device in word 3 of the drive response. The fault queue number is 0 when the device is not faulted.

If an error has occurred in the block transfer, word 1 of the response is negative.

Example

In this example, the device has stored a fault in the first entry of the fault queue that caused the drive to trip. Word 3 of the response indicates the entry number.

Data File Format

	0	1	2	3	4	5	6	7	8	9
PLC request	3	1794	0							
Drive response	4	1794	0	1*						

* Example only — These values vary depending on parameters and products.

Notes:

B

BOOTP (Bootstrap Protocol)

BOOTP lets the module configure itself dynamically at boot time if the network has a BOOTP server. The BOOTP server assigns the module a preconfigured IP address, a subnet mask, and a gateway address; therefore, you do not have to configure these using the parameters in the module. BOOTP can make it easier to administer an Ethernet network. A free version of Rockwell Software's BOOTP Server can be accessed at http://www.ab.com/networks.

Bridge

A bridge refers to a network device that can route messages from one Ethernet network to another.

A bridge also refers to a communications module in a ControlLogix controller that connects the controller to a network. See also Scanner.

C

CIP (Common Industrial Protocol)

CIP is the transport and application layer protocol used for messaging over EtherNet/IP networks. The protocol is used for implicit messaging (real time I/O) and explicit messaging (configuration, data collection, and diagnostics).

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 EtherNet/IP network.

You can set the module to a data rate of 10 Mbps Full-Duplex, 10 Mbps Half-Duplex, 100 Mbps Full-Duplex, or 100 Mbps Half-Duplex. If the network hub or switch sets or auto-negotiates the data rate, you can set the module to automatically detect the data rate.

Datalinks

A Datalink is a type of pointer used by some Allen-Bradley 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 four bytes in both the input and output image table of the controller. The drive determines the size of Datalinks.

DriveExplorer Software

DriveExplorer software is a tool for monitoring and configuring Allen-Bradley products and modules. It can be run on computers running Microsoft Windows 95, Windows 98, Windows NT (version 4.0 or higher), Windows CE (version 2.0 or higher), and Windows 2000 operating systems. DriveExplorer (version 4.03 or higher) can be used to configure this module and Allen-Bradley drives. Information about DriveExplorer software and a free lite version can be accessed at http://www.ab.com/drives/driveexplorer.

DriveTools SP Software

A software suite designed for Microsoft Windows 95, Windows 98, Windows NT (4.0 or higher), and Windows 2000 operating systems. This software suite provides a family of tools that you can use to program, monitor, control, troubleshoot, and maintain Allen-Bradley products. DriveTools SP (version 3.01) can be used with Allen-Bradley drives. Information about DriveTools SP can be accessed at http://www.ab.com/drives/drivetools.

Duplex

Duplex describes the mode of communication. *Full-duplex* communications let a device exchange data in both directions at the same time. *Half-duplex* communications let a device exchange data only in one direction at a time. The duplex used by the module depends on the type of duplex that other network devices, such as switches, support.

E

EDS (Electronic Data Sheet) Files

EDS files are simple text files that are used by network configuration tools such as RSNetWorx for EtherNet/IP to describe products so that you can easily commission them on a network. EDS files describe a product device type, revision, and configurable parameters. EDS files for many Allen-Bradley products can be found at http://www.ab.com/networks/eds.

EtherNet/IP Network

Ethernet/IP (Industrial Protocol) is an open producer-consumer communication network based on the Ethernet standard (IEEE 802.3), TCP/IP, UDP/IP, and CIP. Designed for industrial communications, both I/O and explicit messages can be transmitted over the network. Each device is assigned a unique IP address and transmits data on the network. The number of devices that an EtherNet/IP network can support depends on the class of IP address. For example, a network with a Class C IP address can have 254 nodes.

General information about EtherNet/IP and the EtherNet/IP specification are maintained by the Open DeviceNet Vendor's Association (ODVA). ODVA is online at http://www.odva.org.

Explicit Messaging

Explicit Messages are used to transfer data that does not require continuous updates. They are typically used to configure, monitor, and diagnose a device over the network.

F

Fault Action

A fault action determines how the module and connected drive act when a communications fault (for example, a cable is disconnected) occurs or when the scanner is switched out of run mode. The former uses a communications fault action, and the latter uses an idle fault action.

Fault Configuration

When communications are disrupted (for example, a cable is disconnected), the module and 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 25- [Flt Cfg Logic]** through **34- [Flt Cfg D2 In]**). 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 Logic Command, Reference, and/or Datalink(s).

Flash Update

The process of updating firmware in the module. The module can be flash updated using the Allen-Bradley software tool ControlFLASH or the X-modem protocol and a 1203-SFC serial cable.

G

Gateway

A gateway is a device on a network that connects an individual network to a system of networks. When a node needs to communicate with a node on another network, a gateway transfers the data between the two networks. You need to configure the address for the gateway device in the module if you want the module to communicate with devices that are not on its network.

H

Hardware Address

Each Ethernet device has a unique hardware address (sometimes called a MAC address) that is 48 bits. The address appears as six bytes separated by colons (for example, xx:xx:xx:xx:xx:xx). Each byte has a value between 0 and 255 (0x00 and 0xFF). This address is assigned in the hardware and cannot be changed. It is required to identify the device if you are using a BOOTP utility.

HIM (Human Interface Module)

A device that can be used to configure and control an Allen-Bradley drive.

Hold Last

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

I

Idle Action

An idle action determines how the module and connected drive act when the controller is switched out of run mode.

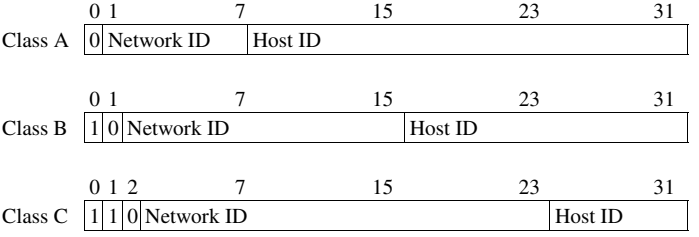
I/O Data

I/O data, sometimes called " implicit messages" or "input/output," 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 module. Input is transmitted by the module and consumed by the scanner.

IP Addresses

A unique IP address identifies each node on an EtherNet/IP network. An IP address consists of 32 bits that are divided into four segments of one byte each. It appears as four decimal integers separated by periods (xxx.xxx.xxx.xxx). Each “xxx” can have a decimal value from 0 to 255. For example, an IP address could be 192.168.0.1.

An IP address has two parts: a network ID and a host ID. The class of network determines the format of the address.



The number of devices on your EtherNet/IP network will vary depending on the number of bytes that are used for the network address. In many cases you are given a network with a Class C address, in which the first three bytes contain the network address (subnet mask = 255.255.255.0). This leaves 8 bits or 256 addresses on your network. Because two addresses are reserved for special uses (0 is an address for the network usually used by the router, and 255 is an address for broadcast messages to all network devices), you have 254 addresses to use on a Class C address block.

To ensure that each device on the Internet has a unique address, contact your network administrator or Internet Service Provider for unique fixed IP addresses. You can then set the unique IP address for the module by using a BOOTP server or by manually configuring parameters in the module. The module reads the values of these parameters only at power-up.

L

Logic Command/Logic Status

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

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

M

Master-Slave Hierarchy

A module configured for a master-slave hierarchy exchanges data with the master device. Usually, a network has one scanner which is the master device, and all other devices (for example, drives connected to EtherNet/IP modules) are slave devices.

On a network with multiple scanners (called a multimaster hierarchy), each slave device must have a scanner specified as a master.

Module

Devices such as drives, controllers, and computers usually require a module to provide a communication interface between them and a network such as EtherNet/IP. A module 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 1203-EN1 EtherNet/IP-to-SCANport module connects SCANport-supported drives to an EtherNet/IP network. Modules are sometimes also called “adapters,” “cards,” “embedded communication options,” “gateways,” and “peripherals.”

N

Non-Volatile Storage (NVS)

NVS is the permanent memory of a device. Devices such as the module 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

PCCC (Programmable Controller Communications Command)

PCCC is the protocol used by some controllers to communicate with devices on a network. Some software products (for example, DriveExplorer and DriveTools SP) also use PCCC to communicate.

Peer-to-Peer Hierarchy

A module that is configured for a peer-to-peer hierarchy can exchange data with a device on the network that is not a scanner. This type of hierarchy can be set up so that a scanner configures or transmits data to one Allen-Bradley drive which then sends the same configuration or data to other Allen-Bradley drives on the network. To use a peer-to-peer hierarchy, you configure one module to transmit data (2 or 4 words) and one or more modules to receive the data.

Ping

A ping is a message that is sent by a SCANport 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.

R

Reference/Feedback

The Reference is used to send a Reference (for example, speed, frequency, torque) to the drive. It consists of one 16-bit word of input to the module from the network.

Feedback is used to monitor the speed of the drive. It consists of one 16-bit word of output from the module to the network.

RSLogix 5/500/5000

RSLogix software is a tool for configuring and monitoring controllers to communicate with connected devices. It is a 32-bit application that runs on various Windows operating systems. Information about RSLogix software can be found at http://www.software.rockwell.com/rslogix.

RSNetWorx for EtherNet/IP

RSNetWorx for EtherNet/IP software is a tool for configuring and monitoring EtherNet/IP networks and connected devices. It is a 32-bit Windows application that runs on Windows 95, Windows 98, and Windows NT. Information about RSNetWorx for EtherNet/IP software can be found at http://www.software.rockwell.com/rsnetworx.

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 modules connected to a network. See also Controller.

SCANport

SCANport is a standard peripheral communication interface used by various Allen-Bradley drives and power products, such as 1305 and 1336 PLUS II drives.

SCANport Peripheral

A device that provides an interface between SCANport and a network or user. Peripheral devices are also referred to as “modules” or “adapters.” The serial converter and HIMs are examples of SCANport peripherals.

SCANport Product

A device that uses the SCANport communications interface to communicate with one or more peripheral devices. For example, a motor drive such as a 1336 PLUS II drive is a SCANport product. In this manual, a SCANport product is also referred to as “drive” or “host.”

Status Indicators

Status indicators are LEDs that are used to report the status of the module, network, and drive.

Subnet Masks

A subnet mask is an extension to the IP addressing scheme that lets you use a single network ID for multiple physical networks. A bit mask identifies the part of the address that specifies the network and the part of the address that specifies the unique node on the network. A “1” in the subnet mask indicates the bit is used to specify the network. A “0” in the subnet mask indicates that the bit is used to specify the node.

For example, a subnet mask on a Class C address may appear as follows: 11111111 11111111 11111111 11000000 (255.255.255.192). This mask indicates that 26 bits are used to identify the network and 6 bits are used to identify devices on each network. Instead of a single physical Class C network with 254 devices, this subnet mask divides it into four networks with up to 62 devices each.

Switches

Switches are network devices that provide virtual connections that help to control collisions and reduce traffic on the network. They are able to reduce network congestion by transmitting packets to an individual port only if they are destined for the connected device. In a control application, in which real time data access is critical, network switches may be required in place of hubs.

T

TCP (Transmission Control Protocol)

EtherNet/IP uses this protocol to transfer Explicit Messaging packets using IP. TCP guarantees delivery of data through the use of retries.

U

UDP (User Datagram Protocol)

EtherNet/IP uses this protocol to transfer I/O packets using IP. UDP provides a simple, but fast capability to send I/O messaging packets between devices. This protocol ensures that modules transmit the most recent data because it does not use acknowledgements or retries.

Z

Zero Data

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

Notes:

Numerics

A

B

C

D

E

F

G

H

I

L

M

N

www.rockwellautomation.com

Corporate Headquarters
Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI, 53202-5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

Headquarters for Allen-Bradley Products, Rockwell Software Products and Global Manufacturing Solutions
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 SA/NV, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Headquarters for Dodge and Reliance Electric Products
Americas: Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615-4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433
Europe/Middle East/Africa: Rockwell Automation, Brühlstraße 22, D-74834 Elztal-Dallau, Germany, Tel: (49) 6261 9410, Fax: (49) 6261 17741
Asia Pacific: Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 6356-9077, Fax: (65) 6356-9011

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

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