User Manual



Bulletin 193 E1 Plus EtherNet/IP Side Mount Module

Catalog Number 193-ETN





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 <u>SGI-1.1</u> available from your local Rockwell Automation sales office or online at <u>http://www.rockwellautomation.com/literature/</u>) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

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

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



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Table of Contents

Installation and Wiring	Introduction	. 7
	Features	. 8
	Installation	. 9
	Wiring	10
	Dimensions	11
	Network Design	11
Protection Functions	Introduction	13
	Trip Status / Identification	13
	Trip Resetting	13
	Trip and Warning Enable	13
	Overload and Phase Loss Protection	14
	Overload Warning	14
	Jam Protection	15
	Jam Trip	15
	Jam Warning	16
	Underload Protection	16
	Underload Warning	16
	Communication Fault Protection	17
	Comm Fault Warning	17
	Communication Idle Protection	17
	Comm Idle Warning	17
Configure an E1 Plus EtherNet/	Introduction	19
ID Modulo To Operate on the	Determining Network Parameters	19
	Setting the IP Network Address	20
Network	Assign Network Parameters via the BOOTP/DHCP Utility	20
	Assign Network Parameters Via a Web Browser and MAC Scapper	20
	Software	22
	Other Factors to Consider When Assigning Network Parameters	24
	Duplicate IP Address Detection	24
	Behavior of Modules With Duplicate IP Addresses	25
	DNS Addressing	25
	Install EDS File	20
	Download EDS File Embedded in the Module	20
	Download EDS File from Allen Bradley EDS File Download Site	20
	Register the EDS File	28
Automation Controller and	Introduction	22
Software Communications	I/O Messaging	33
Souware Communications	Controll ogiv Configuration with Add-On Profiles	22
	EtherNet/IP Network Configuration with Add On Profiles	25
	Accessing Module Data with Add-On Profiles	37
	Controll only Generic Configuration	28
	EtherNet/ID Network Ceneric Configuration	20 20
	Downloading the Generic Configuration to the DI C	-10 /12
	Downloading the Generic Configuration to the FLC	43

	Accessing Generic Module Data	. 44
	Logix Explicit Messaging	. 45
	MicroLogix 1100 and 1400 Explicit Messaging	. 48
	FactoryTalk View with Predefined Tags	. 51
Email Notifications	Introduction	. 57
	Notification Events.	. 57
	Email Contents	57
	Email Configuration	58
	Configure Device Identity	. 90 59
	Limitations	. 61
Device Parameters and Tags	Introduction	. 63
	Parameter and Tag Programming	. 63
	Program Lock	. 63
	Resetting to the Factory Default Values	. 63
	Parameter Group Listing	. 64
	Monitor Group	. 64
	Advanced Setup Group	. 65
	Reset/Lock Group	. 68
	I/O Setup Group	. 69
	Trip History Group	. 71
Troubleshooting	Introduction	73
Treasiconocang	FtherNet/IP Modes of Operation	73
	Power-Up Reset Mode	. 73
	Run Mode	. 75
	Run Wode	· / - 74
	Lingerserverable Error Mode	. 74
	Ether Net/ID Treachlache etine Duran deure	· /)
	EtherNet/IP I roubleshooting Procedures	· /)
	Input and Output Troubleshooting Procedures	. />
Specifications	Specifications	. 77
EtherNet/IP Information	Electronic Data Sheets	. 81
-	EtherNet/IP Objects	. 81
	Identity Object — CLASS CODE 0x01	. 81
	Message Router Object — CLASS CODE 0x02	. 82
	Assembly Object — CLASS CODF 0x04	. 83
	Connection Manager Object — CLASS CODE $0x06$. 85
	Discrete Input Point Object — CLASS CODE 0x00	. 85
	Discrete Output Point Object — CLASS CODE 0x00	. 55 86
	Parameter Object — CLASS CODE $0x0F$. 55 87
	Parameter Group Object — CLASS CODE $0x01$. 07 88
	$\mathbf{I} = \mathbf{I} = $. 00

Control Supervisor Object — CLASS CODE 0x29	89
Overload Object — CLASS CODE 0x2C	91
PCP Object — CLASS CODE 0xC2	91
TCP/IP Interface Object — CLASS CODE 0xF5	92
Ethernet Link Object — CLASS CODE 0xF6	93
Rockwell Automation Support	95
Installation Assistance	95
New Product Satisfaction Return	95

Installation and Wiring

Introduction

The purpose of this chapter is to provide the necessary instructions to successfully install an E1 Plus EtherNet/IP Module to an E1 Plus Overload Relay and properly connect to a EtherNet/IP network.



ATTENTION: To prevent electrical shock, disconnect from power source before installing or servicing. Install in suitable enclosure. Keep free from contaminants.



ATTENTION: The side mount module contains ESD (electrostatic discharge) sensitive parts and assemblies. Static control precautions are required when installing, testing, servicing, or repairing this assembly. Component damage may result if ESD control procedures are not followed. If you are not familiar with static control procedures, refer to Rockwell Automation publication 8000-4.5.2, "*Guarding Against Electrostatic Damage*", or any other applicable ESD protection handbook.



ATTENTION: The purpose of this document is to serve as a guide for proper installation. The National Electrical Code and any other governing regional or local code will take precedence. Rockwell Automation cannot assume responsibility for the compliance or proper installation of the side mount module or associated equipment. A hazard of personal injury and/or equipment damage exists if codes are ignored during installation.



ATTENTION: An incorrectly applied or installed side mount module can result in damage to the components or reduction in product life. Wiring or application errors such as supplying incorrect or inadequate supply voltage, or operating/storing in excessive ambient temperatures may result in malfunction of the product.



ATTENTION: Only personnel familiar with the side mount module and associated machinery should plan to install, set up, and maintain the system. Failure to comply may result in personal injury and/or equipment damage.



ATTENTION: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take adequate measures.



ATTENTION: To remain compliant with UL/CSA Certifications, the EtherNet/IP power supply must meet NEC Class 2 requirements.

Features

Figure 1 - Features





Installation

Figure 2 - Installation [1]







Wiring

Table 1 - Wire and Size Torque Specifications

1X 2X	2412 AWG 2416 AWG 5 lbin
1X 2X	0.2…2.5 mm ² 0.25…1 mm ² 0.56 N∙m
1X 2X	0.2…2.5 mm ² 0.2…1 mm ² 0.56 N∙m

Figure 5 - Wiring Diagram



Dimensions

Figure 6 - Dimension Diagram





 Table 2 - Dimension Specifications

Contactor Cat. No.	E1 Plus Cat. No.	Α	В	C	D	E	F	G	Н	J	К	L
100-C09, -C12, -C16, -C23	193*-EE_B	67,3 mm (2.65 in)	148 mm (4.83 in)	85.2 mm (3.35 in)	24.5 mm (0.96 in)	13.9 mm (0.55 in)	35 mm (1.38 in)	60 mm (2.36 in)	86.5 mm (3.40 in)	2 mm (0.08 in)	4.5 mm (0.17 in)	22,3 mm (0.88 in)
100-C30, -C37	102*EE D	67,3 mm (2.65 in)	148 mm (5.83 in)	101.2 mm (3.98 in)	24.5 mm (0.96 in)	13.9 mm (0.56 in)	35 mm (0.55 in)	60 mm (2.36 in)	104 mm (4.09 in)	2 mm (0.08 in)	4.5 mm (0.17 in)	22,3 mm (0.88 in)
100-C43	193 LL_D	71.8 mm (2.83 in)	148 mm (5.83 in)	101.2 mm (3.98 in)	24.5 mm (0.96 in)	18.4 mm (0.74 in)	45 mm (1.77 in)	60 mm (2.36 in)	104 mm (4.09 in)	2 mm (0.08 in)	4.5 mm (0.17 in)	22,3 mm (0.88 in)
100-C60, -C72, -C85	193*-EE_E	94,3 mm (3.71 in)	191.6 mm (7.54 in)	120.4 mm (4.74 in)	29 mm (1.14 in)	23.8 mm (0.94 in)	55 mm (2.16 in)	100 mm (3.94 in)	126 mm (4.94 in)	2 mm (0.08 in)	5.4 mm (0.21 in)	22,3 mm (0.88 in)

Network Design

The E1 Plus EtherNet/IP module has one RJ45 port to connect a CAT5 type or better Ethernet cable. Rockwell Automation offers a wide variety of Allen-Bradley Ethernet patch cables with its Bulletin 1585 line of Ethernet cables (http://www.ab.com/sensors/ethernet/incabinet.html).

The E1 Plus supports a Star Ethernet topology in which all Ethernet nodes wire back to a central Ethernet switch, hub, or router as shown below:



Rockwell Automation offers a line of Allen-Bradley managed and unmanaged Ethernet Switches with its Stratix family of Ethernet Switches (http://www.ab.com/networks/switches/).

Protection Functions

Introduction	The purpose of this chapter is to provide detailed information regarding the protective trip and warning functions that the E1 Plus EtherNet/IP Module adds to the E1 Plus Overload Relay. In this chapter, you will find considerable mention given to parameters as they relate to these functions. For complete descriptions of the programming parameters, refer to <i>Chapter 6- Device Parameters and Tags</i> .
Trip Status / Identification	The E1 Plus EtherNet/IP Module determines trip status and identification through monitoring of reference signals inside the E1 Plus Overload Relay. On power-up, it assumes that the E1 Plus Overload Relay is in a non-tripped condition. For definitive feedback on trip status of the E1 Plus Overload Relay, one of the E1 Plus EtherNet/IP module inputs may be wired to the N.O. auxiliary contact (terminals 97 and 98) of the E1 Plus Overload Relay. Parameters 40 and 41 are used to configure the assignment of the inputs. For this function, use the "OL Contact" configuration.
Trip Resetting	 The following options are available for resetting a tripped E1 Plus Overload Relay with an E1 Plus EtherNet/IP module: Blue mechanical reset button located on the front of the E1 Plus Overload Relay Setting Parameter 14, <i>Trip Reset</i>, to "Reset trip" Setting the trip reset bit in an output assembly from a logic controller Using a push button (N.O. contact configuration) wired to one of the EtherNet/IP module inputs, programming the corresponding input assignment parameter (40 or 41) to "Trip Reset" Setting the CIP Tag, Trip_Reset, to 1
	IMPORTANT Setting parameter 16, <i>Reset Mode</i> , to "Automatic" does not result in other reset commands being ignored.

Trip and Warning Enable

Parameter 12, *Trip Enable*, allows the installer to enable or disable the jam trip protective function.

Parameter 13, *Warning Enable*, allows the installer to enable or disable the overload, jam, underload, and communication warning protective functions.



ATTENTION: The Trip Enable settings should not be altered during machine operation, as unexpected behavior could occur. This may result in an unintended actuation of controlled industrial equipment, with the potential for machine damage or serious injury to personnel.

Overload and Phase Loss Protection

Thermal overload and phase loss trip protection is provided exclusively by the E1 Plus Overload Relay. The E1 Plus Overload Relay provides uninterrupted protection to the motor, even in the event of an E1 Plus EtherNet/IP Module failure. Settings for FLA and trip class are found directly on the E1 Plus Overload Relay.

IMPORTANT The reset mode DIP switch adjustment is overridden by the E1 Plus EtherNet/IP module parameter 16, *OL Reset Mode*, while the E1 Plus EtherNet/IP module is powered.

Overload Warning

The E1 Plus EtherNet/IP Module continuously monitors the E1 Plus Overload Relay's percentage of thermal utilization signal. Parameter 2,%*Therm Utilized*, provides this value.

Parameter 17, *OL Warn Level*, is used to adjust the setpoint to alert for an impending overload trip and is adjustable from 0...100% TCU.

The E1 Plus EtherNet/IP Module will indicate an overload warning if all the following conditions are met:

- No warning currently exists
- Overload warning is enabled
- %Therm Utilized is equal to or greater than OL Warn Level

When the overload warning conditions are satisfied, the following will occur:

- Bit 0 in Parameter 4, Warning Status, will go to "1"
- Bit 1 of Parameter 10, *Device Status*, will go to "1"

IMPORTANT %*Therm Utilized* will stabilize at a value of approximately 88% with the motor operating continuously at rated current.

Jam Protection

Motor current greater than the motor's nameplate rating can indicate a high overload or stall condition, such as an overloaded conveyor or jammed gear. These conditions can result in overheating of the motor, and equipment damage. Rapid jam fault detection helps to minimize damage and loss of production.

By continuously monitoring the motor current level signal as a percentage of the E1 Plus Overload Relay's dial FLA setting, the E1 Plus EtherNet/IP module allows jam trip and warning capability.

Jam Trip

The following parameters are available for configuring the E1 Plus EtherNet/IP Module's jam trip performance:

- Parameter 18, *Jam Inhibit Time*, allows the installer to inhibit a jam trip from occurring during the motor starting sequence. It is adjustable from 0...250 seconds.
- Parameter 19, *Jam Trip Delay*, allows the installer to define the time period a jam condition must be present before a trip occurs. It is adjustable from 5...250 seconds.
- Parameter 20, *Jam Trip Level*, allows the installer to define the current at which the E1 Plus Overload Relay will trip on a jam. It is user-adjustable from 150...600% of the FLA dial setting.

The E1 Plus EtherNet/IP Module will command the E1 Plus Overload Relay to trip if all the following conditions are met:

- No trip currently exists
- Jam Protection is enabled
- Jam Inhibit Time has expired
- The motor current is greater than the *Jam Trip Level* for a time period greater than the *Jam Trip Delay*

When the conditions for a jam trip are satisfied, the following will occur:

- Bit 2 in Parameter 3, Trip Status, will go to "1"
- Bit 0 in Parameter 10, Device Status, will go to "1"
- The E1 Plus Overload Relay's trip relay contacts (95 and 96) will open
- Out A will be placed in their Protection Fault State (if so programmed)

IMPORTANT	The Protection Fault State of OUT A is defined by parameter 34 (<i>OUTA Pr FltState</i>) and parameter 35 (<i>OUTA Pr FltValue</i>).
IMPORTANT	The jam inhibit timer starts after the load current transitions from 0 A to 30% FLA. The E1 Plus EtherNet/IP Module does not begin monitoring for a jam condition until the <i>Jam Inhibit Time</i> expires.

Jam Warning

Parameter 21, *Jam Warn Level*, allows the installer to define the current at which the EtherNet Module will indicate a warning. It is user-adjustable from 100...600% FLA.

The E1 Plus EtherNet/IP Module will indicate a Jam warning if:

- No warning currently exists
- Jam Warning is enabled
- Jam Inhibit Time has expired
- The motor current is equal to or greater than the Jam Warn Level

When the Jam Warning conditions are satisfied, the following will occur:

- Bit 2 in Parameter 4, Warning Status, will go to "1"
- Bit 1 in Parameter 10, Device Status, will go to "1"

The Jam Warning function does not include a time delay feature. Once the <i>Jam Inhibit Time</i> has expired, the Jam Warning indication is instantaneous

Underload Protection

Motor current less than a specific level may indicate a mechanical malfunction in the installation, such as a torn conveyor belt, damaged fan blade, broken shaft, or worn tool. Such conditions may not harm the motor, however, rapid detection may help to minimize equipment damage and loss of production.

Underload Warning

The following parameters are available for configuring the E1 Plus EtherNet/IP Module's underload warning performance:

- Parameter 22, *UL Inhibit Time*, allows the installer to inhibit an underload indication from occurring during the motor starting sequence. It is adjustable from 0...250 seconds.
- Parameter 23, *UL Warn Level*, allows the installer to define the current at which the E1 Plus EtherNet/IP Module will indicate a warning. It is user-adjustable from 30...100% of the FLA dial setting.

The E1 Plus EtherNet/IP Module will immediately indicate an Underload warning if:

- No warning currently exists
- Underload Warning is enabled
- UL Inhibit Time has expired
- The motor current is less than the UL Warn Level

When the Underload Warning conditions are satisfied, the following will occur:

- Bit 3 in Parameter 4, *Warning Status*, will go to "1"
- Bit 1 of Parameter 10, Device Status, will go to "1"

IMPORTANT The Underload Warning function does not include a time delay feature. Once the *UL Inhibit Time* has expired, the Underload warning indication is instantaneous.

Communication Fault Protection

A disruption of the communication link between the E1 Plus EtherNet/IP Module and a EtherNet/IP network can result in the loss of application control and/or critical process diagnostic data. Rapid communication fault detection helps minimize potential damage due to uncontrolled or unmonitored applications.

Comm Fault Warning

The E1 Plus EtherNet/IP Module will indicate a Comm Fault warning if:

- No warning currently exists
- Comm Fault Warning is enabled
- The EtherNet/IP Module experiences a loss of communication

When the Comm Fault warning conditions are satisfied, the following will occur:

- The Network Status LED will blink red or become solid red
- Bit 5 in Parameter 4, *Warning Status*, will go to "1"
- Bit 1 of Parameter 10, *Device Status*, will go to "1"

IMPORTANT The Comm Fault State of OUT A is defined by Parameter 36 (*OUTA En FltState*) and parameter 37 (*OUTA En FltValue*).

Communication Idle Protection

When a programmable controller is placed into the program mode, the execution of its ladder program is suspended, and any connected networks go to an idle state. If inadvertent, this can result in the loss of application control and/or critical process diagnostic data. Rapid communication idle detection helps minimize the potential damage due to uncontrolled or unmonitored applications.

Comm Idle Warning

The E1 Plus EtherNet/IP Module will indicate a Comm Idle warning if:

- No warning currently exists
- Comm Idle Warning is enabled
- The network controller that is communicating to the E1 Plus EtherNet/IP Module is placed in idle mode

When the Comm Idle warning conditions are satisfied, the following will occur:

- Bit 6 in Parameter 4, Warning Status, will go to "1"
- Bit 1 in Parameter 10, *Device Status*, will go to "1"

IMPORTANT The Comm Idle State of OUT A is defined by Parameter 38 (*OUTA En IdlState*) and parameter 39 (*OUTA En IdlValue*).

Configure an E1 Plus EtherNet/IP Module To Operate on the Network

To operate an EtherNet/IP network, you must define these parameters.

Introduction	This chapter describes how to configure an E1 Plus EtherNet/IP module to operate on an EtherNet/IP network.
	When you first install an E1 Plus EtherNet/IP module, the module is Dynamic Host Configuration Protocol (DHCP) enabled.

Determining Network Parameters

Table 3 - EtherNet/IP Network Parameters

EtherNet/IP Network Parameter	Description
IP address	 The IP address uniquely identifies the module. The IP address is in the form xxx.xxx.xxx where each xxx is a number from 0255. These are reserved values you cannot use: 0.0.0.10.255.255.255 127.0.0127.255.255.255 224.255.255.255255.255.255
Subnet mask	Subnet addressing is an extension of the IP address scheme that allows a site to use a single network ID for multiple physical networks. Routing outside of the site continues by dividing the IP address into a net ID and a host ID via the class. Inside a site, the subnet mask is used to redivide the IP address into a custom network ID portion and host ID portion. If you change the subnet mask of an already-configured module, you must cycle power to the module for the change to take effect.
Gateway	A gateway connects individual physical networks into 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.

If you use DNS addressing, or reference the module via a host name in an MSG instruction, then define these parameters.

EtherNet/IP Network Parameter	Description
Host name	A host name is part of a text address that identifies the module. The full text address of a module is <i>host_name.domain_name</i> .
Domain name	A domain name is part of a text address that identifies the domain in which the module resides. The full text address of a module is <i>host_name.domain_name</i> . The domain name has a 48-character limit.
Primary DNS server address	This identifies any DNS servers used in the network. You must have a DNS server configured if you
Secondary DNS server address	IP address that can be used by the network. For more information on DNS addressing, see page <u>26</u> .

Table 4 - EtherNet/IP Network Parameters for DNS Addressing

	Check with your specify these para	Ethernet network administrator to determine if you need to ameters.
Setting the IP Network	E1 Plus EtherNet Internet Protoco	:/IP modules ship with DHCP enabled. You can set the network l (IP) address by:
Autros	 Using a Bo Protocol (DHCP Se RSLinx[™] C 	ootstrap Protocol (BOOTP)/Dynamic Host Configuration DHCP) server, such as the Rockwell Automation BOOTP- rver Utility, which is included with Rockwell Software's Classic software
	• Using a we	b browser and MAC Scanner software
Assign Network Parameters via the BOOTP/	By default, the E DHCP utility is	1 Plus EtherNet/IP module is DHCP enabled. The BOOTP/ a standalone program that is located in the:
DHCP Utility	• BOOTP-I	DHCP Server folder accessed from the Start menu.
	IMPORTANT	Before you start the BOOTP/DHCP utility, make sure you have the

ŀ

hardware MAC ID of the module, which is printed on the side of the E1 Plus EtherNet/IP module. The MAC ID has a format similar to: 00-0b-db-14-55-35.

This utility recognizes DHCP-enabled devices and provides an interface to configure a static IP address for each device.

To assign network parameters via the BOOTP/DHCP utility, perform this procedure.

- 1. Start the BOOTP/DHCP software.
- **2.** Select Tool \rightarrow Network Settings.
- 3. If appropriate for the network, enter the subnet mask, gateway address, primary/secondary server addresses, and domain name.

N	etwork Settings							×
	Defaults							_
	Subnet Mask:	255		255	224		0	
	Gateway:	0		0	0		0	
	Primary DNS:	0		0	0		0	1
	Secondary DNS:	0		0	0		0	
	Domain Name:							
			_	OK		Ca	ancel	

4. Click OK.

The Request History panel displays the hardware addresses of modules issuing BOOTP or DHCP requests.

5. Double-click the MAC address of the module to be configured.

The MAC address is printed on the side of the E1 Plus EtherNet/IP module. The format of the hardware address resembles 00-0b-db-14-55-35.

Clear History Add	to Relation List				
(hr.min:sec) Type	Ethernet Addr	ress (MAC)	IP Address	Hostname	
8:55:08 BOOT	00:00:BC:21	A0:56			
8:55:02 BOOT	P 00:00/BC:21:4	A0:56			
8:54:55 BUUT 8:54:49 BOOT	00.00 BC 21 /	NU:06			
0.001	00.00.00.217	10.00			
elation List					
slation List		au nuro [r		•1	
elation List New Delete En:	ble BDOTP En	able DHCP	Disable BOOTP/DHC	P	
slation List New Delete Ens	ble BDDTP En		Disable BOOTP/DHC	Description	
elation List New Delete Ens Ethernet Address (MAC	ble BOOTP En	IP Address	Disable BOOTP/DHC Hostname	Description	
elation List New Delete Ens Ethernet Address (MAC	ble BDDTP En	IP Address	Disable BOOTP/DHC Hostname	Description	
elation List New Defete Ens Ethernet Address (MAC	ble BDDTP En) Type	IP Address	Disable B00TP/DHC Hostname	Description	
elstion List New Delete Ens Ethernet Address (MAC	ble BOOTP En	sble DHCP	Disable BOOTP/DHO Hostname	P Description	
elation List New Delete En: Ethernet Address (MAC	ble BODTP En	eble DHCP	Disable B00TP/DH0 Hostname	Description	
elation List New Defete Ens Ethernet Address (MA)	ble BODTP En	eble DHCP	Disable B00TP/DHC Hostname	Description	
elation List New Defete Ent Ethernet Address (MAC	ble BODTP En	IP Address	Disable BOOTP/DHO Hostname	Description	
ion List ww. <u>Delete</u> <u>En</u> t rennet Address (MAC	Ые ВООТР Еп Туре	eble DHCP	Disable BOOTP/DHC Hostname	Description	Fritie

The New Entry window appears with the module's Ethernet Address (MAC).

New Entry	×
Ethernet Address (MAC):	00:00:BC:21:A0:56
IP Address:	130 . 151 . 217 . 3
Hostname:	
Description:	
	OK Cancel

- 6. Enter the IP address, host name, and a module description.
- 7. Click OK.
- **8.** Re-cycle power to the module. To recycle power, remove and reapply the control power terminals A1 and A2.
- **9.** To permanently assign this configuration to the module, highlight the module in the Relation List panel and click the Disable BOOTP/DHCP button.

When module power is recycled, it uses the assigned configuration and does not issue a DHCP request.

If you do not select the Disable BOOTP/DHCP button, on a power cycle, the module clears the current IP configuration and will again begin sending DHCP requests.

Assign Network Parameters Via a Web Browser and MAC Scanner Software

In the event that a user does not have access to a DHCP software utility, a user can assign network parameters via a web browser, such as Microsoft's Internet Explorer, and Media Access Control (MAC) scanner software, such as MAC Scanner from Colasoft - <u>http://www.colasoft.com/</u>. Follow these steps to configure the module using this method.

- 1. Locate and identify the MAC ID printed on the label of the E1 Plus EtherNet/IP Side Mount Module. This address has a format that is similar to: 00-0b-db-14-55-35
- 2. Connect the E1 Plus EtherNet/IP Side Mount Module to the same Wide Area Network (WAN) as your personal computer.
- 3. Start the MAC scanner software
- 4. Select the appropriate subnet to scan for available MAC addresses.

Eile Edit	⊻iew <u>S</u> car	<u>H</u> elp				
Export All	Export Selecter	Сору	X Delete Fi	Local Subnet	192.168.0.0	- O O 3 Start Pause Stop Settin
IP		MA	AC Address	s	Host Name	Manufacturer
IP		MA	C Address	s	Host Name	Manufacturer

5. Scan the Subnet for all available MAC addresses.

<u>File E</u> dit <u>V</u> iew <u>S</u> can <u>I</u>	<u>H</u> elp		
Export All Export Selected	Copy Delete Find	192.168.0.0	Start Pause Stop Setting
IP	MAC Address	Host Name	Manufacturer
3 192.168.0.1	00:0D:88:2C:B2:75	USMKEWHMARTIN2	D-Link
3 192.168.0.11	00:00:BC:3B:BE:24		Aller Durdlau
3 192.168.0.100	00:00:BC:B3:A9:C9		Allen-bradley

6. Identify the IP address assigned to the MAC ID of the E1 Plus EtherNet/ IP Side Mount Module. The IP address will have a format that is similar to 192.168.0.100. 7. Open a web browser and type the IP address on the address line to view the internal web server of the E1 Plus EtherNet/IP Side Mount Module.

Rockwell Automation -	Microsoft Internet Explor		
File Edit View Favorites	Tools Help		
🔆 Back 🔹 🌔 🖂 🗙	💈 🏠 🔎 Search 🥱	🏷 Favorites 🥝 🔗 🍹	
Address 🕘 http://192.168.0.3	.00/		💌 🔁 Go
Allen-Bradley	E1 Plus Ether	Net/IP	Rockwell Automation
Expand Minimize	Home		
Parameters	Device Name	E1 Plus EtherNet/IP	
Administrative Set	Device Description		Resources
EDS File	Device Location		Visit AB. com for additional
	Ethernet Address (MAC)	00:00:BC:B3:A9:C9	information
	IP Address	192.168.0.100	
	Product Revision	1.001 Build 18	Contacts
	Firmware Version Date	Jan 9 2009, 11:43:53	
	Serial Number	20202B74	
	Status	No I/O connections established	
	Uptime Seconds Copyright © 2008 Rockwell .	0 days, 3h:31m:43s Between Refresh: 15 Disable Automation, Inc. All Rights Reserve	e Refresh with O.

- 8. Select Administration Settings->Network Configuration to change the IP address of the E1 Plus EtherNet/IP Side Mount Module to a static IP address.
- **9.** The module will prompt the user for a User Name and Password. Use "Administrator" for the user name, leave the password field blank, and select OK.

Enter Ne	twork Password 🔀						
? >	This secure Web Site (at 192.168.0.100) requires you to log on.						
Ť	Please type the User Name and Password that you use for E1 Plus EtherNet/IP.						
	User Name Administrator						
	Password						
	Save this password in your password list						
	OK Cancel						

10. Assign the appropriate network settings per the recommendation of the network administrator for the network that this module will be communicating on and select **Apply**.

Rockwell Automation - Micr	rosoft Internet Explorer		
File Edit View Favorites To	ols Help		*
🚱 Back 👻 🕥 👻 🛃	Search 🤺 Favorites ,	😌 🗟 • 💺 🖃 × 🧾	
Address 🕘 http://192.168.0.100/			💌 🄁 Go
Allen-Bradley	l Plus EtherNet/IP		Rockwell Automation
Expand Minimize A	Device Identity Network Configur	ation E-mail Configuration Password Configuration	
Diagnostics	Initial Network Configuration		
Administrative Settings	Ethernet Interface Configuration	Static 💙	
Network Configuratio	Network Interface		
E-mail Configuration	IP Address	192.168.0.100	
Password Configurati	Subnet Mask	255.255.255.0	
	Default Gateway	0.0.0.0	
	Primary Name Server	0.0.0.0	
	Secondary Name Server	0.0.0.0	
	Default Domain Name		
	Host Name		
	Ethernet Link		
	Ethernet Link Configuration	Autonegotiate 💌	
	Apply Changes		
	Copyright © 2008 Rockwell Automatic	on, Inc. All Rights Reserved.	

11. Recycle the power on the E1 Plus EtherNet/IP module for the communications changes to take affect. To recycle power, remove and reapply the control power terminals A1 and A2.

There are other factors to consider when assigning networks parameters, which include:

- Network isolation from or integration into the plant/enterprise network
- Network size
 For large networks, even isolated networks, it might be more convenient
 and safer to use a BOOTP/DHCP server rather than RSLinx software.
 The BOOTP/DHCP server also limits the possibility of assigning
 duplicate IP addresses.
- Company policies and procedures dealing with plant floor network installation and maintenance
- Level of involvement by IT personnel in plant floor network installation and maintenance
- Type of training offered to control engineers and maintenance personnel

If you use the Rockwell Automation BOOTP or DHCP server in an uplinked subnet where an enterprise DHCP server exists, a module may get an address from the enterprise server before the Rockwell Automation utility even sees the

Other Factors to Consider When Assigning Network Parameters

module. You might have to disconnect from the uplink to set the address and configure the module to retain its static address before reconnecting to the uplink. This is not a problem if you have node names configured in the module and leave DHCP enabled.



ATTENTION: The E1 Plus EtherNet/IP module must be assigned a fixed network address. The IP address of this module must not be dynamically provided.

Failure to observe this precaution may result in unintended machine motion or loss of process control.

Duplicate IP Address Detection

When you change the IP address or connect the module to an EtherNet/IP network, the module checks to make sure that the IP address assigned to this module does not match the address of any other network device. If the module determines that another device on the network with a matching IP address, the EtherNet/IP port of the module goes into conflict mode.

• NETWORK STATUS LED indicator is solid red.

To resolve this conflict, use the instructions in this chapter to change the IP address of the module. Then cycle power to the module or reset the modules by disconnecting and then reconnecting the EtherNet cable.

Two modules could possibly detect a conflict simultaneously. If this occurs, perform this procedure.

- 1. Remove the module with the incorrect IP address and correct its conflict.
- 2. Cycle power or disconnect the EtherNet cable from the second module and reconnect it.

Behavior of Modules With Duplicate IP Addresses

Devices in conflict over an IP address behave differently depending on whether connections have been established to either of the modules and whether both modules support duplicate IP address detection.

lf	Then
Both modules support duplicate IP address detection	The first started module uses and retains its IP address. The other module will detect a conflict, give up the IP address and enter conflict mode.
Both modules support duplicate IP address detection and are started at roughly the same time	One of them surrenders the IP address and enters conflict mode.
One module supports duplicate IP address detection and a second module does not	The second module generally keeps its IP address, regardless of which module first obtains the IP address. The module that supports duplicate IP address detection will detect the conflict and give up the IP address.

Table 5 - Device Conflict Over Duplicate IP Addresses

DNS Addressing	To further qualify a module's address, use DNS addressing to specify a host nam for a module, which also includes specifying a domain name and DNS servers. DNS addressing makes it possible to set up similar network structures and IP address sequences under different domains.		
	DNS addressing is only necessary if you refer to the module by host name, such as in path descriptions in MSG instructions.		
	To use DNS addressing, perform this procedure.		
	1. Assign a host name to the module.		
	A network administrator should be able to assign a host name. Valid host names should be IEC-1131-3 compliant.		
	2. Configure the module's parameters.		
	3. In addition to the IP address, subnet mask, and gateway address, configure a host name for the module, domain name, and primary/secondary DNS server addresses.		
Install EDS File	Before the E1 Plus EtherNet/IP Side Mount Module is configured to communicate on an EtherNet/IP network, it must be registered to the software that configures the network such as Rockwell Software's RSLinx Classic and RSNetWorx for EtherNet/IP software. A user registers the module by installing an Electronic Data Sheet (EDS file). The EDS file for the E1 Plus EtherNet/IP Side Mount Module can be obtained from one of two locations:		
	Embedded in the module		

• Allen-Bradley EDS file download website

Download EDS File Embedded in the Module

The EDS file for the E1 Plus EtherNet/IP Side Mount Module is embedded within the module. After the IP address for the module has been configured, connect the module to same Ethernet network as a personal computer. Using a web browser on the personal computer, a user can download the EDS file using a web browser by following these steps: 1. Type the IP address of the E1 Plus EtherNet/IP Side Mount Module on the address line of the web browser.

Rockwell Automation -	Microsoft Internet Expl	orer	
File Edit View Favorites	Tools Help		4
G Back 🔹 🕥 🕤 🗙	💈 🏠 🔎 Search	📌 Favorites 🚱 •	
Address ど http://192.168.0.	100/		💌 🔁 G
Allen-Bradley	E1 Plus Ethe	erNet/IP	Rockwel Automatio
Expand Minimiz 📥	Home		
Parameters	Device Name	E1 Plus EtherNet/IP	
Diagnostics	Device Description		
Administrative Se	Device Location		Resources
e come	Ethernet Address (MAC)	00:00:BC:B3:A9:C9	Visit AB.com for additional information
	IP Address	192.168.0.100	
	Product Revision	1.002 Build 2	Contacts
	Firmware Version Date	Mar 13 2009, 13:16:45	
	Serial Number	20202B74	
	Status	No I/O connections established	
	Uptime	0 days, 3h:21m:1s	
	Seconds B Copyright © 2008 Rockwell	Automation, Inc. All Rights Res	le Refresh with 0.

- 2. Right click on the EDS File link
- 3. Select Save to save the EDS file to the personal computer.

File Download	×
Do you want to open or save this file?	
Name: 00010003012C0100.eds Type: RSView32 Event File, 77.6 KB From: 192.168.0.100	
Open Save Cance	el
While files from the Internet can be useful, some files can pote harm your computer. If you do not trust the source, do not ope save this file. <u>What's the risk?</u>	ntially n or

Download EDS File from Allen-Bradley EDS File Download Site

The EDS file for the E1 Plus EtherNet/IP Side Mount Module can also be downloaded from the Allen-Bradley EDS File download site. Using a web browser on the personal computer that is connected to the Internet, a user can download the EDS file by following these steps:

1. Type <u>http://www.ab.com/networks/eds</u> on the address line of the web browser.

2. Select the network type as EtherNet/IP and select Search.

EDS Resources from Rockwell Automation - Microsof	t Internet Explorer 📃 🗖 🔀
File Edit View Favorites Tools Help	🥂
🕒 Back 🝷 🐑 👻 😰 🏠 🔎 Search 👷 F	iavorites 🚱 🔗 - چ 🚍 - 📒
Address http://www.ab.com/networks/eds	💌 🄁 Go
Care Shuller	- DeviceLogix EDS Files
- Case studies	-
Network:	Select a network
Device Type:	Select a network
	DeviceNet
Bulletin/Catalog No.:	EtherNet/IP
Hadas Davidation	Network Independent
Major Revision:	
Minor Revision:	
Keyword:	
	Search Reset
*The EDS archives maintain a hi Automation DeviceNet and Cont	story of revisions as well as the most up-to-date versions of Rockwell rolNet EDS files.
Tools & Resources Locatio	ons Contact Us Sitemap Legal Notices
Copyright © 2009 Rockwell A	Automation, Inc. All Rights Reserved.
	×

3. Locate the EDS file for the E1 Plus EtherNet/IP Side Mount Module and download it to the personal computer.

Register the EDS File

After the EDS file has been downloaded, a user will need to register the EDS file with the software that configures the EtherNet/IP network. The following example lists the steps needed to register an EDS file with Rockwell Software's RSLinx Classic software.

1. Start the EDS Hardware Installation Tool, located at Start->Programs->Rockwell Software->RSLinx Tools.

🛅 FactoryTalk Tools	•
🛅 RSLinx	•
🛅 Utilities	•
📾 RSLinx Tools	🕨 🎒 EDS Hardware Installation Tool
🛅 RSLogix 5000 Enterprise Series	►
🛅 RSTools	•
🛅 RSNetWorx	•

2. Select Add to register a new device.

Rockwell Software - H	ardware Installation Tool
This tool allows yo information currer	ou to change the hardware description htly installed on your computer.
Add Remove Remove All	Launch the EDS Wizard and add selected hardware description files and associated components only. Launch the EDS Wizard and remove selected hardware description files and associated components only. Remove all previously installed hardware description files and associated components from your computer.
	Exit

3. Register a single file, browse to the location where the EDS file is located, and select Next.

Rockwell Software's EDS Wizard
Registration Electronic Data Sheet file(s) will be added to your system for use in Rockwell Software applications.
Register a single file Register a directory of EDS files Look in subfolders Named:
C:\Documents and Settings\whmartin\My Documents\ICB\Products\E1 Browse
* If there is an icon file (.ico) with the same name as the file(s) you are registering then this image will be associated with the device. To perform an installation test on the file(s), click. Next
Next > Cancel

4. Select Next to accept the installation test results.

Rockwell Software's EDS Wizard	×
EDS File Installation Test Results This test evaluates each EDS file for errors guarantee EDS file validity.	in the EDS file. This test does not
- 🕒 Installation Test Results	
c:\documents and settings\whmartin\	my documents\icb\products\e1 plus\ethernet\ed
	>
View file	
	<back next=""> Cancel</back>

5. Accept the Graphic Image by selecting Next.

Rockwell Software's	EDS Wizard	×
Change Graphic Image You can change the graphic image that is associated with a device.		
F	Product Types	
Change icon	Motor Overload E1 Plus EtherNet/IP	
	<back next=""> Cancel</back>	

6. Select Next to register the device.

Rockwell Software's EDS Wizard	×
Final Task Summary This is a review of the task you want to complete.	
You would like to register the following device. E1 Plus EtherNet/IP	
< Back Next > Can	cel



7. Select Finish to successfully register the module.

Automation Controller and Software Communications

The E1 Plus EtherNet/IP Side Mount Module supports three types of EtherNet/
IP messaging:

- I/O Messaging Used for deterministic Ethernet communications with ControlLogix[™], CompactLogix[™], SoftLogix[™], and EtherNet/IP scanners. Its primary use is to read and write I/O data for control purposes.
- Explicit Messaging Used for non-deterministic communications in which the data is not critical for control. Explicit messages have a lower priority compared to I/O messages, and they are used to read and write non-critical data. Logix controllers, MicroLogix 1100 and 1400 controllers support Explicit Messaging using a MSG instruction.
- ControlLogix Style Tags Used for non-deterministic communications in which the data will is used in an HMI, SCADA, or historical data logging software system. Software packages can read and write data directly from the device.

This chapter describes and shows examples of how each type of messaging is used.

I/O Messaging

Note: If you are not using Add-on

profiles, please turn to page 38.

Introduction

RSLogix 5000[™] software is used to configure I/O messaging between an automation controller and an E1 Plus EtherNet/IP Side Mount Module on an EtherNet/IP Network. This example will show the steps necessary to configure a ControlLogix controller for this type of messaging.

ControlLogix Configuration with Add-On Profiles

If you have RSLogix 5000 v. 20.0, the E1 Plus add-on profile (AOP) is included. Proceed with the following instructions. If you do have v. 19 or earlier, download the AOP before proceeding.

An existing project can be used or a new project can be created to configure EtherNet/IP I/O messaging. To create a new configuration in RSLogix 5000, select File \rightarrow New.

1. Select the controller type, chassis type, slot number, and project path. Enter a name for the controller and click OK.

New Controller		×
Vendor:	Allen-Bradley	
Туре:	1756-L1 ControlLogix5550 Controller	OK
Revision:	13 💌	Cancel
	Redundancy Enabled	Help
Name:	CLOGIX5000	
Description:		
	V	
Chassis Type:	1756-A10 10-Slot ControlLogix Chassis	
Slot:	0 Safety Partner Slot:	
Create In:	C:\RSLogix 5000\Projects	Browse

2. Right-click on I/O Configuration and select New Module to open the Select Module Type window.

🕌 RSLogix 5000 - CLOO	GIX5000 [1756-L1]		
File Edit View Search	Logic Communicat	ations Tools Window	Help
		he la	- <u>KKK []</u> <u>P</u>
Offline No Forces	UN L K	- Path:	AB_ETHIP-1\10.10.21.46\Backplane\0*
No Edits 🔒 🗆 1/1	0		I Image Image
Controller CLOGD Controller Tag Controller Tag Controller Fas Power-Up Har Tasks Controller Sas WainTask MainTa	x5000 gs ult Handler ndler ram Programs xxes		
	New Module		
	X Cut	Ctrl+X	
E	Copy	Ctrl+C	
	Paste	Ctrl+V	

Select Module Type		×
Type: 1756-ENET/B		
Туре	Description	
1756-DMA31	1756 SA3100 Drive Interface	•
1756-DMA50	1756 SA500 Drive Interface	
1756-DMB30	1756 SB3000 Drive Interface	
1756-DMD30	1756 SD3000 Drive Interface	
1756-DMF30	1756 SF3000 Drive Interface	_
1756-DNB	1756 DeviceNet Scanner	
1756-ENBT/A	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	
1756-ENET/A	1756 Ethernet Communication Interface	
1756-ENET/B	1756 Ethernet Bridge	
1756-EWEB/A	1756 10/100 Mbps Ethernet Bridge w/Enhanced Web Services	
1756-HSC	1756 High Speed Counter	
1756-HYD02	2 Axis Hydraulic Servo	
1756-IA16	16 Point 79V-132V AC Input	
1756-IA16I	16 Point 79V-132V AC Isolated Input	-
Show		-
Vendor: All	▼ Other ▼ Specialty I/O Select All	
🔽 Analog 🔽 Digit	al 🔽 Communication 🔽 Motion 🔽 Controller Clear All	
	OK Cancel Help	

3. Select the desired EtherNet/IP scanner module and click OK.

4. Enter the desired communication settings and click Finish.

Module Prope	rties - Local:1 (1756-ENET/B 2.1)	×	
Type: Vendor: Parent: Name:	1756-ENET/B 1756 Ethernet Communication Interface Allen-Bradley Local Ethernet Bridge		
Description:	Image: Provide state Image: Pr		
Slot: Revision:	1 Image: Sector in the sector is a sector in the sector in the sector is a sector in the sector in the sector is a sector in the sector in the sector is a sector in the sector in the sector is a sector in the sector in the sector is a sector in the sec		
Cancel < Back Next > Finish >> Help			

EtherNet/IP Network Configuration with Add-On Profiles

After the controller configuration, the E1 Plus EtherNet/IP Side Mount Module has to be added to the I/O configuration.

1. Place the program in Offline mode.

-	0			
🕌 RSLogix 5000 - CLOGIX5000 [1756-L1]*				
File Edit View Se	earch Logic Communications T			
Offline 📑 🗸 🛛	RUN LAL			
No Forces 🛛 🕨 🖕				
No Edits 🔒				

2. Right-click on the Ethernet/IP scanner in I/O Configuration and select New Module to open the Select Module Type window.





lodule	Description	Vendor	
- 1769-L23E-QB1 Ethe	r 10/100 Mbps Ethernet Port on CompactLogix5323E-QB1	Allen-Bradley	
- 1769-L23E-QBFC1 Et	10/100 Mbps Ethernet Port on CompactLogix5323E-QBFC1	Allen-Bradley	
1769-L32E Ethernet P	2 10/100 Mbps Ethernet Port on CompactLogix5332E	Allen-Bradley	
1769-L35E Ethernet P	2 10/100 Mbps Ethernet Port on CompactLogix5335E	Allen-Bradley	
1788-EN2DN/A	1788 Ethernet to DeviceNet Linking Device	Allen-Bradley	
1788-ENBT/A	1788 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	Allen-Bradley	
1788-EWEB/A	1788 10/100 Mbps Ethernet Bridge w/Enhanced Web Servic	Allen-Bradley	
1794-AENT/A	1794 10/100 Mbps Ethernet Adapter, Twisted-Pair Media	Allen-Bradley	
1794-AENT/B	1794 10/100 Mbps Ethernet Adapter, Twisted-Pair Media	Allen-Bradley	
Drivelogix5730 Ether	n 10/100 Mbps Ethernet Port on DriveLogix5730	Allen-Bradley	
E1 Plus	Electronic Overload Relay Communications Interface	Allen-Bradley	
ETHERNET-BRIDGE	Generic EtherNet/IP CIP Bridge	Allen-Bradley	
ETHERNET-MODULE	Generic Ethernet Module	Allen-Bradley	
EtherNet/IP	SoftLogix5800 EtherNet/IP	Allen-Bradley	
PH-PSSCENA/A	Ethernet Adapter, Twisted-Pair Media	Parker Hannifin Corp.	
Digital			
			•
			1
		<u>F</u> ind	Add Favoriti
By Category By Vi	endor Favorites		

4. Enter a name for the E1 Plus EtherNet/IP Side Mount Module. The name will create a tag in RSLogix 5000 that can be used to read and write data from the E1 Plus EtherNet/IP Side Mount Module.

💻 New Module 🔀			
General* Connection Module Info Internet Protocol Port Configuration			
Type: E1 Plus Electronic Overload Relay Communications Interface			
Parent:	Allen-Bradley E1_Plus_Test	Ethernet Address	
Na <u>m</u> e:	E1_Plus_Example	O Private Network: 192.168.1.	
Descri <u>p</u> tion:	~	P Address: 192 . 168 . 10 . 2	
		O Host Name:	
- New Module X General* Connection Module Info Internet Protocol Port Configuration E1 Plus Electronic Overload Relay Communications Interface Type: Allen-Bradlev Vendor: Ethernet Address Parent: E1_Plus_Test E1_Plus_Example OPrivate Network: 192.168.1. Na<u>m</u>e: Description: 192 . 168 . 10 2 • IP Address: OHost Name: Module Definition Series: А Change ... Revision: 1.1 Electronic Keying: Compatible Module Connection: Data All Diagnostic Data Input Data:
- 5. Enter the IP address of the E1 Plus EtherNet/IP Side Mount Module.

- **6.** Click Next.
- 7. The E1 Plus EtherNet/IP Side Mount Module is now shown as a module in the I/O configuration.
- 🗉 😓 Controller E1_Plus_AOP_Test 🧭 Controller Tags 🗀 Controller Fault Handler 🗀 Power-Up Handler 🗄 🔄 Tasks 🗄 🤕 MainTask 🗄 🕞 MainProgram Unscheduled Programs / Phases 🗄 🔄 Motion Groups - Ongrouped Axes Add-On Instructions 😑 😑 Data Types 🖳 🚂 User-Defined 🗄 🚂 Strings 🖙 Add-On-Defined 🗄 🚂 Predefined 🗄 🚂 Module-Defined 🗀 Trends 🗄 🔄 I/O Configuration 🖻 🖅 1756 Backplane, 1756-A10 1756-L60M03SE E1_Plus_AOP_Test ⊨ ¶ [1] 1756-L60M03SE SERCOS LocalSERCOS ᡖ SERCOS Network 🗄 🖞 [2] 1756-ENET/B E1_Plus_Test 🗄 器 Ethernet 1756-ENET/B E1_Plus_Test E1 Plus/A E1_Plus_Example

Accessing Module Data with Add-On Profiles

With both the controller and EtherNet/IP network configured, the ControlLogix controller can exchange data with the E1 Plus EtherNet/IP Side Mount Module. 1. Open the Controller Tags window.



2. Select the Monitor Tags tab.



Three tags, "E1Plus:C", "E1Plus:I" and "E1Plus:O", have been added to represent the three I/O Instances: Configuration, input and output. The Configuration Instance was created even though its size was configured as zero. The E1Plus:I tag represents input data, which is data coming from the E1Plus into the controller (%FLA, %TCU, Trip Status, Warning Status, etc.). The E1 Plus:O tag represents output data, which is data going from the controller out to the E1 Plus (Enable Output A, Trip Reset, etc.).

ControlLogix Generic Configuration

An existing project can be used or a new project can be created to configure EtherNet/IP I/O messaging. To create a new configuration in RSLogix 5000, select File \rightarrow New.

1. Select the controller type, chassis type, slot number, and project path. Enter a name for the controller and click OK.

New Controller		×
Vendor:	Allen-Bradley	
Туре:	1756-L1 ControlLogix5550 Controller 💌 OK	
Revision:	13 T	
	Redundancy Enabled Help	
Name:	CLOGIX5000	
Description:	×	
	<u>_</u>	
Chassis Type:	1756-A10 10-Slot ControlLogix Chassis	
Slot:	0 - Safety Partner Slot:	
Create In:	C:\RSLogix 5000\Projects Browse	

2. Right-click on I/O Configuration and select New Module to open the Select Module Type window.

elect Module Type		×
Type: 1756-ENET/B		
Туре	Description	
1756-DMA31	1756 SA3100 Drive Interface	•
1756-DMA50	1756 SA500 Drive Interface	_
1756-DMB30	1756 SB3000 Drive Interface	
1756-DMD30	1756 SD3000 Drive Interface	
1756-DMF30	1756 SF3000 Drive Interface	
1756-DNB	1756 DeviceNet Scanner	
1756-ENBT/A	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	
1756-ENET/A	1756 Ethernet Communication Interface	
1756-ENET/B	1756 Ethernet Bridge	
1756-EWEB/A	1756 10/100 Mbps Ethernet Bridge w/Enhanced Web Services	
1756-HSC	1756 High Speed Counter	
1756-HYD02	2 Axis Hydraulic Servo	
1756-IA16	16 Point 79V-132V AC Input	
1756-IA16I	16 Point 79V-132V AC Isolated Input	•
Show		-
Vendor: All	🔽 🔽 Other 🔽 Specialty I/O 🛛 Select All	
🔽 Analog 🔽 Digit	al 🔽 Communication 🔽 Motion 🔽 Controller 🛛 🗌 Clear All	
	OK Cancel Help	

3. Select the desired EtherNet/IP scanner module and click OK.

4. Enter the desired communication settings and click Finish.

Module Prope	rties - Local:1 (1756-ENET/B 2.1)	×
Type: Vendor: Parent:	1756-ENET/B 1756 Ethernet Communication Interface Allen-Bradley Local	
Name:	Ethernet_Bridge	
Description:	IP Address: 10 . 10 . 21 . 46	
	C Host Name:	
Slot:		
Revision:	2 1 Electronic Keying: Compatible Module	
	Cancel < Back Next > Finish >> Help	

EtherNet/IP Network Generic Configuration

After the controller configuration, the E1 Plus EtherNet/IP Side Mount Module has to be added to the I/O configuration.

1. Place the program in Offline mode.

🎊 RSLogi	x 5000 - CLOGIX5000 [1756-L1]*	
File Edit	View Search Logic Communications	Т
1		
Offline		J
No Forces		ľ
No Edits		
	0	

2. Right-click on the Ethernet/IP scanner in I/O Configuration and select New Module to open the Select Module Type window.



3. Select Generic Ethernet Module and click OK.

Select Module Type		×
Type: ETHERNET-MODUL	LE	
Type D	escription	
Drivelogix5730 Ethernet 10	D/100 Mbps Ethernet Port on DriveLogix5730	-
EtherNet/IP Sc	oftLogix5800 EtherNet/IP	
ETHERNET-MODULE Ge	eneric Ethernet Module	
ETHERNET-PANELVIEW Et	themet/IP Panelview	
PowerFlex 700 Vector-2I Po	owerFlex 700 Vector Drive (208/240V) via 20-COMM-E	
PowerFlex 700 Vector-4I Po	owerFlex 700 Vector Drive (400/480V) via 20-COMM-E	
PowerFlex 700 Vector-61 Po	owerFlex 700 Vector Drive (600V) via 20-COMM-E	
PowerFlex 700-200V-E Po	owerFlex 700 Drive (208/240V) via 20-COMM-E	
PowerFlex 700-400V-E Po	owerFlex 700 Drive (400/480V) via 20-COMM-E	
PowerFlex 700-600V-E Po	owerFlex 700 Drive (600V) via 20-COMM-E	
PowerFlex 700S-200V-E Po	owerFlex 700S Drive (208/240V) via 20-COMM-E	
PowerFlex 700S-400V-E Po	owerFlex 700S Drive (400/480V) via 20-COMM-E	
PowerFlex 700S-600V-E Po	owerFlex 700S Drive (600V) via 20-COMM-E	-
PowerFlex /U-E Po	owerFlex /U Drive via 2U-CUMM-E	<u>'</u>
Show		
Vendor: All	Other Specialty I/O Select All	
M Analog M Digital	Communication Motion Motion Controller	
	OK Cancel Help	

4. Enter a name for the E1 Plus EtherNet/IP Side Mount Module. The name will create a tag in RSLogix 5000 that can be used to read and write data from the E1 Plus EtherNet/IP Side Mount Module.



5. Select Data-SINT for the Comm Format. The Comm Format tells RSLogix 5000 the format of the data. The Data-SINT format will represent the data from the E1 Plus EtherNet/IP Side Mount Module as a field of 8-bit values.



6. Set the Connection Parameters. I/O data is accessed using Input Instances 50, 51, 106, 110 or 111 and Output Instances 2, 101 or 103. The size of the input connection and the output connection shall correspond to the size of the chosen instance. The E1 Plus configuration assembly instance is 120. In this example configuration data is not used, so the data size is set to 0.

- Connection Par	ameters		
	Assembly Instance:	Size:	
Input	111	22	
Output:	103	1	
Configuration:	120	0	→ (8-bit)
Status Input:			
Status Output			

7. Enter the IP address of the E1 Plus EtherNet/IP Side Mount Module.

Address / Host Name									
IP Address:	1	0		10		21	•	25	
C Host Name:									-

- 8. Click Next.
- 9. Enter a value for the time between each scan of the module. Make sure Inhibit Module is not checked.

Module Properties - Ethernet_Bridge (ETHERNET-MODULE 1.1)	×
Requested Packet Interval (RPI): 10.0 <u>→</u> ms (1.0 - 3200.0 ms)	
Major Fault On Controller If Connection Fails While in Run Mode	
Module Fault	
Cancel < Back Next > Finish >> Help	_

10. Click Finish to add the E1 Plus to the I/O Configuration in RSLogix 5000.

Downloading the Generic Configuration to the PLC

1. In the RSLogix 5000 program, select Communications \rightarrow Who Active.



2. Select the desired communication path and click Set Project Path.



3. Select Communications \rightarrow Go Online.



4. In the Connected To Go Online window, click Download.

Connected To Go Online			×
Options General Date/Tim	e Major Faults Minor Faults Fil	e	
Condition: The open projec	t doesn't match the project in the co	ntroller.	
Connected Controller: Controller Name: Controller Type: Comm Path: Security:	CLOGIX5000 1756-L1/A ControlLogix5550 Cont AB_ETHIP-1\10.10.21.46\Backp <none></none>	troller lane\0	
Offline Project: Controller Name: Controller Type: File: Security:	CLOGIX5000 1756-L1 ControlLogix5550 Control C:\RSLogix 5000\Projects\CLOG <none></none>	ler IX5000.ACD	
	Download Select File	Cancel	Help

5. In the Download confirmation window, click Download to download the configuration to the PLC.

Download		×
1	Download to the controller: Name: CLOGIX5000 Type: 1756-L1/A ControlLogix55 Path: AB_ETHIP-1\10.10.21.46 Security: <none></none>	50 Controller \Backplane\0
	Download Cancel	Help

If there are any errors, a warning triangle will be present on the E1 Plus in the I/O configuration listing.

Double-click the module to view any error that is reported.

Accessing Generic Module Data

With both the controller and EtherNet/IP network configured, the ControlLogix controller can exchange data with the E1 Plus EtherNet/IP Side Mount Module.

1. Go online and switch the controller to Remote Run mode.

🎊 R	SLogi	x 5000) - CLOG	IX5000) [1756-L1]*	
File	Edit	View	Search	Logic	Communications	Т
1	2		3 X			
Rem	Run	0	📕 🗖 Ru	in Mode	REM	J
No F	orces	•		ntroller (ок 🌱	Ī
No E	dits	2		ttery UK I AK		
				. 011	0	

2. Open the Controller Tags window.

⊡				
	Controller Tags			
îm	Controller Fault Handler			
L	Power-Up Handler			

3. Select the Monitor Tags tab.

Controller Tags - CLOGIX5000(controller)						
Scope: CLOGIX5000(contro 💌 Show:	Show All 💽 So <u>r</u> t: Tag Name	•				
Tag Name 🛆	Value 🗲	Force Mask 🛛 🗲	Style 🔺			
-E1Plus:C	{}	{}				
-E1Plus:I	{}	{}				
-E1Plus:I.Data	{}	{}	Decimal			
	0		Decimal			
	0		Decimal			
	0		Decimal			
	0		Decimal			
⊕-E1Plus:I.Data[4]	0		Decimal			
	0		Decimal			
	0		Decimal			
⊕-E1Plus:I.Data[7]	0		Decimal			
	0		Decimal			
	0		Decimal			
	0		Decimal			
	0		Decimal			
E1Plus:I.Data[12]	4		Decimal			
E1Plus:I.Data[13]	0		Decimal			
	4		Decimal			
	0		Decimal			
E1Plus:I.Data[16]	2		Decimal			
E1Plus:I.Data[17]	0		Decimal			
E1Plus:I.Data[18]	2		Decimal			
E1Plus:I.Data[19] E1Plus:I.Data[19]	0		Decimal			
	2		Decimal			
	0		Decimal			
E1Plus:0	{}	{}				
▶ E1Plus:0.Data	{}	{}	Decimal			
E1Plus:0.Data[0]	0		Decimal			
Monitor Tage (Edit Tage /	() Mapitar Tara (Edit Tara /					

Three tags, "E1Plus:C", "E1Plus:I" and "E1Plus:O", have been added to represent the three I/O Instances: Configuration, input and output. The Configuration Instance was created even though its size was configured as zero. The E1Plus:I tag represents input data, which is data coming from the E1Plus into the controller (%FLA, %TCU, Trip Status, Warning Status, etc.). The E1 Plus:O tag represents output data, which is data going from the controller out to the E1 Plus (Enable Output A, Trip Reset, etc.).

Logix Explicit Messaging

CompactLogix, ControlLogix, and SoftLogix controllers can read and write specific information to and from the E1 Plus EtherNet/IP Side Mount Module using Explicit Messaging and the Parameter Object. An example of configuring a ControlLogix explicit message using the MSG instruction to read the Device Status parameter data from the E1 Plus EtherNet/IP Side Mount Module is shown below.

- 1. Configure the configuration tab for the message instruction with the follow settings:
 - Message type: CIP Generic
 - Service type: Parameter Read
 - Instance: 10: The parameter you want to read back (e.g., 10 represents device status)
 - Destination: The controller tag to write the data to.

Message Configuration - E1_Plus_Read_Me	ssage 🔀
Configuration [*] Communication Tag	,
Message Type: CIP Generic	•
Service Parameter Read 🗨	Source Element:
Service e (Hex) Class: f (Hex)	Destination Plus_Read_Data[0] -
Instance: 10 Attribute: 1 (Hex)	New Tag
🔘 Enable 🔾 Enable Waiting 🔵 Start	Done Done Length: 22
Error Code: Extended Error Code: Error Path: Error Text:	Γ Timed Out 🗲
ОК	Cancel Apply Help

2. Configure the path field in the communications tab to point to the E1 Plus EtherNet/IP Side Mount Module.

Path: 1, 2, 2, 192.168.0.100

For this example, **1** represents the processor slot, **2** represents the EtherNet/IP scanner slot, **2** represents the EtherNet/IP port, and **192.168.0.100** represents the IP address of the E1 Plus EtherNet/IP Side Mount Module.

Nessage Configuration - E1_Plus_Read_Message	X
Configuration Communication* Tag	
Path: 1, 2, 2, 192.168.0.100	Browse
Communication Method CIP C DH+ Channel: Destination Link: CIP With Source ID Source Link: D Destination Node:	0 <u>*</u> 0 <u>*</u> (Octal)
Connected Cache Connections	
Enable Enable Waiting Start Dore Dor Error Code: Extended Error Code: Error Path: Error Text:	he Length: 22 Timed Out ←
OK Cancel	Apply Help

Users can read all of the motor diagnostic data back in one MSG instruction by using Assembly Instance 111. An example of configuring a ControlLogix explicit message using the MSG instruction to read all of the motor diagnostic data from the E1 Plus EtherNet/IP Side Mount Module is shown below.

- 1. Configure the configuration tab for the message instruction with the follow settings:
 - Message type: CIP Generic
 - Service type: Get Attribute Single
 - Class: 4 the Assembly Object
 - Instance: 111 the Complete Motor Starter assembly
 - Destination: The controller tag to write the data to.
 - Attribute: 3 get/set data instance attribute

Message Configuration - E1_Plus_Read_Mes	isage 🔀
Configuration Communication Tag	_
Service Get Attribute Single	Source Element:
	Source Length: 0 + (Bytes)
Code: e (Hex) Class: 4 (Hex)	Destination E1_Plus_Read_Data -
Instance: 111 Attribute: 3 (Hex)	New Tag
🔘 Enable 🔵 Enable Waiting 🔵 Start	Done Done Length: 22
Error Code: Extended Error Code: Error Path: Error Text:	Γ Timed Out 🗢
OK	Cancel Apply Help

2. Configure the path field in the communications tab to point to the E1 Plus EtherNet/IP Side Mount Module.

Path: 1, 2, 2, 192.168.0.100

For this example, **1** represents the processor slot, **2** represents the EtherNet/IP scanner slot, **2** represents the EtherNet/IP port, and **192.168.0.100** represents the IP address of the E1 Plus EtherNet/IP Side Mount Module.

 Message Configuration - E1_Plus_Read_M	essage 🛛 🗙
Configuration Communication*] Tag	
Path: [1, 2, 2, 192,168.0.100]	Browse
Communication Method CIP C DH+ Channel: CIP With Source Link: 0	Destination Link:
🔽 Connected 🕅 Cache C	ionnections 🔶
Enable Enable Waiting Start Eutended Ever Cade	Done Done Length: 22 Timed Out 6
Error Lode: Extended Error Lode: Error Path: Error Text:	
OK	Cancel Apply Help

MicroLogix 1100 and 1400 Explicit Messaging

MicroLogix 1100 and 1400 controllers can read and write information to and from the E1 Plus EtherNet/IP Side Mount Module using Explicit Messaging and the Assembly Object. RSLogix 500 Version 8.10 or higher is required to configure EtherNet/IP explicit messaging with these controllers.

An example of a MicroLogix 1100 using the MSG instruction to read all of the motor diagnostic data from the E1 Plus EtherNet/IP Side Mount Module is shown below.

1. Write the appropriate ladder logic to periodically execute a MSG instruction for the MicroLogix controller.

谿 LAD	2	
E _{IH} E _N	1 % © X 3 8	
0000	Periodic Timer to Read Data from El Plus EthenNet/IP Module T4.0 DN	Periodic Timer to Read Data from El Pas EtherNet/IP Module Toner T40 Timer T40 Timer T40 Timer T40 Timer Base 0.01 Preset 100× Accum 75×
0001	Periodic Times to Read Data from EL Plus EthenNet/IP Module 3 C DN	Read Motor Status Input Average ReadWrite Mesage MSG File MG90 Setup Screen <

- **2.** Configure General tab in the MSG instruction with the following parameters:
 - Channel: 1 (Integral) the Ethernet port on the processor
 - Communication Command: CIP Generic
 - Data Table Address: the location to store the information
 - Size in Bytes: 22 assembly 111 consists of 22 bytes of information
 - MultiHop: Yes
 - Service: Read Assembly to read an input assembly

- Class: 4 the Assembly Object
- Instance: 111 the Complete Motor Starter assembly
- Attribute: 3 get/set data instance attribute

🕿 MSG - MG9:0 : (1 Elements)	
General MultiHop Send Data Receive Data	
This Controller Channet: [1 (Integral) Communication Command: [CIP Generic Data Table Address (Receive): [N7:0 Size in Bytes (Receive): [22] (Send): [N/A]	Control Bits Ignore if timed out (TO): Break Connection (BK): Awaiting Execution (EW): Error (ER):
Target Device Message Timeout : 33	Message done (DN): 1 Message Transmitting (ST): 0 Message Enabled (EN): 0
Local / Remote : Local MultiHop: Yes Extended Routing Info File(RIX): RDX10:0 Service: Read Assembly. Service Code (hex): E Class (hex): 4 (dec): 4 Instance (hex): 6F (dec): 111 Attribute (hex): 3 (dec): 3	Error Error Code(Hex): 0
Error Description No errors	

3. Configure MultiHop tab in the MSG instruction with the following parameters:

To Address: the IP address of the E1 Plus EtherNet/IP Side Mount Module.

General MultiHop Send Data Receive Data	
Ins = Add Hop Del = Remove Hop	
From Device From Port To Address Type To Address	
This MicroLogix Channel 1 EtherNet/IP Device (str:) 192.168.0.100	

An example of a MicroLogix 1100 using the MSG instruction to write data to energize an output relay on the E1 Plus EtherNet/IP Side Mount Module is shown below.

1. Write the appropriate ladder logic to execute a MSG instruction for the MicroLogix controller (an EEM instruction for the SLC-5/05) to control the E1 Plus EtherNet/IP Side Mount Module.



- 2. Configure General tab in the MSG instruction with the following parameters:
 - Channel: 1 (Integral) the Ethernet port on the processor
 - Communication Command: CIP Generic
 - Data Table Address: the location to write the information from
 - Size in Bytes: 1 assembly 101 consists of 1 byte of information
 - MultiHop: Yes
 - Service: Write Assembly to write an output assembly
 - Class: 4 the Assembly Object
 - Instance: 101 the Basic Contact output assembly
 - Attribute: 3 get/set data instance attribute

🔀 MSG - MG9:1 : (1 Elements)	
General MultiHop Send Data Receive Data This Controller Channet: [Integral] Channet: [Integral] [Integral] Communication Command: [CIP Generic Size in Bytes (Receive): [N/A] [Send]: Target Device	Control Bits Ignore if timed out (TO): [] Break Connection (BK): [] Awaiting Execution (EW): [] Error (ER): [] Message done (DN): []
Message Timeout : 33 Local / Remote : Local MultiHop: Yes Extended Routing Info File(RIX): RiX10:1 Service: Write Assembly Service Code (hex): 10 Class (hex): 4 (dec): 4 Instance (hex): 65 (dec): 101 Attribute (hex): 3 (dec): 3	Message Transmitting (ST): [] Message Enabled (EN): [] Error Error Code(Hex): 0
Error Description No errors	

3. Configure the MultiHop tab in the MSG instruction with the following parameters:

To Address: the IP address of the E1 Plus EtherNet/IP Side Mount Module.

🖹 MSG	- MG9:1 : (1 Elements)			
Genera	al [MultiHop] Send Data Rei	ceive Data		
	Ins = Add Hop		Del = Remove Hop	
	From Device	From Port	To Address Type	To Address
	This MicroLogix	Channel 1	EtherNet/IP Device (str.)	192.168.0.100
	<			

FactoryTalk View with Predefined Tags

The E1 Plus EtherNet/IP Side Mount Module embedded predefined CIP tags within the module. This allows software packages, such as FactoryTalk View Supervisory Edition (SE), to read and write data directly from the E1 Plus EtherNet/IP Side Mount Module. An example of using RSLinx Classic as an OPC (OLE for Process Control) server to serve data to FactoryTalk View SE is show below. Follow these steps to read data directly from the E1 Plus EtherNet/ IP Side Mount Module using its predefined tags. 1. Configure an OPC topic within RSLinx Classic to communicate to the E1 Plus EtherNet/IP Side Mount Module. In the Data Source tab, select *New* to create a new OPC topic name, high light the device to establish communications with, and press *Apply*.



2. In the Data Collection tab, select the process type *Logix5000* and select *Apply*





3. Start FactoryTalk View Studio and create a new application. Draw a numeric display. Right click on the display and select *Connections*.

4. Select the Tag selector tool +++ to select a tag from the E1 Plus EtherNet/IP Side Mount Module.

N	NumericDisplay Properties					
	Connections	Com	nmon			
	Name		Tag / Expression	Tag	Exprn	
	Value	←		•••	•••	

5. Right click on the project name and select *Refresh All Folders* to get an updated list of topics to read data from.

🗳 Tag Browser	
Select Tag	
Folders	
E1 Plus EtherNetIP Demo	
	Refresh Folder
	Refresh All Folders
	Show Server Names
	New HMI Tag Folder

6. Expand the OPC topic name that you created in RSLinx Classic, select the *Online* folder, choose the tag you would like to display in the numeric display, and press *OK*.

🔮 Tag Browser		? 🗙
Select Tag Folders EtherNetIP Demo EtherNetIP Offline Online system	Contents of 1/::EtherNetIP/Unline' Name Description % %_Therm_Utilized % Average_%FLA % Device_Status:In_1 % Device_Status:In_2 % Device_Status:In_2 % Device_Status:In_1 % Device_Status:In_2 % Device_Status:In_1 % Device_Status:In_2 % Devic	
	OL_Reset_Mode OL_Warning_Level	~

7. Select *OK* to select the tag to display in the numeric display.

lumericDis	play	Properties		×
Connections	Con	nmon		
Name	Ĺ	Tag / Expression	Tag Ex	prn
Value	+	{[EtherNetIP]Average_%FLA}	•••	••

- 8. Test the display by pressing the Test Run button to view data directly from the E1 Plus EtherNet/IP Side Mount Module on the display.

Email Notifications

Introduction

This chapter describes email notifications and how to configure an E1 Plus EtherNet/IP module to send email notifications for different events.

Notification Events

There are several events that can trigger an email notification; the events are listed below.

- Overload trip
- Phase loss trip
- Jam trip
- Trip clear
- Overload warning
- Jam warning
- Underload warning
- Communication fault warning
- Communication idle warning
- EEPROM fault warning
- Warning clear

IMPORTANT If an event has been disabled within the Control Supervisor Attribute 108 or 109 (see page <u>90</u>), it is not possible to override this and have emails generated.

Email Contents

The subject and body contents in the email message will be created from the type of trip or warning that is detected, the Device Name, Device Description, Device Location and Contact Info. Sample email messages are shown here:

Email Subject

E1Plus module has detected a trip

Email Body

Trip status:	Overload
Device Name:	E1 Plus EtherNet/IP Side Mount Module
Device Description:	Module under development
Device Location:	The Location
Contact Info:	Contact Person contact.person@thecontact.com

The first word in the subject is the Device Name. If a Device Name is not configured, then the product name attribute from the identity object will be used.

Email Configuration

To be able to send an email, the IP address or the hostname of a Simple Mail Transfer Protocol (SMTP) server must be configured and notifications must be selected. Follow these steps to configure an email notification.

1. In a web browser, enter the IP address of the E1 Plus EtherNet/IP module in the address bar and press Enter.



2. Select Administrative Settings → email Configuration, and a login window will appear.



3. Log in with the username "Administrator" and no password. If desired, a password can be set within the Administrative Settings tab *Password Configuration*.

Allen-Bradley E1	Plus EtherNet/IP	Rockwell Automation
Expand Minimize Home Parameters Diagnostics Administrative Settings Device Identity Network Configuration E-mail Configuration Password Configuration EDS File	Device Identity Network Configuration E-mail Configuration Password Configuration E-mail Notification E-mail Recipient Image: Configuration E-mail Sender Image: Configuration Image: Configuration SMTP Server Image: Configuration Image: Configuration SMTP Username Image: Configuration Image: Configuration SMTP Password Image: Configuration Image: Configuration SMTP Port 25 Image: Configuration	

4. Enter the information into the email notification fields as described below.

Email Recipient	The email address of the person who will receive the notifications.
Email Sender	The email address from which the notification will be sent.
SMTP Server	The SMTP server address. Ask your network administration what address to use.
SMTP Username	The username for the SMTP server. Ask your network administration what username to use.
SMTP Password	The password for the SMTP server. Ask your network administration what password to use.
SMTP Port	The SMTP Server Port. Ask your network administration what port number to use (Port 25 is a common SMTP port).

5. Select the specific fault and warning notifications to send to the email recipient. These can be changed after the initial configuration.

Faults:	Warnings:
Overload	Overload
Phase Loss	Jam
Jam	Underload
	Communication Fault
	Communication Idle
	EEPROM Fault
Apply Changes	

6. Click "Apply Changes" to save the configuration.

Configure Device Identity

The Device Identity properties populate the notification email subject and body. To configure the Device Identity, perform these steps: 1. In a web browser, enter the IP address of the E1 Plus EtherNet/IP module in the address bar and press Enter.



2. Select Administrative Settings \rightarrow Device Identity and a login window will appear.



3. Log in with the username "Administrator" and no password. If desired, a password can be set within the Administrative Settings tab *Password Configuration*.

Allen-Bradley E1 Plus Et	herNet/IP	Rockwe Automatio
Expand Minimize Device Ide Home Parameters Diagnostics Name and Device N Daignostics Device Identity Device Identity Device Identity Network Configuration Device Identity Password Configuration Device Identity Contact Identity E-mail Configuration Evice Identity Device Identity Desword Configuration Education Device Identity EDS File Contact Identity Contact Identity	Initity Network Configuration E-mail Contact Information ame escription Info Changes 2008 Rockwell Automation, Inc. All Right	Configuration Password Configuration
	Device Name	The name of the E1 Plus EtherNet/IP module.
	Device Description	The description of the E1 Plus EtherNet/IP module.

Device Location Contact Info

4. Enter the Device Identity information into the fields as described below.

5. Click "Apply Changes" to save the configuration.

Limitations

Based on the functionality of the E1 Plus EtherNet/IP module there are some limitations on when emails can be triggered.

The location of the E1 Plus EtherNet/IP module.

Contact information for the E1 Plus EtherNet/IP module.

- If two events occur at the same time, an email will only be sent for the most significant event.
- If the module has been configured to send an email for a lower prioritized event and this event occurs at the same time as a higher prioritized event for which the module has not been programmed to send an email, no email will be sent for either event.
- The Clear email will only be sent when all events have been cleared and an event email has previously been sent. For example: if the module is configured to send an email when a jam trip is detected and it detects an overload trip for which no email notification is configured, no email will be sent when the overload event is cleared.

Chapter 5

Device Parameters and Tags

Introduction

The E1 Plus EtherNet/IP Side Mount Module allows the Parameter Object to respond to explicit messages using the MSG instruction from Logix Controllers and SLC-500/MicroLogix controllers. The module also supports the Symbolic Object, which allows software packages such FactoryTalk View to communicate directly to the E1 Plus EtherNet/IP Side Mount Module as if it were a Logix Controller with predefined tags. This chapter describes each parameter and tag.

Parameter and Tag Programming

Refer to Chapter 3, *Configure an E1 Plus EtherNet/IP Module To Operate on the Network*, for instructions to modify EtherNet/IP parameter settings.

IMPORTANT Parameter setting changes to the E1 Plus EtherNet/IP Module take effect immediately even during a "running" status.

Program Lock

Parameter 24, *Program Lock*, provides a degree of security from having parameter settings unintentionally altered when programmed to the "locked" setting.

Resetting to the Factory Default Values

Parameter 25, *Set to Default*, allows the installer to reset all parameter settings (including trip logs) to the factory default values.

IMPORTANT Resetting to factory default values also resets the E1 Plus EtherNet/IP Module's IP and DHCP settings.

Parameter Group Listing

The E1 Plus EtherNet/IP Module contains five parameter groups

Table 6 - Parameter Groups

Monitor parameters	Advanced Setup	Reset/Lock	I/O Setup	Trip History
1 Average %FLA	12 Trip Enable	14 Trip Reset	34 OutA Pr FltState	5 Trip Log O
2%Therm Utilized	13 Warning Enable	24 Program Lock	35 OutA Pr FltValue	6 Trip Log 1
3 Trip Status	15 Single/Three Ph	25 Set to Default	36 OutA En FltState	7 Trip Log 2
4 Warning Status	16 OL Reset Mode		37 OutA En FltValue	8 Trip Log 3
10 Device Status	17 OL Warning Level		38 OutA En IdlState	9 Trip Log 4
	18 Jam Inhibit Time		39 OutA En IdlValue	
	19 Jam Trip Delay		40 IN1 Assignment	
	20 Jam Trip Level		41 IN2 Assignment	
	21 Jam Warn Level			
	22 UL Inhibit Time			
	23 UL Warn Level			

Monitor Group

Average %FLA	Parameter No.	1		
This parameter reports the average motor current.	Access Rule	Get		
rated current (dial setting on the E1 Plus Overload	Data Type	UINT		
Kelay), and is reported in increments of 5.	Units	%		
	Min. Value	0		
	Max. Value	1275		
	Default Value	0		
	Tag Name	Average_%FLA		
% Therm Utilized	Parameter No.	2		
% Therm Utilized	Parameter No.	2		
% Therm Utilized This parameter reports the percent thermal utilization of the connected motor	Parameter No. Access Rule	2 Get		
% Therm Utilized This parameter reports the percent thermal utilization of the connected motor.	Parameter No. Access Rule Data Type	2 Get USINT		
% Therm Utilized This parameter reports the percent thermal utilization of the connected motor.	Parameter No.Access RuleData TypeUnits	2 Get USINT %		
% Therm Utilized This parameter reports the percent thermal utilization of the connected motor.	Parameter No.Access RuleData TypeUnitsMin. Value	2 Get USINT % 0		
% Therm Utilized This parameter reports the percent thermal utilization of the connected motor.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. Value	2 Get USINT % 0 100		
% Therm Utilized This parameter reports the percent thermal utilization of the connected motor.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault Value	2 Get USINT % 0 100 None		

Trip Status	Parar	neter No.	3		
This parameter provides trip identification.	Acces	Access Rule		Get	
1 = Trip 0 = No Trip		Data Type		WORD	
Bit 0: Overload — Tag Name: Trip_Status: Overload	Units		—		
Bit 1: Phase Loss — Tag Name: Trip_Status: Phase_Loss		Min. Value		0x0000	
	Max. Value		0x0007		
	Defau	lt Value	0x0000		
Warning Status		Parameter No.		4	
This parameter provides warning identification		Access Rule		Get	
1 = Warning 0 = No Warning Bit 0: Overload — Tag Name: Warning_Status: Overload Bit 2: Jam — Tag Name: Warning_Status: Jam Bit 3: Underload — Tag Name: Warning_Status: Underload Bit 5: Comm Fault — Tag Name: Warning_Status: Comm_Fault Bit 6: Comm Idle — Tag Name: Warning_Status: Comm_Idle Bit 7: Non Vol Mem Fault — Tag Name: NV_Mem_Fault		Data Type		WORD	
		Units		—	
		Min. Value		0x0000	
		Max. Value		0x00FF	
		Default Valu	е	0x0000	
Device Status		Paramete No.	r	10	
This parameter provides status information related to the E1 Plus	8	Access Rul	е	Get	
Uverload Relay and the SMM. 1 = On or Present 0 = Off or Not Present Pit 0: Trin Tag Name: Davide Status: Trin		Data Type		WORD	
		Units		_	
Bit 1: Warning — Tag Name: Device_Status: Warning		Min. Value		0x0000	
Bit 2: Output A — Tag Name: Device_Status: Out_A Bit 3: Input #1 — Tag Name: Device_Status: In_1		Max. Value	1	0x003F	
Bit 4: Input #2 — Tag Name: Device_Status: In_2 Bit 5: Motor Current — Tag Name: Device_Status: Motor_Current		Default Value		0x0000	

Advanced Setup Group

Trip Enable	Parameter No.	12
This parameter allows the installer to enable or disciple the lam Trip function	Access Rule	Get/Set
1 = Enabled 0 = Disabled Bit 2: Jam— Tag Name: Trip_Enable: Jam	Data Type	WORD
	Units	—
	Min. Value	0x0000
	Max. Value	0x0007
	Default Value	0x0000

Warning Enable		Parameter No.	13
This parameter allows the installer to enable or disable the warning functions separately. All warning functions are disabled from the		Access Rule	Get/Set
factory.		Data Type	WORD
1 = Enabled Ω = Disabled		Units	—
Bit 0: Overload — Tag Name: Warning_Status: Overload		Min. Value	0x0000
Bit 2: Jam — Tag Name: Warning_Status: Jam Bit 3: Underload — Tag Name: Warning_Status: U	nderload	Max. Value	0x007F
Bit 5: Comm Fault — Tag Name: Warning_Status: 0 Bit 6: Comm Idle — Tag Name: Warning_Status: C	Comm_Fault omm_Idle	Default Value	0x0000
Single/Three Ph	Parameter No.	15	
This parameter configures the EtherNet/IP	Access Rule	Get/Set	
Module for single- or three-phase application. This parameter should be set to "Single Phase"	Data Type	BOOL	
when Bulletin 193S or 592S devices are employed.	Units	—	
0 = Single Phase	Min. Value	0	
I = IIIIee Fliase	Max. Value	1	
	Default Value	1	
	Tag Name	Single_Three_F	'n
OL Reset Mode	Parameter No.	16	
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting	Parameter No. Access Rule	16 Get/Set	
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SNM is resurred. Note here use that the E1	Parameter No. Access Rule Data Type	16 Get/Set BOOL	
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SMM is powered. Note, however, that the E1 Plus manual reset button, accessible at the front,	Parameter No. Access Rule Data Type Units	16 Get/Set BOOL	
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SMM is powered. Note, however, that the E1 Plus manual reset button, accessible at the front, is always active. $\Omega = Manual$	Parameter No.Access RuleData TypeUnitsMin. Value	16 Get/Set BOOL 0	
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SMM is powered. Note, however, that the E1 Plus manual reset button, accessible at the front, is always active. 0 = Manual 1 = Automatic	Parameter No.Access RuleData TypeUnitsMin. ValueMax. Value	16 Get/Set BOOL 0 1	
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SMM is powered. Note, however, that the E1 Plus manual reset button, accessible at the front, is always active. 0 = Manual 1 = Automatic	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault Value	16 Get/Set BOOL 0 1 0	
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SMM is powered. Note, however, that the E1 Plus manual reset button, accessible at the front, is always active. 0 = Manual 1 = Automatic	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag Name	16 Get/Set BOOL 0 1 0 0. 0. 0. 0. 0. 0. 0.	e
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SMM is powered. Note, however, that the E1 Plus manual reset button, accessible at the front, is always active. 0 = Manual 1 = Automatic OL Warning Level	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.	16 Get/Set BOOL 0 1 0 0L_Reset_Mod 17	e
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SMM is powered. Note, however, that the E1 Plus manual reset button, accessible at the front, is always active. 0 = Manual 1 = Automatic OL Warning Level This parameter sets the overload warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access Rule	16 Get/Set BOOL 0 1 0 0L_Reset_Mod 17 Get/Set	e
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SMM is powered. Note, however, that the E1 Plus manual reset button, accessible at the front, is always active. 0 = Manual 1 = Automatic OL Warning Level This parameter sets the overload warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData Type	16 Get/Set BOOL 0 1 0 0L_Reset_Mod 17 Get/Set USINT	e
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SMM is powered. Note, however, that the E1 Plus manual reset button, accessible at the front, is always active. 0 = Manual 1 = Automatic OL Warning Level This parameter sets the overload warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData TypeUnits	16 Get/Set BOOL 0 1 0 0L_Reset_Mod 17 Get/Set USINT % TCU	e
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SMM is powered. Note, however, that the E1 Plus manual reset button, accessible at the front, is always active. 0 = Manual 1 = Automatic OL Warning Level This parameter sets the overload warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData TypeUnitsMin. Value	16 Get/Set BOOL 0 1 0 0L_Reset_Mod 17 Get/Set USINT % TCU 0	e
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SMM is powered. Note, however, that the E1 Plus manual reset button, accessible at the front, is always active. 0 = Manual 1 = Automatic OL Warning Level This parameter sets the overload warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData TypeUnitsMin. ValueMax. Value	16 Get/Set BOOL 0 1 0 OL_Reset_Mod 17 Get/Set USINT % TCU 0 100	e
OL Reset Mode This parameter defines whether a trip can be automatically or manually reset. This setting overrides the E1 Plus DIP switch adjustment while the SMM is powered. Note, however, that the E1 Plus manual reset button, accessible at the front, is always active. 0 = Manual 1 = Automatic OL Warning Level This parameter sets the overload warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData TypeUnitsMin. ValueMax. ValueData TypeUnitsMin. ValueDefault ValueDefault Value	16 Get/Set BOOL 0 1 0 0L_Reset_Mod 17 Get/Set USINT % TCU 0 100 90	e

Jam Inhibit Time	Parameter No.	18
This parameter defines the amount of time for which iam detection is inhibited during a motor	Access Rule	Get/Set
starting sequence.	Data Type	USINT
	Units	Seconds
	Min. Value	0
	Max. Value	250
	Default Value	10
	Tag Name	Jam_Inhibit_Time
Jam Trip Delay	Parameter No.	19
This parameter allows the installer to program a	Access Rule	Get/Set
at the programmed level prior to the device	Data Type	USINT
tripping.	Units	Seconds
	Min. Value	5
	Max. Value	250
	Default Value	50
	Tag Name	Jam_Trip_Delay
Jam Trip Level	Parameter No.	20
Jam Trip Level This parameter sets the jam trip level.	Parameter No. Access Rule	20 Get/Set
Jam Trip Level This parameter sets the jam trip level.	Parameter No. Access Rule Data Type	20 Get/Set UINT
Jam Trip Level This parameter sets the jam trip level.	Parameter No. Access Rule Data Type Units	20 Get/Set UINT % FLA
Jam Trip Level This parameter sets the jam trip level.	Parameter No. Access Rule Data Type Units Min. Value	20 Get/Set UINT % FLA 150
Jam Trip Level This parameter sets the jam trip level.	Parameter No. Access Rule Data Type Units Min. Value Max. Value	20 Get/Set UINT % FLA 150 600
Jam Trip Level This parameter sets the jam trip level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault Value	20 Get/Set UINT % FLA 150 600 250
Jam Trip Level This parameter sets the jam trip level.	Parameter No. Access Rule Data Type Units Min. Value Max. Value Default Value Tag Name	20 Get/Set UINT % FLA 150 600 250 Jam_Trip_Level
Jam Trip Level This parameter sets the jam trip level. Jam Warn Level	Parameter No. Access Rule Data Type Units Min. Value Max. Value Default Value Tag Name Parameter No.	20 Get/Set UINT % FLA 150 600 250 Jam_Trip_Level 21
Jam Trip Level This parameter sets the jam trip level. Jam Warn Level This parameter sets the jam warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access Rule	20 Get/Set UINT % FLA 150 600 250 Jam_Trip_Level 21 Get/Set
Jam Trip Level This parameter sets the jam trip level. Jam Warn Level This parameter sets the jam warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData Type	20 Get/Set UINT % FLA 150 600 250 Jam_Trip_Level 21 Get/Set UINT
Jam Trip Level This parameter sets the jam trip level. Jam Warn Level This parameter sets the jam warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData TypeUnits	20 Get/Set UINT % FLA 150 600 250 Jam_Trip_Level 21 Get/Set UINT % FLA
Jam Trip Level This parameter sets the jam trip level. Jam Warn Level This parameter sets the jam warning level.	Parameter No. Access Rule Data Type Units Min. Value Max. Value Default Value Tag Name Parameter No. Access Rule Data Type Units	20 Get/Set UINT % FLA 150 600 250 Jam_Trip_Level 21 Get/Set UINT % FLA 100
Jam Trip Level This parameter sets the jam trip level. Jam Warn Level This parameter sets the jam warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData TypeUnitsMin. ValueMax. Value	20 Get/Set UINT % FLA 150 600 250 Jam_Trip_Level 21 Get/Set UINT % FLA 100 600
Jam Trip Level This parameter sets the jam trip level. Jam Warn Level This parameter sets the jam warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData TypeUnitsMin. ValueMax. ValueData TypeUnitsMin. ValueMax. ValueDefault Value	20 Get/Set UINT % FLA 150 600 250 Jam_Trip_Level 21 Get/Set UINT % FLA 100 600 150
Jam Trip Level This parameter sets the jam trip level. Jam Warn Level This parameter sets the jam warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag Name	20 Get/Set UINT % FLA 150 600 250 Jam_Trip_Level 21 Get/Set UINT % FLA 100 600 150 Jam_Warn_Level

UL Inhibit Time	Parameter No.	22
This parameter defines the amount of time for	Access Rule	Get/Set
which underload detection is inhibited during a motor starting sequence.	Data Type	USINT
	Units	Seconds
	Min. Value	0
	Max. Value	250
	Default Value	10
	Tag Name	UL_Inhibit_Time
UL Warn Level	Parameter No.	23
UL Warn Level This parameter sets the underload warning level.	Parameter No. Access Rule	23 Get/Set
UL Warn Level This parameter sets the underload warning level.	Parameter No. Access Rule Data Type	23 Get/Set USINT
UL Warn Level This parameter sets the underload warning level.	Parameter No. Access Rule Data Type Units	23 Get/Set USINT % FLA
UL Warn Level This parameter sets the underload warning level.	Parameter No. Access Rule Data Type Units Min. Value	23 Get/Set USINT % FLA 30
UL Warn Level This parameter sets the underload warning level.	Parameter No. Access Rule Data Type Units Min. Value Max. Value	23 Get/Set USINT % FLA 30 100
UL Warn Level This parameter sets the underload warning level.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault Value	23 Get/Set USINT % FLA 30 100 70

Reset/Lock Group

Trip Reset	Parameter No.	14
This parameter provides the user with the	Access Rule	Get/Set
network. After a trip is reset, the parameter	Data Type	BOOL
automatically returns to a "Heady" state.	Units	—
1 = Reset Trip	Min. Value	0
Note: A transition from U to 1 is necessary to trigger a trip reset when mapped on the cyclic	Max. Value	1
data.	Default Value	0
	Tag Name	Trip_Reset
Program Lock	Parameter No.	24
Program Lock	Parameter No.	24
Program Lock This parameter prohibits the device parameters from being altered when set to "Locked". It must	Parameter No. Access Rule	24 Get/Set
Program Lock This parameter prohibits the device parameters from being altered when set to "Locked". It must be set to "Unlocked" to allow parameter	Parameter No. Access Rule Data Type	24 Get/Set BOOL
Program Lock This parameter prohibits the device parameters from being altered when set to "Locked". It must be set to "Unlocked" to allow parameter modification. It doesn't affect parameters when they're	Parameter No.Access RuleData TypeUnits	24 Get/Set BOOL —
Program Lock This parameter prohibits the device parameters from being altered when set to "Locked". It must be set to "Unlocked" to allow parameter modification. It doesn't affect parameters when they're accessed through the assembly object.	Parameter No. Access Rule Data Type Units Min. Value	24 Get/Set BOOL — 0
Program Lock This parameter prohibits the device parameters from being altered when set to "Locked". It must be set to "Unlocked" to allow parameter modification. It doesn't affect parameters when they're accessed through the assembly object. 0 = Unlocked 1 = Locked	Parameter No.Access RuleData TypeUnitsMin. ValueMax. Value	24 Get/Set BOOL 0 1
Program Lock This parameter prohibits the device parameters from being altered when set to "Locked". It must be set to "Unlocked" to allow parameter modification. It doesn't affect parameters when they're accessed through the assembly object. 0 = Unlocked 1 = Locked	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault Value	24 Get/Set BOOL

Set To Defaults	Parameter No.	25
This parameter allows the user to reset the	Access Rule	Get/Set
After parameter values have been reset to the	Data Type	BOOL
factory default settings, the parameter automatically returns to a "Ready" state.	Units	—
0 = Ready	Min. Value	0
Note: A transition from 0 to 1 is necessary to	Max. Value	1
trigger a set to default when mapped on the cyclic data.	Default Value	0
	Tag Name	Set_To_Default

I/O Setup Group

OutA Pr FltState	Parameter No.	34
This parameter, in conjunction with the Pr	Access Rule	Get/Set
a trip occurs. When set to "1", Output A will	Data Type	BOOL
continue to operate as commanded via the network. When set to "0", Output A will open or	Units	—
close as determined by the setting of the Pr FltValue.	Min. Value	0
0 = Go to FltValue	Max. Value	1
I = Ignore Fault	Default Value	0
	Tag Name	OutA_Pr_FLTState
OutA Pr FitValue	Parameter No.	35
This parameter determines the state that Output A	Access Rule	Get/Set
set to "0".	Data Type	BOOL
0 = Open 1 = Closed	Units	—
	Min. Value	0
	Max. Value	1
	Default Value	0
	Tag Name	OutA_Pr_FLTValue
OutA En FltState	Parameter No.	36
This parameter, in conjunction with the FltValue,	Access Rule	Get/Set
EtherNet/IP network fault occurs. When set to	Data Type	BOOL
"1", Output A will hold the state prior to trip occurrence. When set to "0", Output A will open	Units	—
or close as determined by the setting of the EltValue	Min. Value	0
0 = Go to FltValue	Max. Value	1
I = HUIU LASI SIALE	Default Value	0
	Tag Name	OutA_En_FLTState

OutA En FltValue	Parameter No.	37
This parameter determines the state that Output A	Access Rule	Get/Set
assumes when a EtherNet/IP network fault occurs and the FltState is set to "0".	Data Type	BOOL
0 = Open 1 = Closed	Units	—
1 - 010304	Min. Value	0
	Max. Value	1
	Default Value	0
	Tag Name	OutA_En_FLTValue
OutA En IdIState	Parameter No.	38
This parameter, in conjunction with the IdlState,	Access Rule	Get/Set
EtherNet/IP network is idle (clear mode). When	Data Type	BOOL
set to "1", Output A will hold the state prior to trip occurrence. When set to "0", Output A will open	Units	—
or close. The En Flt parameters supersede the En	Min. Value	0
0 = Go to IdIValue	Max. Value	1
1 = Hold Last State	Default Value	0
	Tag Name	OutA_En_IdlState
OutA En IdlValue	Parameter No.	39
OutA En IdlValue This parameter determines the state that Output A	Parameter No. Access Rule	39 Get/Set
OutA En IdIValue This parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter.	Parameter No. Access Rule Data Type	39 Get/Set BOOL
OutA En IdIValue This parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter. 0 = Open 1 = Closed	Parameter No. Access Rule Data Type Units	39 Get/Set BOOL —
OutA En IdIValueThis parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter.0 = Open 1 = Closed	Parameter No. Access Rule Data Type Units Min. Value	39 Get/Set BOOL 0
OutA En IdIValue This parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter. 0 = Open 1 = Closed	Parameter No.Access RuleData TypeUnitsMin. ValueMax. Value	39 Get/Set BOOL 0 1
OutA En IdIValue This parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter. 0 = Open 1 = Closed	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault Value	39 Get/Set BOOL 0 1 0
OutA En IdIValue This parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter. 0 = Open 1 = Closed	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag Name	39 Get/Set BOOL 0 1 0 0 0 0utA_En_IdlValue
OutA En IdIValue This parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter. 0 = Open 1 = Closed IN1 Assignment	Parameter No. Access Rule Data Type Units Min. Value Max. Value Default Value Tag Name Parameter No.	39 Get/Set BOOL 0 1 0 OutA_En_IdlValue
OutA En IdIValue This parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter. 0 = Open 1 = Closed IN1 Assignment This parameter allows the user to assign a	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access Rule	39 Get/Set BOOL 0 1 0 0utA_En_IdIValue 40 Get/Set
OutA En IdIValue This parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter. 0 = Open 1 = Closed IN1 Assignment This parameter allows the user to assign a specific function to the discrete IN1 input. 0 = Normal	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData Type	39 Get/Set BOOL 0 1 0 OutA_En_IdIValue 40 Get/Set USINT
OutA En IdIValue This parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter. 0 = Open 1 = Closed INI Assignment This parameter allows the user to assign a specific function to the discrete IN1 input. 0 = Normal 1 = Trip Reset 2 = OI Contact	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData TypeUnits	39 Get/Set BOOL 0 1 0 OutA_En_IdIValue 40 Get/Set USINT
OutA En IdIValue This parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter. 0 = Open 1 = Closed IMI Assignment This parameter allows the user to assign a specific function to the discrete IN1 input. 0 = Normal 1 = Trip Reset 2 = OL Contact	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData TypeUnitsMin. Value	39 Get/Set BOOL 0 1 0 0utA_En_IdIValue 40 Get/Set USINT 0
OutA En IdIValue This parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter. 0 = Open 1 = Closed IMI Assignment This parameter allows the user to assign a specific function to the discrete IN1 input. 0 = Normal 1 = Trip Reset 2 = OL Contact	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData TypeUnitsMin. ValueMax. Value	39 Get/Set BOOL 0 1 0 OutA_En_IdIValue 40 Get/Set USINT 0 2
OutA En IdIValue This parameter determines the state that Output A assumes when the network is idle and instructed by the IdIState parameter. 0 = Open 1 = Closed INI Assignment This parameter allows the user to assign a specific function to the discrete IN1 input. 0 = Normal 1 = Trip Reset 2 = OL Contact	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault ValueTag NameParameter No.Access RuleData TypeUnitsMin. ValueMax. ValueData TypeUnitsMin. ValueDefault ValueDefault Value	39 Get/Set BOOL 0 1 0 0utA_En_IdIValue 40 Get/Set USINT 0 2 0

IN2 Assignment	Parameter No.	41
This parameter allows the user to assign a	Access Rule	Get/Set
0 = Normal	Data Type	USINT
1 = Trip Reset 2 = OL Contact	Units	—
	Min. Value	0
	Max. Value	2
	Default Value	0
	Tag Name	IN2_Assignment

Trip History Group

Trip Log 0	Parameter No.	5
This parameter records the latest trip.	Access Rule	Get
	Data Type	WORD
	Units	—
	Min. Value	0x0000
	Max. Value	0x0007
	Default Value	0x0000
	Tag Name	Trip_Log_0
Trip Log 1	Parameter No.	6
This parameter records the trip previous to Trip	Access Rule	Get
Log U.	Data Type	WORD
	Units	—
	Min. Value	0x0000
	Max. Value	0x0007
	Default Value	0x0000
	Tag Name	Trip_Log_1
Trip Log 2	Parameter No.	7
This parameter records the trip previous to Trip	Access Rule	Get
Log I.	Data Type	WORD
	Units	—
	Min. Value	0x0000
	Max. Value	0x0007
	Default Value	0x0000
	Tag Name	Trip_Log_2

Trip Log 3	Parameter No.	8
This parameter records the trip previous to Trip	Access Rule	Get
Log Z.	Data Type	WORD
	Units	—
	Min. Value	0x0000
	Max. Value	0x0007
	Default Value	0x0000
	Tag Name	Trip_Log_3
Trip Log 4 This parameter records the trip previous to Trip	Parameter No.	9
Trip Log 4 This parameter records the trip previous to Trip	Parameter No. Access Rule	9 Get
Trip Log 4 This parameter records the trip previous to Trip Log 3.	Parameter No.Access RuleData Type	9 Get WORD
Trip Log 4 This parameter records the trip previous to Trip Log 3.	Parameter No.Access RuleData TypeUnits	9 Get WORD
Trip Log 4 This parameter records the trip previous to Trip Log 3.	Parameter No.Access RuleData TypeUnitsMin. Value	9 Get WORD 0x0000
Trip Log 4 This parameter records the trip previous to Trip Log 3.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. Value	9 Get WORD 0x0000 0x0007
Trip Log 4 This parameter records the trip previous to Trip Log 3.	Parameter No.Access RuleData TypeUnitsMin. ValueMax. ValueDefault Value	9 Get WORD 0x0000 0x0007 0x0000
Troubleshooting

Introduction

The purpose of this chapter is to assist in troubleshooting the E1 Plus EtherNet/ IP module.



ATTENTION: Servicing energized industrial control equipment can be hazardous. Electrical shock, burns, or unintentional actuation of controlled industrial equipment may cause death or serious injury. For safety of maintenance personnel, as well as other who may be exposed to electrical hazards associated with the maintenance activities, follow the local safety-related work practices (for example, the NFPS 70W, Part II, *Electrical Safety for Employee Workplaces*, in the United States) when working on or near energized equipment. maintenance personnel must be trained in the safety practices, procedures, and requirements that pertain to their respective job assignments. Do not work alone on energized equipment.



ATTENTION: Do not attempt to defeat or override fault circuits. The cause of a fault indication must be determined and corrected before attempting operation. Failure to correct a control system or mechanical malfunction may result in personal injury and/or equipment damage due to uncontrolled machine system operation.

EtherNet/IP Modes of Operation

The E1 Plus EtherNet/IP Module has four EtherNet/IP modes of operation: Power-Up Reset Mode, Run Mode, Recoverable Error Mode, and Unrecoverable Error Mode.

Power-Up Reset Mode

During Power-Up Reset Mode, the following occurs:

1. The *MODULE STATUS* LED should flash green for approximately 1/4 second, then red for 1/4 second. The *MODULE STATUS* LED will then stay lit green and the *NETWORK STATUS* LED should flash green for approximately 1/4 second, then red for 1/4 second before turning off. The *NETWORK STATUS* LED and the *MODULE STATUS* LED will now return to their standard indication.

IMPORTANT	The E1 Plus EtherNet/IP Module protection functions are still		
	operational even without an established network connection.		

2. The E1 Plus EtherNet/IP Module performs a duplicate IP address check to verify another module is not assigned to the same IP address. If a duplicate IP address is detected on the network, the *NETWORK STATUS* LED turns solid red, the *MODULE STATUS* LED turns flashing red, and the E1 Plus EtherNet/IP Module enters the *Recoverable Error Mode*.

If the power-up or reset is successful, the overload relay will enter Run Mode.

Run Mode

In *Run Mode*, the E1 Plus EtherNet/IP Module will operate as a slave device to a master device. The *NETWORK STATUS* LED will blink green if there are no network connections established with a network master. When one or more connections are in the "established" state, the *NETWORK STATUS* LED will turn solid green. When one or more connections are in the "timed-out" state, the *NETWORK STATUS* LED will blink red. In the *Run Mode*, the E1 Plus EtherNet/IP Module will:

- Accept messages from a master on the EtherNet/IP network.
- Send response messages, COS messages, or CYCLIC messages to a master.

If a communication error is detected, the E1 Plus EtherNet/IP Module will either enter the *Recoverable Error* or *Unrecoverable Error Mode*.

Recoverable Error Mode

In *Recoverable Error Mode*, the E1 Plus EtherNet/IP Module's *MODULE STATUS* LED turns flashing red. The overload relays will respond to messages that are specified in offline node recovery message protocol.

Error Type	Description	LED State
Recoverable	Duplicate IP address detected	Flashing Red

Unrecoverable Error Mode

In *Unrecoverable Error Mode*, the E1 Plus EtherNet/IP Module's *MODULE STATUS* LED turns solid red. The overload relay continues in this state as long as the device is powered.

Error Type	Description	LED State
Unrecoverable	Power-up initialization failure	Solid Red
	Fatal communication error	

EtherNet/IP Troubleshooting Procedures

The following table identifies possible causes and corrective actions when troubleshooting EtherNet/IP-related failures using the *NETWORK STATUS* LED.

Table 7 - EtherNet/IP Troubleshooting Procedures

Color	State	Possible Cause	Corrective Action
None		The E1 Plus EtherNet/IP Module is not receiving power at the EtherNet/IP connector.	Check EtherNet/IP power and cable connections and the power connection on the EtherNet/IP connector.
Green Red Off	Flashing (once)	Normal	The Network Status LED flashes green, red, and off once during a normal power-up sequence.
Green	Flashing	E1 Plus EtherNet/IP Module is online but with no connections established.	Check EtherNet/IP master and its scan list for correct scanner configuration.
Green	Solid	Normal operating state, and the E1 Plus EtherNet/IP Module is allocated to a master.	No action required.
Red	Flashing	One or more connections timed-out.	Reset EtherNet/IP master device.
Red	Solid	 Diagnostics test failed on power-up/reset. Internal fault exists. Duplicate EtherNet/IP module address exists (two EtherNet/IP modules cannot have the same address). A fatal communication error occurred. 	 Cycle power to the unit and network. If the fault still exists, replace unit. Change the IP address to a valid setting and reset the device. Check EtherNet/IP media for proper installation.

Input and Output Troubleshooting Procedures



ATTENTION: If the outputs are to be commanded via an explicit message, ensure that there can never be an established I/O connection that can actively control them, and that the explicit message connection has a non-zero expected packet rate (EPR) setting.

Table 8 - Input and Output Troubleshooting Procedures

Failure Type	Failure Description	Corrective Action
Input 1, 2	Input 1 or 2 does not appear to recognize a contact closure	 Check the supply voltage on the power connector. If the applicable contact closed but the E1 Plus EtherNet/IP Module Input does not recognize the closure, check the continuity and wiring to the connected contact. Check the IN 1 and 2 status LEDs. If the appropriate LED does not illuminate, measure the voltage across and current through the applicable input. Verify they are within the ratings of the E1 Plus EtherNet/IP Module (See Appendix A). If the appropriate Input LED does illuminate, but the input status is not reported properly over the EtherNet/IP network, check the programmable controller ladder logic and I/O mapping.
Input 1, 2	Trip reset operation	Check the programming of Parameter 40, IN1 Assignment or Parameter 41, IN2 Assignment.
OUT A	Output A does not appear to turn on (close) when commanded to do so.	 Check the supply voltage on the power connector. Check the OUTA status LED. If the appropriate LED does not illuminate, check the programmable controller ladder logic and I/O mapping. If the appropriate Output LED is illuminated, remove the control circuit power and check for continuity across the appropriate output terminals (13/14). If the continuity test indicates the output is open, replace the E1 Plus EtherNet/IP Module. Check the supply voltage against the ratings of the contactor and the relay output before installing a new unit. Remove control circuit power and check the control circuit fuse and the control wiring to the E1 Plus EtherNet/IP Module output terminals. Check the control circuit power supply. Verify the voltage is within the contactor and overload relay ratings. Check the <i>DEVICE STATUS</i> and <i>TRIP STATUS</i> parameters. If a Protection Fault exists, refer to the <i>TRIP STATUS</i> parameters. If a EtherNet/IP-related fault exists, refer to the <i>EtherNet/IP</i> troubleshooting procedure. Check the OUTA Pr FltState, Pr FltValue, En FltValue, En FltValue, En IdlState, and En IdlValue programmable parameters. The Pr FltState and Pr FltValue parameter supersede the En Flt or En Idle parameters.
OUT A	Output A does not appear to turn off (open) when commanded to do so.	 Check the OUTA status LED. If the appropriate LED remains illuminated, check the programmable controller ladder logic and I/O mapping. If the appropriate Output LED is not illuminated, remove the control circuit power and check for continuity across the appropriate output terminals (13/14). If the continuity test indicates the output is closed, replace the E1 Plus EtherNet/IP Module. Check the supply voltage against ratings of the contractor and the relay output before installing a new unit. Remove control circuit power and check the control circuit fuse and the control wiring to the E1 Plus EtherNet/IP Module. Check the OUTA Pr FltState, Pr FltValue, En FltValue, En FltValue, En IdlState, and En IdlValue programmable parameters. Then check the <i>DEVICE STATUS</i> and <i>TRIP STATUS</i> parameters. If a Protection Fault exists, refer to the <i>TRIP STATUS</i> parameters. If a EtherNet/IP-related fault exists, refer to the <i>EtherNet</i> troubleshooting procedure.
OUT A	The contactor connected to Output A appears to "chatter"	 Verify the OUT A LED remains in the appropriate On or Off state. If the LED is flickering, check the programmable controller's ladder logic program. Check the control circuit supply voltage. Verify it is within the ratings of the contactor coil and the overload relay's outputs. Remove the control circuit power. Verify all control wiring is properly secured.

Specifications

Specifications

Terminal Ratings:		
Terminal Screw	M3	
Wire Cross Section	See wiring diagram section	
Torque	0.56…0.79 N • m (5…7 lbin)	
Degree of Protection	IP20	
Power Supply Ratings:		
Rated Supply Voltage U_s	24V DC	
Rated Operating Range U _e	24V -15%, +10% DC	
Rated Supply Current Ie	110 mA at 24V DC	
Maximum Surge Current at Power-Up	2.5 A	
Maximum Power Consumption	2.7 W	
Output Relay Ratings:		
Terminals OUT A:	13/14	
Type of Contacts	Form A SPST - NO	
Rated Thermal Current I _{the}	5 A	
Rated Insulation Voltage U _i	300V AC	
Rated Operating Voltage U _e	240V AC	
Rated Operating Current I_e	3 A (at 120V AC), 1.5 A (at 240V AC) 0.25 A (at 110V DC), 0.1 A (at 220V DC)	
Minimum Operating Current	10 mA at 5V DC	
Rating Designation	B300	
Utilization Category	AC-15	
Resistive Load Rating (p.f.=1.0)	5 A, 250V DC 5 A, 30V DC	
Inductive Load Rating (p.f.=0.4), (L/R=7 ms)	2 A, 250V AC 2 A, 30V DC	
Short Circuit Current Rating	1,000 A	
Recommended Control Circuit Fuse	KTK-R-6 (6 A, 600V)	
Rated Number of Operations Out A: W/100-C-09100-C43 W/100-C-60100-C85 W/NEMA Size 02 W/NEMA Size 3	5,000,000 2,500,000 1,000,000 300,000	
mpar naringo.		

Terminals IN 1:	1
IN 2: SSV (Sensor Supply Voltage)	23
Supply Voltage (provided by module)	24V DC±10%
Type of Inputs	Current Sinking
ON-State Voltage	15V DC
On-State Current (turn-on)	2 mA
Steady State Current	5 mA
Off-State Voltage	5V DC
Off-State Current	0.5 mA
Transition Voltage	515V DC
Transition Current	0.52.0 mA
Environmental Ratings:	
Ambient Temperature T _{amb} Storage	-40+85°C (-40+185°F)
(Open) (Enclosed)	-20+60°C (-4+140°F) -20+40°C (-4+104°F)
Humidity Operating Damp Heat - Steady State Damp Heat - Cyclic	595% non-condensing per IEC 68-2-3 per IEC 68-2-30
Cooling Method	Natural Convection
Vibration (per IEC 68-2-6)	3 G
Shock (per IEC 68-2-27)	30 G
Maximum Altitude	2000 m
Pollution Environment	Pollution Degree 2
Terminal Marking	EN 50012
Degree of Protection	IP20
Electromagnetic Compatibility	
Electrostatic Discharge Immunity Test Level Performance Criteria	8 kV Air Discharge; 4 kV Contact Discharge
RF Immunity Test Level Performance Criteria	10V/m 1 00
Electrical Fast Transient/Burst Immunity Test Level Performance Criteria	2 kV (Power); 1 kV (control) 1 0 ❷
Surge Immunity Test Level Performance Criteria	2 kV L-E; 1 kV L-L 1 0 2
Radiated Emissions	Class A
Conducted Emissions	Not tested

• Performance Criteria 1 requires the DUT (device under test) not to experience degradation or loss of performance.

Environment 2 - Heavy Industrial.

measures.				
EtherNet/IP Communications:				
Connections TCP CIP	150 48			
CIP Unconnected Messages	128			
Packet Rates (packets/second) I/O HIM/MSG	500 500			
Media Support Twisted Pair Fiber	Yes No			
Speed Duplex (Half/Full)	10/100			
Duplicate IP Detection	Yes			
Jam Protection:				
Trip Level	150600% FLA			
Trip Delay	0.125.0 sec.			
Inhibit	0250 sec.			
Standards and Certifications				
UL 508				
CSA 22.2, No. 14				
EN 60947-4-1				

WARNING: This is a class A product. In domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Appendix A

EtherNet/IP Information

Electronic Data Sheets

Electronic Data Sheet (EDS) files are specially formatted ASCII files that provide all of the information necessary for a configuration tool (e.g., RSNetWorx for EtherNet/IP) to access and alter the parameters of a device. The EDS file contains all the parameter information of a device: number of parameters, groupings, parameter name, min., max, and default values, units, data format and scaling. The EDS file for the E1 Plus EtherNet/IP Module is available from the Internet at <u>www.ab.com/networks/eds/index/html</u>. It can also be built automatically by some configuration tools since all of the information necessary for an EDS file may be extracted from the E1 Plus EtherNet/IP Module.

EtherNet/IP Objects

The following object classes are supported.

Table 9 - EtherNet object Classes

Class	Object
0x01	Identity
0x02	Message Router
0x04	Assembly
0x06	Connection Manager
0x08	Discrete Input Point
0x09	Discrete Output Point
0x0F	Parameter
0x10	Parameter Group
0x29	Control Supervisor
0x2C	Overload
0xC2	РСР
0xF5	TCP/IP Interface
0xF6	Ethernet Link

Identity Object — CLASS CODE 0x01

The following class attributes are supported for the Identity Object:

Table 10 -	Identity	Object	Class	Attributes
------------	----------	--------	-------	------------

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	UINT	0x0001

Identity Object instances contain the following instance attributes:

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Vendor ID	UINT	Programmable via test object
2	Get	Device Type	UINT	0x0003
3	Get	Product Code	UINT	300
4	Get	Revision	Structure of:	
		Major Revision	USINT	1
		Minor Revision	USINT	N/A
5	Get	Status	WORD	Bit 0: Owned, shall be set when at least one connection i configured Bit 1: Reserved, set to 0 Bit 2: Configured Bit 3: Reserved, set to 0 Bit 4-7: See extended device status Bit 8: Minor Recoverable fault Bit 9: Minor Unrecoverable fault Bit 10: Major Recoverable fault Bit 11: Major Unrecoverable fault Bit 12-15: Reserved, set to 0 Extended device status (Bit 4-7) 0000=Unknown 0001=Firmware updated in progress 0010=Faulted I/O connection 0011=No I/O connection established 0100=Non volatile configuration bad 0101=Major fault 0110=Connection in run mode 0111=Connection in idle mode
6	Get	Serial Number	UDINT	Unique number assigned for each device
7	Get	Product Name	SHORT_STRING	Product name
8	Get	State	USINT	3=Operational

Table 11 - Identity Object Instance Attributes

The following common services are implemented for the Identity Object:

Table 12 -	Identity	Object	Common	Services
------------	----------	--------	--------	----------

Service Code	Implemented for:		Service Name
	Class	Instance	
0x01	No	Yes	Get Attribute All
0x0E	Yes	Yes	Get Attribute Single
0x05	No	Yes	Reset

Message Router Object — CLASS CODE 0x02

No class or instance attributes are supported. The message router object exists only to rout explicit messages to other objects.

Assembly Object — CLASS CODE 0x04

The following class attributes are supported for the Assembly Object:

Table 13 - Assembly Object Class Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	UINT	0x0002
2	Get	Max Instance	UINT	120

Instance Attributes

Instances/Connection points implements the following data attributes:

Table 14 - Instance Attributes

#	Access	Name	Туре	Value	Description
1	Get	Number of members in list	UINT	N/A	No. of members to follow in the list in attribute #2
2	Get	Member list	Array of	N/A	Array of CIP paths
3	Get/Set	Data	Array of UINT	—	Data produced/consumed by the module
4	Get	Size	UINT	N/A	No. of USINTs in attribute #3
100	Get	Name	SHORT_STRING	N/A	Name of the assembly instance

Output Assemblies

The following output assembly instances are implemented:

Table 15 - Instance 2 — Basic Overload Output Assembly from ODVA Profile

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0						Trip Reset		

 Table 16 - Instance 101 — Similar to Basic Contact Output Assembly from ODVA

 Contact Profile

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0								Output A

Table 17 - Instance 103 — Similar to Basic Starter Output Assembly from ODVA Starter Profile

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0						Trip Reset		Output A

Input Assemblies

Table 18 - Instance 50 — Trip Status Input Assembly from ODVA Overload Profile

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0								Tripped

Table 19 - Instance 51 — Basic Status Input Assembly from ODVA Overload Profile

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0							Warning	Tripped

Table 20 - Instance 106 — Motor Starter Input Assembly

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Motor Current		Input 2	Input 1		Out A Stat	Warning	Tripped

Table 21 - Instance 110 — Extended Motor Starter Input Assembly

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0		
0	Motor Current		Input 2	Input 1		Out A Stat	Warning	Tripped		
1	Unused	Unused								
2	Average	Average % FLA (low byte)								
3	Average	% FLA (hig	h byte)							
4	%Therm	%Therm Utilized (low byte)								
5	%Therm	%Therm Utilized (high byte)								

Table 22 - Instance 111 — Complete Motor Starter Input Assembly

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0			
0	Motor Current		Input 2	Input 1		Out A Stat	Warning	Tripped			
1	Unused	•		•	•						
2	Average	Average % FLA (low byte)									
3	Average	% FLA (hi	gh byte)								
4	%Therm	Utilized (I	ow byte)								
5	%Therm	Utilized (h	igh byte)								
6	Trip Stat	us (low by	te)								
7	Trip Stat	us (high by	/te)								
8	Warning	Status (lo	w byte)								
9	Warning	Status (hi	gh byte)								
10	Device S	Status (low	byte)								
11	Device S	Status (higł	n byte)								
12	Trip Log 0 (low byte)										
13	Trip Log	0 (high byt	e)								
14	Trip Log 1 (low byte)										
15	Trip Log	1 (high byt	e)								

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
16	Trip Log 2	2 (low byte)						
17	Trip Log 2	2 (high byte)					
18	Trip Log 3	3 (low byte)						
19	Trip Log 3	3 (high byte)					
20	Trip Log 4	4 (low byte)						
21	Trip Log 4	4 (high byte)					

Table 22 - Instance 111 — Complete Motor Starter Input Assembly

The following services are implemented for the Assembly Object:

Table 23 - EtherNet Object Common Services

Service	Implemented	l for:	Service Name	
Coue	Class	Instance Consuming	Instance Producing	
0x0E	Yes	Yes	Yes	Get Attribute Single
0x10	No	Yes	No	Set Attribute Single

Connection Manager Object — CLASS CODE 0x06

No class or instance attributes are supported.

The following common service are implemented for the Connection Manager Object:

Table 24 -	Connection	Manager	Object	Common	Services

Service Code	Implemented for:	Service Name	
	Class	Instance	
0x54	No	Yes	Forward Open
0x4E	No	Yes	Forward Close

Discrete Input Point Object — CLASS CODE 0x08

The following class attributes are supported for the Discrete Input Point Object:

Table 25 - Discrete Input Point Object Class Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	UINT	0x0002
2	Get	Max Instance	UINT	0x0002

Two instances of the Discrete Input Point Object are supported as follows:

Table 26 - Discrete Input Point Object Instances

Attribute ID	Access Rule	Name	Data Type	Value
3	Get	Value	BOOL	0=0FF 1=0N

The following common services are implemented for the Discrete Input Point Object:

Table 27 - Discrete Input Object Common Services

Service Code	Implemented for:		Service Name
Coue	Class	Instance	
0x0E	Yes	Yes	Get Attribute Single

Discrete Output Point Object — CLASS CODE 0x09

The following class attributes are supported for the Discrete Output point Object:

Table 28 - Discrete Output Point Object Class Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	UINT	0x0001
2	Get	Max Instance	UINT	0x0001

A single instance is implemented and contains the following attributes:

Table 29 - Discrete Output Point Object Instance 1 - Output A

Attribute ID	Access Rule	Name	Data Type	Value
3	Get	Value	BOOL	0=0FF 1=0N
5	Get/Set	Fault Action	BOOL	0=Fault Value Attribute 1=Hold Last State
6	Get/Set	Fault Value	BOOL	0=0FF 1=0N
7	Get/Set	Idle Action	BOOL	0=Fault Value Attribute 1=Hold Last State
8	Get/Set	Idle Value	BOOL	0=0FF 1=0N
113	Get/Set	Pr Fault Action	BOOL	0=Pr Fault Value Attribute 1=Ignore
114	Get/Set	Pr Fault Value	BOOL	0=0FF 1=0N

The following common services are implemented for the Discrete Output Point Object:

Table 30 - Discrete Output Object Common Services

Service Code	Implemented for:		Service Name
Coue	Class	Instance	
0x0E	Yes	Yes	Get Attribute Single
0x10	No	Yes	Set Attribute Single

Parameter Object — CLASS CODE 0x0F

The following class attributes are supported for the Parameter Object:

Table 31 - Parameter Object Class Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	UINT	0x0001
2	Get	Max Instance	UINT	0x0029
8	Get	Parameter Class Descriptor	WORD	0x000B
9	Get	Configuration Assembly Instance	UINT	0x0078
10	Get	Native Language	UINT	0x01=English

The following instance attributes are implemented for all parameter attributes:

Table 32 - Parameter Obiect Instance Attri	ibutes
--	--------

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Value	Specified in Descriptor	N/A
2	Get	Link Path Size	USINT	N/A
3	Get	Link Path	Packed EPATH:	Path to specified object attribute
4	Get	Descriptor	WORD	Parameter Dependent
5	Get	Data Type	EPATH	Parameter Dependent
6	Get	Data Size	USINT	Parameter Dependent
7	Get	Parameter Name String	SHORT_STRING	Parameter Dependent
8	Get	Units String	SHORT_STRING	Parameter Dependent
9	Get	Help String	SHORT_STRING	Parameter Dependent
10	Get	Minimum Value	Specified in Descriptor	Parameter Dependent
11	Get	Maximum Value	Specified in Descriptor	Parameter Dependent
12	Get	Default Value	Specified in Descriptor	Parameter Dependent
13	Get	Scaling Multiplier	UINT	1
14	Get	Scaling Divisor	UINT	1
15	Get	Scaling Base	UINT	1
16	Get	Scaling Offset	INT	0

Attribute ID	Access Rule	Name	Data Type	Value
17	Get	Multiplier Link	UINT	0
18	Get	Divisor Link	UINT	0
19	Get	Base Link	UINT	0
20	Get	Offset Link	UINT	0
21	Get	Decimal Precision	USINT	Parameter Dependent

Table 32 - Parameter Object Instance Attributes

The following commons services are implemented for the Parameter Object:

Table 33 - Parameter Object Common Services

Service	Implemented	for:	Service Name
coue	Class	Instance	
0x01	No	Yes	Get Attribute All
0x0E	Yes	Yes	Get Attribute Single
0x10	No	Yes	Set Attribute Single
0x4B	No	Yes	Get Enum String

Parameter Group Object — CLASS CODE 0x10

The following class attributes are supported for the Parameter Group Object:

Table 34 - Parameter Group Object Class Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	UINT	0x0001
2	Get	Max Instance	UINT	0x0005
8	Get	Native Language	USINT	0x01=English

The following parameter group objects are supported:

- Instance 1 = Monitor Parameters
- Instance 2 = Trip History
- Instance 3 = Reset/Lock
- Instance 4 = Advanced Setup
- Instance 5 = I/O Setup

The following instance attributes are supported for all parameter group instances:

Table 35 - Parameter Group Object Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Group Name String	SHORT_STRING	N/A
2	Get	Number of Members	UINT	N/A
3	Get	1st Parameter	UINT	N/A
4	Get	2nd parameter	UINT	N/A
n	Get	Nth Parameter	UINT	N/A

The following common services are implemented for the Parameter Group Object:

Table 36 - Parameter Group Object Common Services

Service Implemented for:		for:	Service Name
Code	Class	Instance	
0x0E	Yes	Yes	Get Attribute Single

Control Supervisor Object — CLASS CODE 0x29

No class attributes are supported for the Control Supervisor Object. A single instance (instance 1) of the Control Supervisor Object is supported. The following instance attributes are supported.

Table 37 - Control Supervisor Object Instance 1 Attributes

Attribute ID	Access Rule	Name	Data Type	Value
10	Get	Faulted	BOOL	0=No Fault present 1= Fault Latched
11	Get	Warning	BOOL	0=No Warnings present 1=Warning present (not latched)
12	Get/Set	Fault Rst	BOOL	0=No action 0->1=Fault reset
13	Get	FaultCode	UINT	If in Faulted state, FaultCode indicates the fault that caused the transition to Faulted state. If not in Faulted state, FaultCode indicates the fault that caused the last transition to the Faulted state.
14	Get	Warning Code	UINT	Code word indicating warning present. If multiple warnings are present, the lowest code value is displayed.
100	Get	Trip Status	WORD	Bit 0=Overload Bit 1=Phase Loss Bit 2=Jam Bit 3-Bit 15=Not used

Attribute ID	Access Rule	Name	Data Type	Value
101	Get	Warning Status	WORD	Bit 0=Overload Bit 1=Not Used Bit 2=Jam Bit 3=Underload Bit 4=Not Used Blt 5=Comm Fault Bit 6=Comm Idle Bit 7=Non Vol Mem Fault Bit 8-Bit 15=Not used
102	Get	Trip Log O	WORD	Last trip condition. Bit definitions of the value are the same as attribute 101
103	Get	Trip Log 1	WORD	Last trip condition. Bit definitions of the value are the same as attribute 101
104	Get	Trip Log 2	WORD	Last trip condition. Bit definitions of the value are the same as attribute 101
105	Get	Trip Log 3	WORD	Last trip condition. Bit definitions of the value are the same as attribute 101
106	Get	Trip Log 4	WORD	Last trip condition. Bit definitions of the value are the same as attribute 101
107	Get	Device Status	WORD	Bit 0=Trip Bit 1=Warning Bit 2=OutputA Bit 3=Input 1 Bit 4=Input 2 Bit 5=Motor Current Bit 6-Bit 15=Not used
108	Get/Set	Trip Enable	WORD	Bit 0=Not Used Bit 1=Not Used Bit 2=Jam Bit 3-Bit 15=Not Used
109	Get/Set	Warning Enable	WORD	Bit 0=Overload Bit 1=Not Used Bit 2=Jam Bit 3=Underload Bit 4=Not Used BIt 5=Comm Fault Bit 6=Comm Idle Bit 7-Bit 15=Not Used
110	Get/Set	OL Reset Mode	BOOL 0=Manual 1=Automatic	
111	Get/Set	IN1 Assignment	USINT	0=Normal 1=Trip Reset 2=OL Contact
112	Get/Set	IN2 Assignment	USINT	0=Normal 1=Trip Reset 2=OL Contact

Table 37 - Control Supervisor Object Instance 1 Attributes

The following common services are implemented for the Control Supervisor Object:

Tat	ble	38	3 - (Control	Su	perv	isor	Ob	ject (Common	Servi	ices
-----	-----	----	-------	---------	----	------	------	----	--------	--------	-------	------

Service	Implemented	for:	Service Name
Coae	Class	Instance	
0x0E	No	Yes	Get Attribute Single
0x10	No	Yes	Set Attribute Single
0x05	No	Yes	Reset

Overload Object — CLASS CODE 0x2C

No class attributes are supported for the Overload Object. A single instance (instance 1) of the Overload Object is supported:

Attribute ID	Access Rule	Name	Data Type	Value
7	Get	% Thermal Utilized	USINT	xxx% FLA
108	Get	Average % FLA	UINT	01000%FLA
109	Get	% Thermal Utilized	USINT	0100%
127	Get/Set	Single/Three Phase	BOOL	0=Single Phase 1=Three Phase
132	Get/Set	OL Warn Level	USINT	0100% TCU
141	Get/Set	Jam Inhibit Time	USINT	0250 s
142	Get/Set	Jam Trip Delay	USINT	0.525.0 s
143	Get/Set	Jam Trip Level	UINT	150600%FLA
144	Get/Set	Jam Warn Level	UINT	100600%FLA
145	Get/Set	UL Inhibit Time	USINT	0250 s
148	Get/Set	UL Warn Level	USINT	30100%FLA

Table 39 - Overload Object Instance Attributes

The following common services are implemented for the Overload Object:

Table 40 - Overload Object Common Services

Service Code	Implemented	for:	Service Name
Code	Class	Instance	
0x0E	No	Yes	Get Attribute Single
0x10	No	Yes	Set Attribute Single

PCP Object — CLASS CODE 0xC2

The following class attributes are supported for the PCP Object:

Table B.1 PCP Object Class Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	UINT	1

The following instance attributes are implemented for all parameter attributes:

 Table 41 - PCP Object Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	MCC Number	USINT	0-255
2	Get/Set	Vertical Section Number	USINT	0-255
3	Get/Set	Starting Section Letter	USINT	0-255
4	Get/Set	Space Factors	USINT	0-0x3F
5	Get/Set	Cabinet Width	USINT	0-255
6	Get/Set	Controlled Device	USINT	0-255
7	Get	Number of Device Inputs	USINT	2
8	Get/Set	Devices Connected at Inputs	Array of USINT	
9	Get	Number of Device Outputs	USINT	1
10	Get/Set	Devices Connected at Outputs	Array of USINT	

The following common services are implemented for the PCP Object:

Service	Implemented for:		Service Name
Coue	Class	Instance	
0x01	No	Yes	Get Attribute All
0x02	No	Yes	Set Attribute All
0x0E	Yes	Yes	Get Attribute Single
0x10	No	Yes	Set Attribute Single

TCP/IP Interface Object — CLASS CODE 0xF5

The following class attributes are supported for the TCP/IP Interface Object:

Table 43 - TCP/IP Interface Object Class Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	UINT	1

The following instance attributes are implemented for all parameter attributes:

Table 44 - TCP/IP Interface Object Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Status	DWORD	N/A
2	Get	Configuration capability	DWORD	0x00000014
3	Get/Set	Configuration control	DWORD	N/A

Attribute ID	Access Rule	Name	Data Type	Value
4	Get	Physical Link Object	Struct of:	
		Path size	UINT	0x0002
		Path	Padded EPATH	20 F6 24 01
5	Get/Set	Interface configuration	Structure of:	
		IP Address	UDINT	
		Network Mask	UDINT	
		Gateway Address	UDINT	
		Name Server	UDINT	
		Name Server 2	UDINT	
		Domain Name	STRING	
6	Get/Set	Host Name	STRING	
8	Get/Set	TTL Value	USINT	1
9	Get/Set	Mcast Config	Structure of:	
		Alloc Control	USINT	0
		Reserved	USINT	
		Num Mcast	UINT	4
		Mcast Start Addr	UDINT	

Table 44 - TCP/IP Interface Object Instance Attributes

The following common services are implemented for the TCP/IP Interface Object:

Table 45 - TCP/IP Interface Common Services

Service	Implemented for:		Service Name
Code	Class	Instance	
0x01	No	Yes	Get Attribute All
0x0E	Yes	Yes	Get Attribute Single
0x10	No	Yes	Set Attribute Single

Ethernet Link Object — CLASS CODE 0xF6

The following class attributes are supported for the Ethernet Link Object:

Table 46 - Ethernet Link Object Class Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	UINT	3

Table 47 - Ethernet Link Object Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Interface Speed	UDINT	10 or 100
2	Get	Interface Flags	DWORD	
3	Get	Physical Address	ARRAY of 6 USINTs	MAC Address
4	Get	Interface Counters	Structure of:	
		In Octets	UDINT	N/A
		In Ucast Packets	UDINT	N/A
		In NUcast Packets	UDINT	N/A
		In Discards	UDINT	N/A
		In Errors	UDINT	N/A
		In Unknown Protos	UDINT	N/A
		Out Octets	UDINT	N/A
		Out Ucast Packets	UDINT	N/A
		Out NUcast Packets	UDINT	N/A
		Out Discards	UDINT	N/A
		Out Errors	UDINT	N/A
5	Get	Media Counters	Structure of:	
		Alignment Errors	UDINT	N/A
		FCS Errors	UDINT	N/A
		Single Collisions	UDINT	N/A
		Multiple Collisions	UDINT	N/A
		SQE Test Errors	UDINT	0
		Deferred Transmission	UDINT	N/A
		Late Collisions	UDINT	N/A
		Excessive Collisions	UDINT	N/A
		MAC Transmit Errors	UDINT	N/A
		Carrier Sense Errors	UDINT	N/A
		Frame Too Long	UDINT	N/A
		MAC Receive Errors	UDINT	N/A
6	Get/Set	Interface Control	Structure of:	
		Control Bits	WORD	N/A
		Forces Interface Speed	UINT	N/A

The following instance attributes are implemented for all parameter attributes:

The following common services are implemented for the Ethernet Link Object:

Tab	le	48 ·	- Eth	ernet	Link	Common	Services
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Service	Implemented for:		Service Name
Code	Class	Instance	
0x01	Yes	Yes	Get Attribute All
0x0E	No	Yes	Get Attribute Single
0x10	No	Yes	Set Attribute Single
0x4C	No	Yes	Get And Clear

Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using its products. At http://support.rockwellautomation.com, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://support.rockwellautomation.com.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned:

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for return procedure.

Appendix B

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At <u>http://www.rockwellautomation.com/support/</u>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <u>http://www.rockwellautomation.com/support/</u>.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the <u>Worldwide Locator</u> at <u>http://www.rockwellautomation.com/support/americas/phone_en.html</u> , or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete this form, publication <u>RA-DU002</u>, available at <u>http://www.rockwellautomation.com/literature/</u>.

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