User Manual
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PACSystems™ VersaMax

PLC STATION MANAGER
USER MANUAL

EMERSON

Contents

Chapter 1: Overview

The Station Manager is a part of the communications software in VersaMax™ PLC IC200CPUE05.

The Station Manager can be used to:

- Observe and modify internal statistics, an exception log, and advanced user parameters.
- Interrogate and control the Ethernet interface. Password security prevents unauthorized use of commands that change the Ethernet interface parameters or states.

You can use the Station Manager to monitor the operation of the Ethernet interface itself, and of its operation on the network. If a problem occurs, the Station Manager may be used to pinpoint the source.

The Station Manager functions operate in background mode. The Station Manager is not available during power–up diagnostics or when using the Software Loader.

1.1 Using the Station Manager Functions

The Station Manager functions are a group of commands that can be sent to the Ethernet interface. These commands can be used to monitor and control the operation of the Ethernet interface. For example, the Station Manager can display Port 1 status, display the Ethernet configuration, and display the Advanced User Parameters. It can also force the Ethernet interface to be online or offline, restart the Ethernet interface firmware, and display counters and exception events.

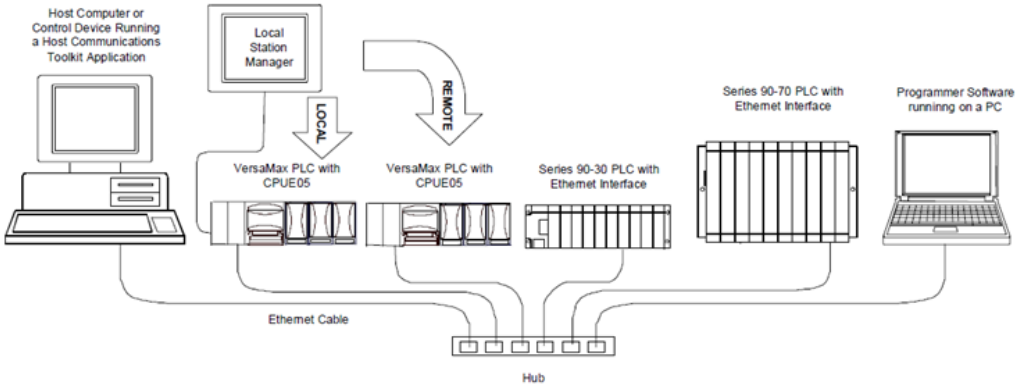
The operator interface to the Station Manager can be either a terminal emulator on a personal computer, or an ASCII terminal. This device can be connected directly to the VersaMax PLC CPUE05, or connected to another device on the network, as explained below.

1.2 Local and Remote Operation of the Station Manager

Local Station Manager: The Station Manager functions can be accessed directly by connecting the terminal emulator or ASCII terminal to Port 1 on the CPU.

Remote Station Manager. the Station Manager functions can be accessed over the Ethernet network from another Ethernet interface. Similarly, the Station Manager function in CPUE05 can access another interface remotely over the network.

Figure 1:



The Station Manager commands can be invoked over the network from other VersaMax PLC Ethernet interfaces or Series 90 PLC Ethernet Interfaces. When invoked remotely, the Station Manager software processes the command as if it had been entered locally. The Station Manager automatically directs output from the command back over the network to the device that sent the request. There is no indication on the local Station Manager terminal (if attached) when a remote command is being processed.

Both the local and remote access share the same security level.

1.3 Monitor and Modify Commands

There are two types of Station Manager commands:

- Monitor commands and
- Modify commands.

Both Monitor and Modify-level commands can be used either locally or remotely.

1.3.1 Monitor Commands

Monitor commands provide information about the Ethernet interface and the network. Executing these commands does not affect the operation of the Ethernet interface. They are available to anyone using the Station Manager. The Monitor commands are:

Command	Function Performed	Command	Function Performed
help	Display Station Manager command set	port1	Display Port 1 status
log	Display current exception log	prog	Display PLC logic program name
login	Enter privileged access level	sosw	Display Ethernet configuration
ltime	Display login inactivity timeout	stat	Display various operating status
node	Display basic identification	tally	Display various operating
parm	Display advanced user parameters	time	Display internal Ethernet clock
		xchange	Display individual Ethernet Global Data exchange information

1.3.2 Modify Commands

Modify commands perform functions that may change the operation of the Ethernet interface. Access to Modify commands is password protected. The Modify commands are:

Command	Function Performed	Command	Function Performed
chltime	Change login inactivity timeout	net	Force network offline/online
chparm	Change the backup Advanced User Parameters	ok	Reset the STAT LED (log isn't cleared)
chport1	Toggle Port 1 override	ping	Send ICMP Echo requests
chsosw	Change the backup Ethernet configuration	rem	Send command to remote node
chtime	Change the internal Ethernet clock	repp	Display current or most recent ping results
clear	Clear selected status information	restart	Restart the Ethernet firmware
killss	Delete an SRTP connection	stopp	Stop ping in progress
logout	Exit privileged access level	trace	Display activity for debug

1.4 Contents of this Manual

Chapter 1, Overview. Chapter 1 describes the Station Manager.

Chapter 2, Getting Started. Chapter 2 gives basic installation and startup. This chapter gives basic installation and startup information for using the Station Manager:

- Connecting a terminal for the Local Station Manager
- Configuring the CPU for Local Station Manager Operation
- Controlling Local Station Manager Operation on Port 1
- Using the Station Manager
- Station Manager Display Format
- Checking the Ethernet Interface IP Address
- Communications on the Network

Chapter 3, Station Manager Command Summary. Chapter 3 is a task-oriented guide to using the Station Manager commands. Detailed definitions of all Station Manager commands are in chapter 4.

- Commands to Display and Control PLC Features
- Commands to Display and Control Station Manager Operation
- Commands to Display and Control the Ethernet Interface Setup
- Commands to Display and Control Ethernet Interface Operation
- Commands to Display and Control Network Activities
- Commands to Display Ethernet Status Information

Chapter 4, Station Manager Command Reference. This chapter is an alphabetically organized reference to the Station Manager commands. It explains how to execute each command and interpret its results.

Chapter 5, Tallies of Ethernet Tasks. Chapter 5 explains how to view tallies of specific Ethernet tasks. It also describes the types of information you can display, grouped by task. Contents of this chapter are:

- Tally Groups
- Viewing and Clearing Tallies
- Tally Definitions

Chapter 6, Exception Events. Chapter 6 explains how to view information about "exceptional" Ethernet events. Contents of this chapter are:

- Viewing and Clearing the Exception Log
- Reading an Exception Log Entry using the Station Manager
- Reading Exceptions in the PLC Fault Table
- Exception Log Event Descriptions

1.5 Related VersaMax Documents

Refer to the documents below if you need more information about the VersaMax PLC and related products.

VersaMax PLC User's Manual (catalog number GFK-1503, revision C or later)	Describes the installation, operation, and programming instruction set of VersaMax family of PLC CPUs.
VersaMax Ethernet Network Interface Unit User's Manual (catalog number GFK-1860)	Describes the installation and operation of the Ethernet Network Interface Unit module.
VersaMax Modules, Power Supplies, and Carriers User's Manual (catalog number GFK-1504)	Describes the many VersaMax I/O and option modules, power supplies, and carriers. This manual also provides detailed system installation instructions.

Chapter 2: Getting Started

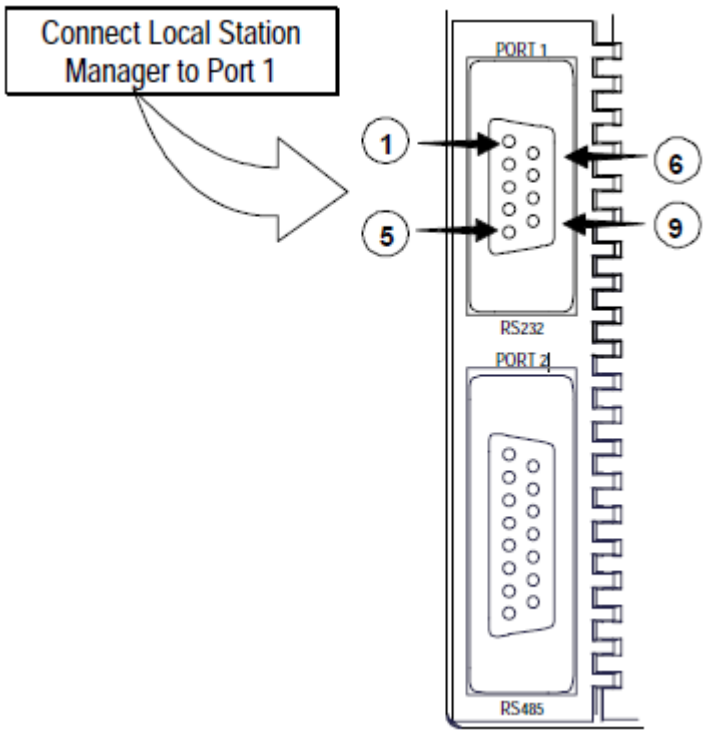
This chapter gives basic installation and startup information for using the Station Manager with the VersaMax™ PLC IC200CPUE05. This chapter includes:

- Connecting a terminal for the Local Station Manager
- Configuring the CPU for Local Station Manager Operation
- Controlling Local Station Manager Operation on Port 1
- Using the Station Manager
- Station Manager Display Format
- Checking the Ethernet Interface IP Address
- Testing Communications on the Network

2.1 Connecting a Terminal for the Local Station Manager

Connect the serial cable from the PC or ASCII terminal to Port 1 of CPUE05.

Figure 2:



2.1.1 Pin Assignments for Port 1

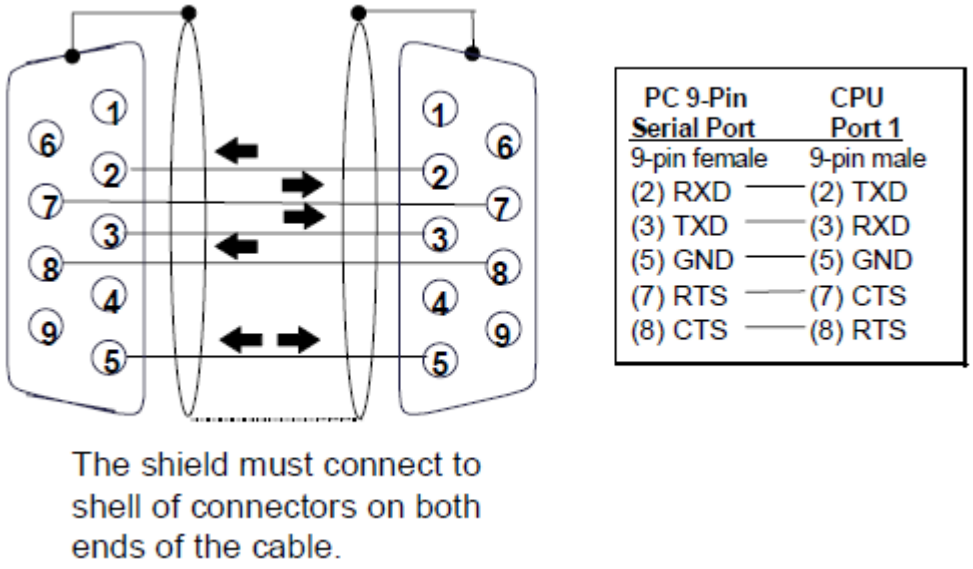
The pinout of Port 1 allows a simple straight-through cable to connect with a standard AT-style RS-232 port.

Pin	Signal	Direction	Function
1	n/c		
2	TXD	Output	Transmit Data output
3	RXD	Input	Receive Data input
4	n/c		
5	GND	--	0V/GND signal reference
6	n/c		
7	CTS	Input	Clear to Send input
8	RTS	Output	Request to Send output
9	n/c		
Shell	SHLD	--	Cable Shield wire connection / 100% (Continuous) shielding cable shield connection

2.1.2 Cable for Local Station Manager Connection

The maximum cable length is 15 meters (50ft).

Figure 3:



Vendor Part numbers below are provided for reference only. Any part that meets the same specification can be used.

Cable: Belden 9610	Computer cable, overall braid over foil shield 5 conductors † 30 Volt / 80C (176F) 24 AWG tinned copper, 7x32 stranding			
9 Pin Male Connector:	Type: Crimp	Vendor: ITT/Cannon AMP	Plug: DEA9PK87F0 205204-1	Pin: 030-2487-017 66506-9
	Solder	ITT/Cannon AMP	ZDE9P 747904-2	-- --
Connector Shell:	Kit *– ITT Cannon DE121073-54 [9-pin size backshell kit]: Metal-Plated Plastic (Plastic with Nickel over Copper) † Cable Grounding Clamp (included) 40 cable exit design to maintain low-profile installation Plus – ITT Cannon 250-8501-010 [Extended Jackscrew]: Threaded with #4-40 for secure attachment to CPU001 port † Order Qty 2 for each cable shell ordered			

† Critical Information – any other part selected should meet or exceed this criterion.

* Use of this kit maintains the 70mm installed depth.

2.2 Configuring the CPU for Local Station Manager Operation

Port 1 must be configured for or forced to Local Station Manager operation before the function can be used. This can be done from the programmer, by pressing the Ethernet Restart pushbutton, or by sending the REM CHPORT1 command.

You will also need to set up the communication parameters of the terminal emulator or ASCII terminal that is being used to run the Station Manager so that they match the configuration of Port 1.

2.2.1 Configuring Port 1 of the CPU for Local Station Manager Operation

Port configuration for using the Local Station Manager function is part of the overall CPU setup, which is described in the VersaMax PLC User's Manual (GFK- 1503, revision C or later).

Specific parameters for Port 1 that must be set up for Local Station Manager operation are listed below.

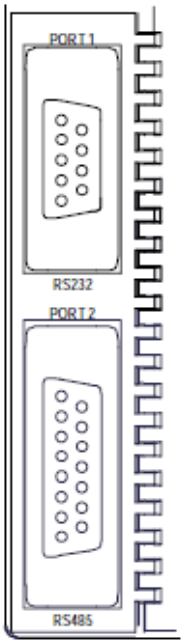
Feature	Default	Choices
Port Mode	SNP	Local Station Manager, SNP, Serial I/O, RTU, Disabled
Parity	When Port Mode is configured as Local Station Manager, default is None.	In Local Station Manager mode: Odd, Even, None
Data Rate (bps)	In Local Station Manager mode: 9600	In Local Station Manager mode: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200

Feature	Default	Choices
Flow Control	None	In Local Station Manager mode: Hardware, None

2.3 Controlling Local Station Manager Operation on Port 1

As part of the CPU configuration, Port 1 can be configured for either CPU serial communications (SNP, RTU, Serial I/O), or Local Station Manager use. Port 1 can still be forced into Local Station Manager operation even when it is configured for CPU use. However, if Port 1 is configured for Local Station Manager use, that becomes its exclusive mode, and it cannot be used for CPU functions. Therefore, Port 1 should typically be configured for CPU use, and forced to Station Manager use when necessary.

Figure 4:



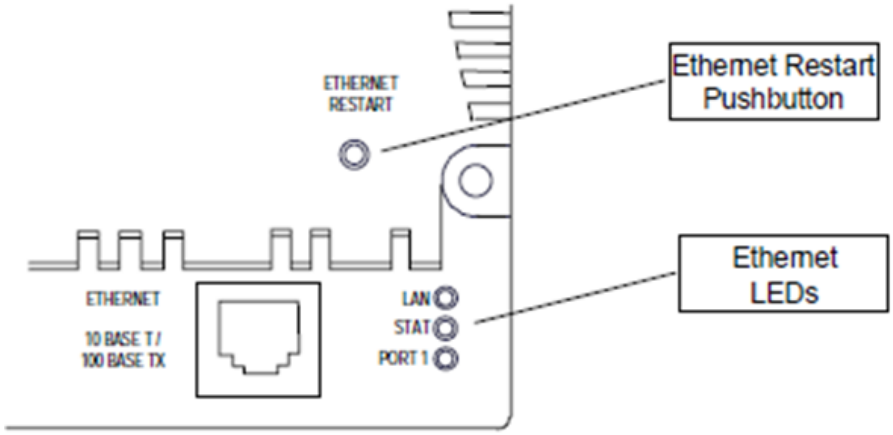
If Port 1 has been configured for CPU use: you can place it in Local Station Manager mode by holding down the Restart pushbutton for at least 5 seconds (wait for the Port1 LED to change to amber). Port 1 remains in Local Station Manager mode until the PLC is power cycled, until the Restart pushbutton is held down for at least 5 seconds, or until the Ethernet interface is restarted (via the Restart pushbutton or Restart command).

If Port 1 has been configured for Local Station Manager use: it cannot be used for CPU serial communications or for firmware upgrades using Winloader. The Restart pushbutton will NOT toggle it to the CPU serial protocols.

2.3.1 Using the Ethernet Restart Pushbutton

The Ethernet Restart pushbutton is located on the right side of the module.

Figure 5:



- Press the Restart pushbutton for less than 5 seconds if you want to reset the Ethernet hardware, test the Ethernet LEDs, and restart the Ethernet firmware. This disrupts any Ethernet communications that are presently underway.
- Press the Restart pushbutton until the Port 1 LED becomes amber (at least 5 seconds) if you want to toggle the function of Port 1 between configured CPU operation and Local Station Manager operation. Note that if Port 1 is forced to or configured for Local Station Manager operation, Winloader cannot be used for a firmware upgrade.

2.3.2 Observing the Ethernet LEDs

The three Ethernet LEDs indicate the status and activity of the Ethernet interface.

LAN indicates the status and activity of the Ethernet network connection. ON/flickering green indicates Ethernet interface is online. ON amber indicates Ethernet interface is offline

STAT indicates the general status of the Ethernet interface. ON green indicates no "exception" detected. ON amber indicates an exception. Blinking amber indicates error code. Blinking green indicates waiting for configuration or waiting for IP address.

PORT1 indicates when the Ethernet firmware is controlling the RS-232 serial port. ON amber indicates Port 1 is available for Local Station Manager use (either by configuration or forcing). OFF indicates PLC CPU is controlling Port 1.

The Ethernet LEDs turn ON briefly, first amber then green, whenever a restart is performed by pressing and releasing the Restart pushbutton. This allows you to verify that the Ethernet LEDs are operational. All three LEDs blink green in unison when a firmware load is in progress.

2.3.3 Station Manager Operation in Different Ethernet Interface States

The Station Manager is active whenever the Ethernet interface is in the Operational state (see the VersaMax PLC User's Manual, GFK-1503). It is also active for local use only when the Ethernet interface is waiting for an IP address.

The Station Manager is not active during diagnostics, when using the software loader, or if there is a hardware failure.

2.4 Using the Station Manager

There are two types of Station Manager commands:

- Monitor commands and
- Modify commands.

Monitor commands provide information about the Ethernet interface and its operation on the network. Executing these commands does not affect the operation of the Ethernet interface. They are available to anyone using the Station Manager. The Monitor-level command prompt is:

```
>
```

Modify commands perform functions that may change the operation of the Ethernet interface and the network. Access to Modify commands is password protected. The Modify-level command prompt is:

```
=
```

Both Monitor and Modify-level commands can be used either locally or remotely. (The REM command cannot be remotely sent to another Ethernet interface).

2.4.1 Entering Commands

Press the Enter key on the PC or ASCII terminal. The Station Manager should respond with the Station Manager Monitor mode prompt character.

```
>
```

You can enter any Monitor commands from this prompt.

To use any of the Modify commands you must obtain the Modify "=" prompt using the LOGIN command. To log in to Modify mode, type from the ">" prompt:

```
login  <RET>
```

The password prompt appears:

```
Password:
```

Type in the password and press the Enter key. The password is case sensitive and may include special characters. The default password is "system" (lower case). If you want to change the password or if you have forgotten the password, follow the appropriate

procedure under the CHPARM STPASSWD command in Chapter 4, “Station Manager Command Reference”. If the entered password is correct, the Modify prompt appears.

=

You can execute all Monitor and Modify commands from the Modify prompt. If no commands are executed within the default login inactivity timeout (or a different timeout period that has been set up using the CHLTIME command), the Modify login expires and you need to login again.

2.4.2 Entering Station Manager Commands

Refer to the detailed command descriptions in chapter 4. In the command format descriptions, brackets and braces indicate optional or alternative parameters for a command. These brackets and braces are NOT part of a command; do not include them when entering a command.

Bracket Type	Indicates	Command	Example Entry
< > angle brackets	Symbolic parameter name	tally <tasks>	tally c
[ ] square brackets	Optional parameter	log [z]	log
{ | } braces and vertical bars	Alternative parameters	net { on | off }	net on

Enter the rest of the command exactly as it is shown. Do not include extra spaces or tab characters within commands. All data entered for the command is converted to lower case unless it is enclosed in double quotes (“ ”).

2.4.3 Entering Control Characters

The Station Manager accepts the ASCII control characters listed below. Other control characters are ignored.

Control Character	Usual Keyboard Function	Function
BS	CTRL–H (Backspace)	Delete previous character Delete previous character Resume output to the display Recall previous command line(s) Stop output to the display Cancel the current input line Terminate line and execute command
DEL	Delete	
DC1	CTRL–Q	
DC2	CTRL–R	
DC3	CTRL–S	
CAN	CTRL–X	
CR	Return (Enter)	

2.4.4 Entering a Multi-line Command

Use the character pair \<CR> to continue a command on the next line. The\ (backslash) character is not part of any command.

2.4.5 Repeating a Prior Command Entry

The Station Manager stores up to the last 10 command lines. This stored list is cleared at restart or power-up. If you want to repeat a command, press CTRL-R as many times as needed. Press CTRL-X to clear the current Station Manager command line.

2.5 Station Manager Display Format

The Station Manager display format depends on the type of data being input or output.

2.5.1 Numeric Values

Most numeric values are displayed as decimal values. In cases where it would be helpful, the value is displayed in both decimal and hexadecimal. A few values are displayed only in hexadecimal. Hexadecimal values are displayed with an "H" as their last character. An example of numeric output is shown below:

```
ifragtmr = 100 (0064H)
```

When a numeric value is entered, it may be entered as either a decimal value or as a hexadecimal value. A hexadecimal value must be entered using the trailing "H" (either upper or lower case) as its last character.

2.5.2 Byte String Values

Byte strings represent each successive byte as a pair of hexadecimal digits enclosed in double angle brackets (<<...>>).

```
MAC Address = <<080019010842>>
```

2.5.3 IP Addresses

IP addresses are displayed and entered in dotted decimal format:

```
IP Address = 10.0.0.2
```

2.6 Checking the Ethernet Interface IP Address

When you are setting up a system, you can check the IP address of the Ethernet interface using the Local Station Manager and verify that it is unique by accessing it from another device on the network. It is very important not to duplicate IP addresses.

Instructions for both checks are summarized below.

2.6.1 Checking the IP Address Using the Local Station Manager

To be certain that the local interface has the correct IP address, access the Station Manager and issue the NODE command (a Monitor mode command):

```
> node
IC200CPUE05 Embedded Ethernet
Copyright (c) 2000. All rights reserved.
Version 2.00 (28A1) TCP/IP
Version 2.00 (17A1) Loader
IP Address = 10.0.0.2       Subnet Mask = 255.255.0.0
MAC Address = <<080019010203>>
Gateway = 0.0.0.0
NTP Time Servers (1,2,3) = 0.0.0.0,  0.0.0.0,  0.0.0.0
Station Manager at Port 1:
Data Rate = 9600, Parity = NONE, Flow Control = NONE
Port 1 configured for Station Manager; not overridden
Source of Soft Switches: CPU

August 28, 2001, 16:00:05
Date/time initialized from PLC CPU
```

2.6.2 Verifying that the IP Address is Unique from Another Device

You should also make sure the Ethernet interface does not have the same IP address as another node.

1. Disconnect the LAN cable from the Ethernet interface.
2. Log into another network device
3. Use the PING command as described in chapter 4 and ping the IP address assigned to the Ethernet interface from some other device on the network.

If you get an answer to the ping, it means the chosen IP address is already in use by another node. You must correct this situation by assigning unique IP addresses.

2.7 Testing Communications on the Network

During system setup, use the Station Manager to test each installed Ethernet interface to be sure each interface is operational and configured with proper TCP/IP parameters. To do that:

1. Enter the LOGIN command:

   login

   The LOGIN command is followed by the password prompt:

   Password:

   The factory default password is:

   system (lower case).

   The Modify prompt appears:

   =

2. Enter your password (it is not echoed). If the password matches the current password for the Modify level, a confirmation message appears, and you can access the Modify commands.
3. Use the PING command to test the ability to reach individual destinations. The test works by sending an ICMP echo request message to a specific destination and waiting for a reply. Most nodes on TCP/IP networks implement ping.

   PING can reach remote IP networks through gateways.

   Enter the PING command using the IP address for the destination to be tested. A typical PING command is shown below:

```
= ping 10.0.0.2 10
Ping initiated

<<< Ping Results >>>
Command:  ping  10.0.0.2  10  100  64
Sent = 10, Received = 10, No Timely Response = 0
Late/Stray Responses = 0
Round-trip (ms)  min/avg/max  0/1/10
```

Chapter 3: Station Manager Command Summary

This chapter is a task-oriented guide to the Station Manager commands. Detailed definitions of all Station Manager commands are in chapter 4.

- Commands to Display and Control PLC Features
- Commands to Display and Control Station Manager Operation
- Commands to Display and Control the Ethernet Interface Setup
- Commands to Display and Control Ethernet Interface Operation
- Commands to Display and Control Network Activities
- Commands to Display Ethernet Status Information

3.1 Commands to Display/Control PLC Features

- **to display the PLC program name:** Use the PROG command.
- **to display the status of Port 1:** Use the PORT1 command to show whether PLC Port 1 (the RS-232 serial port) is in its normal configured operation or forced local Station Manager operation. The Port 1 LED always shows the status of the port.
- **to toggle the Port 1 Override:** Use the LOGIN command to enter modify mode, then use the CHPORT1 command to toggle the operation of Port 1 between its normal configured operation and forced local Station Manager operation. Using this command has the same effect as pressing the Ethernet Restart pushbutton for 5 seconds.

3.2 Commands to Display/Control Station Manager Operation

- **to display the available Station Manager commands:** Use the HELP command.
- **to place the Station Manager in Modify mode:** Use the LOGIN command and enter the password.
- **to display the Station Manager login inactivity timeout:** Use the LTIME command.
- **to change the login inactivity timeout:** Use the LOGIN command to enter modify mode, then use the CHLTIME command to change the secure login inactivity timeout.
- **to change the Station Manager Monitor access password:** Use the LOGIN command to enter modify mode, then use the CHPARM command to enter the new password character string.
- **to send a command to a remote node:** Use the LOGIN command to enter modify mode, then use the REM command. The Station Manager on the remote node acts on the command as if it had been entered at its local serial port but directs all output from

processing the command back over the network to the station where the REM command originated.

- **to exit Modify mode:** Use the LOGOUT command.

3.3 Commands to Display/Control the Ethernet Interface Setup

- **to display basic ID and setup information for the Ethernet interface:** Use the NODE command.
- **to display the Ethernet configuration:** Use the SOSW command to show the current setting of the Ethernet configuration data (soft switches) and to indicate their source. This command also displays the current port usage of Port 1.
- **to change the backup Ethernet configuration:** If a PLC configuration has not been stored into the CPU, use the LOGIN command to enter modify mode, then use the CHSOSW command to change the backup configuration parameters of the Ethernet interface.
- **to display the internal Ethernet time/date:** Use the TIME command to show the current date and time maintained by the Ethernet interface. This command also indicates whether the Ethernet interface date and time are synchronized to the PLC CPU or to the Ethernet network (network time server).
- **to change the internal Ethernet time/date temporarily:** Use the LOGIN command to enter modify mode, then use the CHTIME command. The Ethernet interface internal clock will be set to “not synchronized”. This command does not change the time kept in the PLC CPU, and it remains in effect only until the Ethernet interface is power-cycled or restarted.
- **to display some/all Advanced User Parameters:** Use the PARM command.
- **to change the backup Advanced User Parameters:** Use the LOGIN command to enter modify mode, then use the CHPARM command to modify the value of a selected parameter. When all parameters have been modified, restart the Ethernet interface to use the modified parameters.

3.4 Commands to Display/Control Ethernet Interface Operation

- **to force the Ethernet interface to be online or offline:** Use the LOGIN command to enter modify mode, then use the NET command. This command takes an Ethernet interface on or off the network without physically disconnecting it or restarting the hardware.
- **to restart the Ethernet interface firmware:** Use the LOGIN command to enter modify mode, then use the RESTART command to restart the Ethernet interface without reloading the firmware. Using this command has the same effect as pressing the

Restart pushbutton for less than 5 seconds. Any data transfer between the PLC and the network at the time the RESTART command is entered is permanently lost.

3.5 Commands to Display/Control Network Activities

- **to ping (send an echo request to) a network device:** Use the LOGIN command to enter modify mode, then use the PING command to generate a sequence of ICMP Echo requests to a specific network device. Login is maintained until the PING has ended.
- **to display the latest PING results:** Use the REPP command. The results indicate a currently running PING sequence or the results from the most recent PING to run.
- **to stop a PING in progress:** Use the LOGIN command to enter modify mode, then use the STOPP command to immediately stop an active PING and display the results. Use this command to terminate a long–running PING sequence.
- **to delete an SRTP connection:** (for diagnostics and maintenance only) Use the LOGIN command to enter modify mode, then use the KILLSS command. This command deletes only connections that are in the ESTABLISHED state.

3.6 Commands to Display Ethernet Status Information

- **to display status information about Ethernet tasks:** Use the STAT command.
- **to display the Exception Log:** Use the LOG command. See chapter 6, “Exception Events” for instructions and information.
- **to reset the STAT LED without clearing the Exception log:** Use the LOGIN command to enter modify mode, then use the OK command.
- **to clear/reset Exception Log and reset the STAT LED:** Use the LOGIN command to enter modify mode, then use the CLEAR LOG command. To reset the STAT LED without clearing the exception log, use the OK command.
- **to display various operating counters:** Use the TALLY command to show the current value of the tallies for specified tasks. Some tallies indicate load and performance information about the station. Others can show if there are problems within the station or within the network. See chapter 5 for instructions and information.
- **to clear the re-settable tallies:** Use the LOGIN command to enter modify mode, then use the CLEAR TALLY command. See chapter 5, “Tallies of Ethernet Tasks” for instructions and information.
- **to display activity for debug:** Use the LOGIN command to enter modify mode, then use the TRACE command to display a diagnostic trace of certain specified Ethernet tasks. Login is maintained until the trace has ended. This command should only be used in debugging problems. It should NEVER be left enabled in operational nodes.

- **to display individual EGD exchange information:** Use the XCHANGE command to show detailed information about a specified Ethernet Global Data exchange, as identified by a producer ID and exchange ID.

Chapter 4: Station Manager Command Reference

This chapter is an alphabetical reference to the Station Manager commands. It describes how to execute each Station Manager command and interpret its results.

Station Manager Commands

Command	Function Performed	Available in this Mode
chltime	Change login inactivity timeout	Modify
chparm	Change backup Advanced User Parameters	Modify
chport1	Toggle Port 1 override	Modify
chsosw	Change backup Ethernet configuration	Modify
chtime	Change internal Ethernet clock	Modify
clear	Clear selected status information	Modify
help	Display Station Manager command set	Monitor
?	Display Station Manager command set	Monitor
killss	Delete an SRTP connection	Modify
log	Display current exception log	Monitor
login	Enter Modify access level	Monitor
logout	Exit Modify access level	Modify
ltime	Display login inactivity timeout	Monitor
net	Force network offline/online	Modify
node	Display basic identification	Monitor
ok	Reset STAT LED (log isn't cleared)	Modify
parm	Display the Advanced User Parameters	Monitor
ping	Send ICMP Echo requests	Modify
port1	Display Port 1 status	Monitor
prog	Display PLC logic program name	Monitor
rem	Send command to remote node	Modify
repp	Display latest ping results	Modify
restart	Restart Ethernet firmware	Modify
sosw	Display Ethernet configuration	Monitor
stat	Display various operating status	Monitor
stopp	Stop ping in progress	Modify
tally	Display various operating counters	Monitor
time	Display internal Ethernet clock	Monitor
trace	Display activity for debug	Modify
xchange	Display individual EGD exchange information	Monitor

4.1 CHLTIME

Available in Modify mode.

Use the CHLTIME command to change the login inactivity timeout value. The change will remain in effect until the time expires, until the timeout period is explicitly changed, or until the next LOGOUT command is entered. If the number of minutes specified is zero, the login inactivity timeout is not enforced.

The login inactivity timeout clock is suspended during execution of a TRACE or PING command.

CHLTIME Command Format

CHLTIME < minutes >

<minutes>	is the login inactivity timeout value in minutes. The range is 0 to 32767.

CHLTIME Command Example

= chltime 5

Login timeout = 5 min

4.2 CHPARM

Available in Modify mode.

Before a PLC configuration has been stored into the PLC, you can use the CHPARM command to change the value of a specific Advanced User Parameter. However, it is not recommended that you change any Advanced Parameter other than “stpasswd”. Be careful when setting any Advanced Parameter. Poor choice of settings may result in degraded Ethernet interface operation. If you change these parameters, record the original values for future reference.

Changes do not take effect until the Ethernet interface is restarted or power is cycled. Advanced User Parameters are saved in battery-backed memory. If battery backup is lost, then any loss of power will cause the backup of these parameters to be lost. Changes made by the CHPARM command are retained over restart and power cycles, until changed again by the CHPARM command.

After the PLC configuration has been stored into the PLC, the CHPARM command is prohibited and any previous changes made with it are no longer effective. Changes to the default Advanced User Parameter values should be made via an optional Advanced User Parameter file. See the VersaMax PLC User’s Manual (GFK-1503) for details.

CHPARM Command Format

CHPARM < parm name > { < value > | def }

or

CHPARM all def

<parm name>	specifies the name of an advanced user parameter (listed in the PARM command description later in this chapter).
<value>	specifies the new value for the specified advanced user parameter.
"def"	may be entered instead of an actual value to set the specified parameter to its factory default value.

CHPARM Command Example

= chparm ifrag_tmr 4

Parameter changes take effect at the next power up or restart Changes are updated

to the PLC Configuration at the next power cycle or PLC configuration CLEAR. To avoid losing parameter changes, be sure to power cycle or CLEAR before LOADing PLC configuration to the programmer).

Using CHPARM to Change the Station Manager Password

The default Station Manager password is "system". The normal way to change the password is via the "stpasswd" parameter in the Advanced User Parameter file. When a PLC configuration has not been stored into the PLC, the Station Manager password maybe changed by the CHPARM command; the parameter name is "stpasswd". In order to use the CHPARM command, the current password is required to access the "Modify level" of the Station Manager. Note that the Station Manager password parameter value will be converted to lowercase unless you enclose the value within double quotes.

What to Do if You Have Forgotten Your Password

If the Station Manager password has been set to a non-default value and you have forgotten the current password, you will be unable to enter Modify mode or use the modify level CHPARM command. In this case, you must either examine the "stpasswd" parameter in the Advanced User Parameter file for this PLC to determine the actual password, or store another Advanced User Parameter file with a known password to the PLC.

4.3 CHPORT1

Available in Modify mode.

Use the CHPORT1 command to set the operation of Port 1 (the RS-232 serial port) to either its normal configured operation or forced local Station Manager operation.

Using this command has the same effect as pressing the Ethernet Restart pushbutton for 5 seconds. This command has no effect if Port 1 was configured from the programmer to be restricted to Local Station Manager operation.

CHPORT1 Command Format

CHPORT1 { sta | cfg }

sta	forces Port 1 to local Station Manager operation.
cfg	returns the port to its normal configured operation.

CHPORT1 Command Example

= chport1 sta

Port 1 overridden for Station Manager operation

Checking the Status of Port 1

The Port 1 LED always shows the status of the port, even after toggling the port operation. In addition, the PORT1 command can be used to display the status of Port 1. See PORT1 later in this chapter.

4.4 CHSOSW

Available in Modify mode.

Before a configuration has been received from the CPU, you can use the CHSOSW command to change the backup configuration parameters of the Ethernet interface. Changes made by the CHSOSW command do not take effect until the Ethernet interface is restarted or power cycled. The changes remain in effect until a new configuration is supplied by the CPU.

After the Ethernet interface receives a configuration from the PLC CPU, the CHSOSW command is prohibited and any previous changes made with it are no longer effective.

CHSOSW Command Format

CHSOSW { < sosw data > | def }

def	sets all values to their defaults
ip_address	dotted–decimal IP address
subnet_mask	dotted–decimal subnet mask
gateway	dotted–decimal default gateway address
p1_data_rate	p1_data_rate (4800, 9600, 19200, 38400, 57600, 115200)
p1_parity	p1_parity (NONE, ODD, EVEN)
p1_flow_control	p1_flow_control (NONE, HARDWARE)
ntp_host1_addr	IP address of first NTP time server
ntp_host2_addr	IP address of second NTP time server
ntp_host3_addr	IP address of third NTP time server

CHSOSW Command Example

= chsosw ip_address 10.0.0.2

Parameter changes take effect at the next power up or restart Changes are updated to the PLC Configuration at the next power cycle or PLC configuration CLEAR. To avoid losing configuration changes, be sure to power cycle or CLEAR before LOADing PLC configuration to the programmer.

4.5 CHTIME

Available in Modify mode.

Use the CHTIME command to set both the time and date for the Ethernet interface.

When modified with the CHTIME command, the Ethernet interface internal clock is set to "not synchronized". This command is rejected if the Ethernet interface is synchronized to external NTP time servers.

A time value is required date value is optional. Valid dates are JAN 01, 1998 – DEC 31, 2097. If an invalid date or time is entered, the internal clock is not changed. Changes remain in effect until the Ethernet interface is power-cycled or restarted. This command applies only to the Ethernet interface; it does not change the time kept in the PLC CPU.

CHTIME Command Format

CHTIME [< MMM DD, YYYY >] < HH [: MM [: SS]] >

<MMM>	is the month (JAN . . . DEC)
<DD>	is the day of the month (1-31)
<YYYY>	is the year (1998 . . .)
<HH>	is an hour in the range 0–23
<MM>	is an optional minute in the range 0–59 which defaults to 0
<SS>	is an optional second in the range 0–59 which defaults to 0

Leading zeros do not need to be entered.

CHTIME Command Example

```
= chtime feb 21, 2001   23:00:10
Feb 21, 2001    23:00:10.2
Date/time not synchronized
```

4.6 CLEAR

Available in Modify mode.

Use the CLEAR command to set Ethernet interface data to initial values, usually zeros. When clearing the exception log, the STAT LED is reset to green, indicating the exception log is empty.

CLEAR Command Format

CLEAR { log | tally }

log	discards all log entries and sets the log to an empty state. Also resets the STAT LED on the Ethernet interface to green.
tally	sets all resettable tallies to zero.

CLEAR Command Example

```
= clear tally
Tallies cleared
```

4.7 HELP

Available in Monitor or Modify mode.

Use the HELP command (or enter the single character command "?") to display a list of Station Manager commands.

HELP Command Format

HELP

or

?

HELP Command Example 1: Not Logged In (Monitor Level)

If you are not logged in, you will see only the Monitor-level commands.

```
> help
<<< Monitor Commands >>>
?        help     log      login    ltime    node     parm
port1    prog     sosw     stat     tally    time     xchange
```

HELP Command Example 2: Logged In

If you are logged in to use Modify commands, you will also see all Monitor–level commands in the command list.

```
= help
<<< Monitor Commands >>>
?        help     log      login    ltime    node     parm
port1    prog     sosw     stat     tally    time     xchange

<<< Modify Commands >>>
chltime  chparm   chport1  chsosw   chtime   clear    killss
logout   net      ok       ping     rem      repp     restart
stopp    trace
```

4.8 KILLSS

Available in Modify mode.

This command should be used only for diagnostics and maintenance because it disrupts the communication on an STRP connection.

Use the KILLSS command to delete an established SRTP connection. This command does not delete connections that are not in the ESTABLISHED state.

A connection is identified by an endpoint number, as listed in the leftmost column of the STAT v command output. See the description of STAT later in this chapter for information.

KILLSS Command Format

```
KILLSS {all | < SRTP Server Endpoint > [ < SRTP Server Endpoint > [...]]}
```

< SRTP Server Endpoint >	endpoint number of connection to be terminated.
all	terminates all established SRTP Server endpoints.

KILLSS Command Example

```
= killss 2 3 6
SRTP Server endpoint 2 shut down initiated
SRTP Server endpoint 3 shut down initiated
SRTP Server endpoint 6 shut down initiated
```

4.9 LOG

Available in Monitor or Modify mode.

Use the LOG command to display the exception log without any internal status code data. Use the LOG Z command to display the exception log including the additional status code data. The LOG Z command requires a 132-column display format. See the example below for the data displayed by the two forms of the LOG command.

The exception log is a circular list; a new event overwrites the oldest event in the list. An arrow points to the most recent event. Events stay in the log until they are cleared with the CLEAR LOG command or until they are overwritten. The exception log is maintained in battery-backed memory; the exception log contents are retained over normal power outage. Refer to chapter 6, “Exception Events” for detailed information about Exception Events.

LOG Command Format

```
LOG   [ z ]
```

z	display additional status and addressing data

LOG Command Example

```
> log
<<< Exception Log >>>
IC200CPUE05  Embedded Ethernet version 2.10 (34A1)
Log displayed 04-AUG-2000  11:25:28.3
Log initialized using valid RAM information
Log last cleared 31-JUL-2000  09:33:46.9
  Date         Time         Event Count  Entry 2 through Entry 6
  03-AUG-2000  09:33:47.0    1H    1H    0000H 0001H 0000H 0000H 0000H
  03-AUG-2000  09:33:47.0    0H    1H    MII/PHY Fail
  03-AUG-2000  14:01:22.2   20H    1H    0001H 0000H 0000H 0001H 0117H
->03-AUG-2000  09:33:47.2   2aH    1H    0004H 0000H 0000H 0004H 0192H
```

LOG Z Command Example

```
> log z
<<< Exception Log >>>
IC200CPUE05  Embedded Ethernet version 2.10 (34A1)
Log displayed 04-AUG-2000  11:25:28.3
Log initialized using valid RAM information
Log last cleared 31-JUL-2000  09:33:46.9                                    Remote IP Addr:Port
  Date         Time         Event Count  Entry 2 through Entry 6    SCode   or Producer ID:Exchg   Local IP Addr:Port
  03-AUG-2000  09:33:47.0    1H    1H    0000H 0001H 0000H 0000H 0000H
  03-AUG-2000  09:33:47.0    0H    1H    MII/PHY Fail               80010605H
  03-AUG-2000  14:01:22.2   20H    1H    0001H 0000H 0000H 0001H 0117H
->03-AUG-2000  09:33:47.2   2aH    1H    0004H 0000H 0000H 0004H 0192H
```

Each exception event contains:

Date	the system date of the last occurrence of the logged event.
Time	the system time of the last occurrence of the logged event. The timestamp used is the current date and time of day as known by the Ethernet interface.
Event	the kind of event that occurred. Events are described in chapter 6.
Count	a repetition count for the event. If identical events occur regularly, they can flood the log with useless entries. Instead of recording each repeated event in detail, the log simply keeps the time of the latest event and a count of the number of repetitions of the repeated event. Log entries are retained on restarts and reloads of the Ethernet interface.
Entry	information about the event, divided into 5 entries, Entry 2 – Entry 6.

Additionally, some exception events may provide one or more of the following:

SCode	a 32-bit internal status code providing additional detail.
Remote IP Addr: Port	the IP address and port of the remote device associated with the failure.
Local IP Addr: Port	the local IP address and port on the device where the failure occurred.
Producer ID: Exchg	for Ethernet Global Data events, the complete identifier of a particular exchange.

4.10 LOGIN

Available in Monitor or Modify mode.

Use the LOGIN command to change the present privilege level of the Station

Manager in order to access the Modify commands.

LOGIN Command Format

LOGIN

The LOGIN command is followed by the password prompt:

Password:

Enter your password (it is not echoed). All keys pressed after the prompt except the Enter key are considered part of the password. The delete and backspace characters do not have their usual meanings; they are interpreted as password characters. The password may not include tabs or spaces.

Passwords are limited to 8 characters and all characters after the eighth are ignored. When issued locally via the Local Station Manager terminal, the password does NOT need to be enclosed in double quotes to be case-sensitive.

If the password matches the current password for the Modify level, a confirmation message appears, and you can access the Modify commands. If the password does not match, an error message appears, and the security level does not change.

Example (Local)

```
> login
Password: system
Logged in
=
```

The Default Password

The factory default password is:

system (lower case).

The password is normally changed using the Advanced User Parameters. It can also be changed by using the CHPARM STPASSWD command.

Log into a Remote System

The LOGIN command may be used with the REM (remote) command to log into a remote system. Refer to the REM command description in this chapter.

4.11 LOGOUT

Available in Modify mode.

Use the LOGOUT command to terminate the secure login. Modify commands entered after the logout receive an error message. Logging out causes the login inactivity timeout value to return to 10 minutes for the next login.

LOGOUT Command Format

LOGOUT

LOGOUT Command Example

```
= logout
Logged out

>
```

4.12 LTIME

Available in Monitor or Modify mode.

Use the LTIME command to display the current login inactivity timeout value.

The login inactivity timeout value can be changed using the CHLTIME command.

LTIME Command Format

LTIME

LTIME Command Example

```
> ltime
Login timeout = 10 min
```

4.13 NET

Available in Modify mode.

Use the NET command to cause the Ethernet interface to either ignore incoming and outgoing Ethernet frames (when NET OFF is specified) or to accept incoming and outgoing Ethernet frames (when NET ON is specified). This command can be used to remove an Ethernet interface from the network without the need to physically disconnect it or restart the hardware.

NET Command Format

```
NET  { ON  |  OFF }
```

off	take the Ethernet interface off the network
on	attempt to put the Ethernet Interface on the network

NET Command Example

```
= net off
Interface off network
```

4.14 NODE

Available in Monitor or Modify mode.

Use the NODE command to display the Ethernet interface sign–on message.

NODE Command Format

NODE

NODE Command Example 1

```
> node
IC200CPUE05 Embedded Ethernet
Copyright (c) 2001. All rights reserved.
Version 2.10 (11A1) TCP/IP
Version 2.00 (38A1) Loader
IP Address = 10.0.0.2       Subnet Mask = 255.255.0.0
MAC Address = <<080019010203>>
Gateway = 0.0.0.0
NTP Time Servers (1,2,3) = 0.0.0.0,  0.0.0.0, 0.0.0.0

Station Manager at Port 1:
  Data Rate = 9600, Parity = NONE, Flow Control = NONE
Port 1 configured for Station Manager; not overridden

Source of Soft Switches: CPU
Advanced User Parameters are modified; use "parm" command to display

August 28, 2001, 16:00:05
Date/time initialized from PLC CPU
```

4.15 OK

Available in Modify mode.

The STAT LED is set to amber when an entry is placed into the exception log. You can use the OK command to turn the STAT LED green again. This command has no effect on the contents of the exception log.

OK Command Format

OK

OK Command Example

```
= ok
STAT LED modified
```

4.16 PARM

Available in Monitor or Modify mode.

Use the PARM command to display the current value of the Advanced User Parameters (listed on the following pages) for specified task(s). All Advanced User Parameters for the specified tasks are displayed. Pending changes may cause data to scroll off some screens. Soft switch configuration parameters for the specified tasks are not displayed; use the SOSW command to display those.

PARM Command Format

```
parm { < tasks > | all }
```

all	displays all advanced user parameters.	
<task>	specifies a task identifier.	
	c	PLC Driver
	f	ARP
	i	IP
	b	System Memory
	l	Network Interface
	w	TCP
	n	NTP
	g	Ethernet Global Data

PARM Command Example

```
= parm i
<<<  IP Parameters  >>>
                Default Value     User-Set Value
ittl        =     64 (40H)*
ifrag_tmr   =      3 (0003H)*

* An asterisk identifies the currently active value.

Pending local changes (must powerup or restart to activate):
ifrag_tmr   = 4 (0004H)
```

4.17 Advanced User Parameters

The Advanced User Parameters listed below are used by the PARM and CHPARM commands. These parameters are also used for the data portion of the Advanced User Parameters file.

Parameter	Description	Default Value	Range
System Memory Parameters (task b)			
staudp	Remote command UDP port	18245 (4745H)	0 – 65535 (ffffH)
stpasswd	Station Manager password (only visible from MODIFY prompt)	“system”	0-8 characters, case sensitive, no spaces
PLC Driver Parameters (task c)			
crsp_tout	Transfer/response timeout in seconds	16 (0010H)	10 – 3600 (0e10H)
ARP Parameters (task f)			
fflush	Interval in seconds at which to flush the ARP cache	600 (0258H)	0 – 604800 (93A80H)
Ethernet Global Data Parameters (task g)			
gctl_port	UDP port for EGD control messages	7937 (1f01H)	0 – 65535 (ffffH)
gdata_port	UDP port for point-to-point (unicast) EGD messages	18246 (4746H)	0 – 65535 (ffffH)
gbcast_ttl	IP time-to-live for global broadcast messages (hop count)	1 (1H)	0 – 255 (00ffH)
gucast_ttl	IP time-to-live for point-to-point (unicast) messages (hop count)	16 (10H)	0 – 255 (00ffH)
EGD provides a UDP port parameter and host group IP address parameter for each of 32 possible host groups (0-31). The parameter formats for each host group are shown below. XX specifies host group 0-31.			
gXX_udp	UDP port for host group XX	18246 (4746H)	0 – 65535 (ffffH)
gXX_addr	IP time-to-live for host group XX (must be Class D address)	224.0.7.XX	224.0.0.2 – 239.255.255.255
gXX_ttl	IP time-to-live for host group (multicast) messages (hop count)	1 (1H)	0 – 255 (00ffH)
SRTP Channels Parameters (task ‘h’) (none)			
IP Parameters (task i)			
ittl	IP header default time–to–live (hop count)	64 (0040H)	0 – 255 (00ffH)
ifrag_tmr	IP fragment timeout interval in seconds	3 (00003H)	0 – 65535 (ffffH)
ICMP/IGMP Parameters (task ‘j’) (none)			
Network Interface Parameters (task ‘l’) (none)			
UDP Parameters(task ‘u’) (none)			
SRTP Server Parameters (task ‘v’) (none)			
TCP Parameters (task ‘w’)			
wnodelay	TCP nodelay option (0= inactive; 1 = active)	0, 1	0 (000H)

Parameter	Description	Default Value	Range
wkal_idle	TCP keepalive timer value (in seconds)	0 65535 (ffffH)	240 (00f0H)
wkal_cnt	TCP keepalive probe count	0 65535 (ffffH)	2 (0002H)
wkal_intvl	TCP keepalive probe interval (in seconds)	0 65535 (ffffH)	60 (003cH)
wmsl	TCP maximum segment lifetime (in seconds)	0 65535 (ffffH)	30 (001eH)
wsnd_buf	TCP send buffer size (in bytes)	0 32767 (7fffH)	4096 (1000H)
wrcv_buf	TCP receive buffer size (in bytes)	0 32767 (7fffH)	4096 (1000H)
NTP Parameters (task n)			
nmin_poll1	NTP min. poll interval for NTP server 1 in log(2) of seconds	6 (0006H)	4 – 14 (000eH)
nmax_poll1	NTP max. poll interval for NTP server 1 in log(2) of seconds	10 (000aH)	4 – 14 (000eH)
nmin_poll2	NTP min. poll interval for NTP server 2 in log(2) of seconds	6 (0006H)	4 – 14 (000eH)
nmax_poll2	NTP max. poll interval for NTP server 2 in log(2) of seconds	10 (000aH)	4 – 14 (000eH)
nmin_poll3	NTP min. poll interval for NTP server 3 in log(2) of seconds	6 (0006H)	4 – 14 (000eH)
nmax_poll3	NTP max. poll interval for NTP server 3 in log(2) of seconds	10 (000aH)	4 – 14 (000eH)
nsync_tout	NTP synchronization timeout period in seconds	300 (012cH)	150-65535 0096H – ffffH)

4.18 PING

Available in Modify mode.

Use the PING command to generate ICMP Echo requests to validate network connectivity.

The PING command is refused if the Ethernet interface on which you are issuing the PING command to has not been configured with a valid IP address.

Login is maintained (automatic inactivity logout is inhibited) until the PING sequence has ended.

The results of the last PING command are maintained until the Modify-level login is exited. Use the REPP command to display the results of the most recent PING command. Only one PING command can be active at a time.

PING Command Format

```
PING  <node> [ <cnt> [ <sch> [ <len> ] ] ]
```

node	the IP address of the remote node to be “pinged” (i.e., to be sent ICMP Echo Request messages). Enter in standard IP dotted–decimal form.
cnt	the number of times the ping is to be repeated. Default is 1. Range is 1 through ffffffffH.
sch	the maximum amount of time to wait for a reply to each ping. The timeout interval is expressed in 10–millisecond units. Default is 100 (1 second). Range is 0 through 7fffH. A value of 0 results in the value of 100 (1 second) delay used.
len	the number of data bytes in the Echo Request message. The actual data pattern is not changeable by the user. Default length is 64 bytes. Range is 8 through 32747 but is limited by system buffer memory.

PING Command Example

```
= ping 10.0.0.2 10
Ping initiated

<<< Ping Results >>>
Command:  ping  10.0.0.2  10  100  64
Sent = 10, Received = 10, No Timely Response = 0
Late/Stray Responses = 0
Round-trip (ms)  min/avg/max  0/1/10
```

See also the REPP command for detailed explanation of PING results.

4.19 PORT1

Available in Monitor or Modify mode.

Use the PORT1 command to show whether Port 1 (the RS-232 serial port) is in its normal configured operation or forced local Station Manager operation. The Port 1 LED always shows the status of the port.

You can use the CHPORT1 command in modify mode to toggle the operation of Port 1 between its normal configured operation and forced local Station Manager operation. See CHPORT1 earlier in this chapter.

PORT1 Command Format

PORT1

PORT1 Command Example

```
> port1
Port 1 configured for PLC communication; not overridden
```

4.20 PROG

Available in Monitor mode.

Use the PROG command to show the name of the current PLC CPU application program.

PROG Command Format

PROG

PROG Command Example

```
> prog
CPU Program Name is "CONVEY4"
```

4.21 REM

Available in Modify mode.

Use the REM command to send a Station Manager command to a remote Ethernet interface for processing. The Station Manager on the remote node acts on the command as if it had been entered at its local serial port but directs all output from processing the command back over the network to the station where the REM command originated.

The results are displayed at the local station with the notation “REM” along with the prompt from the remote station. An Ethernet interface cannot use the REM command to send a REM command to another Ethernet interface. An Ethernet interface cannot use the REM command to send any command to itself.

REM Command Format

```
REM  <node> <cmd> [<cmd parms>]
```

node	the IP address of the remote Ethernet interface
cmd	is any Station Manager command except REM
cmd parms	is a list of any parameters required by <cmd>

Do NOT send the REM command itself to an Ethernet interface (i.e.,

```
= rem <node> rem <node> <command> )
```

REM Command Example

```
= rem 10.0.0.2 node
REM> IC693 PLC Factory LAN Interface
REM> Copyright (c) 1998.  All rights reserved.
REM> Version 1.00 (28A1) TCP/IP
REM> Version 1.00 (28A1) Software Loader
REM> IP Address = 10.0.0.2
REM> MAC Address = <<080019010177>>
```

Log into a Remote System

When using the REM command to send a LOGIN command to log into a remote system, you must enter the password value along with the LOGIN command.

```
REM <node> LOGIN <password>
```

If the password contains any uppercase letters, place it in double quotes; passwords are case sensitive.

Security is enforced on the remote system just as if the command had been entered locally. The remote user and any local user of a given node all see the same security level.

4.22 REPP

Available in Modify mode.

Use the REPP command to report the results of the PING command. The results may be for a currently running PING or the most recent PING command.

REPP Command Format

REPP

REPP Command Example

```
= repp
<<< Ping Results >>>
Command:  ping  10.0.0.2  10  100  64
Sent = 1, Received = 1, No Timely Response = 0
Late/Stray Responses = 0
Round-trip (ms)  min/avg/max  0/1/10
Note: The ping is still active
```

In the response:

Command	identifies the actual PING command parameters used (including default values for any optional parameters not specified on the command line) to generate the results
Sent	shows the number of Echo Request messages sent.
Received	shows the number of Echo Reply messages received within the expected response schedule of a corresponding Echo Request. The response schedule begins when an Echo Request is sent and ends when the schedule time specified in the <sch> parameter of the PING command elapses.
No Timely Response	shows the number of times that no Echo Response message arrived within the response schedule of the corresponding Echo Request; that is, when the response schedule time elapses before the corresponding Echo Response arrives.
Late/Stray Responses	indicates the number of times an Echo Response arrived outside of the response schedule of its corresponding Echo Request or when a stray Echo Response, not corresponding to any recent Echo Request, arrives.
Roundtrip	indicates the minimum, average, and maximum delay (in units of milliseconds) measured between sending an Echo Request and receiving the corresponding Echo Response. These times use 1 millisecond increments.

4.23 RESTART

Available in Modify mode.

Use the RESTART command to restart the Ethernet interface without reloading the software. Using this command has the same effect as pressing the Restart pushbutton for less than 5 seconds. Any data transfer between the PLC and the network at the time the RESTART command is entered is permanently lost.

RESTART Command Format

RESTART

RESTART Command Example

```
= restart
Restarting Module
```

4.24 SOSW

Available in Monitor or Modify mode.

Use the SOSW command to show the current setting of the Ethernet configuration data (soft switches) and to indicate their source. This command also displays the current port usage of Port 1.

SOSW Command Format

SOSW

SOSW Command Example

```
> sosw
<<< Soft Switch Data >>>
IP Address         = 10.0.0.2      (TCP/IP values from Soft Switches)
Subnet Mask        =  255.255.0.0
Gateway            =  0.0.0.0
NTP Time Server 1  =  0.0.0.0
NTP Time Server 2  =  0.0.0.0
NTP Time Server 3  =  0.0.0.0

Station Manager at Port 1:
Data Rate    = 9600
Parity       = NONE
Flow Control = NONE
Port 1 configured for PLC communication; not overridden

Source of Soft Switches:  Autoconfiguration
Advanced User Parameters are modified; use "parm" command to display

Pending local changes (must powerup or restart to activate):
p1_data_rate = 38400
ntp_host1_addr = 3.16.17.214
ntp_host2_addr = 3.20.143.5
ntp_host3_addr = 3.17.19.40
```

Sources for the soft switches are:

PLC Configuration	settings received in the configuration from the PLC CPU.
Autoconfiguration	settings derived from autoconfiguration
Backup	settings retrieved from the Ethernet interface's internal backup. This is expected when configuration has not been received from the PLC CPU.
Factory Default	settings are factory defaults. This is expected when no current configuration or previously backed up configuration exists.

4.25 STAT

Available in Monitor or Modify mode.

Use the STAT command to show the current status of the specified task(s).

STAT Command Format

```
STAT <task(s)>
```

<task>	may be one or more of the following task identifiers.	
	l	Network Interface
	u	UDP
	i	IP
	b	System Memory
	c	PLC Driver
	g	Ethernet Global Data
	j	ICMP, IGMP
	w	TCP
	f	ARP
	n	NTP
	v	SRTP Server

STAT Command Example

```
> stat v

<<< SRTP Server Status >>>

Endpoint  Task   State         Num Requests  Client Address
--------  ----   -----------   ------------  --------------
   0       32    ESTABLISHED       10906       10.0.0.4
   1       33    ESTABLISHED       10916       10.0.0.4
   2       34    ESTABLISHED       10931       10.0.0.4
   3       35    ESTABLISHED       10911       10.0.0.4
```

4.26 STOPP

Available in Modify mode.

Use the STOPP command to immediately stop an active PING and print the results.

This command is used to terminate a long–running PING sequence.

STOPP Command Format

STOPP

STOPP Command Example

```
= stopp
<<< Ping Results >>>
Command:  ping  10.0.0.2  10  100  64
Sent = 8, Received = 8, No Timely Response = 0
Late/Stray Responses = 0
Round-trip (ms)  min/avg/max  0/1/10
Note:  The ping was aborted.
```

4.27 TALLY

Available in Monitor or Modify mode.

Use the TALLY command to show the current value of the tallies for the specified tasks. Some tallies indicate load and performance information about the station. Others can show if there are problems within the station or within the network.

All tallies are displayed as 32-bit hexadecimal numbers.

TALLY Command Format

TALLY <task(s)>

<task>	May be one or more of the following task identifiers.	
	l	Network Interface
	u	UDP
	i	IP
	n	NTP
	v	SRTP Server
	j	ICMP, IGMP
	w	TCP
	f	ARP
	c	PLC Driver
	g	Ethernet Global Data

TALLY Command Example

```
> tally c
<<< PLC Driver Tallies >>>   03-JAN-1998  21:22:36.168
UsrReq  =00000003H  UsrRsp  =00000003H  UsrMsg  =00000000H  UnsolMsg=00000002H
PlcReq  =00000002H  PlcRsp  =00000002H  Cmrq    =00000000H  CmrqDscd=00000000H
PlcSweep=00000000H  PktToPlc=00000005H  PktFmPlc=00000007H  PktUnreg=00000000H
BsyRetry=00000000H  BpdAbort=00000000H  PlcTmout=00000000H  UsrTmout=00000000H

<<< Shared Memory Interface Tallies >>>   03-JAN-1998  21:22:36.177
SendObtn=00000005H  MBSend  =00000005H  MBResend=00000000H  SndAbort=00000000H
MBAvail =00000008H  RecvObtn=00000008H  MBRecv  =00000008H  RcvAbort=00000000H
Busy    =00000000H  Idle    =00000000H  Hrtbeats=000002e4H  ClrDbCfg=00000000H
InptScan=00000000H  FactCmd =00000000H  FactRsp =00000000H  EgdProd =00000000H
UnknCmd =00000000H  HpAlloc =00000000H  HpFree  =00000000H  DblFree =00000000H
```

Refer to Chapter 5, “Tallies of Ethernet Tasks”, for a list of the tallies and their meanings.

4.28 TIME

Available in Monitor or Modify mode.

Use the TIME command to show the current internal clock (date and time) maintained within the Ethernet interface. This command also indicates whether the Ethernet interface date and time are synchronized to the PLC CPU or to the Ethernet network. If the date/time are synchronized to a network time server, the recognized time server is listed.

The Ethernet interface date and time are used in Ethernet Global Data and in the exception, log displayed by the LOG command:

- **Ethernet Global Data:** If the Ethernet interface has been configured to use Network Time Synchronization, the timestamp within each produced Ethernet Global Data exchange is based on the internal clock of the Ethernet interface that produced the exchange. This may be different from that of the PLC CPU. For Ethernet Global Data exchanges that are produced by an Ethernet interface not configured to use Network Time Synchronization, the timestamp in EGD exchange data is based on the internal clock of the PLC CPU.
- **Exception Log:** The timestamp information in the Exception Log is based on the internal clock of the Ethernet interface.
- **PLC Fault Table:** The timestamp in the PLC Fault Table is based on the internal clock of the PLC CPU.

At each powerup or Ethernet restart, the Ethernet interface attempts to set its internal clock to the date and time read from the PLC CPU. If this is not available, the internal clock is initialized to 00:00:00:0 January 1, 1998 (the same default date/time used by the PLC CPU). If NTP time synchronization is configured, the Ethernet interface internal clock may be updated to values obtained from a remote NTP server on the network. Time values are displayed in 24-hour format.

TIME Command Format

TIME

TIME Command Example

```
> time
Feb 28,2001    16:00:05.4
Date/time initialized from PLC CPU
```

The command CHTIME can be used to change the date/time value.

4.29 TRACE

Available in Modify mode.

Use the TRACE command to display a diagnostic trace of certain specified Ethernet tasks for troubleshooting purposes. Login is maintained (automatic inactivity logout is inhibited) until the TRACE has ended. Enabling trace output has severe performance penalties for the communications software. This command should only be used in debugging problems. TRACE should NEVER be left enabled in operational nodes. Only one TRACE command can be active at a time. Each new TRACE command automatically stops any existing traces. The TRACE command can be used either locally or remotely. The TRACE command issued last, either locally or remotely, determines where the display takes place. If a trace is initiated from a remote Station Manager, trace output continues to be sent to that remote Station Manager until terminated, even if the remote Station Manager is disconnected or logged into another station. Be sure to stop your traces.

TRACE Command Format

```
TRACE !
      or
TRACE <task>[(<qual>)][< task(s)>][<mins>[<max_len>]]
```

Up to 8 tasks may be specified; each task may contain an optional qualifier within parentheses. All tasks/qualifiers are entered as one parameter without spaces.

TRACE Command Example

```
= trace v(2)v(5)z 15 64
Trace enabled for: v(2)v(5)z
Minutes remaining = 15
max data displayed = 64
```

!	disables all tracing. It should only be used by itself.
task	up to 8 tasks of the following types can be traced. A letter specifies the task type: g Ethernet Global Data v SRTP Server c PLC Driver z Enables Protocol Data Unit (PDU) tracing for selected traces
qual	optional number that restricts tracing to a specified entry within a task. The qualifier must be enclosed in parentheses and immediately follows the task letter. The qualifiers for the above tasks are: g Ethernet Global Data: Exchange index (0) - (31) v SRTP Server: Connection ID (0) - (7) c PLC Driver: Mailbox task ID (0) - (127) Multiple trace qualifiers of the same task can be specified. See example above.
mins	optional timeout period from 0 (no timeout) to 32767 min. Default is 10 min.
max_len	optional length that limits the amount of data displayed from each traced Protocol Data Unit (PDU). PDU tracing must be enabled via the task identifier 'z'. The display length may vary from 1 byte to 32767 bytes; if the optional length value is not specified, the display length defaults to the first 48 bytes of the PDU.

Trace Outputs for Ethernet Global Data (Task g)

Typical trace outputs for EGD are shown below. The "ndx" value identifies a Ethernet Global Data exchange. You can display information about this exchange (such as remote IP address and local UDP port) with the STAT g command.

```
egd <-- ndx=1

egd --> ndx=1
```

Optional Protocol Data Unit data is also displayed if PDU trace is enabled.

Trace Outputs for SRTP Server (Task v)

Typical trace outputs for SRTP Server are shown below. The "conn" value identifies a SRTP Server connection. You can display information about this connection (such as remote IP address and local TCP endpoint) with the STAT v command.

```
srtp svr <-- conn=2

srtp svr --> conn=2
```

Optional Protocol Data Unit data is also displayed if PDU trace is enabled.

Trace Outputs for PLC Driver (Task c)

Typical trace outputs for the PLC backplane driver are shown below. The "task" value identifies a PLC mailbox message address within the LAN interface. You can display information about this mailbox address task with the STAT c command.

```
plc <-- task=13

plc --> task=0
```

Optional Protocol Data Unit data is also displayed if PDU trace is enabled.

4.30 XCHANGE

Available in Monitor mode.

Use the XCHANGE command to show detailed information about the configuration of a specified Ethernet Global Data exchange. Every change is uniquely identified by its producer ID and exchange ID.

XCHANGE Command Format

```
xchange < producer ID >  < exchange ID >
```

producer ID	the ID of the device that produced the exchange
exchange ID	the ID of the exchange

In this command, the producer ID and exchange ID identify an Ethernet Global Data exchange. The producer ID and exchange ID values for all defined exchanges may be displayed by using the STAT g command.

XCHANGE Command Example

```
> xchange 1.2.3.4 1
<<< Individual Exchange Information >>>
Exch. Mode:      PRODUCER
Producer ID:     1.2.3.4
Exchange ID      1
Period:          1000 ms
UDP Port:        5500
Xfer Bytes:      2
Exch Type:       STATIC
Dest IP:         10.16.32.145
Transfer Cnt:    43
Refresh Errs:    0
```

Chapter 5: Tallies of Ethernet Tasks

This chapter explains how to display and clear information about specific Ethernet tasks. It also describes the types of information you can display, grouped by task;

Contents of this chapter are:

- Tally Groups
- Viewing and Clearing Tallies
- Tally Definitions

5.1 Tally Groups

The Ethernet interface of CPUE05 maintains a set of tallies that count notable conditions detected by the Ethernet firmware.

Tallies are grouped and identified by task type:

- PLC Driver Tallies (task 'c')
- SMI Driver Tallies (also part of task 'c')
- SRTP Server Tallies (task 'v')
- Ethernet Global Data Tallies (task 'g')
- Network Interface Tallies (task 'l')
- ARP Tallies (task 'f')
- IP Tallies (task 'i')
- ICMP/IGMP Tallies (task 'j')
- TCP Tallies (task 'w')
- UDP Tallies (task 'u')
- NTP Tallies (task 'n')

5.2 Viewing and Clearing Tallies

Use the TALLY command to view the current tallies for the specified tasks. Some tallies indicate load and performance information about the station. Others can show if there are problems within the station or within the network.

5.2.1 TALLY Command Format

```
TALLY <task(s)>
```

<task>	may be one or more of the following task identifiers.	
	l	Network Interface
	u	UDP
	i	IP
	n	NTP

	v	SRTP Server
	j	ICMP, IGMP
	w	TCP
	f	ARP
	c	PLC Driver
	g	Ethernet Global Data

There are no tallies for the ARP task (f).

All tallies are displayed as 32-bit hexadecimal numbers.

5.2.2 TALLY Command Example

```
> tally c
<<< PLC Driver Tallies >>>   03-JAN-1998  21:22:36.168
UsrReq  =00000003H  UsrRsp  =00000003H  UsrMsg  =00000000H  UnsolMsg=00000002H
PlcReq  =00000002H  PlcRsp  =00000002H  Cmrq    =00000000H  CmrqDscd=00000000H
PlcSweep=00000000H  PktToPlc=00000005H  PktFmPlc=00000007H  PktUnreg=00000000H
BsyRetry=00000000H  BpdAbort=00000000H  PlcTmout=00000000H  UsrTmout=00000000H

<<< Shared Memory Interface Tallies >>>   03-JAN-1998  21:22:36.177
SendObtn=00000005H  MBSend  =00000005H  MBResend=00000000H  SndAbort=00000000H
MBAvail =00000008H  RecvObtn=00000008H  MBRecv  =00000008H  RcvAbort=00000000H
Busy    =00000000H  Idle    =00000000H  Hrtbeats=000002e4H  ClrDbCfg=00000000H
InptScan=00000000H  FactCmd =00000000H  FactRsp =00000000H  EgdProd =00000000H
UnknCmd =00000000H  HpAlloc =00000000H  HpFree  =00000000H  DblFree =00000000H
```

5.2.3 Clearing the Tallies

Use the CLEAR TALLY command in Modify mode to set all resettable Ethernet interface data tallies to their initial values, usually zeros.

5.2.4 CLEAR Command Example

```
= clear tally
Tallies cleared
```

5.3 Tally Definitions

5.3.1 PLC Driver Tallies (task ‘c’)

Use the command: > tally c

to display the tally data for these Ethernet operations:

Tally	Description
UsrReq	Service requests from BPD users to PLC.
UsrRsp	Service request responses to BPD users.
UsrMsg	Messages from BPD users to PLC.
UnsolMsg	Unsolicited transfers from PLC to BPD users.
PlcReq	Service requests from PLC to BPD users.
PlcRsp	Service request responses to PLC.

Tally	Description
Cmrq	COMMREQs received from PLC.
CmrqDscd	COMMREQs discarded for BPD Users.
PlcSweep	Total PLC Sweeps.
PktToPlc	Total mailbox messages sent to PLC.
PktFmPlc	Total mailbox messages received from PLC.
PktUnreg	Messages received for unregistered user.
BsyRetry	Automatic retries due to PLC busy.
BpdAbort	Transfers aborted by BPD.
PlcTmout	Timeouts awaiting response from PLC.
UsrTmout	Timeouts awaiting response from user.

5.3.2 SMI Driver Tallies (also part of task ‘c’)

Tally	Description
SendObtn	Mailbox messages obtained from send queue.
MBSend	Mailbox messages successfully sent to PLC.
MBResend	Mailbox messages successfully resent to PLC.
SndAbort	Mailbox message send obtains aborted.
MBAvail	MB_AVAILABLE commands received from PLC.
RecvObtn	Mailbox messages obtained from receive queue.
MBRecv	Mailbox messages successfully received from PLC.
RcvAbort	Mailbox message receive obtains aborted.
Busy	BUSY commands received from PLC.
Idle	IDLE commands received from PLC.
Hrtbeats	HEARTBEAT indications received from PLC.
ClrDbCfg	CFG_BD_CFG commands received from PLC.
InptScan	INPUT_SCAN commands received from PLC.
FactCmd	Factory Test commands received from PLC.
FactRsp	Factory Test responses sent to PLC.
EgdProd	EGD_PROD_CMP commands received from PLC.
UnknCmd	Unknown commands received from PLC.
HpAlloc	Shared memory heap buffer allocations.
HpFree	Shared memory heap buffer frees.
DblFree	Shared memory heap buffer double-frees.

5.3.3 SRTP Server Tallies (task 'v')

Use the command: > tally v

to display the tally data for these Ethernet operations:

Tally	Description
InPDU	Total SRTP PDUs received (good and bad) from network.
OutPDU	Total SRTP PDUs sent to network.
BadPDU	Bad PDUs received from network.
InConRq	Connect Request PDUs received from network.
OutConRp	Connect Response PDUs sent to network.
InDatRq	Data and Session Request PDUs received from network.
OutDatRp	Data Response PDUs sent to network.
InUncRq	Unconfirmed Request PDUs received from network.
OutUncRq	Unconfirmed Request PDUs sent to network.
InErrRq	Error Request PDUs received from network.
OutErrRq	Error Request PDUs sent to network.
InDisRq	Disconnect requests received from network.
OutDisRq	Disconnect requests sent to network.
InSesRq	Session Request PDUs received from network.
OpenTO	SRTP connections timed out in OPENING state.

5.3.4 Ethernet Global Data Tallies (task 'g')

Use the command: > tally g

to display the tally data for these Ethernet operations:

Tally	Description
EstConRq	Establish Global Data connection area requests received from PLC.
EstConRp	Establish Global Data connection area replies sent to PLC.
ConnRdy	Global Data connection area is ready messages received from PLC.
EnabOut	Enable production requests received from PLC.
DisabOut	Disable production requests received from PLC.
TermRq	Terminate Global Data connection area requests received from PLC.
TermRp	Terminate Global Data connection area replies sent to PLC.
DataRx	Global Data production packets received from network.
DataTx	Global Data production packets sent to network.
RdRqRcv	CMP Read requests received from network.
RdRpSnt	CMP Read replies sent to network.
WrRqRcv	CMP Write requests received from network.
WrRpSnt	CMP Write replies sent to network.
RdRqSnt	CMP Read requests sent to network.
RdRpRcv	CMP Read replies received from network.
WrRqSnt	CMP Write requests sent to network.

Tally	Description
WrRpRcv	CMP Write replies received from network.
CfRqRcv	CMP Retrieve Configuration requests received from network.
CfRpSnt	CMP Retrieve Configuration replies sent to network.
SmRqRcv	CMP Summary requests received from network.
SmRpSnt	CMP Summary replies sent to network.
CpRqRcv	CMP Capabilities requests received from network.
CpRpSnt	CMP Capabilities replies sent to network.
StRqRcv	CMP Statistics requests received from network.
StRpSnt	CMP Statistics replies sent to network.
IdleData	Global Data production packets received while data input is disabled.
RefrErr	Refresh errors encountered.
SemaErr	Semaphore locking errors encountered.
ECRpRtry	Retries when sending Establish Connection reply to PLC.
ECRpAbrt	Establish Connection replies aborted (due to backplane communication problems).
ECRpTO	Establish Connection replies timed out (due to backplane communication problems).
TMAbort	Global Data transaction machines aborted or terminated. Each transaction machine corresponds to one EGD exchange. A transaction machine is aborted if a fatal error is encountered and is terminated when the exchange is terminated (as when storing a new configuration).
UnRecID	Consumed exchange not configured for exchange received from network.
BadPort	UDP port not setup for exchange received from network.
AlinErr	CMP error responses due to alignment error.
ExchErr	CMP error responses due to invalid exchange specified in request.
SigErr	CMP error responses due to signature error in request.
LenErr	CMP error responses due to length error in request.
OffErr	CMP error responses due to invalid data offset in request.
TooLong	CMP error responses because response is too large for UDP packet.
PduErr	CMP error responses due to PDU encoding error.
RejRcv	CMP Reject responses received from network.
RejSnt	CMP Reject responses sent to network.
Timeout	CMP application timeouts.
UnscnC	EGD samples lost due to being overwritten by fresher EGD samples before they can be scanned into memory.
Stale	Produced exchanges sent without fresh PLC data.
StatErr	EGD samples discarded due to an invalid or unrecognized status.

5.3.5 Network Interface Tallies (task 'l')

Use the command: > tally l

to display the tally data for these Ethernet operations:

Tally	Description
RcvOctet	Octets received from network.
RcvUniPkt	Unicast packets received from network.
RcvMcPkt	Multicast packets received from network.
DscPkt	Received packets discarded by Network Interface.
RcvError	Error packets received from network.
UnkProto	Received packets discarded due to unknown protocol.
SndOctet	Octets sent to network.
SndUniPk	Unicast packets sent to network.
SndMcPkt	Multicast packets sent to network.
SndError	Outbound packets discarded due to errors.
SndDscd	Outbound packets discarded.
The following are Detailed Network Interface Tallies	
TxCol>64	Tx collisions after at least 64 bytes sent to network
TxLatCol	Tx late collisions.
TxTotCol	Total Tx collisions.
TxXDefer	Packets not sent to network due to excess deferrals.
TxAbtCol	Packets not sent to network due to excess collisions.
TxUnder	Packets not sent to network due to transmit FIFO underrun.
TxJumbo	Too-large packets aborted.
TxDefer	Packets deferred at least once.
Rx2Stk	Total received packets delivered to protocol stack.
RxMc2Stk	Received multicast packets delivered to protocol stack.
RxNoBuff	Packets not received due to lack of buffers.
RxSkip	Total receive packets skipped.
RxShort	Too short receive packets discarded.
RxLong	Too-long receive packets discarded.
RxAlign	Receive packets discarded due to alignment error.
RxCRC	Receive packets discarded due to CRC error.
RxCoding	Receive packets discarded due to coding error.
RxUnder	Receive packets discarded due to receiver FIFO underrun.
RxOver	Receive packets discarded due to receiver FIFO overrun.

5.3.6 IP Tallies (task 'i')

Use the command: > tally i

to display the tally data for these Ethernet operations:

Tally	Description
InRecv	The total number of input datagrams received from interfaces, including those received in error.
InHdrErr	The number of input datagrams discarded due to errors in their IP headers.
InAdrErr	The number of input datagrams discarded because the IP address in their IP header's destination field was not a valid address to be received at this entity.
ForwDgms	The number of input datagrams for which this entity was not their final IP destination, as a result of which an attempt was made to find a route to forward them to that final destination. (Not used)
InUnkPro	The number of locally addressed datagrams received successfully but discarded because of an unknown or unsupported protocol.
InDiscds	The number of input IP datagrams for which no problems were encountered to prevent their continued processing, but which were discarded (e.g., for lack of buffer space).
InDelivs	The total number of input datagrams successfully delivered to IP user–protocols (including ICMP).
OutReq	The total number of IP datagrams which local IP user–protocols (including ICMP) supplied to IP in requests for transmission.
OutDiscd	The number of output IP datagrams for which no problem was encountered to prevent their transmission to their destination, but which were discarded (e.g. for lack of buffer space).
OutNoRts	The number of IP datagrams discarded because no route could be found to transmit them to their destination.
ReasmTO	The maximum number of seconds which received fragments are held while they are awaiting reassembly at this entity. (Not used)
ReasmReq	The number of IP fragments received which needed to be reassembled at this entity.
ReasmOKs	The number of IP datagrams successfully re–assembled.
ReasmFai	The number of failures detected by the IP re–assembly algorithm (for whatever reason: timed out, errors, message size too big, etc.).
FragOKs	The number of IP datagrams that have been successfully fragmented at this entity.
FragFail	The number of IP datagrams that have been discarded because they needed to be fragmented at this entity but could not be, e.g., because their "Don't Fragment" flag was set.
FragCrea	The number of IP datagrams that have been generated as a result of fragmentation at this entity.
Filtered	IP packets ignored because not addressed to this node and destination is unreachable.

5.3.7 ICMP/IGMP Tallies (task ‘j’)

Use the command: > tally j

to display the tally data for these Ethernet operations:

Tally	Description
InMsgs	The total number of ICMP messages received.
InErrors	The number of ICMP messages received that have errors (bad checksums, etc.).
InDstUnr	The number of ICMP Destination Unreachable messages received.
InTimeEx	The number of ICMP Time Exceeded messages received.
InParmPr	The number of ICMP Parameter Problem messages received.
InSrcQch	The number of ICMP Source Quench messages received.
InRedir	The number ICMP Redirect messages received.
InEchos	The number of ICMP Echo (requests) messages received.
InEchoRp	The number of ICMP Echo Reply messages received.
InTmSp	The number of ICMP Timestamp (request) messages received.
InTmSpRp	The number of ICMP Timestamp Reply messages received.
InAdrM	The number of ICMP Address Mask Request messages received.
InAdrMRp	The number of ICMP Address Mask Reply messages received.
OtMsgs	The total number of ICMP messages attempted to send.
OtErrors	The number of ICMP messages not sent due to problems discovered within ICMP.
OtDstUnr	The number of ICMP Destination Unreachable messages sent.
OtTimeEx	The number of ICMP Time Exceeded messages sent.
OtParmPr	The number of ICMP Parameter Problem messages sent.
OtSrcQch	The number of ICMP Source Quench messages sent.
OtRedir	The number of ICMP Redirect messages sent.
OtEchos	The number of ICMP Echo (request) messages sent.
OtEchoRp	The number of ICMP Echo Reply messages sent.
OtTmSp	The number of ICMP Timestamp (request) messages sent.
OtTmSpRp	The number of ICMP Timestamp Reply messages sent.
OtAdrM	The number of ICMP Address Mask Request messages sent.
OtAdrMRp	The number of ICMP Address Mask Reply messages sent.

5.3.8 UDP Tallies (task 'u')

Use the command: > tally u

to display the tally data for these Ethernet operations:

Tally	Description
InDatagm	Number of incoming datagrams validated and accepted by the UDP stack.
NoPorts	Number of incolming datagrams discarded by the UDP stack because the destination UDP ports were not initialized for reception.
InErrors	Number of incoming datagrams discarded by the UDP stack because they are invalid datagrams, e.g., invalid checksums, etc.
OtDatagm	Number of outgoing UDP datagrams sent by the UDP stack to remote hosts.

5.3.9 NTP Tallies (task 'n')

Use the command: > tally n

to display the tally data for these Ethernet operations:

Tally	Description
ntppkt	Number of NTP packets processed. This will count the total number of NTP packets received.
nstrater	Number of NTP packets received with an invalid stratum. This will indicate the number of packets received with an invalid stratum value in the packet.
nverold	Number of NTP packets received with an old version. This will count the number of NTP packets received with a version set to a value less than 3.
nver3	Number of NTP packets received with a current version. This will count the number of NTP packets received with a version set to a value equal to 3.
nverbad	Number of NTP packets received with an unknown version. This will count the number of NTP packets received with a version value greater than 3 (these packets are ignored).
nlenbad	Number of NTP packets received with an invalid length. This will count the number of NTP packets received with a length field invalid or insufficient to contain a valid NTP packet.
nautbad	Number of NTP packets received with an invalid authorization. This will count the number of NTP packets discarded due to an authorization failure. The Emerson NTP will not support authorization so this count should only be incremented if the NTP server is using authorization.
nrejmode	Number of NTP packets rejected due to the mode that NTP is operating in. This will count the number of NTP packets rejected due to the mode that the NTP is operating in, for example if another node attempts to use this node as a server.
nrejcli	Number of NTP packets rejected due to client count per net. This will count the number of packets rejected due to too many clients. Since the Emerson NTP will be configured as a client and not a server, this count should only be incremented if some other device in the network incorrectly attempts to use the VersaMax as a server.

Tally	Description
ntimebad	Number of NTP packets received with a timestamp differing from the current Ethernet interface time by greater than 16 minutes. These packets will not be used to update the Ethernet interface's internal clock.
nsvrchng	Number of times NTP has changed to a different NTP server.

Chapter 6: Exception Events

The Ethernet interface maintains a log of the following types of “exception” events:

- Powerup diagnostics events
- System startup events
- Configuration (CFG) events
- Operating system (RTOS) events
- PLC backplane driver (BPD) events
- Error handler (ERR) events
- Station Manager (STA) events
- Common Utility (UTL) events
- SRTP Server (SRTP) events
- Network Interface events
- Ethernet Global Data (EGD) events
- Network Time Protocol (NTP) events
- Run-time Diagnostics (DIAG) events

Exception log events can be viewed and cleared using the Ethernet Station Manager. Most exception log events cause a fault message to be placed in the PLC Fault Table.

This chapter explains how to display and clear information about specific exception events. It also describes exception log information, grouped by the event type.

Contents of this chapter are:

- Viewing and Clearing the Exception Log
- Reading an Exception Log Entry using the Station Manager
- Reading Exceptions in the PLC Fault Table
- Exception Log Event Descriptions

6.1 Viewing and Clearing the Exception Log

Use the LOG command in monitor mode to view the exception log. The exception log is a circular list; a new event may overwrite the oldest event in the list. An arrow points to the most recent event. Exception log entries are retained on restarts and reloads of the Ethernet interface.

LOG Command Format

LOG

LOG Command Example

```
> log
<<< Exception Log >>>
IC200CPUE05  Embedded Ethernet version 2.10 (34A1)
Log displayed 04-AUG-2000  11:25:28.3
Log initialized using valid RAM information
Log last cleared 31-JUL-2000  09:33:46.9
  Date         Time         Event Count  Entry 2 through Entry 6
  03-AUG-2000  09:33:47.0     1H    1H   0000H 0001H 0000H 0000H 0000H
  03-AUG-2000  09:33:47.0     0H    1H   MII/PHY Fail
  03-AUG-2000  14:01:22.2    20H    1H   0001H 0000H 0000H 0001H 0117H
->03-AUG-2000  09:33:47.2    2aH    1H   0004H 0000H 0000H 0004H 0192H
```

6.1.1 Clearing the Exception Log

Events stay in the exception log until they are cleared with the CLEAR LOG command, until they are overwritten by more recent data, or until power is removed from the Ethernet interface.

Use the CLEAR LOG command in Modify mode to discard all current events in the exception Log.

CLEAR Command Example

```
= clear log
Log cleared
```

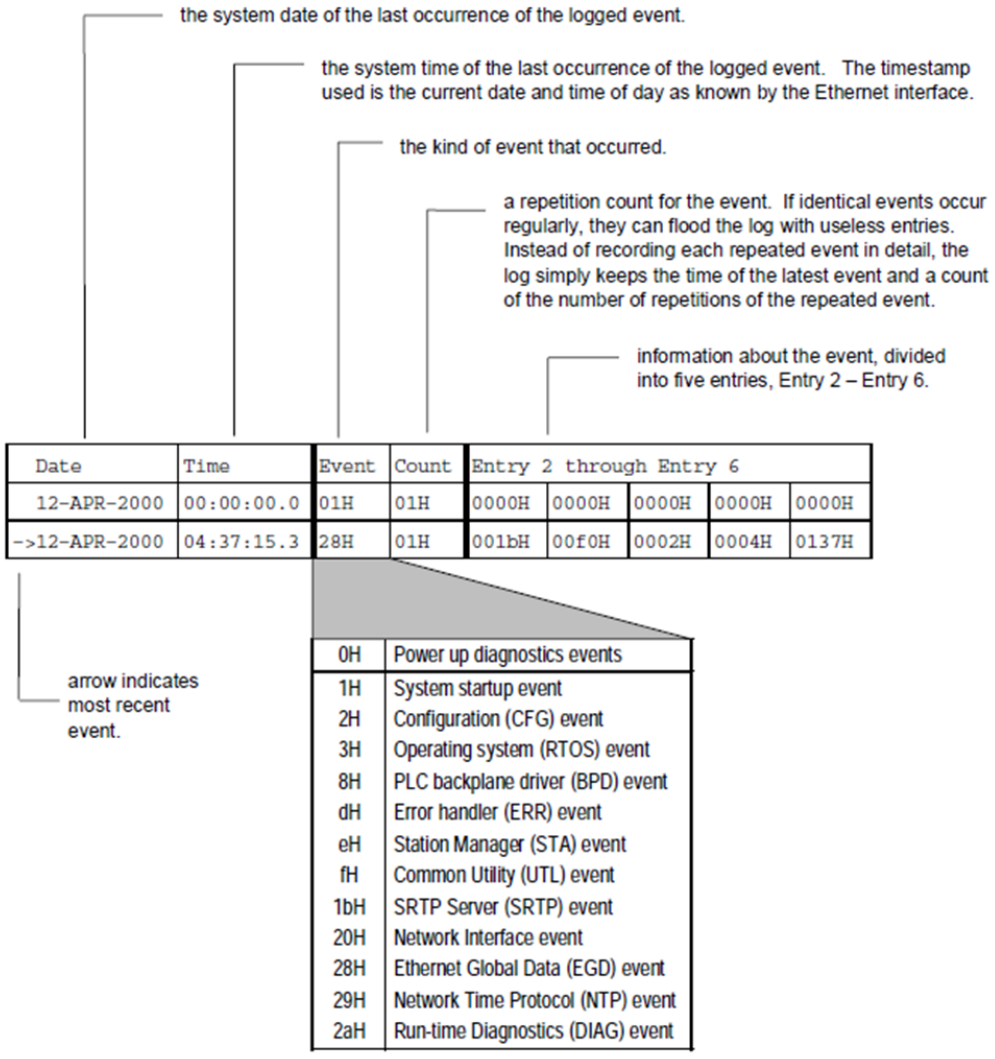
6.2 Reading an Exception Log Entry using the Station Manager

The Station Manager displays the entries in the Exception Log in the format shown below. Each entry is identified by its date, time, and event type. The count shows how many of that error type have occurred.

The additional fields in each entry provide detailed information about the Exception. This information is explained later in this chapter.

The basic exception log displayed by the LOG command is shown below.

Figure 6:



Entry 5 and Entry 6 are reserved for internal error location identification. This detailed information is specific to the particular Ethernet firmware version.

6.2.1 Optional Information

Most Exception Log entries also contain additional information as shown below.

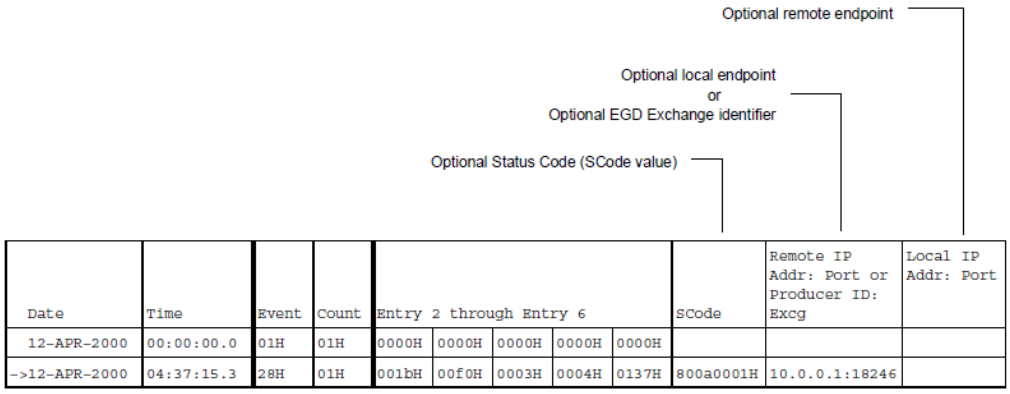
Optional exception log data is displayed only via the LOG Z command.

The first optional field is a Status Code (SCode) value for detailed troubleshooting. Status Code formats are described on the next page.

Some exception log entries contain optional remote and/or local endpoint information; endpoints are displayed as: IP Address: Port.

Some Ethernet Global Data events contain an optional exchange identifier; EGD exchanges are identified as: Producer ID: Exchange ID.

Figure 7:



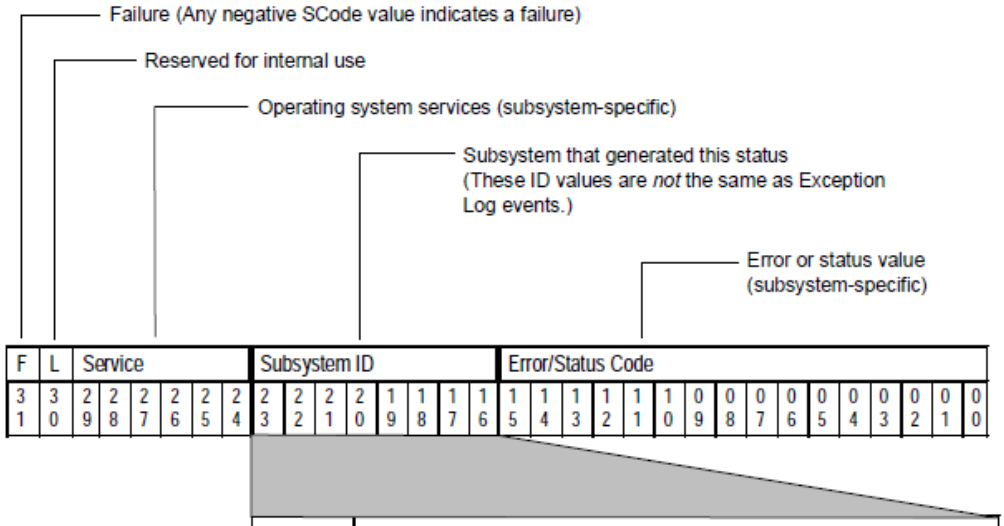
Date	Time	Event	Count	Entry 2 through Entry 6					SCode	Remote IP Addr: Port or Producer ID: Excg	Local IP Addr: Port
12-APR-2000	00:00:00.0	01H	01H	0000H	0000H	0000H	0000H	0000H			
->12-APR-2000	04:37:15.3	28H	01H	001bH	00f0H	0003H	0004H	0137H	800a0001H	10.0.0.1:18246	

6.2.2 Status Codes in the Exception Log

Most events in the Exception Log include a Status Code (SCode). This Status Code reports the internal status of the Ethernet firmware when the exception occurred. Status Codes are only displayed when using LOG Z.

The Status Code is a 32-bit value. It is organized into the following fields:

Figure 8:



Value	Description
1H	Diagnostic (DIAG) subsystem
2H	Board Support Package (BSD) subsystem
3H	Error Handler (ERR) subsystem
4H	Shared Memory (SMI) subsystem
5H	PLC Backplane Driver (BPD) subsystem
6H	Configuration Handler (CFG) subsystem
7H	Non-volatile memory (NVM) subsystem
8H	Station Manager (STA) subsystem
9H	SRTP Server (SRTP) subsystem
aH	Ethernet Global Data (EGD) subsystem
bH	Utility (UTL) subsystem
dH	Time Synchronization (NTP) subsystem
21H	Operating System services (group 1)
22H	Operating System services (group 2)
23H	Operating System services (group 3: Runtime library)
24H	Operating System services (group 4: Runtime library)
25H	Operating System services (group 5: Networking Services)

6.2.3 Status Code Service Values

SCode Service values identify particular Operating System services. They are used only when reporting Operating System errors (Subsystem ID values 21H – 25H). SCode Service values are detailed internal information of use to Emerson.

6.2.4 Status Code Error/Status Values

The Status Code Error/Status field values depend upon the Subsystem ID value. SCode Error/Status values not listed below are internal errors and should be reported to Emerson.

Error/Status Values for the DIAG Subsystem (01H)

Error/Status Value Error/Status Condition

0000H	General failure.
0201H	Powerup diagnostics initialization failure.
0202H	Powerup diagnostics CRC self-test failure.
0501H	Shared Memory initialization failure.
0601H – 061eH	Ethernet Controller diagnostic failure.
0701H – 071eH	Serial Port UART diagnostic failure.
0801H – 0806H	Error reporting a powerup diagnostic failure to the Ethernet exception log.
0a01H – 0a02H	Error creating or starting the Ethernet watchdog timer (WDT).
0b03H	Ethernet firmware CRC error was detected by runtime diagnostics.

Error/Status Values for the ERR Subsystem (03H)

Error/Status Value Error/Status Condition

0001H	No communication with PLC CPU; unable to log exception in PLC Fault Table.
0003H	Memory allocation error.
0004H	Invalid date/time received from PLC CPU or network; unable to update the
0005H	timestamp of events in the exception log. Saved exception log contents in NVRAM are corrupted.
0006H	Unable to rebuild exception log in NVRAM; NVRAM does not retain data.

Error/Status Values for the SMI Subsystem (04H)

Error/Status Value	Error/Status Condition
0002H	Destructive RAM test failure during shared memory diagnostics.
0004H	Unable to notify PLC CPU that shared memory diagnostics have failed.
0005H	Incompatible CPU, Ethernet firmware versions prevent shared memory communication.
0008H	Shared memory interface was not properly configured for use.
0009H	Timeout sending a shared memory command to PLC CPU.
000aH	PLC CPU is busy; unable to send shared memory command to PLC CPU.
000dH – 000eH	Error obtaining a mail buffer in shared memory.
000fH	Cannot send mail to PLC CPU; shared memory mail queue is full.
0010H	Cannot get mail from PLC CPU; shared memory mail queue is empty.
0011H	Error allocating memory buffer from shared memory heap.

Error/Status Value	Error/Status Condition
0012H – 0013H	Error freeing memory buffer to shared memory heap.
0015H	Unknown Station Manager command was received.
0016H	PLC CPU is unavailable while updating its firmware.

Error/Status Values for the ERR Subsystem (03H)

Error/Status Value	Error/Status Condition
0001H	BPD subsystem was not successfully initialized.
0002H	Mail communication via shared memory was not established.
0003H	Service Request Processor within PLC CPU is not available.
0004H	BPD subsystem is shutdown pending an Ethernet restart or firmware update.
0008H	User task is not registered with BPD subsystem; request cannot be processed.
0009H	User task is already registered for use.
000aH	BPD user task or individual transaction was not found.
000bH	Transaction rejected; sequence number is already in use.
000cH – 000eH	Invalid request from BPD user task.
0020H – 0021H	Memory allocation error.
0022H	Error sending mail to PLC CPU.
0023H	Error receiving mail from PLC CPU. (May be invalid message type.)
0024H	Packet sequence error in mail messages received from PLC CPU.
0025H	Error sending mail to PLC CPU; unable to obtain shared memory mail queue.
0026H	Error sending mail to PLC CPU; unable to send mail command to PLC CPU.
0027H	Timeout waiting for expected response from PLC CPU.
0028H	Timeout waiting for expected response from BPD user task.
0029H	Unexpected response received from PLC CPU; the response is discarded.
002aH	Timeout waiting to receive entire PLC Request from PLC CPU; request is discarded.
002dH	PLC CPU has rejected a mail transfer from the Ethernet Interface.
0030H	Commreq mail was received for a BPD user task that does not support Commreqs.
0041H	Unknown Station Manager command was received.

Error/Status Values for the CFG Subsystem (06H)

Error/Status Value	Error/Status Condition
0005H – 0006H	Memory allocation error.
0007H	Invalid configuration data received from PLC CPU.
0009H – 000aH	Invalid configuration parameter or value.
000bH	Advanced User Parameter file is too large.
000eH	A new configuration is being Stored to the PLC; cannot process until Store completes.
0012H	Unknown Station Manager command was received.
0018H	Unable to read saved Advanced User Parameters from NVRAM; NVRAM is corrupt.
0019H	Improper CPU response received.
001aH	Ethernet Interface has not been configured.

Error/Status Values for the NVM Subsystem (07H)

Error/Status Value	Error/Status Condition
0001H	No data has been saved into NVRAM.
0002H	NVRAM data is corrupt. Saved backup data has been lost.

Error/Status Values for the STA Subsystem (08H)

Error/Status Value	Error/Status Condition
0001H	General failure.
000cH – 000dH	Memory allocation error.
0014H	Out of message blocks; unable to transmit to network.
0015H	Unable to retrieve local IP address; cannot issue ping request.
0017H	Remote device is unreachable; cannot issue ping request.

Error/Status Values for the SRTP Server Subsystem (09H)

Error/Status Value	Error/Status Condition
0032H	Error obtaining Advanced User Parameter data.
0034H – 0035H	Memory allocation error.
0036H	Expected send or receive task was not found for an SRTP connection.
0037H	Error obtaining new mail message sequence number.
003aH	Invalid reason code in outgoing SRTP PDU; PDU was not sent.
0048H	Unknown Station Manager command was received.
Error/Status codes 8000H – 8fffH may be returned to the remote SRTP client device.	
8001H	General failure.
8002H	No communication to local PLC CPU.
8005H	Unrecognized SRTP PDU was received.

Error/Status Value	Error/Status Condition
8006H	Data received with PDU type that does not support data.
8008H	SRTP action not allowed in current connection state.
8009H	Unable to send service request to local PLC CPU.
800aH	Recognized but unsupported SRTP PDU was received.
800bH	SRTP transaction was lost; service request was not completed.
800cH	Error sending SRTP PDU to remote device on network.

Error/Status Values for the EGD Subsystem (0aH)

Error/Status Value	Error/Status Condition
0003H	Unknown Station Manager command was received.
0004H	Error obtaining Advanced User Parameter data.

Error/Status Values for the UTL Subsystem (0bH)

Error/Status Value	Error/Status Condition
0001H	Memory allocation error, or other general resource error. May also be an operating system resource error.
0006H	Unknown Station Manager command was received.

Error/Status Values for the NTP Subsystem (0cH)

Error/Status Value	Error/Status Condition
0001H	Error deleting NTP peer from operating system peer table.
0002H	Error adding NTP peer to operating system peer table.
0003H	Unknown Station Manager command was received.
0005H	System NTP peer incorrectly set by operating system.

Error/Status Values for the Operating System (21H to 25H)

The list below contains those Operating System Error/Status codes that indicate network errors or other conditions that may be corrected by users. Error/Status values not listed below are internal errors and should be reported to Emerson.

Error/Status Value	Error/Status Condition
0001H	Timeout.
0034H	Memory allocation error.
5006H	No such IP address/Port. *
5020H	The network connection has been broken.
5024H	Socket connection cannot be completed immediately.
5025H	Previous socket connection attempt has not yet completed.
5027H	The destination IP address/Port is invalid. *
5028H	The message to be sent is too long.

Error/Status Value	Error/Status Condition
5029H	Incorrect protocol type.
502aH	Protocol type is supported but not available.
502bH	Protocol type is not supported.
5031H	Destination IP address/Port is not available. *
5033H	The network is unreachable.
5035H	The network connection has been aborted by the peer.
5036H	The network connection has been reset by the peer.
5037H	Memory allocation error.
5038H	The socket is already connected.
5039H	The socket is not connected.
503cH	The network connection has timed out.
503dH	The attempted network connection was refused.
5041H	Destination host is not reachable from this node. There is no gateway to access
5046H	devices on the other sub-network. Network Interface was not initialized.
5049H	Specified route cannot be found.

* Destination Port depends upon the type of message being sent (a TCP port, a UDP port, etc.).

6.3 Reading Ethernet Exceptions in the PLC Fault Table

In addition to the information available using the Station Manager, the Ethernet interface sends a fault to the PLC Fault Table for most Ethernet exception events. This information is viewed from the programmer software; it is not necessary to use the Station Manager for this.

A sample PLC Fault Table entry for an exception log event is shown below:

```
FAULT                    FAULT                                    DATE        TIME
LOCATION                 DESCRIPTION                             MM-DD-YYYY HH:MM:SS.mmm
0.0       Backplane communications with PLC fault; lost request   06-21-2000 04:37:15.000
0.0       LAN system software fault; resuming                     06-21-2000 12:07:53.000
```

In the PLC Fault Table, the fault location of Ethernet exception events is the PLC CPU rack and slot (rack = 0, slot = 0). The exception Event Code (Event Codes are described in this chapter) and additional data appear as a series of hexadecimal bytes in the Fault Extra Data for the PLC Fault Table entry; the fault extra data bytes are organized as event code and additional data from the exception log entry.

The Exception Log Event Descriptions in this chapter include PLC Fault Table entries for exception events.

6.3.1 Extra Fault Data Format in the PLC Fault Table

The Fault extra data for an Exception Log Event contains:

```
08 00 09 00 04 00 22 00 01 0c 74 80 05 00 28 00 00 00 00 00 00 00 00
```

where:

08	= Event code	(= 08H)
00 09	= Entry 2	(= 0009H)
00 04	= Entry 3	(= 00004)
00 22	= Entry 4	(= 0022H)
00 01	= Entry 5	(= 0001H)
0c 74	= Entry 6	(= 0c74H)
80 05 00 28	= SCode	(= 80050028H)

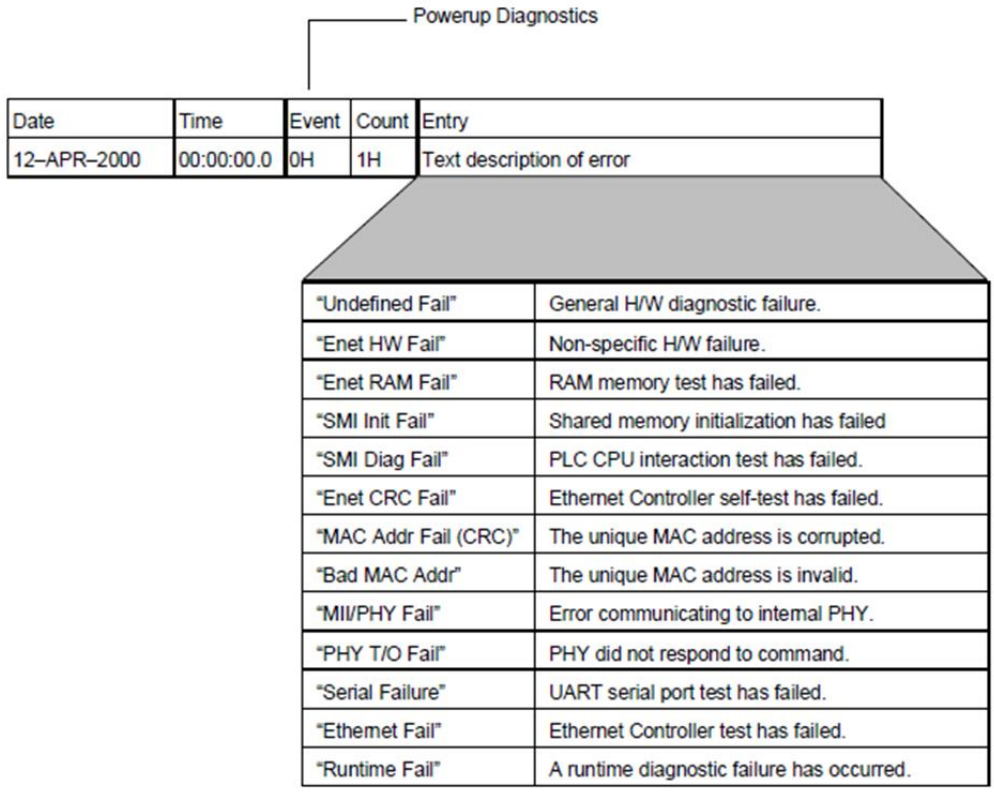
6.4 Exception Log Event Descriptions

Event "0": Powerup Diagnostics

Event 0 is logged when a powerup diagnostic error occurs. Unlike other exception log events that specify additional numeric data in entries 2-6, powerup diagnostic errors are reported as short text messages.

All Powerup Diagnostic events generate the PLC Fault "Module hardware fault"

Figure 9:



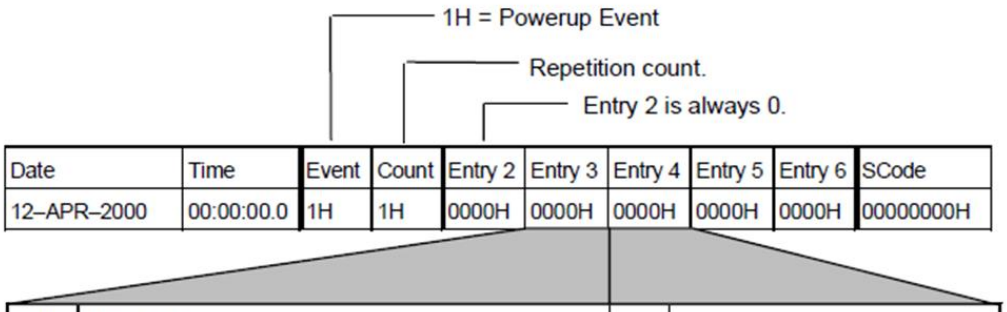
Event "1": Powerup Events

Event 1 is logged on every initialization of the Ethernet interface. This event indicates the boundaries between restarts. By checking the count on this event, you can find out how many restarts have occurred. As restarts are not necessarily error conditions, this event does not change the STAT LED.

Powerup events are not reported to the PLC Fault Table. The PLC CPU may generate a PLC Fault Table entry when the Ethernet interface is restarted.

In the exception log, Entry 2 for a powerup event is always zero. When restarting after exit from the firmware loader, Entry 4 indicates the reason for entering the firmware loader. Entries 5 and 6 are not used. Powerup events do not use a Status Code (SCode) value.

Figure 10:



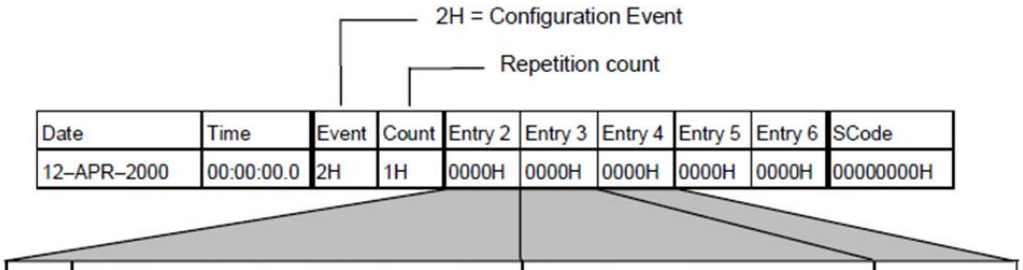
Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12–APR–2000	00:00:00.0	1H	1H	0000H	0000H	0000H	0000H	0000H	00000000H

0	Normal power up.		
1	Restart via Ethernet Restart pushbutton.		
2	Pre-emptive restart via Ethernet Restart pushbutton when a previous restart attempt did not complete.		
3	Station Manager restart request.		
4	Automatic restart after changing MAC address.		
5	Automatic restart due to system error (see preceding exception log event).		
7	Automatic restart after firmware update completion.	b	Firmware load due to corrupted Primary Ethernet firmware.
		10	Firmware load requested by user via CPU serial port.
c	Automatic restart due to Ethernet watchdog timer expiration.		
e	Automatic restart due to restart command from PLC CPU firmware. This code may also be displayed on powerup after a very brief power outage.		
ff	Restart due to unknown reason.		

Event "2": Configuration (CFG) Events.

Event 2 is logged when a configuration exception event occurs. The table below shows the event codes, PLC Fault Table entries, and definitions for Configuration Events. Entries 5 and 6 contain an internal location identification code. Most Configuration events contain an optional Status Code (SCode) value.

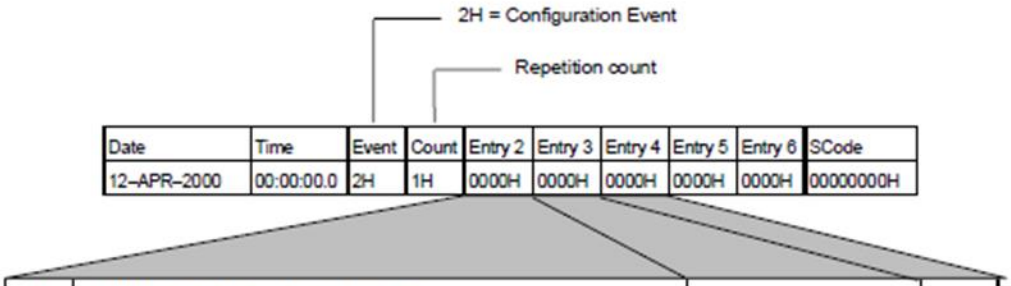
Figure 11:



0	*"LAN system-software fault; resuming"* A failure occurred during primary firmware initialization.	Internal error code.	
1	*"LAN system-software fault; resuming"* Configuration subsystem task 0 failed to properly register with the PLC Driver subsystem. There is no communication with the CPU.		
2	*"LAN system-software fault; resuming"* A failure occurred attempting to send a logon request to the PLC CPU. The CFG subsystem will no longer receive change notification mail. This will cause the LED's to not properly display a configuration store or clear.		
3	*"LAN system-software fault; resuming"* The PLC CPU sent an unrecognized request to the Configuration subsystem.	May contain an internal error code indicating the type of the request.	
4	*"LAN system-software fault; resuming"* The PLC CPU sent an unrecognized message to the Configuration subsystem.	Internal code indicating the type of mail message for an unrecognized unsolicited mail message, or the sequence number for an unrecognized response message.	
5	*"LAN system-software fault; resuming"* The Configuration subsystem failed attempting to respond to a PLC CPU request.	Response message type.	Response message sequence number.
6	*"LAN system-software fault; resuming"* A failure occurred processing the Ethernet configuration. This error is due to an invalid configuration being stored. The Configuration processing stops at the first error detected.	For Advanced User Parameter errors, the line number within the Advanced User Parameter file where the error occurred.	

Event "2": Configuration (CFG) Events (continued)

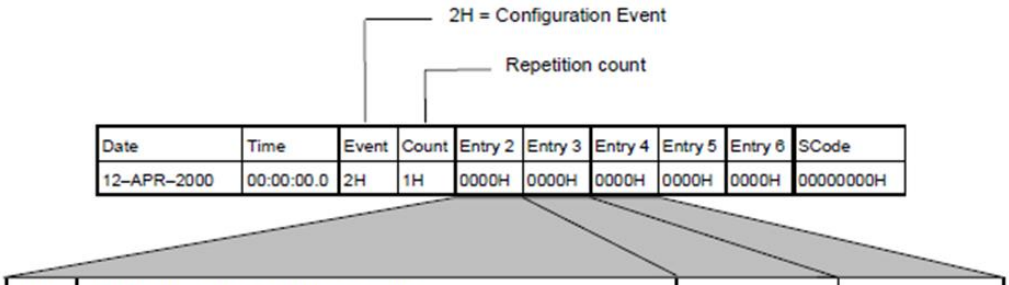
Figure 12:



7	*"LAN system-software fault; resuming"* A failure occurred in configuration timeout processing. If no Status Code value exists, the configuration was not received from the PLC CPU in a timely manner. The last configuration stored will be retrieved from backup memory. If no configuration exists in backup, the default configuration will be used.		
8	*"LAN system-software fault; resuming"* Failure attempting to retrieve backup configuration data from non-volatile memory. The backup configuration data has been corrupted. The default configuration will be used.		
9	*"LAN system-software fault; resuming"* Failure attempting to store backup configuration data into non-volatile memory.		
a	*"LAN system-software fault; resuming"* An unknown system event confirmation was received.	Confirmation type received.	
b	*"LAN system-software fault; resuming"* A failure was returned by the PLC Driver while attempting to send a request to the PLC CPU to retrieve the PLC CPU date/time.		
c	*"LAN system-software fault; resuming"* A failure occurred attempting to remove a Task from the event notification list.		
d	*"LAN system-software fault; resuming"* An unrecognized event was received by the timeout task.	Event code.	
f	*"LAN system-software fault; resuming"* An unidentified subsystem attempted to vote on the module OK status.		
10	*"LAN system-software fault; resuming"* Failure attempting to process a station manager command. Details are found in the Status Code. If no Status Code value exists, an invalid station manager command was attempted.	Internal error code.	
11	*"LAN system-software fault; resuming"* A failure was encountered when attempting to retrieve the internal system time from the DIAG subsystem. This will cause unreliable operation of the Ethernet Restart pushbutton, the STAT LED, and the Port 1 LED.		
12	*"LAN system-software fault; resuming"* An internal operating system error occurred while retrieving or updating the current time value in shared memory. This may cause unreliable timestamp values in produced EGD exchanges.	May contain an internal error code, which indicates a failure occurred while converting to POSIX time.	
13	*"LAN system-software fault; resuming"* A failure occurred receiving confirmation from one or more subsystems during the restart sequence. The restart will still occur.	May contain an internal error code.	

Event "2": Configuration (CFG) Events (continued)

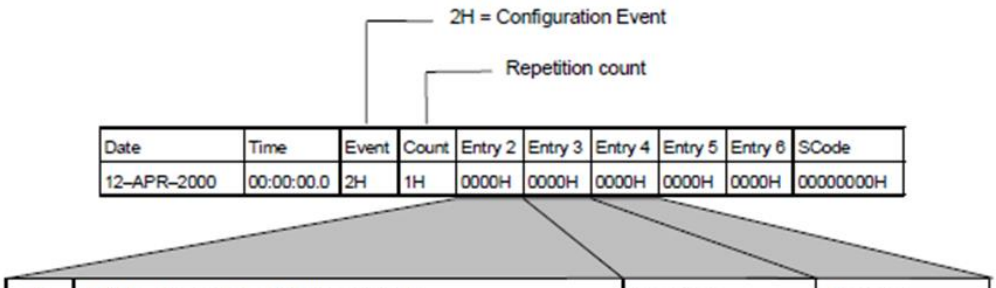
Figure 13:



14	*"LAN system-software fault; resuming"* A failure occurred receiving confirmation from one or more subsystems during enter sequence into factory diagnostics. Factory diagnostics will still occur.		
15	*"LAN system-software fault; resuming"* A failure occurred attempting to allocate space to insert a Task into the notification list for system events.	Internal error code indicating system events.	
16	*"LAN system-software fault; resuming"* A failure occurred while allocating memory for the Advanced User Parameters file received from the PLC. The details are found in the Status Code value returned from the UTL subsystem.		
17	*"LAN system-software fault; resuming"* A failure occurred attempting to register a subsystem for system event notification. Details in Status Code returned from UTL subsystem.	Internal error code indicating system events.	
18	*"LAN system-software fault; resuming"* A failure occurred attempting to deregister a subsystem for system event notification.	Internal error code that indicates the system events being deregistered.	
19	*"LAN system-software fault; resuming"* A system event notification error occurred. The notification could not be sent due to an operating system error, or the notification occurred before the event notification user list was created.	May contain an internal error code, which indicates the system event being sent.	
1a	*"LAN system-software fault; resuming"* An operating system error occurred while the CFG main task was receiving messages from other tasks.		
1b	*"LAN system-software fault; resuming"* Cannot perform autoconfiguration due to an error while allocating space for the backup configuration in non-volatile memory, or while retrieving the backup configuration from non-volatile memory.	Internal error code.	
1d	*"LAN system-software fault; resuming"* Unable to update Advanced User Parameters File during station manager CHPARM command processing. A failure occurred while allocating space for the new parameter, or while retrieving the current Advanced User Parameter file from non-volatile memory.		

Event "2": Configuration (CFG) Events (continued)

Figure 14:



1e	*"LAN system-software fault; resuming"* An error response message was returned from the CPU for a Logon request.	Response message type.	Response message sequence number.
1f	*"LAN system-software fault; resuming"* An error response was returned from the CPU for a Get Date/Time request.		
21	*"LAN system-software fault; resuming"* An error response was returned from the CPU for a Get Program Name request.		
22	*"LAN system-software fault; resuming"* The PLC CPU returned an invalid Port 1 assignment.	Internal error code.	
23	*"LAN system-software fault; resuming"* An invalid value was used for the Data Rate, Parity or Flow Control configuration parameters for Port 1.	Internal error code.	The invalid value.
24	*"LAN system-software fault; resuming"* An internal system error occurred while a Task was attempting to enter or exit a critical region.		
26	*"LAN system-software fault; resuming"* An internal system error occurred attempting to initiate a Restart sequence. The restart will not occur.		
27	*"LAN system-software fault; resuming"* An unrecognized Restart sequence command was received.	Internal error code.	
29	*"LAN system-software fault; resuming"* Invalid parameter passed to the Port1 LED control function.	Internal error code.	
2a	*"LAN system-software fault; resuming"* The active NTP server has changed.	IP Address of previous NTP server, displayed as two hex words. (For example, 10.0.0.2 would be shown as 0A00H 0002H)	
2b	*"LAN system-software fault; resuming"* An operating system error occurred while canceling a timer. The failure occurred during the status task shutdown while preparing to enter factory diagnostics operation.		
2c	*"LAN system-software fault; resuming"* A failure occurred in shared memory while responding to a firmware update request. The restart sequence will still occur and the module will restart into software load mode.		
2d	*"LAN system-software fault; resuming"* A failure occurred attempting to write to flash to place the module into software load mode. The module will not accept a firmware update.		

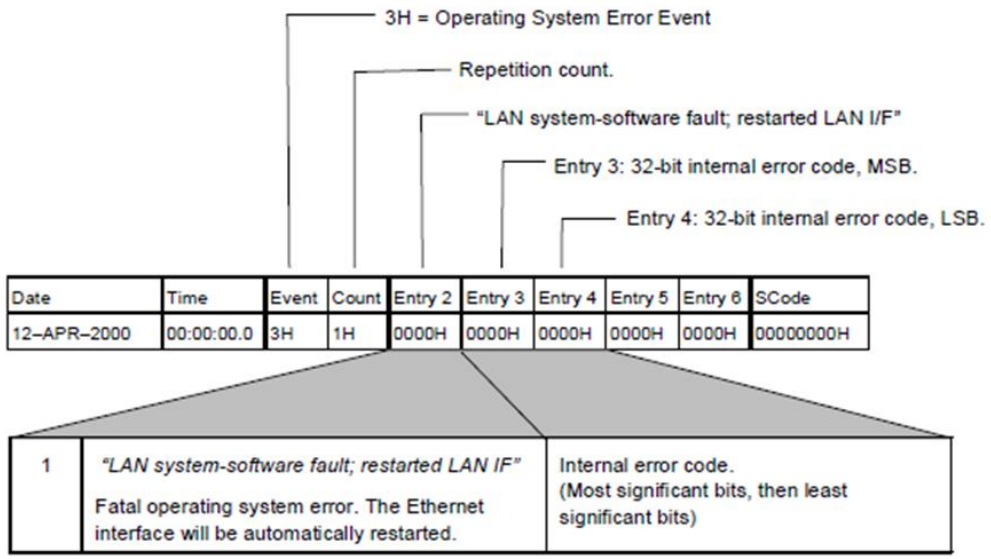
Event "3": Operating System Error Events

Event 3 is logged if the operating system detects an unrecoverable error. Normal operation cannot continue. The Ethernet interface is automatically restarted.

Entries 3 and 4 contain a 32-bit internal error code. (Entry 3 contains the most significant 16 bits; Entry 4 contains the least significant 16 bits.) Entries 5 and 6 contain an internal location identification code. Operating System events may contain an optional Status Code (SCode) value; optional data is displayed via the LOG Z command.

The PLC Fault Table entries for these exceptions are generated only after the restart has completed.

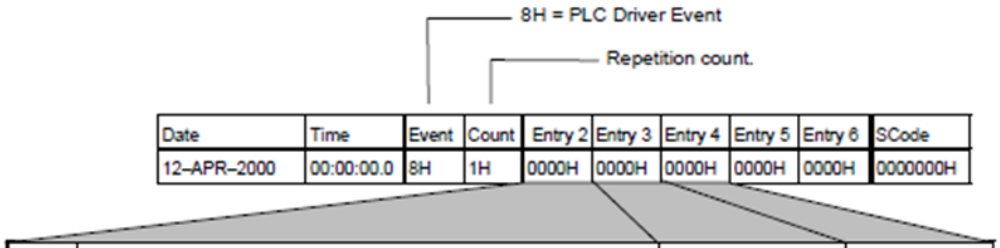
Figure 15:



Event "8": PLC Driver (BPD) Events

Event 8 is logged when a PLC Driver exception event occurs. The diagram below shows the event codes, PLC Fault Table entries, and definitions for PLC Driver Events. Entries 5 and 6 contain an internal location identification code. Most PLC Driver events contain an optional Status Code (SCode) value; optional data is displayed via the LOG Z command.

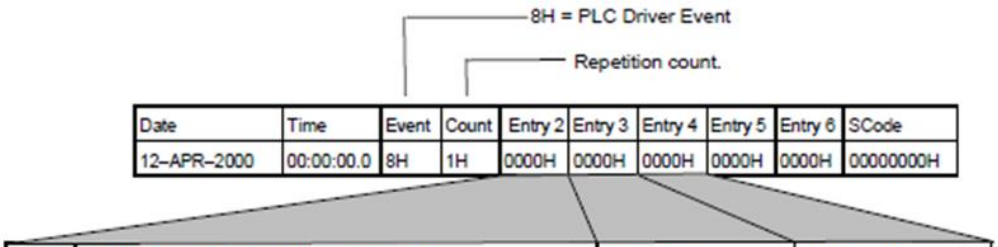
Figure 16:



1	*No PLC Fault Table Entry for this error.* PLC Driver subsystem not initialized after PLC powerup or Ethernet restart. No communications with PLC CPU.		
2	*No PLC Fault Table entry for this error.* Mailbox communication was not established with PLC CPU after a PLC powerup or Ethernet restart. There is no communication with the PLC CPU.	Internal error code.	
3	*"Backplane communications with PLC fault; lost request"* Service Request Processor (within PLC CPU) did not come online after a PLC powerup or Ethernet restart. There is no mailbox communication with the PLC CPU.		
4	*"Backplane communications with PLC fault; lost request"* Mailbox packets were received from PLC CPU in wrong order.	Task number.	Mailbox sequence number.
5	*"Comm-Req Bad task ID programmed"* A COMMREQ was received from PLC CPU for an unknown or unregistered BPD User task.		
6	*"Backplane communications with PLC fault; lost request"* A mailbox message (other than a COMMREQ) was received from the PLC CPU for an unknown or unregistered BPD User task.		
8	*"Backplane communications with PLC fault; lost request"* PLC Driver timed out waiting for an expected response from the PLC CPU.		
9	*"Backplane communications with PLC fault; lost request"* PLC Driver timed out waiting for an expected response from a BPD User task to a request from the PLC CPU.		
a	*"Backplane communications with PLC fault; lost request"* PLC Driver timed out waiting for completion of a multi-packet unsolicited transfer from the PLC CPU.		
10	*No PLC Fault Table entry for this error.* PLC Driver has stopped due to a fatal internal error.		
11	*"LAN system-software fault; resuming"* Error starting internal operating timers.	Internal timer identification code.	

Event "8": PLC Driver (BPD) Events (continued)

Figure 17:



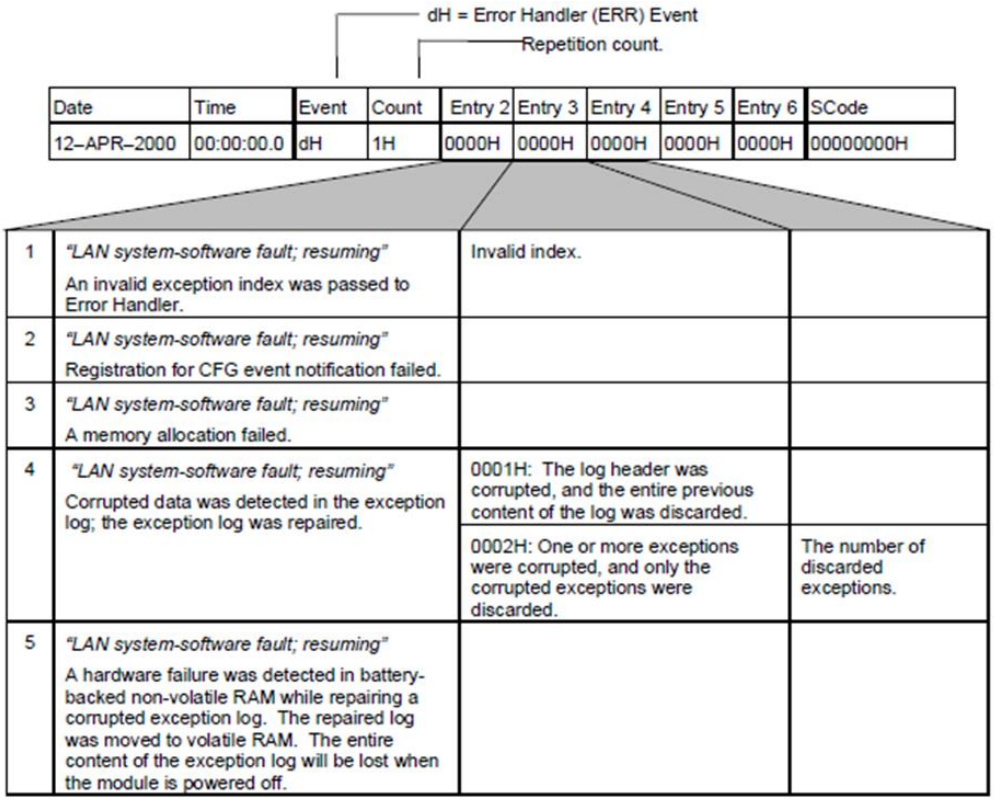
12	*"LAN system-software fault; resuming"* Error registering a new BPD User task.	Task number.	May contain memory allocation size.
13	*"LAN system-software fault; resuming"* Error de-registering a BPD User task.	Task number.	
14	*"LAN system-software fault; resuming"* Error receiving a mailbox transfer from a BPD User task.	Task number.	Mailbox sequence number.
15	*(No PLC Fault for this exception)* Error sending a mailbox transfer to the PLC CPU.	Either the task number or an internal error code.	
16	*"LAN system-software fault; resuming"* Error receiving a mailbox transfer from the PLC CPU.	Task number.	
17	*"LAN system-software fault; resuming"* Error sending a mailbox transfer to a BPD User task.	Either the task number or an internal error code.	
18	*"LAN system-software fault; resuming"* Error flushing a mailbox transfer.	Task number.	
19	*"LAN system-software fault; resuming"* Error handling internal transfer timeout timers.	Either the task number or an internal error code.	
1a	*"LAN system-software fault; resuming"* Error freeing an internal transaction record.	Task number.	
1b	*"LAN system-software fault; resuming"* Error generating Station Manager output data.	Internal error code.	Station Manager command code.
1c	*"LAN system-software fault; resuming"* Unknown Station Manager command was received.	Unknown Station Manager command code.	
1d	*"LAN system-software fault; resuming"* Error starting PLC Sweep timer task.		
1e	*"LAN system-software fault; resuming"* Error during PLC Sweep or PLC State Change notification.	Notification type code.	
1f	*"LAN system-software fault; resuming"* Error updating Ethernet Status Data (includes LIS word).		
20	*"LAN system-software fault; resuming"* Reject mail received from PLC CPU.	Task number.	Mailbox sequence number.
2a	*"LAN system-software fault; resuming"* General non-fatal internal error.		
30	*"LAN system-software fault; resuming"* Error during PLC Driver shutdown.	Internal error code.	

Event "d": Error Handler (ERR) Events

Event d is logged when an Error Handler exception event occurs. The diagram below shows the event codes, PLC Fault Table entries, and definitions for Error Handler Events. Entries 5 and 6 contain an internal location identification code.

Most Error Handler Events contain an optional Status Code (SCode) value; optional data is displayed via the LOG Z command.

Figure 18:

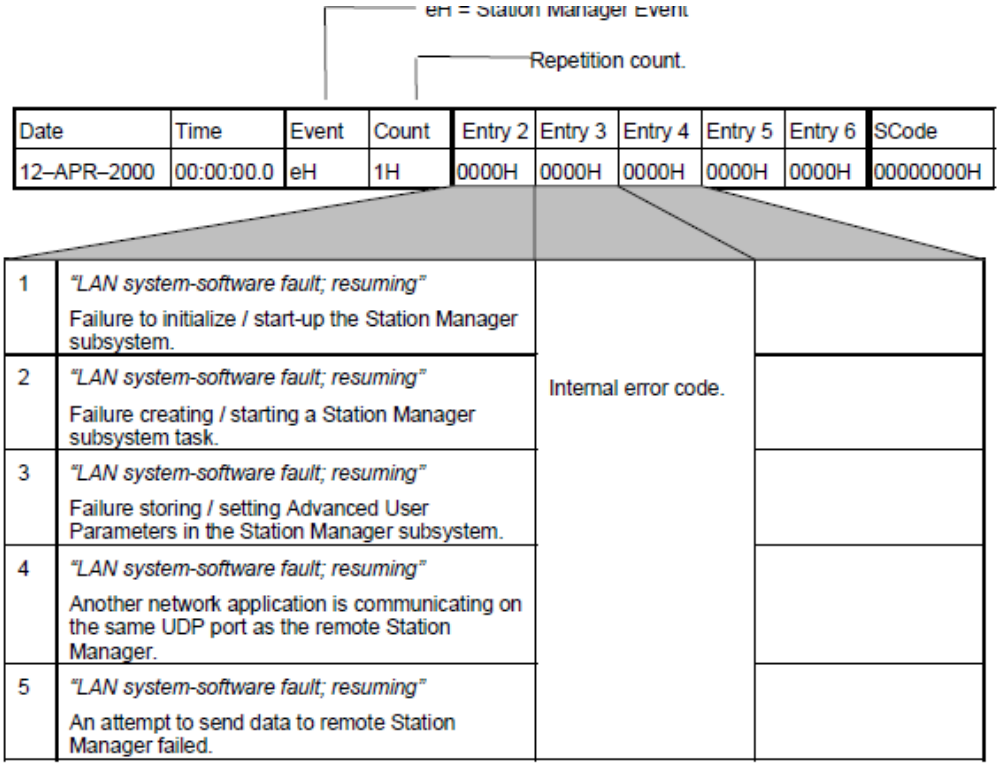


1	*"LAN system-software fault; resuming"* An invalid exception index was passed to Error Handler.	Invalid index.	
2	*"LAN system-software fault; resuming"* Registration for CFG event notification failed.		
3	*"LAN system-software fault; resuming"* A memory allocation failed.		
4	*"LAN system-software fault; resuming"* Corrupted data was detected in the exception log; the exception log was repaired.	0001H: The log header was corrupted, and the entire previous content of the log was discarded.	
		0002H: One or more exceptions were corrupted, and only the corrupted exceptions were discarded.	The number of discarded exceptions.
5	*"LAN system-software fault; resuming"* A hardware failure was detected in battery-backed non-volatile RAM while repairing a corrupted exception log. The repaired log was moved to volatile RAM. The entire content of the exception log will be lost when the module is powered off.		

Event "e": Station Manager (STA) Events

Event e is logged when a Station Manager exception event occurs. The diagram below shows the event codes, PLC Fault Table entries, and definitions for Station Manager Events. Entries 5 and 6 contain an internal location identification code. Most Station Manager events contain an optional Status Code (SCode) value; optional data is displayed via the LOG Z command.

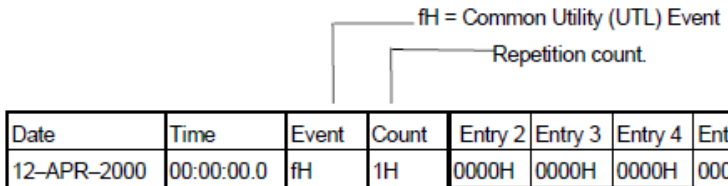
Figure 19:



Event "f": Common Utility (UTL) Events

Event f is logged when a Common Utility exception event occurs. The diagram below shows the event codes, PLC Fault Table entries, and definitions for Common Utility Events. Entries 5 and 6 contain an internal location identification code. Most Common Utility events contain an optional Status Code (SCode) value; optional data is displayed via the LOG Z command.

Figure 20:



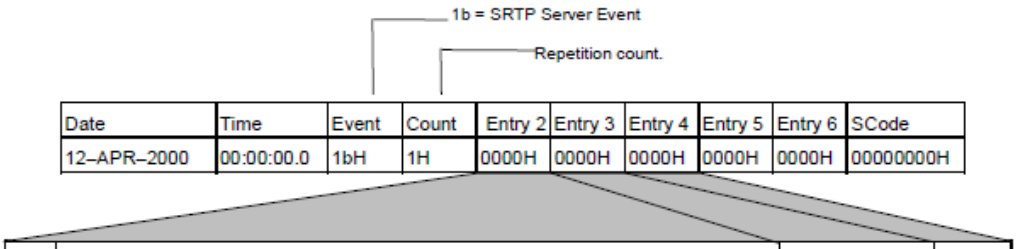
Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12–APR–2000	00:00:00.0	fH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

1	*"LAN system-software fault; resuming"* Error in an operating system request.		
2	*"LAN system-software fault; resuming"* Error in memory allocation request.		
3	*"LAN system-software fault; aborted assoc. & resuming"* Error entering or leaving a critical region.		
4	*"LAN system-software fault; resuming"* Error generating Station Manager output data.		
5	*"LAN system-software fault; resuming"* Unknown Station Manager command was received.	Unknown Station Manager command code.	
6	*"LAN system-software fault; aborted assoc. & resuming"* A command to the Ethernet network interface did not complete. The LAN interface status bits relating to the network are not reliable.		
7	*"LAN system-software fault: resuming"* Error registering for event notification from CFG subsystem.		
8	*"LAN system-sofyware fault; resuming"* Error entering or leaving a critical region within UTL main task.		

Event "1b": SRTP Server Events

Event is1b is logged when a SRTP Server exception event occurs. The diagram below shows the event codes, PLC Fault Table entries, and definitions for SRTP Server Events. Entries 5 and 6 contain an internal location identification code. Most SRTP Server events contain an optional Status Code (SCode), remote end point, and local end point values. Remote and local endpoint values are displayed as IP Address: TCP port. Optional data is displayed via the LOG Z command.

Figure 21:

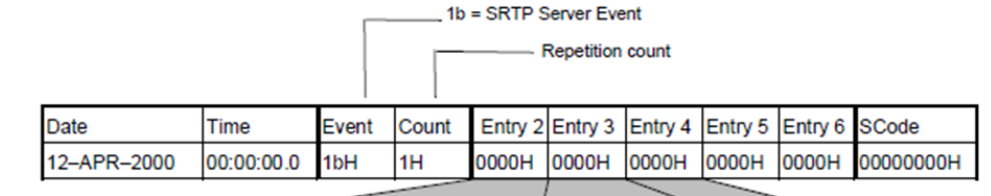


Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12–APR–2000	00:00:00.0	1bH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

1	*"LAN I/F can't init-check parms; running soft Sw Utl"* SRTP Server subsystem was not initialized after a PLC powerup or Ethernet restart. Servicing of SRTP communication requests will fail.	Internal error code.	
2	*"LAN system-software fault; resuming"* Error requesting an operating system service.		
3	*"LAN system-software fault; resuming"* SRTP Server was not able to close the listen socket when the maximum number of SRTP Server connections was established. Subsequent attempts to establish an SRTP Server connection will fail until the PLC is restarted.		
4	*"LAN system-software fault; resuming"* SRTP Server was not able to re-open a listen port upon termination of an SRTP connection. Subsequent attempts to establish an SRTP Server connection will fail until the PLC is restarted.		
5	*"LAN system-software fault; resuming"* SRTP Server lost the internal mechanism necessary to handle changes in module configuration and to process the keep-alive timer that will terminate an SRTP connection that enters a state it cannot exit.		
6	*"LAN system-software fault; resuming"* SRTP Server lost the keep-alive timer mechanism. This timer is necessary to terminate an SRTP connection that enters a state it cannot exit.		
7	*"LAN system-software fault; resuming"* SRTP Server detected an invalid connection identifier while attempting to process an event.	Connection ID.	
8	*"LAN system-software fault; resuming"* An invalid command was received by an SRTP Server task.	Task command code.	
9	*"LAN system-software fault; resuming"* An attempt to accept an incoming TCP Connect request failed. Subsequent attempts to establish an SRTP Server connection will fail until the PLC is restarted.		
a	*"LAN system-software fault; resuming"* An attempt to start a trace on an SRTP Server connection being established has failed.		
b	*"LAN system-software fault; resuming"* An attempt to receive an SRTP PDU from the remote SRTP endpoint failed. The SRTP connection has been terminated.		

Event "1b": SRTP Server Events (continued)

Figure 22:

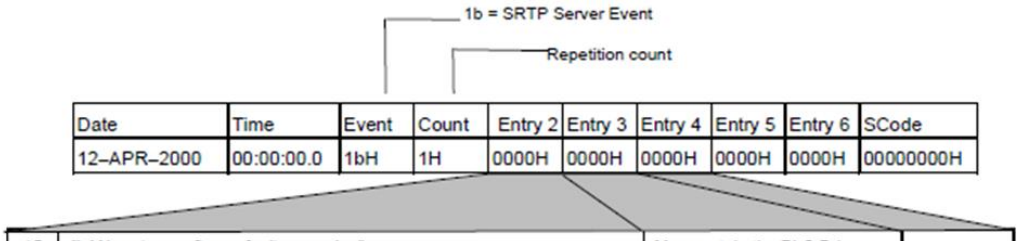


Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12–APR–2000	00:00:00.0	1bH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

c	*"LAN system-software fault; resuming"* An attempt to send an SRTP PDU to the remote SRTP endpoint failed.	PLC Driver (BPD) user task number and the transfer identification number for the SRTP PDU that failed.	
d	*"LAN system-software fault; resuming"* An attempt to process an SRTP PDU that was received from the remote SRTP endpoint failed.	PLC Driver (BPD) user task number and the transfer identification number for the SRTP PDU that failed.	Code indicating the type of SRTP PDU that could not be processed.
e	*"Backplane communications with PLC fault; lost request"* An attempt to register a connection with the PLC Driver (BPD) failed. Communication with the PLC CPU on the SRTP Server connection cannot occur.	PLC Driver (BPD) user task number that failed to register.	
f	*"Backplane communications with PLC fault; lost request"* An attempt to de-register a connection with the PLC Driver (BPD) failed. Any subsequent attempts to establish this SRTP Server connection may fail.	PLC Driver (BPD) user task number that failed to be de-registered.	
10	*"Backplane communications with PLC fault; lost request"* An attempt to send a request to the PLC Driver (BPD) failed. SRTP Server will initiate the error service that will result in termination of the SRTP connection.		
11	*"Backplane communications with PLC fault; lost request"* An attempt to send a message to the PLC Driver (BPD) failed. SRTP Server will initiate the error service that will result in termination of the SRTP connection.		
12	*"Backplane communications with PLC fault; lost request"* The PLC Driver (BPD) was not able to process a request from SRTP Server or the corresponding response.	PLC Driver (BPD) user task number and the transfer identification number of the request that failed.	
13	*"LAN system-software fault; resuming"* An unexpected request was received from the PLC CPU.	PLC Driver (BPD) user task number and the transfer identification number of the request that failed.	
14	*"LAN data memory exhausted-check parms; resuming"* An attempt to allocate a resource failed.	May contain PLC Driver (BPD) user task number and the transfer identification number of the request that failed.	

Event "1b": SRTP Server Events (continued)

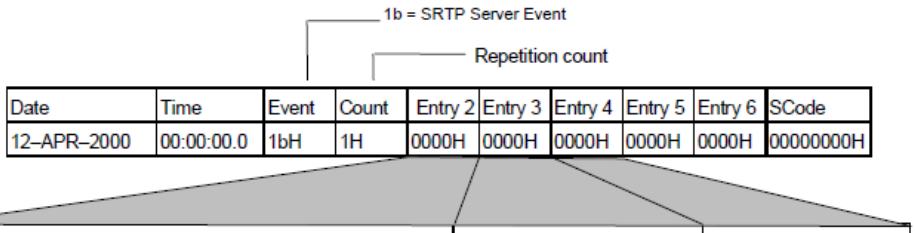
Figure 23:



15	*"LAN system-software fault; resuming"* An attempt to free a resource failed.	May contain the PLC Driver (BPD) user identification number and the transfer task number of the request during which the failure occurred.	
16	*"LAN system-software fault; resuming"* An attempt to abort a request sent to the PLC Driver (BPD) failed.	May contain the PLC Driver (BPD) user identification number and the transfer task number for the request that failed to be aborted.	
17	*"LAN system-software fault; resuming"* An error was detected in SRTP Server that failed to be processed.	Entry 3 & Entry 4 contains codes indicating the error that failed to be processed.	
18	*"LAN system-software fault; resuming"* An unexpected event has arrived on an SRTP Server connection. No state transition exists for the event in the connection's current state.	Event code.	
19	*"LAN system-software fault; resuming"* An internal error occurred that prevented SRTP Server from sending an SRTP PDU. SRTP Server failed to understand the type of SRTP PDU that needed to be sent.	Code indicating the reason for the send SRTP PDU request.	
1a	*"LAN system-software fault; resuming"* An attempt to add tracking of an open SRP session on an SRTP Server connection failed. SRTP Server will be unable to terminate the session when the connection is closed. Any subsequent attempts to open this connection will fail until the PLC is power-cycled.	The session's service request processor address.	
1b	*"LAN system-software fault; resuming"* An attempt to delete tracking of an SRP session on an SRTP Server connection failed.		
1c	*"LAN system-software fault; resuming"* An attempt to automatically terminate a dangling session with the service request processor failed. Any subsequent attempts to establish this SRTP Server connection may fail.		
1d	*"LAN system-software fault; resuming"* SRTP Server failed to synchronize operating parameters with the configuration received from the PLC CPU.		
1e	*"LAN system-software fault; resuming"* A valid event has arrived on an SRTP Server connection that is in an invalid state.	Code indicating the current state of the SRTP Server connection.	
1f	*"LAN system-software fault; resuming"* An internal error occurred while attempting to delete an SRTP Server task.		
20	*"LAN system-software fault; resuming"* SRTP Server was unable to find a record of a transaction that was sent to the PLC CPU when the PLC Driver (BPD) notified SRTP Server that activity occurred on that transaction (either the response was received or an error occurred on that transaction).	PLC Driver (BPD) user task number and the transfer identification number of the request without a matching transaction record.	

Event "1b": SRTP Server Events (continued)

Figure 24:



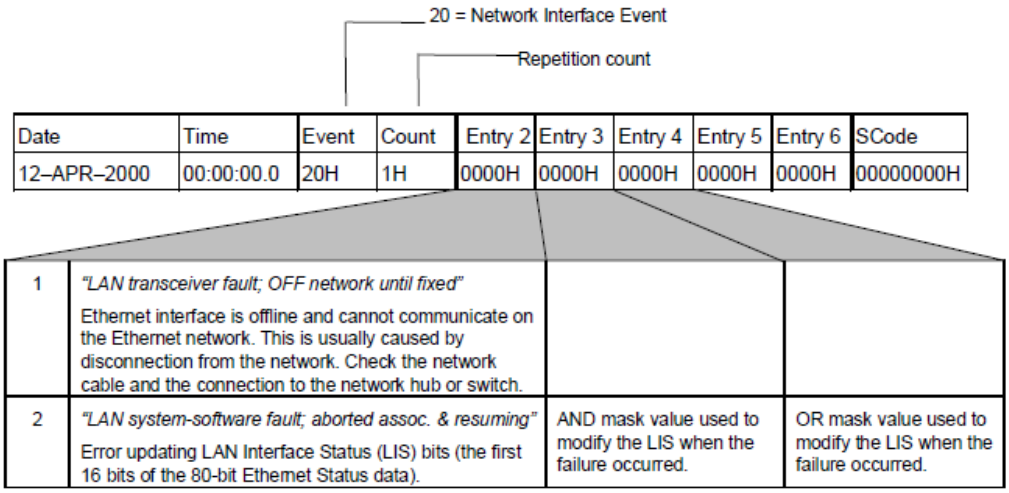
Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12–APR–2000	00:00:00.0	1bH	1H	0000H	0000H	0000H	0000H	0000H	00000000H

21	*"LAN system-software fault; resuming"* A PDU arrived in a state in which the SRTP connection cannot handle it. SRTP Server will initiate the error service that will result in termination of the SRTP connection.	Code indicating the PDU type.		Code indicating the state of the SRTP connection.	
		0	Connect Request	1	IDLE
		1	Connect Response	2	OPENING
		2	Data Request	3	ESTABLISHED
		3	Data Response	4	CLOSING
		4	Unconfirmed Request	5	TERMINATE
		5	Error Request		
		6	Destinations Request		
		7	Destinations Response		
		8	Session Request		
22	*"LAN I/F capacity exceeded; discarded request"* An SRTP connection could not be created due to either enforcement of a maximum limit on the number of SRTP connections or an internal error that prevents processing an establish connection request, such as system resource exhaustion.				
23	*"LAN system-software fault; resuming"* An attempt to increment an SRTP Server tally failed.	ID of the tally that failed to be incremented.			
24	*"LAN system-software fault; resuming"* SRTP Server dropped a keep-alive timer tick. Timing of keep-alive timer processing may be temporarily skewed.				
25	*"LAN system-software fault; resuming"* An attempt to restart SRTP Server failed.				
26	*"Bad remote application request; discarded request"* A PDU arrived with a version field number higher than the SRTP protocol version supported by SRTP Server	The version number of the PDU.		The SRTP version supported by the SRTP Server.	
27	*"Bad remote application request; discarded request"* A PDU arrived with an invalid pdu_type field code.	Code indicating the PDU type as listed above.			
28	*"Bad remote application request; discarded request"* A PDU arrived with a non-zero data_length field, but was of a class of PDU's which must have zero (0) in this field.	Code indicating the PDU type as listed above.		The lower 16 bits of the data_length field.	
29	*"Bad remote application request; discarded request"* An Error Request PDU arrived from a remote SRTP endpoint. The SRTP connection will be terminated.	Error code in the Error Request PDU.			
2a	*"LAN system-software fault; resuming"* An attempt to shutdown SRTP Server failed.				
2b	*"Bad remote application request; discarded request"* A valid SRTP PDU arrived, but the SRTP Server does not support handling it.	Code indicating the PDU type as listed above.			

Event "20": Network Interface Events

Event 20 is logged when a Network interface exception event occurs. The diagram below shows the event codes, PLC Fault Table entries, and definitions for Network Interface Events. Entries 5 and 6 contain an internal location identification code. Most Network Interface events contain an optional Status Code (SCode) value; optional data is displayed via the LOG Z command.

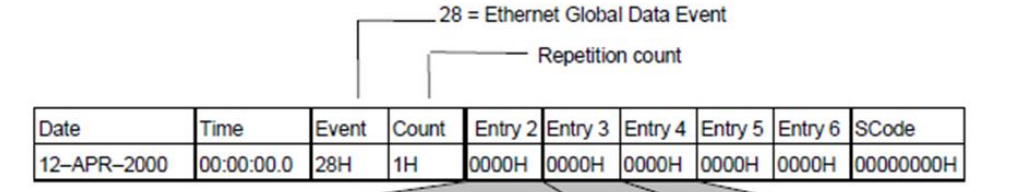
Figure 25:



Event "28": Ethernet Global Data (EGD) Events

Event 28 is logged when an Ethernet Global Data (EGD) exception event occurs. The diagram below shows the event codes, PLC Fault Table entries, and definitions for Ethernet Global Data Events. Entries 5 and 6 contain an internal location identification code. Most Ethernet Global Data events contain an optional Status Code (SCode) and exchange identifier values. The exchange is identified by Producer ID and Exchange ID. Optional data is displayed via the LOG Z command.

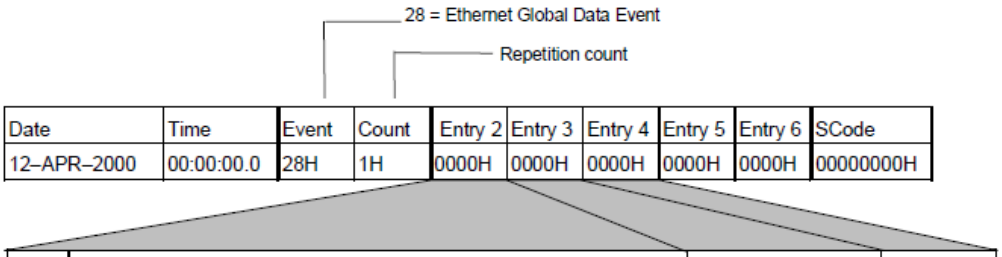
Figure 26:



1	*"LAN system-software fault; resuming"* Error in an operating system request.	May contain additional internal error code.	May contain additional internal error code.
2	*"LAN system-software fault; resuming"* Error initializing EGD. No EGD exchanges will be processed until the module is power-cycled or restarted.		
3	*"LAN system-software fault; resuming"* Error retrieving the soft switch or Advanced User Parameters data. EGD may be operating with unexpected parameter settings.		
4	*"LAN system-software fault; resuming"* Unable to register for PLC data transfers. EGD will be inoperative until this problem is fixed.		
5	*"Backplane communications with PLC fault; lost request"* An unknown internal message was received by EGD main task.	Initial portion of the unrecognized message.	
6	*"LAN system-software fault; resuming"* Error in a PLC request to establish an EGD exchange. The exchange with this error will not be created. This is an internal error and should be reported to GE for corrective action.		
7	*"LAN data memory exhausted-check parms; resuming"* Error in allocating memory to hold the state of an exchange. The exchange in question will not transfer any data.		
8	*"LAN I/F capacity exceeded; discarded request"* A request to allocate shared memory to communicate the exchange data to the PLC failed. The exchange in question will not transfer any data.	Size of the connection area to be allocated.	
9	*"LAN system-software fault; resuming"* The internal identifier used by the PLC to identify the exchange was not valid. This is an internal error and should be reported to GE for corrective action.	Internal exchange handle	Internal connection ID.
a	*"LAN system-software fault; resuming"* The name format in the exchange is not supported. This is an internal error and should be reported to GE for corrective action.	Producer name format	Consumer name format.
c	*"LAN system-software fault; resuming"* Error releasing shared memory.	Shared memory offset.	
d	*"LAN system-software fault; resuming"* Error freeing the state information for an exchange.	Exchange number.	

Event "28": Ethernet Global Data (EGD) Events (continued)

Figure 27:

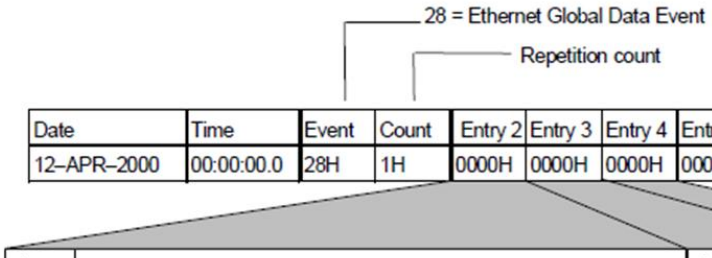


Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12–APR–2000	00:00:00.0	28H	1H	0000H	0000H	0000H	0000H	0000H	00000000H

e	*"LAN system-software fault; resuming"* Error in accessing the semaphore for an exchange.		
f	*"Backplane communications with PLC fault; lost request"* An unexpected PLC service has been received. This is an internal error and should be reported to GE for corrective action.	Internal identification code.	
10	*"Backplane communications with PLC fault; lost request"* Unrecognized message received from the PLC. This is an internal error and should be reported to GE for corrective action.		
11	*"Backplane communications with PLC fault; lost request"* Improperly formed message received from the PLC. This is an internal error and should be reported to GE for corrective action.	Contains the size of any data with this message.	
12	*"LAN data memory exhausted-check parms; resuming"* Error in allocating memory for internal EGD communications.	The size of the requested allocation.	
13	*"LAN system-software fault; resuming"* Unrecognized message received from the PLC. This is an internal error and should be reported to GE for corrective action.	Command code of the unrecognized message.	
14	*"LAN system-software fault; resuming"* Error return from a request to scan EGD consumed data. One or more samples will be lost or delayed in being transferred to the PLC application. In some cases, this exception can occur during normal power down; if so, it does not indicate a problem.		
15	*"Backplane communications with PLC fault; lost request"* Error in sending mail to the PLC. Typically this will result in the PLC CPU generating a "loss of module" fault on the Ethernet module.		
16	*"LAN system-software fault; resuming"* Error generating Station Manager output.	Additional internal error code.	
17	*"LAN system-software fault; resuming"* Error printing tally output.		
18	*"LAN system-software fault; resuming"* Unknown Station Manager command was received.	The unknown Station Manager command code.	
19	*"LAN system-software fault; resuming"* Error identifying the state of a produced exchange. This is an internal error and should be reported to GE for corrective action.		

Event "28": Ethernet Global Data (EGD) Events (continued)

Figure 28:

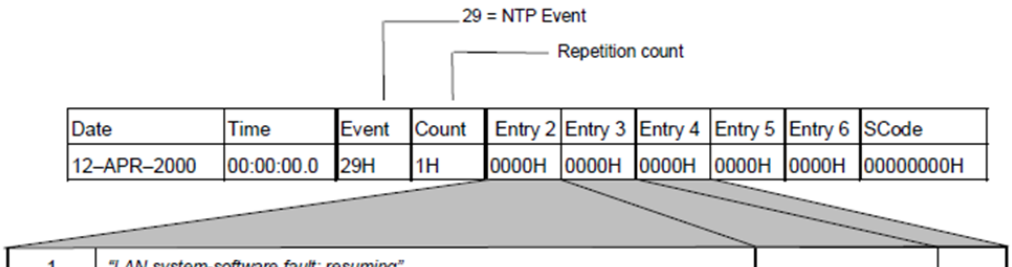


1a	*"LAN system-software fault; resuming"* Error communicating between EGD tasks. This is an internal error and should be reported to GE for corrective action.	Additional internal error code.	Additional internal error code.
1b	*"LAN system-software fault; resuming"* Unrecognized data received on the EGD data port. The data in the received message is ignored.	The unrecognized command code.	PDU version.
1c	*"LAN system-software fault; resuming"* The signature field in a sample is invalid. This indicates that the producer and the consumer may not agree on the format of the data. The exchange having the error is identified in the extended data available using the *LOG Z* command.	The signature.	
1d	*"LAN system-software fault; resuming"* The length of the sample received for a consumed exchange does not match the length configured for the exchange. This usually means that the producer and the consumer of the data don't agree on its format. The exchange having the error is identified in the extended data available using the *LOG Z* command.	The received data length.	
1e	*"LAN system-software fault; resuming"* Error return from a request to scan EGD consumed data. This error can be logged under a normal shutdown if a request occurs simultaneously with the power shutoff. One or more samples will be lost or delayed in being transferred to the PLC application.		
1f	*"LAN system-software fault; resuming"* Error retrieving information about the shared memory between the PLC and the Ethernet module.		
20	*"LAN system-software fault; resuming"* Invalid adapter index encountered in an exchange.	The adapter index.	
22	*"LAN system-software fault; resuming"* The length field in a received sample does not match with the length of the sample packet. This normally indicates an error in the producer of the data.	The received data length.	
23	*"LAN system-software fault; resuming"* Error in a mail request received from the PLC.		
24	*"LAN system-software fault; resuming"* Internal error in the EGD subsystem.		
25	*"LAN system-software fault; resuming"* Error entering or leaving a critical region.		
26	*"LAN system-software fault; resuming"* Error processing a consumed exchange time out. All subsequent timeout processing is suspect.		

Event "29": NTP Events

Event 29 is logged when a NTP exception event occurs. The diagram below shows the event codes, PLC Fault Table entries, and definitions for NTP Events. Entries 5 and 6 contain an internal location identification code. Most NTP events contain an optional Status Code (SCode) value; optional data is displayed via the LOG Z command.

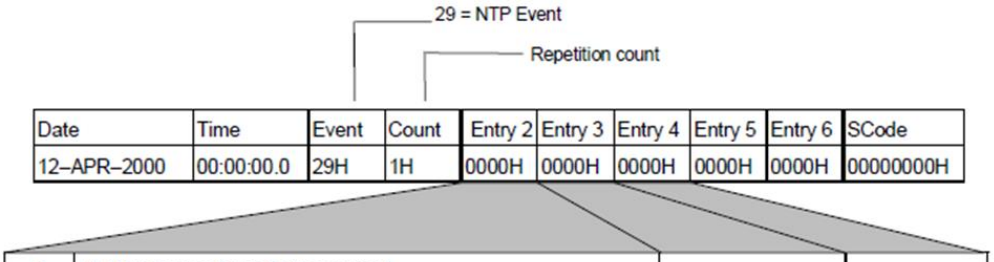
Figure 29:



1	*"LAN system-software fault; resuming"* Error obtaining basic Ethernet configuration from the PLC CPU.		
2	*"LAN system-software fault; resuming"* Error obtaining Advanced User Parameter variables from the PLC CPU.		
3	*"LAN system-software fault; resuming"* Unable to utilize a specified NTP server. Verify that a valid IP address has been specified and that any non-default Advanced User Parameters are valid.	NTP server number from the hardware configuration.	
4	*"LAN system-software fault; resuming"* Unable to remove a specified NTP server from those currently configured for use. This is an internal error and should be reported to GE for corrective action.		
5	*"LAN system-software fault; resuming"* This is an internal error and should be reported to GE for corrective action.		
6	*"LAN system-software fault; resuming"* This is an internal error and should be reported to GE for corrective action.		
7	*"LAN system-software fault; resuming"* Error converting internal IP address representation to a format suitable for output. This is an internal error and should be reported to GE for corrective action.		
8	*"LAN system-software fault; resuming"* Error initializing the NTP server task. NTP is not operational.		
9	*"LAN system-software fault; resuming"* Error starting the NTP server task. NTP is not operational.		
a	*"LAN system-software fault; resuming"* Error deleting the NTP server task. Although an attempt was made to terminate NTP operation, it continues to run as previously configured.		
b	*"LAN system-software fault; resuming"* Error printing tally output.		
c	*"LAN system-software fault; resuming"* Error obtaining Ethernet configuration from the PLC CPU. The NTP configuration remains unchanged.		

Event "29": NTP Events (continued)

Figure 30:



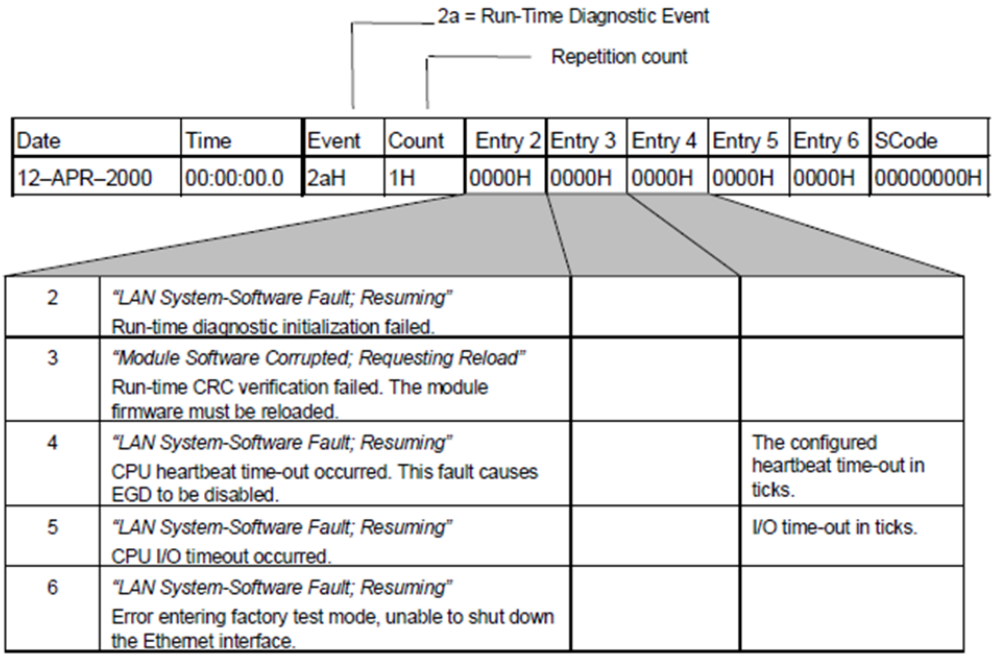
Date	Time	Event	Count	Entry 2	Entry 3	Entry 4	Entry 5	Entry 6	SCode
12–APR–2000	00:00:00.0	29H	1H	0000H	0000H	0000H	0000H	0000H	00000000H

d	*"LAN system-software fault; resuming"* This is an internal error and should be reported to GE for corrective action.		
e	*"LAN system-software fault; resuming"* Error printing stat output. Status Code contains a detailed error code. This is an internal error and should be reported to GE for corrective action.		
f	*"LAN system-software fault; resuming"* Error generating Station Manager output. Station Manager output initialization failed. This is an internal error and should be reported to GE for corrective action.		
10	*"LAN system-software fault; resuming"* Error generating Station Manager output. Station Manager output generation failed. This is an internal error and should be reported to GE for corrective action.		
11	*"LAN system-software fault; resuming"* Error generating Station Manager output. Station Manager output termination failed. Further Station Manager commands will likely fail. This is an internal error and should be reported to GE for corrective action.		
12	*"LAN system-software fault; resuming"* Unknown Station Manager command was received.	The unknown Station Manager command code.	
13	*"LAN system-software fault; resuming"* Unable to obtain current time from the Ethernet interface's internal clock. This is an internal error and should be reported to GE for corrective action.		
14	*"LAN system-software fault; resuming"* Unable to set current the Ethernet interface's internal clock. This is an internal error and should be reported to GE for corrective action.		
15	*"LAN system-software fault; resuming"* Error updating timestamps within the exception log. Timestamps in the log will not reflect a common timebase and should not be used for timing comparisons. This is an internal error and should be reported to GE for corrective action.		
16	"LAN system-software fault; resuming" Not currently synchronized to an NTP server. The Ethernet interface has previously achieved synchronization with one of the configured NTP servers but is currently unable to synchronize with any NTP server. Check your network and NTP servers for problems.	IP address of the last synchronized server.	

Event "2a": Run-time Diagnostic Events

Event 2A is logged when a run-time exception event occurs. The diagram below shows the event codes, PLC Fault Table entries, and definitions for Run-tine Diagnostic Events. Entries 5 and 6 contain an internal location identification code. Most Run-time Diagnostic Events contain an optional Status Code (SCode) value; optional data is displayed via the LOG Z command.

Figure 31:



Technical support & Contact Information

Home link: http://www.Emerson.com/Industrial-Automation-Controls

Knowledge Base: https://www.emerson.com/Industrial-Automation-Controls/support

Note: If the product is purchased through an Authorized Channel Partner, please contact the seller directly for any support.

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