MONITORING SYSTEM

SPEC. NOS.: 586505000
586505500
MODEL: LMS1000

User Instructions

Firmware Version 6.3

Section 5847
Issue AL, July 24, 2006

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STATIC WARNING

The printed circuit cards used in this equipment contain static sensitive components. The warnings listed below must be observed to prevent damage to these components. Disregarding any of these warnings may result in personal injury or damage to the equipment.

1. Do not insert or remove printed circuit cards with power applied. Wait at least 5 minutes after power is turned off (or until power supplies have discharged to zero volts) before removing any circuit card.

2. Before touching any static sensitive component or printed circuit card containing such a component, discharge all static electricity from yourself by wearing a wrist strap grounded through a one megohm resistor. Some wrist straps, such as Emerson Network Power P/N 631810600, have a built-in one megohm resistor; no external resistor is necessary. Read and follow wrist strap manufacturer's instructions outlining use of a specific wrist strap.

3. Do not touch the traces or components on a printed circuit card containing static sensitive components. Handle the printed circuit card only by the edges that do not have connector pads.

4. After removing a printed circuit card containing a static sensitive component, place the printed circuit card only on conductive or anti-static material such as conductive foam, conductive plastic, or aluminum foil. Do not use ordinary Styrofoam or ordinary plastic.

5. Store and ship static sensitive devices or printed circuit cards containing such components only in static shielding containers.

6. If necessary to repair a printed circuit card containing a static sensitive component, wear an appropriately grounded wrist strap, work on a conductive surface, use a grounded soldering iron, and use grounded test equipment.

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Static Warning

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FCC INFORMATION

The modem circuit card of LMS1000 (if installed) has been granted a registration number by the Federal Communications Commission, under Part 68 rules and regulations for direct connection to the telephone lines. In order to comply with these FCC rules, the following instructions must be carefully read and applicable portions followed completely:

a) Direct connection to the telephone lines may be made only through the standard plug- ended cord furnished to the utility-installed jack. No connection may be made to party or coin phone lines. Prior to connecting the device to the telephone lines, you must:

b) Call your telephone company and inform them you have an FCC registered device you desire to connect to their telephone lines. Give them the number(s) of the line(s) to be used, the make and model of the device, the FCC registration number and ringer equivalence. This information will be found on the device or enclosed with instructions as well as the jack suitable for your device.

c) After the telephone company has been advised of the above you may connect your device if the jack is available, or after the telephone company has made the installation.

d) Repairs may be made only by the manufacturer or his authorized service agency. Unauthorized repairs void registration and warranty. Contact seller or manufacturer for details of permissible user performed routine repairs, and where and how to have other than routine repairs.

e) If, through abnormal circumstances, harm to the telephone lines is caused, it should be unplugged until it can be determined if your device or the telephone line is the source. If your device is the source, it should not be reconnected until necessary repairs are effected.

f) Should the telephone company notify you that your device is causing harm, the device should be unplugged. The telephone company will, where practicable, notify you, that temporary discontinuance of service may be required. However, where prior notice is not practicable, the telephone company may temporarily discontinue service, if such action is reasonably necessary, in such cases the telephone company must (A) Promptly notify you of such temporary discontinuance, (B) Afford you the opportunity to correct the condition and (C) Inform you of your rights to bring a complaint to the FCC under their rules.

g) The telephone company may make changes in its communications facilities, equipment, operations or procedures, where such action is reasonably required in the operation of its business and is not inconsistent with FCC rules. If such changes can be reasonably expected to render any customer's devices incompatible with telephone company facilities, or require modification or alteration, or otherwise materially affect its performance, written notification must be given to the user, to allow uninterrupted service.

The following information is provided here and on a label attached to the outside of the system cabinet when equipped with a modem circuit card.

MODEM	JACK	RINGER EQUIVALENCE	FCC REGISTRATION NUMBER
56K bps	RJ-11	0.2A	B46USA-22429-MM-E

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APPENDIX (a record of the changes made to this document)

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CHAPTER 1
INTRODUCTION

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PREFACE

This document (Section 5847) provides *User Instructions* for Monitoring System Model **LMS1000**, Spec. Nos. **586505000** and **586505500**. These instructions also provide procedures for the integrated **LMS** of a Spec. No. **582140000** LPS Power System.

For *Installation Instructions*, refer to Section 5879 located in the separate INSTALLATION MANUAL. Installation instructions are also provided on the CD (Electronic Documentation Package) furnished with your system.

WHAT IS LMS1000

- LMS1000 is a programmable monitoring, controlling, and data acquisition system designed for use in telecommunications power sites.

- LMS1000 can be equipped to monitor analog, binary, and temperature inputs.

- LMS1000 collects data on the monitored inputs. The data collected is used for alarm processing and reporting, and to provide statistics.

- LMS1000 is capable of reporting alarm conditions to a remote terminal, pager, or Email address. For remote terminal or pager notification, LMS1000 must be equipped with an optional modem. Two types of alarm reporting mechanisms are provided, System Alarm Reporting and Individual User Alarm Reporting.

- LMS1000 is capable of reporting alarm conditions via SNMP traps over Ethernet when the SNMP option is ordered, or via TL1 (over Ethernet) when the 'TL1 over Ethernet' option is ordered. TL1 is also available via a serial connection in 'direct mode'.

- LMS1000 provides programmable LED's to allow local indication of alarm conditions or occurrences. For remote indication, LMS1000 can be equipped with programmable relays. Relays can also be used to control other equipment.

- LMS1000 easily interfaces with the MCA of a Vortex® Power System (VPS) or LPS Power System. This interface allows an LMS1000 user to remotely monitor, adjust, and control the VPS or LPS via LMS1000, plus easily use the features of LMS1000

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with the VPS or LPS. Separate analog, binary, and relay circuit cards do not have to be supplied for this interface. In a VPS, one simple cable connection between the LMS1000 and VPS completes the interconnections required. The LMS is factory integrated in an LPS Power System. Analog, binary, relay, and temperature circuit cards may be provided to monitor equipment external to the VPS or LPS.

Note that Spec. No. 582140000 LPS Power System does not use the LMS Cabinets. The LMS is factory integrated into the LPS Power System. LMS I/O circuit card mounting positions are provided inside a 582140000 LPS Power System.

- Available software options include…

  WEB Interface
  Power Metering
  Energy Management
  Rectifier/PCU Sequencing
  TL1/X.25
  SNMP
  TL1 (over Ethernet)
  Gateway Port

  Note: *The LMS Energy Management and Sequencing features are not for use in an LPS Power System.*

- Available specialty interfaces include…

  Door Access Controller Interface
  External GPS Modem Interface
  AC Analyzer Interface

- Refer to SAG586505000/SAG586505500 (System Application Guide) for additional information. The SAG can be accessed via the CD (Electronic Documentation Package) furnished with your system.

LMS1000 CONSISTS OF...

- a Main Cabinet which holds up to ten input/output circuit cards, in a cabinet size that occupies two 19" or 23" relay rack spaces. For system expansion and/or to monitor points at other locations, Supplemental (Expansion) Cabinets are available. Each Expansion Cabinet holds up to ten input/output circuit cards, in a cabinet size that occupies two 19" or 23" relay rack spaces. Also available are Expansion Assemblies which provide an input circuit card equipped with a fixed number of analog and binary input points in a sheetmetal housing. These assemblies can be mounted inside customer equipment. The Main Cabinet, Expansion Cabinets, and Expansion Assemblies are interconnected via the LMS network.

- a CPU circuit card, optional modem circuit card, and any combination of optional analog, binary, relay, and temperature input/output (I/O) circuit cards. Analog, binary, and temperature circuit cards monitor a variety of inputs. The relay circuit card provides Form-C relay contacts for connection to external alarms and control circuits. The CPU circuit card also contains programmable LED's for local indication of alarms or occurrences.

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- communications ports: Local Terminal Port, Remote (Modem) Terminal Port, VPS/LPS Ports, optional TL1 port, and Ethernet Port (for Telnet access, optional WEB access, optional SNMP access, optional TL1 access, and Email alarm reporting). Additional OEM ports are provided. The functions of the OEM ports are determined by the firmware. This allows the function to be manufacturer programmable for specific applications. A local front panel display option is also available.

- Firmware, which interfaces to the hardware and provides monitoring, alarm processing, alarm reporting, and controlling functions. Alarm processing includes statistics, status, and diagnostic information.

- Remote System Diagnostics.

  Memory Test
  Verify Integrity of Application Code
  Verify Integrity of I/O Subsystem Communications
  Check Status of I/O Cards
  Verify Integrity of Communications and Operations

LMS1000 PROVIDES...

- An extended temperature operating range.

- Lower monitoring costs.

- Smaller packaging size.

- Automatically detected (identified) I/O circuit cards. Circuit cards are automatically identified by system firmware on power-up.

- CPU Firmware can easily be upgraded by an Emerson Network Power service facility via a local or remote terminal interface.

- System configuration can easily be downloaded from LMS1000 to a PC (locally or remotely), and uploaded from a PC to LMS1000 (locally or remotely).

- Simplified installation via integration of distributed monitoring I/O hardware.

- Incremental expandability.

- Extensive self diagnostics.

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Local
Terminal
Port
or
RS-232
Port*

Remote
Dial-Up &
Reporting
Port

VPS
(Vortex
Power
System)
Port
(OEM3*)

OEM2*
Comm
Port

OEM1*
Comm
Port

RS-232   Modem   RS-485   RS-232/   RS-232
                                          RS-422,
                                          selectable

Local
LED's

LMS1000
SPEC. NOS.
586505000 and 586505500

Ethernet Port
(TELNET, SNMP,
TFTP, WEB, TL1)

Expansion Ports
(to expansion
cabinets and/or
assemblies)

Analog
Inputs

Binary
Inputs

Relay
Outputs

e.g. Voltages,
Currents,
Temperatures

e.g. Rectifier Fail,
Fuse Fail,
Battery Alarm,
Door Open

e.g. CPU Fail Alarm,
Power Alarms,
Rectifier Control,
Energy Management
and Sequential Start
(relays are not
required for a
Vortex Power System)

* Software Dependent:
  See Lists 60, 61, 79, 84, 85, 86, and 88 descriptions in SAG586505000/SAG586505500.

Figure 1-1
Block Diagram (586505000/586505500 LMS Cabinet)
(**Note that Spec. No. 582140000 LPS Power System does not use the
LMS Cabinets. The LMS is factory integrated into the LPS Power System.**)

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CHAPTER 2
OPERATING LMS1000

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LMS DESCRIPTION

This section describes the hardware components, but most importantly, how the channel numbering scheme works inside the LMS -- how discrete I/O points, Expansion Nodes, and MCA information are mapped to LMS channels.

Components of LMS

The LMS is a Monitoring System with Power System controlling capabilities. The components of the LMS can easily be networked together to provide a multitude of monitoring and controlling configurations.

The LMS consists of a **Main Cabinet** which houses the primary CPU circuit card, plus provides mounting slots for optional input/output (I/O) circuit cards. The I/O cards can be furnished to provide LMS I/O points for connection outside of an Emerson Network Power Power System.

An optional LMS **Expansion Cabinet** which houses an expansion CPU circuit card is also available to allow for additional monitoring points, plus the Expansion Cabinet can be placed away from the Power System for extended monitoring applications. The Expansion Cabinet has the same physical footprint as the Main Cabinet, with the same number of slots for I/O cards.

> Note that Spec. No. 582140000 LPS Power System does not use the LMS Cabinets. The LMS is factory integrated into the LPS Power System.
>
> In a 582140000 LPS Power System, the primary LMS CPU circuit card is housed in the Primary Bay. The expansion LMS CPU circuit cards are housed in the Secondary Bays. Both the Primary and Secondary Bays provide mounting slots for the optional LMS I/O circuit cards.

The LMS easily interfaces with the MCA (Meter-Control-Alarm) Assembly of a Emerson Network Power VPS and LPS Power System. There is no need for separate LMS I/O circuit cards for this interface. All LMS monitoring and controlling capabilities for the **MCA Interface** are built into the LMS primary CPU circuit card.

An LMS **Expansion Assembly** has been designed which is factory integrated into designated VPS Power Systems. This integration allows the Expansion Assembly to be built into the VPS Power System, thus eliminating the need for you to 'hard wire' the Power System's distribution shunts and FA/CBA leads to the LMS. Simple LMS network connections are all that is required. The Expansion Assembly is also available for integration into customer equipment.

Note that the LMS Monitoring System can consist of multiple Expansion Cabinets and Expansion Assemblies to suit your needs.

LMS Channel Numbering Scheme

Inputs/Outputs (I/O) and Channels

The LMS provides **analog** and **binary** input monitoring points, and extended **relay** contact output points. In addition, local front panel programmable **LEDs** are provided.

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Each input and output point is directly associated with a channel. Thus there are LMS **analog**, **binary**, **relay**, and **LED** channels.

In the LMS, you can combine two or more analog inputs into one **function** channel, and advance software options provide **energy management** channels. This adds **function** channels and **energy management** channels to the list of channel types in the LMS.

Nodes

In the LMS system; the 586505000/586505500 Main Cabinet or 582140000 Primary Bay, the 586505000/586505500 Expansion Cabinets or 582140000 Secondary Bays, the 586505000/586505500 Expansion Assemblies, and the MCA Interface are referred to as nodes. A node is a grouping of I/O's in a common assembly, cabinet, or bay.

Putting it Together, the LMS Channel Numbering Scheme

LMS channels are identified through a type designation (A = analog, B = binary, R = relay, L = LED, F = function, and E = energy management), a Node Number (I/O grouping) prefix, and an input/output number. Remember, a particular channel's type designation and input/output number is identical to that of the input or output associated to it.

- Installed optional LMS I/O circuit cards in the 586505000/586505500 Main Cabinet or 582140000 Primary Bay and each 586505000/586505500 Expansion Cabinet or 582140000 Secondary Bay are automatically detected by LMS firmware. Inputs and outputs are automatically assigned consecutive numbers (per cabinet or bay) for each type detected, starting with the circuit card of that type installed in the left most position (as viewed from the front). Types are A for analog, B for Binary, and R for relay. Temperature inputs are mapped to analog channels.

  The Node Number is a fixed number for the 586505000/586505500 Main Cabinet (Node 00), and includes all I/O's associated to the 586505000/586505500 Main Cabinet. For the 582140000, Node 00 is the grouping of LMS I/O cards installed in the Primary Bay. Node 00 also includes the LED, Function, and Energy Management channels. For both 586505000/586505500 and 582140000, you assign Node Numbers (21-89) to the groupings of LMS I/O cards installed in 586505000/586505500 Expansion Cabinets and 582140000 Secondary Bays during the Initial Start-Up procedure.

- Input numbers for the LMS VPS MCA Interface are pre-assigned (The LMS VPS MCA Interface provides additional analog channels and binary channels. These channels are dedicated to the LMS VPS MCA Interface, and are automatically mapped to monitor predetermined VPS parameters.). The Node Number for the LMS VPS MCA Interface is 90.

- Input numbers for the LMS LPS MCA Interface are pre-assigned (The LMS LPS MCA Interface provides additional analog channels and binary channels. These channels are dedicated to the LMS LPS MCA Interface, and are automatically mapped to monitor predetermined LPS parameters.). The Node Number for the LMS LPS MCA Interface is 99.

- Input numbers for the LMS LPS Bay Interface are pre-assigned (The LMS LPS Bay Interface provides additional analog channels and binary channels. These channels are dedicated to the LMS LPS Bay Interface, and are automatically mapped to

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monitor predetermined LPS parameters.). The Node Number for each LPS Bay is 1 through 20, starting with the Primary Bay.

- The LMS also provides self diagnostic alarms on binary channels B0081 through B0099.

Example: A0001,
A represents an analog input/channel
00 represents the 586505000/586505500 Main Cabinet Node or 582140000 Primary Bay LMS I/O Grouping Node (cannot be changed)
01 represents input/channel #01

Example: A3001,
A represents an analog input/channel
30 represents the 586505000/586505500 Expansion Cabinet Node or 582140000 Secondary Bay LMS I/O Grouping Node set as Node #30 (set when network initially established)
01 represents input/channel #01

Example: A4001,
A represents an analog input/channel
40 represents the 586505000/586505500 Expansion Assembly Node set as Node #40 (set when network initially established)
01 represents input/channel #01

Example: A9001,
A represents an analog input/channel
90 represents the VPS MCA Node (cannot be changed)
01 represents input/channel #01

Example: A9901,
A represents an analog input/channel
99 represents the LPS MCA Node (cannot be changed)
01 represents input/channel #01

Example: A0101,
A represents an analog input/channel
01 represents the 582140000 Primary Bay Node (cannot be changed)
01 represents input/channel #01

Example: A0201,
A represents an analog input/channel
02 represents an 582140000 Secondary Bay Node (cannot be changed)
01 represents input/channel #01

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LOCAL CONTROLS AND INDICATORS

LMS Display Option

Refer to Section 5942 or Section 5943 for LMS Display option operation procedures. These are provided in the LMS1000 Installation Manual, and on the CD provided with your system documentation.

Location and Identification

Refer to Figure 2-1.

LMS CPU Circuit Cards

The following controls and indicators are located on the LMS CPU circuit cards. In a 586505000/586505500 System, these indicators are visible through the front panel of the Main and Expansion Cabinets. In the 582140000 LPS Power System, open the bay's front door to view the indicators on the LMS CPU circuit card.

a) ON Indicator: This indicator illuminates green to indicate the presence of DC input power to the CPU circuit card, and that the power supply circuits located on the circuit card are functioning properly.

LMS Main CPU Circuit Card Only: This indicator illuminates yellow if the voltage of the internal battery located on the CPU circuit card decreases below 2.5 volts DC. The internal battery maintains clock and memory if input power to the system is lost. When this indicator illuminates yellow, the memory backup battery should be replaced.

b) FAIL Indicator: This indicator illuminates red if the CPU circuit card fails. If this occurs, the system has shut down.

LMS Main CPU Circuit Card Only: This indicator also illuminates if any of the LMS "Hardware Fail" channels become active. Extended relay contacts are also provided for connection of external alarms.

c) RST Pushbutton Switch: This pushbutton switch is used in cases where the system will not respond to operator input. Momentarily pushing this switch resets the CPU.

d) 1 - 8 (Programmable Status LED Indicators) **(Main CPU Circuit Card Only)**: Eight LED indicators are located on the main CPU circuit card. These indicators can be programmed to illuminate at specific user determined events or occurrences. The LED's can also be programmed to illuminate red, yellow, or green.

e) S2 (Programmable Switch) **(Main CPU Circuit Card Only)**: Can be used in program lines. Refer to "Program Lines" in "Chapter 3. Configuring LMS1000" in the separate *Installation Instructions* (Section 5879).

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586505000 Shown
586505500 Similar

FRONT OF SHELF

Located on Front of
Main LMS CPU Circuit Card

ON FAIL   RST   S2   1 2 3 4 5 6 7 8   RS-232

MAIN CABINET

586505000 Shown
586505500 Similar

LMS1000
EXPANSION CHASSIS

FRONT OF SHELF

Located on Front of
Expansion LMS CPU Circuit Card

ON FAIL   RST

EXPANSION CABINETS
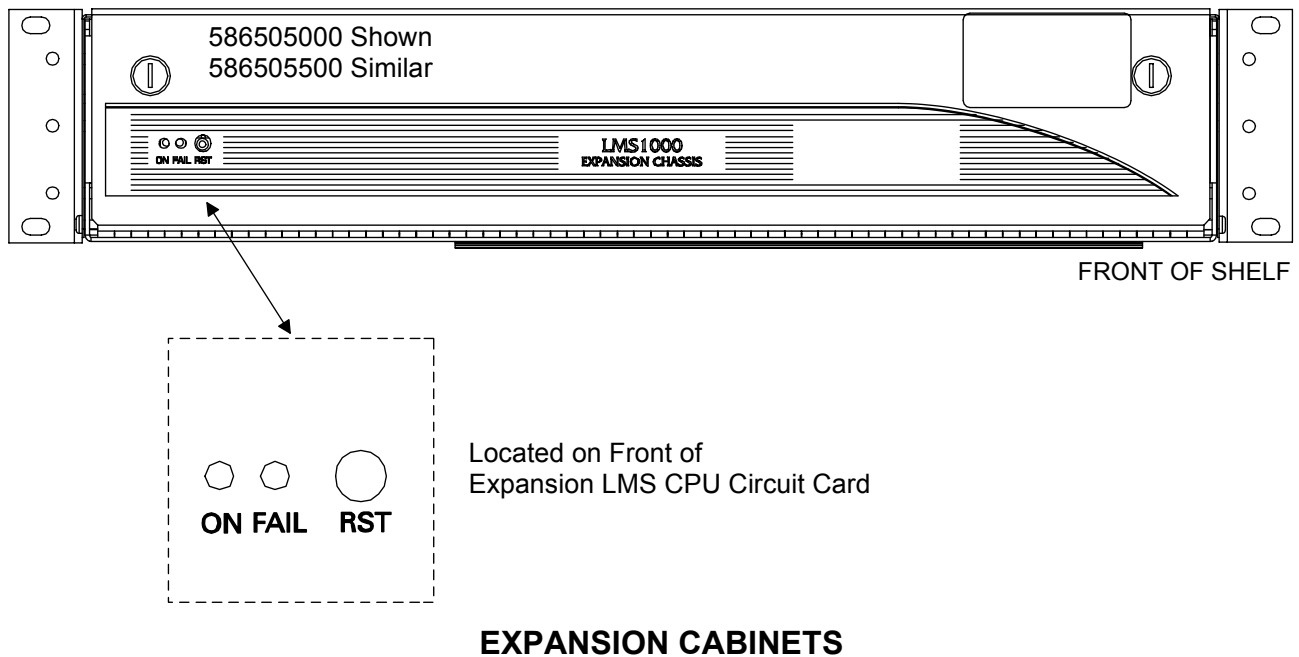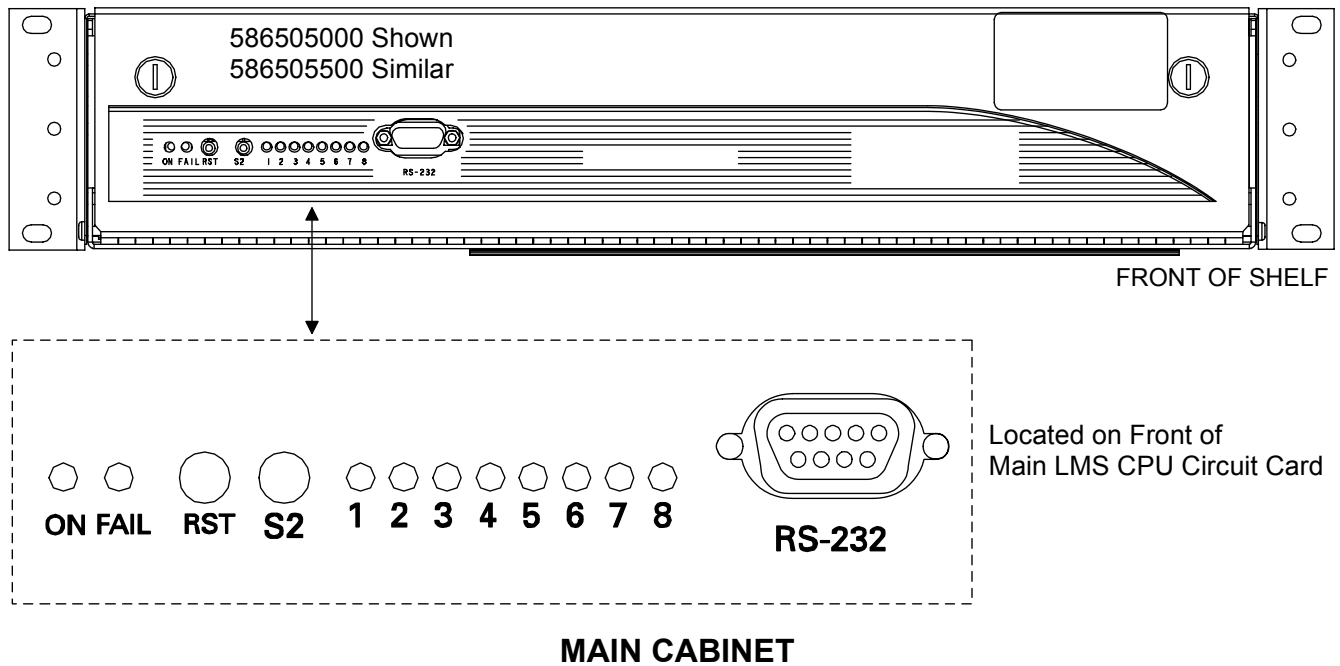
Figure 2-1
Controls and Indicators Locations (586505000/586505500 LMS Cabinet)
(Note that Spec. No. 582140000 LPS Power System does not use the
LMS Cabinets. The LMS is factory integrated into the LPS Power System.)

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ACCESSING THE SYSTEM THROUGH
A LOCAL OR REMOTE TERMINAL

Users can access the system through a local terminal and (if a modem circuit card is installed) through a remote terminal.

Passwords and Access Levels

General: Up to eight separate users may be configured to access the system. Each user is assigned a password and an access level.

Passwords: The password assigned to a user is required to be entered for that user to log onto the system.

Access Levels: The access level (1-6) assigned to a user determines which commands that specific user can execute. Each command is associated to a command level. A user configured with an access level of 1 can execute all commands with a command level of 1. A user configured with an access level of 2 can execute all commands with a command level of 2 or less, and so forth. Note that users configured with an access level of 2-6 can execute commands with the corresponding command level, and with a lower command level. As an example, a user programmed with an access level of 4 can execute commands with a command level of 1, 2, 3, or 4.

Commands are divided into the following command levels.

Level 1:   Interrogate/Status Commands

Level 2:   Display Channel Configuration

Level 3:   Set Date & Time

Level 4:   Alarm Acknowledge, Alarm Canceling

Level 5:   Configure Channels

Level 6:   Configure Users, Upload & Download

A list with a short description of each command is provided at the beginning of "Chapter 3. Commands".

Terminal Requirements

A local terminal must have a keyboard, a video console or printer, and an RS-232 serial port. This terminal requires an interface cable for connecting the terminal's serial port to the system's local port. Refer to the separate *Installation Instructions* (Section 5879) for cable connection details.

A remote terminal must have a keyboard, a video console or printer, and a modem connected to a phone line. If the modem is an external type, you also need an interface cable between the modem and the terminal's serial port. Refer to the modem instructions for details.

The terminal must be capable of directing keyboard entry out through the serial port or modem at 300 bits/s, 8 data bits, 1 stop bit and half-duplex. This capability may also be

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achieved using a personal computer running a special "terminal emulator" program such as the Lorain® SMART Partner.

Local Terminal Access

The word format communications parameters (word length, stop bits, and parity) of the local terminal must match the system's default parameters. The default parameters are 8 data bits, 1 stop bit, and no parity. The data rate of the local port is software selectable from 300 to 19200 bits/s, and can be changed through the SET COM command. The data rate is factory set to 19200 bits/s.

Remote Terminal Access

Remote terminal access requires a modem to be installed in the system. An internal 56K bits/s modem is available. This modem allows monitoring and programming the system from a remote terminal via phone lines, and also allows the system to report alarms to remote terminals. Remote terminal access is accomplished by calling the system.

The communications parameters of the remote terminal must match the system's default parameters. The default parameters are 2400 bits/s (when reporting), 8 data bits, 1 stop bit, and no parity. These defaults cannot be changed.

When answering, the data rate of the internal modem switches to match the incoming call. When reporting, the modem data rate will be set to the speed that is programmed in the user configuration of the user being called. When the modem performs a callback, it will call at the speed it answered at.

Using a Terminal

Logon Prompt: When the system is initially accessed, the following logon prompt is displayed.

```
ENTER PASSWORD
*
```

Entering Passwords: Passwords are case sensitive, which means the system recognizes upper and lower case characters differently. Type your password exactly as it was entered during system configuration. After typing the password, press *ENTER*. As the password is entered, it will not be displayed on the terminal's screen.

Command Prompt: The command prompt indicates that the system is waiting for user input, and is shown below. In this prompt, n denotes the level of access.

```
Command <n>:
```

Entering Commands:

After typing a command, press *ENTER*.

Commands are not case sensitive, which means the system does not recognize upper and lower case characters differently. Type the commands in either upper or lower case, as desired.

In most cases, the entire command does not have to be entered to be executed. All that needs to be entered are enough characters to uniquely identify the command. As an

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example, instead of typing the command SET TIME, typing SE TI is sufficient. Some commands can be entered with one character. As an example, commands such as ALARMS, SCAN, LOG, and PRCONFIG can be executed by entering the respective single character A, S, L, or P. The minimum characters required to enter each command are indicated in "Chapter 3. Commands".

When the backspace or delete key (Control H) is pressed, the last character typed is erased. Successive uses of this key will erase characters back to, but not beyond, the beginning of the line.

Two control characters allow use of all or parts of the previously entered command. When a command is entered, a copy is stored internally in a buffer. Typing CTRL-R copies the previously entered command from the buffer to the current command line. Typing CTRL-Z copies the next character of the previously entered command from the buffer to the current command line.

Aborting and Pausing Commands:

Typing CTRL-C, CTRL-X, or ESCape terminates the execution of a command in process, and returns the user to the command prompt. This allows the user to enter another command.

During system configuration, typing CTRL-V returns the user to the prior setting to be programmed.

Typing CTRL-S pauses the response to a command. Typing any key restarts the response.

User Timeout:

A user timeout feature is provided which automatically logs off a user when a period of inactivity has occurred. This feature is designed to prevent a remote user from leaving a terminal unattended, and thus tying up the modem port accidentally.

Note: The TL1 port has a session timeout feature which operates independently from the user timeout feature.

A period of inactivity is defined as the amount of time that elapses while the system is waiting for a command, carriage return, or line feed to be entered from the user. A timeout message is issued and the communication link terminated when the elapsed time reaches a preset value. This value is termed the "User Timeout" value, and is programmable through the SET TIMEOUT command.

The timeout feature is active only when the system has specifically requested input from the user, such as after a command prompt. It is NOT active during the processing of a command.

Note: Commands such as SCAN A1 n will run indefinitely until the user aborts the command.

Logging On To the System

This procedure shows the user how to establish contact with the system through a local or remote terminal. To establish a <u>local</u> communication link to the system, press **ENTER**. If communicating through a modem, the user must call the system and wait for it to answer. A remote communication link is automatically established after the modems connect. Once the system establishes contact with the remote terminal, logging onto the system through the following procedure is identical whether a local or remote (modem) terminal is used. Figure 2-2 shows a typical screen display of a successful logon.

```
ENTER PASSWORD
*
LMS1000 v1.0.0
Unit Name:  UNIT ONE-Unit #1
Unit Header:

Good Afternoon User 8 - User #8 !
Today is Monday 11/12/96 at 16:14:52.


THERE ARE NO ALARMS PRESENT

Command <6>:
```

Figure 2-2
Typical Logon Screen Display

Procedure:

1) When the communication link is established, the system prompts the user to...

   ```
   ENTER PASSWORD
   *
   ```

2) Type the correct password, then press **ENTER**. The password is not displayed on the terminal's screen as it is entered. Additionally, during remote access, the user has three (3) attempts to enter a valid password. If the password is not entered correctly after three (3) attempts, the remote communications session is terminated. The user also has ten (10) seconds to enter a valid password when prompted before the remote communications session is terminated. The EVENT LOG will report a failed logon attempt when someone attempts to logon and fails.

3) When the correct password is entered, the system responds with the unit number, the unit name, unit header, and the current day, date, and time. If alarms are active, a message is displayed.

4) The user is now logged on to the system.   The above information is followed by the system command line prompt "Command <n>:". In this prompt, n denotes the command access level of the current user.

5) Commands (that the user has access to) may now be entered. The command BYE should be entered to terminate the communication link when finished.

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Callback Feature

If a user is attempting to log onto the system through a remote terminal and the callback feature was selected during system configuration, after entering the correct password, the system will hang-up and then call the user back at the preprogrammed designated phone number.

Header Information

After a user successfully logs onto the system, the system displays a header which details the unit name, unit number, date, time, and a user defined 79 character field. The system also indicates if alarms are active, and provides notification of pending mail.

Logging Off of the System

This procedure shows the recommended way of terminating a communications session, as opposed to allowing the system to timeout and automatically log the user off. It is not a good practice to let the system timeout.

Procedure:

1) Type *BYE*, then press *ENTER*.

   ```
   Command <n>: BYE
   ```

2) The screen displays a user logged off response.

Note: The system automatically logs a user off if a loss of carrier is detected, or via the timeout feature described earlier.

Automatic Logoff: If a user is remotely communicating with the system, and the system needs to issue an alarm report to a remote terminal, the system issues a pending report message to the user and then automatically logs the user off. This enables the system to issue the alarm report. The user is logged off after the auto-logoff time period (set with the SET REPORT command) expires.

Note: If a user is running a long report or a continuous scan report, a pending report (auto-logoff) message may not be displayed.

Note: If the pending report is a user report for the logged on user, the user is prompted to receive the report. If the user does not respond at the prompt, auto-logoff occurs.

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ACCESSING LMS1000 VIA TELNET AND TFTP

Users can access the system via Telnet and TFTP through the Ethernet Port. It is beyond the scope of this manual to describe Telnet and TFTP interface operation. Refer to external documentation for a further understanding of the these interfaces.

ACCESSING LMS1000 VIA SNMP
(IF SNMP SOFTWARE OPTION IS INSTALLED)

Users can access the system via SNMP (if SNMP option installed) through the Ethernet Port. It is beyond the scope of this manual to describe SNMP interface operation. Refer to external documentation for a further understanding of the SNMP interface.

Management Information
Base (MIB) User Interface

The SNMP Interface allows for the control of elements in the system via a user supplied SNMP Manager.

Users must be familiar with their MIB browser and know how to access the information in the LMS SNMP Interface using their browser. They must also be able to obtain a TCP/IP address for the interface and obtain at least one TCP/IP address to which SNMP traps are sent.

The system operates using standard IP SNMPv1 and SNMPv2 protocols.

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USING THE TL1/X.25 PORT
(IF TL1/X.25 SOFTWARE OPTION IS INSTALLED)

When the TL1/X.25 software option is installed, the system supports the TL1 commands and messages listed in the Commands Chapter. The Access Identifiers and some parameters used in the TL1 commands and messages are user programmable. The parameters are configured as part of the channel configuration. Channels are grouped under an Access Identifier using the SET AID and AID commands. These commands are detailed in the Commands Chapter.

Generation of TL1 Autonomous messages is enabled through configuration of a user (with the SET USER command).

A feature is provided to disable the use of a separator character (AID delimiter) between the system access identifier field and system sub-access identifier field in all command responses and autonomous messages which might contain a TL1 access identifier in the response. This feature does NOT affect the format of TL1 commands sent to the system. When entering TL1 commands in the system, the system sub-access identifier must always be separated from the system access identifier (making up the TL1 access identifier) by a hyphen.

The TL1/X.25 network is connected via a network device to the TL1/X.25 port. The TL1/X.25 port provides an RS-232 connection with asynchronous ASCII text output. A network device is required to convert the output to an X.25 packetized format. The TL1/X.25 feature provides for only the 'direct' mode of operation between the system and a network interface device (commonly a PAD). TL1 operating parameters are set using the SET MODE and MODE commands. These commands are detailed in the Commands Chapter.

The "direct" mode assumes that a link to the X.25 network link is always present. The sending and receiving of messages occurs without initiating a network connection (as with a Permanent Virtual Circuit). A handshake line is available to indicate to the System when a network connection has been lost. The LMS1000 uses the Clear to Send (CTS) handshake line.

If necessary, the output from the TL1/X.25 port can be inhibited using the port's handshake input. The system will not send any messages while the handshake input is inactive. Messages which are pending at the time or after the handshake input becomes inactive will be sent when the handshake input is returned to the active state.

It is beyond the scope of this manual to provide operational instructions for an NMA system and TL1 commands. Refer to the NMA system documentation and the appropriate Bellcore publications for operational instructions.

USING THE TL1 PORT
(IF TL1 [OVER ETHERNET] SOFTWARE OPTION IS INSTALLED)

Refer to the previous section titled USING THE TL1/X.25 PORT. Only difference is TL1 support is provided via the LMS Ethernet port.

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USING THE GATEWAY PORT
(IF GATEWAY SOFTWARE OPTION IS INSTALLED)

If the LMS1000 Gateway software option is installed, customer equipment connected to the LMS1000 Gateway port can be accessed via LMS1000. This feature allows LMS1000 to emulate a "dumb" RS-232 asynchronous terminal interface. User input through either a local or remote LMS1000 port is directed to the customer equipment connected to the LMS1000 Gateway port.

Gateway Port Parameters: The communications parameters of the LMS1000 Gateway port must match those of the customer equipment connected to it. The parity, data bits, and stop bits are fixed at no parity, 1 stop bit, and 8 data bits. The data rate of the Gateway port is set using the LMS1000 command SET GATEWAY. Refer to the SET GATEWAY command detailed in the Commands chapter. Available data rates are 300, 1200, 2400, 9600, 19200 bps (default is 9600 bps).

Connecting and Disconnecting: The Gateway port is activated by using the LMS1000 command CONNECT. Refer to the CONNECT command detailed in the Commands chapter.

The port is deactivated by pressing CTRL-C twice. The second CTRL-C must follow the first within a one second time interval. When LMS1000 detects the exit sequence, the user is alerted that the Gateway session has been terminated and the LMS1000 command prompt appears indicating that the LMS1000 is ready for command processing.

```
Aborting GATEWAY session…
Returning control to LMS…

LMS V6.2.0  CRC: xxxxxxxx
Unit Name: Central Office - Unit #1

Command<4>:
```

<u>Restrictions</u>

- Only one LMS1000 Gateway port supported.
  Only one Gateway port User at a time supported.

- **Session Abort Control:** A Gateway session must be manually terminated using the special Gateway session termination escape sequence. The LMS1000 will not detect an abort of the Gateway session by the device connected to the Gateway port, nor is it capable of terminating the session with the device connected to the Gateway port when the LMS1000 session is aborted abruptly.

- **Loss of Carrier:** The LMS1000 will automatically terminate Gateway access established via modem dial up or TELNET in the event of carrier loss.

- **User Timeout:** The Gateway Port is automatically deactivated and the User is returned to the LMS1000 command prompt if the User Timeout Period is exceeded.

- **Alarm Reporting:** When using a dial-up session to communicate with the Gateway port, dial-out alarm notification via LMS1000 is delayed until the Gateway session is terminated and control is returned to the LMS1000.

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- With the exception of session inactivity monitoring, any related communications protocol control (i.e., character echoing) will be performed by the device connected to the Gateway port.

- Third party software utilized to communicate with Gateway connected device will need to first logon to the LMS1000 and enter the CONNECT command.

  The LMS1000 will not support any third party proprietary communications protocol required to communicate with customer equipment connected to the Gateway port.

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USING PROGRAMMABLE COMMANDS

Eight user programmable commands can be entered in the system. A programmable command combines up to eight standard commands into a single command which then can be executed by typing the name given the programmable command. The programmable commands can be created or changed by using the command SET CMD. This command is described below. The name of the programmable command and the necessary access level required to execute the command can also be entered or revised through this command. This command is available to users programmed for access to level 6 commands.

SET CMD Command: This command lists each item that can be changed, showing the current information, and then prompting for new or revised information to be entered. If the current information does not need to be changed, press *ENTER* to continue.

SET CMD

`Command <6>: SET CMD`	Type SET CMD, then press ENTER.
`Which Command (1 - 8):`	Type the number (1-8) which corresponds to the programmable command configuration which is to be created or revised, then press ENTER.
`Command _ Name:`	Type the desired name for this programmable command (30 characters maximum), then press ENTER.
`Command _ access level:`	Type the desired access level (1-6) required to execute this programmable command, then press ENTER.
`Command _ line 1:` ***Note:*** *This line is repeated to enter up to seven more commands.*	Type the first standard command plus any additional characters to be used with the standard command (20 characters maximum) that will be executed when this programmable command is entered, then press ENTER.

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USING THE ALARM CUTOFF FEATURE

Note: *This feature is not the same as the ACO provided on the MCA's Interface Pad of a VPS or LPS Power System.*

An Alarm Cut-Off Feature allows users to temporarily cut-off existing alarm conditions from affecting certain relay channels of the system. This feature prevents any analog, function, or binary channel alarm condition from affecting the control programs of the relay channels. This feature is intended for applications where programmable relays are being used as MAJOR and MINOR alarm relays. This feature must be programmed when the relay channels are configured to be operable. It is important to know that if a cut-off alarm clears, such as a low voltage going away, the cut-off feature for that alarm is automatically released, or "uncanceled". That is, if the alarm were to turn in again, the user must initiate another alarm cut-off to prevent that alarm from affecting the relay.

Activating the ACO: If a relay energizes due to an alarm condition active on an analog, function, or binary channel; the user can "cut-off" (de-energize) the alarm by issuing the command SET ACO. The system responds with a listing of alarms that are cancelled and makes an entry in the event log. This command is available to users programmed for access to level 4 commands.

Clearing the ACO:

a) Manual: The command CLR ACO releases, or "uncancels", the alarm cut-off feature thereby enabling analog, function, and binary channel alarm conditions to again affect the relay channels' control programs. This command is available to users programmed for access to level 4 commands. An entry is recorded in the event log that tags a user's name to this action.

b) Automatic: Also, any relay channel configured to be "Affected by ACO" can also be configured so that it can only remain cancelled for a selectable amount of time. This is accomplished by setting the "cycle frequency" of the relay channel for the desired time period. An alarm relay cancelled by the SET ACO command is automatically reset by the system at a time determined by the relay's "cycle frequency". Basically, the system uncancels all alarms by performing the equivalent of a CLR ACO command each time that the total number of minutes in a day (that have elapsed since midnight) is evenly divisible by the relay's "cycle frequency". For example, a relay with a "cycle frequency" of 480 minutes cycles off at midnight, 8 AM, and 4 PM. This feature is designed to automatically restore cancelled major or minor alarm relays at selected time intervals.

FORCING ON RELAYS OR LED'S

Relay's and LED's are normally controlled by control programs. They can also be forced on through the commands SET RLY and SET LED, respectively. If a relay or LED has been manually forced on, it can be turned off through the commands CLR RLY and CLR LED, respectively. You cannot turn off a relay or LED that has been turned on through a control program. If a relay must be turned off in this situation, configure the associated relay channel to be inactive.

Note: *The relay circuit card contains a jumper which may be set to disable the use of the SET RLY and CLR RLY commands.*

ACKNOWLEDGING SYSTEM ALARMS

If the System Alarm Report Mode parameter (SET REPORT command) is set to CONTINUOUS, the system continues to call or Email the User at the programmed retry interval until the user acknowledges the alarm. Acknowledgement of an alarm is done by logging on with a terminal and entering the command ACK.

Using the ACKnowledge Command: If a user issues an ACKnowledge command, the user's ID number is tagged to all alarm log entries not previously acknowledged. If the ACK command is issued after a user receives a pending system alarm report message, the auto-logoff and system alarm report will be aborted.

GETTING ANALOG AND FUNCTION CHANNEL STATISTICS

The statistics available for any analog or function channel include the three highest clock hourly averages and their time and date of occurrence, the time and date of the peak one minute average value, and the time and date of the minimum one minute average value. The time of the last reset is also shown. These statistics are retained in battery-backed memory.

Commands STATS and CLR STATS: Statistics can be obtained through the command STATS. The current statistics can be cleared to allow other statistic values to be recorded using the command CLR STATS. The statistics for each analog and function channel can be cleared independently by using the modifier An or Fn (n=channel number) after typing the characters CLR STATS (ex. CLR STAT A0001 or CLR STAT F0001). The command STATS is available to a user programmed for access to level 1 commands. The command CLR STATS is available to users programmed for access to level 4 commands.

USING THE SCAN FEATURE

The user can set the time interval between scan data output lines when scanning an individual channel. The interval can be specified from 1 to 600 seconds. This is done by entering a modifier (1 through 600) at the end of a scan command line. If no modifier is entered, a single line of scan data is displayed. (ex. SCAN A0012 20, would output one line of scan data for analog channel A0012 every 20 seconds.)

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USING THE RATE FEATURE (ANALOG CHANNEL MAXIMUM LOAD PERCENTAGES REPORT)

This feature determines how plant (battery and rectifier) capacities and other sizing limits (fuses, circuit breakers, and wire sizes) are faring under actual load conditions. This feature allows the customer to easily determine the maximum load percentage (that has occurred) versus an analog channel alarm limit. This feature divides the maximum peak value of an analog input and the highest hourly average into a designated alarm limit and presents the results as percentages. These percentages inform the customer how close a channel's peak and high hourly average values are in relation to its alarm limit(s).

To use this feature, one of two character phrases must appear in the analog channel's alarm limit name. These two phrases are "CAP" (for capacity) and "SIZ" (for size). Also, the "Unit Text" for this analog channel must be "AMPS".

To get a report, enter the command RATE. Any time the RATE command is entered, and either of the two phrases mentioned above appear in an analog channel's alarm limit name and the analog channel's Unit Text is set for AMPS, the system computes the two percentages and displays the resulting information. The RATE command is available to a user programmed for access to level 1 commands. Refer to "Chapter 3. Commands" for a typical screen display.

VIEWING AND CLEARING THE ALARM LOG

The alarm log maintains in battery-backed memory a chronological listing of the 500 latest alarms that have occurred in the system (and an MCA, if connected). Entries in the log automatically include analog, function, and binary alarms, however; a relay or LED channel may be programmed to record an entry in the log whenever it energizes or illuminates, respectively.

VPS MCA Alarms: VPS MCA alarms that are recorded in the alarm log are as follows. For proper system alarm reporting or individual user alarm reporting of VPS MCA alarms, refer to Table 2-1 and ensure that the desired channels automatically mapped to predetermined VPS MCA alarms are programmed for system alarm reporting and/or added to the appropriate user configuration.

System High Voltage Alarm #1	Subsystem Minor Alarm
System High Voltage Alarm #2	All AC Off
Battery On Discharge Alarm	MCA Fail Alarm
50% Battery On Discharge Alarm	LVD Active
System Overcurrent Alarm	LVDs Inhibited
Subsystem High Voltage Alarm	System Major Alarm
Subsystem Low Voltage Alarm	System Minor Alarm
Subsystem Overcurrent Alarm	Shunt Fail Alarm
Emergency Stop	LVD Fail Alarm
System Fuse Alarm	Subsystem Fuse Alarm
Subsystem Major Alarm	PCU01 to PCU56 Fail Alarm
High AC Line Alarm	VPS Communications Failure

LPS MCA Alarms: LPS MCA alarms that are recorded in the alarm log are as follows. For proper system alarm reporting or individual user alarm reporting of LPS MCA alarms, refer to Table 2-2 and ensure that the desired channels automatically mapped to

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predetermined LPS MCA alarms are programmed for system alarm reporting and/or added to the appropriate user configuration.

System High Voltage Alarm #1	System Total Load Alarm
System High Voltage Alarm #2	Distribution Panel Alarms
Battery On Discharge Alarm	MCA Hardware Failure Alarm
System Voltage is Very Low Alarm	Emergency Stop
System Distribution Load A Current Alarm	Unidentified LPS Node Alarm
System Distribution Load B Current Alarm	High AC Line Alarm
High Temperature #1 and #2 Alarms	All AC Off
Low Temperature #1 and #2 Alarms	PCU01 to PCU56 Fail Alarm
System Breaker or Fuse Alarm	Subsystem Fuse Alarm
System Major Alarm	Subsystem Major Alarm
System Minor Alarm	Subsystem Minor Alarm
LPS Communications Failure	LPS Router Alarms
LPS MCA "CAN I/O" Circuit Card Alarms	Relay Board Alarms
LVD Active	LVDs Inhibited
LVD Fail Alarm	

An important aspect of the alarm log is its use for system alarm reporting and individual user alarm reporting. The alarm log supplies the information that the system formats for these reports. A listing of the alarm log will indicate entries which are to be reported. When that entry is acknowledged (ACK command) by a user, the user number appears just after the occurred time shown in the report to indicate the user that acknowledged the alarm. Each entry in the alarm log contains the following items:

1) Channel number of the alarm (A0033, B0012, R0001, etc.).

2) Channel's name.

3) Type of alarm (high, low, force, program), and class of alarm.

4) Occurred date and time. If the alarm has been acknowledged by a user, the user number appears after the occurred time.

5) Cleared date and time.

6) A lowercase character r if the alarm is to be reported as a system alarm.

Commands LOG and CLR LOG: The alarm log can be viewed or cleared by using the commands LOG or CLR LOG, respectively. These commands are available to users programmed for access to level 1 and level 4 commands, respectively.

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VIEWING AND CLEARING THE EVENT LOG

The event log maintains in battery-backed memory a chronological listing of the 500 latest events that have occurred in the system (and in an MCA, if connected). An event is defined as any change to the system configuration or to critical programming parameters of the system, and are described below.

Note: *The event log will <u>not</u> record a report failure if there is no phone number entered in a user's configuration, and the system attempted an alarm report to this user.*

LMS1000 Events:

1) The unit has been reset.
2) The unit's default settings are reset (by user or unit).
3) A user logs on to the unit.
4) A failed logon attempt has occurred.
5) The user setup has been changed.
6) The date or time has been changed.
7) The alarm log has been cleared.
8) The statistics have been cleared.
9) Alarms have been cancelled or un-cancelled (SET/CLR ACO).
10) A particular channel has been configured.
11) A particular LED or relay has been set (forced) or cleared.
12) The event log has been cleared.
13) A time period has been set.
14) A user phone number has been set.
15) The unit name or number has been set.
16) An information page has been set.
17) Relay circuit card failure.
18) Analog circuit card failure.
19) A new alarm report completed or failed.
20) A user report completed or failed.
21) User channels set.
22) System uploaded.
23) Status page set.
24) Programmable command set.
25) User timeout set.
26) Unreported system alarms have been acknowledged (ACK).
27) Pager report attempted.
28) Function, LED, or relay channel program line cleared.
29) Energy management enabled, disabled, or configured.
30) TL1 Report Messages.
31) System Identifier Configured.
32) TL1 Report Messages enabled or disabled.
33) "4 chan Relay bd <#n> fail".
34) "Com link to MCA broken".
35) "Chn <type, node#, channel#> statistics cleared".
36) "Function channel stats cleared".
37) "Analog channel stats cleared".
38) "System reset issued".
39) "4 chan Binary bd <#n> fail".
40) "8 chan Binary bd <#n> fail".
41) "Temperature bd <#n> fail".
42) "Temp bd <#n> sensor <#n> fail".
43) "4 ch A/D <#n> converter <#n> fail".

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44) "4 ch A/D <#n> EEPROM fail".
45) Rectifier sequencing is enabled, disabled, or configured.
46) Group <# n> configured.
47) Set limits of analog or function channel.
48) Set control program line of relay, LED, or function channel(s).
49) Number of rings before answer is set.
50) Alarm class <#n> is configured.
51) Local communications port data rate is set.
52) User mail is set.
53) System alarm report parameters are configured.
54) I/O card <#n> added.
55) Search for new nodes ("NODE ADD" command).
56) Node <#n> configured.
57) Node <#n> or unmapped node deleted.
58) Node <#n> replaced.
59) I/O Network initialized.
60) Upload abort before completion (partial upload).
61) Upload of TL1 parameters failed.
62) TL1 operating mode is configured.
63) TL1 AID <#n> is configured.
64) Channel database configured.
65) One of the following IP (internet) parameter address was changed: Unit address, Gateway address, Netmask address, Host address added, Host address deleted.
66) SNMP operation was enabled or disabled.
67) SNMP "GET" or "SET" community string was changed.
68) SNMP traps operation enabled, disabled, or version changed.
69) SNMP traps host added or deleted.
70) SNMP occurred, retired, or persistent traps enabled or disabled.
71) Execution of the following TL1 commands results in an event log entry: ALW-MSG, INH-MSG, OPR-EXT-CONT, RLS-EXT-CONT, INIT-SYS, DEL-USER, EDIT-PID, EDIT-USER, ENT-USER, SET-ATTR.
72) Main chassis channel initialization failed.
73) Power Metering Statistics cleared.
74) Application Vx.x.x.x changed.
75) HTTP create socket failed.
76) HTTP task reset.
77) HTTP bind socket failed.
78) HTML checksum failure.
79) VI parameters set.
80) Battery Discharge Timer set.
81) Key code nn validated
82) Invalid Key Code Entered

VPS MCA Events: The following actions performed at the VPS's MCA local interface pad or event (#28 below) are recorded in the events log.

1) System float voltage set
2) System test/equalize voltage set
3) System high voltage shutdown set
4) System current limit set
5) System output voltage calibration reading set
6) NAG (audible alarm cutoff reset time period) minutes set
7) Battery charge temperature compensation module's calibration voltage set
8) System high voltage alarm #1 set
9) System high voltage alarm #2 set
10) System 50% battery on discharge alarm set

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11) System battery on discharge alarm set
12) System overcurrent alarm set
13) System operating mode (float or test/equalize) changed
14) Subsystem high voltage alarm set
15) Subsystem low voltage alarm set
16) PCU toggled on or off (TR feature)
17) Number of available PCU mounting positions changed
18) Number of PCUs installed changed
19) Number/type of loads installed changed
20) Number of LVD cards installed changed
21) Subsystem overcurrent alarm set
22) Subsystem output voltage calibration reading set
23) LVD "disconnect" set
24) LVD "reconnect" set
25) ACO activated
26) Subsystem Installed
27) Subsystem Removed
28) MCA Powered Down

VPS MCA Events: The following actions performed via LMS1000 or detected by LMS1000 (#26 below) are recorded in the events log.

1) System float voltage set
2) System test/equalize voltage set
3) System high voltage shutdown set
4) System current limit set
5) System output voltage calibration reading set
6) NAG (audible alarm cutoff reset time period) minutes set
7) Battery charge temperature compensation module's calibration voltage set
8) System high voltage alarm #1 set
9) System high voltage alarm #2 set
10) System 50% battery on discharge alarm set
11) System battery on discharge alarm set
12) System overcurrent alarm set
13) System operating mode (float or test/equalize) changed
14) Subsystem high voltage alarm set
15) Subsystem low voltage alarm set
16) PCU toggled on or off (TR feature)
17) Number of available PCU mounting positions changed
18) Subsystem overcurrent alarm set
19) Subsystem output voltage calibration reading set
20) LVD "disconnect" set
21) LVD "reconnect" set
22) Inventory reset
23) MCA custom message set
24) PCU custom message set
25) MCA remote access password set
26) LMS1000/MCA communications link broken
27) Previously downloaded configuration uploaded to the VPS. Two events are recorded for this action. "Vortex system uploaded" and "VPS settings uploaded".

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LPS MCA Events: The following actions performed via LMS1000 or detected by LMS1000 are recorded in the events log.

where, bb = bay number
 cc = equipment number
 ss = bay slot number
 nnn = PCU capacity
 dd = equipment element number

1) LPS local update inventory
2) LPS remote update inventory
3) LPS bay bb unknown added
4) LPS bay bb unknown deleted
5) LPS bay bb unknown moved
6) LPS bay bb unknown replaced
7) LPS MCA added
8) LPS MCA deleted
9) LPS MCA moved
10) LPS MCA replaced
11) LPS router bb-cc added
12) LPS router bb-cc deleted
13) LPS router bb-cc moved
14) LPS router bb-cc replaced
15) LPS nnnA PCU bb-cc added
16) LPS nnnA PCU bb-cc deleted
17) LPS nnnA PCU bb-cc moved
18) LPS nnnA PCU bb-cc replaced
19) LPS dist. bb-cc added
20) LPS dist. bb-cc deleted
21) LPS dist. bb-cc moved
22) LPS dist. bb-cc replaced
23) LPS RCB bb-ss added
24) LPS RCB bb-ss deleted
25) LPS RCB bb-ss moved
26) LPS RCB bb-ss replaced
27) LPS sys volts input changed
28) LPS temp. probe installed
29) LPS temp. probe removed
30) LPS temp. format changed
31) LPS MCA load A/B activated
32) LPS MCA load A/B deactivated
33) LPS dist. bb-cc LD B enabled
34) LPS dist. bb-cc LD A enabled
35) System float voltage set
36) System equalize/test voltage set
37) System high voltage shutdown set
38) System current limit set
39) System high voltage alarm #1 set
40) System high voltage alarm #2 set
41) System battery on discharge alarm set
42) System very low voltage alarm set
43) System total load current alarm set
44) System distribution A load current alarm set
45) System distribution B load current alarm set
46) NAG (audible alarm cutoff reset time period) minutes set

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47) System manual equalize/test time set
48) System temperature compensation slope set
49) System maximum temperature compensation voltage set
50) System minimum temperature compensation voltage set
51) System high temperature alarm #1 set
52) System high temperature alarm #2 set
53) System low temperature alarm #1 set
54) System low temperature alarm #2 set
55) System relay test time set
56) System equalize multiplier set
57) Temperature displayed in degrees Celsius
58) Temperature displayed in degrees Fahrenheit
59) Manual equalize/test started
60) Manual equalize/test stopped
61) System relay test started
62) System relay test stopped
63) LPS MCA password set
64) MCA MSG set
65) Router bb MSG set
66) PCU bb-cc MSG set
67) Dist panel bb-cc MSG set
68) Relay bb-ss MSG set
69) PCU bb-cc set ON
70) PCU bb-cc set OFF
71) Dist bb-cc shunt dd added
72) Dist bb-cc shunt dd removed
73) Dist bb-cc shunt dd changed
74) LPS nnnA PCU bb-cc new capacity
75) Equalize/test mode is active
76) Float mode is active
77) LPS I/O Bd bb-ss added
78) LPS I/O Bd bb-ss deleted
79) LPS I/O Bd bb-ss moved
80) LPS I/O Bd bb-ss replaced
81) I/O Bd bb-ss custom message set
82) I/O Bd bb-ss input scale set
83) I/O Bd bb-ss output scale set
84) I/O Bd bb-ss load type set
85) I/O Bd bb-ss binary input dd alarm orientation changed
86) LPS MCA auxiliary load deactivated
87) LPS MCA auxiliary load activate

Each entry in the Event Log contains the following items:

1) Name and number of user responsible for the event.
2) Description of the event.
3) Date and time of the event.

Command EVENTS and CLR EVENTS: The event log can be viewed or cleared by using the commands EVENTS or CLR EVENTS, respectively. These commands are available to users programmed for access to level 6 commands.

USING STATUS PAGES

Sixteen user programmable status pages (or screens) can be formatted in the system. These status pages can be viewed by any user through the command STATUS. These pages permit the displaying of scan information (channel status such as present value and alarm information) derived from separate channels on a single page format. Each status page can hold up to 18 lines of text. The first line is used for a page title or name, while the remaining 17 lines are programmed to contain either header information or actual channel scan data.

SET STATUS Command: The status pages can be created or changed by using the SET STATUS command. This command is available to users programmed for access to level 6 commands. This command, when entered, displays a header that contains the current status pages configuration information. The command then asks which status page is to be created or changed. Then, individually, the command will list each line, showing the current information, and then prompting for new or revised information to be entered. If the current information does not need to be changed, press *ENTER* to continue.

To program one of the 17 lines for header information, the user enters the channel type (e.g. A, B, R, etc.). This will then produce the particular header information as normally seen during the execution of the standard command SCAN.

To program one of the 17 lines to display actual channel SCAN data, the user enters both the channel type and number (e.g., A001, B003, R0014, etc).

You can generate a blank line in a status page by pressing the *SPACE BAR*, and then *ENTER*. This will also move you to the next line.

A status page can be programmed with the following characters:

Line 1: Type the page name or title (30 characters maximum).

Lines 2 - 18: Type one of the following characters per line to display Header or SCAN Information when the command STATUS is executed.

A=Analog Channel Header
B=Binary Channel Header
E=Energy Management Channel Header
F=Function Channel Header
L=LED Channel Header
R=Relay Channel Header
An=Analog Channel n
Bn=Binary Channel n
En=Energy Management Channel n
Fn=Function Channel n
Ln=LED Channel n
Rn=Relay Channel n
Space Bar=Blank line

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USING INFORMATION PAGES

Three user programmable information pages (or screens) can be entered in the system. These information pages can be viewed by any user through the system command INFO. Each information page can hold up to 20 lines of text, with 79 characters per line. Spaces and punctuation each count as a character. These pages can serve as a note pad or location of instructions for users.

Command SET INFO: The information pages can be created or changed by using the command SET INFO. This command is available to users programmed for access to level 6 commands.

USING THE MAIL SERVICE

Each of the eight users has the capability of sending mail to all configured users, including themselves. When a user logs onto the system, he is notified if there is any mail sent to him. The user can read his mail by entering the command MAIL. After displaying the contents of the mail from a particular user, the system asks whether to save or delete this information. If the mail is not deleted, the user will be notified that he has mail every time he logs on to the system, or until the sender deletes the mail himself. After the currently displayed mail is either saved or deleted, mail sent from another user, if present, is displayed. The users ability to send mail to himself allows the user to write a message that he will receive every time he logs on to the system. A user can only send one mail message at a time

Reading Mail: Mail can be read by entering the command MAIL.

Sending Mail: Three lines of information can be created or changed for mailing purposes by using the command SET MAIL as described in "Chapter 3. Commands". Each line is 79 characters long. The sender programs which users are to receive his mail by individually entering the desired user(s) number(s) when prompted. The sender can also review the mail he previously sent, and at the same time he will be notified by the system of the users that have acknowledged receiving the mail. This command is available to users programmed for access to level 1 commands. Use CTRL-R and CTRL-Z to edit mail messages. Typing CTRL-R copies the previously entered message. Typing CTRL-Z copies the next character of the previously entered message.

METHODS OF OBTAINING SPECIFIC INFORMATION

Since each user may not necessarily be concerned about the same information, several methods exist whereby a user can limit the information displayed when using a local or remote terminal.

a) One method involves organizing the channels under a common name known as a group. Eight different groups can be configured. Each group is programmed with a unique name and may contain any or all channels. Either the group name or group number can then be used to extract information from those channels (e.g., SCAN G0001). Refer to the Configuration chapter in the separate *Installation Instructions* (Section 5879) for details on configuring the groups.

b) Another method of limiting information is by programming only the channels of interest to a particular user in his user configuration. This can be done when the user is configured with the commands SET SYSTEM or SET USERS, or with the command SET CHANNELS. When a user has defined channels, he can then extract information on only those channels by typing the letter U (for User) after certain commands. For example, the command SCAN U displays the present status of only the user's channels. Similarly, ALARMS U displays the present alarm status of these same channels.

c) A third method of limiting information involves typing part of the desired channel or channels name after certain commands, such as SCAN, ALARMS, LOG, and PRCONFIG. For example, the command "SCAN Rect" displays the present status for any channel that contains "Rect" in the channel name. Also, if you use a question mark (?) after the command, it will act as a wildcard and match any character. For example, the command "ALARMS P???" displays alarms for channels that contained an uppercase P in their channel name followed by at least three other characters.

d) Programmable Commands - Similar to "macros" or "batch processing", these allow multiple standard commands to be executed by typing the name of the programmable command.

e) Status Pages - Status Pages can be used to create a custom screen containing 17 lines of channel information that includes alarm status and present value.

f) Information Pages - Three pages, each one consisting of 20 lines by 79 characters, allows storage of such information as spare parts, maintenance data, emergency information, etc.

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DOWNLOADING AND UPLOADING THE CONFIGURATION

The system has the capability of downloading the current system configuration to a personal computer. The system also has the capability of uploading a system configuration. The only requirement is that the information transfer is done using the XMODEM protocol with CRC error checking, or TFTP protocol via the Ethernet port.

Once the system has been completely configured for a particular application, it is highly recommended that the system configuration is downloaded to disk. If the CPU has to be changed, or if firmware has to be upgraded, system configuration could be reprogrammed by uploading the configuration file saved on disk back into the system.

Downloading and Uploading Using XMODEM

The XMODEM protocol ensures the integrity of the configuration during an upload and download process. Communications programs for PC's that have the XMODEM protocol are available in the LORAIN® SMART PARTNER and other software packages.

Note: *A fully configured system downloaded or uploaded over a phone line at 1200 bits/s may require up to 15 minutes.*

Note: *The communications parameters of the remote terminal must match the system's default parameters. The default parameters are 8 data bits, 1 stop bit, and no parity. These defaults cannot be changed.*

System configuration files can be saved on disk, or loaded back into a system using the DOWNLOAD and UPLOAD commands, as described below. These commands are also described in "Chapter 3. Commands". These commands are available to users programmed for access to level 6 commands.

To Download the Configuration from the LMS1000 to a PC using XMODEM:

1) Log on to the system. The user must have access to level 6 commands.

2) Enter the command *DOWNLOAD*, then press *ENTER*. You have up to 1 minute to initiate a file transfer.

3) The system will wait up to 1 minute before aborting the process if no file transfer occurs. The system waits for a 'C' character, which is the synchronization character for starting an XMODEM CRC file transfer.

4) At the PC, initiate a file transfer using XMODEM CRC protocol.

To Upload a Configuration from a PC to the LMS1000 using XMODEM:

1) Log on to the system. The user must have access to level 6 commands.

2) Enter the command *UPLOAD*, then press *ENTER*. The following will be displayed.

```
UPLOAD using XMODEM Protocol with CRC error checking
```

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You have up to 1 minute to initiate a file transfer. Each second during this 1 minute period the system sends a 'C' character, which is the synchronization character for starting an XMODEM CRC file transfer.

3) At the PC, initiate a file transfer using XMODEM CRC protocol.

4) When the transfer is complete, the following is displayed.

```
84 blocks received OK.
Upload Complete.
```

The number of blocks received may vary.

Note: *If an error message (as shown below) appears, the file being uploaded must be re-edited to correct the appropriate program line. The CLR PROG command may be used instead of re-editing the upload file. Refer to the CLR PROG command in the COMMANDS Chapter.*

```
202 blocks received OK.

R01=h1

      ^

Program error -- Bad Character

Upload Complete.
```

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Downloading and Uploading Using TFTP

System configuration files can be saved on disk, or loaded back into a system using the DOWNLOAD TFTP and UPLOAD TFTP commands, as described below. These commands are also described in "Chapter 3. Commands". These commands are available to users programmed for access to level 6 commands.

To Download the Configuration from the LMS1000 to a PC using TFTP:

1) Start a separate TFTP client session on the host to which the configuration file is transferred.

2) Log on to the system. The user must have access to level 6 commands.

3) Enter the command *DOWNLOAD TFTP*, then press *ENTER*. The following will be displayed.

    ```
    DOWNLOAD using TFTP
    ```

4) After seeing the above prompt, start the download process from the client. **DO NOT ATTEMP THE DOWNLOAD UNTIL THE PROMPT ABOVE IS DISPLAYED.**

To Upload a Configuration from a PC to the LMS1000 using TFTP:

1) Start a separate TFTP client session on the host from which the configuration file is transferred.

2) Log on to the system. The user must have access to level 6 commands.

3) Enter the command *UPLOAD TFTP*, then press *ENTER*. The following will be displayed.

    ```
    UPLOAD using TFTP
    ```

4) After seeing the above prompt, start the upload process from the client. **DO NOT ATTEMP THE UPLOAD UNTIL THE PROMPT ABOVE IS DISPLAYED.**

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ACCESSING A VORTEX POWER SYSTEM (VPS)

If LMS1000 is connected to a VPS, the VPS can be accessed by issuing certain LMS1000 commands. Commands available can be viewed by entering the LMS1000 command HELP VORTEX.

Note: The VPS contains an MCA remote lockout feature which disables changing VPS adjustment/configuration/calibration settings via LMS1000.

Note: Only one LMS1000 user is allowed to change VPS settings at a time. LMS1000 locks out any other user attempting to change VPS settings.

<u>Password:</u> When LMS1000 is initially powered up or during a reset, LMS1000 automatically issues a password to gain remote access to the VPS. A newly installed LMS1000 issues the VPS's default remote access password (VORTEX, in all capitol letters). If the VPS's remote access password has been changed from its default, the password issued by LMS1000 must also be changed. See command SET VORTEX PASSWORD. You must know the existing password set in LMS1000 to change it. If LMS1000 does not successfully connect with the VPS during power up or reset, a message is displayed when a user attempts VPS access.

If the password is changed in LMS1000, record the new password in a secure place. There is no way to view the password set in LMS1000.

Also, if the VPS MCA's remote access password is ever changed, record the new password in a secure place. The current VPS MCA remote access password cannot be viewed remotely from LMS1000. The password can be viewed locally, from the VPS MCA's Interface Pad. Refer to the VPS manual for a procedure.

<u>LMS1000 Event Log:</u> Certain actions performed at the VPS's MCA local interface pad and via LMS1000 are recorded in the LMS1000 event log. Refer to "Viewing and Clearing the Event Log" in this chapter for a listing of recorded VPS events.

<u>LMS1000 Alarm Log:</u> Refer to "Viewing and Clearing the Alarm Log" in this chapter for a list of VPS alarms that are recorded in the Alarm Log.

Note: Binary Channel B0085 monitors the communications link between the LMS1000 and Vortex Power System. This channel alarms if this communications link is not operational. A failed communications link generates an Alarm Log entry and an Event Log entry.

<u>LMS1000 Commands:</u> The Vortex Interface provides analog channels A9001-A9081 and binary channels B9001-B9080. These channels are dedicated to monitor predetermined VPS parameters. The function of these channels are preset and cannot be changed. To efficiently use these channels with traditional (non-Vortex specific) commands, refer to Table 2-1 which shows the mapping of VPS parameters to these dedicated channels.

CHANNEL NUMBER	CHANNEL NAME
A9001	Vortex System Voltage
A9002	Vortex System Current
A9003	Vortex Subsystem Voltage
A9004	Vortex Subsystem Current
A9005	Vortex Total PCU Current
A9006 through A9021	Vortex Shunt01 Current through Vortex Shunt16 Current
A9022 through A9025	Vortex Temperature Probe #1 through Vortex Temperature Probe #4
A9026 through A9081	Vortex PCU01 Current through Vortex PCU56 Current
B9001	Vortex System High Voltage 1
B9002	Vortex System High Voltage 2
B9003	Vortex System Battery On Discharge
B9004	Vortex System 50% Battery On Discharge
B9005	Vortex System Overcurrent
B9006	Vortex Subsystem High Voltage
B9007	Vortex Subsystem Low Voltage
B9008	Vortex Subsystem Overcurrent
B9009	Vortex PCU Emergency Stop
B9010	Vortex System Fuse
B9011	Vortex All AC Off
B9012	Vortex MCA Fail
B9013	Vortex LVD Active
B9014	Vortex LVDs Inhibited
B9015	Vortex System Major
B9016	Vortex System Minor
B9017	Vortex Shunt Fail
B9018	Vortex LVD Fail
B9020	Vortex Battery Charge Alarm
B9021	Vortex Subsystem Fuse
B9022	Vortex Subsystem Major
B9023	Vortex Subsystem Minor
B9024	Vortex PCU High AC Line
B9025 through B9080	Vortex PCU01 Fail through Vortex PCU56 Fail

Table 2-1
VPS Interface Analog and Binary Channels

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Viewing Active VPS Alarms: Use the command ALARMS VORTEX. This command is available to a user with access to level 1 commands.

Viewing VPS Status/Alarms and Monitored Voltage/Current Points: Use the command SCAN VORTEX. This command is available to a user with access to level 1 commands.

Viewing VPS Settings and Equipment Inventory: Use the command PRCONFIG VORTEX. This command is available to a user with access to level 2 commands.

Setting the VPS Audible Alarm Cutoff Reset Time Period (NAG): Use the command SET VORTEX SYSTEM NAGTIMER. This command is available to a user with access to level 4 commands.

Setting VPS Alarm Parameters: Use the commands SET VORTEX SYSTEM HIVLTALM1, SET VORTEX SYSTEM HIVLTALM2, SET VORTEX SYSTEM BATONDISCH, SET VORTEX SYSTEM 50%BATONDISCH, SET VORTEX SYSTEM OVRCURRENT, SET VORTEX SUBSYSTEM HIVALM, SET VORTEX SUBSYSTEM LVALM, and SET VORTEX SUBSYSTEM OVRCURRENT. These commands are available to a user with access to level 5 commands.

Changing the Password Issued by LMS1000 to Gain Remote Access to the VPS: Use the command SET VORTEX PASSWORD. This command is available to a user with access to level 6 commands.

Changing the VPS Operating Mode (Float or Test/Equalize): Use the command SET VORTEX SYSTEM MODE. This command is available to a user with access to level 6 commands.

Setting VPS "System Voltage" Calibration: Use the command SET VORTEX SYSTEM CALVOLT. This command is available to a user with access to level 6 commands.

Setting VPS "Subsystem Voltage" Calibration: Use the command SET VORTEX SUBSYSTEM CALVOLT. This command is available to a user with access to level 6 commands.

Resetting VPS "System Voltage" Calibration to Factory Defaults: Use the command SET VORTEX SYSTEM FACTORYCAL. This command is available to a user with access to level 6 commands.

Resetting VPS "Subsystem Voltage" Calibration to Factory Defaults: Use the command SET VORTEX SUBSYSTEM FACTORYCAL. This command is available to a user with access to level 6 commands

Setting VPS Battery Charge Temperature Compensation Module's Calibration Voltage: Use the command SET VORTEX SYSTEM TEMPCOMP. This command is available to a user with access to level 6 commands.

Setting VPS Available PCU Mounting Positions: Use the commands SET VORTEX SYSTEM 25APLACES, SET VORTEX SYSTEM 50APLACES, SET VORTEX SYSTEM 100APLACES, and SET VORTEX SYSTEM 200APLACES. These commands are available to a user with access to level 6 commands.

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Resetting VPS Inventory: Use the command SET VORTEX SYSTEM INVENTORY. This command is available to a user with access to level 6 commands.

Toggling PCUs On or Off (TR Feature): Use the command SET VORTEX PCU. This command is available to a user with access to level 6 commands.

Setting VPS Float Output Voltage: Use the command SET VORTEX SYSTEM FLTVOLT. This command is available to a user with access to level 6 commands.

Setting VPS Test/Equalize Output Voltage: Use the command SET VORTEX SYSTEM TSTEQVOLT. This command is available to a user with access to level 6 commands.

Setting VPS High Voltage Shutdown: Use the command SET VORTEX SYSTEM HVS. This command is available to a user with access to level 6 commands.

Setting VPS Current Limit: Use the command SET VORTEX SYSTEM CURLIMIT. This command is available to a user with access to level 6 commands.

Setting VPS Low Voltage Disconnect "Disconnects": Use the command SET VORTEX LVD DISCONNECT. This command is available to a user with access to level 6 commands.

Setting VPS Low Voltage Disconnect "Reconnect": Use the command SET VORTEX LVD RECONNECT. This command is available to a user with access to level 6 commands.

Setting VPS PCU Custom Messages: Use the command SET VORTEX MESSAGE PCU. This command is available to a user with access to level 6 commands.

Setting VPS MCA Custom Message: Use the command SET VORTEX MESSAGE MCA. This command is available to a user with access to level 6 commands.

Downloading the VPS Configuration: Use the command DOWNLOAD VORTEX. This command is available to a user with access to level 6 commands.

Uploading the VPS Configuration: Use the command UPLOAD VORTEX. This command is available to a user with access to level 6 commands.

ACCESSING AN LPS POWER SYSTEM

If LMS1000 is furnished in an LPS Power System, the LPS can be accessed by issuing certain LMS1000 commands. Commands available can be viewed by entering the LMS1000 command SET LPS.

Note: *The LPS contains an MCA remote lockout feature which disables changing LPS adjustment/configuration/calibration settings via LMS1000.*

Note: *Only one LMS1000 user is allowed to change LPS settings at a time. LMS1000 locks out any other user attempting to change LPS settings.*

Password: When LMS1000 is initially powered up or during a reset, LMS1000 automatically issues a password to gain remote access to the LPS. A newly installed LMS1000 issues the LPS's default remote access password (MARCONI!, in all capitol letters). If the LPS's remote access password has been changed from its default, the password issued by LMS1000 must also be changed. See command SET LPS PASSWORD. You must know the existing password set in LMS1000 to change it. If LMS1000 does not successfully connect with the LPS during power up or reset, a message is displayed when a user attempts LPS access.

If the password is changed in LMS1000, record the new password in a secure place. There is no way to view the password set in LMS1000.

Also, if the LPS MCA's remote access password is ever changed, record the new password in a secure place. The current LPS MCA remote access password cannot be viewed remotely from LMS1000. The password can be viewed locally, from the LPS MCA's Interface Pad. Refer to the LPS manual for a procedure.

LMS1000 Event Log: Certain actions performed at the LPS's MCA local interface pad and via LMS1000 are recorded in the LMS1000 event log. Refer to "Viewing and Clearing the Event Log" in this chapter for a listing of recorded LPS events.

LMS1000 Alarm Log: Refer to "Viewing and Clearing the Alarm Log" in this chapter for a list of LPS alarms that are recorded in the Alarm Log.

Note: *Binary Channel B0085 monitors the communications link between the LMS1000 and LPS Power System. This channel alarms if this communications link is not operational. A failed communications link generates an Alarm Log entry and an Event Log entry.*

LMS1000 Commands: The LPS Interface provides analog channels A9901-A9907 and binary channels B9901-B9946. These channels are dedicated to monitor predetermined LPS MCA parameters. The function of these channels are preset and cannot be changed. To efficiently use these channels with traditional (non-Vortex specific) commands, refer to Table 2-2 which shows the mapping of LPS parameters to these dedicated channels. The LMS also maps LPS bay parameters to LMS channels as detailed in Table 2-3.

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CHANNEL NUMBER	CHANNEL NAME
A9901	LPS Plant Voltage
A9902	Total PCU Output Current
A9903	Total Load Current
A9904	Group A Load Current
A9905	Group B Load Current
A9906	reserved
A9907	Compensation Temperature
A9908	Total Auxiliary Load (only present if any LPS MCA "CAN I/O" circuit card's analog input is configured as "auxiliary" load)
B9901	System Voltage is Very Low
B9902	System Battery is on Discharge
B9903	System High Voltage #1 Alarm
B9904	System High Voltage #2 Alarm
B9905	Total Load Current Alarm
B9906	Group A Load Current Alarm
B9907	Group B Load Current Alarm
B9908	reserved
B9909	LPS System Minor Alarm
B9910	LPS System Major Alarm
B9911	AC Power is Off to All PCUs
B9912	System Breaker or Fuse Alarm
B9913	High Temperature #1 Alarm
B9914	High Temperature #2 Alarm
B9915	Low Temperature #1 Alarm
B9916	Low Temperature #2 Alarm
B9917	Dist. Panel Alarm
B9918	Test/Equalize Mode
B9919	Emergency Stop Input
B9920	High Voltage Shutdown Input
B9921	MCA Audible Alarm Cutoff
B9922	MCA Audible Alarm
B9923	MCA Relay Test
B9924	Unidentified Node is Present
B9925	reserved
B9926	reserved
B9927	reserved
B9928	reserved

Table 2-2 (cont'd on next page)
LPS Interface Analog and Binary Channels
For LPS MCA Node (99)

CHANNEL NUMBER	CHANNEL NAME
B9929	MCA Hardware Failure Alarm Alarm Log Sub-ID Entries B9929.09 Display Fail B9929.10 Temperature Sensor No Reply B9929.11 Any LPS Router Fail Alarm Exists B9929.12 Any LPS Relay Board Fail Alarm Exists B9929.13 MCA Memory Failure
B9930	MCA Hardware Install Error Alarm Log Sub-ID Entries B9930.09 Any LPS Device Firmware Error Exists B9930.10 No Distribution Panel Modules Installed B9930.11 No Routers Installed B9930.12 No MCA Customer Alarm Relay Boards Installed B9930.13 No PCUs Installed
B9931 through B9946	Relay Board nn-01 Alarm through Relay Board nn-07 Alarm nn = bay number Alarm Log Sub-ID Entries B99nn.09 Relay 1 is stuck B99nn.10 Relay 2 is stuck B99nn.11 Relay 3 is stuck B99nn.12 Relay 4 is stuck B99nn.13 Relay 5 is stuck B99nn.14 Relay 6 is stuck B99nn.17 Processor Failure B99nn.18 Communications Failure B99nn.19 Duplicate Node nn = relay channel number, i.e. 31 for Relay 1

Table 2-2 (cont'd from previous page)
LPS Interface Analog and Binary Channels
For LPS MCA Node (99)

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CHANNEL NUMBER	CHANNEL NAME
Ann01 through Ann48	Fuse [Breaker] [Plug In] nn-01 Load through Fuse [Breaker] [Plug In] nn-47 Load Note that there are no even channel numbers for distribution elements. Each element takes up two positions per pole. The channel number for the element is the lowest position number used. For example: For a single pole element in distribution panel #2 in position 25 and 26, channels are A0125 and B0125. For a double pole element in positions 27-30, channels are A0127 and B0127. For a triple pole element in positions 31-36, channels are A0131 and B0131. For a quad pole element in positions 37-44, channels are A0137 and B0137.
Ann49	reserved
Ann50	reserved
Ann51 through Ann60	PCU nn-01 Load through PCU nn-10 Load
Ann61 through Ann90	reserved
Ann91	I/O Board bb-ss Load (bb = LPS Bay #, ss = LPS Bay Slot #)

Table 2-3 (cont'd on next page)
LPS Interface Analog and Binary Channels
For LPS Bay Nodes (nn = 1-20)

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Bnn01 through Bnn48	Fuse [Breaker] [Plug In] nn-01 Alarm through Fuse [Breaker] [Plug In] nn-47 Alarm Alarm Log Sub-ID Entries Bnnnn.09 Fuse / Circuit Breaker Alarm Bnnnn.11 Shunt Overcurrent Alarm Bnnnn.12 Unknown Element Alarm Note that there are no even channel numbers for distribution elements. Each element takes up two positions per pole. The channel number for the element is the lowest position number used. For example: For a single pole element in distribution panel #2 in position 25 and 26, channels are A0125 and B0125. For a double pole element in positions 27-30, channels are A0127 and B0127. For a triple pole element in positions 31-36, channels are A0131 and B0131. For a quad pole element in positions 37-44, channels are A0137 and B0137.
Bnn49	Bay nn Status Alarm Log Sub-ID Entries Bnn49.09 Router Processor Fail Bnn49.10 Router Communications Fail Bnn49.11 Router External Voltage Fail Bnn49.12 Router Internal Voltage Fail Bnn49.13 Router Firmware Fail Bnn49.17 Distr. Panel #1 Processor Fail Bnn49.18 Distr. Panel #1 Communications Fail Bnn49.19 Distr. Panel #1 A/B Feed Change Bnn49.20 Distr. Panel #1 Unknown Elements Bnn49.21 Distr. Panel #1 Firmware Fail Bnn49.25 Distr. Panel #2 Processor Fail Bnn49.26 Distr. Panel #2 Communications Fail Bnn49.27 Distr. Panel #2 A/B Feed Change Bnn49.28 Distr. Panel #2 Unknown Elements Bnn49.29 Distr. Panel #2 Firmware Fail
Bnn50	I/O Board bb-ss Alarm (bb = LPS Bay #, ss = LPS Bay Slot #) Alarm Log Sub-ID Entries Bnn50.09 CAN I/O Processor Fail Bnn50.10 CAN I/O Communications Fail Bnn50.11 CAN I/O Duplicate Node Bnn50.12 Shunt Output Overcurrent Alarm Bnn50.13 Shunt Input Overcurrent Alarm

Table 2-3 (cont'd from previous page, cont'd on next page)
LPS Interface Analog and Binary Channels
For LPS Bay Nodes (nn = 1-20)

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Bnn51 through Bnn60	PCU nn-01 Alarm through PCU nn-10 Alarm <u>Alarm Log Sub-ID Entries</u> Bnnnn.07 Firmware Error Bnnnn.09 Sense Loss (MN) Bnnnn.10 Communications Fail (MJ) Bnnnn.11 AC Line Low (MJ) Bnnnn.13 Switched OFF (MJ) Bnnnn.14 Emergency Stop Active (MJ) Bnnnn.15 High Ambient Temperature (MN) Bnnnn.16 Converter Fail (MJ) Bnnnn.17 Breaker OFF (MJ) Bnnnn.18 Output Inhibited (MJ) Bnnnn.19 Fan Fail Major (MJ) Bnnnn.20 Remote HV Shutdown (MJ) Bnnnn.21 Processor Fail (MJ) Bnnnn.22 PF Thermal Shutdown (MJ) Bnnnn.23 AC Line Too High (MJ) Bnnnn.24 Fan Fail Minor (MN) Bnnnn.25 AC Line Phase Lost (MJ) Bnnnn.26 Power Factor Fail (MJ) Bnnnn.27 Thermal Shutdown (MJ) Bnnnn.28 Thermal Current Limit (MJ) Bnnnn.29 PF HV Shutdown (MJ) Bnnnn.30 Converter Unbalanced (MJ)
Bnn61 through Bnn90	reserved
Bnn91 through Bnn94	I/O Board bb-ss Binary #n (bb = LPS Bay #, ss = LPS Bay Slot #, n = corresponding Binary Input #)

Table 2-3 (cont'd from previous page)
LPS Interface Analog and Binary Channels
For LPS Bay Nodes (nn = 1-20)

Viewing LPS Settings and Equipment Inventory: Use the command PRCONFIG LPS. This command is available to a user with access to level 2 commands.

Changing the LPS Operating Mode (Float or Test/Equalize): Use the command SET LPS SYSTEM TSTEQMODE. This command is available to a user with access to level 6 commands.

Toggling PCUs On or Off (TR Feature): Use the command SET LPS PCU. This command is available to a user with access to level 6 commands.

Setting LPS Relay Test Time Period: Use the command SET LPS SYSTEM RLYTSTTIME. This command is available to a user with access to level 5 commands.

Setting LPS Relay Test On: Use the command SET LPS SYSTEM RLYONTEST. This command is available to a user with access to level 6 commands.

Setting LPS Relay Test Off: Use the command SET LPS SYSTEM RLYOFFTEST. This command is available to a user with access to level 6 commands.

Setting LPS Audible Alarm Cutoff Reset Time Period (NAG): Use the command SET LPS SYSTEM NAGTIMER. This command is available to a user with access to level 4 commands.

Setting LPS Custom Text Messages: Use the commands SET LPS MESSAGE PCU, SET LPS MESSAGE MCA, SET LPS MESSAGE ROUTER, SET LPS MESSAGE DISTRIBUTION, SET LPS MESSAGE RELAY, and SET LPS MESSAGE CANIO_BD. These commands are available to a user with access to level 6 commands.

Setting LPS Temperature Readings to Celsius: Use the command SET LPS SYSTEM USECELSIUS. This command is available to a user with access to level 6 commands.

Setting LPS Temperature Readings to Fahrenheit: Use the command SET LPS SYSTEM USEFAHRENHEIT. This command is available to a user with access to level 6 commands.

Changing the Password Issued by LMS to Gain Remote Access to the LPS: Use the command SET LPS PASSWORD. This command is available to a user with access to level 6 commands.

Resetting (Updating) LPS Inventory: Use the command SET LPS SYSTEM UPDATEINV. This command is available to a user with access to level 6 commands.

Setting LPS Float Output Voltage: Use the command SET LPS SYSTEM FLTVOLT. This command is available to a user with access to level 6 commands.

Setting LPS Test/Equalize Output Voltage: Use the command SET LPS SYSTEM TSTEQVOLT. This command is available to a user with access to level 6 commands.

Setting LPS Test/Equalize Time Period: Use the command SET LPS SYSTEM TSTEQTIME. This command is available to a user with access to level 6 commands.

Setting LPS Auto-Equalize Multiplier: Use the command SET LPS SYSTEM EQMULTIPLIER. This command is available to a user with access to level 6 commands.

Setting LPS Temp Slope: Use the command SET LPS SYSTEM TEMPSLOPE. This command is available to a user with access to level 6 commands.

Setting LPS Temp Comp Max: Use the command SET LPS SYSTEM TEMPCOMPMAX. This command is available to a user with access to level 6 commands.

Setting LPS Temp Comp Min: Use the command SET LPS SYSTEM TEMPCOMPMIN. This command is available to a user with access to level 6 commands.

Setting LPS High Voltage Shutdown: Use the command SET LPS SYSTEM HVS. This command is available to a user with access to level 6 commands.

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Setting LPS Current Limit: Use the command SET LPS SYSTEM CURLIMIT. This command is available to a user with access to level 6 commands.

Setting LPS Alarm Parameters: Use the commands SET LPS SYSTEM HIVLTALM1, SET LPS SYSTEM HIVLTALM2, SET LPS SYSTEM BATONDISCH, SET LPS SYSTEM VERYLOWVOLT, SET LPS SYSTEM LOADCURRENT, SET LPS SYSTEM LOADACURRENT, SET LPS SYSTEM LOADBCURRENT, SET LPS SYSTEM HI1TEMPALM, SET LPS SYSTEM HI2TEMPALM, SET LPS SYSTEM LOW1TEMPALM, and SET LPS SYSTEM LOW2TEMPALM. These commands are available to a user with access to level 5 commands.

Setting LPS MCA "CAN I/O" Circuit Card Parameters: Use the commands SET LPS CANIO and SET LPS MESSAGES CANIO_BD. These commands are available to a user with access to level 6 commands.

VIEWING SOFTWARE OPTIONS INSTALLED

Enter the OPTIONS command. A list of all available options is displayed. In the list, options that are currently installed are indicated along with, if appropriate, the port assigned to the option.

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USING THE POWER METERING SOFTWARE OPTION

What is Power Metering?

The LMS Power Metering feature tabulates power consumed by customer loads connected to your power plant; generating daily, weekly, and monthly power consumption data. Power Metering data is based upon the average of all samples taken during one minute. The LMS calculates kilowatt-hours by totaling the minute averages from the current hour and records this total at the top of each hour. Each hour total is added to the daily total and each daily total is added to the weekly and monthly totals.

Power consumption data of up to sixty-four (64) separate loads can be generated.

You may also decide to generate power consumption data per customer, not load.

Entering the command POWER generates and displays the power consumption report. This report may also be generated in a "comma separated value" format which can easily be imported into a spreadsheet for record keeping or presentation purposes. The user can then easily translate power consumption data into dollars billed.

Setting Up Power Metering

First, you need to connect an LMS analog input to your DC power plant's system voltage.

Next, for each customer load to be monitored, you need to connect an analog input(s) to the load shunt(s).

And finally, configure an LMS function channel for each customer. The function channel's program line should be set up to calculate the amount of power consumed. In addition, the phrase "KW" must be entered for the function channel's "Unit Text" parameter. Examples of program lines are detailed next.

The program line must calculate power consumed by a load by multiplying the value of the analog channel monitoring the system voltage (input voltage of all customer loads) with the value of the analog channel monitoring the load's input current, and multiplying this product by 0.001 (because power consumption data is generated in kilo-watts per hour). For example, if analog input A01 is connected to system voltage and analog input A0002 is connected to the load's input shunt, then an appropriate program line would be:

    F0001=A0001*A0002*0.001

If the customer has multiple loads, a single function channel can be used to tabulate the sum of all power consumed by that customer. For example, if analog input A0001 is connected to system voltage, analog input A0002 is connected to customer load "#1", and analog input A0003 is connected to customer load "#2", then an appropriate program line would be:

    F0001=A0001*(A0002+A0003)*0.001

This example also describes a program line for a single load with multiple shunts or fuses monitored by A0002 and A0003.

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Using Power Metering

To display a power consumption report, enter the command POWER. The POWER command is available to a user programmed for access to level 1 commands. The command is also described in "Chapter 3. Commands".

For the "comma separated value" format, enter the command POWER CSV.

To clear the Power Metering data, enter the command CLR POWER. But be careful, entering this command destroys all previously saved data. The CLR POWER command is available to a user programmed for access to level 4 commands. The command is also described in "Chapter 3. Commands".

POWER Command

This command displays power consumption data for function channels configured to calculate power, and is available for all users (command level 1).

Command syntax is POWER, POW, POWER CSV, or POW CSV.

A power consumption report is generated and displayed for all function channels configured with the UNIT TEXT of KW, and the appropriate program line to generate power consumption values. Power consumption data consists of power consumed for current day, current week, and current month. In addition, power consumption data for the previous day, previous week, and previous month is also displayed.

Entering the command modifier CSV displays the power consumption report in the "comma separated value" format. This allows the data to be imported into a spreadsheet.

Typical Screen Display

```
Command<1>: POWER
POWER CONSUMPTION STATISTICS  AS OF 13:04:45 ON 04/29/99

F0001 POWER STATS: CUSTOMER BILL LOADA POWER
   Daily
   04/28/99: 55.07 KWH
   04/29/99: 29.80 KWH

   Weekly
   04/19/99 THROUGH 04/25/99: 384.8 KWH
   04/26/99 THROUGH 04/29/99: 194.9 KWH

   Monthly
   03/14/99 THROUGH 03/31/99: 887.9 KWH
   04/01/99 THROUGH 04/29/99: 1505.0 KWH

F0002 POWER STATS: CUSTOMER BILL LOADB POWER
   Daily
   04/28/99: 109.20 KWH
   04/29/99: 59.17 KWH
```

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```
              Weekly
              04/19/99 THROUGH 04/25/99: 762.8 KWH
              04/26/99 THROUGH 04/29/99: 386.8 KWH

              Monthly
              03/14/99 THROUGH 03/31/99: 1868.0 KWH
              04/01/99 THROUGH 04/29/99: 3098.0 KWH

F0003 POWER STATS: CUST BOB LOADA AND LOADB POWER
              Daily
              04/28/99: 147.40 KWH
              04/29/99: 79.85 KWH

              Weekly
              04/19/99 THROUGH 04/25/99: 1036.0 KWH
              04/26/99 THROUGH 04/29/99: 524.0 KWH

              Monthly
              03/14/99 THROUGH 03/31/99: 2583.0 KWH
              04/01/99 THROUGH 04/29/99: 4233.0 KWH
```

The following is an example using the "comma separated value" format.

Format is:

Title (line 1),
name of channel, yesterday, today, last week, this week, last month, this month.

```
Command<1>: POWER CSV
POWER CONSUMPTION STATISTICS AS OF 13:04:45 ON 04/29/99
CUSTOMER BILL LOADA POWER, 55.07 KWH, 29.80 KWH, 384.8 KWH, 194.9
KWH, 887.9 KWH, 1505.0 KWH
CUSTOMER BILL LOADB POWER, 109.20 KWH, 59.17 KWH, 762.8 KWH,
386.8 KWH, 1868.0 KWH, 3098.0 KWH
CUST BOB LOADA AND LOADB POWER, 147.40 KWH, 79.85 KWH, 1036.0
KWH, 524.0 KWH, 2583.0 KWH, 4233.0 KWH
```

CLR POWER Command

This command clears the power consumption data for a specified function channel or all function channels configured for Power Metering. A user must be configured for command access level 4 or greater to use this command.

Command syntax is CLR POWER [function_channel_number] or CLR POW [function_channel_number].

Entering a function channel number (1-64) after the command clears data for the specified function channel only.

Previous saved data is destroyed. Future Power Metering reports are based on data collected after this command is entered.

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Typical Screen Display

```
Command<4>: CLR POWER

Power Stats cleared.
```

```
Command<4>: CLR POWER 1

Power Stats cleared.
```

Determining if the Power Metering Option is Installed

Enter the command OPTIONS. In the displayed information, look for "Power Metering" under the column heading "Option Name". Look for "installed, enabled" under the "Status" column heading.

If the Power Metering option's status is listed as "not installed", contact Emerson Network Power and tell them you would like the Power Metering option installed on your LMS1000.

What Do I Need, How Do I Order?

Foremost you'll need to specify the Power Metering option. Specify 586505000/586505500 List 87. Note that this option must be factory installed, or field installed by Emerson Network Power only. Note this option can be field installed remotely via dial-up phone lines if your LMS1000 is equipped with a modem or via Ethernet if connected to a TCP/IP network.

Second, you need at least one analog circuit card. Specify 586505000/586505500 List 20 (this gives you analog circuit card Part No. 506336). This analog circuit card provides 4 analog inputs. One will be connected to system voltage. This leaves three for measuring customer loads.

Order one additional analog circuit card per four additional customer loads to be monitored. Note that there is also an 8-input analog circuit card (586505000/586505500 List 22) available which monitors up to eight 50 mv shunts.

Also order one (1) in-line fuse kit to protect the analog leads connected to system voltage. Specify 586505000/586505500 List BE (3/8" ring lug) or List BF (5/16" ring lug).

And order a current limit resistor kit for each customer load to be monitored for power consumption. Specify 586505000/586505500 List BA (3/8" ring lug), List BB (splice), or List BC (ring lug for #10 stud).

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USING THE WEB INTERFACE SOFTWARE OPTION

What does the LMS WEB Interface Do for Me ?

- Allows you to access the LMS over the Internet via a WEB Browser.
- Read access only for security.
- Displays LMS status in a simple three-pane WEB Interface.
- Top pane for LMS identification, alarm notification, and display of system voltage and system current that updates approximately every 15 seconds.
- Left pane for navigation.
- Right pane for display of status information, which includes display of…
    Alarms and Logs
        Alarm Status (equivalent of the LMS ALARMS command)
        Alarm Log (equivalent of the LMS LOG command)
        Event Log (equivalent of the LMS EVENTS command)
    Equipment
        Hardware (equivalent of the LMS BOARDS command)
- You can configure your own LMS WEB Pages to display. The following User defined LMS features can be displayed in the WEB Browser…
    LMS Status Pages
    LMS Channel Groups
    LMS User Channels

Setting Up the LMS WEB Interface

Basic Setup

Simply connect your LMS to a TCP/IP network, and enter the IP Address assigned to the LMS into the LMS Configuration (LMS Command IP ADDRESS).

Enter the LMS command SET VI to set the channels that the WEB Interface uses to display system voltage and system current.

Advance Setup

You can configure your own personal LMS WEB Status Pages, LMS WEB Channel Groups, and LMS WEB User Channels within LMS. You can then retrieve these configured WEB Pages from a WEB Browser.

Configuring LMS WEB Status Pages: LMS Status Pages configured with a page name will show up in the WEB Interface navigation pane.

Configuring LMS WEB Channel Groups: LMS Channel Groups configured with a group name will show up in the WEB Interface navigation pane.

Configuring LMS WEB User Channels: LMS Channels assigned to a User will show up in the WEB Interface navigation pane (for the logged-on user).

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Using the LMS WEB Interface

1) Open your WEB Browser, and enter in the "Address Line" the IP Address assigned to the LMS you want to connect to.

2) A Login page appears. Enter a valid LMS "User Name" and "User Password".
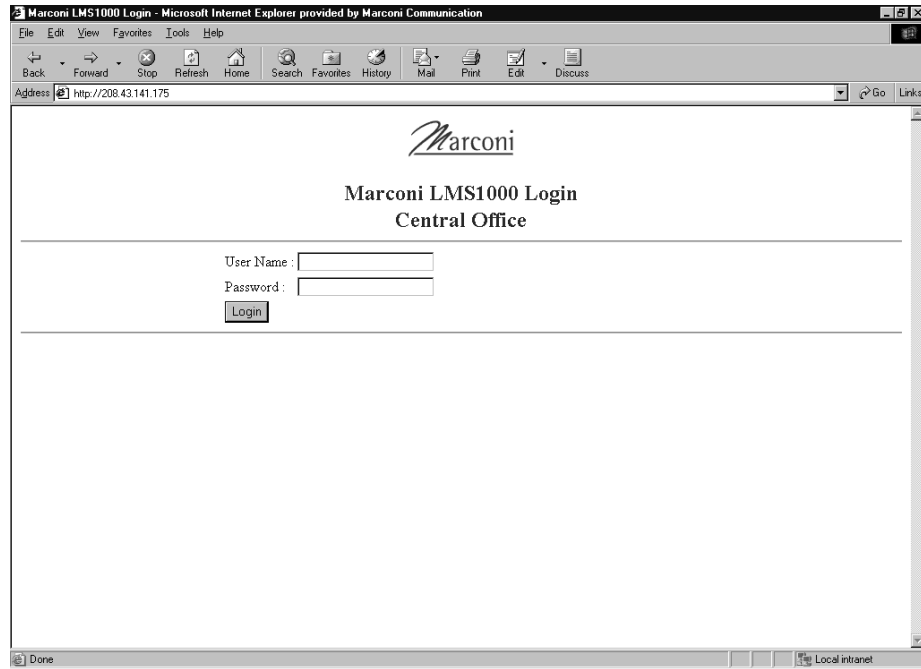
Login Screen

Warning: For security, only login with a User and Password which gives you access to level 1 LMS commands (Level 1 User).

3) The three-pane WEB Interface window opens after a successful login.
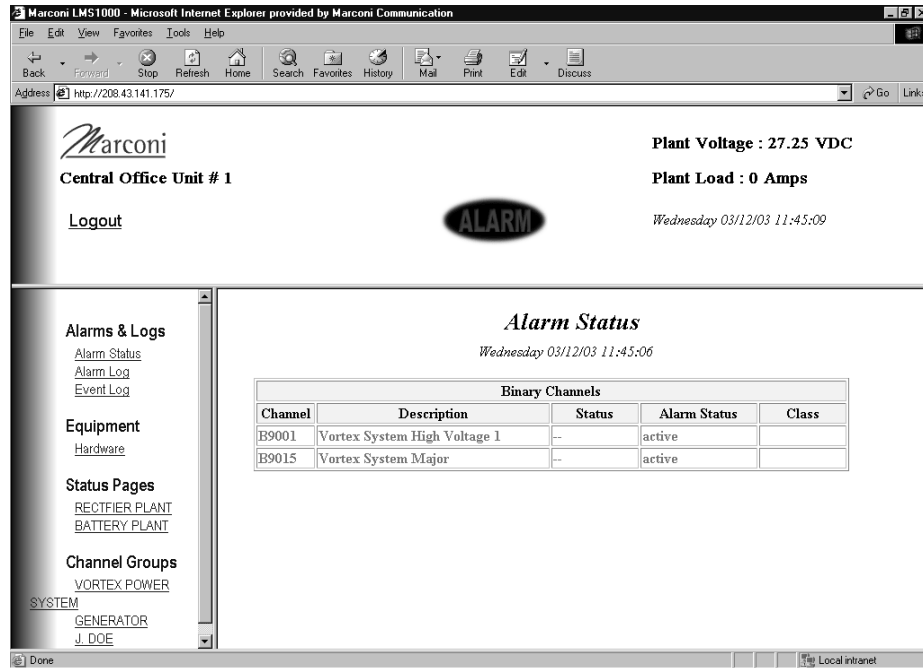
Three-Pane WEB Interface Window

4) The **Top Pane** displays the Unit Name and values of the Plant Voltage and Plant Current LMS Channels. An ALARM message displays if there are active alarms in the LMS.

5) Click on an item in the **Left Pane** to display its status in the **Right Pane**.

   Note: *Entries under Status Pages and Channel Groups only appear if properly configured in the LMS, as previously explained under "Advance Setup"*

What Do I Need, How Do I Order?

- Netscape Navigator, v4.0 or later
  or
  Microsoft Internet Explorer, v4.0 or later

- Order 586505000/586505500 List 81, and have an Emerson Network Power Service Center load the new firmware into your LMS. Firmware can be upgraded via the Ethernet, Modem, or Local Port.

   Note: *If you have an LMS1000 with firmware version earlier than 2.1.0.6, you must replace the entire CPU circuit card. Earlier versions are not software upgradeable.*

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Sample Screen Shots

Alarm Status Page

Alarm Log Page

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Event Log Page

<table>
<tr><th colspan="6">Event Log</th></tr>
<tr><th>Num</th><th>User</th><th>Name</th><th>Description</th><th>Date</th><th>Time</th></tr>
<tr><td>1</td><td>8</td><td>User #8</td><td>VI Parameters set</td><td>03/12/03</td><td>11:32:42</td></tr>
<tr><td>2</td><td>8</td><td>User #8</td><td>System uploaded</td><td>03/12/03</td><td>11:26:30</td></tr>
<tr><td>3</td><td>8</td><td>User #8</td><td>Logged on</td><td>03/12/03</td><td>11:24:18</td></tr>
<tr><td>4</td><td>0</td><td>LMS</td><td>Defaults set</td><td>03/12/03</td><td>11:23:28</td></tr>
<tr><td>5</td><td>0</td><td>LMS</td><td>Reset</td><td>03/12/03</td><td>11:23:12</td></tr>
<tr><td>6</td><td>8</td><td>User #8</td><td>System initialize performed</td><td>03/12/03</td><td>11:21:39</td></tr>
<tr><td>7</td><td>8</td><td>User #8</td><td>Logged on</td><td>03/12/03</td><td>11:21:25</td></tr>
<tr><td>8</td><td>8</td><td>User #8</td><td>Set time</td><td>03/12/03</td><td>10:54:30</td></tr>
<tr><td>9</td><td>8</td><td>User #8</td><td>VI Parameters set</td><td>03/12/03</td><td>11:03:24</td></tr>
<tr><td>10</td><td>8</td><td>User #8</td><td>Battery disch. timer set</td><td>03/12/03</td><td>11:03:23</td></tr>
</table>

Event Log

Wednesday 03/12/03 11:49:05

<table>
<tr><th colspan="6">Event Log</th></tr>
<tr><th>Num</th><th>User</th><th>Name</th><th>Description</th><th>Date</th><th>Time</th></tr>
<tr><td>1</td><td>8</td><td>User #8</td><td>VI Parameters set</td><td>03/12/03</td><td>11:32:42</td></tr>
<tr><td>2</td><td>8</td><td>User #8</td><td>System uploaded</td><td>03/12/03</td><td>11:26:30</td></tr>
<tr><td>3</td><td>8</td><td>User #8</td><td>Logged on</td><td>03/12/03</td><td>11:24:18</td></tr>
<tr><td>4</td><td>0</td><td>LMS</td><td>Defaults set</td><td>03/12/03</td><td>11:23:28</td></tr>
<tr><td>5</td><td>0</td><td>LMS</td><td>Reset</td><td>03/12/03</td><td>11:23:12</td></tr>
<tr><td>6</td><td>8</td><td>User #8</td><td>System initialize performed</td><td>03/12/03</td><td>11:21:39</td></tr>
<tr><td>7</td><td>8</td><td>User #8</td><td>Logged on</td><td>03/12/03</td><td>11:21:25</td></tr>
<tr><td>8</td><td>8</td><td>User #8</td><td>Set time</td><td>03/12/03</td><td>10:54:30</td></tr>
<tr><td>9</td><td>8</td><td>User #8</td><td>VI Parameters set</td><td>03/12/03</td><td>11:03:24</td></tr>
<tr><td>10</td><td>8</td><td>User #8</td><td>Battery disch. timer set</td><td>03/12/03</td><td>11:03:23</td></tr>
<tr><td>11</td><td>8</td><td>User #8</td><td>VI Parameters set</td><td>03/12/03</td><td>11:03:18</td></tr>
<tr><td>12</td><td>8</td><td>User #8</td><td>VI Parameters set</td><td>03/12/03</td><td>11:02:28</td></tr>
<tr><td>13</td><td>8</td><td>User #8</td><td>Battery disch. timer set</td><td>03/12/03</td><td>11:02:23</td></tr>
<tr><td>14</td><td>8</td><td>User #8</td><td>VI Parameters set</td><td>03/12/03</td><td>10:57:56</td></tr>
<tr><td>15</td><td>8</td><td>User #8</td><td>Battery disch. timer set</td><td>03/12/03</td><td>10:57:55</td></tr>
<tr><td>16</td><td>8</td><td>User #8</td><td>Logged on</td><td>03/12/03</td><td>10:57:46</td></tr>
<tr><td>17</td><td>0</td><td>LMS</td><td>Reset</td><td>03/12/03</td><td>10:55:55</td></tr>
<tr><td>18</td><td>8</td><td>User #8</td><td>Logged on</td><td>03/10/03</td><td>16:19:55</td></tr>
<tr><td>19</td><td>8</td><td>User #8</td><td>Logged on</td><td>03/10/03</td><td>09:50:18</td></tr>
<tr><td>20</td><td>8</td><td>User #8</td><td>Logged on</td><td>03/10/03</td><td>09:07:51</td></tr>
<tr><td>21</td><td>8</td><td>User #8</td><td>Logged on</td><td>03/10/03</td><td>08:32:55</td></tr>
<tr><td>22</td><td>8</td><td>User #8</td><td>Logged on</td><td>03/09/03</td><td>11:56:34</td></tr>
<tr><td>23</td><td>0</td><td>LMS</td><td>Reset</td><td>03/09/03</td><td>11:56:11</td></tr>
<tr><td>24</td><td>8</td><td>User #8</td><td>Logged on</td><td>03/09/03</td><td>11:38:35</td></tr>
<tr><td>25</td><td>0</td><td>LMS</td><td>Defaults set</td><td>03/09/03</td><td>11:38:13</td></tr>
<tr><td>26</td><td>0</td><td>LMS</td><td>Reset</td><td>03/09/03</td><td>11:37:57</td></tr>
<tr><td>27</td><td>0</td><td>LMS</td><td>Application V2.1.0.14 changed</td><td>03/09/03</td><td>11:37:57</td></tr>
<tr><td>28</td><td>0</td><td>LMS</td><td>Event log cleared</td><td>03/09/03</td><td>11:37:57</td></tr>
</table>

LMS Hardware Page

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User Instructions
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Sample Status Page

RECTFIER PLANT
Wednesday 03/12/03 11:46:20

Analog Channels					
Channel	Description	Value	Units	Limit	Class
A9005	Vortex Total PCU Current	0.832	Amps		
A9026	Vortex PCU01 Current	0.835	Amps		

Binary Channels				
Channel	Description	Status	Alarm Status	Class
B9009	Vortex PCU Emergency Stop	--	none	
B9024	Vortex PCU High AC Line	--	none	
B9025	Vortex PCU01 Fail	--	none	

RECTFIER PLANT
Wednesday 03/12/03 11:50:27

Analog Channels					
Channel	Description	Value	Units	Limit	Class
A9005	Vortex Total PCU Current	0.832	Amps		
A9026	Vortex PCU01 Current	0.855	Amps		

Binary Channels				
Channel	Description	Status	Alarm Status	Class
B9009	Vortex PCU Emergency Stop	--	none	
B9024	Vortex PCU High AC Line	--	none	
B9025	Vortex PCU01 Fail	--	none	

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Sample Channel Group Page

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Analog Channels					
Channel	Description	Value	Units	Limit	Class

Binary Channels				
Channel	Description	Status	Alarm Status	Class
B9001	Vortex System High Voltage 1	--	active	
B9002	Vortex System High Voltage 2	--	none	
B9003	Vortex System Batt. on Disch.	--	none	
B9004	Vortex System 50% Batt. Disch.	--	none	
B9005	Vortex System Overcurrent	--	none	
B9009	Vortex PCU Emergency Stop	--	none	
B9010	Vortex System Fuse	--	none	
B9011	Vortex All AC Off	--	none	
B9012	Vortex MCA Fail	--	none	
B9013	Vortex LVD Active	--	none	
B9014	Vortex LVDs Inhibited	--	none	
B9015	Vortex System Major	--	active	
B9016	Vortex System Minor	--	none	
B9017	Vortex Shunt Fail	--	none	
B9018	Vortex LVD Fail	--	none	
B9020	Battery Charge Alarm	--	none	
B9024	Vortex PCU High AC Line	--	none	

USING THE BATTERY DISCHARGE TIMER FEATURE

Refer also to the Commands chapter for typical screen displays of the commands described in this section.

What is the Battery Discharge Timer Feature?

The LMS can record Battery Discharge History. The Battery Discharge Timer feature displays the last 50 recorded discharges in a tabular format. The information displayed includes the duration of the battery discharge, the time and date at which the discharge began, the lowest recorded plant voltage during the discharge, and the average plant load.

Setting Up the Battery Discharge Timer Feature

A Binary, LED, or Relay channel must be identified to monitor the "On Battery" condition. A Binary input may be used with external equipment that detects the system is "On Battery". The program line of a Relay or LED channel can be used for more sophisticated detection of the "On Battery" condition. Refer to the "Program Lines" section of the "Configuration" chapter in the LMS *Installation Instructions* (Section 5879) for further details on setting a Program Line. Analog or Function channels must be identified to monitor the Plant Voltage and Plant Load.

Enter the command BATTERY TIMER SET. When prompted, enter the channels monitoring the "On Battery Signal", "Plant Voltage", and "Plant Load".

Configure the "On Battery" channel as required for your installation site.

Using the Battery Discharge Timer Feature

Enter the command BATTERY TIMER STATUS to display the Battery Discharge History. Use the command BATTERY TIMER CSV to display the data in a comma separated format. To clear the Battery Discharge History, use the command BATTERY TIMER CLR.

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USING THE DOOR ACCESS CONTROLLER INTERFACE (WHEN 586505000/586505500 LIST 80 INSTALLED)

Refer to the documentation furnished with the Door Access Controller.

Note that two events are added to the Event Log ('key code nn validated' and 'invalid key code entered').

Note also that two Programmable Commands may have been configured to manually lock and unlock the Access Door via LMS if the Door Access Controller should fail.

The following LMS binary channels are added.

Channel Number	Channel Name
B7001	DAC Communications Failure
B7002	Strike Failed
B7003	Forced Entry
B7004	DAC PIN List Invalid
B7005	Door Open

USING THE EXTERNAL GPS MODEM INTERFACE (WHEN 586505000/586505500 LIST 84 INSTALLED)

Refer to the documentation furnished with the GPS Modem.

The LMS operates at 19200, n, 8, 1.

USING THE AC ANALYZER INTERFACE
(WHEN 586505000/586505500 LIST 85 INSTALLED)

Refer to the documentation furnished with the AC Analyzer. LMS AC Analyzer Interface is 9600, n, 8, 1. Set the AC Analyzer to 9600, n, 8, 1 as node #1.

The following LMS analog and binary channels are added.

Channel Number	Channel Name
A7101	Phase 1 Voltage (VAC)
A7102	Phase 2 Voltage (VAC)
A7103	Phase 3 Voltage (VAC)
A7104	Phase 1-2 Voltage (VAC)
A7105	Phase 2-3 Voltage (VAC)
A7106	Phase 1-3 Voltage (VAC)
A7107	Phase 1 Current (AMPS)
A7108	Phase 2 Current (AMPS)
A7109	Phase 3 Current (AMPS)
A7110	Phase 1 Power Factor
A7111	Phase 2 Power Factor
A7112	Phase 3 Power Factor
A7113	Phase 1 Apparent Power (VA)
A7114	Phase 2 Apparent Power (VA)
A7115	Phase 3 Apparent Power (VA)
A7116	Phase 1 Real Power (W)
A7117	Phase 2 Real Power (W)
A7118	Phase 3 Real Power (W)
A7119	Phase 1 Reactive Power (VAR)
A7120	Phase 2 Reactive Power (VAR)
A7121	Phase 3 Reactive Power (VAR)
A7122	Average Voltage (VAC)
A7123	Average Current (AMPS)
A7124	Average Power Factor
A7125	Average Apparent Power (VA)
A7126	Average Real Power (W)
A7127	Average Reactive Power (VAR)
A7128	Frequency (HZ)
A7129	Real Energy (WH)
A7130	Reactive Energy (VARH)
A7131	Average Real Pwr., 15m (W)
A7132	Average Reactive Pwr., 15m (VAR)
B7101	AC Analyzer Com. Failure

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LMS ALARM LIMIT OPTIONS

LMS v6.3 contains an enhanced version of alarm processing that allows for a more intuitive use of alarm limits when used with plant voltage and battery shunts. The new capability is made possible with an additional analog channel configuration item, **alarm polarity**, which governs how high and low alarms operate. The default alarm processing is the same as earlier LMS revisions – a high alarm occurs when the reading is greater than the high limit, and a low alarm occurs when the reading is less than the low limit. LMS v6.3 introduces two new modes of operation intended for analog inputs that have bipolar or negative readings.

- In the *polarized* mode, a high or low alarm can only occur if the polarity of the alarm <u>matches</u> the polarity of the reading. This is useful for detecting both high charge and discharge currents on a battery shunt. For example, assume a shunt is wired for a negative float current reading, and it has a high alarm limit of –6.0 amps to detect a high float current. It can then also have a high limit of +100.0 amps to detect a high discharge current. So, in this example there are two high alarms, with opposite polarity. In previous versions of LMS, this was not permitted. To select the polarized mode, enter a "P" at the alarm polarity prompt.

- In the *negative* mode, the alarm processing is reversed from the default behavior. In other words, a **high alarm** occurs when the reading is **less than** the high limit, and a **low alarm** occurs when the reading is the **greater than** low limit. This is intended for inputs when the reading is always negative, such as plant voltage, making it possible to have conventional alarm limits. Now, -56.0V can be a high limit (given a float voltage of -54.0V), when in previous LMS versions, it must be a low limit. To select the negative mode, enter a "–" (minus sign) at the alarm polarity prompt.

- In the *default* mode, the polarity of readings and alarm limits are in fact used during alarm processing, meaning evaluations are relative (and not absolute). Furthermore, a reading is compared to all alarm limits. So, in the example at right and with a temperature of -4.0 °C, two low alarms would turn in: one for +5.0 limit and one for the -3.0 limit. The default mode can be selected by entering a "+" (plus sign) at the alarm polarity prompt.

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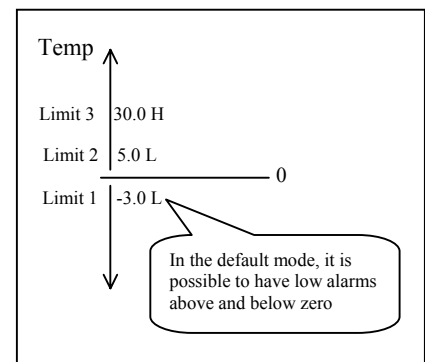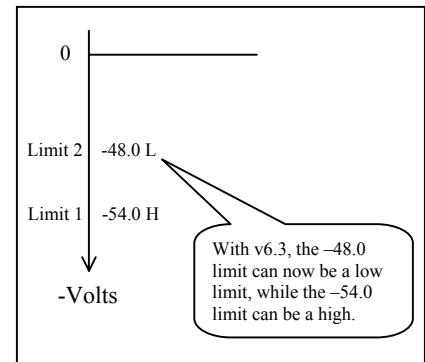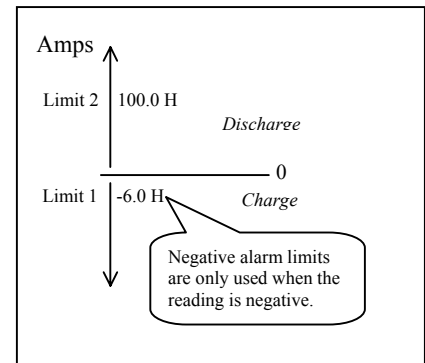
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OVERVIEW OF THE COMMAND SET

LMS1000 Commands

This section provides an alphabetical list of all LMS1000 commands, with a short description of each command.

LMS1000 Commands	Description
ACK	acknowledge report type alarms
ACO	list alarms that have been cutoff
AID <n>	display configured access identifiers
ALARMS	list active alarms
ANSWER	show number of rings before the system answers
BATTERY	list BATTERY type commands
BATTERY THERMAL	sets the Battery Thermal Alarm Channel and Battery Thermal Runaway Voltage
BATTERY TIMER	list BATTERY TIMER type commands
BATTERY TIMER ?	display Help for BATTERY type commands
BATTERY TIMER CLR	clear Battery Discharge History
BATTERY TIMER CSV	display Battery Discharge History in comma separated value format
BATTERY TIMER SET	set Battery Discharge Timer feature
BATTERY TIMER STATUS	display Battery Discharge History in tabular format
BOARDS	list boards installed in the LMS1000 System Network
BYE	logoff and hang-up
CHANNELS	list user defined channels
CLASS	list programmable alarm classifications
CLR	list CLR type commands
CLR ACO	disable alarm cutoff
CLR EVENTS	clear event log
CLR LED <n>	turn LED off
CLR LOG	clear alarm log
CLR MAIL	clear your mail from memory
CLR POWER <n>	clear power consumption data (if Power Metering software option installed)
CLR PROGRAM <tn>	clear control programs
CLR RLY <n>	de-energize relay
CLR STATS <tn>	clear channel statistics
CMD	list programmable commands
COM	list local comm port settings
CONFIG <tn>	configure specified channel
CONNECT	initiate a communications session with device connected to GATEWAY port
DAC DEL	Deletes a User from the Door Access Controller (DAC).
DAC LIST	Displays a list of Users and their Access Codes stored in the Door Access Controller (DAC).

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LMS1000 Commands	Description
DAC SET	Adds / changes a User and/or Access Code stored in the Door Access Controller (DAC).
DAC SET LOCK OFF	Unlocks the access with any DAC User Code.
DAC SET LOCK ON	Locks the access with any DAC User Code.
DAC STATUS	Displays the actual state of the Access Door.
DATE	show date and time
DOWNLOAD	dump system configuration using XMODEM protocol
DOWNLOAD TFTP	performs a DUMP operation using TFTP
EFF	show Energy Management status
EVENTS <n>	list event log entries for specified user
HELP	list of commands with a description of each
INFO <n>	show information pages
LIMITS	list channel alarm limits
LOG	list alarm log entries
MAIL	show any mail
MENU	list of commands
MODE	displays configuration of TL1 port settings
NETWORK	list NETWORK type commands
NETWORK INITIALIZE	clear all known nodes and search for new nodes
NODE	list NODE type commands
NODE ADD	search for and configure new nodes
NODE CONFIG <n>	configure user information for a node
NODE DELETE <n>	remove a node
NODE INITIO <n>	reinitialize a node's I/O hardware configuration
NODE LIST <n>	view user and hardware configuration for nodes
NODE REPLACE <n>	replace a node
OPTIONS	list options installed
PERIODS	list time periods
PHONE	show user phone numbers
POWER <t<n>>	list power consumption data (if Power Metering software option installed)
PRCONFIG	list channel configuration
PROGRAM	list control programs
RATE	list size or capacity percentages
REPORT	show system alarm reporting parameters
SCAN	list active channel status
SEQUENCE	show AC & standby sequencer status
SET	list SET type commands
SET ACO	cutoff present alarms from affecting relays
SET AID <n>	configures access identifiers
SET ANSWER <n>	set number of rings before the system answers
SET CHANNELS	set user defined channels
SET CLASS <n>	set programmable alarm classifications

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LMS1000 Commands	Description
SET CMD <n>	set programmable commands
SET COM	set local comm port configuration
SET DATE <mm/dd/yy>	set date where mm = month, dd = date, yy = year
SET DEFAULTS	set system default parameters
SET EFF	set Energy Management parameters
SET EMAIL	set Email Alarm Notification Parameters
SET GATEWAY	set GATEWAY port communications data rate
SET INFO <n>	configure information pages
SET LED <n>	turn LED on
SET LIMITS <tn>	set channel alarm limits
SET MAIL	send mail to users
SET MODE	modify configuration of TL1 port settings
SET PERIODS <tn>	set time periods
SET PHONE	set user phone numbers
SET PROGRAM <tn>	configure control programs
SET REPORT	set system alarm reporting parameters
SET RLY <n>	energize relay
SET SEQUENCE	set AC & Standby sequencer parameters
SET STATUS <n>	configure status page
SET SYSTEM	configure all settings
SET TIME <hh:mm:ss>	set time where hh = hours, mm = minutes, ss = seconds
SET TIMEOUT <n>	set user timeout
SET UNIT	set unit name and number
SET USERS <n>	configure a user
SET VI	sets the channels that display system voltage and system current
STATS	list channel statistics
STATUS <n>	show status page
TIME	show date and time
TIMEOUT	show user timeout
UNIT	show unit name and number
UPLOAD	configure the system by uploading file using XMODEM protocol
UPLOAD TFTP	allows transfer of configuration information to the system from any networked personal computer capable of uploading and downloading a file to a disk using the TFTP Protocol
USERS <n>	list user configuration
VI	show Plant Voltage and Load

where: < > anything enclosed in brackets is optional.
     n is a valid number.
     t is a type A, B, E, F, G, L, R; for Analog, Binary, Energy Management, Function, Group, LED, or Relay.

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Vortex® Power System (VPS) Interface Commands

This section provides an alphabetical list of all Vortex Power System (VPS) Interface commands, with a short description of each command.

Vortex® Power System (VPS) Interface Commands	Description
ALARMS VORTEX	list active Power System alarms
ALARMS VORTEX LVD	list active LVD alarms
ALARMS VORTEX MCA	list active MCA alarms
ALARMS VORTEX PCU<n>	list active PCU alarms
ALARMS VORTEX SHUNT	list active SHUNT alarms
ALARMS VORTEX SUBSYSTEM	list active subsystem type alarms
ALARMS VORTEX SYSTEM	list active system type alarms
DOWNLOAD VORTEX	dump Vortex Power System configuration using XMODEM protocol
HELP VORTEX	list of Vortex Interface commands with a description of each
PRCONFIG VORTEX	list settings and equipment inventory
PRCONFIG VORTEX INVENTORY	list equipment inventory
PRCONFIG VORTEX SETTINGS	list settings
SCAN VORTEX	list present status of Vortex Power System
SCAN VORTEX LVD	list present status of LVD circuits
SCAN VORTEX MCA	list present status of MCA
SCAN VORTEX PCU<n>	list present status of specified PCU
SCAN VORTEX SUBSYSTEM	list present status of subsystem data
SCAN VORTEX SYSTEM	list present status of system data
SET VORTEX	configure Vortex Power System settings
SET VORTEX INTERFACE	Enable/Disable Vortex interface
SET VORTEX LVD<n<t>> DISCONNECT	set specified LVD disconnect voltage settings
SET VORTEX LVD RECONNECT	set LVD reconnect voltage setting
SET VORTEX MESSAGE MCA	set MCA custom message
SET VORTEX MESSAGE PCU<n>	set specified PCU custom message
SET VORTEX PASSWORD	set MCA logon password
SET VORTEX PCU<n>	turn specified PCU On or Off
SET VORTEX SUBSYSTEM CALVOLT	set subsystem calibration voltage
SET VORTEX SUBSYSTEM FACTORYCAL	set subsystem cal. voltage to factory default
SET VORTEX SUBSYSTEM HIVALM	set subsystem High Voltage alarm
SET VORTEX SUBSYSTEM LVALM	set subsystem Low Voltage alarm

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Vortex® Power System (VPS) Interface Commands	Description
SET VORTEX SUBSYSTEM OVRCURRENT	set subsystem Overcurrent alarm
SET VORTEX SYSTEM 25APLACES	set system number of 25A Places
SET VORTEX SYSTEM 50APLACES	set system number of 50A Places
SET VORTEX SYSTEM 100APLACES	set system number of 100A Places
SET VORTEX SYSTEM 200APLACES	set system number of 200A Places
SET VORTEX SYSTEM 50%BATONDISCH	set system 50% Battery On Discharge alarm
SET VORTEX SYSTEM BATONDISCH	set system Battery On Discharge alarm
SET VORTEX SYSTEM CALVOLT	set system calibration voltage
SET VORTEX SYSTEM CURLIMIT	set system current limit
SET VORTEX SYSTEM FACTORYCAL	set system cal. voltage to factory default
SET VORTEX SYSTEM FLTVOLT	set system float voltage
SET VORTEX SYSTEM HIVLTALM1	set system High Voltage 1 Alarm
SET VORTEX SYSTEM HIVLTALM2	set system High Voltage 2 Alarm
SET VORTEX SYSTEM HVS	set system High Voltage Shutdown
SET VORTEX SYSTEM INVENTORY	reset the system equipment inventory
SET VORTEX SYSTEM MODE	set Vortex Power System mode
SET VORTEX SYSTEM NAGTIMER	set system ACO timer
SET VORTEX SYSTEM OVRCURRENT	set system Overcurrent alarm
SET VORTEX SYSTEM TEMPCOMP	set system Temperature compensation voltage
SET VORTEX SYSTEM TSTEQVOLT	set system test/equalize voltage
UPLOAD VORTEX	configure Vortex Power System by uploading file using XMODEM protocol
where: < > anything enclosed in brackets is optional 　　　　n　is a valid number 　　　　t　is A or B for Vortex LVD settings	

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LPS Power System Interface Commands

This section provides an alphabetical list of all LPS Power System Interface commands, with a short description of each command.

LPS Power System Interface Commands	Description
PRCONFIG LPS	list settings and equipment inventory
PRCONFIG LPS DISTRIBUTION	list equipment inventory of Distribution Elements
PRCONFIG LPS INVENTORY	list equipment inventory of all Elements
PRCONFIG LPS N<#>-<#>	list equipment inventory of Bay/MCA Elements
PRCONFIG LPS PCU	list equipment inventory of PCU Elements
PRCONFIG LPS SETTINGS	list settings
SET LPS	configure LPS Power System settings
SET LPS CANIO	set LPS MCA CAN I/O circuit card parameters prompted to select which LPS MCA CAN I/O circuit card, then which parameter to set (configurable parameters are… designate the alarm state for MCA CAN I/O circuit card binary inputs, designate MCA CAN I/O circuit card analog input as "auxiliary" or "distribution", set the scale factor for MCA CAN I/O circuit card analog input and output)
SET LPS MESSAGE CANIO_BD	set MCA CAN I/O circuit card custom messages
SET LPS MESSAGE DISTRIBUTION	set Distribution Elements custom message
SET LPS MESSAGE MCA	set MCA custom message
SET LPS MESSAGE PCU<n>	set specified PCU custom message
SET LPS MESSAGE RELAY	set Relay Elements custom message
SET LPS MESSAGE ROUTER	set Router Elements custom message
SET LPS PASSWORD	set MCA logon password
SET LPS PCU<n>	turn specified PCU On or Off
SET LPS SYSTEM BATONDISCH	set system Battery On Discharge alarm
SET LPS SYSTEM CURLIMIT	set system current limit
SET LPS SYSTEM EQMULTIPLIER	set system "Auto-Equalize Time Multiplier"
SET LPS SYSTEM FLTVOLT	set system float voltage
SET LPS SYSTEM HI1TEMPALM	set system High Temperature 1 alarm
SET LPS SYSTEM HI2TEMPALM	set system High Temperature 2 alarm
SET LPS SYSTEM HIVLTALM1	set system High Voltage 1 alarm
SET LPS SYSTEM HIVLTALM2	set system High Voltage 2 alarm

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LPS Power System Interface Commands	Description
SET LPS SYSTEM HVS	set system High Voltage Shutdown
SET LPS SYSTEM LOADACURRENT	set system Load Group A Current alarm
SET LPS SYSTEM LOADBCURRENT	set system Load Group B Current alarm
SET LPS SYSTEM LOADCURRENT	set system Total Load Current alarm
SET LPS SYSTEM LOW1TEMPALM	set system Low Temperature 1 alarm
SET LPS SYSTEM LOW2TEMPALM	set system Low Temperature 2 alarm
SET LPS SYSTEM NAGTIMER	set system ACO timer
SET LPS SYSTEM RLYOFFTEST	set system "alarm relay test feature" off
SET LPS SYSTEM RLYONTEST	set system "alarm relay test feature" on
SET LPS SYSTEM RLYTSTTIME	set system "alarm relay test feature time period"
SET LPS SYSTEM TEMPCOMPMAX	set system "battery charge temperature compensation feature's maximum voltage"
SET LPS SYSTEM TEMPCOMPMIN	set system "battery charge temperature compensation feature's minimum voltage"
SET LPS SYSTEM TEMPSLOPE	set system "battery charge temperature compensation feature's compensation slope"
SET LPS SYSTEM TSTEMODE	set system to float or test/equalize mode
SET LPS SYSTEM TSTEQTIME	set system "timed equalize feature's equalize time period"
SET LPS SYSTEM TSTEQVOLT	set system test/equalize voltage
SET LPS SYSTEM UPDATEINV	reset the system equipment inventory
SET LPS SYSTEM USECELSIUS	set system temperature readings to Celsius
SET LPS SYSTEM USEFAHRENHEIT	set system temperature readings to Fahrenheit
SET LPS SYSTEM VERYLOWVOLT	set system Very Low Voltage alarm

where: < > anything enclosed in brackets is optional
        # is a valid number
        N is a valid number	

IP Networking Commands

This section provides an alphabetical list of all IP Networking commands available when the SNMP software option is installed, with a short description of each command.

IP Networking Commands	Description
IP	display the IP Network variables
IP ADD <address>	add a new host to the list of authorized hosts
IP ADDRESS <address>	set the units IP address
IP DELETE <address>	remove a host from the list of authorized hosts
IP GATEWAY <address>	set the units gateway address
IP NETMASK <address>	set the units network netmask

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SNMP Commands

This section provides an alphabetical list of all SNMP commands available when the SNMP software option is installed, with a short description of each command.

SNMP Commands	Description
SNMP	display the current value of the SNMP options
SNMP GET <comm name>	set the SNMP GET community name
SNMP OFF	disable SNMP access
SNMP ON	enable SNMP access
SNMP SET <comm name>	set the SNMP SET community name
TRAPS	display the SNMP TRAP information
TRAPS ADD <n>	add a new SNMP Trap recipient to the list of TRAP hosts
TRAPS DELETE <n>	remove a host address from the list of TRAP hosts
TRAPS OCCURRED	disable/enable the systems ability to send SNMP Occurred Alarm TRAPS
TRAPS OFF	disable the systems ability to send SNMP TRAPs
TRAPS ON	enable the system to send SNMP TRAPs
TRAPS PERSISTENT	Disable/Enable the systems ability to send SNMP Persistent Alarm TRAPS or set the Persistent Alarms reporting interval
TRAPS RETIRED	Disable/Enable the systems ability to send SNMP Retired Alarm TRAPS
TRAPS VERSION	change the version of SNMP TRAPs sent by the system

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TL1 Commands Supported

This section provides an alphabetical list of all TL1 commands supported when the TL1 software option is installed, with a short description of each command.

Refer to the current issue of the following Bellcore publications for further TL1 command language information.

TR-NWT-000199	TR-NWT-000835	TA-NWT-001360
TR-NWT-000831	TA-NWT-000199	
TR-NWT-000833	TA-NWT-000200	

TL1 Commands Supported	Description
ACTIVATE-USER `ACT-USER`	Sets up a session with the system (i.e., logging into the system.
ALLOW-MESSAGE-ALL `ALW-MSG-ALL`	Enables the system to resume transmission of automatic messages after being placed in the inhibit message mode.
CANCEL-USER `CANC-USER`	Terminates a session with the system (i.e., logging off of the system).
DELETE-USER-SECURITY `DLT-USER-SECU`	Deactivates a user.
EDIT-DATE_AND_TIME `ED-DAT`	Changes the system's date and/or time.
EDIT-PID `ED-PID`	Edits the current user's privilege identifier (<pid>) parameter (i.e., the system's user password).
EDIT-USER-SECURITY `ED-USER-SECU`	Edits the user identifier (<uid>) parameter (i.e., user name), privilege identifier (<pid>) parameter (i.e., the password), calling identifier (<cid>) parameter (i.e., user primary phone number), and user access privilege (<uap>) parameter (i.e., user access level) of the specified user.
ENTER-USER-SECURITY `ENT-USER-SECU`	Activates a user and enters the specified security parameters for this user. These security parameters consist of the user identifier (<uid>) parameter (i.e., user name), privilege identifier (<pid>) parameter (i.e., user password), calling identifier (<cid>) parameter (i.e., user primary phone number), and user access privilege (<uap>) parameter (i.e., user access level).
INHIBIT-MESSAGE-ALL `INH-MSG-ALL`	Disables the transmission of automatic messages.
INITIALIZE-LOG `INIT-LOG`	Instructs the system to initialize (i.e., clear) the specified log (alarm or event).
INITIALIZE-REGISTER `INIT-REG-{EQPT|ALL}`	Instructs the system to initialize to a specific value one or more storage registers or event counters associated with one or more equipment units, facilities, etc. within the system.
INITIALIZE SYSTEM `INIT-SYS`	Instructs the system to initialize its system processor and/or associated subsystems.
OPERATE-ALARM CUTOFF `OPR-ACO-{EQPT|ALL}`	Cuts off the office audible alarm indications without changing the local alarm indications.
OPERATE-EXTERNAL-CONTROL `OPR-EXT-CONT`	Instructs the system to activate a specified relay channel to operate an external control.

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TL1 Commands Supported	Description
RELEASE-EXTERNAL-CONTROL `RLS-EXT-CONT`	Instructs the system to de-activate a specified relay channel to release an external control.
RETRIEVE-ALARM `RTRV-ALM-{EQPT|ALL}`	Instructs the system to send the current state of its alarm conditions associated with one or more equipment units, facilities, etc. within the system.
RETRIEVE-ALARM-ENVIRONMENT `RTRV-ALM-ENV`	Instructs the system to send the current state of its alarm conditions associated with the system's environment.
RETRIEVE-ATTRIBUTE `RTRV-ATTR-{EQPT|ALL}`	Instructs the system to send the current notification code associated with the specified events.
RETRIEVE-ATTRIBUTE-ENVIRONMENT `RTRV-ATTR-ENV`	Instructs the system to send the current attributes associated with the specified environmental alarm.
RETRIEVE-CONDITION `RTRV-COND-{EQPT|ALL}`	Instructs the system to send the current state and standing condition (alarm or status) associated with one or more equipment units, facilities, etc. within the system.
RETRIEVE-EXTERNAL-CONTROL `RTRV-EXT-CONT`	Instructs the system to retrieve the state of the specified relay channels controlling external controls.
RETRIEVE-HEADER `RTRV-HDR`	Requests that the system reply with a "normal" response indicating COMPLD.
RETRIEVE-LOG `RTRV-LOG`	Instructs the system to retrieve the contents of an existing log.
RETRIEVE-PERFORMANCE MONITORING `RTRV-PM-{EQPT|ALL}`	Instructs the system to send its current set of Performance Monitoring (PM) data associated with one or more equipment units, facilities, etc. within the system.
RETRIEVE-THRESHOLD `RTRV-TH-{EQPT|ALL}`	Instructs the system to send the current threshold level (alarm limits) of one or more monitored parameters for which violation will trigger an automatic message.
RETRIEVE-USER-SECURITY `RTRV-USER-SECU`	Retrieves a user's security parameters. The calling identifier (<cid>) parameter (i.e., user primary phone number), and user access privilege (<uap>) parameter (i.e., user access level) of the specified user is retrieved.
SET-ATTRIBUTE `SET-ATTR-{EQPT}`	Instructs the system to set the current notification code associated with the specified events.
SET-ATTRIBUTE-ENVIRONMENT `SET-ATTR-ENV`	Instructs the system to set the current attributes associated with the specified environmental alarm.
SET-SYSTEM_IDENTIFICATION `SET-SID`	Instructs the system to change its system identifier (SID) parameter to a given value.
SET-THRESHOLD `SET-TH-{EQPT}`	Instructs the system to set threshold levels (alarm limits) for a monitored parameter that, when exceeded, will trigger an automatic message.

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LMS1000
COMMANDS,

VORTEX® POWER SYSTEM (VPS)
INTERFACE COMMANDS,

AND

LPS POWER SYSTEM
INTERFACE COMMANDS

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LMS1000 COMMANDS,
VORTEX® POWER SYSTEM (VPS) INTERFACE COMMANDS,
AND LPS POWER SYSTEM INTERFACE COMMANDS
(IN ALPHABETICAL ORDER)

This section presents a more detailed description of each LMS1000 command, Vortex Power System (VPS) Interface Command, and LPS Power System Interface Command; again in alphabetical order. Command syntax and examples of typical screen displays are given.

The following page shows a sample command page that explains the format used for the commands listed in this section. Following the sample command page is an explanation of the conventions used, plus other information on using command options.

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Sample Command

Description: This section describes the purpose of the command.

Command Level: This section tells what level of access is required to execute the command.

Syntax: command [options] , where command is the name of the command and options may include a channel type, node number, channel number, group number, search text, or other arguments. Refer to the next page for more information on command options. Listed in this section is the entire command name, plus the least amount of characters that have to be typed for the command to be recognized.

Comments: This section describes the command in more detail and also explains the use of the command's options.

Notes: This section discusses important points related to the use of the command, such as limitations or warnings.

Related Commands: Lists related commands.

Example: Shows one or more examples that illustrate how to use the command plus a typical screen display.

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Command Conventions and Options

The following conventions are used for the command options.

Convention	Usage

italics | Items shown in italics are variables and requires you to supply the text. For example, when text appears in italics, you should type the desired text.

[brackets] | Items in brackets are optional information that may be used with a command. To include optional information, type a space after the command name and then type the information within the brackets. Do not type the brackets themselves.

COMMAND OPTIONS

Command options provide a command with extra information that affect the operation of the command. If options are omitted, the command either prompts you to supply them or uses a default value. The valid options for a command may be one or more of the following.

Note: *Channels are identified by a channel type, node number, and channel number.*

> ***Example:*** *Channel A0001,*
> *A (channel type) represents an analog channel*
> *00 (node number) represents the Master Node*
> *01 (channel number) represents channel #01*

Option	Description

channel_type | A single alpha character that refers to a channel type. Valid characters include:

A for Analog Channels
B for Binary Channels
E for Energy Management Channels
F for Function Channels
L for LED Channels
R for Relay Channels
U for User Channels

node_number | The number assigned to the node.

channel_number | The number assigned to the channel.

channel_designator | channel_type [node_number] channel_number, example A1201.

channel_range | channel_type [node_number] channel_number – [node number] channel_number, example A1-201.

node_designator | Nnode_number, example N12.

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node_range   Nnode_number – node_number, example N1-3.

group_number   Any number 1 through 8.

group_designator   Ggroup_number.

group_range   Ggroup_number – group_number, example G2-4.

search_text   Some commands use a string of characters to affect the response
                        of the command. When search_text is supplied, only those
                        channels with names containing the text are included in the
                        command's response. A search_text string is a group of
                        characters that can include letters, numbers, and any other
                        character EXCEPT a space. Any characters after a space are
                        ignored.

PCU_number   Designates the power system's PCU. Valid numbers are 1 to 56.

LVD_number   Designates the power system's Low Voltage Disconnect circuit.
                        Valid numbers are 1 to 3.

LVD_side   Designates the side of the power system's Low Voltage
                        Disconnect circuit. Valid letters are A and B.

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ACK

Description: Tags a user to an alarm log entry that is not already acknowledged.

Command Level: 4

Syntax: ACK

Comments: The ACK command displays the same information that would be displayed if you received a system alarm report. But it also tags your user ID number to those log entries. Refer to the SET REPORT command for additional information concerning the operation of the system alarm reporting function.

Notes: This command prevents a system alarm report from occurring (if that feature is being used).

Related Commands: none

Example:

```
Command<4>: ACK
ACKNOWLEDGED ALARM LOG ENTRIES AS OF 11:24:27 ON 01/01/01.
 Chan       Description        Class    Occurred    Ack    Cleared
A0001.2H  Analog Channel 1     MAJOR 01/01 11:24:04  8  01/01 11:24:23
R0001.Pg  Relay Channel 1      MINOR 01/01 11:23:30  8  01/01 00:00:00
A0001.2H  Analog Channel 1     MAJOR 01/01 11:22:54  8  01/01 11:22:59
B0001     Binary Channel 1     MINOR 01/01 11:22:46  8  01/01 00:00:00
A0001.2H  Analog Channel 1     MAJOR 01/01 11:22:43  8  01/01 11:22:52
```

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ACO

Description: Displays active alarms that have their alarm indication canceled.

Command Level: 1

Syntax: ACO
AC

Comments: Only analog, binary, and function alarms can have their alarm indication canceled. When it seems that a relay would be energized (because of its control program) but is not, use this command to see if any alarms have been canceled. Then compare this listing with the control programs to see if any of the canceled alarms may have affected the output.

Notes: none

Related Commands: CLR ACO, SET ACO

Example:

```
Command<1>: ACO
The following alarms are cutoff:
Chan     Description          Value  Units     Alarm Limit  and  Class
A0001  Analog Channel 1       +20.4  Amps  20.0 H - Hi Limit 2   MAJOR
Chan     Description          Status  Alarm Status / Class
B0001  Binary Channel 1        CO      active        MINOR
```

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AID

Description: This command is only available if the TL1 software option is installed in the system. Displays the configuration of the access identifiers.

Command Level: 2

Syntax: AID, displays all AIDs
AID [*n*], where *n* is a number from 1 through 32 and specifies the specific access identifier to be displayed
AI
AI [*n*]

Comments: Each access identifier can be viewed separately by entering the command AID followed by a space and then a number from 1 through 32. The number specifies which access identifier is to be displayed.

Notes: none

Related Commands: SET AID

Example:

```
Command<2>: AID 1
ACCESS IDENTIFIER 1 CONFIGURATION:
 Name:  P140B1
 Type:  EQPT
CHANNELS:
Chan   Description          Sub-access Identifier
A0001 Analog Channel 1         RECT1
A0002 Analog Channel 2         RECT2
A0003 Analog Channel 3         RECT3
A0004 Analog Channel 4         RECT4
```

_____

```
Command<2>: AID
ACCESS IDENTIFIER 1 CONFIGURATION:
 Name:  P140B1
 Type:  EQPT
CHANNELS:
Chan   Description          Sub-access Identifier
A0001 Analog Channel 1         RECT1
A0002 Analog Channel 2         RECT2
A0003 Analog Channel 3         RECT3
A0004 Analog Channel 4         RECT4
ACCESS IDENTIFIER 2 CONFIGURATION:
 Name:  EMLIGHT
 Type:  ENV
CHANNELS:  None
```

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ALARMS

Description: Lists active analog, binary, function, relay, and LED alarms and their channel number. Also lists self diagnostic alarms.

Command Level: 1

Syntax: ALARMS [*channel_type*] [*channel_designator*] [*channel_range*] [*node_designator*] [*node_range*] [*group_designator*] [*search_text*]

A [*channel_type*] [*channel_designator*] [*channel_range*] [*node_designator*] [*node_range*] [*group_designator*] [*search_text*]

Comments: Analog and function channel alarm information includes the present value, the unit of measure, and which alarm setpoint has been exceeded. Each type of alarm can be viewed separately by entering the command ALARMS [*node_designator*] [*node_range*] followed by a space and then the character A for analog, B for binary, R for relay, L for LED, F for function, G for group, or U for user.

Notes: Analog and binary channels are automatically mapped to MCA parameters when the VPS or LPS MCA Interface is used. Alarm information for these analog and binary channels can be viewed using the ALARMS command and options. Refer to Tables 2-1 through 2-3 for a correlation between channels and mapped VPS MCA and LPS MCA parameters. To view alarm information of just the VPS, use the ALARMS VORTEX (ALARMS V) command and options.

Related Commands: ALARMS VORTEX

Example:

```
Command<1>: ALARMS

SYSTEM HARDWARE ALARMS:

I/O Network Failure
Unexpected Response received from node 02
Unable to communicate to node 03
Unrecognized node assembly found
Unexpected reset on node 05
Configuration mismatch on node 06
Assembly mismatch on node 07
Hardware mismatch on node 08
I/O card 01 on node 09 failed
Analog channel 1008 configuration failure
I/O card 02 on Main chassis failed
I/O card 03 on Main chassis does not match recorded the type
I/O card 07 on Main chassis is not a recognized type

ANALOG CHANNEL ACTIVE ALARMS AS OF 11:24:16 ON 01/01/01.
Chan        Description           Value  Units     Alarm Limit  and  Class
A0001.2L Analog Channel 1        +20.3  Amps  20.0 H – Hi Limit 2   MAJOR
BINARY CHANNEL ACTIVE ALARMS AS OF 11:24:18 ON 01/01/01.
Chan        Description           Status  Alarm Status / Class
B0001    Binary Channel 1          CO        active       MINOR
RELAY CHANNEL ACTIVE ALARMS AS OF 11:24:20 ON 01/01/01.
Chan        Description           Status  Alarm Status / Class
```

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```
R0001    Relay Channel 1         On ,Pg      active      MINOR


BINARY CHANNEL ACTIVE ALARMS AS OF 13:45:44 ON 05/13/96.
Chan   Description                   Status Alarm Status / Class
B0083 Node Communication Error        CC      active
B0089 Node I/O H/W Failure            CC      active
B0090 Analog H/W Configuration Err    CC      active
```

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ALARMS VORTEX

Description: Lists active VPS Alarms.

Command Level: 1

Syntax: ALARMS VORTEX, ALARMS VORTEX SYSTEM, ALARMS VORTEX
PCU[*PCU_number*], ALARMS VORTEX LVD, ALARMS VORTEX SHUNT,
ALARMS VORTEX MCA, ALARMS VORTEX SUBSYSTEM

A V, A V SYSTEM, A V PCU[*PCU_number*], A V LVD, A V SHUNT, A V MCA

Comments: Alarms of a specific VPS entity can be viewed separately by entering the
command ALARMS V followed by a space and then the entity specifier (SYSTEM,
PCU[PCU_number], LVD, SHUNT, MCA, or SUBSYSTEM).

Notes:

PCU failure status is only displayed for PCUs installed in the system.

The following is displayed if there are no active MCA alarms.

```
VORTEX MCA STATUS AS OF xx:xx:xx ON xx/xx/xx.
  Description                  Alarm Status
No active MCA alarms
```

The following is displayed if there are no active SHUNT alarms.

```
SHUNT ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx
   Description                 Alarm Status
No active SHUNT alarms
```

The following is displayed if there are no digital LVDs installed in the system.

```
LVD ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx.
  Description                  Alarm Status
No digitally controlled LVDs installed
```

Potentiometer controlled LVDs are displayed only when the LVD circuit is active.

The following is displayed if there are no active LVD alarms.

```
LVD ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx.
  Description                  Alarm Status
No active LVD alarms
```

The following is displayed if there are no active alarms on a selected PCU.

```
PCU## ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx.
                                Alarm Status
No active PCU alarms
```

The following is displayed if the selected PCU is not installed in the system.

```
Command<2>: ALARMS V PCU[n]
Which PCU (1-56)?
PCU ## not installed in system
```

The following is displayed if an invalid PCU number is entered.

```
    Command<2>: ALARMS V PCU[n]
```

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```
                       Which PCU (1-56)?
                       Invalid PCU number
```

Subsystem alarms are only displayed if a subsystem is installed.

Related Commands: ALARMS

Example:

```
Command<1>: ALARMS V
VORTEX SYSTEM ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx.
Chan    Description                  Alarm Status / Class
 B9001 Vortex System High Voltage 1     active
 B9002 Vortex System High Voltage 2     active
 B9003 Vortex System Batt. on Disch.    active
 B9004 Vortex System 50% Batt. Disch.   active
 B9005 Vortex System Overcurrent        active
 B9009 Vortex PCU Emergency Stop        active
 B9010 Vortex System Fuse               active
 B9011 Vortex All AC Off                active
 B9012 Vortex MCA Fail                  active
 B9013 Vortex LVD Active                active
 B9014 Vortex LVDs Inhibited            active
 B9015 Vortex System Major              active
 B9016 Vortex System Minor              active
 B9017 Vortex Shunt Fail                active
 B9018 Vortex LVD Fail                  active
 B9020 Vortex Battery Charge Alarm      active
 B9024 Vortex PCU High AC Line          active
 B9025 Vortex PCU01 Fail                active
 ...
 B9080 Vortex PCU56 Fail                active

VORTEX SUBSYSTEM ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx.
Chan    Description                  Alarm Status / Class
 B9006 Vortex Subsystem High Voltage    active
 B9007 Vortex Subsystem Low Voltage     active
 B9008 Vortex Subsystem Overcurrent     active
 B9021 Vortex Subsystem Fuse            active
 B9022 Vortex Subsystem Major           active
 B9023 Vortex Subsystem Minor           active
```

The following is displayed when a subsystem is not installed:

```
VORTEX SUBSYSTEM ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx.
Chan    Description                  Alarm Status / Class
No Subsystem Installed

MCA ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx.
  Description                    Alarm Status
Board Fail                          active
Shelf fuse                          active
A/D No System Voltage Input         active
A/D No Sense Lead Voltage Input     active
A/D No Subsystem Voltage Input      active
Display Fail                        active
```

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```
SHUNT ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx
  Description                    Alarm Status
Shunt01                         [type fail/com fail]
Shunt02                         [type fail/com fail]
Shunt03                         [type fail/com fail]
...
Shunt16                         [type fail/com fail]

LVD ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx.
  Description                    Alarm Status
LVD 1A                          [inhibited/failed/active]
LVD 1B                          [inhibited/failed/active]
LVD 2A                          [inhibited/failed/active]
LVD 2B                          [inhibited/failed/active]
LVD 3A                          [inhibited/failed/active]
LVD 3B                          [inhibited/failed/active]
```

The following is displayed only for active potentiometer controlled LVDs:

```
[LVD 3A]                        [active]
[LVD 3B]                        [active]
[LVD 4A]                        [active]
[LVD 4B]                        [active]


Command<1>: ALARMS V SYSTEM
VORTEX SYSTEM ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx.
Chan    Description                     Alarm Status / Class
B9001 Vortex System High Voltage 1      active
 B9002 Vortex System High Voltage 2     active
 B9003 Vortex System Batt. on Disch.    active
 B9004 Vortex System 50% Batt. Disch.   active
 B9005 Vortex System Overcurrent        active
 B9009 Vortex PCU Emergency Stop        active
 B9010 Vortex System Fuse               active
 B9011 Vortex All AC Off                active
 B9012 Vortex MCA Fail                  active
 B9013 Vortex LVD Active                active
 B9014 Vortex LVDs Inhibited            active
 B9015 Vortex System Major              active
 B9016 Vortex System Minor              active
 B9017 Vortex Shunt Fail                active
 B9018 Vortex LVD Fail                  active
 B9020 Vortex Battery Charge Alarm      active
 B9024 Vortex PCU High AC Line          active
 B9025 Vortex PCU01 Fail                active
 ...
 B9080 Vortex PCU56 Fail                active
```
_____

```
Command<1>: ALARMS V MCA
MCA ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx.
  Description                    Alarm Status
Board Fail                      active
Shelf fuse                      active
A/D No System Voltage Input     active
A/D No Sense Lead Voltage Input active
```

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```
A/D No Subsystem Voltage Input       active
Display Fail                         active
```

```
Command<1>: ALARMS V SHUNT
SHUNT ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx
  Description              Alarm Status
Shunt01                    [type fail/com fail]
Shunt02                    [type fail/com fail]
Shunt03                    [type fail/com fail]
Shunt04                    [type fail/com fail]
Shunt05                    [type fail/com fail]
...
Shunt16                    [type fail/com fail]
```

```
Command<1>: ALARMS V LVD
LVD ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx.
  Description              Alarm Status
LVD 1A                     [inhibited/failed/active]
LVD 1B                     [inhibited/failed/active]
LVD 2A                     [inhibited/failed/active]
LVD 2B                     [inhibited/failed/active]
LVD 3A                     [inhibited/failed/active]
LVD 3B                     [inhibited/failed/active]
```

The following is displayed only for active potentiometer controlled LVDs:

```
[LVD 3A]                        [active]
[LVD 3B]                        [active]
[LVD 4A]                        [active]
[LVD 4B]                        [active]
```

```
Command<1>: ALARMS V PCU[n]
Which PCU (1-56)?
PCU## ACTIVE ALARMS AS OF xx:xx:xx ON xx/xx/xx.
                           Alarm Status
Com Fail                   active
Sense Lead Open            active
Lost AC Feed               active
High Voltage Shutdown      active
Input Switch OFF           active
Emergency Stop             active
Thermal Current Limit      active
Conversion Element Fail    active
Circuit Breaker is Open    active
A/D Failed                 active
Fan slowed or stopped      active
```

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ANSWER

Description: Displays the number of rings that will occur before the system's modem answers a phone call.

Command Level: 5

Syntax: ANSWER
AN

Comments: The default setting is 1.

Notes: none

Related Commands: SET ANSWER

Example:

```
Command<5>: ANSWER
Rings before answer: 1
```

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BATTERY

Description: Lists all commands that begin with BATTERY, and then prompts the user to enter one of the displayed options.

Command Level: 6

Syntax: BATTERY
BATTERY [*command*] [*command*]

Comments: none

Notes: Only the commands that the user has access to are listed.

Related Commands: BATTERY TIMER, BATTERY THERMAL

Example:

```
Command<6>: BATTERY

Which BATTERY command?
TIMER     THERMAL
?
```

BATTERY THERMAL

Description: Sets the Battery Thermal Alarm Channel and Battery Thermal Runaway Voltage.

Command Level: 6

Syntax: BATTERY THERMAL
BA TH

Comments: none

Notes: Refer to the Configuration Chapter in the LMS Installation Instructions (Section 5879) for further information.

Related Commands: none

Example:

```
Command<6>: BATTERY THERMAL
Battery Thermal Alarm Channel:
Battery Thermal Alarm Channel: B0001

Battery Thermal Runaway Voltage:
Battery Thermal Runaway Voltage:  48.60 VDC
```

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BATTERY TIMER

Description: Lists all commands that begin with BATTERY TIMER, and then prompts the user to enter one of the displayed options.

Command Level: 6

Syntax: BATTERY TIMER
BATTERY TIMER [*command*]
BA TI [*command*]

Comments: none

Notes: Only the commands that the user has access to are listed.

Related Commands: BATTERY TIMER CLR, BATTERY TIMER CSV, BATTERY TIMER SET, BATTERY TIMER STATUS

Example:

```
Command<6>: BATTERY TIMER

Which action?
CSV             CLR             STATUS          SET
?
```

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BATTERY TIMER ?

Description: Displays the BATTERY Commands help text in tabular format.

Command Level: 6

Syntax: see "Example"

Comments: none

Notes: none

Related Commands: BATTERY TIMER CLR, BATTERY TIMER CSV, BATTERY TIMER SET, BATTERY TIMER STATUS

Example:

```
Command<6>: BATTERY TIMER ?

BATTERY TIMER CSV      Shows Battery Discharge History in comma separated form
BATTERY TIMER CLR      Clears the Battery Discharge History
BATTERY TIMER STATUS   Shows Battery Discharge History and current status
BATTERY TIMER SET      Sets Battery Discharge Timer Configuration
_____

Command<6>: BATTERY TIMER CSV ?
BATTERY TIMER CSV      Shows Battery Discharge History in comma separated form
_____

Command<6>: BATTERY TIMER CLR ?
BATTERY TIMER CLR      Clears the Battery Discharge History
_____

Command<6>: BATTERY TIMER STATUS ?
BATTERY TIMER STATUS   Shows Battery Discharge History and current status
_____

Command<6>: BATTERY TIMER SET ?
BATTERY TIMER SET      Sets Battery Discharge Timer Configuration
```

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BATTERY TIMER CLR

Description: Permits the user to clear the battery discharge history.

Command Level: 6

Syntax: BATTERY TIMER CLR
BA TI CL

Comments: none

Notes: none

Related Commands: BATTERY TIMER CSV, BATTERY TIMER SET, BATTERY TIMER STATUS

Example:

```
Command<6>: BATTERY TIMER CLR
WARNING!!! This command will delete all battery discharge history.
Do you wish to continue (YES or NO):YES
Battery discharge history cleared
```

BATTERY TIMER CSV

Description: Displays the battery discharge history in a comma separated value format.

Command Level: 6

Syntax: BATTERY TIMER CSV
          BA TI CS

Comments: none

Notes: none

Related Commands: BATTERY TIMER CLR, BATTERY TIMER SET, BATTERY TIMER STATUS

Example:

```
Command<6>: BATTERY TIMER CSV

Discharge #,Duration, AC Fail Time, AC Fail Date, Lowest Voltage, Avg. Current
D01,00:00,09:20,02/26/03, 27.00, 88.00,
D02,00:07,09:12,02/26/03, 27.00, 88.00,
…
D50,00:07,15:12,02/14/03, 27.00, 88.00,
```

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BATTERY TIMER SET

Description: Permits the user to select the channels required for battery discharge recording.

Command Level: 6

Syntax: BATTERY TIMER SET
BA TI SE

Comments: none

Notes: The user may select Binary, LED, or Relay channels for the 'On Battery' channels. Analog or Function channels may be selected for the Plant Voltage and Plant Load channels. The Plant Voltage and Plant Load channels are shared between the VI and BATTERY TIMER features.

Related Commands: BATTERY TIMER CLR, BATTERY TIMER CSV, BATTERY TIMER STATUS

Example:

```
Command<6>: BATTERY TIMER SET
On Battery:
On Battery:

WARNING!!! The Plant Voltage and Load channels are used by both the
           BATTERY TIMER and VI features
Plant Voltage: F0001
Plant Voltage:
Plant Load: F0002
Plant Load:
```

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BATTERY TIMER STATUS

Description: Displays the last 50 recorded discharges in a tabular format. The information displayed includes the duration of the battery discharge, the time and date at which the discharge began, the lowest recorded plant voltage during the discharge, and the average plant load.

Command Level: 6

Syntax: BATTERY TIMER STATUS
BA TI ST

Comments: none

Notes: There may be less than 50 entries if the system is new or the history has been cleared with the BATTERY TIMER CLR command. The discharges are recorded as D01 through D50. D01 is the most recent discharge and D50 is the oldest. The oldest discharge is removed from record when more than 50 discharges are completed.

Related Commands: BATTERY TIMER CLR, BATTERY TIMER CSV, BATTERY TIMER SET

Example:

```
Command<6>: BATTERY TIMER STATUS

BATTERY DISCHARGE HISTORY
    -Dur- ---AC FAIL---- --VDC- -AMPS-       -Dur- ---AC FAIL---- --VDC- -AMPS-
D01 00:00 09:20 02/26/03  27.00  88.00   D26 00:07 09:12 02/24/03  27.00  88.00
D02 00:07 09:12 02/26/03  27.00  88.00
…
D25 00:07 09:12 02/25/03  27.00  88.00

WARNING!!! THE SYSTEM IS ON BATTERY
D00 00:00 09:20 02/26/03  27.00  88.00
_____

Command<6>: BATTERY TIMER STATUS

BATTERY DISCHARGE HISTORY
    -Dur- ---AC FAIL---- --VDC- -AMPS-       -Dur- ---AC FAIL---- --VDC- -AMPS-
D01 00:00 09:20 02/26/03  27.00  88.00   D26 00:07 09:12 02/24/03  27.00  88.00
D02 00:07 09:12 02/26/03  27.00  88.00
…
D25 00:07 09:12 02/25/03  27.00  88.00

The system is NOT on battery
```

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BOARDS

Description: Displays the circuit cards installed in the LMS1000 System Network. The information includes the type and location of the I/O hardware, the version of the I/O hardware, and the present operating status of the I/O hardware.

Command Level: 2

Syntax: BOARDS [[*X*]*node_number*]
B [[*X*]*node_number*]

Comments: The system determines which circuit cards are in the network at power-up or reset. If no modifier is used when entering the command, all nodes in the network are listed.

Notes: none

Related Commands: none

Example:

```
Command<6>: boards
Node #0    Unit: Central Office                    : Unit # 1     -  Main Chassis

    Card Description                    Version       Status
Card  1:  4 Channel Universal Analog    1.0.0          OK

Unit Board Status:
Modem: 56000 bps


Node #1   Name: LPS Bay #1                       - BAY
    Card Description                     Serial Number
Router Module 01                        0002801621
Dist. Panel 01                          0050331648
Dist. Panel 02                          0050397185
Relay Control board 01-01               0067108864
I/O board 01-04                         0084082691


Node #2   Name: LPS Bay #2                       - BAY
    Card Description                     Serial Number
Router Module 02                        0016843009
Dist. Panel 01                          0050462976
I/O board 02-03                         0085394178


Node #21  Name:                           - Expansion Assembly

    Card Description                    Version       Status
8 Binary/24 Shunt                        2.1.0          OK


Node #22  Name:                           - Expansion Chassis

    Card Description                    Version       Status
```

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```
Card  1:  4 Channel Relay              1.0.0         OK
Card  2:  8 Channel Binary             1.0.0         OK
Card  3:  4 Channel Universal Analog   1.0.0         OK
Card  4:  8 Channel Digital Temperature 1.0.1        OK
Card  5:  4 Channel Relay              1.0.0         OK
Card  6:  8 Channel Binary             1.0.0         OK


Node #99  Name: LPS MCA node                     -  MCA
   Card Description                     Serial Number
MCA Board                               0002801621

_____

Command<6>: boards 1
Node #1    Name: LPS Bay #1                       -  BAY
   Card Description                     Serial Number
Router Module 01                        0002801621
Dist. Panel 01                          0050331648
Dist. Panel 02                          0050397185
Relay Control board 01-01               0067108864
I/O board 01-04                         0084082691

_____

Command<6>: boards 99
Node #99  Name: LPS MCA node                     -  MCA
   Card Description                     Serial Number
MCA Board                               0002801621

_____

Command<6>: boards 0
Node #0    Unit: Central Office             : Unit # 1     -  Main Chassis

   Card Description              Version        Status
Card  1:  4 Channel Universal Analog   1.0.0       OK

Unit Board Status:
Modem: 56000 bps

_____

Command<6>: boards 21
Node #21  Name:                              -  Expansion Assembly

   Card Description              Version        Status
8 Binary/24 Shunt                2.1.0         OK

_____

Command<6>: boards 22
Node #22  Name:                              -  Expansion Chassis

   Card Description              Version        Status
Card  1:  4 Channel Relay              1.0.0         OK
Card  2:  8 Channel Binary             1.0.0         OK
Card  3:  4 Channel Universal Analog   1.0.0         OK
Card  4:  8 Channel Digital Temperature 1.0.1        OK
Card  5:  4 Channel Relay              1.0.0         OK
Card  6:  8 Channel Binary             1.0.0         OK
```

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BYE

Description: Terminates the communication link.

Command Level: 1

Syntax: BYE

Comments: Using the BYE command is the normal way to terminate a communication session.

Notes: When communicating to the system via the modem, it is recommended to terminate the communication session using the BYE command. Removing carrier without using the BYE command can cause extraneous characters to be transmitted over the phone line. Although it is not likely, these extraneous characters could be interpreted as a system command. Also, it is wise to use the BYE command when using the local RS-232 port, especially if you have a high level of access. If your communication session is not terminated, and you leave your terminal unattended, someone else could perform various actions before the unit times out that will have your name tagged to them in the event log of the system.

If a Telnet connection is terminated at the remote end by not issuing BYE, the system's telnet socket stays active until a user timeout occurs. The system cannot be accessed again via telnet during that period. Also, it is wise to use the BYE command when using Telnet, especially if you have a high level of access. If your communication session is not terminated, and you leave your terminal unattended, someone else could perform various actions before the unit times out that will have your name tagged to them in the event log of the system.

Related Commands: none

Example:

```
Command<1>: BYE
User #1 logged off at 02:42:51
NO CARRIER
```

CHANNELS

Description: Lists all channels which are assigned to the currently logged on user.

Command Level: 1

Syntax: CHANNELS
CH

Comments: Information presented includes the channel number, and the description of the channel.

Notes: To view the current status of these channels use the command SCAN U.

Related Commands: SET CHANNELS

Example:

```
Command<1>: channels
USER NO. 1 CHANNELS:
 A0001 PBD02 LOAD 11 PCFD00 D1 LDA
 B0001 1231H1 HIGH VOLTAGE ALARM
 R0001 TANDEM 5TH FL MAJOR ALARM
END OF USER NO. 1 CHANNELS
```

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CLASS

Description: Displays the current alarm class descriptions for the eight alarm class numbers.

Command Level: 2

Syntax: CLASS
CL

Comments: If no description was previously entered, "none" is displayed after the alarm class number.

Notes: none

Related Commands: SET CLASS

Example:

```
Command<2>: CLASS
Programmable Alarm Classifications
 K1.MINOR K2.MAJOR K3.none K4.FACIL K5.none K6.none K7.none K8.ENGR
```

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CLR

Description: Lists all commands that begin with the command CLR (Clear) and then prompts the user to enter one of the displayed options.

Command Level: NA

Syntax: CLR [*command*]

Comments: Any clear command entered by a user will automatically generate an entry in the event log that includes the users name and the type of clear command used. Only commands available to the current user are listed. The list in the example is for a user that has access to level 6 commands.

Notes: Only the commands that the user has access to are listed.

Related Commands: See Example below.

Example:

```
Command<6>: clr
Clear what:
ACO          EVENTS        LED          LOG            MAIL
POWER        PROGRAM       RLY          STATS
```

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CLR ACO

Description: Lists all alarms that are cutoff and then cancels the cutoff. If any alarms remain active, alarm indicators will be actuated.

Command Level: 4

Syntax: CLR ACO

Comments: Any relays that have been turned off because of the SET ACO command will now turn on after the CLR ACO command is entered (provided the same alarm conditions exist). Also, if any new alarm conditions occur that figure into a relay control program, that output will turn on again, thereby releasing the alarm cancel for that output. Any relays that are configured as alarm types and have been turned off because of the SET ACO command will generate a new alarm log entry when they re-energize due to the CLR ACO command.

Notes: Any user entering this command will have his name and this action recorded in the event log.

Related Commands: ACO, SET ACO

Example:

```
Command<4>: CLR ACO
No alarms are cutoff.
```

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CLR EVENTS

Description: Clears the events log which displays the changes which have been made to the configuration of the system.

Command Level: 6

Syntax: CLR EVENTS
CLR EV

Comments: This command permanently erases all past events that have been recorded by the system. There is no way to restore the information. Also, after the log is cleared, a new entry will be made for the user who just cleared it.

Notes: none

Related Commands: EVENTS

Example:

```
Command<6>: CLR EVENTS
Clear Event Log (Y or N)?  Y
Log cleared !
```

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CLR LED

Description: Clears any LED's which have been forced on using the SET LED command.

Command Level: 5

Syntax: CLR LED [*n*]

Comments: This command turns off an LED if it has been turned on with the SET LED command. However, this command will NOT turn off any LED that has been turned on because of its control program.

Notes: This command could potentially initiate a user report if everything were programmed correctly. First, the LED in question would have to be configured as an alarm type. Second, a user would have to be configured to receive a retired alarm report and he would have to have the LED in question as one of his user channels. Once the LED is cleared, a user phone report or Email message would occur. Any user entering this command will have his name and this action recorded in the event log.

Related Commands: SET LED

Example:

```
Command<5>: CLR LED
Clear LED:
```

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CLR LOG

Description: Clears the alarm log of previous entries.

Command Level: 4

Syntax: CLR LOG

Comments: Any existing alarms will be immediately entered into the alarm log after the alarm log is cleared.

Notes: This command could potentially eliminate past retired alarms from being reported.

Related Commands: LOG

Warning: *This command permanently erases all alarm log entries and there is no way to restore the information. After the alarm log is cleared, any existing alarm condition will be immediately re-entered in the alarm log. Since the alarm log contains information necessary for alarm reporting (and for some user reports), clearing the alarm log will wipe out that information thus losing potential alarm reports for older alarms. More specifically, each alarm log entry contains information that determines which users are to receive "occurred" and "retired" alarm reports for that particular entry. Also, each entry contains information about whether or not that entry should be reported as a system alarm. Remember, clearing the alarm log will lose reports for cleared (retired) alarms. Existing alarms will be re-entered however, the occurred date and time of the those existing alarms will be misleading, since it will be recorded at the instant when the log was actually cleared. Note that this command will also generate an entry in the event log.*

Example:

```
Command<4>: CLR LOG
Clear Alarm Log (Y or N): Y
Log cleared.
```

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CLR MAIL

Description: Displays any existing mail messages and prompts the user to delete the mail entry.

Command Level: 1

Syntax: CLR MAIL

Comments: Before you clear the mail (you are sending), make sure that everyone has read the mail. That is, there should be no "Send To" numbers that are not also in the "Read By" numbers (the numbers refer to the user number 1-8). When another user reads your mail, his user number will be stored as part of the "Read By" numbers. His user number will still appear in the "Send To" numbers unless he specifically indicates that he is done with your mail. As long as a user's number appears as part of the "Send To" numbers, he will be notified every time he logs onto the system that he has mail.

Notes: none

Related Commands: MAIL, SET MAIL

Example:

```
Command<1>: CLR MAIL
Mail Setup
Line 1: FRED,
Line 2: THE DIESEL IS WORKING GREAT.
Line 3: THANKS FOR YOUR HELP.
Send To: 1
Read By: 3

Clear this mail (Y or N) ? y
Mailed cleared!
```

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CLR POWER

Description: Clears the power consumption data for a single or all function channels configured for Power Metering.

Command Level: 4

Syntax: CLR POWER [*function_channel_number*]
          CLR PO [*function_channel_number*]

Comments: Entering a function channel number after the command clears data for the specified function channel only.

Notes: Future Power Metering reports are based on data collected after this command is entered.

Available only if the Power Metering software option is installed.

Related Commands: POWER

Example:

```
Command<4>: CLR POWER
Power Stats cleared.
```

_____

```
Command<4>: CLR POWER 1
Power Stats cleared.
```

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CLR PROGRAM

Description: Clears the specified control program line.

Command Level: 5

Syntax: CLR PROGRAM
CLR PROGRAM F[*channel_number*]
CLR PROGRAM L[*channel_number*]
CLR PROGRAM R[*node_number_channel_number*]
CLR PR
CLR PR F[*channel_number*]
CLR PR L[*channel_number*]
CLR PR R[*node_number_channel_number*]

Comments: This command clears from memory the control program line of the function channel, LED channel, or relay channel specified. This command also recompiles the remaining control program lines. If a specific control program line is not entered, the system prompts for an entry.

Notes: Can be used to erase an invalid control program line that was detected during an upload procedure, and to recompile the remaining valid control program lines.

Related Commands: none

Example:

```
Command<5>: CLR PROG
Which channel? R0001
CONTROL PROGRAM:
R0001=B0001
Clear program line for channel R0001? (Y or N):  Y
```

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CLR RLY

Description: Clears any relays which have been forced on using the SET RLY command.

Command Level: 6, or level 5 if the relay channel being cleared is configured in the user's channel group.

Syntax: CLR RLY [*node_number_channel_number*]

Comments: This command de-energizes a relay if it has been turned on with the SET RLY command. However, this command will NOT turn off any relay that has been turned on because of its control program.

A jumper is provided on the relay circuit card which can be used to disable the SET RLY and CLR RLY commands.

Notes: This command could potentially initiate a user report if everything were programmed correctly. First, the relay in question would have to be configured as an alarm type. Second, a user would have to be configured to receive a retired alarm report and he would have to have the relay in question as one of his user channels. Once the relay is cleared, a user phone report or Email message would occur. Any user entering this command will have his name and this action recorded in the event log. If a level 5 user attempts to clear a relay channel not configured in the user's channel group, the following message is issued. "Illegal request, not configured to access this channel".

Related Commands: SET RLY

Example:

```
Command<5>: CLR RLY
Clear Relay: 0003

Clear Relay: 0004

Clear Relay: 0064
```

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CLR STATS

Description: Resets the analog and function channel statistics.

Command Level: 4

Syntax: CLR STATS
CLR STATS A[[*node_number*]*channel_number*]
CLR STATS F[*channel_number*]
CLR ST
CLR ST A[[*node_number*]*channel_number*]
CLR ST F[*channel_number*]

Comments: Any user clearing statistics will have his name and this action recorded in the event log. Entering the channel type and number after the command resets statistics for the specified channel only.

Notes: Future statistics will be based on information collected after this command is entered.

Related Commands: STATS, CLRSTAT

Example:

```
Command<4>: CLR STATS
Reset all channel stats (Y or N): Y
Statistics are cleared.
```

CMD

Description: Lists each of the eight programmable commands, if they are used.

Command Level: 6

Syntax: CMD

Comments: Using programmable commands is analogous to using macros or batch processing. Their use can simplify the task of extracting data from the system.

Notes: Each command can consist of up to eight standard commands. When the name of a programmable command is entered, all of its commands are automatically performed, without having to manually prompt the system to perform each task.

Related Commands: SET CMD

Example:

```
Command<6>: cmd
Command 1 name: LOADS
Command 1 access level: 1
Command 1 line 1: SCAN RECTIFIER
Command 1 line 2: SCAN LOAD
Command 1 line 3: SCAN CURRENT
```

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COM

Description: Displays the local port communications parameters.

Command Level: 6

Syntax: COM

Comments: none

Notes: The data rate, parity, number of data bits, and number of stop bits are displayed in the order listed, separated by commas.

Related Commands: SET COM

Example:

```
Command<6>: COM
Local Comm Port Setup:  2400,n,8,1
```

CONFIG

Description: Allows the configuration of analog and binary inputs, control relays, function channels, groups, LED indicators, and energy management channels.

Command Level: 5

Syntax: CONFIG [*channel_type*] [*channel_designator*]
          C [*channel_type*] [*channel_designator*]

Comments: A single input is configured by entering the command CONFIG followed by a space and then the character A for analog, B for binary, R for relay, F for function, E for energy management, G for group, or L for LED, followed by the node number and channel number.

To utilize the special rate computations by the system, the Unit Text for the appropriate analog channels should be set to AMPS.

To utilize the Power Metering software option (if installed) computations by the system, the Unit Text for the appropriate function channels should be set to KW.

Eight (8) Input Temperature Circuit Card: To display temperature readings in Fahrenheit, the Unit Text for the appropriate analog channel must be set to DEGF.

Notes: If system alarm reporting is selected for any channels, any alarms associated with that channel will cause a phone call or Email to report the alarm. If set to NO, the alarm will only be recorded in the alarm log. If the CHANNEL ACTIVE attribute on any channel is set to N, that channel will not be displayed in any scans or reports. It is recommended to set the spare (unused) channels to NOT ACTIVE. When the channel is configured to be not active, the user is asked if the channel default values should be set (refer to the SET DEFAULTS command). The user is also asked if the channel should be deleted. Answering yes will result in the channel's configuration being removed from memory. The scale factor is a number that correlates to the number associated with the measured input. For example, a shunt with a 50mv output for 500 amperes has a scale factor of 500 with a 50 mv module, while a 5 ampere shunt has a scale factor of 5. The scale factor is the value displayed when the input is set equal to the maximum input specified on the analog modules. The maximum scale factor possible is 20,000.

The timing involved in the operation of the rectifier sequencing feature will be affected if the alarm delay attributes for the binary channels selected to control the sequencer are configured. Configuring the "On Delay" or "Off Delay" for the AC Fail / Transfer input or Standby On / Proper Operate input will postpone detection (signals may have already been detected by the transfer device) of an AC Failure or Proper Operate signal by the rectifier sequencing software.

Analog Channels A9001-A9081 and Binary Channels B9001-B9080 are only available when the VPS MCA Interface is used. These channels are automatically mapped to monitor predetermined VPS parameters. Refer to Table 2-1 for a correlation between channels and associated VPS parameters. Because of the nature of the channels automatically mapped to VPS parameters, some of the channel attributes do not apply and thus are not configurable.

Analog channels for LPS nodes 1-20 and 99 are automatically mapped to monitor predetermined LPS parameters. Refer to Tables 2-2 and 2-3 for the mapping of LPS channels. Note that some LPS channel parameters are not configurable. Except for LPS

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distribution points, LPS analog channels cannot be configured to alarm because those limits are controlled by the MCA and result in binary alarms in the LMS.

If a limit is changed when an alarm is active which deactivates the alarm condition, the alarm remains active in the alarm log and will not be shown as cleared. Also, no retired alarm notification will be sent.

See *Chapter 2. Operating LMS1000* for a description and examples of the Alarm Polarity attribute.

Analog channel configuration error messages:

```
WARNING, no hardware exists for this channel!
    (unmapped node #, no I/O card exists)

Node is failed, channel hardware not configured!
    (node failure)

Channel hardware configuration error!
    (bad I/O card)
```

Related Commands: none

Example:

```
Command<5>: CONFIG
Which channel? A0001
ANALOG CHANNEL CONFIGURATION AS OF 07:35:50 ON 01/01/01.
Chan    Description             Act Rpt Pol Scale 4-20 Unit Off-Dly-On
 A0001 Analog Channel 1          Y   Y   +  100.0   N  Volt   0      0
   Sub-access ID       Montype    Monfmt
 ANALOG1               DCVOLTS      D
 LIMITS CONFIGURATION
  Limit /  Name       Class  Condtype            Ntfc  Svef
  70.0 H   HVA2       MAJOR  TOOHIGH             MJ    SA
  Condition Description
THIS VOLTAGE IS TOO HIGH
  60.0 H   HVA1       MAJOR  HIGH                MJ    SA
  Condition Description
THIS VOLTAGE IS HIGH
  50.0 L   LVA1       MINOR  LOW                 MN    NSA
  Condition Description
THIS VOLTAGE IS LOW
  40.0 L   LVA2       MINOR  TOOLOW              MN    NSA
  Condition Description
THIS VOLTAGE IS TOO LOW
Channel active (Y or N): Y
Name: Analog Channel 1
Name: MAIN SHUNT
Sub-access Identifier: ANALOG1
Sub-access Identifier: RECT1
System Alarm Report mode: Y
System Alarm Report mode (Y or N):
Transducer Type:
Transducer Type (Shunt, Current, Voltage, Temp, or None):
Shunt type: current info
```

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```
Shunt type (50mv or 100mv):
Scale Factor: 100.0
Scale Factor:
Monitor type: DCVOLTS
Monitor type: DCAMPS
Monitor Value Format: Decimal
Set monitor value format to integer(I) or decimal(D): I
Alarm Polarity: current info
Alarm Polarity (+, -, P): P
Limit 1 Enabled: Yes
Limit 1 Enabled (Y or N):
Limit 1 Value: 70.0
Limit 1 Value: 4800
Limit 1 Type: H
Limit 1 Type is High or Low (H or L):
Limit 1 Name: HVA2
Limit 1 Name: ABOVE 4800
Limit 1 Notification Code: MJ
Limit 1 Notification Code:
Limit 1 Service Effect Code: SA
Limit 1 Service Effect Code:
Limit 1 Alarm Class Number: 1
Condition Type: TOOHIGH
Condition Type:
Limit 1 Condition Description:
THIS VOLTAGE IS TOO HIGH
Condition Description:
THIS CURRENT IS TOO HIGH
Limit 2 Enabled: Yes
Limit 2 Enabled (Y or N):
Limit 2 Value: 60.0
Limit 2 Value: 4200
Limit 2 Type: H
Limit 2 Type is High or Low (H or L):
Limit 2 Name: HVA1
Limit 2 Name: ABOVE 4200
Limit 2 Notification Code: MJ
Limit 2 Notification Code:
Limit 2 Service Effect Code: SA
Limit 2 Service Effect Code:
Limit 2 Alarm Class Number: 1
Condition Type: HIGH
Condition Type:
Limit 2 Condition Description:
THIS VOLTAGE IS HIGH
Condition Description:
THIS CURRENT IS HIGH
Limit 3 Enabled: Yes
Limit 3 Enabled (Y or N):
Limit 3 Value: 50.0
Limit 3 Value: 500
Limit 3 Type: L
Limit 3 Type is High or Low (H or L):
Limit 3 Name: LVA1
Limit 3 Name: BELOW 500
Limit 3 Notification Code: MN
Limit 3 Notification Code:
```

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```
Limit 3 Service Effect Code: NSA
Limit 3 Service Effect Code:
Limit 3 Alarm Class Number: 2
Condition Type: LOW
Condition Type:
Limit 3 Condition Description:
THIS VOLTAGE IS LOW
Condition Description:
THIS CURRENT IS LOW
Limit 4 Enabled: Yes
Limit 4 Enabled (Y or N):
Limit 4 Value: 50.0
Limit 4 Value: 100
Limit 4 Type: L
Limit 4 Type is High or Low (H or L):
Limit 4 Name: LVA2
Limit 4 Name: BELOW 100
Limit 4 Notification Code: MN
Limit 4 Notification Code:
Limit 4 Service Effect Code: NSA
Limit 4 Service Effect Code:
Limit 4 Alarm Class Number: 2
Condition Type: LOW
Condition Type:
Limit 4 Condition Description:
THIS VOLTAGE IS TOO LOW
Condition Description:
THIS CURRENT IS TOO LOW
Unit Text: VOLT
Unit Text: AMPS
Off Delay Time: 0s
Off Delay Time:
On Delay Time: 0s
On Delay Time: 15
Save changes (Y or N): Y
```

_____

```
Command<6>: CONFIG F0001
FUNCTION CHANNEL CONFIGURATION AS OF 07:35:28 ON 02/09/96.
Chan   Description                      Act Rpt Pol Unit Off-Dly-On
 F0001 Function Channel 1                Y   Y   +  Volt   0s      0s
    Sub-access ID       Montype   Monfmt
 FUNCTION1             DCVOLTS        D
 LIMITS CONFIGURATION
  Limit /  Name      Class  Condtype            Ntfc  Svef
  70.00H   HVA2      MAJOR  TOOHIGH             MJ    SA
  Condition Description
THIS VOLTAGE IS TOO HIGH
  60.00H   HVA1      MAJOR  HIGH                MJ    SA
  Condition Description
THIS VOLTAGE IS HIGH
  50.00L   LVA1      MINOR  LOW                 MN    NSA
  Condition Description
THIS VOLTAGE IS LOW
  40.00L   LVA2      MINOR  TOOLOW              MN    NSA
  Condition Description
THIS VOLTAGE IS TOO LOW
```

```
Channel active (Y or N): Y
Name: Function Channel 1
Name:
Sub-access Identifier: FUNCTION1
Sub-access Identifier:
System Alarm Report mode: Y
System Alarm Report mode (Y or N):
Monitor type: DCVOLTS
Monitor type: DCAMPS
Monitor Value Format: Decimal
Set monitor value format to integer(I) or decimal(D): I
Limit 1 Enabled: Yes
Limit 1 Enabled (Y or N):
Limit 1 Value: 70.00
Limit 1 Value: 5000
Limit 1 Type: H
Limit 1 Type is High or Low (H or L):
Limit 1 Name: HVA2
Limit 1 Name: ABOVE 5000
Limit 1 Notification Code: MJ
Limit 1 Notification Code:
Limit 1 Service Effect Code: SA
Limit 1 Service Effect Code:
Limit 1 Alarm Class Number: 1
Condition Type: TOOHIGH
Condition Type:
Limit 1 Condition Description:
THIS VOLTAGE IS TOO HIGH
Condition Description:
THIS CURRENT IS TOO HIGH
Limit 2 Enabled: Yes
Limit 2 Enabled (Y or N):
Limit 2 Value: 60.00
Limit 2 Value: 4200
Limit 2 Type: H
Limit 2 Type is High or Low (H or L):
Limit 2 Name: HVA1
Limit 2 Name: ABOVE 4200
Limit 2 Notification Code: MJ
Limit 2 Notification Code:
Limit 2 Service Effect Code: SA
Limit 2 Service Effect Code:
Limit 2 Alarm Class Number: 1
Limit 3 Enabled: Yes
Limit 3 Enabled (Y or N):
Limit 3 Value: 50.00
Limit 3 Value: 500
Limit 3 Type: L
Limit 3 Type is High or Low (H or L):
Limit 3 Name: LVA1
Limit 3 Name: BELOW 500
Limit 3 Notification Code: MN
Limit 3 Notification Code:
Limit 3 Service Effect Code: NSA
Limit 3 Service Effect Code:
Limit 3 Alarm Class Number: 2
Condition Type: LOW
```

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```
Condition Type:
Limit 3 Condition Description:
THIS VOLTAGE IS LOW
Condition Description:
THIS CURRENT IS LOW
Limit 4 Enabled: Yes
Limit 4 Enabled (Y or N):
Limit 4 Value: 40.00
Limit 4 Value: 100
Limit 4 Type: L
Limit 4 Type is High or Low (H or L):
Limit 4 Name: LVA2
Limit 4 Name: BELOW 100
Limit 4 Notification Code: MN
Limit 4 Notification Code:
Limit 4 Service Effect Code: NSA
Limit 4 Service Effect Code:
Limit 4 Alarm Class Number: 2
Condition Type: TOOLOW
Condition Type:
Limit 4 Condition Description:
THIS VOLTAGE IS TOO LOW
Condition Description:
THIS CURRENT IS TOO LOW
Unit Text: VOLT
Unit Text: AMPS
Off Delay Time: 0s
Off Delay Time:
On Delay Time: 0s
On Delay Time: 15
Save changes (Y or N): Y
Enter Program Line:
F0001=A0001+A0002+A0003
```

```
Command<6>: CONFIG R0001
RELAY CHANNEL CONFIGURATION AS OF 07:35:40 ON 01/01/01.
Chan     Description        Act Alm Rpt Class Set ACO Cycle Off-Dly-On
 R0001 Relay Channel 1       Y   Y   Y         N   N    0m    0s       0s
    Sub-access ID      Ctrltype        Condtype        Ntfc  Svef
 RELAY1                         HIGH                    CR    SA
 Condition Description
THIS IS RELAY CHANNEL R01'S CONDITION DESCRIPTION
CONTROL PROGRAM:
R0001=B0001
Channel active (Y or N): Y
Name: Relay Channel 1
Name:
Sub-access Identifier: RELAY1
Sub-access Identifier:
Alarm Type: Y
Alarm Type (Y or N):
System Alarm Report mode: Y
System Alarm Report mode (Y or N):
Alarm Class Number: 0  2
Condition Type: HIGH
Condition Type:
```

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```
Condition Description:
THIS IS RELAY CHANNEL R01'S CONDITION DESCRIPTION
Condition Description:
Notification Code: CR
Notification Code:
Service Effect Code: SA
Service Effect Code:
Affected by ACO: N
Affected by ACO (Y or N): Y
Cycle Freq (min): 0
Cycle Freq (min):
Control Type:
Control Type:
Off Delay Time: 0s
Off Delay Tim:
On Delay Time: 0s
On Delay Time:
Save changes (Y or N): Y
Enter Program Line:
R01=B1|B2
```

_____

```
Command<6>: CONFIG L0001
LED CHANNEL CONFIGURATION AS OF 07:35:00 ON 01/01/01.
Chan     Description                     Act Alm Rpt Class Off-Dly-On
 L0001 LED Channel 1                      Y   Y   Y          0s      0s
    Sub-access ID      Ctrltype         Condtype      Ntfc  Svef
 LED1                  AIRCOND    HIGH                  CR    SA
 Condition Description
THIS IS LED CHANNEL L01'S CONDITION DESCRIPTION
CONTROL PROGRAM:
L0001=b0001
Channel active (Y or N): Y
Name: LED Channel 1
Name:
Sub-access Identifier: LED1
Sub-access Identifier:
Alarm Type: Y
Alarm Type (Y or N):
System Alarm Report mode: Y
System Alarm Report mode (Y or N):
Alarm Class Number: 0  2
Condition Type: HIGH
Condition Type:
Condition Description:
THIS IS LED CHANNEL L01'S CONDITION DESCRIPTION
Condition Description:
Notification Code: CR
Notification Code:
Service Effect Code: SA
Service Effect Code:
Control Type: AIRCOND
Control Type:
Off Delay Time: 0s
Off Delay Time:
On Delay Time: 0s
On Delay Time:
```

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```
Save changes (Y or N): Y
Enter Program Line:
L0001=B0001
```

_____

```
Command<6>: CONFIG B0003
BINARY CHANNEL CONFIGURATION AS OF 07:35:53 ON 01/01/01.
Chan      Description                    Act Rpt Cont Class Off-Dly-On
 B0003 Binary Channel 3                   Y   Y   CC          0s      0s
    Sub-access ID        Condtype          Ntfc  Svef
 BINARY3              LOW                   CR    SA
 Condition Description
THIS IS RELAY CHANNEL B03'S CONDITION DESCRIPTION
Channel active (Y or N): Y
Name: Binary Channel 3
Name: FIRE ALARM!
Sub-access Identifier: BINARY3
Sub-access Identifier: RECT1
System Alarm Report mode: Y
System Alarm Report mode (Y or N):
Condition Type: LOW
Condition Type: FUSEOPERATE
Condition Description:
THIS IS RELAY CHANNEL B03'S CONDITION DESCRIPTION
Condition Description:
Notification Code: CR
Notification Code: MJ
Service Effect Code: SA
Service Effect Code: NSA
Alarm Condition: CC
Alarm Condition (CC or CO): CO
Alarm Class Number: 0  1
Off Delay Time: 0s
Off Delay Time: 20
On Delay Time: 0s
On Delay Time: 45
Save changes (Y or N): Y
```

_____

```
Command<6>: CONFIG E0001
ENERGY MANAGEMENT CHANNEL CONFIGURATION AS OF 16:33:32 ON 01/01/01.
Chan   Description                    Act Capacity  Sht RFA TR  Dsl
 E0001 Energy Mngmt Rectifier 1        N    200.0   A33 B33 R33  N
Channel active (Y or N): Y
Name: Energy Mngmt Rectifier 1
Name:
Energy Mngmt Rectifier 1 Shunt = A0033
Energy Mngmt Rectifier 1 Shunt = A
Energy Mngmt Rectifier 1 Capacity: 200.0
Energy Mngmt Rectifier 1 Capacity:
Energy Mngmt Rectifier 1 RFA = B0033
Energy Mngmt Rectifier 1 RFA = B
Energy Mngmt Rectifier 1 TR lead = R0033
Energy Mngmt Rectifier 1 TR lead = R
Rectifier ON when Standby ON (Y or N):
Save changes (Y or N): Y
```

_____

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```
Command<6>: CONFIG E0001
ENERGY MANAGEMENT CHANNEL CONFIGURATION AS OF 16:33:32 ON 01/01/01.
Chan   Description                    Act Capacity  Sht RFA TR  Dsl
 E0001 Energy Mngmt PCU1               N    100.0   A70 B84 --- N
Channel active (Y or N): Y
Name: Energy Mngmt PCU1
Name:
Energy Mngmt PCU1 Shunt = A0070
Energy Mngmt PCU1 Shunt =
Rectifier ON when Standby ON (Y or N):
Save changes (Y or N): Y
```

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CONNECT

Description: Activates the Gateway port.

Command Level: 4

Syntax: CONNECT

Comments: Allows the LMS1000 to emulate a "dumb" RS-232 asynchronous terminal interface. When activated, user input through either a local or remote LMS1000 port is directed to the customer equipment connected to the LMS1000 Gateway port. To exit and return to the LMS1000 command prompt, press CTRL-C twice. The second CTRL-C must follow the first within a one second time interval.

Notes: User must be familiar with the command set and operation of the customer equipment connected to the LMS1000 Gateway port.

Possible data loss may occur if the LMS1000 Gateway port data rate does not match that of the local or remote terminal being used to access the customer equipment via LMS1000.

The LMS1000 alarm reports will not be processed while the Gateway feature is active and a remote terminal is being used.

In normal LMS1000 command mode operation, the LMS1000 echoes characters back to the user's terminal. This is not done in the Gateway mode, and must be a function (echoing) of the customer equipment connected to the LMS1000 Gateway port.

This program is automatically exited and the User is returned to the LMS1000 command prompt if the user timeout period is exceed. If user timeout occurs during a remote communication session, the communication link is automatically terminated.

Related Commands: SET GATEWAY

Example:

If the Gateway port is available for access when the CONNECT command is issued, the User is prompted as follows. Note that the Warning message is only displayed when using the LMS1000 modem port.

```
Command<4>: CONNECT
WARNING!!! ALARM REPORTS CANNOT BE PROCESSED
           WHILE GATEWAY SESSION IS ACTIVE

GATEWAY port active

   Press <CTRL-C><CTRL-C> to exit

<cursor>
```

If the Gateway port is in use by another User, the requesting User will be prompted as follows:

```
GATEWAY Port Busy - Try Again

Command<4>:
```

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If the CONNECT command is issued from an established modem dial up session, and a modem report is pending, the following message is displayed:

```
Report is pending.  Cannot activate GATEWAY port.
```

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DAC DEL

Description: Deletes a User from the Door Access Controller (DAC). Available only if the DAC Interface Option is installed.

Command Level: 6

Syntax: DAC DEL

Comments: none

Notes: The entered PIN # must match the current value.

Related Commands: DAC LIST, DAC SET, DAC SET LOCK OFF, DAC SET LOCK ON, DAC STATUS, LOCK, UNLOCK

Example:

```
Command <6>: DAC DEL
DAC Code #: [Code #]
PIN: [PIN#]
Save Changes (Y or N): [Y|N]
```

_____

```
ERROR: The entered PIN does not match the current value for DAC Code #[Code #].
CODE NOT CHANGED
```

DAC LIST

Description: Displays a list of Users and their Access Codes stored in the Door Access Controller (DAC). Available only if the DAC Interface Option is installed.

Command Level: 6

Syntax: DAC LIST

Comments: none

Notes: none

Related Commands: DAC DEL, DAC SET, DAC SET LOCK OFF, DAC SET LOCK ON, DAC STATUS, LOCK, UNLOCK

Example:

```
Command <6>: DAC LIST
User      Id
DAC001   4312
DAC002   1234
DAC003   1298
```

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DAC SET

Description: Adds / changes a User and/or Access Code stored in the Door Access Controller (DAC). Available only if the DAC Interface Option is installed.

Command Level: 6

Syntax: DAC SET

Comments: All Access Codes are limited to five-digit numbers.

Notes: A value of zero indicates that this entry on the Access Code list is not in use.

Related Commands: DAC DEL, DAC LIST, DAC SET LOCK OFF, DAC SET LOCK ON, DAC STATUS, LOCK, UNLOCK

Example:

```
Command <6>: DAC SET
DAC Code #: [Code #]
Access PIN: [PIN#]
Save Changes (Y or N): [Y|N]
DAC Code #[Code #] has been added/changed with PIN [PIN#]
```
_____

```
Command <6>: DAC ADD [User #] [PIN#]
[User] has been added with PIN [PIN#]
```

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DAC SET LOCK OFF

Description: Unlocks the access with any DAC User Code. Available only if the DAC Interface Option is installed.

Command Level: 6

Syntax: DAC SET LOCK OFF

Comments: none

Notes: none

Related Commands: DAC DEL, DAC LIST, DAC SET, DAC SET LOCK ON, DAC STATUS, LOCK, UNLOCK

Example:

```
Command <6>: DAC SET LOCK OFF
DAC Lock is now Off
```

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DAC SET LOCK ON

Description: Locks the access with any DAC User Code. Available only if the DAC Interface Option is installed.

Command Level: 6

Syntax: DAC SET LOCK ON

Comments: none

Notes: none

Related Commands: DAC DEL, DAC LIST, DAC SET, DAC SET LOCK OFF, DAC STATUS, LOCK, UNLOCK

Example:

```
Command <6>: DAC SET LOCK ON
DAC Lock is now On
```

DAC STATUS

Description: Displays the actual state of the Access Door. Available only if the Door Access Controller (DAC) Interface Option is installed.

Command Level: 6

Syntax: DAC STATUS

Comments: none

Notes: none

Related Commands: DAC DEL, DAC LIST, DAC SET, DAC SET LOCK OFF, DAC SET LOCK ON, LOCK, UNLOCK

Example:

```
Command <6>: DAC STATUS
Actual state is Open
```
_____

```
Command <6>: DAC STATUS
Actual state is Closed
```
_____

```
Command <6>: DAC STATUS
Actual state is Locked ?
```

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DATE

Description: Displays the current day of the week, month, day, year, and time.

Command Level: 1

Syntax: DATE
D

Comments: none

Notes:

Related Commands: SET DATE

Example:

```
Command<1>: DATE
Today is Monday 01/01/01 at 08:57:51.
```

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DOWNLOAD

Description: Performs a DUMP operation using XMODEM protocol with CRC error checking.

Command Level: 6

Syntax: DOWNLOAD
       DO

Comments: Use this command to save to disk system configuration. Later, this same file can be used to upload the system in the event of a software upgrade or CPU failure.

Notes: Download information is transmitted in a condensed ASCII format. This condensation speeds the transmission process, which could still require 10 to 15 minutes of time at 300 bits/s. This command requires a communication program which supports XMODEM and CRC checking.

Related Commands: UPLOAD

Example:

```
Command<6>: DOWNLOAD
DUMP using XMODEM Protocol with CRC error checking
Waiting for 'C' -  You have 1 minute!
```

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DOWNLOAD TFTP

Description: Performs a DUMP operation using TFTP.

Command Level: 6

Syntax: DOWNLOAD TFTP

Comments: Use this command to save to disk the configuration of the system. Later, this same file can be used to upload the system in the event of a software upgrade or CPU failure.

Notes: This command is a derivative of the DOWNLOAD command. The difference is that the TFTP protocol is used to transmit the data rather than XMODEM.

A separate TFTP client session must be started on the host to which the configuration file is transferred.

Related Commands: UPLOAD TFTP

Example:

```
Command<6> : DOWNLOAD TFTP
DOWNLOAD using TFTP
```

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DOWNLOAD VORTEX

Description: Allows transfer of VPS configuration information to any personal computer capable of uploading and downloading a file to a disk using XMODEM protocol with CRC error checking.

Command Level: 6

Syntax: DOWNLOAD VORTEX
DOWN V

Comments: Use this command to save to disk the configuration of the VPS. Later, this same file can be used to upload the VPS in the event of a software upgrade or CPU failure.

Notes: The personal computer must be equipped with a communications software package which allows saving of information and transfer of information to a floppy disk, hard disk, or RAM. The software package must also be capable of uploading information from the personal computer to another device, such as the VPS. Refer to the communications software package instruction manual for specific operating information. This command requires a communication program which supports XMODEM and CRC checking.

Related Commands: UPLOAD VORTEX

Example:

```
Command<6>: DOWNLOAD VORTEX
Retrieving VORTEX settings
DUMP using XMODEM Protocol with CRC error checking
Waiting for 'C' -  You have 1 minute!
9 blocks transmitted OK.
```

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EFF

Description: This command lists the status of the energy management option and the numbers of the VPS rectifiers/PCUs that are turned on by the energy management option, if any.

Command Level: 1

Syntax: EFF

Comments: None

Notes: The function only operates with VPS PCUs and is not available for LPS PCUs.

Related Commands: none

Example:

```
Command<1>: eff
RECTIFIER EFFICIENCY ROUTINE ACTIVE
FOLLOWING RECTIFIERS TURNED ON
1,2,3,4,5,6
```

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EVENTS

Description: Lists the 500 most recent events that have occurred in the system. Information includes the user number, user name, description of the change, and the date and time that the change was made.

VPS events are also recorded, if a VPS Power System is connected.

LPS events are also recorded, if an LPS Power System is connected.

Command Level: 6

Syntax: EVENTS
        EV

Comments: Optionally, enter a space and user number after typing EVENTS to get events for that user only.

Notes: There may be less than 500 entries in the event log if the system is new or has been cleared with the CLR EVENTS command. The event log will <u>not</u> record a report failure if there is no phone number or Email address entered in a user's configuration, and the system attempted an alarm report to this user.

Refer to "Chapter 2. Operating LMS1000" for a discussion on the Event Log.

Related Commands: CLR EVENTS

Example:

```
Command<6>: EVENTS 6
EVENTS LOG AS OF 02:38:03 ON 01/01/01.
Num Usr Name                 Description                Date     Time
002  6  User #6              Alarms Cancelled           01/16/09 02:33:01
004  6  User #6              Cleared Statistics         01/16/09 02:32:30
005  6  User #6              Cleared Alarm Log          01/16/09 02:32:13
006  6  User #6              Alarms Cancelled           01/16/09 02:32:03
007  6  User #6              Logged On                  01/16/09 02:28:17
008  6  User #6              Logged On                  01/16/09 02:25:27
009  6  User #6              Logged On                  01/16/09 01:56:47
010  6  User #6              Chan L01 Configured        01/16/09 01:55:40
011  6  User #6              Rectifier Efficiency On    01/16/09 01:55:40
012  6  User #6              Rectifier Efficiency Off   01/16/09 01:55:40
013  6  User #6              Efficiency Configured      01/16/09 01:55:40
014  7  User #7              Power Metering stats cleared 06/03/09 03:03:04
015  7  User #7              F32 Power Meter stat cleared 06/03/09 03:02:51
016  1  LMS                  Key code #121 validated    08/15/03 13:56:44
017  1  LMS                  Invalid Key Code Entered   08/15/03 13:55:14
```

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Example of VPS actions recorded when performed at the VPS's MCA local interface pad.

```
Command<6>: ev
EVENTS LOG AS OF 17:54:19 ON 01/01/01.
Num Usr Name      Description                    Date      Time
001  0  SMART     VPS Temp Comp Vlt set at MCA   10/10/10  xx:xx:xx
002  0  SMART     VPS ACO Timer set at MCA       10/10/10  xx:xx:xx
003  0  SMART     VPS Current Limit set at MCA   10/10/10  xx:xx:xx
004  0  SMART     VPS Sys HVS set at MCA         10/10/10  xx:xx:xx
005  0  SMART     VPS Test/Eq Vlt set at MCA     10/10/10  xx:xx:xx
006  0  SMART     VPS Float Vlt set at MCA       10/10/10  xx:xx:xx
007  0  SMART     VPS Subsys LoVlt set at MCA    10/10/10  xx:xx:xx
008  0  SMART     VPS Subsys HiVlt set at MCA    10/10/10  xx:xx:xx
009  0  SMART     VPS Float/Eq mode set at MCA   10/10/10  xx:xx:xx
010  0  SMART     VPS Sys Ovrcurr set at MCA     10/10/10  xx:xx:xx
011  0  SMART     VPS BatOnDisch set at MCA      10/10/10  xx:xx:xx
012  0  SMART     VPS 50%BatOnDisch set at MCA   10/10/10  xx:xx:xx
013  0  SMART     VPS Sys HiVltAlm2 set at MCA   10/10/10  xx:xx:xx
014  0  SMART     VPS Sys HiVltAlm1 set at MCA   10/10/10  xx:xx:xx
015  0  SMART     VPS Subsys CalVlt set at MCA   10/10/10  xx:xx:xx
016  0  SMART     VPS Subsys Ovrcur set at MCA   10/10/10  xx:xx:xx
017  0  SMART     VPS PCUn forced on at MCA      10/10/10  xx:xx:xx
018  0  SMART     VPS PCUn forced off at MCA     10/10/10  xx:xx:xx
019  0  SMART     VPS Reconnect Vlt set at MCA   10/10/10  xx:xx:xx
020  0  SMART     VPS DiscVlt LVD1A set at MCA   10/10/10  xx:xx:xx
021  0  SMART     VPS DiscVlt LVD1B set at MCA   10/10/10  xx:xx:xx
022  0  SMART     VPS DiscVlt LVD2A set at MCA   10/10/10  xx:xx:xx
023  0  SMART     VPS DiscVlt LVD2B set at MCA   10/10/10  xx:xx:xx
024  0  SMART     VPS DiscVlt LVD3A set at MCA   10/10/10  xx:xx:xx
025  0  SMART     VPS DiscVlt LVD3B set at MCA   10/10/10  xx:xx:xx
026  0  SMART     VPS 25A Places set at MCA      10/10/10  xx:xx:xx
027  0  SMART     VPS 50A Places set at MCA      10/10/10  xx:xx:xx
028  0  SMART     VPS 100A Places set at MCA     10/10/10  xx:xx:xx
029  0  SMART     VPS 200A Places set at MCA     10/10/10  xx:xx:xx
030  0  SMART     VPS Sys Cal Vlt set at MCA     10/10/10  xx:xx:xx
031  0  SMART     VPS Num LVDs changed           10/10/10  xx:xx:xx
032  0  SMART     VPS Num/Typ PODs changed       10/10/10  xx:xx:xx
033  0  SMART     VPS Num PCUs changed           10/10/10  xx:xx:xx
034  0  SMART     VPS ACO feature activated      10/10/10  xx:xx:xx
035  0  SMART     VPS Subsystem installed        10/10/10  xx:xx:xx
036  0  SMART     VPS Subsystem removed
```

Example of VPS actions recorded when performed via LMS1000.

```
Command<6>: ev
EVENTS LOG AS OF 17:54:19 ON 01/01/01.
Num Usr Name        Description                    Date     Time
001 8   User #8     VPS Temp Comp Vlt set          10/10/10 xx:xx:xx
002 8   User #8     VPS ACO Timer set              10/10/10 xx:xx:xx
003 8   User #8     VPS Current Limit set          10/10/10 xx:xx:xx
004 8   User #8     VPS Sys HVS set                10/10/10 xx:xx:xx
005 8   User #8     VPS Test/Eq Vlt set            10/10/10 xx:xx:xx
006 8   User #8     VPS Float Vlt set              10/10/10 xx:xx:xx
007 8   User #8     VPS Subsys LoVlt set           10/10/10 xx:xx:xx
008 8   User #8     VPS Subsys HiVlt set           10/10/10 xx:xx:xx
009 8   User #8     VPS Float/Eq mode set          10/10/10 xx:xx:xx
010 8   User #8     VPS Sys Ovrcurr set            10/10/10 xx:xx:xx
011 8   User #8     VPS BatOnDisch set             10/10/10 xx:xx:xx
012 8   User #8     VPS 50%BatOnDisch set          10/10/10 xx:xx:xx
013 8   User #8     VPS Sys HiVltAlm2 set          10/10/10 xx:xx:xx
014 8   User #8     VPS Sys HiVltAlm1 set          10/10/10 xx:xx:xx
015 8   User #8     VPS Subsys CalVlt set          10/10/10 xx:xx:xx
016 8   User #8     VPS Subsys Ovrcur set          10/10/10 xx:xx:xx
017 8   User #8     VPS PCUn forced on             10/10/10 xx:xx:xx
018 8   User #8     VPS PCUn forced off            10/10/10 xx:xx:xx
019 8   User #8     VPS Reconnect Vlt set          10/10/10 xx:xx:xx
020 8   User #8     VPS DiscVlt LVD1A set          10/10/10 xx:xx:xx
021 8   User #8     VPS DiscVlt LVD1B set          10/10/10 xx:xx:xx
022 8   User #8     VPS DiscVlt LVD2A set          10/10/10 xx:xx:xx
023 8   User #8     VPS DiscVlt LVD2B set          10/10/10 xx:xx:xx
024 8   User #8     VPS DiscVlt LVD3A set          10/10/10 xx:xx:xx
025 8   User #8     VPS DiscVlt LVD3B set          10/10/10 xx:xx:xx
026 8   User #8     VPS 25A Places set             10/10/10 xx:xx:xx
027 8   User #8     VPS 50A Places set             10/10/10 xx:xx:xx
028 8   User #8     VPS 100A Places set            10/10/10 xx:xx:xx
029 8   User #8     VPS 200A Places set            10/10/10 xx:xx:xx
030 8   User #8     VPS Sys Cal Vlt set            10/10/10 xx:xx:xx
031 8   User #8     VPS Equip. inventory reset     10/10/10 xx:xx:xx
032 8   User #8     VPS MCA custom message set     10/10/10 xx:xx:xx
033 8   User #8     VPS PCUn custom message set    10/10/10 xx:xx:xx
034 8   User #8     VPS MCA logon password set     10/10/10 xx:xx:xx
035 8   User #8     Vortex system uploaded         10/10/10 xx:xx:xx
036 8   User #8     VPS settings uploaded
```

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HELP

Description: Lists all commands that are available at the current level with a brief description (including any programmable commands).

Command Level: NA

Syntax: HELP
   H

Comments: Only commands available to the current user are listed. The list in the example is for a user that has access to level 6 commands.

Notes: The commands preface by the words CLEAR and SET can be viewed by entering the respective word followed by a question mark.

Programmable commands are also displayed, along with the command string in the definition column of the help command.

Energy management commands will not be shown if the option is not installed.

To view the help definition for a single command, enter the command followed by a space then a question mark.

Related Commands: HELP VORTEX, MENU

Example:

```
Command<6>: help
ACK                  acknowledge report type alarms
ACO                  list alarms that have been cutoff
AID <n>              display configured access identifiers
ALARMS               list active alarms
ANSWER               show number of rings before the system answers
BATTERY              BATTERY type commands
BOARDS               list boards installed in the System Network
BYE                  logoff and hang-up
CHANNELS             list user defined channels
CLASS                list programmable alarm classifications
CLR                  list CLR type commands
CMD                  list programmable commands
COM                  list local comm port settings
CONFIG <tn>          configure specified channel
CONNECT              initiate a communications session
                     with device connected to GATEWAY port
DATE                 show date and time
DOWNLOAD             dump system configuration using XMODEM Protocol
DOWNLOAD TFTP        performs a DUMP operation using TFTP
EFF                  show Energy Management status
EVENTS <n>           list event log entries for specified user
INFO <n>             show information pages
IP                   display the IP Network variables
LIMITS               list channel alarm limits
LOG                  list alarm log entries
MAIL                 show any mail
MENU                 list of commands
```

```
MODE                    displays configuration of TL1 port settings
NETWORK                 list NETWORK type commands
NODE                    list NODE type commands
OPTIONS                 list options installed
PERIODS                 list time periods
PHONE                   show user phone numbers
POWER <t<n>>            list power consumption data
PRCONFIG                list channel configuration
PROGRAM                 list control programs
RATE                    list size or capacity percentages
REPORT                  show system alarm reporting parameters
SCAN                    list active channel status
SEQUENCE                show AC & Standby sequencer status
SET                     list SET type commands
SNMP                    display the current value of the SNMP options
STATS                   list channel statistics
STATUS <n>              show status page
TIME                    show date and time
TIMEOUT                 show user timeout
TRAPS                   display the SNMP TRAP information
UNIT                    show unit name and number
UPLOAD                  configure the system by uploading a file using XMODEM
UPLOAD TFTP             allows transfer of configuration information to the system
                        from any networked personal computer capable of uploading
                        and downloading a file to a disk using the TFTP Protocol
USERS <n>               list user configuration
VI                      show Plant Voltage and Load


CLR ACO                 disable alarm cutoff
CLR EVENTS              clear event log
CLR LED <n>             turn LED off
CLR LOG                 clear alarm log
CLR MAIL                clear your mail from memory
CLR POWER <n>           clear power consumption data
CLR PROGRAM <tn>        clear control programs
CLR RLY <n>             de-energize relay
CLR STATS <tn>          clear channel statistics


IP ADD <address>        add a new host to the list of authorized hosts
IP ADDRESS <address>    set the units IP address
IP DELETE <address>     remove a host from the list of authorized hosts
IP GATEWAY <address>    set the units gateway address
IP NETMASK <address>    set the units network netmask


NETWORK INITIALIZE      clear all known nodes and search for new nodes


NODE ADD                search for and configure new nodes
NODE CONFIG <n>         configure user information for a node
NODE DELETE <n>         remove a node
NODE INITIO             reinitialize a node's I/O hardware configuration
NODE LIST <n>           view user and hardware configuration for nodes
NODE REPLACE <n>        replace a node


SET ACO                 cutoff present alarms from affecting relays
SET AID <n>             configures access identifier
SET ANSWER <n>          set number of rings before the system answers
SET CHANNELS            set user defined channels
```

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```
SET CLASS <n>          set programmable alarm classifications
SET CMD <n>            set programmable commands
SET COM               set local comm port configuration
SET DATE <mm/dd/yy>    set date where mm = month, dd = date, yy = year
SET DEFAULTS          set system default parameters
SET EFF               set Energy Management parameters
SET EMAIL             set IP DNS server, SMTP Server, and return mail addresses
SET GATEWAY           set GATEWAY port communications data rate
SET INFO <n>          configure information pages
SET LED <n>           turn LED on
SET LIMITS <tn>       set channel alarm limits
SET MAIL              send mail to users
SET MODE              modify configuration of TL1 port settings
SET PERIODS <tn>      set time periods
SET PHONE             set user phone numbers
SET PROGRAM <tn>      configure control programs
SET REPORT            set system alarm reporting parameters
SET RLY <n>           energize relay
SET SEQUENCE          set AC & Standby sequencer parameters
SET STATUS <n>        configure status page
SET SYSTEM            configure all settings
SET TIME <hh:mm:ss>   set time where hh = hours, mm = minutes, ss = seconds
SET TIMEOUT <n>       set user timeout
SET UNIT              set unit name and number
SET USERS <n>         configure a user
SET VI                set Plant Voltage and Load settings
SET VORTEX            configure Vortex Power System settings


SNMP GET <comm name>  set the SNMP GET community name
SNMP OFF              disable SNMP access
SNMP ON               enable SNMP access
SNMP SET <comm name>  set the SNMP SET community name


TRAPS ADD <n>         add a new SNMP Trap recipient to the list of TRAP hosts
TRAPS DELETE <n>      remove a host address from the list of TRAP hosts
TRAPS OCCURRED        disable/enable the systems ability to send SNMP Occurred
                      Alarm TRAPS
TRAPS OFF             disable the systems ability to send SNMP TRAPs
TRAPS ON              enable the system to send SNMP TRAPs
TRAPS PERSISTENT      disable/Enable the systems ability to send SNMP Persistent
                      Alarm TRAPS or set the Persistent Alarms reporting
                      interval
TRAPS RETIRED         disable/enable the systems ability to send SNMP Retired
                      Alarm TRAPS
TRAPS VERSION <V1|V2> change the version of SNMP TRAPs sent by the system

ALARMS VORTEX                    list active Power System alarms
ALARMS VORTEX LVD                list active LVD alarms
ALARMS VORTEX MCA                list active MCA alarms
ALARMS VORTEX PCU<n>             list active PCU alarms
ALARMS VORTEX SHUNT              list active SHUNT alarms
ALARMS VORTEX SUBSYSTEM          list active subsystem type alarms
ALARMS VORTEX SYSTEM             list active system type alarms


DOWNLOAD VORTEX                  dump Vortex Power System configuration
                                 using XMODEM protocol
```

```
PRCONFIG VORTEX                          list settings and equipment inventory
PRCONFIG VORTEX INVENTORY                list equipment inventory
PRCONFIG VORTEX SETTINGS                 list settings


SCAN VORTEX                              list present status of Vortex Power System
SCAN VORTEX LVD                          list present status of LVD circuits
SCAN VORTEX MCA                          list present status of MCA
SCAN VORTEX PCU<n>                       list present status of specified PCU
SCAN VORTEX SUBSYSTEM                    list present status of subsystem data
SCAN VORTEX SYSTEM                       list present status of system data


SET VORTEX INTERFACE                     Enable/Disable Vortex interface
SET VORTEX LVD<n<t>> DISCONNECT          set specified LVD disconnect voltage settings
SET VORTEX LVD RECONNECT                 set LVD reconnect voltage setting
SET VORTEX MESSAGE MCA                   set MCA custom message
SET VORTEX MESSAGE PCU<n>                set specified PCU custom message
SET VORTEX PASSWORD                      set MCA logon password
SET VORTEX PCU<n>                        turn specified PCU On or Off


SET VORTEX SYSTEM 25APLACES              set system number of 25A Places
SET VORTEX SYSTEM 50APLACES              set system number of 50A Places
SET VORTEX SYSTEM 100APLACES            set system number of 100A Places
SET VORTEX SYSTEM 200APLACES            set system number of 200A Places
SET VORTEX SYSTEM 50%BATONDISCH         set system 50% Battery On Discharge alarm
SET VORTEX SYSTEM BATONDISCH            set system Battery On Discharge alarm
SET VORTEX SYSTEM CALVOLT                set system calibration voltage
SET VORTEX SYSTEM CURLIMIT               set system current limit
SET VORTEX SYSTEM FACTORYCAL            set system cal. voltage to factory default
SET VORTEX SYSTEM FLTVOLT                set system float voltage
SET VORTEX SYSTEM HIVLTALM1             set system High Voltage 1 Alarm
SET VORTEX SYSTEM HIVLTALM2             set system High Voltage 2 Alarm
SET VORTEX SYSTEM HVS                    set system High Voltage Shutdown
SET VORTEX SYSTEM INVENTORY             reset the system equipment inventory
SET VORTEX SYSTEM MODE                   set Power System mode
SET VORTEX SYSTEM NAGTIMER               set system ACO timer
SET VORTEX SYSTEM OVRCURRENT            set system Overcurrent alarm
SET VORTEX SYSTEM TEMPCOMP              set system Temperature compensation voltage
SET VORTEX SYSTEM TSTEQVOLT             set system test/equalize voltage


SET VORTEX SUBSYSTEM CALVOLT            set subsystem calibration voltage
SET VORTEX SUBSYSTEM FACTORYCAL         set subsystem cal. voltage to factory default
SET VORTEX SUBSYSTEM HIVALM             set subsystem High Voltage alarm
SET VORTEX SUBSYSTEM LVALM              set subsystem Low Voltage alarm
SET VORTEX SUBSYSTEM OVRCURRENT         set subsystem Overcurrent alarm


UPLOAD VORTEX                            configure Vortex Power System by
                                         uploading file using XMODEM
                                         protocol


Programmed Command:        Command Strings:


where: <>    anything enclosed in brackets is optional
       n     is a valid number
       t     is a type A, B, E, F, G, L, R for Analog, Binary,
             Energy Management, Function, Group, LED or Relay
             is A or B for Vortex LVD settings
```

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```
Command<6>: HELP
ACK                     acknowledge report type alarms
ACO                     list alarms that have been cutoff
AID <n>                 display configured access identifiers
ALARMS                  list active alarms
ANSWER                  show number of rings before the system answers
BATTERY                 BATTERY type commands
BOARDS                  list installed boards
BYE                     logoff and hangup
CHANNELS                list user defined channels
CLASS                   list programmable alarm classifications
CLR                     list CLR type commands
CMD                     list programmable commands
COM                     list local comm port settings
CONFIG <tn>             configure specified channel
CONNECT                 initiate a communications session
                        with device connected to GATEWAY port
DATE                    show date and time
DOWNLOAD                dump system configuration using XMODEM protocol
DOWNLOAD TFTP           dump system configuration using TFTP protocol
EFF                     show Energy Management status
EVENTS <n>              list event log entries for specified user
INFO <n>                show information pages
IP                      display the IP Network variables
LIMITS                  list channel alarm limits
LOG                     list alarm log entries
MAIL                    show any mail
MENU                    list of commands
MODE                    display configuration of TL1 port settings
NETWORK                 list NETWORK type commands
NODE                    list NODE type commands
OPTIONS                 list options installed
PERIODS                 list time periods
PHONE                   show user phone numbers
POWER <n>               list power consumption data
PRCONFIG                list channel configuration
PROGRAM                 list control programs
RATE                    list size or capacity percentages
REPORT                  show system alarm reporting parameters
SCAN                    list active channel status
SEQUENCE                show AC & Standby sequencer status
SET                     list SET type commands
SNMP                    display the current value of the SNMP options
STATS                   list channel statistics
STATUS <n>              show status page
TIME                    show date and time
TIMEOUT                 show user timeout
TRAPS                   display the SNMP TRAP information
UNIT                    show unit name and number
UPLOAD                  configure system by uploading file using XMODEM
UPLOAD TFTP             configure system by uploading file using TFTP
USERS <n>               list user configuration
VI                      show Plant Voltage and Load

CLR ACO                 disable alarm cutoff
CLR EVENTS              clear event log
CLR LED <n>             turn LED off
```

User Instructions
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```
CLR LOG                 clear alarm log
CLR MAIL                clear your mail from memory
CLR POWER <n>           clear power consumption data
CLR PROGRAM <tn>        clear control programs
CLR RLY <n>             de-energize relay
CLR STATS <tn>          clear channel statistics


IP ADD <address>        add a new host to the list of authorized hosts
IP ADDRESS <address>    set the units IP address
IP DELETE <address>     remove a host from the list of authorized hosts
IP GATEWAY <address>    set the units gateway address
IP NETMASK <netmask>    set the units network netmask


NETWORK INITIALIZE      clear all known nodes and search for new nodes


NODE ADD                search for and configure new nodes
NODE CONFIG <n>         configure user information for a node
NODE DELETE <n>         remove a node
NODE INITIO <n>         reinitialize a node's I/O hardware configuration
NODE LIST <n>           view user and hardware configuration for nodes
NODE REPLACE <n>        replace a node


SET ACO                 cutoff present alarms from affecting relays
SET AID <n>             configure access identifier
SET ANSWER <n>          set number of rings before the system answers
SET CHANNELS            set user defined channels
SET CLASS <n>           set programmable alarm classifications
SET CMD <n>             set programmable commands
SET COM                 set local comm port configuration
SET DATE <mm/dd/yy>     set date where mm = month, dd = date, yy = year
SET DEFAULTS            set system default parameters
SET EFF                 set Energy Management parameters
SET EMAIL               set IP DNS server, SMTP Server, and return mail addresses
SET GATEWAY             set GATEWAY port communications data rate
SET INFO <n>            configure information pages
SET LED <n>             turn LED on
SET LIMITS <tn>         set channel alarm limits
SET LPS                 set LPS parameters
SET MAIL                send mail to users
SET MODE                modify configuration of TL1 port settings
SET PERIODS <tn>        set time periods
SET PHONE               set user phone numbers
SET PROGRAM <tn>        configure control programs
SET REPORT              set system alarm reporting parameters
SET RLY <n>             energize relay
SET SEQUENCE            set AC & Standby sequencer parameters
SET STATUS <n>          configure status page
SET SYSTEM              configure all settings
SET TIME <hh:mm:ss>     set time where hh = hours, mm = minutes, ss = seconds
SET TIMEOUT <n>         set user timeout
SET UNIT                set unit name and number
SET USERS <n>           configure a user
SET VI                  set Plant Voltage and Load Channels


SNMP GET <comm name>    set the SNMP GET community name
SNMP OFF                disable SNMP access
SNMP ON                 enable SNMP access
```

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```
SNMP SET <comm name>    set the SNMP SET community name

TRAPS ADD <n>           add a new SNMP Trap recipient to the list of TRAP hosts
TRAPS DELETE <n>        remove a host address from the list of TRAP hosts
TRAPS OCCURRED          disable/enable the systems ability to send SNMP Occurred
                        Alarm TRAPS
TRAPS OFF               disable the systems ability to send SNMP TRAP's
TRAPS ON                enable the system to send SNMP TRAP's
TRAPS PERSISTENT        disable/Enable the systems ability to send SNMP Persistent
                        Alarm TRAPS or set the Persistent Alarms reporting interval
TRAPS RETIRED           disable/enable the systems ability to send SNMP Retired
                        Alarm TRAPS
TRAPS VERSION <V1|V2>   change the version of SNMP TRAP's sent by the system


PRCONFIG LPS                Displays the LPS system adjustment settings
                           alarm setpoints values, and configuration
                           parameters and the LPS hardware equipment
                           inventory for all bays and the MCA node.
PRCONFIG LPS N<#>          Displays only the LPS hardware equipment
                           inventory for the specified bay.
PRCONFIG LPS N<#>-<#>      Displays only the LPS hardware equipment inventory
                           for valid LPS bays and the MCA node that fall
                           within the specified range of LMS node numbers.
PRCONFIG LPS SETTINGS      Displays only the LPS system adjustment settings
                           alarm setpoints values, and configuration parameters.
PRCONFIG LPS INVENTORY     Displays only the LPS hardware equipment
                           inventory for all bays and the MCA node.
PRCONFIG LPS PCU           Displays only the LPS hardware equipment
                           inventory of PCUs
PRCONFIG LPS DISTRIBUTION  Displays only the LPS hardware equipment
                           inventory of bay distribution panels.


Programmed Command:        Command Strings:


where:  <>   anything enclosed in brackets is optional
        n    is a valid number
        t    is a type A, B, F, G, L, R for Analog, Binary,
             Function, Group, LED or Relay
```

Chapter 3. Commands

User Instructions
Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

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HELP VORTEX

Description: Lists all Vortex Interface commands that are available at the current level with a brief description.

Command Level: NA

Syntax: HELP VORTEX
        HELP V

Comments: Only commands available to the current user are listed. The list in the example is for a user that has access to level 6 commands.

Notes: The commands preface by the words SET VORTEX (SET V) can be viewed by entering the word SET VORTEX (SET V) followed by a question mark.

To view the help definition for a single command, enter the command followed by a space then a question mark.

Related Commands: HELP, MENU

Example:

```
Command<6>: HELP VORTEX
ALARMS VORTEX                   list active Power System alarms
ALARMS VORTEX LVD               list active LVD alarms
ALARMS VORTEX MCA               list active MCA alarms
ALARMS VORTEX PCU<n>            list active PCU alarms
ALARMS VORTEX SHUNT             list active SHUNT alarms
ALARMS VORTEX SUBSYSTEM         list active subsystem type alarms
ALARMS VORTEX SYSTEM            list active system type alarms

DOWNLOAD VORTEX                 dump Vortex Power System configuration
                                using XMODEM protocol

PRCONFIG VORTEX                 list settings and equipment inventory
PRCONFIG VORTEX INVENTORY       list equipment inventory
PRCONFIG VORTEX SETTINGS        list settings

SCAN VORTEX                     list present status of Vortex Power System
SCAN VORTEX LVD                 list present status of LVD circuits
SCAN VORTEX MCA                 list present status of MCA
SCAN VORTEX PCU<n>              list present status of specified PCU
SCAN VORTEX SUBSYSTEM           list present status of subsystem data
SCAN VORTEX SYSTEM              list present status of system data

SET VORTEX INTERFACE            Enable/Disable Vortex interface
SET VORTEX LVD<n<t>> DISCONNECT set specified LVD disconnect
                                voltage settings
SET VORTEX LVD RECONNECT        set LVD reconnect voltage setting
SET VORTEX MESSAGE MCA          set MCA custom message
SET VORTEX MESSAGE PCU<n>       set specified PCU custom message
SET VORTEX PASSWORD             set MCA logon password
SET VORTEX PCU<n>               turn specified PCU On or Off

SET VORTEX SYSTEM 25APLACES     set system number of 25A Places
```

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```
SET VORTEX SYSTEM 50APLACES        set system number of 50A Places
SET VORTEX SYSTEM 100APLACES       set system number of 100A Places
SET VORTEX SYSTEM 200APLACES       set system number of 200A Places
SET VORTEX SYSTEM 50%BATONDISCH    set system 50% Battery On Discharge alarm
SET VORTEX SYSTEM BATONDISCH       set system Battery On Discharge alarm
SET VORTEX SYSTEM CALVOLT          set system calibration voltage
SET VORTEX SYSTEM CURLIMIT         set system current limit
SET VORTEX SYSTEM FACTORYCAL       set system cal. voltage to factory default
SET VORTEX SYSTEM FLTVOLT          set system float voltage
SET VORTEX SYSTEM HIVLTALM1        set system High Voltage 1 Alarm
SET VORTEX SYSTEM HIVLTALM2        set system High Voltage 2 Alarm
SET VORTEX SYSTEM HVS              set system High Voltage Shutdown
SET VORTEX SYSTEM INVENTORY        reset the system equipment inventory
SET VORTEX SYSTEM MODE             set Power System mode
SET VORTEX SYSTEM NAGTIMER         set system ACO timer
SET VORTEX SYSTEM OVRCURRENT       set system Overcurrent alarm
SET VORTEX SYSTEM TEMPCOMP         set system Temperature compensation voltage
SET VORTEX SYSTEM TSTEQVOLT        set system test/equalize voltage


SET VORTEX SUBSYSTEM CALVOLT       set subsystem calibration voltage
SET VORTEX SUBSYSTEM FACTORYCAL    set subsystem cal. voltage to factory default
SET VORTEX SUBSYSTEM HIVALM        set subsystem High Voltage alarm
SET VORTEX SUBSYSTEM LVALM         set subsystem Low Voltage alarm
SET VORTEX SUBSYSTEM OVRCURRENT    set subsystem Overcurrent alarm


UPLOAD VORTEX                      configure Vortex Power System by
                                   uploading file using XMODEM
                                   protocol

where:  <>    anything enclosed in brackets is optional
        n     is a valid number
        t     is A or B for Vortex LVD settings
```

INFO

Description: Displays information pages which are available for storing user information.

Command Level: 1

Syntax: INFO

Comments: none

Notes: Each page consists of 20 lines, each line 79 characters in length.

Related Commands: SET INFO

Example:

```
Command<1>: info
INFORMATION PAGE #1
RECTIFIERS:
            RL200D50
            RL400D50 (2)


            FUSES
            C.B.



MAINTENANCE
            BATTERY DISCHARGE ON 01/01/01
```

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LIMITS

Description: Displays the alarm limits for each analog and function input.

Command Level: 2

Syntax: LIMITS[*node_designator*] [*channel_range*] [*node_range*]
LIMITS A[[*node_number*] *channel_number*]
LIMITS F[*channel_number*]
LIM[*node_designator*] [*channel_range*] [*node_range*]
LIM A[[*node_number*] *channel_number*]
LIM F[*channel_number*]

Comments: Typing a command like PRCONFIG A1 will list the entire channel
configuration for analog channel 1 including the limits.

Notes: When using channel_range, only channel types A or F are valid. Except for LPS
distribution points, LPS analog channels cannot be configured to alarm because those
limits are controlled by the MCA and result in binary alarms in the LMS.

Related Commands: none

Example:

```
Command<2>: LIMITS A
ANALOG CHANNEL ALARM LIMITS AS OF 07:36:02 ON 01/01/01.
Chan    Description
 A0001 Analog Channel 1
  Limit /  Name       Class  Condtype            Ntfc  Svef
  70.0 H   HVA2       MAJOR  TOOHIGH             MJ    SA
  Condition Description
THIS VOLTAGE IS TOO HIGH
  60.0 H   HVA1       MAJOR  HIGH                MJ    SA
  Condition Description
THIS VOLTAGE IS HIGH
  50.0 L   LVA1       MINOR  LOW                 MN    NSA
  Condition Description
THIS VOLTAGE IS LOW
  40.0 L   LVA2       MINOR  TOOLOW              MN    NSA
  Condition Description
THIS VOLTAGE IS TOO LOW
 A0002 Analog Channel 2
  Limit /  Name       Class  Condtype            Ntfc  Svef
  7000 H   ABOVE 7000 MAJOR  TOOHIGH             MJ    SA
  Condition Description
THIS CURRENT IS ABOVE 7000 AMPS
  6000 H   ABOVE 6000 MAJOR  HIGH                MJ    SA
  Condition Description
THIS CURRENT IS ABOVE 6000 AMPS
  500  L   BELOW 500  MINOR  LOW                 MN    NSA
  Condition Description
THIS CURRENT IS BELOW 500 AMPS
  100  L   BELOW 100  MINOR  TOOLOW              MN    NSA
  Condition Description
THIS CURRENT IS BELOW 100 AMPS
```

```
Command<6>: LIMITS F
FUNCTION CHANNEL ALARM LIMITS AS OF 07:41:17 ON 02/09/96.
Chan    Description
 F0001 Function Channel 1
  Limit /  Name       Class  Condtype              Ntfc  Svef
  5000.H  ABOVE 5000         TOOHIGH               CR    SA
  Condition Description
CURRENT IS ABOVE 5000 AMPS
  500.0L  BELOW 500          HIGH                  CR    SA
  Condition Description
CURRENT IS BELOW 500 AMPS
       None
       None
 F0002 Function Channel 2
  Limit /  Name       Class  Condtype              Ntfc  Svef
  70.00H  HVA2        MAJOR  TOOHIGH               MJ    SA
  Condition Description
VOLTAGE IS ABOVE 70 VOLTS
  60.00LH HVA1        MAJOR  HIGH                  MJ    SA
  Condition Description
VOLTAGE IS ABOVE 60 VOLTS
  50.00L  LVA1        MINOR  LOW                   MJ    SA
  Condition Description
VOLTAGE IS BELOW 50 VOLTS
  40.00L  LVA2        MINOR  TOOLOW                MJ    SA
  Condition Description
VOLTAGE IS BELOW 40 VOLTS
```

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LOG

Description: Displays the 500 most recent alarms along with their time and date of occurrence and cancellation, as well as if the alarm has been reported (r), acknowledged (user number displayed), or attempted to be reported but the System Alarm Report Retry Time was set to 0 which disables the retry feature (*).

VPS and LPS alarms are also recorded, if a VPS or LPS is connected.

Command Level: 1

Syntax: LOG [*channel_type*] [*channel_designator*] [*group_designator*] [*search_text*]

LOG -*n*, where -*n* lists any entries with occurred/cleared times within the past *n* hours

L [*channel_type*] [*channel_designator*] [*group_designator*] [*search_text*]

Comments: For analog, function, LED, and relay channels; the channel number is followed by a period, and then an alarm type designation. The analog and function alarm type informs whether the alarm is a high (H) or low (L) limit and which of the four limits (1-4) is exceeded. The LED and relay alarm type informs whether the output is energized due to a control program (Pg) or if it was forced (Fc) on by the SET command. The alarm class (if configured) is also listed. Relay information includes whether the relay is energized or released due to programming or manually forced to its current state. Analog or binary alarms or relays can be viewed separately, or one single input can be viewed by itself by entering the command LOG followed by a space and then the character A for analog, B for binary or R for relay, then followed by the node and channel numbers, if desired.

Notes: There may be less than 500 entries if the system is new or the log has been cleared with the CLR LOG command.

Refer to "Chapter 2. Operating LMS1000" for a discussion on the Alarm Log.

A node number appears in the alarm log to indicate the node causing the failure condition, when one of the LMS1000 self diagnostic binary channels B0088-B0095 activates. For example, "B0095.10" indicates there is an "Analog H/W Configuration Error" on node number 10.

Related Commands: CLR LOG

Example:

```
Command<1>: log
ENTIRE ALARM LOG ENTRIES AS OF 12:14:56 ON 01/01/01.
 Chan      Description          Class    Occurred     Ack    Cleared
A0001.2H  Analog Channel 1      MAJOR 11/01 12:13:29   r 00/00 00:00:00
A0001.2H  Analog Channel 1      MAJOR 11/01 12:11:51   r 11/01 12:13:27
A0001.2H  Analog Channel 1      MAJOR 11/01 12:10:52   6  11/01 12:11:37
B0001     Binary Channel 1      MINOR 11/01 12:10:40   6  00/00 00:00:00
A0001.2H  Analog Channel 1      MAJOR 11/01 12:10:23   6  11/01 12:10:26
R0001.Pg  Relay Channel 1       MINOR 11/01 12:09:57   6  00/00 00:00:00
A0001.2H  Analog Channel 1      MAJOR 11/01 12:09:24   6  11/01 12:10:21
A0001.2H  Analog Channel 1      MAJOR 11/01 11:09:00   6  11/01 12:09:21
```

```
B9015      VORTEX System Major   MAJOR 11/01 12:09:06  6  00/00 00:00:00
B9016      VORTEX System Minor   MINOR 11/01 12:08:06  6  00/00 00:00:00
```
_____

```
Command<6>: LOG

ENTIRE ALARM LOG ENTRIES AS OF 13:45:49 ON 05/13/96.
Chan       Description                    Class    Occurred    Ack    Cleared
B0095.10 Analog H/W Configuration Err            05/13 13:45:23   00/00 00/00/00
B0094.09 Node I/O H/W Failure                    05/13 13:44:19   00/00 00/00/00
B0093.08 Node H/W Mismatch                       05/13 13:43:21   05/13 13:43:34
B0092.07 Node Assembly Mismatch                  05/13 13:42:06   05/13 13:42:42
B0091.06 Node Configuration Mismatch             05/13 13:29:37   05/13 13:30:14
B0090.05 Node Watch Dog Reset Error              05/13 13:27:55   05/13 13:28:32
B0087    Foreign Node Error                      05/13 13:26:22   05/13 13:26:58
B0089.03 Node Communication Error                05/13 13:25:20   00/00 00/00/00
B0088.02 Unexpected Response                     05/13 13:24:05   05/13 13:24:42
B0086    I/O Network Failure                     05/13 13:22:53   05/13 13:23:35
B0085    Power System Com Link Failure           05/13 13:22:53   05/13 13:23:35
B0084    Main Chassis Foreign H/W                05/13 13:22:53   05/13 13:23:35
B0083    Main Chassis H/W Mismatch               05/13 13:22:53   05/13 13:23:35
B0082    Main Chassis H/W Failure                05/13 13:22:53   05/13 13:23:35
B0081    Self Diagnostics Error                  05/13 13:22:53   05/13 13:23:35
```

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MAIL

Description: Permits viewing of mail for the user. Information includes the user which sent the mail and the time of posting. The reader is also asked whether he is done with the mail.

Command Level: 1

Syntax: MAIL
MA

Comments: If the user replies yes when asked if he is done with the mail, he will not receive that mail the next time he logs on. If the user is not done with the mail, and he wishes to be notified every time he logs on, he should enter N.

Notes: none

Related Commands: CLR MAIL, SET MAIL

Example:

```
Command<1>: MAIL
Mail from Office Manager posted 01/01/01 08:39:33.
CHECK WATER LEVEL IN BATTERIES TODAY
CALL ME @ 555-4645 IF ANY PROBLEMS
Are you done with this mail? (Y or N) ? Y
```

User Instructions
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MENU

Description: Lists all commands available at the current level.

Command Level: NA

Syntax: MENU
M

Comments: For more detailed information on these commands use the HELP command. Only commands available to the current user are listed. The list in the example is for a user that has access to level 6 commands.

Notes: Programmable commands are also displayed. Energy management commands will not be shown if the option is not installed.

Related Commands: HELP, HELP VORTEX

Example:

```
Command<6>: MENU
Menu:
ACK            ACO            AID            ALARMS           ANSWER
BATTERY        BOARDS         BYE            CHANNELS         CLASS
CLR            CMD            COM            CONFIG           CONNECT
DAC DEL        DAC LIST       DAC SET        DAC SET LOCK OFF DAC SET LOCK ON
DAC STATUS     DATE           DOWNLOAD       EFF              EVENTS
HELP           INFO           IP             LIMITS           LOG
MAIL           MENU           MODE           NETWORK          NODE
OPTIONS        PERIODS        PHONE          POWER            PRCONFIG
PROGRAM        RATE           REPORT         SCAN             SEQUENCE
SET            SNMP           STATS          STATUS           TIME
TIMEOUT        TRAPS          UNIT           UPLOAD           USERS
VI

Programmed Commands:

Vortex Menu:
ALARMS VORTEX
ALARMS VORTEX LVD
ALARMS VORTEX MCA
ALARMS VORTEX PCU
ALARMS VORTEX SHUNT
ALARMS VORTEX SUBSYSTEM
ALARMS VORTEX SYSTEM

DOWNLOAD VORTEX

PRCONFIG VORTEX
PRCONFIG VORTEX INVENTORY
PRCONFIG VORTEX SETTINGS

SCAN VORTEX
SCAN VORTEX LVD
SCAN VORTEX MCA
SCAN VORTEX PCU
```

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```
SCAN VORTEX SUBSYSTEM
SCAN VORTEX SYSTEM

UPLOAD VORTEX
```

_____

```
Command<6>: MENU
Menu:
ACK             ACO             AID             ALARMS          ANSWER
BATTERY         BOARDS          BYE             CHANNELS        CLASS
CLR             CMD             COM             CONFIG          CONNECT
DATE            DOWNLOAD        EFF             EVENTS          HELP
INFO            IP              LIMITS          LOG             MAIL
MENU            MODE            NETWORK         NODE            OPTIONS
PERIODS         PHONE           POWER           PRCONFIG        PROGRAM
RATE            REPORT          SCAN            SEQUENCE        SET
SNMP            STATS           STATUS          TIME            TIMEOUT
TRAPS           UNIT            UPLOAD          USERS           VI

Programmed Commands:
```

User Instructions
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MODE

Description: This command is only available if the TL1 software option is installed in the system. Displays the configuration of the TL1 port settings.

Command Level: 6

Syntax: MODE
MOD

Comments: The "Auto logon user:" attribute shows the number of the user who is automatically logged on by the system. The configuration of the entered user determines the access level of the user session, and is used in determining when a report must be sent.

Notes: The "Auto logon user:" attribute is only displayed if the "Auto logon:" attribute is set to "Enabled".

Related Commands: SET MODE

Example:

TL1/X.25 Software Option Installed

```
Command<6>: MODE
TL1 Mode: Direct
TL1/X.25 Comm Port Setting: 9600, n, 8, 1
Session Timeout:  600 min
Auto logon: Enabled
Auto logon user: User #7
AID delimiter: Yes
```

TL1 (over Ethernet) Software Option Installed

```
Command<6>: MODE
TL1 Mode: Telnet
TCP Keepalive: Enabled
Port: 2020
Session Timeout:  600 min
Auto logon: Enabled
Auto logon user: User #7
AID delimiter: Yes
```

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NETWORK

Description: Lists all commands that begin with NETWORK, and then prompts the user to enter one of the displayed options.

Command Level: 6

Syntax: NETWORK
N

Comments: "IO network is running." is displayed when the network is ready. The follow are displayed if the network is not ready.

"IO network is adding nodes.
IO network commands not ready!"
Indicates a new IO network is being discovered.

"IO network is verifying nodes.
IO network commands not ready!"
Indicates a known network is being verified.

"IO network is failed.
IO network commands not ready!"
Indicates an IO network has failed and no communication to nodes is possible.

"IO network is not initialized.
IO network commands not ready!"
Only displayed for a very short time after a reset.

"IO network state is undefined!
IO network commands not ready!"
Only displayed for a very short time after a reset on a new system.

Notes: Only the commands that the user has access to are listed.

Related Commands: NETWORK INITIALIZE

Example:

```
Command<6>: NETWORK

IO network is running.

Which action?
INITIALIZE
?
```

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NETWORK INITIALIZE

Description: Clears node 0, nodes 21-89, and any X (unmapped) nodes from the database, and then adds all nodes found on the I/O network.

Command Level: 6

Syntax: NETWORK INITIALIZE
N IN

Comments: The system prompts the user to continue. If YES answered, all known nodes are deleted. The system then prompts the user if all associated channels are to be removed. The system then displays all nodes currently found on the network.

Notes: Use of this command generates an entry in the Event Log. This cancels any previous node errors. The Main Cabinet and Vortex Interface (MCA) Nodes do not require discovery. The Main Cabinet and MCA hardware is discovered by other mechanisms.

"IO network is running." is displayed when the network is ready. The follow are displayed if the network is not ready.

"IO network is adding nodes.
IO network commands not ready!"
Indicates a new IO network is being discovered.

"IO network is verifying nodes.
IO network commands not ready!"
Indicates a known network is being verified.

"IO network is failed.
IO network commands not ready!"
Indicates an IO network has failed and no communication to nodes is possible.

"IO network is not initialized.
IO network commands not ready!"
Only displayed for a very short time after a reset.

"IO network state is undefined!
IO network commands not ready!"
Only displayed for a very short time after a reset on a new system.

Related Commands: none

Example:

```
Command<6>: NETWORK INITIALIZE

IO network is running.

WARNING: This command will terminate all alarm processing of remote I/O
Do you wish to continue? (YES or NO): yes

Do you wish to delete associated channels? (Yes or No): yes
```

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```
Deleting Nodes……………
Deleting Analog channels…………
Deleting Binary channels…………
Deleting Relay channels…………

Searching for new nodes

Node#  Name                        Spec. Number   Ser.#  Loc  Echelon Id #
X01    ---                         58212190001    12346  L    1A2B3C4D5F6A
X02    ---                         58212190001    12346  R    1A2B3C4D5F6B
X03    ---                         58212190002    12347  L    1A2B3C4D5F6C
X04    ---                         58212190002    12347  R    1A2B3C4D5F6D
```

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NODE

Description: Lists all commands that begin with NODE, and then prompts the user to enter one of the displayed options.

Command Level: 2

Syntax: NODE
NO

Comments: none

Notes: Only the commands that the user has access to are listed.

"IO network is running." is displayed when the network is ready. The follow are displayed if the network is not ready.

"IO network is adding nodes.
IO network commands not ready!"
Indicates a new IO network is being discovered.

"IO network is verifying nodes.
IO network commands not ready!"
Indicates a known network is being verified.

"IO network is failed.
IO network commands not ready!"
Indicates an IO network has failed and no communication to nodes is possible.

"IO network is not initialized.
IO network commands not ready!"
Only displayed for a very short time after a reset.

"IO network state is undefined!
IO network commands not ready!"
Only displayed for a very short time after a reset on a new system.

Related Commands: NODE ADD, NODE CONFIG, NODE DELETE, NODE LIST, NODE REPLACE

Example:

```
Command<6>: NODE

IO network is running.

Which action?
ADD    CONFIG    DELETE    LIST    REPLACE
?
```

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User Instructions
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NODE ADD

Description: Adds to the database all new nodes found on the network, and then allows the nodes to be configured.

Command Level: 6

Syntax: NODE ADD
NO AD

Comments: The system searches for new nodes on the network and then lists all nodes (new and old) by Node#, Name, Spec. Number, Ser.# (serial number), Loc (location), and Echelon Id #. The system prompts the user to select a node to configure. You select the node by entering the Node# from the list. Note that the node numbers for unmapped nodes (nodes that were not previously configured) are temporarily listed as X01 through X99 for reference. Once a node is selected by it's number, the user configures the node as explained under the NODE CONFIGURE command.

Notes: Use of this command generates an entry in the Event Log. The Main Cabinet, VPS MCA Interface, and LPS MCA Interface Nodes are automatically added to the system by other mechanisms, and are not shown in the list.

"IO network is running." is displayed when the network is ready. The follow are displayed if the network is not ready.

"IO network is adding nodes.
IO network commands not ready!"
Indicates a new IO network is being discovered.

"IO network is verifying nodes.
IO network commands not ready!"
Indicates a known network is being verified.

"IO network is failed.
IO network commands not ready!"
Indicates an IO network has failed and no communication to nodes is possible.

"IO network is not initialized.
IO network commands not ready!"
Only displayed for a very short time after a reset.

"IO network state is undefined!
IO network commands not ready!"
Only displayed for a very short time after a reset on a new system.

Related Commands: NODE CONFIG, NODE DELETE, NODE LIST, NODE REPLACE

Example:

```
Command<6>: NODE ADD

IO network is running.

Searching for new nodes
```

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```
Node#  Name                              Spec. Number   Ser.#  Loc  Echelon Id #
X01    ---                               58212190001    12346  L    1A2B3C4D5F6A
X02    ---                               58212190001    12346  R    1A2B3C4D5F6B
X03    ---                               58212190002    12347  L    1A2B3C4D5F6C
X04    ---                               58212190002    12347  R    1A2B3C4D5F6D

Which node? : X01
Node Number: ---
Node Number: 01
Node Name: ---
Node Name: Main Distribution Bay 1
Spec Number: 58212190001
Spec Number:
Serial Number: 12346
Serial Number:
Location Number: L
Location Number:
Module 1 List Number: --
Module 1 List Number: AB
Module 2 List Number: --
Module 2 List Number: D
Module 3 List Number: --
Module 3 List Number: T
Module 4 List Number: --
Module 4 List Number: BK
Save changes (Y or N): Y

Storing node configuration

Edit Node Channels (Y or N): Y
Enter channel (e.g. A12 or A1-6) or D to display.
Add Channel: A1
Add Channel: A7-11
Add Channel: B1-4
Add Channel:

Enter channel (e.g. A12 or A1-6) or D to display.
Del Channel: A11
Del Channel:

Configure another node? (Y or N):
```

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User Instructions
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NODE CONFIG

Description: Allows configuration information of nodes in the database to be entered or edited.

Command Level: 6

Syntax: NODE CONFIG [[*X*]*node_number*]
         NO CO [[*X*]*node_number*]

Comments: If no modifier is used when entering the command, the system lists all nodes by Node#, Name, Spec. Number, Ser.# (serial number), Loc (location), and Echelon Id #. The system then prompts the user to select a node to configure. You select the node by entering the Node# from the list. Note that the node numbers for unmapped nodes (nodes that were not previously configured) are temporarily listed as X01 through X99 for reference. Once a node is selected by it's number, the user is presented with the configuration information that can be entered or edited. The Echelon Identifier is preset and cannot be changed.

Notes: Use of this command generates an entry in the Event Log. For a VPS Power System, the Main Cabinet and Vortex Interface (MCA) Nodes do not contain user configurable information, and are not shown in the list. Channels are added with a default channel configuration. For an LPS Power System, some attributes are preset or do not apply and are not configurable. Channels are added automatically.

"IO network is running." is displayed when the network is ready. The follow are displayed if the network is not ready.

   "IO network is adding nodes.
   IO network commands not ready!"
   Indicates a new IO network is being discovered.

   "IO network is verifying nodes.
   IO network commands not ready!"
   Indicates a known network is being verified.

   "IO network is failed.
   IO network commands not ready!"
   Indicates an IO network has failed and no communication to nodes is possible.

   "IO network is not initialized.
   IO network commands not ready!"
   Only displayed for a very short time after a reset.

   "IO network state is undefined!
   IO network commands not ready!"
   Only displayed for a very short time after a reset on a new system.

Related Commands: NODE ADD, NODE DELETE, NODE LIST, NODE REPLACE

Example:

```
Command<6>: NODE CONFIG

IO network is running.
```

```
Node#   Name                                Spec. Number    Ser.#  Loc   Echelon Id #
 01     ---                                 58212190001     12346  L     1A2B3C4D5F6A
 02     ---                                 58212190001     12346  R     1A2B3C4D5F6B
 03     ---                                 58212190002     12347  L     1A2B3C4D5F6C
 04     ---                                 58212190002     12347  R     1A2B3C4D5F6D

Which node? : 02
Node Number: ---
Node Number: 02
Node Name: ---
Node Name: Main Distribution Bay 1
Spec Number: 58212190001
Spec Number:
Serial Number: 12346
Serial Number:
Location Number: R
Location Number:
Module 1 List Number: --
Module 1 List Number: AB
Module 2 List Number: --
Module 2 List Number: D
Module 3 List Number: --
Module 3 List Number: T
Module 4 List Number: --
Module 4 List Number: BK
Save changes (Y or N): Y

Storing node configuration

Edit Node Channels (Y or N): Y
Enter channel (e.g. A12 or A1-6) or D to display.
Add Channel: D
A0201 Analog channel 0201
A0207 Analog channel 0207
A0208 Analog channel 0208
A0209 Analog channel 0209
A0210 Analog channel 0210
B0201 Binary channel 0201
B0202 Binary channel 0202
B0203 Binary channel 0203
B0204 Binary channel 0204
R0201 Relay  channel 0201
Add Channel:
Enter channel (e.g. A12 or A1-6) or D to display.
Del Channel: A10
Del Channel:

Configure another node? (Y or N):
```

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NODE DELETE

Description: Deletes nodes from the database.

Command Level: 6

Syntax: NODE DELETE [[*X*]*node_number*]
NO DE [[*X*]*node_number*]

Comments: If no modifier is used when entering the command, the system lists all nodes by Node#, Name, Spec. Number, Ser.# (serial number), Loc (location), and Echelon Id #. The system then prompts the user to select a node to delete. You select the node by entering the Node# from the list. Note that the node numbers for unmapped nodes (nodes that were not previously configured) are temporarily listed as X01 through X99 for reference. If a node that was previously configured is deleted, the user may also delete the node's channels.

Notes: Use of this command generates an entry in the Event Log. This cancels any previous node errors. The Main Cabinet, VPS MCA Interface, and LPS MCA Interface Nodes cannot be deleted, and are not shown in the list.

"IO network is running." is displayed when the network is ready. The follow are displayed if the network is not ready.

"IO network is adding nodes.
IO network commands not ready!"
Indicates a new IO network is being discovered.

"IO network is verifying nodes.
IO network commands not ready!"
Indicates a known network is being verified.

"IO network is failed.
IO network commands not ready!"
Indicates an IO network has failed and no communication to nodes is possible.

"IO network is not initialized.
IO network commands not ready!"
Only displayed for a very short time after a reset.

"IO network state is undefined!
IO network commands not ready!"
Only displayed for a very short time after a reset on a new system.

Related Commands: NODE ADD, NODE CONFIG, NODE LIST, NODE REPLACE

Example:

```
Command<6>: NODE DELETE

IO network is running.

Node#  Name                          Spec. Number   Ser.# Loc  Echelon Id #
 01    ---                           58212190001    12346 L    1A2B3C4D5F6A
 02    ---                           58212190001    12346 R    1A2B3C4D5F6B
```

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```
03      ---                             58212190002    12347   L    1A2B3C4D5F6C
04      ---                             58212190002    12347   R    1A2B3C4D5F6D

Delete which node ?: 02

WARNING: Alarm processing for node 02 will terminate if the node is deleted
Do you wish to continue? (YES or NO): yes

Do you wish to delete node 02 channels? (Yes or No): yes

Deleting Analog channels…………
Deleting Binary channels…………
Deleting Relay channels…………
```

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NODE INITIO

Description: Permits the user to re-initialize the I/O hardware configuration of either the Main Cabinet or an Expansion Cabinet. This operation causes the I/O hardware configuration stored in nonvolatile memory to be replaced with the configuration of the hardware actually installed.

Command Level: 6

Syntax: NODE INITIO [*node_number*]

Comments: A user may select a node to be re-initialized by its node number from a list of nodes with application node numbers. Nodes that have not been configured with a node number cannot be re-initialized.

Notes: This command does not work with any Main Cabinet, VPS MCA Interface, or LPS MCA Interface Nodes.

"IO network is running." is displayed when the network is ready. The follow are displayed if the network is not ready.

> "IO network is adding nodes.
> IO network commands not ready!"
> Indicates a new IO network is being discovered.

> "IO network is verifying nodes.
> IO network commands not ready!"
> Indicates a known network is being verified.

> "IO network is failed.
> IO network commands not ready!"
> Indicates an IO network has failed and no communication to nodes is possible.

> "IO network is not initialized.
> IO network commands not ready!"
> Only displayed for a very short time after a reset.

> "IO network state is undefined!
> IO network commands not ready!"
> Only displayed for a very short time after a reset on a new system.

Related Commands: none

Example:

```
Command<6>: NODE INITIO

IO network is running.
Enter '0' for Main chassis
Or the number of a configured node shown below

Node#  Name                            Spec. Number   Ser.#  Loc  Echelon Id #
  05   midddut                         58212190001    12346  L    1A2B3C4D5F6A
 X01   ---                             58212190001    12346  R    1A2B3C4D5F6B
 X02   ---                             58212190002    12347  L    1A2B3C4D5F6C
```

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```
 X03    ---                              58212190002      12347  R     1A2B3C4D5F6D

Which node? : 5
Reinitializing node …
```

_____

```
Command<6>: NODE INITIO 5

IO network is running.
Reinitializing node …
```

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NODE LIST

Description: Lists information on all nodes in the database.

Command Level: 2

Syntax: NODE LIST [[*X*]*node_number*]
NODE LIST [LONG]
NO LI [[*X*]*node_number*]
NO LI L

Comments: If no modifier is used when entering the command, all nodes in the database are listed. The system lists all nodes by Node#, Name, Spec. Number, Ser.# (serial number), Loc (location), and Echelon Id #. When a node number modifier or the "LONG" modifier is used; node card information, distribution module information, and channels are also listed. Note that the node numbers for unmapped nodes (nodes that were not previously configured) are temporarily listed as X01 through X99 for reference.

Notes: This command does not display any Main Cabinet, VPS MCA Interface, or LPS MCA Interface Nodes.

"IO network is running." is displayed when the network is ready. The follow are displayed if the network is not ready.

"IO network is adding nodes.
IO network commands not ready!"
Indicates a new IO network is being discovered.

"IO network is verifying nodes.
IO network commands not ready!"
Indicates a known network is being verified.

"IO network is failed.
IO network commands not ready!"
Indicates an IO network has failed and no communication to nodes is possible.

"IO network is not initialized.
IO network commands not ready!"
Only displayed for a very short time after a reset.

"IO network state is undefined!
IO network commands not ready!"
Only displayed for a very short time after a reset on a new system.

"LPS interface is running" is displayed when the LPS data is initialized.
Otherwise, "LPS interface is initializing!" is displayed.

Related Commands: NODE ADD, NODE CONFIG, NODE DELETE, NODE REPLACE

Example:

```
Command<6>: node list

IO network is running.
```

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```
LPS interface is running


Node#  Name                       Spec.#        Ser.#
-----------------------------------------------------------------
 01    LPS Bay #1                 1234567890123 3000000001
 02    LPS Bay #2                 XXXXXXXXXXXXX 1482184792

Node#  Name                       Spec.#        Ser.#  Loc  Echelon Id #
------------------------------------------------------------------------
 21    ---                        507606        00001  RR   000581984200
 22    ---                        bottom        65535  a3   00a015799100

Node#  Name                       Spec.#        Ser.#
-----------------------------------------------------------------
 99    LPS MCA node               1234567890123 3000000001
```
_____

```
Command<6>: node list

IO network is running.

LPS interface is running


Node#  Name                       Spec.#        Ser.#
-----------------------------------------------------------------
 01    LPS Bay #1                 1234567890123 3000000001
 02    LPS Bay #2                 XXXXXXXXXXXXX 1482184792

Node#  Name                       Spec.#        Ser.#  Loc  Echelon Id #
------------------------------------------------------------------------
 22    ---                        bottom        65535  a3   00a015799100

Node#  Name                       Spec.#        Ser.#
-----------------------------------------------------------------
 99    LPS MCA node               1234567890123 3000000001

Node#  Name                       Spec.#        Ser.#  Loc  Echelon Id #
------------------------------------------------------------------------
X01    ---                        507606        00001  RR   000581984200
```

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NODE REPLACE

Description: Replaces nodes in the database with a new node found on the network.

Command Level: 6

Syntax: NODE REPLACE [*node_number*]
NO RE [*node_number*]

Comments: If no modifier is used when entering the command, the system lists all nodes by Node#, Name, Spec. Number, Ser.# (serial number), Loc (location), and Echelon Id #. The system then prompts the user to select a node to be replaced. You select the node by entering the Node# from the list. Note that the node numbers for unmapped nodes (nodes that were not previously configured) are temporarily listed as X01 through X99 for reference. The node selected is deleted. If a node that was previously configured is deleted, the user may also delete the node's channels. The system then searches for new nodes on the network and then lists all nodes (new and old). The user is prompted to enter the name of the node which is to replace the node deleted.

Notes: Use of this command generates an entry in the Event Log. This cancels any previous node errors. Do not use this command to replace a Node with a different type of Node. To replace a Node with a different type of Node first delete the Node using the command NODE DELETE, then add the new Node using the command ADD NODE. The Main Cabinet, VPS MCA Interface, and LPS MCA Interface Nodes cannot be replaced.

"IO network is running." is displayed when the network is ready. The follow are displayed if the network is not ready.

"IO network is adding nodes.
IO network commands not ready!"
Indicates a new IO network is being discovered.

"IO network is verifying nodes.
IO network commands not ready!"
Indicates a known network is being verified.

"IO network is failed.
IO network commands not ready!"
Indicates an IO network has failed and no communication to nodes is possible.

"IO network is not initialized.
IO network commands not ready!"
Only displayed for a very short time after a reset.

"IO network state is undefined!
IO network commands not ready!"
Only displayed for a very short time after a reset on a new system.

Related Commands: NODE ADD, NODE CONFIG, NODE DELETE, NODE LIST

Example:

```
Command<6>: NODE REPLACE
```

```
IO network is running.

Node#   Name                            Spec. Number    Ser.#   Loc   Echelon Id #
 01     ---                             58212190001     12346   L     1A2B3C4D5F6A
 02     ---                             58212190001     12346   R     1A2B3C4D5F6B
 03     ---                             58212190002     12347   L     1A2B3C4D5F6C
 04     ---                             58212190002     12347   R     1A2B3C4D5F6D

Replace which node?: 02

WARNING: Alarm processing for node 02 will terminate if the node is deleted
Do you wish to continue? (YES or NO): yes

Node 02 deleted!
Searching for new nodes

Node#   Name                            Spec. Number    Ser.#   Loc   Echelon Id #
 01     ---                             58212190001     12346   L     1A2B3C4D5F6A
 03     ---                             58212190002     12347   L     1A2B3C4D5F6C
 04     ---                             58212190002     12347   R     1A2B3C4D5F6D
X01     ---                             58212190001     12346   R     1A2B3C4D5F6E

Select node to replace node 02?: X01

Storing node configuration

Node#   Name                            Spec. Number    Ser.#   Loc   Echelon Id #
 01     ---                             58212190001     12346   L     1A2B3C4D5F6A
 02     ---                             58212190001     12346   R     1A2B3C4D5F6B
 03     ---                             58212190002     12347   L     1A2B3C4D5F6C
 04     ---                             58212190002     12347   R     1A2B3C4D5F6D
```

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Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

OPTIONS

Description: Lists all available options, and indicates which options are currently installed in the system. Also shows the port assigned to the option, if applicable.

Command Level: 2

Syntax: OPTION
O

Comments: "Status" parameters include installed/not installed which indicates if the option is or is not installed in your system, enabled/disabled which indicates if all system resources required for the option to operate properly are or are not available (disabled may also be shown to indicate if the option has been deactivated by a user via a command, if available), and hardware failure which indicates a hardware resource required by the option has been diagnosed as failed. The "Port Assigned" parameters include RS-232, OEM1, OEM2, Vortex, and Internal. This parameter gives the designation of the serial communications port assigned to this option during option installation. These designations match the silkscreening on the system cabinet with the exception of the "internal" port, which is inside the cabinet.

Notes: none

Related Commands: none

Example:

```
Command<6>: options

SYSTEM OPTIONS    AS OF 14:15:15 ON 12/10/03.

   Option Name               Status              Port Assigned
   -----------               ------              -------------
   Local Port                installed,enabled   RS-232 Port
   Modem Port                installed,enabled   Internal Port
   Vortex Port               not installed
   TL1/X.25                  not installed
   TL1 Over Telnet           not installed
   LPS Port                  installed,enabled   OEM2 Port
   External Modem            not installed
   AC Analyzer               not installed
   Front Panel Display       not installed
   AC & Diesel Sequencers    not installed
   Energy Management         installed,enabled   Not Required
   Power Metering            installed,enabled   Not Required
   SNMP                      not installed       Ethernet
   Web Interface             installed,enabled   Ethernet
   Door Access Controller    not installed
   Gateway Port              installed,enabled   OEM1
```

PERIODS

Description: Displays the 8 time intervals available for use in control programs.

Command Level: 2

Syntax: PERIODS
             PE

Comments: These time periods are denoted in control programs by the character P followed by a number (1-8).

Notes: none

Related Commands: SET PERIODS

Example:

```
Command<2>: periods
TIME PERIOD No. 1 - FROM 08:00:00  TO 08:10:00
TIME PERIOD No. 2 - FROM           TO
TIME PERIOD No. 3 - FROM           TO
TIME PERIOD No. 4 - FROM           TO
TIME PERIOD No. 5 - FROM           TO
TIME PERIOD No. 6 - FROM 23:59:45  TO 00:00:00
TIME PERIOD No. 7 - FROM           TO
TIME PERIOD No. 8 - FROM           TO
```

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PHONE

Description: Displays the phone numbers of the logged on user only.

Command Level: 1

Syntax: PHONE

Comments: Additional information includes the valid days of the week and hours of the day that the primary phone number is valid (Sunday =1).

Notes: The alternate phone number is for calls during non-valid days and hours.

Related Commands: SET PHONE

Example:

```
Command<1>: PHONE
YOUR PHONE NUMBERS:
  Primary Phone: 5557685
  Primary Phone Valid Days: 2-6
  Primary Phone Valid Hours: 08-16
  Alternate Phone: 5552423
```

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POWER

Description: Displays power consumption data for function channels configured to calculate power

Command Level: 1

Syntax: POWER
PO
POWER CSV
PO CSV

Comments: Power consumption data is generated and stored for function channels configured with the UNIT TEXT of KW, and the appropriate program line to multiply the value of the analog channel monitoring system voltage times the value of the analog channel monitoring load current, then divide this product by 1000 (or multiple it by 0.001). Power consumption data consists of power consumed for current day, current week, and current month. In addition, power consumption data for the previous day, previous week, and previous month is also stored and displayed.

Entering the command modifier CSV displays the power consumption report in the "comma separated value" format. This allows the data to be imported into a spreadsheet.

Notes: Available only if the Power Metering software option is installed.

Related Commands: CLR POWER

Example:

```
Command<1>: POWER
POWER CONSUMPTION STATISTICS  AS OF 13:04:45 ON 01/01/01
F0001 POWER STATS: LOADA POWER
    Daily
    04/28/98: 55.07 KWH
    04/29/98: 29.80 KWH
    Weekly
    04/19/98 THROUGH 04/25/98: 384.8 KWH
    04/26/98 THROUGH 04/29/98: 194.9 KWH
    Monthly
    03/14/98 THROUGH 03/31/98: 887.9 KWH
    04/01/98 THROUGH 04/29/98: 1505.0 KWH
F0002 POWER STATS: BDFB POWER
    Daily
    04/28/98: 109.20 KWH
    04/29/98: 59.17 KWH
    Weekly
    04/19/98 THROUGH 04/25/98: 762.8 KWH
    04/26/98 THROUGH 04/29/98: 386.8 KWH
    Monthly
    03/14/98 THROUGH 03/31/98: 1868.0 KWH
    04/01/98 THROUGH 04/29/98: 3098.0 KWH
F0003 POWER STATS: LOADB POWER
    Daily
    04/28/98: 147.40 KWH
    04/29/98: 79.85 KWH
```

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```
Weekly
04/19/98 THROUGH 04/25/98: 1036.0 KWH
04/26/98 THROUGH 04/29/98: 524.0 KWH
Monthly
03/14/98 THROUGH 03/31/98: 2583.0 KWH
04/01/98 THROUGH 04/29/98: 4233.0 KWH
```

_____

The following is displayed when the POWER command is entered and the Power Metering software option is not installed.

```
Command<1>: POWER
Bad command
```

_____

The following is an example using the "comma separated value" format.

```
Command<1>: POWER CSV
POWER CONSUMPTION STATISTICS AS OF 13:04:45 ON 04/29/98
LOADA POWER, 55.07 KWH, 29.80 KWH, 384.8 KWH, 194.9 KWH, 887.9 KWH, 1505.0 KWH
BDFB POWER, 109.20 KWH, 59.17 KWH, 762.8 KWH, 386.8 KWH, 1868.0 KWH, 3098.0 KWH
LOADB POWER, 147.40 KWH, 79.85 KWH, 1036.0 KWH, 524.0 KWH, 2583.0 KWH, 4233.0 KWH
```

User Instructions
Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

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PRCONFIG

Description: Displays the current configuration of each analog and binary input, all function channels, all energy management channels, and the relay and LED alarm configuration.

Command Level: 2

Syntax: PRCONFIG [*channel_type*] [*channel_designator*] [*channel_range*] [*node_designator*] [*node_range*] [*group_designator*]
P [*channel_type*] [*channel_designator*] [*channel_range*] [*node_designator*] [*node_range*] [*group_designator*]

Comments: To display the limits of the analog channels, use the LIMITS command, or enter the command PRCONFIG A*n* (where *n* is [*node_number*]*channel_number*). To display the control program for an LED or a relay, use the PROGRAM command, or enter the command PRCONFIG R*n* (where *n* is [*node_number*]*channel_number*). The group_designator option displays the channel designators and channel names in the group.

Notes: Analog, binary, energy management, LED, function, or relay channel configurations can be viewed separately, or one single configuration can be viewed by itself by entering the command PRCONFIG followed by a space and then the character A for analog, B for binary, E for energy management, L for LED, F for function, or R for relay, followed by the number, if desired. This command will only display active energy management channels, unless PRCONFIG E was issued.

The condition type, notification code, and service effect fields are not displayed in a relay or LED channel configuration when the alarm type is set to N.

Analog and binary channels are automatically mapped to MCA parameters when the VPS or LPS MCA Interface is used. Configurations for these analog and binary channels can be displayed using the PRCONFIG command and options. Refer to Tables 2-1 through 2-3 for a correlation between channels and mapped VPS MCA and LPS MCA parameters. To view settings and equipment inventory of just the VPS or LPS, use the PRCONFIG VORTEX or PRECONFIG LPS command and options. These commands are explained next.

Related Commands: PRCONFIG LPS, PRCONFIG VORTEX

Example:

```
Command<2>: PRCONFIG
ANALOG CHANNEL CONFIGURATION AS OF 07:38:01 ON 01/01/01.
Chan     Description              Act Rpt Pol Scale 4-20 Unit Off-Dly-On
 A0001 Analog Channel 1            Y   Y   +  100.0  N   Amps   0s       0s
    Sub-access ID       Montype   Monfmt
 ANALOG1             DCVOLTS        D
 A0002 Analog Channel 2            Y   Y   -  100.0  N   Amps   0s       0s
    Sub-access ID       Montype   Monfmt
 ANALOG2             DCVOLTS        I
BINARY CHANNEL CONFIGURATION AS OF 07:38:21 ON 02/09/01.
Chan     Description               Act Rpt Cont Class Off-Dly-On
 B0001 Binary Channel 1             Y   Y   CC            0s       0s
    Sub-access ID         Condtype        Ntfc  Svef
```

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```
  BINARY1                HIGH                  CR    SA
 Condition Description
BINARY CHANNEL B01'S CONDITION DESCRIPTION
 B0002 Binary Channel 2                  Y   Y   CO        0s     0s
    Sub-access ID        Condtype       Ntfc Svef
  BINARY2                HIGH                  CR    NSA
 Condition Description
BINARY CHANNEL B02'S CONDITION DESCRIPTION
ENERGY MANAGEMENT CHANNEL CONFIGURATION AS OF 07:16:07 ON 02/09/01.
Chan    Description                 Act Capacity  Sht RFA TR  Dsl
 E0002 Energy Mngmt Rectifier 2          Y   100.0   A34 B34 R34  Y


FUNCTION CHANNEL CONFIGURATION AS OF 07:38:06 ON 02/09/01.
Chan    Description                 Act Rpt Pol Unit Off-Dly-On
 F0001 Function Channel 1                 Y   Y   +  Amps   0s     15s
    Sub-access ID        Montype   Monfmt
 FUNCTION1              DCVOLTS      I
 F0002 Function Channel 2                 Y   Y   +  Amps   0s     0s
    Sub-access ID        Montype   Monfmt
 FUNCTION2              DCVOLTS      I
LED CHANNEL CONFIGURATION AS OF 07:33:21 ON 02/09/01.
Chan    Description                 Act Alm Rpt Class Off-Dly-On
 L0001 LED Channel 1                   Y   Y   Y        0s     0s
    Sub-access ID     Ctrltype       Condtype       Ntfc Svef
 LED1              AIRCOND    HIGH                  CR    SA
 Condition Description
LED CHANNEL L01'S CONDITION DESCRIPTION
 L0002 LED Channel 2                   Y   Y   Y        0s     0s
    Sub-access ID     Ctrltype       Condtype       Ntfc Svef
 LED2                         LOW                  CR    NSA
 Condition Description
LED CHANNEL L02'S CONDITION DESCRIPTION
RELAY CHANNEL CONFIGURATION AS OF 07:38:12 ON 02/09/01.
Chan    Description                 Act Alm Rpt Class Set ACO Cycle Off-Dly-On
 R0001 Relay Channel 1                 Y   Y   Y        N   Y   0m    0s     0s
    Sub-access ID     Ctrltype       Condtype       Ntfc Svef
 RELAY1                       HIGH                  CR    NSA
 Condition Description
RELAY CHANNEL R01'S CONDITION DESCRIPTION
 R0002 Relay Channel 2                 Y   Y   Y        N   N   0m    0s     0s
    Sub-access ID     Ctrltype       Condtype       Ntfc Svef
 RELAY2                       LOW                  CR    NSA
 Condition Description
RELAY CHANNEL R02'S CONDITION DESCRIPTION

GROUP 1 CONFIGURATION: Group No. 1
GROUP 2 CONFIGURATION: Group No. 2
```

_____

```
Command<6>: P A0001
ANALOG CHANNEL CONFIGURATION AS OF 07:01:03 ON 02/09/01.
Chan    Description             Act Rpt Pol Scale 4-20 Unit Off-Dly-On
 A0001 Analog Channel 1             Y   Y   +  100.0   N  Amps   0s     0s
    Sub-access ID       Montype   Monfmt
 ANALOG1              DCVOLTS      D
 LIMITS CONFIGURATION
```

```
 Limit /  Name        Class  Condtype                  Ntfc  Svef
 70.0 H  HVA2         MAJOR  TOOHIGH                   MJ    SA
 Condition Description
VOLTAGE IS TOO HIGH
 60.0 H  HVA1         MAJOR  HIGH                      MJ    SA
 Condition Description
VOLTAGE IS HIGH
 50.0 L  LVA1         MINOR  LOW                       MN    NSA
 Condition Description
VOLTAGE IS LOW
 40.0 L  LVA2         MINOR  TOOLOW                    MN    NSA
 Condition Description
VOLTAGE IS TOO LOW
```
_____

```
Command<2>: PRCONFIG A9065


ANALOG CHANNEL CONFIGURATION AS OF 11:13:06 ON 02/02/01.
Chan     Description              Act Rpt Pol Scale 4-20 Unit Off-Dly-On
 A9065  Vortex System Voltage     Y   N   +   ---   --   VDC   ---   ---
    Sub-access ID        Montype  Monfmt
                                    I
```
_____

```
Command<2>:  PRCONFIG B65
BINARY CHANNEL CONFIGURATION AS OF 11:16:14 ON 02/02/01.
Chan     Description              Act Rpt Cont Class Off-Dly-On
 B9065 Vortex System High Voltage 1    Y   N   --            0s      0s
    Sub-access ID           Condtype        Ntfc  Svef
                                            CR    SA
 Condition Description
```
_____

```
Command<6>: P E1
ENERGY MANAGEMENT CHANNEL CONFIGURATION AS OF 16:33:32 ON 09/11/01.
Chan   Description               Act Capacity  Sht RFA TR  Dsl
 E0001 Energy Mngmt PCU1          Y    100.0   A70 B84 --- Y
```

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PRCONFIG LPS

Description: Displays the current settings and equipment inventory of the LPS Power System.

Command Level: 2

Syntax: P LP, P LP S, P LP I, P LP P, P LP D, P LP R, P LP N<#>, P LP N<#>-<#>

Comments: The settings or equipment inventory of the LPS can be viewed separately by entering the command P LP followed by a space and then the specifier SETTINGS or INVENTORY.

```
Command<6>: p lp ?
PRCONFIG LPS                Displays the LPS system adjustment settings
                              alarm setpoints values, and configuration
                              parameters and the LPS hardware equipment
                              inventory for all bays and the MCA node.
PRCONFIG LPS N<#>           Displays only the LPS hardware equipment
                              inventory for the specified bay.
PRCONFIG LPS N<#>-<#>       Displays only the LPS hardware equipment
                              inventory for valid LPS bays and the MCA
                              node that fall within the specified range of LMS
                              node numbers.
PRCONFIG LPS SETTINGS       Displays only the LPS system adjustment settings
                              alarm setpoints values, and configuration
                              parameters.
PRCONFIG LPS INVENTORY      Displays only the LPS hardware equipment
                              inventory for all bays and the MCA node.
PRCONFIG LPS PCU            Displays only the LPS hardware equipment
                              inventory of PCUs
PRCONFIG LPS DISTRIBUTION   Displays only the LPS hardware equipment
                              inventory of bay distribution panels.
```

Notes:

Low voltage disconnect settings are only displayed for installed LVDs.

In the event of a PCU failure, the inventory displayed for the failed PCU is as follows.

```
PCU01-No Reply
PCU02-No Reply
```

Subsystem shunts are only displayed if a subsystem is installed.

Related Commands: PRCONFIG, PRCONFIG VORTEX

Example:

```
Command<6>: p lp

LPS POWER SYSTEM SETTINGS AS OF 14:21:32 ON 12/10/03.

System Adjustment Setpoints
    Description                           Value   Units
  Float Voltage                          52.10   VDC
```

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```
    Test/Equalize Voltage                    52.10   VDC
    High Voltage Shutdown                    57.60   VDC
    Plant Current Limit                        800   Amps

System Alarm Setpoints
    Description                            Value   Units
  High Voltage #1 Alarm                    55.60   VDC
  High Voltage #2 Alarm                    56.60   VDC
  Battery on Discharge Alarm               51.10   VDC
  Very Low Voltage Alarm                   47.10   VDC
  Total Load Overcurrent Alarm             5100    Amps
  A Load Overcurrent Alarm                 2600    Amps
  B Load Overcurrent Alarm                 2100    Amps
  High Temperature #1 Alarm                  99    DegC
  High Temperature #2 Alarm                  99    DegC
  Low Temperature #1 Alarm                  -42    DegC
  Low Temperature #2 Alarm                  -40    DegC

System Configuration Setpoints
    Description                            Value   Units
  Audible Silent Time                        10    Minutes
  Manual Test/Equalize Time                   2    Hours
  Relay Test Time                            20    Seconds
  Auto Equalize Time Multiplier               1
  Temperature Compensation Slope          0.090   VDC/DegC
  Maximum Temp. Compensation Voltage      55.90   VDC
  Minimum Temp. Compensation Voltage      50.05   VDC

LPS interface is running


LPS EQUIPMENT INVENTORY AS OF 14:21:34 ON 12/10/03.


Bay 1 - LPS Bay #1
    Spec. #: 1234567890123    S/N:-1294967295


        Description                    Spec. Number      Ser. #      FW Ver.
    -------------------------------------------------------------------------
    Bay Router 1-01:
    This is the ROUTER on the MCA BD 509478          2801621     1.0.1.0

    Dist. Panel 1-01:
    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525           50331648    2.0.3.0
        Positions     Element Type  Load      Description
          01--02         Fuse         B      Fuse 01-01 Load
          03--06         Fuse         B      Fuse 01-03 Load
          07--12         Fuse         B      Fuse 01-07 Load
          13--20         Fuse         B      Fuse 01-13 Load
          21--24         Breaker      B      Breaker 01-21 Load

    Dist. Panel 1-02:
    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525          50397185    2.0.3.0
        Positions     Element Type  Load      Description
          25--26         Breaker      B      Breaker 01-25 Load
          27--30         Breaker      B      Breaker 01-27 Load
          31--36         Breaker      B      Breaker 01-31 Load
```

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```
        37--44          Breaker     B     Breaker 01-37 Load
        45--48       --- open ---


  PCU: -48 VDC Output
  Pos.  Cap.     Description                      Spec. Number        Ser. #      FW
Ver.
   -----------------------------------------------------------------------------
  01-01 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401              33554432   2.0.2.0
  01-02 --- open ---
  01-03 --- open ---
  01-04 --- open ---
  01-05 --- open ---
  01-06 --- open ---
  01-07 --- open ---
  01-08 --- open ---
  01-09 --- open ---
  01-10 --- open ---


  CAN I/O Cards:
  Pos.        Description                    Spec. Number      Ser. #      FW Ver.
   -----------------------------------------------------------------------------
  01-01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348   67108864     2.0.4.0
  01-02 --- open ---
  01-03 --- open ---
  01-04 This CAN I/O board is in loc 1-4 ABE SPEC# 524550   84082691     2.0.5.0
  01-05 --- open ---
  01-06 --- open ---
  01-07 --- open ---



Bay 2 - LPS Bay #2
   Spec. #: XXXXXXXXXXXXX    S/N:1482184792


        Description                   Spec. Number       Ser. #      FW Ver.
   -----------------------------------------------------------------------------
  Bay Router 2-01:
  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509509              16843009   2.0.1.0

  Dist. Panel 2-01:
  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525              50462976   2.0.3.0
        Positions     Element Type  Load      Description
         01--06          Plug In      B     Plug In 02-01 Load
         07--08          Fuse         B     Fuse 02-07 Load
         09--24       --- open ---

  Dist. Panel 2-02: Not Installed


  PCU: -48 VDC Output
  Pos.  Cap.     Description                      Spec. Number        Ser. #      FW
Ver.
   -----------------------------------------------------------------------------
  02-01 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401              34210048   2.0.2.0
  02-02 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401              34275585   2.0.2.0
```

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Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

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```
02-03 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401          34341122   2.0.2.0
02-04 --- open ---
02-05 --- open ---
02-06 --- open ---
02-07 --- open ---
02-08 --- open ---
02-09 --- open ---
02-10 --- open ---


CAN I/O Cards:
Pos.     Description                      Spec. Number    Ser. #     FW Ver.
-----------------------------------------------------------------------------
02-01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348  67567872    2.0.4.0
02-02 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348  67633409    2.0.4.0
02-03 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348  67698946    2.0.4.0
02-04 --- open ---
02-05 --- open ---
02-06 --- open ---
02-07 --- open ---


MCA:
     Description                   Spec. Number    Ser. #     FW Ver.
-----------------------------------------------------------------------
this is the MCA                    509478          2801621   1.0.0.14


System voltage is Averaged
Temperature sensor reporting
Temperature is measured in degrees : Celsius
System distribution loads A and B are activated
```

_____


```
Command<6>: p lp s

LPS POWER SYSTEM SETTINGS AS OF 14:21:50 ON 12/10/03.

System Adjustment Setpoints
    Description                       Value    Units
  Float Voltage                       52.10    VDC
  Test/Equalize Voltage               52.10    VDC
  High Voltage Shutdown               57.60    VDC
  Plant Current Limit                   800    Amps

System Alarm Setpoints
    Description                       Value    Units
  High Voltage #1 Alarm               55.60    VDC
  High Voltage #2 Alarm               56.60    VDC
  Battery on Discharge Alarm          51.10    VDC
  Very Low Voltage Alarm              47.10    VDC
  Total Load Overcurrent Alarm         5100    Amps
  A Load Overcurrent Alarm             2600    Amps
  B Load Overcurrent Alarm             2100    Amps
  High Temperature #1 Alarm              99    DegC
  High Temperature #2 Alarm              99    DegC
  Low Temperature #1 Alarm              -42    DegC
  Low Temperature #2 Alarm              -40    DegC
```

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```
System Configuration Setpoints
   Description                            Value   Units
  Audible Silent Time                       10   Minutes
  Manual Test/Equalize Time                  2   Hours
  Relay Test Time                           20   Seconds
  Auto Equalize Time Multiplier              1
  Temperature Compensation Slope         0.090   VDC/DegC
  Maximum Temp. Compensation Voltage     55.90   VDC
  Minimum Temp. Compensation Voltage     50.05   VDC
```
_____

```
Command<6>: p lp i


LPS interface is running


LPS EQUIPMENT INVENTORY AS OF 14:21:58 ON 12/10/03.


Bay 1 - LPS Bay #1
   Spec. #: 1234567890123    S/N:-1294967295


        Description                   Spec. Number      Ser. #      FW Ver.
   ----------------------------------------------------------------------
  Bay Router 1-01:
  This is the ROUTER on the MCA BD 509478           2801621    1.0.1.0

  Dist. Panel 1-01:
  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525             50331648    2.0.3.0
        Positions     Element Type  Load       Description
          01--02        Fuse         B      Fuse 01-01 Load
          03--06        Fuse         B      Fuse 01-03 Load
          07--12        Fuse         B      Fuse 01-07 Load
          13--20        Fuse         B      Fuse 01-13 Load
          21--24        Breaker      B      Breaker 01-21 Load

  Dist. Panel 1-02:
  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525             50397185    2.0.3.0
        Positions     Element Type  Load       Description
          25--26        Breaker      B      Breaker 01-25 Load
          27--30        Breaker      B      Breaker 01-27 Load
          31--36        Breaker      B      Breaker 01-31 Load
          37--44        Breaker      B      Breaker 01-37 Load
          45--48     --- open ---


  PCU: -48 VDC Output
  Pos. Cap.     Description                    Spec. Number      Ser. #     FW
Ver.
  -----------------------------------------------------------------------------
  01-01 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401            33554432  2.0.2.0
  01-02 --- open ---
  01-03 --- open ---
  01-04 --- open ---
  01-05 --- open ---
  01-06 --- open ---
```

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```
   01-07 --- open ---
   01-08 --- open ---
   01-09 --- open ---
   01-10 --- open ---


   CAN I/O Cards:
   Pos.        Description                     Spec. Number    Ser. #      FW Ver.
   --------------------------------------------------------------------------------
   01-01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348   67108864    2.0.4.0
   01-02 --- open ---
   01-03 --- open ---
   01-04 This CAN I/O board is in loc 1-4 ABE SPEC# 524550   84082691    2.0.5.0
   01-05 --- open ---
   01-06 --- open ---
   01-07 --- open ---




Bay 2 - LPS Bay #2
   Spec. #: XXXXXXXXXXXXX    S/N:1482184792


        Description                 Spec. Number     Ser. #      FW Ver.
   --------------------------------------------------------------------------------
   Bay Router 2-01:
   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509509            16843009    2.0.1.0

   Dist. Panel 2-01:
   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525            50462976    2.0.3.0
        Positions    Element Type  Load     Description
          01--06        Plug In      B     Plug In 02-01 Load
          07--08        Fuse         B     Fuse 02-07 Load
          09--24     --- open ---

   Dist. Panel 2-02: Not Installed


   PCU: -48 VDC Output
   Pos.  Cap.     Description                    Spec. Number    Ser. #      FW
Ver.
   --------------------------------------------------------------------------------
   02-01 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401          34210048    2.0.2.0
   02-02 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401          34275585    2.0.2.0
   02-03 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401          34341122    2.0.2.0
   02-04 --- open ---
   02-05 --- open ---
   02-06 --- open ---
   02-07 --- open ---
   02-08 --- open ---
   02-09 --- open ---
   02-10 --- open ---


   CAN I/O Cards:
   Pos.        Description                     Spec. Number    Ser. #      FW Ver.
   --------------------------------------------------------------------------------
   02-01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348   67567872    2.0.4.0
```

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```
02-02 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348    67633409    2.0.4.0
02-03 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348    67698946    2.0.4.0
02-04 --- open ---
02-05 --- open ---
02-06 --- open ---
02-07 --- open ---


  MCA:
       Description                   Spec. Number     Ser. #      FW Ver.
      -----------------------------------------------------------------------
      this is the MCA               509478           2801621     1.0.0.14

  System voltage is Averaged
  Temperature sensor reporting
  Temperature is measured in degrees : Celsius
  System distribution loads A and B are activated
_____


Command<6>: p lp p

LPS interface is running


LPS EQUIPMENT INVENTORY AS OF 14:22:12 ON 12/10/03.


Bay 1 - LPS Bay #1
    Spec. #: 1234567890123    S/N:-1294967295

  PCU: -48 VDC Output
  Pos. Cap.     Description                    Spec. Number     Ser. #      FW
Ver.
    ----------------------------------------------------------------------------
    01-01 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401           33554432    2.0.2.0
    01-02 --- open ---
    01-03 --- open ---
    01-04 --- open ---
    01-05 --- open ---
    01-06 --- open ---
    01-07 --- open ---
    01-08 --- open ---
    01-09 --- open ---
    01-10 --- open ---



Bay 2 - LPS Bay #2
    Spec. #: XXXXXXXXXXXXX    S/N:1482184792

  PCU: -48 VDC Output
  Pos. Cap.     Description                    Spec. Number     Ser. #      FW
Ver.
    ----------------------------------------------------------------------------
    02-01 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401           34210048    2.0.2.0
    02-02 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401           34275585    2.0.2.0
    02-03 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401           34341122    2.0.2.0
```

User Instructions
Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

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```
   02-04 --- open ---
   02-05 --- open ---
   02-06 --- open ---
   02-07 --- open ---
   02-08 --- open ---
   02-09 --- open ---
   02-10 --- open ---
```
_____

```
Command<6>: p lp d

LPS interface is running


LPS EQUIPMENT INVENTORY AS OF 14:22:21 ON 12/10/03.


Bay 1 - LPS Bay #1
   Spec. #: 1234567890123    S/N:-1294967295


        Description                 Spec. Number      Ser. #      FW Ver.
  -------------------------------------------------------------------------
  Dist. Panel 1-01:
  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525               50331648    2.0.3.0
        Positions    Element Type  Load     Description
         01--02        Fuse         B      Fuse 01-01 Load
         03--06        Fuse         B      Fuse 01-03 Load
         07--12        Fuse         B      Fuse 01-07 Load
         13--20        Fuse         B      Fuse 01-13 Load
         21--24        Breaker      B      Breaker 01-21 Load

  Dist. Panel 1-02:
  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525             50397185    2.0.3.0
        Positions    Element Type  Load     Description
         25--26        Breaker      B      Breaker 01-25 Load
         27--30        Breaker      B      Breaker 01-27 Load
         31--36        Breaker      B      Breaker 01-31 Load
         37--44        Breaker      B      Breaker 01-37 Load
         45--48      --- open ---



Bay 2 - LPS Bay #2
   Spec. #: XXXXXXXXXXXXX    S/N:1482184792


        Description                 Spec. Number      Ser. #      FW Ver.
  -------------------------------------------------------------------------
  Dist. Panel 2-01:
  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525             50462976    2.0.3.0
        Positions    Element Type  Load     Description
         01--06        Plug In      B      Plug In 02-01 Load
         07--08        Fuse         B      Fuse 02-07 Load
         09--24      --- open ---

  Dist. Panel 2-02: Not Installed
```
_____

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User Instructions
Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

```
Command<6>: p lp n1

LPS interface is running


LPS EQUIPMENT INVENTORY AS OF 14:22:40 ON 12/10/03.


Bay 1 - LPS Bay #1
   Spec. #: 1234567890123    S/N:-1294967295


        Description                  Spec. Number      Ser. #     FW Ver.
   -----------------------------------------------------------------------
   Bay Router 1-01:
   This is the ROUTER on the MCA BD 509478           2801621    1.0.1.0

   Dist. Panel 1-01:
   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525               50331648    2.0.3.0
        Positions     Element Type  Load      Description
          01--02          Fuse       B      Fuse 01-01 Load
          03--06          Fuse       B      Fuse 01-03 Load
          07--12          Fuse       B      Fuse 01-07 Load
          13--20          Fuse       B      Fuse 01-13 Load
          21--24          Breaker    B      Breaker 01-21 Load

   Dist. Panel 1-02:
   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525              50397185    2.0.3.0
        Positions     Element Type  Load      Description
          25--26          Breaker    B      Breaker 01-25 Load
          27--30          Breaker    B      Breaker 01-27 Load
          31--36          Breaker    B      Breaker 01-31 Load
          37--44          Breaker    B      Breaker 01-37 Load
          45--48       --- open ---


   PCU: -48 VDC Output
   Pos. Cap.    Description                     Spec. Number      Ser. #      FW
   Ver.
   --------------------------------------------------------------------------
   01-01 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401            33554432  2.0.2.0
   01-02 --- open ---
   01-03 --- open ---
   01-04 --- open ---
   01-05 --- open ---
   01-06 --- open ---
   01-07 --- open ---
   01-08 --- open ---
   01-09 --- open ---
   01-10 --- open ---


   CAN I/O Cards:
   Pos.      Description                  Spec. Number    Ser. #      FW Ver.
   --------------------------------------------------------------------------
   01-01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348  67108864     2.0.4.0
   01-02 --- open ---
   01-03 --- open ---
```

```
  01-04 This CAN I/O board is in loc 1-4 ABE SPEC# 524550   84082691      2.0.5.0
  01-05 --- open ---
  01-06 --- open ---
  01-07 --- open ---
```
_____

```
Command<6>: p lp n1-n2

LPS interface is running


LPS EQUIPMENT INVENTORY AS OF 14:22:50 ON 12/10/03.


Bay 1 - LPS Bay #1
   Spec. #: 1234567890123    S/N:-1294967295

        Description                Spec. Number      Ser. #      FW Ver.
  -------------------------------------------------------------------------
  Bay Router 1-01:
  This is the ROUTER on the MCA BD 509478            2801621     1.0.1.0

  Dist. Panel 1-01:
  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525           50331648    2.0.3.0
        Positions    Element Type  Load     Description
         01--02        Fuse         B     Fuse 01-01 Load
         03--06        Fuse         B     Fuse 01-03 Load
         07--12        Fuse         B     Fuse 01-07 Load
         13--20        Fuse         B     Fuse 01-13 Load
         21--24        Breaker      B     Breaker 01-21 Load

  Dist. Panel 1-02:
  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525           50397185    2.0.3.0
        Positions    Element Type  Load     Description
         25--26        Breaker      B     Breaker 01-25 Load
         27--30        Breaker      B     Breaker 01-27 Load
         31--36        Breaker      B     Breaker 01-31 Load
         37--44        Breaker      B     Breaker 01-37 Load
         45--48       --- open ---


  PCU: -48 VDC Output
  Pos. Cap.    Description                     Spec. Number     Ser. #     FW
Ver.
  -------------------------------------------------------------------------
  01-01 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401           33554432  2.0.2.0
  01-02 --- open ---
  01-03 --- open ---
  01-04 --- open ---
  01-05 --- open ---
  01-06 --- open ---
  01-07 --- open ---
  01-08 --- open ---
  01-09 --- open ---
  01-10 --- open ---
```

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User Instructions
Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

```
CAN I/O Cards:
Pos.      Description                        Spec. Number    Ser. #      FW Ver.
------------------------------------------------------------------------------
01-01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348   67108864    2.0.4.0
01-02 --- open ---
01-03 --- open ---
01-04 This CAN I/O board is in loc 1-4 ABE SPEC# 524550   84082691    2.0.5.0
01-05 --- open ---
01-06 --- open ---
01-07 --- open ---
```

_____

```
Command<6>: p lp n1-2


LPS interface is running


LPS EQUIPMENT INVENTORY AS OF 14:22:59 ON 12/10/03.


Bay 1 - LPS Bay #1
    Spec. #: 1234567890123    S/N:-1294967295


        Description                 Spec. Number      Ser. #      FW Ver.
    --------------------------------------------------------------------------
  Bay Router 1-01:
  This is the ROUTER on the MCA BD 509478             2801621    1.0.1.0

  Dist. Panel 1-01:
  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525            50331648    2.0.3.0
        Positions    Element Type  Load      Description
          01--02        Fuse        B      Fuse 01-01 Load
          03--06        Fuse        B      Fuse 01-03 Load
          07--12        Fuse        B      Fuse 01-07 Load
          13--20        Fuse        B      Fuse 01-13 Load
          21--24        Breaker     B      Breaker 01-21 Load

  Dist. Panel 1-02:
  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525            50397185    2.0.3.0
        Positions    Element Type  Load      Description
          25--26        Breaker     B      Breaker 01-25 Load
          27--30        Breaker     B      Breaker 01-27 Load
          31--36        Breaker     B      Breaker 01-31 Load
          37--44        Breaker     B      Breaker 01-37 Load
          45--48     --- open ---


  PCU: -48 VDC Output
  Pos. Cap.    Description                      Spec. Number    Ser. #      FW
Ver.
  ------------------------------------------------------------------------------
  01-01 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401         33554432   2.0.2.0
  01-02 --- open ---
  01-03 --- open ---
  01-04 --- open ---
  01-05 --- open ---
  01-06 --- open ---
```

```
   01-07 --- open ---
   01-08 --- open ---
   01-09 --- open ---
   01-10 --- open ---



   CAN I/O Cards:
   Pos.       Description                    Spec. Number     Ser. #     FW Ver.
   --------------------------------------------------------------------------------
   01-01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348   67108864    2.0.4.0
   01-02 --- open ---
   01-03 --- open ---
   01-04 This CAN I/O board is in loc 1-4 ABE SPEC# 524550  84082691   2.0.5.0
   01-05 --- open ---
   01-06 --- open ---
   01-07 --- open ---



Bay 2 - LPS Bay #2
   Spec. #: XXXXXXXXXXXX    S/N:1482184792


        Description                    Spec. Number     Ser. #      FW Ver.
   --------------------------------------------------------------------------------
   Bay Router 2-01:
   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509509           16843009    2.0.1.0

   Dist. Panel 2-01:
   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 509525           50462976    2.0.3.0
        Positions     Element Type  Load     Description
          01--06        Plug In       B      Plug In 02-01 Load
          07--08        Fuse          B      Fuse 02-07 Load
          09--24      --- open ---

   Dist. Panel 2-02: Not Installed


   PCU: -48 VDC Output
   Pos.  Cap.     Description                    Spec. Number     Ser. #      FW
Ver.
   --------------------------------------------------------------------------------
   02-01 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401           34210048   2.0.2.0
   02-02 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401           34275585   2.0.2.0
   02-03 200A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 506401           34341122   2.0.2.0
   02-04 --- open ---
   02-05 --- open ---
   02-06 --- open ---
   02-07 --- open ---
   02-08 --- open ---
   02-09 --- open ---
   02-10 --- open ---


   CAN I/O Cards:
   Pos.       Description                    Spec. Number     Ser. #     FW Ver.
   --------------------------------------------------------------------------------
   02-01 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348   67567872    2.0.4.0
```

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```
02-02 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348   67633409    2.0.4.0
02-03 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX RCB SPEC# 514348   67698946    2.0.4.0
02-04 --- open ---
02-05 --- open ---
02-06 --- open ---
02-07 --- open ---
```

User Instructions
Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

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PRCONFIG VORTEX

Description: Displays the current settings and equipment inventory of the VPS.

Command Level: 2

Syntax: PRCONFIG VORTEX, PRCONFIG VORTEX SETTINGS, PRCONFIG VORTEX INVENTORY

P V, P V S, P V I

Comments: The settings or equipment inventory of the VPS can be viewed separately by entering the command PRCONFIG V followed by a space and then the specifier SETTINGS or INVENTORY.

Notes:

Low voltage disconnect settings are only displayed for installed LVDs.

In the event of a PCU failure, the inventory displayed for the failed PCU is as follows.

```
PCU01-No Reply
PCU02-No Reply
```

Subsystem shunts are only displayed if a subsystem is installed.

Related Commands: PRCONFIG, PRCONFIG LPS

Example:

```
Command<2>: PRCONFIG VORTEX
VORTEX POWER SYSTEM SETTINGS AS OF 11:13:06 ON 02/02/01.
   Description                           Value   Units
Float Voltage
Test/Equalize Voltage
System High Voltage 1 Alarm
System High Voltage 2 Alarm
System Battery On Discharge
System 50% Battery On Discharge
System High Voltage Shutdown
System Overcurrent
Current limit
System Calibrate Voltage
NAG(ACO) Timer
Temperature Compensation Voltage
Subsystem High Voltage Alarm
Subsystem Low Voltage Alarm
Subsystem Calibrate Voltage
Subsystem Overcurrent
LVD1A Disconnect Voltage
LVD1B Disconnect Voltage
LVD2A Disconnect Voltage
LVD2B Disconnect Voltage
LVD3A Disconnect Voltage
LVD3B Disconnect Voltage
LVD Reconnect Voltage
```

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User Instructions
Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

```
VORTEX POWER SYSTEM EQUIPMENT INVENTORY AS OF 11:13:06 ON 02/02/01.
  PCUs Installed: 1 2 3 4
  System Shunts Installed: 2 4 6
  LVD Boards Installed: 1 2
  Subsystem Shunts Installed: 1 3 5 7
  Vacant 25A Places: 0
  Vacant 50A Places: 0
  Vacant 100A Places: 0
  Vacant 200A Places: 0
  System Capacity: 500 Amps
  System mode: Float mode
    Description              Spec. No.  Ser.#   Vers    Vout Capacity
  MCA  -                     A433800124         00.19.00  ---     ---
  PCU01-                     A486526800         01.00.00 -48VDC   25A
  PCU02-                     A486526800         01.00.00 -48VDC   25A
  PCU03-                     A486526800         01.00.00 -48VDC   25A
  PCU04-                     A486526800         01.00.00 -48VDC   25A
```
_____

```
Command<2>: PRCONFIG VORTEX SETTINGS
VORTEX POWER SYSTEM SETTINGS AS OF 11:13:06 ON 02/02/01.
  Description                      Value  Units
Float Voltage
Test/Equalize Voltage
System High Voltage 1 Alarm
System High Voltage 2 Alarm
System Battery On Discharge
System 50% Battery On Discharge
System High Voltage Shutdown
System Overcurrent
Current limit
System Calibrate Voltage
NAG(ACO) Timer
Temperature Compensation Voltage
Subsystem High Voltage Alarm
Subsystem Low Voltage Alarm
Subsystem Calibrate Voltage
Subsystem Overcurrent
LVD1A Disconnect Voltage
LVD1B Disconnect Voltage
LVD2A Disconnect Voltage
LVD2B Disconnect Voltage
LVD3A Disconnect Voltage
LVD3B Disconnect Voltage
LVD Reconnect Voltage
```
_____

```
Command<2>: PRCONFIG V INVENTORY
VORTEX POWER SYSTEM EQUIPMENT INVENTORY AS OF 11:13:06 ON 02/02/01.
 PCUs Installed: 1 2 3 4
 System Shunts Installed: 2 4 6
 LVD Boards Installed: 1 2
 Subsystem Shunts Installed: 1 3 5 7
 Vacant 25A Places: 0
 Vacant 50A Places: 0
 Vacant 100A Places: 0
 Vacant 200A Places: 0
```

User Instructions
Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

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```
System Capacity: 500 Amps
System mode: Float mode
  Description            Spec. No. Ser.#    Vers       Vout   Capacity
MCA  -                   A433800124         00.19.00    ---     ---
PCU01-                   A486526800         01.00.00   -48VDC   25A
PCU02-                   A486526800         01.00.00   -48VDC   25A
PCU03-                   A486526800         01.00.00   -48VDC   25A
PCU04-                   A486526800         01.00.00   -48VDC   25A
```

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PROGRAM

Description: Displays the control programs and their status.

Command Level: 2

Syntax: PROGRAM
PRO

Comments: The size occupied by the programs is also displayed.

Notes: none

Related Commands: SET PROGRAM

Example:

```
Command<2>: PROGRAM
Control Programs ARE Running
Control Programs:
R0001=b0001
L0001=a0001
L0002=b0009
Program Space is 1.7% full.
```

User Instructions
Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

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RATE

Description: Compares the maximum peak value and the highest hourly average to an alarm limit, and presents the results as percentage values.

Command Level: 1

Syntax: RATE
R

Comments: These percentages indicate the closeness of the highest hourly average and maximum peak values to the designated alarm value, and indirectly, the percentage of the measured value to capacity. To use this feature, one of two character phrases must appear in the analog channel's alarm limit name. These two phrases are "CAP" (for capacity) and "SIZ" (for size). Also, the "Unit Text" for this analog channel must be "AMPS". Any time the RATE command is entered, and either of these two phrases appear in an analog channel's alarm limit name and the analog channel's Unit Text is set for AMPS, the system computes the two percentages and displays the resulting information.

Notes: none

Related Commands: none

Example:

```
Command<1>: rate
RATING PERCENTAGES AS OF 15:34:38 ON 04/29/01.
Chan    Description      Limit/Name      Max Hrly Avg.    Max min Avg.
 A0001 PBD02 LOAD 11     300.0 FUSE SIZE  118.9, 40%      119.1, 41%
 A0001 PBD02 LOAD 11     200.0 FUSE CAP.  118.9, 59%      119.1, 60%
 A0002 PBD02 LOAD 12     300.0 FUSE SIZE  87.4 , 58%      87.5 , 58%
 A0002 PBD02 LOAD 12     200.0 FUSE CAP.  87.4 , 87%      87.5 , 87%
 A0003 PBD02 LOAD 13     300.0 FUSE SIZE  44.0 , 29%      44.2 , 29%
 A0003 PBD02 LOAD 13     200.0 FUSE CAP.  44.0 , 44%      44.2 , 44%
```

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User Instructions
Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

REPORT

Description: Displays report information.

Command Level: 6

Syntax: REPORT

Comments: Displays parameters related to the alarm reporting function.

Refer to the command SET REPORT for additional information concerning the operation of the system alarm reporting function.

Notes: Parameters displayed include:

System Alarm Report mode, which enables the reporting and allows the user to choose between single (system alarm reporting is considered successful if the system connects with a modem or sends an Email) or continuous (system alarm reporting is considered successful when the user issues an ACK command).

User Calling Sequence, which allows the programming of users in the order in which the system will call or Email in an attempt to communicate an alarm indication.

Retry Time, which is the time interval between the calling or Emailing of the last person designated in the user calling sequence and the recalling or Emailing of the first user in the sequence.

Auto-logoff Time, which is the interval the system waits with a pending report before issuing a priority message, and logging the user off.

Related Commands: SET REPORT

Example:

```
Command<6>: REPORT
System Alarm Report mode: Single
User Calling Sequence: 6 5 4
Retry Time: 10m
Auto-logoff Time: 60sec
```

Chapter 3. Commands

User Instructions
Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

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SCAN

Description: Lists the present value and alarm status of each channel.

Command Level: 1

Syntax: SCAN [*channel_type*] [*channel_designator*] [*channel_range*] [*node_designator*] [*node_range*] [*group_designator*] [*search_text*]

S [*channel_type*] [*channel_designator*] [*channel_range*] [*node_designator*] [*node_range*] [*group_designator*] [*search_text*]

Comments: Analog and Function Channel information displayed includes the current value of each input, the unit of measure, and any of the alarm limits that are active and the alarm class of these limits.

Binary Channel information includes the contact status, open (CO) or closed (CC), the alarm status, and the alarm class.

Relay Channel information consists of the on or off status, the relay force status, the alarm status, and the alarm class.

Energy Management Channel information consists of a description of the rectifier, capacity, shunt value, and the RFA and TR status.

LED Channel information consists of the on or off status, the LED force status, the alarm status, and the alarm class.

If desired, only certain channel types can be viewed by entering the command SCAN followed by a space and then the character A for analog, B for binary, L for LED, F for function, G for group, R for relay, or E for energy management. A continuous scan of a single input is possible by adding the input number after the A, B, L, F, G, R, or E character. Press the Ctrl-S key to stop scrolling, and use any other key to continue.

The user can set the time interval between scan data output lines when scanning an individual channel. The interval can be specified from 1 to 600 seconds. This is done by entering a modifier (1 through 600) at the end of a scan command line. If no modifier is entered, a single line of scan data is displayed. (ex. SCAN A12 20, would output one line of scan data for analog channel A12 every 20 seconds.)

Notes: Analog and binary channels are automatically mapped to MCA parameters when the VPS or LPS MCA Interface is used. Status information for these analog and binary channels can be viewed using the SCAN command and options. Refer to Tables 2-1 through 2-3 for a correlation between channels and mapped VPS MCA and LPS MCA parameters. To view status information of just the VPS, use the SCAN VORTEX command and options. This command is explained next.

Related Commands: SCAN VORTEX

Example:

```
Command<1>: scan
ANALOG CHANNEL STATUS AS OF 15:18:58 ON 11/01/01.
Chan     Description              Value   Units     Alarm Limit  and  Class
 A0001 Analog Channel 1          +20.5   Amps  20.0 H - Hi Limit 2   MAJOR
```

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```
 A0002 Analog Channel 2          +20.0  Amps
 A0003 Analog Channel 3          +7     Amps  500  L - below 500    MINOR
 A0004 Analog Channel 4          +19.9  Amps
BINARY CHANNEL STATUS AS OF 15:19:02 ON 11/01/01.
Chan     Description                    Status  Alarm Status / Class
 B0001 Binary Channel 1                  CO      active       MINOR
 B0002 Binary Channel 2                  CO      none
 B0003 Binary Channel 3                  CC      active       MAJOR
 B0004 Binary Channel 4                  CO      none
ENERGY MANAGEMENT CHANNEL STATUS AS OF 15:19:05 ON 11/01/01.
Chan     Description                    Capacity  Shunt  RFA TR
 E0001 Energy Mngmt Rectifier 1          200.0   +0.0     N   Y
FUNCTION CHANNEL STATUS AS OF 15:19:06 ON 11/01/96.
Chan     Description            Value  Units    Alarm Limit  and  Class
 F0001 Function Channel 1       +39.97 Amps  500.0L -           MINOR
RELAY CHANNEL STATUS AS OF 15:19:08 ON 11/01/01.
Chan     Description                    Status  Alarm Status / Class
 R0001 Relay Channel 1                  On ,Pg    active     MINOR
 R0002 Relay Channel 2                   Off
 R0003 Relay Channel 3                   Off
 R0004 Relay Channel 4                   Off
```

SCAN VORTEX

Description: Lists status/alarms and values of monitored voltage/current points of the VPS.

Command Level: 1

Syntax: SCAN VORTEX, SCAN VORTEX SYSTEM, SCAN VORTEX SUBSYSTEM, SCAN VORTEX PCU[*PCU_number*], SCAN VORTEX LVD, SCAN VORTEX MCA

S V, S V SYSTEM, S V SUBSYSTEM, S V PCU[*PCU_number*], S V LVD, S V MCA

Comments: Status of a specific VPS entity can be viewed separately by entering the command STATUS V followed by a space and then the entity specifier (SYSTEM, SUBSYSTEM, PCU[PCU_number], LVD, or MCA).

Notes: SCAN VORTEX PCU[PCU_*number*] gives a continuous scan of that PCU.

Only installed PCUs are displayed.

The following is displayed if there are no PCUs installed.

```
VORTEX PCU STATUS AS OF xx:xx:xx ON xx/xx/xx.
Chan   Description          Value  Units  Alarm Status
No PCUs installed
```

The following is displayed if there are no active MCA alarms.

```
VORTEX MCA STATUS AS OF xx:xx:xx ON xx/xx/xx.
  Description                  Alarm Status
No active MCA alarms
```

The following is displayed if there are no digital LVDs installed.

```
LVD STATUS AS OF xx:xx:xx ON xx/xx/xx.
  Description                  Alarm Status
No digitally controlled LVDs installed
Potentiometer controlled LVD's are displayed only when the LVD
circuit is active.
```

The following is displayed if there are no subsystem installed.

```
VORTEX SUBSYSTEM STATUS AS OF xx:xx:xx ON xx/xx/xx.
Chan   Description          Value  Units  Alarm Status
No Subsystem Installed
```

Related Commands: SCAN

Example:

```
Command<1>: SCAN V
VORTEX SYSTEM STATUS AS OF xx:xx:xx ON xx/xx/xx.
Chan    Description         Value  Units  Alarm Status
 A9001 Vortex System Voltage   +50.3  VDC    [None]
                                      [High Voltage #1]
                                      [High Voltage #2]
                                      [Battery On Discharge]
```

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```
                                     [50% Battery On Discharge]
 A9002 Vortex System Current   +800   Amps   [None/Overcurrent]
 A9006 Vortex Shunt01 Current  +200   Amps   [None/Fail]
 A9007 Vortex Shunt02 Current  +200   Amps   [None/Fail]
 A9010 Vortex Shunt05 Current  +200   Amps   [None/Fail]
 A9011 Vortex Shunt06 Current  +200   Amps   [None/Fail]
 B9009 Vortex PCU Emergency Stop              [None/Active]
 B9024 Vortex PCU High AC Line                [None/Active]
 B9010 Vortex System Fuse                     [None/Active]
 B9011 Vortex All AC Off                      [None/Active]
 B9014 Vortex LVDs Inhibited                  [None/Active]
 B9015 Vortex System Major                    [None/Active]
 B9016 Vortex System Minor                    [None/Active]
VORTEX SUBSYSTEM STATUS AS OF xx:xx:xx ON xx/xx/xx.
Chan      Description            Value  Units  Alarm Status
 A9003 Vortex Subsystem Voltage +50.9  VDC    [None]
                                              [High Voltage]
                                              [Low Voltage]
 A9004 Vortex Subsystem Current +400   Amps   [None/Overcurrent]
 A9008 Vortex Shunt03           +200   Amps   [None/Fail]
 A9009 Vortex Shunt04           +200   Amps   [None/Fail]
 B9021 Vortex Subsystem Fuse                  [None/Active]
 B9022 Vortex Subsystem Major                 [None/Active]
 B9023 Vortex Subsystem Minor                 [None/Active]


VORTEX PCU STATUS AS OF xx:xx:xx ON xx/xx/xx.
Chan      Description            Value  Units  Alarm Status
 A9005 Total PCU Current        +1200  Amps
 A9026 PCU01 Current            +100   Amps   [None/Fail]
 A9027 PCU02 Current            +100   Amps   [None/Fail]
 A9030 PCU05 Current            +100   Amps   [None/Fail]
 A9031 PCU06 Current            +100   Amps   [None/Fail]
 A9043 PCU09 Current            +100   Amps   [None/Fail]
 A9037 PCU12 Current            +100   Amps   [None/Fail]
 A9045 PCU20 Current            +100   Amps   [None/Fail]
VORTEX MCA STATUS AS OF xx:xx:xx ON xx/xx/xx.
  Description                 Alarm Status
Board Fail                       active
Shelf fuse                       active
A/D No System Voltage Input      active
A/D No Sense Lead Voltage Input  active
A/D No Subsystem Voltage Input   active
Display Fail                     active
VORTEX LVD STATUS AS OF xx:xx:xx ON xx/xx/xx.
  Description                 Alarm Status
LVD 1A                       [inhibited/failed/active/inactive]
LVD 1B                       [inhibited/failed/active/inactive]
LVD 2A                       [inhibited/failed/active/inactive]
LVD 2B                       [inhibited/failed/active/inactive]
LVD 3A                       [inhibited/failed/active/inactive]
LVD 3B                       [inhibited/failed/active/inactive]
```

The following is displayed only for active potentiometer controlled LVDs:

```
[LVD 3A]                         [active]
[LVD 3B]                         [active]
[LVD 4A]                         [active]
```

```
[LVD 4B]                                [active]
```
_____

```
Command<1>: SCAN V SYSTEM
VORTEX SYSTEM STATUS AS OF xx:xx:xx ON xx/xx/xx.
Chan      Description           Value   Units   Alarm Status
 A9001 Vortex System Voltage    +50.3   VDC     [None]
                                                [High Voltage #1]
                                                [High Voltage #2]
                                                [Battery On Discharge]
                                                [50% Battery On Discharge]
 A9002 Vortex System Current    +800    Amps    [None/Overcurrent]
 A9006 Vortex Shunt01 Current   +200    Amps    [None/Fail]
 A9007 Vortex Shunt02 Current   +200    Amps    [None/Fail]
 A9010 Vortex Shunt05 Current   +200    Amps    [None/Fail]
 A9011 Vortex Shunt06 Current   +200    Amps    [None/Fail]
 B9009 Vortex PCU Emergency Stop         [None/Active]
 B9024 Vortex PCU High AC Line          [None/Active]
 B9010 Vortex System Fuse               [None/Active]
 B9011 Vortex All AC Off                [None/Active]
 B9014 Vortex LVDs Inhibited            [None/Active]
 B9015 Vortex System Major              [None/Active]
 B9016 Vortex System Minor              [None/Active]
```
_____

```
Command<1>: SCAN V SUBSYSTEM
VORTEX SUBSYSTEM STATUS AS OF xx:xx:xx ON xx/xx/xx.
Chan      Description               Value   Units   Alarm Status
 A9022 Vortex Subsystem Voltage     +50.9   VDC     [None]
                                                    [High Voltage]
                                                    [Low Voltage]
 A9023 Vortex Subsystem Current     +400    Amps    [None/Overcurrent]
 A9008 Vortex Shunt03               +200    Amps    [None/Fail]
 A9009 Vortex Shunt04               +200    Amps    [None/Fail]
 B9021 Vortex Subsystem Fuse                [None/Active]
 B9022 Vortex Subsystem Major              [None/Active]
 B9023 Vortex Subsystem Minor              [None/Active]
```
_____

```
Command<1>: SCAN V MCA
VORTEX MCA STATUS AS OF xx:xx:xx ON xx/xx/xx.
  Description                   Alarm Status
Board Fail                      active
Shelf fuse                      active
A/D No System Voltage Input     active
A/D No Sense Lead Voltage Input active
A/D No Subsystem Voltage Input  active
Display Fail                    active
```
_____

```
Command<1>: SCAN V LVD
VORTEX LVD STATUS AS OF xx:xx:xx ON xx/xx/xx.
  Description                   Alarm Status
LVD 1A                          [inhibited/failed/active/inactive]
LVD 1B                          [inhibited/failed/active/inactive]
LVD 2A                          [inhibited/failed/active/inactive]
LVD 2B                          [inhibited/failed/active/inactive]
```
_____

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```
LVD 3A                             [inhibited/failed/active/inactive]
LVD 3B                             [inhibited/failed/active/inactive]
```

The following is displayed only for active potentiometer controlled LVDs:

```
[LVD 3A]                           [active]
[LVD 3B]                           [active]
[LVD 4A]                           [active]
[LVD 4B]                           [active]
```

_____

```
Command<1>: SCAN V PCU
VORTEX PCU STATUS AS OF xx:xx:xx ON xx/xx/xx.
Chan     Description                 Value  Units  Alarm Status
 A9005 Total PCU Current            +1200  Amps
 A9026 PCU01 Current                +100   Amps   [None/Fail]
 A9027 PCU02 Current                +100   Amps   [None/Fail]
 A9030 PCU05 Current                +100   Amps   [None/Fail]
 A9031 PCU06 Current                +100   Amps   [None/Fail]
 A9034 PCU09 Current                +100   Amps   [None/Fail]
 A9037 PCU12 Current                +100   Amps   [None/Fail]
 A9045 PCU20 Current                +100   Amps   [None/Fail]
```

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SEQUENCE

Description: Lists the sequencer option configuration parameters, and displays sequencer status.

Command Level: 1

Syntax: SEQUENCE
SEQ

Comments: Information displayed includes the status of the standby sequencer, the Standby On/Proper Operate binary input number, and the Standby Start Delay. The AC Sequencer status is also listed, along with the AC Fail/Transfer binary input number, the Input Type, the Sequencer Failsafe Time, and AC Restoration Qualification Time.

Notes: none

Related Commands: SET SEQUENCE

Example:

```
Command<1>: SEQUENCE

RECTIFIER SEQUENCING ROUTINES Current Setting (DISABLED or ACTIVE)

SEQUENCER OPTIONS:
AC Sequencer:  Off
    AC Fail/Transfer Input = B0001
    Input type: AC Fail

Standby Sequencer:  Off
    Standby On/Proper Operate Input = B0001
    Standby Start Delay: 15sec

Sequencer Failsafe time: 100sec
AC Restoration Qualification time: 100sec
```

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SET

Description: Lists all commands that begin with the command SET, and then prompts the user to enter one of the displayed options.

Command Level: NA

Syntax: SET [*command*]
SE [*command*]

Comments: none

Notes: Only commands available to the current user are listed. The list in the example is for a user that has access to level 6 commands.

Related Commands: SET VORTEX

Example:

```
Command<6>: set
Set what:
ACO           AID           ANSWER        CHANNELS      CLASS
COM           CMD           DATE          DEFAULTS      EFF
EMAIL         INFO          LED           LIMITS        LPS
MAIL          MODE          PERIODS       PHONE         PROGRAM
REPORT        RLY           SEQUENCE      STATUS        SYSTEM
TIME          TIMEOUT       UNIT          USERS         VI
VORTEX
```

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SET ACO

Description: Releases any relays that are energized due to analog or binary alarms, provided the relays are configured for ACO operation.

Command Level: 4

Syntax: SET ACO
SE AC

Comments: none

Notes: Any user setting the alarm cutoff will have his name and this action recorded in the event log. If an analog or binary alarm were to clear and then turn in again, it would then affect relay control programs. Relays configured as alarm types that are affected by a SET ACO will affect the alarm log information. When the output turns off, the associated log entry will have its cleared time stamped with the current time. Because this alarm could affect the alarm log, this command could initiate some phone reports or Email messages. Only relays configured for ACO will be affected by this command.

Related Commands: ACO

Example:

```
Command<4>: SET ACO
The following alarms are cutoff:
Chan     Description           Value  Units     Alarm Limit  and  Class
 A0001 Analog Channel 1        +20.1  Amps  20.0 H - Hi Limit 2   MAJOR
Chan     Description           Status  Alarm Status / Class
 B0001 Binary Channel 1         CO       active       MINOR
```

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SET AID

Description: This command is only available if the TL1 software option is installed in the system. Configures up to thirty-two access identifiers, and associates sub-access identifiers to the access identifiers.

Command Level: 6

Syntax: SET AID [*n*]
SE AI [*n*]

Comments: To add or delete channels, type *D* at the prompt to display a complete list of channels previously linked to the current access identifier. The channel number, previously configured channel name, and previously configured channel sub-access identifier are displayed.

Type the number(s) of all channels to be added or removed. Channels can be specified by entering a single channel number (e.g. A0001, B0008), or by entering a range of channel numbers (e.g. A0001-8, L0001-L0012).

Notes: The terms Access Identifier, LMS1000 Access Identifier, and LMS1000 Sub-Access Identifier are described as follows.

Access Identifier: In an NMA system, a unique access identifier (AID) is used to identify each entity contained within the system. LMS1000 must be configured to allow a single access identifier to be used to access and report on an NMA system entity which may consist of a multiple of sub-entities, each monitored by a variety of LMS1000 channels. This is accomplished by configuring LMS1000 access identifiers and LMS1000 sub-access identifiers as described next. A list of access identifiers and sub-access identifiers appears in TA-NWT-001360, Table 4-1.

LMS1000 can be set to use an "AID delimiter". When enabled, LMS1000 access identifier field and LMS1000 sub-access identifier field in all responses to TL1 commands and reports containing a TL1 access identifier field is separated by a hyphen. The use of an "AID delimiter" (a hyphen) can be enabled or disabled, as described under LMS1000 Command SET MODE.

LMS1000 Access Identifier: Thirty-two (32) LMS1000 access identifiers are available. LMS1000 access identifier is used to uniquely identify a system entity (such as a power plant).

LMS1000 Sub-Access Identifier: LMS1000 sub-access identifiers are used to uniquely identify each sub-entity of an entity (such as each rectifier, each battery string, etc. contained in the power plant).

The association between all LMS1000 channels monitoring an individual rectifier, an individual battery string, etc. is made by configuring each channel monitoring this individual sub-entity with a unique sub-access identifier name. This is done when the individual LMS1000 channels are configured.

Thus all LMS1000 channels monitoring "rectifier one" may be configured with the sub-access identifier name RECT1. All LMS1000 channels monitoring "rectifier two" may be configured with sub-access identifier RECT2. All LMS1000 channels monitoring "battery string one" may be configured with the sub-access identifier BATSTR1. All LMS1000

channels monitoring "battery string two" may be configured with sub-access identifier name BATSTR2. Etc.

Now, to associate the sub-entities (each rectifier, each battery string, etc.) to the entity (the power plant), you configure the access identifier to include all LMS1000 channels monitoring this entity and any sub-entity contained within.

Related Commands: AID

Example:

```
Command<6>: SET AID

Which Access Identifier?  3

ACCESS IDENTIFIER  3 CONFIGURATION:
  Name: AID03
  Type: EQPT
CHANNELS: None

Name:

Type:

Enter channel (eg. A0012 or A0001-6) or D to display.
Add channel:

Enter channel (eg. A0012 or A0001-6) or D to display.
Del channel:
```

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SET ANSWER

Description: Determines the number of rings before the system answers an incoming telephone call.

Command Level: 5

Syntax: SET ANSWER
SE AN

Comments: This command can be useful for locations having only one phone line. The system can be set to answer after five rings, permitting any personnel at the installation an opportunity to answer the phone before the system.

Notes: The number of rings defaults to 1 but can be programmed for up to 99 rings.

Related Commands: ANSWER

Example:

```
Command<5>: SET ANSWER

Rings before answer: 1
Enter New #:

Rings before answer: 1
```

SET CHANNELS

Description: Allows channels to be added to or deleted from the configuration of the currently logged on user.

Command Level: 6

Syntax: SET CHANNELS
SE CH

Comments: Information presented includes the type of channel (analog, binary, function, group, relay, LED, or energy management) and the user description of the channel. If the channel is configured to be inactive, "not active" will also be displayed. After this information is presented, the user can add or delete channels as required. When in the edit mode (either adding or deleting channels) the user can enter the character D to display the present list of channels. To facilitate editing, a sequence of channels can be entered, such as B0001-0064. In this example binary channels 1 through 64 in the Master Node would be added or deleted, dependent upon the operation being performed.

Notes: none

Related Commands: CHANNELS

Example:

```
Command<6>: SET CHANNELS

USER NO. 6 CHANNELS:
 A0001 Analog Channel 1
 A0002 Analog Channel 2
 A0004 Analog Channel 4
 A0033 Analog Channel 33
 A0034 Analog Channel 34                not active
 A0037 Analog Channel 37                not active
 A0038 Analog Channel 38                not active
 A0039 Analog Channel 39                not active
 A0040 Analog Channel 40
END OF USER NO. 6 CHANNELS

Enter channel (eg. A0012 or A0001-0006) or D to display.
Add Channel: A0013
Channel does not exist!
Add Channel: A0064
Add Channel:

Enter channel (eg. A0012 or A0001-0006) or D to display.
Del Channel: A0064
Del Channel:
```

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SET CLASS

Description: Allows a user to enter a text description (5 characters maximum) for each of the eight alarm classes.

Command Level: 6

Syntax: SET CLASS [*n*]
SE CL [*n*]

Comments: The text description of an alarm class can be deleted by entering a SPACE before entering any new text.

Notes: none

Related Commands: CLASS

Example:

```
Command<6>: SET CLASS

Programmable Alarm Classifications

 K1.MINOR K2.MAJOR K3.none K4.CLAS4 K5.none K6.none K7.none K8.ENGR

Which alarm class(K1-8) ? 4

Alarm Class Name: CLAS4 FACIL
```

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SET CMD

Description: Permits configuration of one of the eight programmable commands.

Command Level: 6

Syntax: SET CMD [*n*]
SE CM [*n*]

Comments: Each command can consist of up to eight standard commands. When the command SET CMD is entered, the system prompts for the number of the programmable command the user wishes to configure. The system then prompts the user to enter the commands which will comprise the programmable command as well as the name of the programmable command. The name is then used at the system prompt to execute these standard commands that are a part of the programmable command. When the name of the programmable command is entered, all of the commands listed in the group are automatically performed, without having to manually prompt the system to perform each task.

Notes: Any commands entered as part of the programmable command will not be executed if the logged on user does not have a high enough level of access. The use of the programmable command is similar in concept to batch processing or macros.

Related Commands: CMD

Example:

```
Command<6>: SET CMD
1.
2.
3.
4.
5.
6.
7.
8.
Which command (1 - 8) ? 1

Command 1 name:
Command 1 name: ANALOG

Command 1 access level: 1
Command 1 access level:

Command 1 line 1:
Command 1 line 1: SCAN A

Command 1 line 2:
Command 1 line 2: STATS A

Command 1 line 3:
Command 1 line 3:

Command 1 line 4:
Command 1 line 4:
```

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```
Command 1 line 5:
Command 1 line 5:

Command 1 line 6:
Command 1 line 6:

Command 1 line 7:
Command 1 line 7:

Command 1 line 8:
Command 1 line 8:
```

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SET COM

Description: Permits configuration of the local port data rate.

Note: *Modem port communications parameters cannot be set. The data rate for the local port is the only communications parameter that can be changed.*

Command Level: 6

Syntax: SET COM
SE CO

Comments: The data rate, parity, number of data bits, and number of stop bits appear in the order listed, separated by commas. Any local port changes will take effect immediately after the Y key is pressed to initiate the change. Refer to Table 3-1 for a listing of available local port communications formats.

Data Rate (Bits/s)	Parity	Data Bits	Stop Bits
300, 600, 1200, 2400, 4800, 9600, or 19200	n for none	8	1

Default setting shown in underlined type.

Table 3-1
Available Local Port Communications Parameters

Notes: none

Related Commands: COM

Example:

```
Command<6>: SET COM
Local Comm Port Setup:2400,n,8,1
Enter new setup:19200
Re-initialize Port (Y or N):Y
Local Comm Port Setup:19200,n,8,1
```

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SET DATE

Description: Permits the setting of the system date.

Command Level: 3

Syntax: SET DATE

Comments: The current date is displayed, and can be changed if desired by using the format mm/dd/yy.

Notes: This command will affect the dates associated with any statistics that may be saved in memory. Also, any alarms that clear after the date is set will have the new date stored as part of their log entry, which could be misleading. Any user changing the date will have his name and this action recorded in the event log.

Related Commands: DATE

Example:

```
Command<3>: SET DATE
Date is 01/16/01.
Use Format MM/DD/YY
```

SET DEFAULTS

Description: Returns the user programmable parameters shown in Table 3-2 back to their default (factory) settings.

Parameter	Default Setting
Unit Name	Central Office
Unit Number	1
Unit TCP/IP Address	0.0.0.0
GET Community String	public
SET Community String	private
Trap Addresses	(none set)
SNMP Version (for traps sent)	V2
Number of Rings before Answering	1
User Timeout Period	300 seconds
Logon Password	Number of Access Level Required (1-6)
System Alarm Report Mode	Off
User Calling Sequence	(none defined)
Retry Time (System Alarm Report)	10 minutes
Auto-Logoff Time	60 seconds
Sequencer Standby Start Delay	15 seconds
Sequencer Failsafe Timer	60 seconds
AC Restoration Qualification Timer	0 (disabled)
Rectifier Sequencing Routines	Y

Table 3-2
Default Settings for System Parameters

Command Level: 6

Syntax: SET DEFAULTS
            SE DE

Comments: The user will have to type the complete word "YES" when prompted to set the defaults.

Notes: This command will permanently destroy any information the user has programmed, including alarm log information and user configuration. This command will not destroy the event log, or change any communications parameters.

Related Commands: none

Example:

```
Command<6>: SET DEFAULTS
 Execution of this command will DESTROY ALL SYSTEM CONFIGURATIONS
 and could result in ALARM CONDITIONS !!
Do you wish to set defaults(YES or No)? N
Defaults NOT set
```

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```
Command<6>: SET DEFAULTS
 Execution of this command will DESTROY ALL SYSTEM CONFIGURATIONS
 and could result in ALARM CONDITIONS !!
Do you wish to set defaults(YES or No)? yes
Setting system defaults
Initializing Analog I/O card hardware
Defaults set.
```

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SET EFF

Description: Permits configuration of the energy management option, if furnished.

Command Level: 5 and 6. A user with access to level 5 commands is only allowed to enter a Y or N at the RECTIFIER EFFICIENCY ROUTINE (Y or N) prompt. This enables or disables energy management operation. A user with access to level 6 commands is required to enter the additional parameters.

Syntax: SET EFF
SE EF

Comments: Parameters include the status of energy management, active or disabled, and the analog input number of the plant voltage input. Other parameters displayed include Base Rectifier Cycle Period, Percent of system capacity at which to turn off a rectifier, and Percent of system capacity at which to turn on a rectifier. After display of the current parameters, the data may be changed if required.

Notes: Use of this command generates an entry into the Event Log. Not available in an LPS Power System.

Related Commands: EFF

Example:

```
Command<6>: set eff

RECTIFIER EFFICIENCY ROUTINE DISABLED
Plant Voltage Input = A0001
Base Rectifier Cycle Period: 1 day
Percent of system capacity at which to turn off a rectifier: 0.970
Percent of system capacity at which to turn on a rectifier: 0.970

Plant Voltage Input = A9001
Enter Base Rectifier Cycle Period (1-365 days): 30
Percent of system capacity at which to turn off a rectifier (0.90-0.99): .93
Percent of system capacity at which to turn on a rectifier (0.97-0.99): .98
Save changes (Y or N):  n

RECTIFIER EFFICIENCY ROUTINE (Y or N): y
_____

Command<5>: set eff

RECTIFIER EFFICIENCY ROUTINE DISABLED
Plant Voltage Input = A0001

RECTIFIER EFFICIENCY ROUTINE (Y or N): y
```

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SET EMAIL

Description: Set Email alarm notification parameters.

Command Level: 6

Syntax: SET EMAIL

Comments: Enter the addresses in the format nnn.nnn.nnn.nnn, where 0 ≤ nnn ≤ 255.

Notes: SMTP server must be capable of relaying Emails outside of the domain. The Email return address must be on the same domain.

Also set the "IP Network Address", "IP Gateway Address", and "IP Netmask" using the commands IP ADDRESS, IP GATEWAY, and IP NETMASK.

Related Commands: IP ADDRESS, IP GATEWAY, IP NETMASK

Example:

```
Command<6>: set email
Primary DNS Address : 0.0.0.0
Secondary DNS Address : 0.0.0.0
Local SMTP Server Address : 0.0.0.0
Email Return Address :

Enter Primary DNS Address :
```

SET GATEWAY

Description: Displays the LMS1000 Gateway port's communications parameters and alliws the data rate to be changed.

Command Level: 6

Syntax: SET GATEWAY

Comments: When this command is entered, the current communications parameters of the Gateway port are displayed in the following order. Data Rate, Parity, Data Bits, Stop Bits. Enter a new data rate value or press the *ENTER* key to exit the command. If no new data rate was entered, the existing setting is saved. Available data rates are 300, 1200, 2400, 9600, 19200 bps (default is 9600 bps).

Notes: If a local terminal is being used, the change takes effect immediately. If a remote terminal (modem) is being used, the change takes effect the next time the modem is used.

This command lets the user set the Gateway port data rate only. The other communication parameters are fixed in software, and cannot be changed.

Possible data loss may occur if the LMS1000 Gateway port data rate does not matched that of the local or remote terminal being used to access the customer equipment via LMS1000.

The following message is recorded in the event log after successfully changing the Gateway port's data rate:

```
Gateway port configured
```

Related Commands: CONNECT

Example:

```
Command<6>: SET GATEWAY
GATEWAY Port Setup:  2400,n,8,1
Enter New Setup:  xxxxx

GATEWAY Port Setup:  xxxxx,n,8,1
```
        or
```
ERROR: Invalid Parameter. Port setting not changed

Command<6>:
```

If the Gateway port is in use by another User, the requesting User is prompted as follows:

```
Unable to change settings – port in use by another user.
```

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SET INFO

Description: Permits viewing and entry of information on any of the three information pages.

Command Level: 6

Syntax: SET INFO [*n*]
SE IN [*n*]

Comments: The system prompts for the page number of the information page the user wishes to view or edit, and then displays the page. Each page consists of 20 lines, with a maximum of 79 character per line. Information pages can be used to store any type of data. When editing an existing line, use Ctrl-R to copy the entire text; or use Ctrl-Z to copy only one character from the existing text.

Notes: none

Related Commands: INFO

Example:

```
Command<6>: SET INFO
Which Page (1 - 3) ? 1
INFORMATION PAGE #1
Line 1: RECTIFIERS:
Line 2: RL200D50
Line 3: RL400D50 (2)
Line 4:
Line 5:
Line 6: FUSES
Line 7: C.B.
Line 8:
Line 9:
Line 10:
Line 11:
Line 12: MAINTENANCE
Line 13: BATTERY DISCHARGE ON 06/19/96
Line 14:
Line 15:
Line 16:
Line 17:
Line 18:
Line 19:
Line 20:
```

SET LED

Description: Allows manual energizing, or forcing, of an LED alarm indication.

Command Level: 5

Syntax: SET LED [*n*]
        SE LE [*n*]

Comments: none

Notes: Any user using the SET LED command will have his name and this action recorded in the event log. The SET LED command could generate an alarm log entry if the LED is configured as an alarm type. Additionally, if configured as an alarm type, this alarm could initiate a phone report or Email message. The LED can be cleared using the command CLR LED. In an LPS Power System, the name of the LED channel will scroll across the MCA display when the LED is active.

Related Commands: CLR LED

Example:

```
Command<5>: SET LED
Set LED (1 - 8): 3
Set LED (1 - 8):
```

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SET LIMITS

Description: Permits setting of the four analog limits for each input.

Command Level: 5

Syntax: SET LIMITS [*channel_type_node_number_channel_number*]
SE LI [*channel_type_node_number_channel_number*]

Comments: To utilize the special rate computations by the system, analog channel alarm limits names should include the text SIZ or CAP.

Notes: Any user setting limits using this command will have his name and this action recorded in the event log. Changing the limits could affect the analog alarm log conditions; which could affect alarm log entries; which could initiate a phone report or Email message.

If a limit is changed when an alarm is active which deactivates the alarm condition, the alarm remains active in the alarm log and will not be shown as cleared. Also, no retired alarm notification will be sent.

Except for the LPS Distribution Channels, limits cannot be set for analog LPS channels. These are set and controlled by the MCA.

Limits can also be programmed when a channel is configured. If the only change required to an existing channel is to change the limits, the SET LIMITS command eliminates the need to proceed through an entire channel configuration sequence.

Related Commands: LIMITS

Example:

```
Command<5>: SET LIMITS A0001
ANALOG CHANNEL 1 ALARM LIMITS AS OF 20:35:17 ON 02/09/01.
Chan    Description
 A0001 Analog Channel 1
  Limit /  Name        Class  Condtype              Ntfc  Svef
  70.0 H  HVA2                TOOHIGH               CR    SA
  Condition Description
VOLTAGE IS TOO HIGH
  60.0 H  HVA1                HIGH                  MJ    NSA
  Condition Description
VOLTAGE IS HIGH
  50.0 L  LVA1                LOW                   MN    SA
  Condition Description
VOLTAGE IS LOW
  40.0 L  LVA2                TOOLOW                CR    NSA
  Condition Description
VOLTAGE IS TOO LOW
Limit 1 Enabled: Yes
Limit 1 Enabled (Y or N):
Limit 1 Value: 70.0
Limit 1 Value:
Limit 1 Type: H
Limit 1 Type is High or Low (H or L):
Limit 1 Name: HVA2
```

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```
Limit 1 Name:
Limit 1 Notification Code: CR
Limit 1 Notification Code:
Limit 1 Service Effect Code: SA
Limit 1 Service Effect Code:
Limit 1 Alarm Class Number: 0
Condition Type: TOOHIGH
Condition Type:
Limit 1 Condition Description:
VOLTAGE IS TOO HIGH
Condition Description:
Limit 2 Enabled: Yes
Limit 2 Enabled (Y or N):
Limit 2 Value: 60.0
Limit 2 Value:
Limit 2 Type: H
Limit 2 Type is High or Low (H or L):
Limit 2 Name: HVA1
Limit 2 Name:
Limit 2 Notification Code: MJ
Limit 2 Notification Code:
Limit 2 Service Effect Code: NSA
Limit 2 Service Effect Code:
Limit 2 Alarm Class Number: 0
Condition Type: HIGH
Condition Type:
Limit 2 Condition Description:
VOLTAGE IS HIGH
Condition Description:
Limit 3 Enabled: Yes
Limit 3 Enabled (Y or N):
Limit 3 Value: 50.0
Limit 3 Value:
Limit 3 Type: L
Limit 3 Type is High or Low (H or L):
Limit 3 Name: LVA1
Limit 3 Name:
Limit 3 Notification Code: MN
Limit 3 Notification Code:
Limit 3 Service Effect Code: SA
Limit 3 Service Effect Code:
Limit 3 Alarm Class Number: 0
Condition Type: LOW
Condition Type:
Limit 3 Condition Description:
VOLTAGE IS LOW
Condition Description:
Limit 4 Enabled: Yes
Limit 4 Enabled (Y or N):
Limit 4 Value: 40.0
Limit 4 Value:
Limit 4 Type: L
Limit 4 Type is High or Low (H or L):
Limit 4 Name: LVA2
Limit 4 Name:
Limit 4 Notification Code: CR
Limit 4 Notification Code:
```

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```
Limit 4 Service Effect Code: NSA
Limit 4 Service Effect Code:
Limit 4 Alarm Class Number: 0
Condition Type: TOOLOW
Condition Type:
Limit 4 Condition Description:
VOLTAGE IS TOO LOW
Condition Description:
```

_____

```
Command<6>: SET LIMITS F0001
FUNCTION CHANNEL 1 ALARM LIMITS AS OF 20:35:52 ON 02/09/01.
Chan    Description
 F0001 Function Channel 1
  Limit /  Name        Class  Condtype            Ntfc  Svef
  5000.H  ABOVE 5000          TOOHIGH             CR    SA
  Condition Description
CURRENT IS TOO HIGH
  4000.H  ABOVE 4000          HIGH                CR    SA
  Condition Description
CURRENT IS HIGH
  100.0L  BELOW 100           LOW                 CR    SA
  Condition Description
CURRENT IS LOW
  50.00L  BELOW 50            TOOLOW              CR    SA
  Condition Description
CURRENT IS TOO LOW
Limit 1 Enabled: Yes
Limit 1 Enabled (Y or N):
Limit 1 Value: 5000.
Limit 1 Value:
Limit 1 Type: H
Limit 1 Type is High or Low (H or L):
Limit 1 Name: ABOVE 5000
Limit 1 Name:
Limit 1 Notification Code: CR
Limit 1 Notification Code:
Limit 1 Service Effect Code: SA
Limit 1 Service Effect Code:
Limit 1 Alarm Class Number: 0
Condition Type: TOOHIGH
Condition Type:
Limit 1 Condition Description:
CURRENT IS TOO HIGH
Condition Description:
Limit 2 Enabled: Yes
Limit 2 Enabled (Y or N):
Limit 2 Value: 4000.
Limit 2 Value:
Limit 2 Type: H
Limit 2 Type is High or Low (H or L):
Limit 2 Name: ABOVE 4000
Limit 2 Name:
Limit 2 Notification Code: CR
Limit 2 Notification Code:
Limit 2 Service Effect Code: SA
Limit 2 Service Effect Code:
```

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```
Limit 2 Alarm Class Number: 0
Condition Type: HIGH
Condition Type:
Limit 2 Condition Description:
CURRENT IS HIGH
Condition Description:
Limit 3 Enabled: Yes
Limit 3 Enabled (Y or N):
Limit 3 Value: 100.0
Limit 3 Value:
Limit 3 Type: L
Limit 3 Type is High or Low (H or L):
Limit 3 Name: BELOW 100
Limit 3 Name:
Limit 3 Notification Code: CR
Limit 3 Notification Code:
Limit 3 Service Effect Code: SA
Limit 3 Service Effect Code:
Limit 3 Alarm Class Number: 0
Condition Type: LOW
Condition Type:
Limit 3 Condition Description:
CURRENT IS LOW
Condition Description:
Limit 4 Enabled: Yes
Limit 4 Enabled (Y or N):
Limit 4 Value: 50.00
Limit 4 Value:
Limit 4 Type: L
Limit 4 Type is High or Low (H or L):
Limit 4 Name: BELOW 50
Limit 4 Name:
Limit 4 Notification Code: CR
Limit 4 Notification Code:
Limit 4 Service Effect Code: SA
Limit 4 Service Effect Code:
Limit 4 Alarm Class Number: 0
Condition Type: TOOLOW
Condition Type:
Limit 4 Condition Description:
CURRENT IS TOO LOW
Condition Description:
```

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SET LPS

Description: Lists all LPS MCA Interface commands that begin with the command SET, and then prompts the user to enter one of the displayed options.

Command Level: NA

Syntax: SET LPS [command]
    SE LP [command]

Comments: none

Notes: Only commands available to the current user are listed. The list in the example is for a user that has access to level 6 commands.

Related Commands: SET, SET VORTEX

Example:

```
Command<6>: set lps

Set What:
SYSTEM          PCU             MESSAGE         PASSWORD        CANIO
? sys

What system parameter:
FLTVOLT         TSTEQVOLT       HVS             CURLIMIT        HIVLTALM1
HIVLTALM2       BATONDISCH      VERYLOWVOLT     LOADCURRENT     LOADACURRENT
LOADBCURRENT    TSTEQMODE       NAGTIMER        TSTEQTIME       TEMPSLOPE
TEMPCOMPMAX     TEMPCOMPMIN     HI1TEMPALM      HI2TEMPALM      LOW1TEMPALM
LOW2TEMPALM     RLYTSTTIME      RLYONTEST       RLYOFFTEST      USECELSIUS
USEFAHRENHEIT   EQMULTIPLIER    UPDATEINV
? flt
Float Voltage: 52.08 VDC
Float Voltage: 52.1
New Float Voltage Accepted.
```

_____

```
Command<6>: set lps

Set What:
SYSTEM          PCU             MESSAGE         PASSWORD        CANIO
? pcu

Which PCU (bay#-pcu#)? 01-01
Turn PCU 01-01 ON or OFF? off
PCU 01-01 set OFF
```

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```
Command<6>: set lps

Set What:
SYSTEM          PCU              MESSAGE        PASSWORD        CANIO
? message

Which custom message:
PCU                MCA                    ROUTER          DISTRIBUTION   RELAY_BD
CANIO_BD

? pcu

Which PCU (bay#-pcu#)? 01-02
Custom message: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Custom message: this is pcu 2
Custom message CHANGED!
```
_____
```
Command<6>: set lps

Set What:
SYSTEM          PCU              MESSAGE        PASSWORD        CANIO
? pass

Enter current MCA password:
Enter new password:
Re-enter new password:
New password accepted
```
_____
```
Command<6>: set lps

Set What:
SYSTEM          PCU              MESSAGE        PASSWORD        CANIO

? canio

Which CAN I/O board (bay#-board#)? 01-04

What CAN I/O board parameter:
LOADTYPE        SCALE            BINARY
?
```

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User Instructions
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SET LPS CANIO

Description: Set LPS MCA CAN I/O circuit card parameters.

Command Level: 6

Syntax: SET LPS CANIO *[bb-dd]*, bb = LPS Bay #, dd = LPS Bay Slot #
SE LP CA *[bb-dd]*, bb = LPS Bay #, dd = LPS Bay Slot #

Comments: Prompted to select which LPS MCA CAN I/O circuit card, then which parameter to set (designate the alarm state for MCA CAN I/O circuit card binary inputs, designate MCA CAN I/O circuit card analog inputs as "auxiliary" or "distribution", or set the scale factor for MCA CAN I/O circuit card analog inputs and outputs).

Notes: None

Related Commands: none

Example:

```
Command<6>: set lps canio 01-04

What CAN I/O board parameter:
LOADTYPE          SCALE             BINARY
?
```
_____

```
Command<6>: set lps canio

Which CAN I/O board (bay#-board#)? 01-04

What CAN I/O board parameter:
LOADTYPE          SCALE             BINARY
? loadtype
CAN I/O board 01-04 set as DIST type
Set load type to AUX or DIST? aux
CAN I/O board 01-04 set as AUX type
```
_____

```
Command<6>: set lps canio

Which CAN I/O board (bay#-board#)? 01-04

What CAN I/O board parameter:
LOADTYPE          SCALE             BINARY
? scale
Set scale for INPUT or OUTPUT? output
Enter full scale Amps (100 - 20000): 100
CAN I/O board 01-04 Output scale set
```
_____

```
Command<6>: set lps canio

Which CAN I/O board (bay#-board#)? 01-04

What CAN I/O board parameter:
```

```
LOADTYPE          SCALE              BINARY
? binary
Which binary input (1-4)? 2
Binary Input #2 set to alarm on contact CLOSED
Set alarm on contact OPEN or CLOSED? open
Binary Input #2 set to alarm on contact OPEN
```

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SET LPS MESSAGE CANIO_BD

Description: Sets the Custom Text Message for the selected LPS MCA CAN I/O circuit card. This message appears in the inventory list during execution of the PRCONFIG LPS command. A user can also view the Custom Text Message from the MCA display panel whenever the i (information available) symbol appears in the display. Refer to the LPS System documentation.

Command Level: 6

Syntax: SET LPS MESSAGE CANIO_BD
SE LP ME CA

Comments: The current message is displayed, followed by a prompt to enter a new message.

Notes: The custom message can be 20 characters, maximum.

Related Commands: none

Example:

```
Command<6>: set lps message canio_bd

Which CAN I/O board (bay#-board#)? 01-01
CAN I/O board 01-01 not found!
```
_____

```
Command<6>: set lps message canio_bd

Which CAN I/O board (bay#-board#)? 01-04
Which message?
Enter 0 for CAN I/O board or 1-6 for individual I/O # 1
```

Note: *1 - Binary Input #1,* *2 - Binary Input #2,* *3 - Binary Input #3,*
4 - Binary Input # 4, *5 - Shunt Input, 6 - Shunt Output*

```
Custom message: This is the Analog Input!!!!!!!!
Custom message:
Custom message NOT CHANGED!
```
_____

```
Command<6>: set lps message canio_bd

Which CAN I/O board (bay#-board#)? 04-03
Which message?
Enter 0 for CAN I/O board or 1-6 for individual I/O # 0
Custom message: This is CAN I/O board in loc 4-3
Custom message:
Custom message NOT CHANGED!
```

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SET LPS MESSAGE DISTRIBUTION

Description: Sets the Custom Text Message for the selected LPS Distribution element. This message appears in the inventory list during execution of the PRCONFIG LPS command. A user can also view the Custom Text Message from the MCA display panel whenever the i (information available) symbol appears in the display. Refer to the LPS System documentation.

Command Level: 6

Syntax: SET LPS MESSAGE DISTRIBUTION
SE LP ME DI

Comments: The current message is displayed, followed by a prompt to enter a new message.

Notes: The custom message can be 20 characters, maximum.

Related Commands: none

Example:

```
Command<6>: set lps mes dis

Which DIST panel (bay#-panel#)? 02-01
Which message?
Enter 0 for DIST panel or 1-24 for panel element # 1
Custom message: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Custom message: this is fuse 1
Custom message CHANGED!
```
_____

```
Command<6>: set lps mes dis

Which DIST panel (bay#-panel#)? 02-01
Which message?
Enter 0 for DIST panel or 1-24 for panel element # 0
Custom message: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Custom message: this is panel 1 in bay 2
Custom message CHANGED!
```

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Spec. Nos. 586505000 and 5865055000 (Model LMS1000)

SET LPS MESSAGE MCA

Description: Sets the Custom Text Message for the LPS MCA element. This message appears in the inventory list during execution of the PRCONFIG LPS command. A user can also view the Custom Text Message from the MCA display panel whenever the i (information available) symbol appears in the display. Refer to the LPS System documentation.

Command Level: 6

Syntax: SET LPS MESSAGE MCA
SE LP ME MC

Comments: The current message is displayed, followed by a prompt to enter a new message.

Notes: The custom message can be 20 characters, maximum.

Related Commands: none

Example:

```
Command<6>: set lps mes mca
Custom message:
Custom message: this is the MCA
Custom message CHANGED!
```
_____

```
Command<6>: set lps mes mca
Custom message: this is the MCA
Custom message:
Custom message NOT CHANGED!
```

SET LPS MESSAGE PCU

Description: Sets the Custom Text Message for the selected LPS PCU element. This message appears in the inventory list during execution of the PRCONFIG LPS command. A user can also view the Custom Text Message from the MCA display panel whenever the i (information available) symbol appears in the display. Refer to the LPS System documentation.

Command Level: 6

Syntax: SET LPS MESSAGE PCU[*PCU_number*]
            SE LP ME PC[*PCU_number*]

Comments: The current message is displayed, followed by a prompt to enter a new message.

Notes: The custom message can be 20 characters, maximum.

Related Commands: none

Example:

```
Command<6>: set lps mes

Which custom message:
PCU               MCA               ROUTER          DISTRIBUTION    RELAY_BD

? pcu

Which PCU (bay#-pcu#)? 01-02
Custom message: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Custom message: this is pcu 2
Custom message CHANGED!
```

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SET LPS MESSAGE RELAY

Description: Sets the Custom Text Message for the selected LPS Relay element. This message appears in the inventory list during execution of the PRCONFIG LPS command. A user can also view the Custom Text Message from the MCA display panel whenever the i (information available) symbol appears in the display. Refer to the LPS System documentation.

Command Level: 6

Syntax: SET LPS MESSAGE RELAY
SE LP ME RE

Comments: The current message is displayed, followed by a prompt to enter a new message.

Notes: The custom message can be 20 characters, maximum.

Related Commands: none

Example:

```
Command<6>: set lps mes rel

Which relay board (bay#-board#)? 01-07
Relay board 01-07 not found!
```
_____

```
Command<6>: set lps mes rel

Which relay board (bay#-board#)? 01-01
Which message?
Enter 0 for relay board or 1-6 for individual relay # 1
Custom message: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Custom message: this is relay 1
Custom message CHANGED!
```
_____

```
Command<6>: set lps mes rel

Which relay board (bay#-board#)? 01-02
Which message?
Enter 0 for relay board or 1-6 for individual relay # 0
Custom message: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Custom message: this is board 2
Custom message CHANGED!
```

SET LPS MESSAGE ROUTER

Description: Sets the Custom Text Message for the selected LPS ROUTER (Bay) element. This message appears in the inventory list during execution of the PRCONFIG LPS command. A user can also view the Custom Text Message from the MCA display panel whenever the i (information available) symbol appears in the display. Refer to the LPS System documentation.

Command Level: 6

Syntax: SET LPS MESSAGE ROUTER
                SE LP ME RO

Comments: The current message is displayed, followed by a prompt to enter a new message.

Notes: The custom message can be 20 characters, maximum.

Related Commands: none

Example:

```
Command<6>: set lps mes rou

Which bay #? 02
Custom message: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Custom message: this is bay 2
Custom message CHANGED!
```

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SET LPS PASSWORD

Description: Sets the password issued by LMS1000 to gain remote access to the LPS. This password must match the LPS's MCA remote access password. By default, the password issued by LMS1000 and set in an LPS is MARCONI!, in all capitol letters. LMS1000 issues the password set here (or the default if not previously set) when LMS1000 is initially powered up or during a reset. The LPS does not grant remote access until the correct password is sent by LMS1000.

Command Level: 6

Syntax: SET LPS PASSWORD
SE LP PA

Comments: The LPS's MCA remote access password is case sensitive, and is limited to 6 characters.

Notes: This command does not change the LPS's MCA remote access password, only the password issued by the LMS1000 to gain remote access.

Record the new password in a secure place. There is no way to view the password set in the LMS1000.

Also, if the MCA's remote access password is ever changed, record the new password in a secure place. The current MCA remote access password cannot be viewed remotely from LMS1000. The password can be viewed locally, from the MCA's Interface Pad. Refer to the LPS manual for a procedure.

If LMS1000 does not successfully connect with the LPS during power up or reset, the following message is displayed when a user attempts LPS access via the LMS1000.

```
Invalid password
```

Related Commands: none

Example:

```
Command<6>: set lps pass

Enter current MCA password:
Enter new password:
Re-enter new password:
New password not accepted
```
_____

```
Command<6>: set lps pass

Enter current MCA password:
Enter new password:
Re-enter new password:
New password accepted
```

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SET LPS PCU

Description: Turns the selected LPS PCU on or off (TR feature).

Command Level: 6

Syntax: SET LPS PCU[*PCU_number*]
SE LP PC[*PCU_number*]

Comments: None

Notes: None

Related Commands: none

Example:

```
Command<6>: set lps

Set What:
SYSTEM          PCU               MESSAGE          PASSWORD
? pcu

Which PCU (bay#-pcu#)? 01-01
Turn PCU 01-01 ON or OFF? off
PCU set command NOT ACCEPTED!
```
_____

```
Command<6>: set lps pcu

Which PCU (bay#-pcu#)? 01-01
Turn PCU 01-01 ON or OFF? on
PCU 01-01 set ON
```

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SET LPS SYSTEM BATONDISCH

Description: Sets the LPS "battery on discharge alarm" value.

Command Level: 5

Syntax: SET LPS SYSTEM BATONDISCH
SE LP SY BA

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
Not Changed!

Related Commands: none

Example:

```
Command<6>: set lps sys bat
Battery on Discharge Alarm: 51.00 VDC
Battery on Discharge Alarm: 51.1
New Battery on Discharge Alarm Accepted.
```

SET LPS SYSTEM CURLIMIT

Description: Sets the LPS "current limit" value.

Command Level: 6

Syntax: SET LPS SYSTEM CURLIMIT
SE LP SY CU

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
Not Changed!

Related Commands: none

Example:

```
Command<6>: set lps sys cur
Plant Current Limit: 5600 Amps
Plant Current Limit: 5700
New Plant Current Limit Accepted.
```

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SET LPS SYSTEM EQMULTIPLIER

Description: Sets the LPS "auto equalize time multiplier" value.

Command Level: 6

Syntax: SET LPS SYSTEM EQMULTIPLIER
SE LP SY EQ

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
Not Changed!

Related Commands: none

Example:

```
Command<6>: set lps sys eq
Auto Equalize Time Multiplier: 0
Auto Equalize Time Multiplier: 1
New Auto Equalize Time Multiplier Accepted.
```

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SET LPS SYSTEM FLTVOLT

Description: Sets the LPS "float output voltage" value.

Command Level: 6

Syntax: SET LPS SYSTEM FLTVOLT
SE LP SY FL

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The MCA does not allow an adjustment which could result in a service interruption. Refer to the LPS instruction manual's float voltage adjustment procedure for details.

The following message is displayed if the setting was not accepted by the MCA.
```
Not Changed!
```

Related Commands: none

Example:

```
Command<6>: set lps flt
Float Voltage: 52.08 VDC
Float Voltage: 52.1
New Float Voltage Accepted.
```

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User Instructions
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SET LPS SYSTEM HI1TEMPALM

Description: Sets the LPS "high temperature 1 alarm" value.

Command Level: 5

Syntax: SET LPS SYSTEM HI1TEMPALM
SE LP SY HI1

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
```
Not Changed!
```

Related Commands: none

Example:

```
Command<6>: set lps sys hi1
High Temperature #1 Alarm: 100 DegC
High Temperature #1 Alarm: 101
High Temperature #1 Alarm NOT CHANGED!
```
_____

```
Command<6>: set lps sys hi1
High Temperature #1 Alarm: 100 DegC
High Temperature #1 Alarm: 99
New High Temperature #1 Alarm Accepted.
```

SET LPS SYSTEM HI2TEMPALM

Description: Sets the LPS "high temperature 2 alarm" value.

Command Level: 5

Syntax: SET LPS SYSTEM HI2TEMPALM
SE LP SY HI2

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
```
Not Changed!
```

Related Commands: none

Example:

```
Command<6>: set lps sys hi2
High Temperature #2 Alarm: 100 DegC
High Temperature #2 Alarm: 101
High Temperature #2 Alarm NOT CHANGED!
```
_____

```
Command<6>: set lps sys hi2
High Temperature #2 Alarm: 100 DegC
High Temperature #2 Alarm: 99
New High Temperature #2 Alarm Accepted.
```

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SET LPS SYSTEM HIVLTALM1

Description: Sets the LPS "high voltage 1 alarm" value.

Command Level: 5

Syntax: SET LPS SYSTEM HIVLTALM1
SE LP SY HIVLTALM1

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
`Not Changed!`

Related Commands: none

Example:

```
Command<6>: set lps sys hivltalm1
High Voltage #1 Alarm: 55.50 VDC
High Voltage #1 Alarm: 55.6
New High Voltage #1 Alarm Accepted.
```

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SET LPS SYSTEM HIVLTALM2

Description: Sets the LPS "high voltage 2 alarm" value.

Command Level: 5

Syntax: SET LPS SYSTEM HIVLTALM2
SE LP SY HIVLTALM2

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
`Not Changed!`

Related Commands: none

Example:

```
Command<6>: set lps sys hivltalm2
High Voltage #2 Alarm: 56.50 VDC
High Voltage #2 Alarm: 56.6
New High Voltage #2 Alarm Accepted.
```

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SET LPS SYSTEM HVS

Description: Sets the LPS "high voltage shutdown" value.

Command Level: 6

Syntax: SET LPS SYSTEM HVS
SE LP SY HV

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The MCA does not allow an adjustment which could result in a service interruption. Refer to the LPS instruction manual's high voltage shutdown adjustment procedure for details.

The following message is displayed if the setting was not accepted by the MCA.
```
Not Changed!
```

Related Commands: none

Example:

```
Command<6>: set lps sys hvs
High Voltage Shutdown: 57.50 VDC
High Voltage Shutdown: 57.6
New High Voltage Shutdown Accepted.
```

SET LPS SYSTEM LOADACURRENT

Description: Sets the LPS "Load Group A current alarm" value.

Command Level: 5

Syntax: SET LPS SYSTEM LOADACURRENT
SE LP SY LOADA

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
Not Changed!

Related Commands: none

Example:

```
Command<6>: set lps sys loada
A Load Overcurrent Alarm: 2500 Amps
A Load Overcurrent Alarm: 2600
New A Load Overcurrent Alarm Accepted.
```

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SET LPS SYSTEM LOADBCURRENT

Description: Sets the LPS "Load Group B current alarm" value.

Command Level: 5

Syntax: SET LPS SYSTEM LOADBCURRENT
SE LP SY LOADB

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
`Not Changed!`

Related Commands: none

Example:

```
Command<6>: set lps sys loadb
B Load Overcurrent Alarm: 2000 Amps
B Load Overcurrent Alarm: 2100
New B Load Overcurrent Alarm Accepted.
```

SET LPS SYSTEM LOADCURRENT

Description: Sets the LPS "total load current alarm" value.

Command Level: 5

Syntax: SET LPS SYSTEM LOADCURRENT
SE LP SY LO

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
`Not Changed!`

Related Commands: none

Example:

```
Command<6>: set lps sys loadc
Total Load Overcurrent Alarm: 5000 Amps
Total Load Overcurrent Alarm: 5100
New Total Load Overcurrent Alarm Accepted.
```

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SET LPS SYSTEM LOW1TEMPALM

Description: Sets the LPS "low temperature 1 alarm" value.

Command Level: 5

Syntax: SET LPS SYSTEM LOW1TEMPALM
SE LP SY LOW1

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
`Not Changed!`

Related Commands: none

Example:

```
Command<6>: set lps sys low1
Low Temperature #1 Alarm: -50 DegC
Low Temperature #1 Alarm: -49
New Low Temperature #1 Alarm Accepted.
```

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SET LPS SYSTEM LOW2TEMPALM

Description: Sets the LPS "low temperature 2 alarm" value.

Command Level: 5

Syntax: SET LPS SYSTEM LOW2TEMPALM
SE LP SYS LOW2

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
`Not Changed!`

Related Commands: none

Example:

```
Command<6>: set lps sys low2
Low Temperature #2 Alarm: -50 DegC
Low Temperature #2 Alarm: -49
New Low Temperature #2 Alarm Accepted.
```

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SET LPS SYSTEM NAGTIMER

Description: Sets the LPS "nag minutes (audible alarm cutoff reset time period)" value.

Command Level: 4

Syntax: SET LPS SYSTEM NAGTIMER
SE LP SY NA

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
```
Not Changed!
```

Related Commands: none

Example:

```
Command<6>: set lps sys nag
Audible Silent Time: 15 min.
Audible Silent Time: 30
Audible Silent Time NOT CHANGED!
```
_____

```
Command<6>: set lps sys nag
Audible Silent Time: 15 min.
Audible Silent Time: 10
New Audible Silent Time Accepted.
```

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SET LPS SYSTEM RLYOFFTEST

Description: Sets the LPS "alarm relay test feature" off.

Command Level: 6

Syntax: SET LPS SYSTEM RLYOFFTEST
SE LP SY RLYOF

Comments: The current state is displayed, followed by a prompt to change the state.

Notes: The following message is displayed if the setting was not accepted by the MCA.
Not Accepted!

Related Commands: none

Example:

```
Command<6>: set lps sys rlyoff
Relay test is active.
Stop Relay Function Test? (Y or N): y
Relay Test Stopped!
```

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SET LPS SYSTEM RLYONTEST

Description: Sets the LPS "alarm relay test feature" on.

Command Level: 6

Syntax: SET LPS SYSTEM RLYONTEST
SE LP SY RLYON

Comments: The current state is displayed, followed by a prompt to change the state.

Notes: The following message is displayed if the setting was not accepted by the MCA.
```
Not Accepted!
```

Related Commands: none

Example:

```
Command<6>: set lps sys rlyon
Relay test is inactive.
Start Relay Function Test? (Y or N): y
Relay Test Started!
```
_____

```
Command<6>: set lps sys rlyon
Relay test is active.
Start Relay Function Test? (Y or N): n
Command NOT ACCEPTED!
```

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SET LPS SYSTEM RLYTSTTIME

Description: Sets the LPS "alarm relay test time period" value.

Command Level: 5

Syntax: SET LPS SYSTEM RLYTSTTIME
SE LP SY RL

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
`Not Changed!`

Related Commands: none

Example:

```
Command<6>: set lps sys rly
Relay Test Time: 10 sec.
Relay Test Time: 20
New Relay Test Time Accepted.
```

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SET LPS SYSTEM TEMPCOMPMAX

Description: Sets the "battery charge temperature compensation feature's maximum voltage" value.

Command Level: 6

Syntax: SET LPS SYSTEM TEMPCOMPMAX
SE LP SY TEMPCOMPMA

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
`Not Changed!`

Related Commands: none

Example:

```
Command<6>: set lps sys tempcompmax
Maximum Temp. Compensation Voltage: 56.50 VDC
Maximum Temp. Compensation Voltage: 56.7
Maximum Temp. Compensation Voltage NOT CHANGED!
```

_____

```
Command<6>: set lps sys tempcompmax
Maximum Temp. Compensation Voltage: 56.50 VDC
Maximum Temp. Compensation Voltage: 55.9
New Maximum Temp. Compensation Voltage Accepted.
```

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SET LPS SYSTEM TEMPCOMPMIN

Description: Sets "battery charge temperature compensation feature's minimum voltage" value.

Command Level: 6

Syntax: SET LPS SYSTEM TEMPCOMPMIN
SE LP SY TEMPCOMPMI

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
`Not Changed!`

Related Commands: none

Example:

```
Command<6>: set lps sys tempcompmin
Minimum Temp. Compensation Voltage: 50.00 VDC
Minimum Temp. Compensation Voltage: 50.05
New Minimum Temp. Compensation Voltage Accepted.
```

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SET LPS SYSTEM TEMPSLOPE

Description: Sets the "battery charge temperature compensation feature's compensation slope" value.

Command Level: 6

Syntax: SET LPS SYSTEM TEMPSLOPE
SE LP SY TEMPS

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
Not Changed!

Related Commands: none

Example:

```
Command<6>: set lps sys temps
Temperature Compensation Slope: 0.111 V/DegC
Temperature Compensation Slope: 0.200
Temperature Compensation Slope NOT CHANGED!

NOTE, THE "0." IS ENTERED FOR THE USE
NOTE, NEED PROBE INSTALLED
```
_____

```
Command<6>: set lps sys temps
Temperature Compensation Slope: 0.111 V/DegC
Temperature Compensation Slope: 0.15
New Temperature Compensation Slope Accepted.
```
_____

```
Command<6>: set lps sys temp
Temperature Compensation Slope: 0.100 V/DegC
Temperature Compensation Slope: 0.0
Temperature compensation DEACTIVATED!
```
_____

```
Command<6>: set lps sys temps
Temperature Compensation Slope: 0.150 V/DegC
Temperature Compensation Slope: 0..1
Temperature compensation DEACTIVATED!

NOTE, ANYTHING THAT EVALUATES TO ZERO DEACTIVATE TC
```
_____

```
Command<6>: set lps sys temp
Temperature Compensation Slope: 0.000 V/DegC
Temperature Compensation Slope: 0.1
New Temperature Compensation Slope Accepted.
```

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SET LPS SYSTEM TSTEQMODE

Description: Sets the LPS to the float or test/equalize mode.

Command Level: 6

Syntax: SET LPS SYSTEM TSTEQMODE
SE LP SY TSTEQM

Comments: The current operating mode is displayed, followed by a prompt to change the operating mode.

Notes: None

Related Commands: none

Example:

```
Command<6>: set lps sys tsteqm
System is in float mode.
Turn test equalize mode ON or OFF? on
Test equalize mode is ON
```
_____

```
Command<6>: set lps sys tsteqm
System is in test equalize mode.
Turn test equalize mode ON or OFF? off
Test equalize mode is OFF
```
_____

```
Command<6>: set lps sys tsteqm on
System is in float mode.
Turn test equalize mode ON or OFF? on
Test equalize mode is ON
```

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SET LPS SYSTEM TSTEQTIME

Description: Sets the "timed equalize feature's equalize time period" value

Command Level: 6

Syntax: SET LPS SYSTEM TSTEQTIME
SE LP SY TSTEQT

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
Not Changed!

Related Commands: none

Example:

```
Command<6>: set lps sys tsteqt
Manual Test/Equalize Time: 1 hrs.
Manual Test/Equalize Time: 2
New Manual Test/Equalize Time Accepted.
```

SET LPS SYSTEM TSTEQVOLT

Description: Sets the LPS "test/equalize output voltage" value.

Command Level: 6

Syntax: SET LPS SYSTEM TSTEQVOLT
SE LP SY TST

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The MCA does not allow an adjustment which could result in a service interruption. Refer to the LPS instruction manual's test/equalize adjustment procedure for details.

The following message is displayed if the setting was not accepted by the MCA.
```
Not Changed!
```

Related Commands: none

Example:

```
Command<6>: set lps sys tst
Test/Equalize Voltage: 52.00 VDC
Test/Equalize Voltage: 52.1
New Test/Equalize Voltage Accepted.
```

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SET LPS SYSTEM UPDATEINV

Description: Resets the LPS "inventory" to reflect the current system configuration.

Command Level: 6

Syntax: SET LPS SYSTEM UPDATEINV
SE LP SY UP

Comments: None

Notes: None

Related Commands: none

Example:

```
Command<6>: set lps sys up

Execution of this command could REMOVE LPS Bay, PCU, and Distribution Panel
Configuration and could result in lost ALARM CONDITIONS!!

Do you wish to update the MCA inventory? (YES or NO): no
Command NOT ACCEPTED!
```

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SET LPS SYSTEM USECELSIUS

Description: Sets the LPS temperature readings to Celsius.

Command Level: 6

Syntax: SET LPS SYSTEM USECELSIUS
SE LP SY USEC

Comments: none

Notes: none

Related Commands: none

Example:

```
Command<6>: set lps sys usec

Change MCA to use Celsius? (Y or N): y
Change ACCEPTED!
```

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SET LPS SYSTEM USEFAHRENHEIT

Description: Sets the LPS temperature readings to Fahrenheit.

Command Level: 6

Syntax: SET LPS SYSTEM USEFAHRENHEIT
SE LP SY USEF

Comments: none

Notes: none

Related Commands: none

Example:

```
Command<6>: set lps sys usef

Change MCA to use Fahrenheit? (Y or N): y
Change ACCEPTED!
```

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SET LPS SYSTEM VERYLOWVOLT

Description: Sets the LPS "very low voltage alarm" value.

Command Level: 5

Syntax: SET LPS SYSTEM VERYLOWVOLT
SE LP SY VE

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.
`Not Changed!`

Related Commands: none

Example:

```
Command<6>: set lps sys very
Very Low Voltage Alarm: 47.00 VDC
Very Low Voltage Alarm: 47.1
New Very Low Voltage Alarm Accepted.
```

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SET MAIL

Description: Allows a user to enter a message which can be mailed to other users.

Command Level: 1

Syntax: SET MAIL
SE MA

Comments: The reply to the prompt "Send To" determines which users will receive the mail. Users will be notified of mail after logon to the system. Up to three lines of information with 79 characters per line can be entered.

Notes: none

Related Commands: CLR MAIL, MAIL

Example:

```
Command<1>:  SET MAIL
Mail Setup
Line 1:
Line 2:
Line 3:
Send To:
Read By:
Line 1: CHECK WATER LEVEL IN BATTERIES TODAY
Line 2: CALL ME @ 555-4645 IF ANY PROBLEMS
Line 3:
User 1 - John Martin
User 2 - Dave Erickson
User 3 - Terry Thomas
User 4 - Jerry Collins
User 5 - Jim Smith
User 6 - Joe Jones
User 7 - Bob Smith
User 8 - Maintenance Personnel
To Users: 3 5 6
```

SET MODE

Description: This command is only available if the TL1 software option is installed in the system. Configures TL1 port operation.

Command Level: 6

Syntax: SET MODE
         SE MO

Comments: When this command is entered, the current values of the TL1 port are displayed, followed by prompts to enter new values. Type a new value, or press ***ENTER*** to keep the current value.

Available TL1 configuration parameters:

Enter new TL1/X.25 port data rate: (TL1/X.25 option parameter only.) Enter the data rate in bits/sec for the TL1/X.25 port (either 110, 300, 1200, 2400, 4800, or 9600). The default is 9600 bits/sec. If the X28 Mode is selected, the data rate is determined automatically. The PAD device must be connected for this to be accomplished.

Enter new TL1 port number: (TL1 [over Ethernet] option parameter only.) Enter **2020** as the Telnet port number.

TCP Keepalive (Y or N): (TL1 [over Ethernet] option parameter only.) Enter "Y" if the system should test TL1 Telnet connection to remote system (recommended), and "N" if not.

Session Timeout (0-1440, 0=disabled): Enter the TL1 port session timeout value in minutes (0-1440, 0=disabled). A value of zero disables the session timeout feature.

Auto logon (Y or N): Enter "Y" if the system is required to automatically establish a user session, and "N" if not.

Auto logon user: This attribute only appears if "Y" is selected for "AUTO LOGON". Enter the number of the user who is automatically logged on by the system. The configuration of the entered user determines the access level of the user session and is used in determining when a report must be sent.

AID Delimiter (Y or N): In LMS1000, the TL1 Access Identifier (AID) parameter consists of an LMS1000 Access Identifier parameter and an LMS1000 Sub-Access Identifier parameter, as explained under LMS1000 Command SET AID. Enter "Y" to enable the use of a hyphen (AID delimiter) between the LMS1000 Access Identifier parameter and LMS1000 Sub-Access Identifier parameter in all responses to TL1 commands and reports containing a TL1 Access Identifier field. Enter "N" to disable the use of the "AID delimiter".

Save changes (Y or N): Enter a "Y" if the above changes are to be saved in the TL1 port configuration, and "N" if not. If "Y" is entered, the following message appears

"Must issue a hardware reset for changes to take effect."

Notes: This command can only be executed through the local port.

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The session timeout feature of the TL1 port operates independently from the system's user timeout feature. A session timeout is indicated by transmission of the TL1 CANCEL-SESSION message.

TL1 Autonomous Messaging:

Address/Phone Number: The PRIMARY PHONE NUMBER attribute of the user's configuration provides the network address to the system for TL1 autonomous messages. The DIRECT mode of operation transmits the string stored in the user PRIMARY PHONE NUMBER attribute prior to transmitting an autonomous message. This assumes that an existing string in the user PRIMARY PHONE NUMBER attribute can be detected from a user's configuration.

Auto-Logoff for Autonomous Messages: Currently, there is no auto-logoff of users who have established a session via the TL1 port. Pending autonomous messages are sent after the current user session is ended.

Related Commands: MODE

Example:

TL1/X.25 Software Option Installed

```
Command<6>: SET MODE
TL1 Mode: Direct
TL1/X.25 Comm Port Setting: 9600, n, 8, 1
Session Timeout:  600 min
Auto logon: Enabled
Auto logon user: User #7
AID delimiter: Yes

Enter new TL1/X.25 port data rate:
Session Timeout (0-1440, 0 = disable):
Auto logon (Y or N):
Auto logon user:
AID Delimiter (Y or N):
Save changes (Y or N):
Must issue a hardware reset for changes to take effect
```

TL1 (over Ethernet) Software Option Installed

```
Command<6>: SET MODE
TL1 Mode: Telnet
TCP Keepalive: Enabled
Port: 2020
Session Timeout:  600 min
Auto logon: Enabled
Auto logon user: User #7
AID delimiter: Yes

Enter new TL1 port number:
TCP Keepalive (Y or N): Y
Session Timeout (0-1440, 0 = disable):
Auto logon (Y or N):
Auto logon user:
```

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```
AID Delimiter (Y or N):
Save changes (Y or N):
Must issue a hardware reset for changes to take effect
```

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SET PERIODS

Description: Allows you to set one of eight time period intervals that can be used in the control programs as a variable (P term).

Command Level: 5

Syntax: SET PERIODS [*n*]
SE PE [*n*]

Comments: The time period is specified using the format FROM: hh:mm:ss   TO: hh:mm:ss.

Notes: The "FROM" time does not necessarily have be to less than, or before, the "TO" time. As an example, if time period 1 "FROM" time is set to 08:00:00 and the "TO" time is set to 07:00:00, then the control program term P1 will be true 23 hours a day. It will be false between 7:00 and 8:00 in the morning.

Related Commands: PERIOD

Example:

```
Command<5>: SET PERIODS
Which Time Period (1 - 8) ? 1
Time Period No. 1 - FROM           TO
FROM  time (hh:mm:ss)  08:15:00
  TO  time (hh:mm:ss) 16:00:00
Time Period No. 01 - FROM 08:15:00  TO 16:00:00
```

SET PHONE

Description: Allows changing of a user's two phone numbers.

Command Level: 3

Syntax: SET PHONE
　　　　　SE PH

Comments: A phone number can consist of up to 20 characters. The primary phone number is displayed, along with its valid days and valid hours. The alternate phone number is also displayed. The alternate phone number will be used by the system for days and hours that are not valid for the primary phone number. After reviewing this information, the user can enter new information, or press the return or enter key to proceed to the next entry.

Inserting a comma as part of the phone number provides a two second dialing delay when the phone number is dialed.

A phone number can also be entered when a user is configured. If the only change required to an existing channel is to change the phone number, the SET PHONE command eliminates the need to proceed through an entire user configuration sequence.

If you are using pager reporting and the pager company requires a user ID code, that information should be a part of the phone number. The ID code must be separated from the phone number by the character B. For example, if your user ID was 123#, your phone number might look like 1212743 4455 B123#.

Notes: Setting the "From Hour" to 08 and the "Thru Hour" to 16 would cause the primary phone number to be used between 8:00:00 am and 4:59:59 pm.

Related Commands: PHONE

Example:

```
Command<3>: SET PHONE

YOUR PHONE NUMBERS:
  Primary Phone:
  Primary Phone Valid Days: 1-7
  Primary Phone Valid Hours: 00-23
  Alternate Phone:

Primary Phone:
Primary Phone:

Valid Times for Primary Phone
From Day:
From Day:

Thru Day:
Thru Day:

From Hour:
From Hour:
```

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```
Thru Hour:
Thru Hour:

Alternate Phone:
Alternate Phone:
```

SET PROGRAM

Description: Allows changing of the control programs.

Command Level: 5

Syntax: SET PROGRAM [*channel_designator*]
SE PR [*channel_designator*]

Comments:

Refer to the Configuration chapter in the separate *Installation Manual* for a discussion on program lines.

When editing an existing control program use, Ctrl-R to copy the entire control program text, or use Ctrl-Z to copy only one character from the existing text.

A program line can also be entered when a channel is configured. If the only change required to an existing channel is to change the program line, the SET PROGRAM command eliminates the need to proceed through an entire channel configuration sequence.

Notes: This command could affect the alarm log information and therefore could also initiate a phone call or Email message. Any user setting a program line will have his name and this action recorded in the event log. Only one user at a time has access to the system internal program line editor. If the program line editor is in use and another user attempts to edit a program line, the user is notified that the editor is in use. When using channel_designator, only channel types L, R, or F are valid.

Related Commands: PROGRAM

Example:

```
Command<5>: SET PROGRAM
Which Channel ? R0003
Control Program: None
Enter Program Line:
R0003=A0005&B0001&P1
```

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SET REPORT

Description: Allows changing of the system alarm reporting function.

Command Level: 6

Syntax: SET REPORT
SE RE

Comments: The current status of the system reporting function as it is configured is first displayed, and then the user can change the configuration, if desired. Parameters displayed include System Alarm Report mode, which enables the reporting and allows the user to choose between single (system alarm reporting is considered successful if the system connects with a modem or sends an Email), or continuous (system alarm reporting is considered successful when the user issues an ACK command), or off. The User Calling Sequence allows the programming of users in the order in which the system will call in an attempt to communicate an alarm indication. The Retry Time is the time interval between the calling or Emailing of the last person designated in the user sequence and the recalling or Emailing of the first user in the sequence. The Auto-logoff Time is the interval the system waits with a pending report before issuing a priority message, and logging the user off.

In the typical screen display below, the system will first attempt to report system alarms to user No. 6. If not successful, it will attempt to call user No. 5, followed by user No. 4, then user No. 1. The system will try to call or Email user No. 6 again after 10 minutes and continue the sequence until the system gets through to any of the four users. After it gets through to one of the users, the system will no longer attempt to contact the other three users (single), or until the user issues an ACK command (continuous).

If the ACK (acknowledge) command is entered by any user to acknowledge new system alarms which have not been reported, no system alarm report attempts will be made for that particular alarm.

Notes: A maximum of 20 numbers can be entered in the User Calling Sequence. For Email alarm notification, also use the SET EMAIL command.

Related Commands: REPORT, SET EMAIL

Example:

```
Command<6>: SET REPORT
System Alarm Report mode: Single
User Calling Sequence: 6 5 4 1
Retry Time: 10m
Auto-logoff Time: 60sec
System Alarm Report mode: Continuous
User Calling Sequence: 6 5 4 1
Retry Time: 10m
Auto-logoff Time: 60sec
```

SET RLY

Description: Allows manual energizing of each of the control relays.

Command Level: 6, or level 5 if the relay channel being operated is configured in the user's channel group.

Syntax: SET RLY [[*node_number*]*channel_number*]
              SE RL [[*node_number*]*channel_number*]

Comments: The SET RLY command could generate an alarm log entry if the relay is configured as an alarm type. Additionally, if configured as an alarm type, this alarm could initiate a phone report or Email message.

A jumper is provided on the relay circuit card which can be used to disable the SET RLY and CLR RLY commands.

If a level 5 user attempts to set a relay channel not configured in the user's channel group, the following message is issued. "Illegal request, not configured to access this channel" or when using the voice feature "Relay access refused".

Notes: Any user using the SET RLY command will have his name and this action recorded in the event log. The relay can be released using the command CLR RLY.

Related Commands: CLR RLY

Example:

```
Command<6>: SET RLY
Set Relay: 0005
Set Relay:
```

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SET SEQUENCE

Description: Allows configuration of the sequencer option, if furnished.

Command Level: 6

Syntax: SET SEQUENCE
SE SE

Comments: Configuration information consists of the current status of the standby and AC sequencers. Additional information includes the Standby On/Proper Operate binary input, the Start Delay before standby sequencing begins, Sequencer Failsafe Time, AC Restoration Qualification Time, along with the AC Fail/Transfer binary input number and the Input Type. The standby start delay is in seconds. After the configuration information is displayed, the user can change the data if required.

Notes: Use of this command generates an entry into the Event Log. Sequencing affects all rectifiers configured for energy management. The AC Restoration Qualification Timer feature should be set to a few seconds less than the actual amount of time required for a proper transfer. Refer also to the Configuration chapter in the separate *Installation Manual*.

Related Commands: none

Example:

```
Command<6>: SET SEQUENCE

RECTIFIER SEQUENCING ROUTINES Current Setting (DISABLED or ACTIVE)

SEQUENCER OPTIONS:
AC Sequencer:  Off
    AC Fail/Transfer Input = B01
    Input type: AC Fail

Standby Sequencer:  Off
    Standby On/Proper Operate Input = B01
    Standby Start Delay: 15sec

Sequencer Failsafe time:
AC Restoration Qualification time:

AC Sequencer on (Y or N): y
AC Fail/Transfer Input = B1
Input type(Fail or Transfer): FAIL

Standby Sequencer on (Y or N): y
Standby On/Proper Operate Input = B1
Standby Start Delay: 15
Standby Start Delay:

Sequencer Failsafe time: 60
Sequencer Failsafe time:

AC Restoration Qualification time: 0
AC Restoration Qualification time:
```

```
Save changes (Y or N):  n
RECTIFIER SEQUENCING ROUTINES (Y or N):
```

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SET STATUS

Description: Permits configuration of related channel scan information into a convenient single page format consisting of 18 lines. Up to sixteen (16) status pages can be configured.

Command Level: 6

Syntax: SET STATUS [*n*]
SE ST [*n*]

Comments: The first line is reserved for the page name, with a maximum page name length of 30 characters. The remaining 17 lines can be either programmed to display header information, which is the names of the columns displayed during a scan, or actual scan data information from a particular channel. With this capability, a group of different channels can be scanned and appear together on a status page.

Refer to Table 3-3 below for a guide to character entries to display either header information or scan information for particular channels.

SCAN HEADER INFORMATION		SCAN CHANNEL DATA	
ENTER	HEADER TYPE	ENTER	CHANNEL TYPE
A	analog	A[*node_number_channel_number*]	analog
B	binary	B[*node_number_channel_number*]	binary
E	energy management	E[*channel_number*]	energy management
F	function	F[*channel_number*]	function
L	LED	L[*channel_number*]	LED
R	relay	R[*node_number_channel_number*]	relay

Table 3-3
SET STATUS Character Entries

Notes: none

Related Commands: STATUS

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Example:

```
Command<6>: SET STATUS

STATUS PAGES:
Pg  1: PBD02 STATUS               Pg  9:
Pg  2: A                          Pg 10:
Pg  3:  A1                        Pg 11:
Pg  4:                            Pg 12:
Pg  5: B                          Pg 13:
Pg  6: B1                         Pg 14:
Pg  7: B2                         Pg 15:
Pg  8: B3                         Pg 16:

Which page (1-16) ? 2

Pg 2 name:
Pg 2 name: PBD03 STATUS
Pg 2 line 1:
Pg 2 line 1: A
Pg 2 line 2:
Pg 2 line 2:
Pg 2 line 3:
Pg 2 line 3: A5
Pg 2 line 4:
Pg 2 line 4: A6
```

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SET SYSTEM

Description: Programs system and user configuration parameters.

Command Level: 6

Syntax: SET SYSTEM
SE SY

Comments: This command combines the function of several SET commands, allowing system and user information to be entered via a single command. The SET SYSTEM command is explained in detail in the Configuration Chapter of the separate *Installation Manual*.

Notes: Channel configuration parameters are set using the CONFIG command.

Related Commands: CONFIG

Example:

```
Command<6>: set system

Date is 08/17/01.
Use Format mm/dd/yy

Time is 11:39:28.
Use Format hh:mm:ss

LMS1000 V1.0   CRC: 1F1C26EB
Unit Name: Central Office - Unit #1
System Identifier(SID):

Unit Name:

Unit #

System Identifier(SID):

Unit Header:

Unit Pager Code:

LMS1000 V1.0  CRC: 1F1C26EB
Unit Name: Central Office - Unit #1
System Identifier(SID):

Rings before answer: 1
Enter New #:

Rings before answer: 1

USER NO. 1 CONFIGURATION
  Name: User #1                        Occurred Alarm Report: No
  Password: 1                          Retired Alarm Report: No
  Access Level: 1                      Persistent Alarm Report: No
  Callback: No                         Persistent Alarm Report Period: 0m
```

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```
  Mechanized Interface: No          Daily Report: No
  Report Mode: Off                  Daily Report Command:
  Report Device: Modem              Daily Report Time:
  Report Retry Time: 15m
  Primary Phone:
  Primary E-mail:
  Primary Phone Valid Days: 1-7
  Primary Phone Valid Hours: 00-23
  Alternate Phone:
  Alternate E-mail:

User active (Y or N):
                    Y
Name: User #1
Name:

Password: 1
Password:

Access Level: 1
Access Level (1 - 6):

Callback: N
Callback (Y or N):

Primary Phone:
Primary Phone:

Valid Times for Primary Phone
From Day: 1
From Day:

Thru Day: 7
Thru Day:

From Hour: 0
From Hour:

Thru Hour: 23
Thru Hour:

Alternate Phone:
Alternate Phone:

Primary E-mail:
Primary E-mail:

Alternate E-mail:
Alternate E-mail:

Report Device: Modem
Report Device (Modem, Ethernet, or X25):

Report Mode: Off
Report Mode (Off, Modem, Email):
Report Retry Time: 15
Report Retry Time:
```

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```
Occurred Alarm Report: N
Occurred Alarm Report (Y or N):

Retired Alarm Report: N
Retired Alarm Report (Y or N):

Persistent Alarm Report: N
Persistent Alarm Report (Y or N):

Daily Report: N
Daily Report (Y or N):

Save changes (Y or N):
                      Y

Edit User Channels (Y or N):
                         Y
Enter channel (eg. A0012 or A0001-6) or D to display.
Add Channel:

Enter channel (eg. A0012 or 000-6) or D to display.
Del Channel:
```

...

```
USER NO. 8 CONFIGURATION
  Name: User #8                      Occurred Alarm Report: No
  Password: 8                        Retired Alarm Report: No
  Access Level: 6                    Persistent Alarm Report: No
  Callback: No                       Persistent Alarm Report Period: 0m
  Mechanized Interface: No           Daily Report: No
  Report Mode: Off                   Daily Report Command:
  Report Device: Modem               Daily Report Time:
  Report Retry Time: 15m
  Primary Phone:
  Primary E-mail:
  Primary Phone Valid Days: 1-7
  Primary Phone Valid Hours: 00-23
  Alternate Phone:
  Alternate E-mail:

User active (Y or N):
                   Y
Name: User #8
Name:

Password: 8
Password:

Access Level: 6
Access Level (1 - 6):

Callback: N
Callback (Y or N):
```

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```
Primary Phone:
Primary Phone:

Valid Times for Primary Phone
From Day: 1
From Day:

Thru Day: 7
Thru Day:

From Hour: 0
From Hour:

Thru Hour: 23
Thru Hour:

Alternate Phone:
Alternate Phone:

Primary E-mail:
Primary E-mail:

Alternate E-mail:
Alternate E-mail:

Report Device: Modem
Report Device (Modem, Ethernet, or X25):

Report Mode: Off
Report Mode (Off, Modem, E-mail):
Report Retry Time: 15
Report Retry Time:

Occurred Alarm Report: N
Occurred Alarm Report (Y or N):

Retired Alarm Report: N
Retired Alarm Report (Y or N):

Persistent Alarm Report: N
Persistent Alarm Report (Y or N):

Daily Report: N
Daily Report (Y or N):

Save changes (Y or N):
                       Y

Edit User Channels (Y or N):
                             Y
Enter channel (eg. A12 or A1-6) or D to display.
Add Channel:

Enter channel (eg. A12 or A1-6) or D to display.
Del Channel:

System Alarm Report mode: Off
```

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```
User Calling Sequence:
Retry Time: 10m
Auto-logoff Time: 60sec

System Alarm Report mode:

User Calling Sequence:

Retry Time:

Auto-logoff Time:

System Alarm Report mode: Off
User Calling Sequence:
Retry Time: 10m
Auto-logoff Time: 60sec
```

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SET TIME

Description: Permits the setting of the system time.

Command Level: 3

Syntax: SET TIME
SE TI

Comments: The current time is displayed, and can be changed if desired by using the format hh:mm:ss.

Notes: This command will affect the times associated with any statistics that may be saved in memory. Also, any alarms that clear after the time is set will have the new time stored as part of their log entry, which could be misleading. Any user changing the time will have his name and this action recorded in the event log.

Related Commands: TIME

Example:

```
Command<3>: SET TIME
Time is 02:29:04.
Use Format HH:MM:SS
```

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SET TIMEOUT

Description: Defines the length of time that the system will remain on line without a command, carriage return, or line feed being entered before terminating a communications session.

Command Level: 6

Syntax: SET TIMEOUT
SE TIMEO

Comments: The timeout interval is programmable from 5 to 9999 seconds. The default time is 5 minutes.

Notes: Any user changing the timeout period will have his name and this action recorded in the event log.

The TL1 port has a session timeout feature which operates independently from the user timeout feature.

Related Commands: TIMEOUT

Example:

```
Command<6>: SET TIMEOUT
User timeout: 300 seconds.
Enter new user timeout:
User timeout: 300 seconds.
```

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SET UNIT

Description: Allows changing of the system unit name, unit number, system identifier, unit header, unit pager code, and pager delay.

Command Level: 6

Syntax: SET UNIT
SE UN

Comments: The current system unit name, unit number, system identifier, unit header, unit pager code, and pager delay is first displayed, and then a new system unit name (30 characters maximum), unit number (maximum four digits), system identifier (20 characters maximum), unit header (79 characters maximum), unit pager code (allowable characters are *, # , and digits), and pager delay (0-99) can be entered, if desired. If the current system unit number is satisfactory, pressing the return or enter key on the terminal cancels the command.

The system unit name and unit header is displayed when remote access is granted. The unit name, unit number, unit header, and system identifier are always displayed when a user logs on to the system, or when an alarm report is made. The pager delay determines the time delay in seconds between the last digit dialed in a pager phone number and outputting the pager PIN number.

The system identifier parameter applies only to TL1 commands/messages. This is a unique name which identifies the system in an NMA system. This data parameter is used to identify the destination of command messages and the source of response and autonomous messages in an NMA system. This parameter does not appear if the system is not equipped with the TL1 software option.

Notes: The use of this command causes an entry in the events log.

Related Commands: UNIT

Example:

```
Command<6>: SET UNIT

LMS1000 v1.0.0
Unit Name: Central Office - Unit #1
System Identifier:
Unit Header:
THIS IS THE UNIT HEADER
Unit Pager Code:
Pager Delay:

Unit Name: Lorain Engineering
Unit #1
System Identifier (SID):
Unit Header:
THIS IS THE UNIT HEADER
Unit Pager Code: 216-288-1122#
Pager Delay:
```

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SET USERS

Description: Allows tailoring of the alarm reporting features of the system to each of the eight users.

Command Level: 6

Syntax: SET USERS [*n*]
SE US [*n*]

Comments: The configuration of the user selected is first displayed. Information such as the name of the user, the password of the user, the access level of the user, whether or not the user has selected the callback feature, the primary phone number, valid days and hours of the primary phone number, the alternate phone number, Primary Email, and Alternate Email. Additional information includes whether the user is configured for the report device, status of the report mode, the report retry time interval, and whether the user is configured for the occurred alarm report, the retired alarm report, the persistent alarm report, the persistent alarm report period, the daily report, and the daily report command and time.

When callback is selected, additional security is obtained for remote access. After receiving a password from a remote terminal (over the phone line) the system will hang up and call either the primary or alternate phone number to obtain access remotely. The phone number selected will be based on the valid time and day.

If the report mode is set to OFF, none of the reporting functions for this user will be active regardless of their setting.

The report retry time is the number of minutes that the system will wait before attempting to contact the user with a callback or user alarm report if there was no answer or a busy signal during the first try (0-1440 minutes, with 0 representing no retry). (This retry time has no effect on System Alarm Reporting.) The system will continue to try until someone calls the system and logs on as the associated user.

When the occurred alarm report is set to YES, the user will receive a call if any new alarms occur on his channels. If the retired alarm report is set to YES, this user will receive a call when those alarms have cleared.

If the persistent alarm reporting function is selected, the system will continue to report this alarm until it has been cleared. The interval between reports for this function is set by the persistent alarm reporting period.

When the daily report is selected, the user will receive a customized report at a specified time each day.

A user cannot de-activate himself or change his own access level.

Notes: none

Related Commands: USERS, SET PHONE, SET EMAIL, SET CHANNELS, SET SYSTEM

Example:

```
Command<6>: set user
```

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```
Which user (1 - 8) ?
                 1

USER NO. 1 CONFIGURATION
  Name: User #1                        Occurred Alarm Report: No
  Password: 1                          Retired Alarm Report: No
  Access Level: 1                      Persistent Alarm Report: No
  Callback: No                         Persistent Alarm Report Period: 0m
  Mechanized Interface: No             Daily Report: No
  Report Mode: Off                     Daily Report Command:
  Report Device: Modem                 Daily Report Time:
  Report Retry Time: 15m
  Primary Phone:
  Primary E-mail:
  Primary Phone Valid Days: 1-7
  Primary Phone Valid Hours: 00-23
  Alternate Phone:
  Alternate E-mail:

User active (Y or N):
                 y
Name: User #1
Name:

Password: 1
Password:

Access Level: 1
Access Level (1 - 6):

Callback: N
Callback (Y or N):

Primary Phone:
Primary Phone:

Valid Times for Primary Phone
From Day: 1
From Day:

Thru Day: 7
Thru Day:

From Hour: 0
From Hour:

Thru Hour: 23
Thru Hour:

Alternate Phone:
Alternate Phone:

Primary E-mail:
Primary E-mail:

Alternate E-mail:
Alternate E-mail:
```

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```
Report Device: Modem
Report Device (Modem, Ethernet, X25, or Telnet):

Report Mode: Off
Report Mode (Off, E-mail, TL1):

Report Retry Time: 15
Report Retry Time:

TL1 Report Condition interval: 0
TL1 Report Condition interval:

Save changes (Y or N):
                   Y

Edit User Channels (Y or N):
                      Y
Enter channel (eg. A0012 or A0001-0006) or D to display.
Add Channel:

Enter channel (eg. A0012 or A0001-0006) or D to display.
Del Channel:
```

SET VI

Description: Sets the channels that the Web Interface uses to display system voltage and system current.

Command Level: 6

Syntax: SET VI
SE VI

Comments: One at a time, the current setting is displayed and then a line to change the setting. Simply press enter to keep the current setting.

Notes: If LMS1000 is connected to a LPS Power System (VPS), you can enter A9001 as the Plant Voltage channel and A9002 as the Plant Load channel.

Related Commands: none

Example:

```
Command<1>: SET VI
Plant Voltage:
Plant Voltage:  A9001
Plant Current:
Plant Current:  A9002
```

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SET VORTEX

Description: Lists all Vortex Interface commands that begin with the command SET, and then prompts the user to enter one of the displayed options.

Command Level: NA

Syntax: SET VORTEX [command]
SE V [command]

Comments: none

Notes: Only commands available to the current user are listed. The list in the example is for a user that has access to level 6 commands.

Related Commands: SET

Example:

```
Command<6>: SET V
SET what?
SYSTEM      SUBSYSTEM      LVD      PCU      MESSAGE
PASSWORD    INTERFACE
?
```

```
Command<6>: SET V SYSTEM
What System parameter:
FLTVOLT         TSTEQVOLT       HVS             CURLIMIT        CALVOLT
NAGTIMER        TEMPCOMP        MODE            HIVLTALM1       HIVLTALM2
50%BATONDISCH   BATONDISCH      OVRCURRENT      25APLACES       50APLACES
100APLACES      200APLACES      INVENTORY       FACTORYCAL
?
```

```
Command<6>: SET V SUBSYSTEM
What Subsystem parameter:
HIVALM       LVALM        OVRCURRENT      CALVOLT       FACTORYCAL
?
```

```
Command<6>: SET V LVD
What LVD setting:
RECONNECT    DISCONNECT
?DISCONNECT
Which LVD PANEL(1-3)?1
Which LVD circuit(A or B)?A
```

```
Command<6>: SET V PCU
Which PCU(1-56)?
```

```
Command<6>: SET V MESSAGE
Which custom message:
PCU    MCA
```

```
?PCU
Which PCU(1-56)?
```

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SET VORTEX INTERFACE

Description: Enables or disables the Vortex Interface.

Command Level: 6

Syntax: SET VORTEX INTERFACE
SE V IN

Comments: none

Notes: none

Related Commands: none

Example:

```
Command<6>: SET V INTERFACE
Vortex Power System interface is ACTIVE
Do you wish to deactivate Vortex Power System interface (Y or N): y
Currently communicating to Vortex MCA, cannot disable interface.
Vortex Power System interface is ACTIVE
```
_____

```
Command<6>: SET V INTERFACE
Vortex Power System interface is ACTIVE
Do you wish to deactivate Vortex Power System interface (Y or N): y
Vortex Power System is DISABLED
```
_____

```
Command<6>: SET V INTERFACE
Vortex Power System interface is DISABLED
Do you wish to activate Vortex Power System interface (Y or N): y
Vortex Power System interface is ACTIVE
```

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SET VORTEX LVD DISCONNECT

Description: Sets the low voltage disconnect "disconnect" value for the selected VPS low voltage disconnect circuit.

Command Level: 6

Syntax: SET VORTEX LVD[*LVD_number*][*LVD_side*] DISCONNECT
SE V LVD[*LVD_number*][*LVD_side*] DISC

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The MCA does not allow an adjustment which could result in a service interruption. Refer to the VPS instruction manual's low voltage disconnect "disconnect" adjustment procedure for details.

The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<6>: SET V LVD1 DISCONNECT
Which LVD circuit(A or B)? A
LVD1A Disconnect voltage setting: 42.00 VDC
LVD1A Disconnect voltage setting:
```
_____

```
Command<6>: SET V LVD2 DISCONNECT
Which LVD circuit(A or B)? B
LVD2B Disconnect voltage setting: 42.00 VDC
LVD2B Disconnect voltage setting:
```
_____

```
Command<6>: SET V LVD3 DISCONNECT
Which LVD circuit(A or B)? B
LVD3B Disconnect voltage setting: 42.00 VDC
LVD3B Disconnect voltage setting:
```
_____

```
Command<6>: SET V LVD2B DISCONNECT
No digitally controlled LVDs installed
```

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SET VORTEX LVD RECONNECT

Description: Sets the low voltage disconnect "reconnect" value for all installed VPS low voltage disconnect circuits.

Command Level: 6

Syntax: SET VORTEX LVD RECONNECT
SE V LVD REC

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The MCA does not allow an adjustment which could result in a service interruption. Refer to the VPS instruction manual's low voltage disconnect "reconnect" adjustment procedure for details.

The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<6>: SET V LVD RECONNECT
LVD Reconnect Voltage: 49.00 VDC
LVD Reconnect Voltage:
```

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SET VORTEX MESSAGE MCA

Description: Sets the custom message for the VPS MCA. This message appears in the inventory list during execution of the PRCONFIG VORTEX command.

Command Level: 6

Syntax: SET VORTEX MESSAGE MCA
SE V ME MCA

Comments: The current message is displayed, followed by a prompt to enter a new message.

Notes: The custom message can be 20 characters, maximum.

Related Commands: none

Example:

```
Command<6>: SET V MESSAGE MCA
Custom message:
Custom message:
```

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SET VORTEX MESSAGE PCU

Description: Sets the custom message for the selected VPS PCU. This message appears in the inventory list during execution of the PRCONFIG VORTEX command.

Command Level: 6

Syntax: SET VORTEX MESSAGE PCU[*PCU_number*]
SE V ME PCU[*PCU_number*]

Comments: The current message is displayed, followed by a prompt to enter a new message.

Notes: The custom message can be 20 characters, maximum.

Related Commands: none

Example:

```
Command<6>: SET V MESSAGE PCU1
Custom message:
Custom message:
```

SET VORTEX PASSWORD

Description: Sets the password issued by LMS1000 to gain remote access to the VPS. This password must match the VPS's MCA remote access password. By default, the password issued by LMS1000 and set in a VPS is VORTEX, in all capitol letters. LMS1000 issues the password set here (or the default if not previously set) when LMS1000 is initially powered up or during a reset. The VPS does not grant remote access until the correct password is sent by LMS1000.

Command Level: 6

Syntax: SET VORTEX PASSWORD
SE V PA

Comments: The VPS's MCA remote access password is case sensitive, and is limited to 6 characters.

Notes: This command does not change the VPS's MCA remote access password, only the password issued by the LMS1000 to gain remote access.

Record the new password in a secure place. There is no way to view the password set in the LMS1000.

Also, if the MCA's remote access password is ever changed, record the new password in a secure place. The current MCA remote access password cannot be viewed remotely from LMS1000. The password can be viewed locally, from the MCA's Interface Pad. Refer to the VPS manual for a procedure.

If LMS1000 does not successfully connect with the VPS during power up or reset, the following message is displayed when a user attempts VPS access via the LMS1000.

```
Vortex SMART/MCA communications error
```

Related Commands: none

Example:

```
Command<6>: SET V PASSWORD
Enter current MCA password:
Enter new password:
Re-enter new password:
New password accepted
```

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SET VORTEX PCU

Description: Toggles the selected VPS PCU on or off (TR feature).

Command Level: 6

Syntax: SET VORTEX PCU[*PCU_number*]
SE V PC[*PCU_number*]

Comments: The current state (on or off) of the PCU is displayed, followed by a prompt to change the PCU state.

Notes: None

Related Commands: none

Example:

```
Command<6>: SET V PCU03
PCU03 is Off
Turn PCU03 On (Y or N):
```

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SET VORTEX SUBSYSTEM CALVOLT

Description: Sets the VPS "subsystem voltage" calibration.

Command Level: 6

Syntax: SET VORTEX SUBSYSTEM CALVOLT
SE V SU CAL

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

The following message is displayed if a subsystem is not installed.

```
No Subsystem Installed
```

Related Commands: none

Example:

```
Command<5>: SET V SUBSYSTEM CALVOLT
Subsystem Calibrate Voltage: 27.60 VDC
Subsystem Calibrate Voltage:
```

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SET VORTEX SUBSYSTEM FACTORYCAL

Description: Resets the VPS "subsystem voltage" calibration to the factory default value.

Command Level: 6

Syntax: SET VORTEX SUBSYSTEM FACTORYCAL
SE V SU FACTORY

Comments: None

Notes: The following message is displayed if a subsystem is not installed.

```
No Subsystem Installed
```

Related Commands: none

Example:

```
Command<5>: SET V SUBSYSTEM FACTORYCAL
Subsystem calibrate voltage set to Factory default setting.
```

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SET VORTEX SUBSYSTEM HIVALM

Description: Sets the VPS "subsystem high voltage alarm" value.

Command Level: 5

Syntax: SET VORTEX SUBSYSTEM HIVALM
SE V SU HIV

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

The following message is displayed if a subsystem is not installed.

```
No Subsystem Installed
```

Related Commands: none

Example:

```
Command<5>: SET V SUBSYSTEM HIVALM
Subsystem High Voltage Alarm: 28.00 VDC
Subsystem High Voltage Alarm:
```

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SET VORTEX SUBSYSTEM LVALM

Description: Sets the VPS "subsystem low voltage alarm" value.

Command Level: 5

Syntax: SET VORTEX SUBSYSTEM LVALM
SE V SU LVALM

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

The following message is displayed if a subsystem is not installed.

```
No Subsystem Installed
```

Related Commands: none

Example:

```
Command<5>: SET V SUBSYSTEM LVALM
Subsystem Low Voltage Alarm: 27.00 VDC
Subsystem Low Voltage Alarm:
```

SET VORTEX SUBSYSTEM OVRCURRENT

Description: Sets the VPS "subsystem overcurrent alarm" value.

Command Level: 5

Syntax: SET VORTEX SUBSYSTEM OVRCURRENT
SE V SU OVRCURRENT

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

The following message is displayed if a subsystem is not installed.

```
No Subsystem Installed
```

Related Commands: none

Example:

```
Command<5>: SET V SUBSYSTEM OVRCURRENT
Subsystem Overcurrent: 1800 Amps
Subsystem Overcurrent:
```

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SET VORTEX SYSTEM 25APLACES

Description: Sets the number of 25A PCU mounting positions available (filled and empty) in the VPS.

Command Level: 6

Syntax: SET VORTEX SYSTEM 25APLACES
SE V SY 25A

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA:

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<6>: SET V SYS 25APLACES
Total 25A Places: 0
Total 25A Places:
```

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SET VORTEX SYSTEM 50APLACES

Description: Sets the number of 50A PCU mounting positions available (filled and empty) in the VPS.

Command Level: 6

Syntax: SET VORTEX SYSTEM 50APLACES
SE V SY 50A

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA:

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<6>: SET V SYS 50APLACES
Total 50A Places: 0
Total 50A Places:
```

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SET VORTEX SYSTEM 100APLACES

Description: Sets the number of 100A PCU mounting positions available (filled and empty) in the VPS.

Command Level: 6

Syntax: SET VORTEX SYSTEM 100APLACES
SE V SY 100A

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA:

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<6>: SET V SYS 100APLACES
Total 100A Places: 0
Total 100A Places:
```

SET VORTEX SYSTEM 200APLACES

Description: Sets the number of 200A PCU mounting positions available (filled and empty) in the VPS.

Command Level: 6

Syntax: SET VORTEX SYSTEM 200APLACES
SE V SY 200A

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA:

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<6>: SET V SYS 200APLACES
Total 200A Places: 0
Total 200A Places:
```

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SET VORTEX SYSTEM 50%BATONDISCH

Description: Sets the VPS "system 50% battery on discharge alarm" value.

Command Level: 5

Syntax: SET VORTEX SYSTEM 50%BATONDISCH
SE V SY 50%

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<5>: SET V SYSTEM 50%BATONDISCH
System 50% Battery On Discharge:
System 50% Battery On Discharge:
```

SET VORTEX SYSTEM BATONDISCH

Description: Sets the VPS "system battery on discharge alarm" value.

Command Level: 5

Syntax: SET VORTEX SYSTEM BATONDISCH
SE V SY BAT

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<5>: SET V SYSTEM BATONDISCH
System Battery On Discharge:
System Battery On Discharge:
```

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SET VORTEX SYSTEM CALVOLT

Description: Sets the VPS "system voltage" calibration.

Command Level: 6

Syntax: SET VORTEX SYSTEM CALVOLT
SE V SY CAL

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA:

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<6>: SET V SYSTEM CALVOLT
System calibrate voltage: 50.48 VDC
System calibrate voltage:
```

SET VORTEX SYSTEM CURLIMIT

Description: Sets the VPS "current limit value".

Command Level: 6

Syntax: SET VORTEX SYSTEM CURLIMIT
SE V SY CURLIMIT

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<6>: SET V SYSTEM CURLIMIT
Current limit: 500 Amps
Current limit:
```

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SET VORTEX SYSTEM FACTORYCAL

Description: Resets the VPS "system voltage" calibration to the factory default value.

Command Level: 6

Syntax: SET VORTEX SYSTEM FACTORYCAL
SE V SY FACTORY

Comments: None

Notes: None

Related Commands: none

Example:

```
Command<6>: SET V SYSTEM FACTORYCAL
System calibrate voltage set to Factory default setting.
```

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SET VORTEX SYSTEM FLTVOLT

Description: Sets the VPS "float output voltage" value.

Command Level: 6

Syntax: SET VORTEX SYSTEM FLTVOLT
SE V SY FLT

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The MCA does not allow an adjustment which could result in a service interruption. Refer to the VPS instruction manual's float voltage adjustment procedure for details.

The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<6>: SET V SYSTEM FLTVOLT
Float voltage:
Float voltage:
```

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SET VORTEX SYSTEM HIVLTALM1

Description: Sets the VPS "system high voltage alarm 1" value.

Command Level: 5

Syntax: VORTEX SYSTEM HIVLTALM1
SE V SY HIVLTALM1

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<5>: SET V SYSTEM HIVLTALM1
System High Voltage 1 Alarm: 50.00 VDC
System High Voltage 1 Alarm:
```

SET VORTEX SYSTEM HIVLTALM2

Description: Sets the VPS "system high voltage alarm 2" value.

Command Level: 5

Syntax: SET VORTEX SYSTEM HIVLTALM2
SE V SY HIVLTALM2

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<5>: SET V SYSTEM HIVLTALM2
System High Voltage 2 Alarm: 53.00 VDC
System High Voltage 2 Alarm:
```

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SET VORTEX SYSTEM HVS

Description: Sets the VPS "high voltage shutdown" value.

Command Level: 6

Syntax: SET VORTEX SYSTEM HVS
SE V SY HVS

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The MCA does not allow an adjustment which could result in a service interruption. Refer to the VPS instruction manual's high voltage shutdown adjustment procedure for details.

The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<6>: SET V SYSTEM HVS
System How Voltage Shutdown: 59.50 VDC
System How Voltage Shutdown:
```

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SET VORTEX SYSTEM INVENTORY

Description: Resets the VPS "inventory" to reflect the current system configuration.

Command Level: 6

Syntax: SET VORTEX SYSTEM INVENTORY
SE V SY INV

Comments: None

Notes: None

Related Commands: none

Example:

```
Command<6>: SET V SYSTEM INVENTORY
Equipment inventory has been reset
```

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SET VORTEX SYSTEM MODE

Description: Toggles the VPS operating mode (float output voltage or test/equalize output voltage).

Command Level: 6

Syntax: SET VORTEX SYSTEM MODE
SE V SY MODE

Comments: The current operating mode is displayed, followed by a prompt to change the operating mode.

Notes: None

Related Commands: none

Example:

```
Command<6>: SET V SYSTEM MODE
System Mode: Float
System Mode (Float or TestEq):
```

SET VORTEX SYSTEM NAGTIMER

Description: Sets the VPS "nag minutes" (audible alarm cutoff reset time period) value.

Command Level: 4

Syntax: SET VORTEX SYSTEM NAGTIMER
SE V SY NAG

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<4>: SET V SYSTEM NAGTIMER
NAG (ACO) Timer: 5 minutes
NAG (ACO) Timer:
```

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SET VORTEX SYSTEM OVRCURRENT

Description: Sets the VPS "system overcurrent alarm" value.

Command Level: 5

Syntax: SET VORTEX SYSTEM OVRCURRENT
SE V SY OVRCURRENT

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.

```
Power system did not accept the new value, setting remains
unchanged.
```

Related Commands: none

Example:

```
Command<5>: SET V SYSTEM OVRCURRENT
System Overcurrent: 2000 Amps
System Overcurrent:
```

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SET VORTEX SYSTEM TEMPCOMP

Description: Sets the VPS battery charge temperature compensation module's "calibration voltage" value.

Command Level: 6

Syntax: SET VORTEX SYSTEM TEMPCOMP
SE V SY TEMPCOMP

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The following message is displayed if the setting was not accepted by the MCA.

```
Invalid value entered, request to update setting denied.
```

Related Commands: none

Example:

```
Command<6>: SET V SYSTEM TEMPCOMP
Temperature compensation Voltage: 48.09 VDC
Temperature compensation Voltage:
```

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SET VORTEX SYSTEM TSTEQVOLT

Description: Sets the VPS "test/equalize output voltage" value.

Command Level: 6

Syntax: SET VORTEX SYSTEM TSTEQVOLT
SE V SY TSTEQVOLT

Comments: The current value is displayed, followed by a prompt to enter a new value.

Notes: The MCA does not allow an adjustment which could result in a service interruption. Refer to the VPS instruction manual's test/equalize adjustment procedure for details.

The following message is displayed if the setting was not accepted by the MCA.

```
Invalid value entered, request to update setting denied.
```

Related Commands: none

Example:

```
Command<6>: SET V SYSTEM TSTEQVOLT
Test/Equalize Voltage: 53.00 VDC
Test/Equalize Voltage:
```

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STATS

Description: This command lists the statistics for Analog and Function channels.

Command Level: 1

Syntax: STATS[*node_designator*] [*channel_range*] [*node_range*] [*group_designator*]
STATS A
STATS F
STATS A[[*node_number*]*channel_number*]
STATS F[*channel_number*]
ST[*node_designator*] [*channel_range*] [*node_range*] [*group_designator*]

Comments: Information presented includes the three hourly averages and their time and date of occurrence, the time and date of the peak value, and the time and date of the minimum value recorded. Entering the command STATS without a number n will display the statistics for all analog inputs and function channels.

Notes: Any statistic showing a zeroed date and time means the statistic has been recently reset. When using channel_range, only channel types A or F are valid.

When readings have not yet been taken, the Stats will display the smallest possible reading for high or maximum averages and the highest possible reading for the minimum.

Related Commands: CLR STATS

Example:

```
Command<1>: STATS
A0001 stats: Analog Channel 1.  Last reset 03/22/01 02:12:18
  #1 High Hrly Avg of -20000 Amps at 00/00/00 00/00.
  #2 High Hrly Avg of -20000 Amps at 00/00/00 00/00.
  #3 High Hrly Avg of -20000 Amps at 00/00/00 00/00.
  Maximum of -20000 Amps at 00/00/00 00/00.
  Minimum of  20000 Amps at 00/00/00 00/00.
A0002 stats: Analog Channel 2.  Last reset 03/21/01 23:56:38
  #1 High Hrly Avg of -20000 Amps at 00/00/00 00/00.
  #2 High Hrly Avg of -20000 Amps at 00/00/00 00/00.
  #3 High Hrly Avg of -20000 Amps at 00/00/00 00/00.
  Maximum of -0.000 Amps at 03/22/00 00:08.
  Minimum of -0.000 Amps at 03/21/00 23:56.
A0003 stats: Analog Channel 3.  Last reset 03/21/01 23:56:38
  #1 High Hrly Avg of  1.970 Amps at 03/22/00 01:00.
  #2 High Hrly Avg of  0.001 Amps at 03/22/00 00:00.
  #3 High Hrly Avg of -20000 Amps at 00/00/00 00/00.
  Maximum of  5.163 Amps at 03/22/00 01:59.
  Minimum of  0.001 Amps at 03/22/00 00:59.
```

```
Command<6>: stats f
F0001 stats: Function Channel 1.  Last reset 03/21/01 23:56:38
  #1 High Hrly Avg of -99999 Amps at 00/00/00 00/00.
  #2 High Hrly Avg of -99999 Amps at 00/00/00 00/00.
  #3 High Hrly Avg of -99999 Amps at 00/00/00 00/00.
  Maximum of  0.000 Amps at 03/22/00 00:09.
  Minimum of  0.000 Amps at 03/22/00 00:09.
```

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STATUS

Description: Displays the status page.

Command Level: 1

Syntax: STATUS

Comments: After entering the command STATUS, the user can review the titles of the status pages. After review, the user is prompted to enter a status page number. Entering a page number displays the selected page. Each of the eight status pages permit convenient review of several related channel scans. The channels listed on a status page are determined by the user, and can include the channel header information if desired.

Notes: none

Related Commands: SET STATUS

Example:

```
Command<1>: status
STATUS PAGES:
Pg  1: PBD02 STATUS                  Pg  9:
Pg  2:                               Pg 10:
Pg  3:                               Pg 11:
Pg  4:                               Pg 12:
Pg  5:                               Pg 13:
Pg  6:                               Pg 14:
Pg  7:                               Pg 15:
Pg  8:                               Pg 16:
Which page (1-16) ? 1
                          PBD02 STATUS
Chan Description        Value  Unit  Alarm1  Alarm2  Alarm3  Alarm4
A0001  PBD02 LOAD 11    +0.0   Amps  N    0  N    0  N    0  N    0
A0002  PBD02 LOAD 12    +0.1   Amps  N    0  N    0  N    0  N    0
A0003  PBD02 LOAD 13    +0.0   Amps  N    0  N    0  N    0  N    0
A0004  PBD02 LOAD 14    +0.0   Amps  N    0  N    0  N    0  N    0
```

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TIME

Description: Displays the current day of the week, month, day, year, and time.

Command Level: 1

Syntax: TIME
T

Comments: none

Notes: none

Related Commands: DATE

Example:

```
Command<1>: time
Today is Thursday 06/19/01  at 15:34:21.
```

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TIMEOUT

Description: Lists the length of time that the system will remain on-line without a command, carriage return, or line feed being entered.

Command Level: 2

Syntax: TIMEOUT
TIMEO

Comments: At the end of the time interval, the system will terminate the communications session.

Notes: none

Related Commands: SET TIMEOUT

Example:

```
Command<2>: TIMEOUT
User timeout: 300 seconds.
```

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UNIT

Description: Displays the unit name, unit number, system identifier, unit header, unit pager code, and pager delay.

Command Level: 1

Syntax: UNIT
      U

Comments: None

Notes: none

Related Commands: SET UNIT

Example:

```
Command<1>: UNIT
LMS1000 v3.0.0
Unit Name: Central Office - Unit #1
System Identifier (SID):
Unit Header:
THIS IS THE UNIT HEADER
Unit Pager Code:
Pager Delay:
```

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UPLOAD

Description: Allows transfer of configuration information to the system from any personal computer capable of uploading and downloading a file to a disk using XMODEM protocol with CRC error checking.

Command Level: 6

Syntax: UPLOAD
UP

Comments: The UPLOAD command expects to receive information that is from a DOWNLOAD command. Before using the upload command it is recommended that the defaults first be set (SET DEFAULTS).

Notes: The personal computer must be equipped with a communications software package which allows saving of information and transfer of information to a floppy disk, hard disk, or RAM. The software package must also be capable of uploading information from the personal computer to another device, such as the system. Refer to the communications software package instruction manual for specific operating information.

Related Commands: DOWNLOAD

Example:

```
Command<6>: UPLOAD
UPLOAD using XMODEM Protocol with CRC error checking
```

UPLOAD TFTP

Description: Allows transfer of configuration information to the system from any networked personal computer capable of uploading and downloading a file to a disk using the TFTP Protocol.

Command Level: 6

Syntax: UPLOAD TFTP
UP TFTP

Comments: The UPLOAD command expects to receive information that has been download via a DOWNLOAD or DOWNLOAD TFTP command. Before using the upload command, it is recommended that the default first be set (SET DEFAULTS).

Notes: A separate TFTP client session must be started on the host from which the configuration file is transferred.

Related Commands: DOWNLOAD
DOWNLOAD TFTP

Example:

```
Command<6> : UPLOAD TFTP
UPLOAD using TFTP
```

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UPLOAD VORTEX

Description: Allows transfer of configuration information to the VPS from any personal computer capable of uploading and downloading a file to a disk using XMODEM protocol with CRC error checking.

Command Level: 6

Syntax: UPLOAD VORTEX
UP V

Comments: The UPLOAD VORTEX command expects to receive information that is from a DOWNLOAD VORTEX command.

Notes: The personal computer must be equipped with a communications software package which allows saving of information and transfer of information to a floppy disk, hard disk, or RAM. The software package must also be capable of uploading information from the personal computer to another device, such as the VPS. Refer to the communications software package instruction manual for specific operating information. This command requires a communication program which supports XMODEM and CRC checking.

Related Commands: DOWNLOAD VORTEX

Example:

```
Command<6>: UPLOAD VORTEX
Upload VORTEX Power System Custom Message Text Blocks (Y or N)?n
UPLOAD using XMODEM Protocol with CRC error checking
9 blocks received OK.
Upload complete.
```

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USERS

Description: Lists each user and associated configuration information.

Command Level: 6

Syntax: USERS
USERS *n*
US
US *n*

Comments: none

Notes: When the command is entered with a command modifier, the active/inactive state for that user is shown. When the command is entered with no command modifier, inactive users are also listed along with the configurations of all active users.

Related Commands: Set Users

Example:

```
Command<6>: USER 8

USER NO. 8 CONFIGURATION – User is:  inactive

  Name: User #8                        Occurred Alarm Report: No
  Password: 8                          Retired Alarm Report: No
  Access Level: 6                      Persistent Alarm Report: No
  Callback: No                         Persistent Alarm Report Period: 0m
  Mechanized Interface: No             Daily Report: No
  Report Mode: Off                     Daily Report Command:
  Report Device: Modem                 Daily Report Time:
  Report Retry Time: 15m
  Primary Phone:
  Primary E-mail:
  Primary Phone Valid Days: 1-7
  Primary Phone Valid Hours: 00-23
  Alternate Phone:
  Alternate E-mail:

USER NO. 8 CHANNELS: None
_____

Command<6>: USER

. . .

USER NO. 2 CONFIGURATION – User is:  active

  Name: User #2                        Occurred Alarm Report: No
  Password: 2                          Retired Alarm Report: No
  Access Level: 2                      Persistent Alarm Report: No
  Callback: No                         Persistent Alarm Report Period: 0m
  Mechanized Interface: No             Daily Report: No
  Report Mode: Off                     Daily Report Command:
  Report Device: Modem                 Daily Report Time:
```

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```
  Report Retry Time: 15m
  Primary Phone:
  Primary E-mail:
  Primary Phone Valid Days: 1-7
  Primary Phone Valid Hours: 00-23
  Alternate Phone:
  Alternate E-mail:

USER NO. 2 CHANNELS: None


USER NO. 3 is inactive

USER NO. 4 CONFIGURATION – User is:  active

  Name: User #4                       Occurred Alarm Report: No
  Password: 4                         Retired Alarm Report: No
  Access Level: 4                     Persistent Alarm Report: No
  Callback: No                        Persistent Alarm Report Period: 0m
  Mechanized Interface: No            Daily Report: No
  Report Mode: Off                    Daily Report Command:
  Report Device: Modem                Daily Report Time:
  Report Retry Time: 15m
  Primary Phone:
  Primary E-mail:
  Primary Phone Valid Days: 1-7
  Primary Phone Valid Hours: 00-23
  Alternate Phone:
  Alternate E-mail:

USER NO. 4 CHANNELS: None

. . .
```

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VI

Description: Show Plant Voltage and Load.

Command Level: 1

Syntax: VI

Comments: none

Notes: none

Related Commands: none

Example:

```
Command<1>: VI
Plant Voltage:  A9001
Plant Current:  A9002
```

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IP NETWORKING COMMANDS

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IP NETWORKING COMMANDS (IN ALPHABETICAL ORDER)

This section presents a more detailed description of each IP NETWORKING command available when the SNMP software option is furnished, again in alphabetical order. Command syntax and examples of typical screen displays are given.

The following page shows a sample command page that explains the format used for the commands listed in this section. Following the sample command page is an explanation of the conventions used, plus other information on using command options.

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Sample Command

Description: This section describes the purpose of the command.

Command Level: This section tells what level of access is required to execute the command.

Syntax: command [options] , where command is the name of the command and options are as defined on the next page. Listed in this section is the entire command name, plus the least amount of characters that have to be typed for the command to be recognized.

Comments: This section describes the command in more detail and also explains the use of the command's options.

Notes: This section discusses important points related to the use of the command, such as limitations or warnings.

Related Commands: Lists related commands.

Example: Shows one or more examples that illustrate how to use the command plus a typical screen display.

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Command Conventions and Options

COMMAND CONVENTIONS

The following conventions are used for the command options.

Convention   Usage

italics   Items shown in italics are variables and requires you to supply the text. For example, when text appears in italics, you should type the desired text.

[brackets]   Items in brackets are optional information that may be used with a command. To include optional information, type a space after the command name and then type the information within the brackets. Do not type the brackets themselves.

COMMAND OPTIONS

Command options provide a command with extra information that affect the operation of the command. If options are omitted, the command either prompts you to supply them or uses a default value. The valid options for a command may be one or more of the following, but you can only use one option at a time.

Option   Description

Address   nnn.nnn.nnn.nnn, where $0 \le nnn \le 255$

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IP

Description: Display information regarding the user configurable IP Network variables.

Command Level: 6

Syntax: IP

Comments: This command displays all the relevant IP information.

Notes: If the **Network Address, Netmask**, or **Gateway Address** is 0.0.0.0, the address will be displayed as **NONE.** If there are no hosts on the access list, the command displays:

No host access list. Unrestricted access granted.

The authorized host list is the list of remote computers permitted to access the system via **telnet**, **TFTP**, or **SNMP**. Hosts are identified on the list by their **IP** address. The list supports a maximum of 32 entries.

If there are no hosts on the list, access is granted to any computer attempting to connect to the system.

Related Commands: IP ADD
IP ADDRESS
IP DELETE
IP GATEWAY
IP NETMASK

Example:

```
Command<6> : IP
     IP Network Address  : 216.32.74.51
     IP Gateway Address  : 216.32.74.1
     IP Netmask          : 255.255.255.0
     Ethernet Address    : 00:0C:0A:60:12:2C
     IP Authorized Hosts : 216.32.74.42
                           216.32.74.43
```

IP ADD

Description: Add a new host to the list of authorized hosts.

Command Level: 6

Syntax: IP ADD [*address*]

Comments: *See **IP** for a description of the hosts list.*
Enter the address in the format nnn.nnn.nnn.nnn, where 0 ≤ nnn ≤ 255. Addresses of 0.0.0.0 and 255.255.255.255 are not permitted on the list.

Notes: none

Related Commands: IP
                      IP ADDRESS
                      IP DELETE
                      IP GATEWAY
                      IP NETMASK

Example:

```
Command<6> : IP ADD 216.32.74.42

IP host added.
```

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IP ADDRESS

Description: Set the Unit's IP address.

Command Level: 6

Syntax: IP ADDRESS [*address*]

Comments: Enter the address in the format nnn.nnn.nnn.nnn, where 0 ≤ nnn ≤ 255. The address must be a valid address and must not be 255.255.255.255.

Notes: An IP address of 0.0.0.0 will prevent an Ethernet access to the unit.

Related Commands: IP
          IP ADD
          IP DELETE
          IP GATEWAY
          IP NETMASK

Example:

```
Command<6> : IP ADDRESS 216.32.74.51
```

IP DELETE

Description: Remove a host from the list of authorized hosts.

Command Level: 6

Syntax: IP DELETE [*address*]

Comments: *See IP for a description of the hosts list.*
Enter the address in the format nnn.nnn.nnn.nnn, where 0 ≤ nnn ≤ 255.

Notes: [address] must be a host currently on the list of authorized hosts.

Related Commands: IP
IP ADD
IP ADDRESS
IP GATEWAY
IP NETMASK

Example:

```
Command<6> : IP DELETE 216.32.74.42
```

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IP GATEWAY

Description: Set the unit's gateway address.

Command Level: 6

Syntax: IP GATEWAY [*address*]

Comments: Enter the address in the format nnn.nnn.nnn.nnn, where 0 ≤ nnn ≤ 255. This command sets the address of the gateway of the network on which the unit resides.

Notes: The gateway address must be a valid IP address and must not be 255.255.255.255.

Related Commands: IP
IP ADD
IP ADDRESS
IP DELETE
IP NETMASK

Example:

```
Command<6> : IP GATEWAY 216.32.74.1
```

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IP NETMASK

Description: Set the unit's network netmask.

Command Level: 6

Syntax: IP NETMASK [*address*]

Comments: Enter the address in the format nnn.nnn.nnn.nnn, where $0 \leq$ nnn ≤ 255.

Notes: none

Related Commands: IP
IP ADD
IP ADDRESS
IP DELETE
IP GATEWAY

Example:

```
Command<6> : IP NETMASK 255.255.255.0
```

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SNMP COMMANDS

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SNMP COMMANDS (IN ALPHABETICAL ORDER)

This section presents a more detailed description of each SNMP command available when the SNMP software option is furnished, again in alphabetical order. Command syntax and examples of typical screen displays are given.

The following page shows a sample command page that explains the format used for the commands listed in this section. Following the sample command page is an explanation of the conventions used, plus other information on using command options.

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Sample Command

Description: This section describes the purpose of the command.

Command Level: This section tells what level of access is required to execute the command.

Syntax: command [options] , where command is the name of the command and options are as defined on the next page. Listed in this section is the entire command name, plus the least amount of characters that have to be typed for the command to be recognized.

Comments: This section describes the command in more detail and also explains the use of the command's options.

Notes: This section discusses important points related to the use of the command, such as limitations or warnings.

Related Commands: Lists related commands.

Example: Shows one or more examples that illustrate how to use the command plus a typical screen display.

Command Conventions and Options

COMMAND CONVENTIONS

The following conventions are used for the command options.

Convention	Usage
italics	Items shown in italics are variables and requires you to supply the text. For example, when text appears in italics, you should type the desired text.
[brackets]	Items in brackets are optional information that may be used with a command. To include optional information, type a space after the command name and then type the information within the brackets. Do not type the brackets themselves.

COMMAND OPTIONS

Command options provide a command with extra information that affect the operation of the command. If options are omitted, the command either prompts you to supply them or uses a default value. The valid options for a command may be one or more of the following, but you can only use one option at a time.

Option	Description
Address	nnn.nnn.nnn.nnn, where $0 \leq nnn \leq 255$
community name	String of alpha/numeric characters.

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SNMP

Description: Display the value of the current SNMP user configurable options.

Command Level: 6

Syntax: SNMP

Comments: This displays the value of the SNMP variables, **SNMP Enabled/Disabled**, **GET community string**, and **PUT community string.**

Notes: none

Related Commands: SNMP GET
SNMP OFF
SNMP ON
SNMP SET

Example:

```
Command<6> : SNMP
SNMP:on  GET:public  SET:private
```

SNMP GET

Description: Set the SNMP "get" community name.

Command Level: 6

Syntax: SNMP GET [*community name*]

Comments: Enter the community name. The **GET** community name provides a simple means of authentication for all **SNMP GET, GETNEXT,** and **GETBULK** (in the case of SNMP 2c) operations.

Notes: The string may not contain more than 128 characters. SNMP TRAPS will be sent using this string as their community name.

Related Commands: SNMP
                                    SNMP OFF
                                    SNMP ON
                                    SNMP SET

Example:

```
Command<6> : SNMP GET public
```

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SNMP OFF

Description: Disable SNMP access.

Command Level: 6

Syntax: SNMP OFF

Comments: This command disables all access to the unit via SNMP. The unit will not respond to a SNMP request nor will any SNMP TRAP be sent.

Notes: Prevents access to the system through the Ethernet port via an SNMP browser. Access to the system can be enabled by issuing the local command SNMP ON.

Related Commands: SNMP
SNMP GET
SNMP ON
SNMP SET

Example:

```
Command<6> : SNMP OFF
```

SNMP ON

Description: Enable SNMP access.

Command Level: 6

Syntax: SNMP ON

Comments: This command enables all access to the unit via SNMP. The unit responds to SNMP requests and will permit a TRAP be sent.

Notes: Enables access to the system through the Ethernet port via an SNMP browser. Access to the system can be disabled by issuing the local command SNMP OFF.

Related Commands: SNMP
SNMP GET
SNMP OFF
SNMP SET

Example:

```
Command<6> : SNMP ON
```

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SNMP SET

Description: Set the SNMP "set" community name.

Command Level: 6

Syntax: SNMP SET [*community name]*

Comments: Enter the community name. The **PUT** community name provides a simple means of authentication for all **SNMP PUT** operations.

Notes: The string may not contain more than 128 characters.

Related Commands: SNMP
                                 SNMP GET
                                 SNMP OFF
                                 SNMP ON

Example:

```
Command<6> : SNMP SET private
```

TRAPS

Description: Display the user-configurable SNMP TRAP information.

Command Level: 6

Syntax: TRAPS

Comments: none

Notes: none

Related Commands: TRAPS ADD
TRAPS DELETE
TRAPS ON
TRAPS OFF
TRAPS VERSION
TRAPS OCCURRED
TRAPS RETIRED
TRAPS PERSISTENT

Example:

```
Command<6> : TRAPS
TRAPS      : on  Version :  V2
OCCURRED   : on  RETIRED :  on
PERSISTENT : on  Period  :  20
Addresses: 198.137.240.91
           198.137.240.92
```

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TRAPS ADD

Description: Add a new SNMP Trap recipient to the list of TRAP hosts.

Command Level: 6

Syntax: TRAPS ADD [*address*]

Comments: Enter the address in the format nnn.nnn.nnn.nnn, where $0 \leq nnn \leq 255$. This adds a new trap recipient to the list of hosts to which TRAPs will be sent. A maximum of 32 host address may appear on this list.

Notes: All traps will be sent to all hosts on this list.
A host may not appear on this list more than once.
The addresses 0.0.0.0 and 255.255.255.255 are not permissible addresses.

Related Commands: TRAPS
TRAPS DELETE
TRAPS OFF
TRAPS ON
TRAPS VERSION

Example:

```
Command<6> : TRAPS ADD 198.137.240.91
```

TRAPS DELETE

Description: Remove a host address from the list TRAP hosts.

Command Level: 6

Syntax: TRAPS DELETE [*address*]

Comments: Enter the address in the format nnn.nnn.nnn.nnn, where 0 ≤ nnn ≤ 255. This removes a trap recipient host from the list of hosts to which TRAPs will be sent.

Notes: *See **TRAPS ADD** for restrictions on the [address].*
[address] must be a valid host currently on the list.

Related Commands: TRAPS
                       TRAPS ADD
                       TRAPS OFF
                       TRAPS ON
                       TRAPS VERSION

Example:

```
Command<6> : TRAPS DELETE 198.137.240.91
```

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TRAPS OCCURRED

Description: Disable/Enable the systems ability to send SNMP Occurred Alarm TRAPS.

Command Level: 6

Syntax: TRAPS OCCURRED OFF
TRAPS OCCURRED ON

Comments: This enables the system to send or disables the system from sending Occurred Alarms TRAPS. If occurred alarms traps are disabled, no occurred alarms will be sent under any circumstances.

Notes: If TRAPS are disabled altogether via the TRAPS OFF command, Occurred Alarms TRAPS will not be sent regardless of the setting of the Occurred Alarms TRAPS.

Related Commands: TRAPS
TRAPS ON
TRAPS OFF

Example:

```
Command<6> : TRAPS OCCURRED OFF
```

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TRAPS OFF

Description: Disable the systems ability to send SNMP TRAPS.

Command Level: 6

Syntax: TRAPS OFF

Comments: This prevents the system from generating TRAPS. If traps are disabled, no trap will be sent under any circumstances.

Notes: none

Related Commands: TRAPS
TRAPS ADD
TRAPS DELETE
TRAPS ON
TRAPS VERSION

Example:

```
Command<6> : TRAPS OFF
```

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TRAPS ON

Description: Enable the system to send SNMP TRAPS.

Command Level: 6

Syntax: TRAPS ON

Comments: This enables the system to generate a TRAP when required. If traps are enabled, all traps are sent to the configured hosts.

Notes: none

Related Commands: TRAPS
TRAPS ADD
TRAPS DELETE
TRAPS OFF
TRAPS VERSION

Example:

```
Command<6> : TRAPS ON
```

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TRAPS PERSISTENT

Description: Disable/Enable the systems ability to send SNMP Persistent Alarm TRAPS or set the Persistent Alarms reporting interval.

Command Level: 6

Syntax: TRAPS PERSISTENT OFF
TRAPS PERSISTENT ON
TRAPS PERSISTENT {period}

Comments: This enables the system to send or disables the system from sending Persistent Alarms TRAPS. If Persistent Alarms traps are disabled, no Persistent Alarms will be sent under any circumstances.

{period} must be in the range
  $1 \le \{period\} \le 1440$
where period represents the number of minutes between successive traps for a given channel.

Notes: If TRAPS are disabled altogether via the TRAPS OFF command, Persistent Alarms TRAPS will not be sent regardless of the setting of the Persistent Alarms TRAPS.

The system default Persistent Alarm period is 20 minutes.

Related Commands: TRAPS
TRAPS ON
TRAPS OFF

Example:

```
Command<6> : TRAPS PERSISTENT OFF
```
_____

```
Command<6> : TRAPS PERSISTENT 20
```

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TRAPS RETIRED

Description: Disable/Enable the systems ability to send SNMP Retired Alarm TRAPS.

Command Level: 6

Syntax: TRAPS RETIRED OFF
TRAPS RETIRED ON

Comments: This enables the system to send or disables the system from sending Retired Alarms TRAPS. If Retired Alarms traps are disabled, no Retired Alarms will be sent under any circumstances.

Notes: If TRAPS are disabled altogether via the TRAPS OFF command, Retired Alarms TRAPS will not be sent regardless of the setting of the Retired Alarms TRAPS.

Related Commands: TRAPS
TRAPS ON
TRAPS OFF

Example:

```
Command<6> : TRAPS RETIRED OFF
```

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TRAPS VERSION

Description: Change the version of SNMP TRAPS sent by the system.

User Access Level: 6

Syntax: TRAPS VERSION <V1 | V2>

Comments: This tells the system whether V1 formatted or V2c traps will be created when a trap is sent.

Notes: The system supports both Version 1 and Version 2c traps.

Related Commands: TRAPS
TRAPS ADD
TRAPS DELETE
TRAPS ON
TRAPS OFF

Example:

```
Command<6> : TRAPS VERSION V1
```

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TL1 COMMANDS, AUTONOMOUS MESSAGES, AND ERROR CODES SUPPORTED

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TL1 COMMANDS, AUTONOMOUS
MESSAGES, AND ERROR CODES

The system can also operate as a Network Element (NE) in a Network Maintenance and Administration (NMA) system. NMA is software developed by Bell Communications Research (Bellcore) to run on an Operations System (OS). This system utilizes the Transaction Language 1 (TL1) command language.

This section lists the specific TL1 commands and autonomous messages (in alphabetical order) the system supports when the TL1 software option is furnished. A brief description of each is provided. Also provided is a list of error codes for the TL1 commands supported.

Note: *The system does not currently support parameter grouping in TL1 commands.*

Refer to the current issue of the following Bellcore publications for further information on the NMA system and TL1 command language.

> TR-NWT-000831
> TR-NWT-000833
> TR-NWT-000835
> TR-NWT-000199
> TA-NWT-000199
> TA-NWT-000200
> TA-NWT-001360

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TL1 Commands
Supported

TL1 COMMANDS SUPPORTED
(IN ALPHABETICAL ORDER)

This section lists the specific TL1 commands (in alphabetical order) the system supports when the TL1 software option is furnished. A brief description of each is provided.

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ACTIVATE-USER
(ACT-USER)

Referenced In: TR-NWT-000835, Issue 3; pg. 3-23

General Description: Sets up a session with the system (i.e., logging into the system).

An entry is made in the event log indicating that a user session was established and identifying the user who executed the command.

Related Commands: None

LMS1000 Access Level: NA

LMS1000 Equivalent: None

LMS1000 Input Format Variation:

<aid>

The access identifier (<aid>) parameter is the same value as the user identifier (<uid>) parameter for the user attempting to gain access to the system. The user identifier parameter is the NAME attribute from this user's LMS1000 user configuration. Invalid values received for this parameter return an error response with the error code IIAC.

<pid>

The personal identifier (<pid>) parameter is the PASSWORD attribute from this user's LMS1000 user configuration.

LMS1000 Response Format Variation: The "e" (date and time of last session established by this user) and "f" (number of unsuccessful session attempts since last session) parameters are currently not supported in LMS1000.

ALLOW-MESSAGE-ALL
(ALW-MSG-ALL)

Referenced In: TR-NWT-000833, Issue 5; pg. 4-39

General Description: Enables the system to resume transmission of automatic messages after being placed in the inhibit message mode.

Selective enabling of messaging is not implemented in LMS1000. Unreported alarms and events which have occurred since messaging was inhibited and which have been written over by a more recent alarm or event (this occurs after two hundred entries) are not reported. All other unreported alarms and events are reported via the proper autonomous message type (REPORT ALARM or REPORT EVENT).

This command enables autonomous messaging for all LMS1000 users whose REPORT DEVICE attribute is X25. When executed, the command sets the REPORT MODE attribute of these users' LMS1000 user configuration to TL1.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user. The event description indicates that automatic messaging was enabled.

Related Commands: None

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: None

LMS1000 Input Format Variation: Command code modifiers other than ALL are not supported by LMS1000.

<aid>

The access identifier (<aid>) parameter can only be the value ALL. Invalid values received for this parameter return an error response with the error code IIAC.

<ntfcncde>, <condtype>, <tmper>

These parameters are not implemented in LMS1000. The only valid value for these parameters are NULL. Invalid values received for this parameter return an error response with the error code INUP.

LMS1000 Response Format Variation: None

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CANCEL-USER
(CANC-USER)

Referenced In: TR-NWT-000835, Issue 3; pg. 3-33

General Description: Terminates a session with the system (i.e., logging off of the system).

Related Commands: None

LMS1000 Access Level: 1

LMS1000 Equivalent: BYE

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter is the same value as the user identifier (<uid>) parameter for the user terminating the LMS1000 session. The user identifier parameter is the NAME attribute from this user's LMS1000 user configuration. Invalid values received for this parameter return an error response with the error code IIAC.

LMS1000 Response Format Variations: None

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DELETE-USER-SECURITY
(DLT-USER-SECU)

Referenced In: TR-NWT-000835, Issue 3; pg. 3-45

General Description: Deactivates an LMS1000 user.

When executed, the command sets the USER ACTIVE attribute of this user's LMS1000 user configuration to N. This command conforms to the LMS1000's restriction that a user may not deactivate oneself. If a user attempts to deactivate oneself, then an error response is returned with the error code PIUC.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user. The event description indicates that the specified user was deactivated.

Related Commands: None

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: None

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter is the same value as the user identifier (<uid>) parameter for the user who is being deactivated. The user identifier parameter is the NAME attribute from this user's LMS1000 user configuration. Invalid values received for this parameter return an error response with the error code IIAC.

A user cannot deactivate oneself. If a user attempts to delete oneself, than an error response is returned with the error code PIUC.

LMS1000 Response Format Variations: None

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EDIT-DATE_AND_TIME
(ED-DAT)

Referenced In: TA-NWT-000199, Issue 6, Supplement 1; pg. 3-18

General Description: Changes the LMS1000's system date and/or time.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user. The event description indicates that the date and/or time was set through the TL1 interface.

Delayed activation is not allowed.

Related Commands: None

LMS1000 Access Level: 3

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: none

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter does not apply. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IIAC.

<date>

This is the value for the new date in the format YY-MM-DD.

    YY   last two digits of year from 00 to 99
    MM   month of the year ranging from 01 to 12
    DD   day of the month ranging from 01 to 31

Invalid values for this parameter return an error response with the error code IDNV.

<time>

This is the value for the new time in the format HH-MM-SS.

    HH   hour of the day in twenty-four hour format (00 to 23)
    MM   minutes of the hour from 00 to 59
    SS   seconds of the minute from 00 to 59

Invalid values for this parameter return an error response with the error code IDNV.

LMS1000 Response Format Variations: None

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EDIT-PID
(ED-PID)

Referenced In: TR-NWT-000835, Issue 3; pg. 3-51

General Description: Edits the current user's privilege identifier (<pid>) parameter (i.e., LMS1000 user password).

When executed, the command sets the PASSWORD attribute of the current user's LMS1000 user configuration to the specified new name.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user. The event description indicates that the user changed his/her own password.

Related Commands: None

LMS1000 Access Level: 1

LMS1000 Equivalent: None

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter is the same value as the user identifier (<uid>) parameter for the current user. The user identifier parameter is the NAME attribute for this user's LMS1000 user configuration. Invalid values received for this parameter return an error response with the error code IIAC.

<oldpid>

This is the old privilege identifier (LMS1000 password) being replaced by a new one. This parameter is the current PASSWORD attribute of the current user's LMS1000 user configuration. Invalid values received for this parameter return an error response with the error code IDNV.

<newpid>

This is the new privilege identifier (LMS1000 password) which replaces the current one. This parameter is the new PASSWORD attribute for the current user's LMS1000 user configuration. The LMS1000 allows a maximum of eight characters for a password. At least two characters must be non-alpha, and at least one character must be a symbol. (Valid symbols are the '#', '%', and '+' characters.) Invalid values received for this parameter return an error response with the error code IDNV. If the entered value for this parameter matches an existing privilege identifier for another user, an error response with the error code PIUI is returned.

LMS1000 Response Format Variations: None

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EDIT-USER-SECURITY
(ED-USER-SECU)

Referenced In: TR-NWT-000835, Issue 3; pg. 3-59

General Description: Edits the user identifier (<uid>) parameter (i.e., LMS1000 user name), privilege identifier (<pid>) parameter (i.e., LMS1000 user password), calling identifier (<cid>) parameter (i.e., LMS1000 user primary phone number), and user access privilege (<uap>) parameter (i.e., LMS1000 user access level) of the specified user.

When executed, the command sets the NAME, PASSWORD, PRIMARY PHONE, and ACCESS LEVEL attributes of the specified user's LMS1000 user configuration to the new values.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user. The event description indicates that the specified user's LMS1000 user parameters were edited.

Related Commands: None

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: None

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter is the same value as the user identifier (<uid>) parameter for the user whose parameters are being edited. Invalid values received for this parameter return an error response with the error code IIAC.

<uid>

The user identifier (<uid>) parameter determines the new user identifier which replaces the current one. This parameter is the new NAME attribute for the specified user's LMS1000 user configuration. Invalid values received for this parameter return an error response with the error code IDNV. If the entered value for this parameter matches an existing user identifier for another user, an error response with the error code PIUI is returned.

<pid>

The privilege identifier (<pid>) parameter determines the new privilege identifier which replaces the current one. This parameter is the new PASSWORD attribute for the specified user's LMS1000 user configuration. The LMS1000 allows a maximum of eight characters for a password. At least two characters must be non-alpha, and at least one character must be a symbol. (Valid symbols are the '#', '%', and '+' characters.) Invalid values received for this parameter return an error response with the error code IDNV. If the entered value for this parameter matches an existing privilege identifier for another user, an error response with the error code PIUI is returned.

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<cid>

The calling identifier (<cid>) parameter determines the new calling identifier which replaces the current one. This parameter is the new PRIMARY PHONE attribute for the specified user's LMS1000 user configuration. It can either be the network address or the phone number of the specified user. Invalid values received for this parameter return an error response with the error code IDNV.

<uap>

The user access privilege (<uap>) parameter determines the new user access privilege which replaces the current one. This parameter is the new ACCESS LEVEL attribute for the specified user's LMS1000 user configuration. The LMS1000 prohibits a user from changing ones own access level. If the user being edited is the same as the session user (i.e., user who is performing the edit) this parameter cannot be changed. If an invalid value is entered or if the session user requests to change his own user privilege code, then an error response is returned using the error code PIUC.

<keyword-defined block>

This parameter has no relevance in LMS1000, and is ignored if included.

LMS1000 Response Format Variations: None

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ENTER-USER-SECURITY
(ENT-USER-SECU)

Referenced In: TR-NWT-000835, Issue 3; pg. 3-71

General Description: Activates a user and enters the specified security parameters for this user. These security parameters consist of the user identifier (<uid>) parameter (i.e., LMS1000 user name), privilege identifier (<pid>) parameter (i.e., LMS1000 user password), calling identifier (<cid>) parameter (i.e., LMS1000 user primary phone number), and user access privilege (<uap>) parameter (i.e., LMS1000 user access level).

When executed, the command sets the USER ACTIVE attribute of this user's LMS1000 user configuration to Y. The command also sets the USER NAME, PASSWORD, PRIMARY PHONE, and ACCESS LEVEL attributes of this user's LMS1000 user configuration to the specified values. The following attributes of this user's LMS1000 user configuration are also set as indicated.

Callback	N
Alternate Phone	(none entered)
Report Device	X25
Report Mode	TL1

If the specified access identifier (<aid>) parameter matches the NAME attribute of an inactive LMS1000 user, the following attributes for this LMS1000 user remain unchanged. If the specified access identifier does not match the NAME attribute of an inactive LMS1000 user, the following attributes of this user's LMS1000 user configuration are set to the default values indicated below.

From Day	1
Thru Day	7
From Hour	0
Thru Hour	23
TL1 Report Condition Interval	0
Report Retry Time	15

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user. The event description indicates that the specified user was activated.

Related Commands: None

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: None

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter is the same value as the user identifier (<uid>) parameter for the user who is being activated. The user identifier parameter is the new

NAME attribute for this user's LMS1000 user configuration. If the access identifier parameter matches the NAME attribute of an inactive LMS1000 user, that user is activated. If the access identifier parameter does not match the NAME attribute of an inactive LMS1000 user, the first inactive LMS1000 user is activated. The NAME attribute for this user is changed to that specified by this value. If there are no inactive LMS1000 users remaining, then an error response is returned with the error code SROF. If the user being activated is already active, then an error response is returned using the error code PIUI. Other invalid values return an error response with the error code IIAC.

<pid>

The privilege identifier (<pid>) parameter determines the new privilege identifier which replaces the current one. This parameter is the new PASSWORD attribute for the specified user's LMS1000 user configuration. The LMS1000 allows a maximum of eight characters for a password. At least two characters must be non-alpha, and at least one character must be a symbol. (Valid symbols are the '#', '%', and '+' characters.) Invalid values received for this parameter return an error response with the error code IDNV. If the entered value for this parameter matches an existing privilege identifier for another user, an error response with the error code PIUI is returned.

<cid>

The calling identifier (<cid>) parameter determines the new calling identifier which replaces the current one. This parameter is the new PRIMARY PHONE attribute for the specified user's LMS1000 user configuration. It can either be the network address or the phone number of the specified user. Invalid values received for this parameter return an error response with the error code IDNV.

<uap>

The user access privilege (<uap>) parameter determines the new user access privilege which replaces the current one. This parameter is the new ACCESS LEVEL attribute for the specified user's LMS1000 user configuration. Invalid values received for this parameter return an error response with the error code PIUC.

<keyword-defined block>

This parameter has no relevance in LMS1000, and is ignored if included.

LMS1000 Response Format Variations: None

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INHIBIT-MESSAGE-ALL
(INH-MSG-ALL)

Referenced In: TR-NWT-000833, Issue 5; pg. 4-117

General Description: Disables LMS1000 transmission of automatic messages.

Selective disabling of messaging is not implemented in LMS1000. Unreported alarms and events that occur while autonomous messaging is inhibited are reported via the proper message type (REPORT ALARM or REPORT EVENT) when autonomous messaging is re-enabled.

This command disables autonomous messaging for all LMS1000 user's whose REPORT DEVICE attribute is X25. When executed, the command sets the REPORT MODE attribute of these users' LMS1000 user configuration to OFF.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user. The event description indicates that automatic messaging was disabled.

Related Commands: None

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: None

LMS1000 Input Format Variances: Command code modifiers other than ALL are not supported by LMS1000.

<aid>

The access identifier (<aid>) parameter can only be the value ALL. Invalid values received for this parameter return an error response with the error code IIAC.

<ntfcncde>, <condtype>, <tmper>

These parameters are not implemented in LMS1000. The only valid value for these parameters are NULL. Invalid values received for these parameters return an error response with the error code INUP.

LMS1000 Response Format Variances: None

INITIALIZE-LOG(INIT-LOG)

Referenced In: TA-NWT-000200, Issue 5; pg. 132

General Description: Instructs LMS1000 to initialize (i.e., clear) the specified log (alarm or event).

When this command is executed, it clears the contents of the existing log.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user. The event description indicates that the specified log was cleared.

Related Commands: None

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: CLR LOG, CLR EVENTS

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter does not apply. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IIAC.

<lognm>

This is the name of the log. Valid values for this parameter are the text strings ALARM and ACTIV. The string ALARM specifies clearing the LMS1000's alarm log, and the string ACTIV specifies clearing the LMS1000's event log. Invalid values received for this parameter return an error response with the error code IDNV.

<stadat>

This parameter is not implemented in LMS1000, and must be the value NULL. Null specifies a default value of the current date.   Invalid values received for this parameter return an error response with the error code INUP.

<statm>

This parameter is not implemented in LMS1000, and must be the value NULL. Null specifies a default value of the current time.   Invalid values received for this parameter return an error response with the error code INUP.

LMS1000 Response Format Variations: None

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INITIALIZE-REGISTER
(INIT-REG-{EQPT|ALL})

Referenced In: TR-NWT-000833, Issue 5; pg. 4-139

General Description: Instructs LMS1000 to initialize to a specific value one or more storage registers or event counters associated with one or more equipment units, facilities, etc. within LMS1000.

In most common instances, these registers contain performance monitoring information.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user. The event description indicates that the statistics were cleared.

Related Commands: None

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: CLR STATS <t<n>>

LMS1000 Input Format Variations: The command code modifier COM is not supported by LMS1000.

<aid>

Specifying a value of ALL for the access identifier (<aid>) parameter initializes all registers for all access identifiers of the type defined by the command code modifier. If the command code modifier is ALL, the value of the access identifier parameter must be ALL. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<montype>

This parameter is not supported by LMS1000. The only valid value for this parameter is ALL. Invalid values received for this parameter return an error response with the error code IDNV.

<monval>

This parameter is not supported by LMS1000. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IDNV.

<locn>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IDNV.

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IDNV.

<tmper>

This is the accumulation time period for the Performance Monitoring (PM) information. This parameter is not supported by LMS1000. The only valid value for this parameter is NULL. A NULL value causes the parameter to default to 1-HR. Invalid values received for this parameter return an error response with the error code IDNV.

<mondat>

This parameter is not supported by LMS1000. The only valid value for this parameter is ALL. Invalid values received for this parameter return an error response with the error code IDNV.

<montm>

This parameter is not supported by LMS1000. The only valid value for this parameter is ALL. Invalid values received for this parameter return an error response with the error code IDNV.

LMS1000 Response Format Variations: None

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INITIALIZE SYSTEM
(INIT-SYS)

Referenced In: TR-NWT-000833, Issue 5; pg. 4-145

General Description: Instructs LMS1000 to initialize its system processor and/or associated subsystems.

This command may contain various levels of initialization. The highest level is a cold restart which is equivalent to a power-up reset. The level of initialization is specified by a data parameter within the command string.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user. The event description indicates that the system was initialized to the specified level.

Related Commands: None

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: None

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter identifies the equipment unit that is to be initialized. A value of ALL for this parameter denotes the system processor, and is the only value which is supported. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<ph>

This parameter specifies the level of initialization to be performed. The value of <ph> must be an integer greater than or equal to zero. The lowest value (0) is the lowest level of initialization, and the highest value specifies a cold restart initialization.

Valid values for this parameter and the level of initialization associated with them are listed below.

10	Clear alarm log and event log.
20	Clear alarm log and event log, and hour-average/max-min peak statistics of all analog and function channels.
50	Clear all channels which have been ACOed.
51	Clear all control channels (relay, LED) which have been forced on manually.
60	Clear all channels which have been ACOed, and all control channels (relay, LED) which have been forced on manually.

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120   Clear alarm log and event log and hour-average/max-min peak statistics, and clear all channels which have been ACOed and all control channels (relay, LED) which have been forced on manually.

127   Perform a system cold restart (i.e., a power-up reset). The user session and possibly the connection is terminated.

Invalid values received for this parameter return an error response with the error code shown below.

If <ph> is greater than or equal to zero and less than or equal to 127, the error code is IDNV.

If <ph> is less than zero or greater than 127, the error code is IORD.

LMS1000 Response Format Variations: Since a normal response cannot be sent after a cold restart, a normal response is sent immediately prior to executing the cold restart function.

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OPERATE-ALARM CUTOFF
(OPR-ACO-{EQPT|ALL})

Referenced In: TR-NWT-000833, Issue 5; pg. 4-149

General Description: Cuts off the office audible alarm indications without changing the local alarm indications.

Only alarms which are currently active at the time the command is received are affected. LMS1000 remains capable of transmitting its current alarm and status conditions.

This command functions in the same manner as LMS1000 command SET ACO, with one exception. If the command modifier EQPT is used, only those channels with an access identifier type of "EQPT" are affected by the alarm cutoff function.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user. The event description indicates that the alarm cutoff feature was operated for the specified access identifier.

Related Commands: None

LMS1000 Access Level: 4

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: SET ACO

LMS1000 Input Format Variations: The command code modifier COM is not supported.

<aid>

Specifying a value of ALL for the access identifier (<aid>) parameter initializes all registers for all access identifiers of the type defined by the command code modifier. The value of the access identifier parameter must be ALL. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

LMS1000 Response Format Variation: None

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OPERATE-EXTERNAL-CONTROL
(OPR-EXT-CONT)

Referenced In: TR-NWT-000833, Issue 5; pg. 4-153

General Description: Instructs LMS1000 to activate a specified relay channel to operate an external control.

Momentary operation of the external control is not implemented in LMS1000.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user.

Related Commands: RELEASE-EXTERNAL-CONTROL, RETRIEVE-EXTERNAL-CONTROL

LMS1000 Access Level: 5

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: SET RLY

LMS1000 Input Format Variations:

<aid>

Specifying a value of ALL for the access identifier (<aid>) parameter requests the activation of all LMS1000 relay channels specified by the control type (<conttype>) parameter. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<conttype>

The control type (<conttype>) parameter is an attribute of the LMS1000 relay channel configuration. A NULL value requests activation of all LMS1000 relay channels identified by the access identifier (<aid>) parameter. When the access identifier (<aid>) parameter is ALL, the control type (<conttype>) parameter should not be NULL. Invalid values received for this parameter return an error response with the error code IDNV.

<dur>

This is the duration for which the external control is to be operated. Parameter grouping cannot be used with this parameter.

Valid values for the <dur> parameter are as follows:

CONTSContinuous

LMS1000 does not support the value of MNTRY for this parameter. If the value MNTRY is received, an error response with the error code INUP is returned. Other invalid values received for this parameter return an error response with the error code IDNV. A NULL value for this parameter is not allowed. If a NULL value is received for this parameter, an error response with the error code IDNV is returned.

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LMS1000 Response Format Variations: None

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RELEASE-EXTERNAL-CONTROL
(RLS-EXT-CONT)

Referenced In: TR-NWT-000833, Issue 5; pg. 4-179

General Description: Instructs LMS1000 to de-activate a specified relay channel to release an external control.

The external control can be released either momentarily or continuously.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user.

Related Commands: OPERATE-EXTERNAL-CONTROL, RETRIEVE-EXTERNAL-CONTROL

LMS1000 Access Level: 5

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: CLR RLY

LMS1000 Input Format Variations:

<aid>

Specifying a value of ALL for the access identifier (<aid>) parameter requests the de-activation of all LMS1000 relay channels specified by the control type (<conttype>) parameter. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<conttype>

The control type (<conttype>) parameter is an attribute of the LMS1000 relay channel configuration. A NULL value requests de-activation of all LMS1000 relay channels identified by the access identifier (<aid>) parameter. When the access identifier (<aid>) parameter is ALL, the control type (<conttype>) parameter should not be NULL. Invalid values received for this parameter return an error response with the error code IDNV.

<dur>

This is the duration for which the external control is to be released. Parameter grouping cannot be used with this parameter.

Valid values for the <dur> parameter are as follows:

CONTSContinuous

LMS1000 does not support the value of MNTRY for this parameter. If the value MNTRY is received, an error response with the error code INUP is returned. Other invalid values received for this parameter return an error response with the error code IDNV. A NULL value for this parameter defaults to the value of CONTS.

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LMS1000 Response Format Variations: None

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RETRIEVE-ALARM
(RTRV-ALM-{EQPT|ALL})

Referenced In: TR-NWT-000833, Issue 5; pg. 4-205

General Description: Instructs LMS1000 to send the current state of its alarm conditions associated with one or more equipment units, facilities, etc. within LMS1000.

Related Commands: None

Related Messages: REPORT ALARM EQUIPMENT

LMS1000 Access Level: 1

LMS1000 Equivalent: ALARMS <t<n>>

LMS1000 Input Format Variations: The command code modifier COM is not supported.

<aid>

Specifying a value of ALL for the access identifier (<aid>) parameter requests retrieval of alarm conditions for all access identifiers of the type defined by the command code modifier. Use of the command code modifier ALL results in retrieval of all alarm conditions in LMS1000. If the command code modifier is ALL, the value of the access identifier must be ALL. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<ntfcncde>

Specifies the notification code parameter associated with the alarm conditions being retrieved. This parameter is an attribute of the LMS1000 channel or limit configuration.

Valid values for this parameter are as follows:

CR   critical alarm
MJ   major alarm
MN   minor alarm
NULL   request retrieval of alarm conditions for all of the above codes

Invalid values for this parameter return an error response with the error code IDNV.

<condtype>

Specifies the condition type parameter of alarm conditions to be retrieved. A NULL value causes all conditions classified as alarm conditions to be retrieved.   This parameter is an attribute of the LMS1000 channel or limit configuration. Invalid values for this parameter return an error response with the error code IDNV.

<srveff>

Specifies the service effect parameter caused by the alarm conditions to be retrieved. This parameter is an attribute of the LMS1000 channel or limit configuration.

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Valid values for this parameter are as follows:

SA   service-affecting condition
NSA   nonservice-affecting condition
NULL   request retrieval of alarm conditions for both of the above codes

Invalid values for this parameter return an error response with the error code IDNV.

<locn>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IDNV.

<dirn>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IDNV.

<tmper>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code INUP.

LMS1000 Response Format Variations:

<aidtype>

Valid values for an access identifier type response parameter are:

EQPT   equipment
COM   common

<ntfcncde>

This is the notification code parameter associated with a single alarm condition given in this block. Valid values are the same as for the input format. Values are derived from the NOTIFICATION CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated.

<condtype>

This is the condition type parameter of the alarm condition being given in this block. Values are derived from the CONDITION TYPE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated.

<srveff>

This is the service effect parameter associated with a single alarm condition given in this block. Valid values are the same as for the input format. Values are derived from the SERVICE EFFECT CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated.

<ocrdat>

This is the date when the triggering event occurred. The format for this parameter is MOY-DOM (Month-Of-Year - Day-Of-Month). MOY ranges from 1 to 12, and DOM ranges from 1 to 31. A NULL value for this parameter defaults to the current date unless the <ocrtm> parameter is NULL, then this parameter does not apply.

<ocrtm>

This is the time when the triggering event occurred. The format for this parameter is HOD-MOH-SOM (Hour-Of-Day - Minute-Of-Hour - Second-Of-Minute). HOD ranges from 0 to 23. MOH and SOM range from 0 to 59. A NULL value means this parameter and the <ocrdat> parameter are not applicable.

<locn>, <dirn>, <aiddet>, <obsdbhvr>, <exptdbhvr>, <dgntype>, <tblistl>

These parameters do not apply or are not implemented in LMS1000. A NULL value is inserted for them when the <tmper> parameter has a value other than NULL.

<tmper>

This is the accumulation time period for Performance Monitoring (PM) parameters. It represents the length of time the alarm condition has been active. The format for this parameter is VAL-UN, where valid values for VAL (value) and UN (unit) are:

VAL (value)	UN (unit)
1	DAY (day)
1 to 24	HR (hour)
1 to 1440	MIN (minute)

<conddescr>

This parameter is a text message which provides a detailed description of the alarm, event, or condition. It is an ASCII string enclosed within a pair of escaped quotes (\"). It may also be used to describe any action to be taken as a result of the condition. For this application, values are derived from the CONDITION DESCRIPTION parameter of the LMS1000 channel or limit configuration with which the alarm condition is associated. If the channel or limit parameter has not been configured, a NULL will be inserted for this parameter.

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RETRIEVE-ALARM-ENVIRONMENT
(RTRV-ALM-ENV)

Referenced In: TR-NWT-000833, Issue 5; pg. 4-217

General Description: Instructs LMS1000 to send the current state of its alarm conditions associated with the LMS1000 environment.

Related Commands: None

Related Messages: REPORT ALARM ENVIRONMENT

LMS1000 Access Level: 1

LMS1000 Equivalent: None

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter identifies equipment associated with the environmental alarm being requested. Entering a value of ALL requests retrieval of all environmental alarms specified by the notification code (<ntfcncde>) parameter and alarm type (<almtype>) parameter. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<ntfcncde>

Specifies the notification code parameter associated with the environmental alarm conditions being retrieved. This parameter is an attribute of the LMS1000 channel or limit configuration.

Valid values for this parameter are as follows:

    CR   critical alarm
    MJ   major alarm
    MN   minor alarm
    NULL   request retrieval of environmental alarm conditions for all of the above codes

Invalid values for this parameter return an error response with the error code IDNV.

<almtype>

Specifies the alarm type parameter associated with the environmental alarms being retrieved. Specifying a NULL value requests retrieval of all types of environmental alarms. Values are derived from the CONDITION TYPE attribute of the LMS1000 channel or limit configuration with which the alarm is associated. A value of MISC for this attribute is not supported in LMS1000. The error code for an invalid value for this parameter is INUP.

<almmsg>

This parameter is not supported in LMS1000.

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LMS1000 Response Format Variations:

<ntfcncde>

This is the notification code parameter associated with a single alarm condition given in this block. Valid values are the same as for the input format. Values are derived from the NOTIFICATION CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated.

<almtype>

This is the alarm type parameter associated with the environmental alarm given in this block. Values are derived from the CONDITION TYPE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated.

<ocrdat>

This is the date when the triggering event occurred. The format for this parameter is MOY-DOM (Month-Of-Year - Day-Of-Month). MOY ranges from 1 to 12, and DOM ranges from 1 to 31. A NULL value for this parameter defaults to the current date unless <ocrtm> parameter is NULL, then this parameter does not apply.

<ocrtm>

This is the time when the triggering event occurred. The format for this parameter is HOD-MOH-SOM (Hour-Of-Day - Minute-Of-Hour - Second-Of-Minute). HOD ranges from 0 to 23. MOH and SOM range from 0 to 59.   A NULL value means this parameter and the <ocrdat> parameter are not applicable.

<almmsg>

This parameter is not supported in LMS1000.

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RETRIEVE-ATTRIBUTE
(RTRV-ATTR-{EQPT|ALL})

Referenced In: TR-NWT-000833, Issue 5; pg. 4-223

General Description: Instructs LMS1000 to send the current notification code associated with the specified events.

Related Commands: SET-ATTRIBUTE

LMS1000 Access Level: 2

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: None

LMS1000 Input Format Variations: The command code modifier COM is not supported.

The <aid>, <ntfcncde>, and <condtype> parameters should not all be specified as non-null values.

<aid>

Specifying a value of ALL for the access identifier (<aid>) parameter requests retrieval of attributes conditions for all access identifiers of the type defined by the command code modifier. Use of the command code modifier ALL results in retrieval of all attributes for the LMS1000. If the command code modifier is ALL, the value of the access identifier must be ALL. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<ntfcncde>

Specifies the notification code parameter associated with the alarm conditions being retrieved. This parameter is an attribute of the LMS1000 channel or limit configuration.

Valid values for this parameter are as follows:

    CR   critical alarm
    MJ   major alarm
    MN   minor alarm
    NA   not alarmed
    NR   not reported
    NULL   request retrieval of alarm conditions for all of the above codes

Invalid values for this parameter return an error response with the error code IDNV.

<condtype>

Specifies the condition type parameter associated with the attributes to be retrieved. Specifying a NULL value causes all attributes to be retrieved which match the other bounding parameters. This parameter is an attribute of the LMS1000 channel or limit

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configuration. Invalid values for this parameter return an error response with the error code IDNV.

<locn>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values for this parameter return an error response with the error code IDNV.

<dirn>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values for this parameter return an error response with the error code IDNV.

<tmper>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values for this parameter return an error response with the error code INUP.

LMS1000 Response Format Variations:

<aidtype>

Valid values for an access identifier type response parameter are:

    EQPT   equipment
    COM   common

<ntfcncde>

This is the notification code parameter associated with a single alarm condition given in this block. Valid values are the same as for the input format. Values are derived from the NOTIFICATION CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated.

<condtype>

This is the condition type parameter associated with the alarm condition given in this block. Valid values are the same as for the input format. Values are derived from the NOTIFICATION CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated.

<locn>, <dirn>, <tmper>

These parameters do not apply to LMS1000. A NULL value is inserted for them.

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RETRIEVE-ATTRIBUTE-ENVIRONMENT
(RTRV-ATTR-ENV)

Referenced In: TR-NWT-000833, Issue 5; pg. 4-237

General Description: Instructs LMS1000 to send the current attributes associated with the specified environmental alarm.

Related Commands: SET-ATTRIBUTE-ENVIRONMENT

LMS1000 Access Level: 2

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: None

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter identifies equipment associated with the environmental alarm being requested. Entering a value of ALL requests retrieval of all environmental alarms specified by the notification code (<ntfcncde>) parameter and alarm type (<almtype>) parameter. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<ntfcncde>

Specifies the notification code parameter associated with the environmental alarm conditions being retrieved. This parameter is an attribute of the LMS1000 channel or limit configuration.

Valid values for this parameter are as follows:

    CR   critical alarm
    MJ   major alarm
    MN   minor alarm
    NULL   request retrieval of attributes for environmental alarms for all of the above
            codes

Invalid values for this parameter return an error response with the error code IDNV.

<almtype>

Specifies the alarm type parameter associated with the environmental alarms being retrieved. Specifying a NULL value requests retrieval of all types of environmental alarms. Values are derived from the CONDITION TYPE attribute of the LMS1000 channel or limit configuration with which the alarm is associated. The error code for an invalid value for this parameter is IDNV.

LMS1000 Response Format Variations:

This is the notification code parameter associated with the environmental alarm given in this block. Valid values are the same as for the input format. Values are derived from the NOTIFICATION CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated.

<almtype>

This is the alarm type parameter associated with the environmental alarm given in this block. Values are derived from the CONDITION TYPE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated.

 <almmsg>

This parameter is not implemented in LMS1000.

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RETRIEVE-CONDITION
(RTRV-COND-{EQPT|ALL})

Referenced In: TR-NWT-000833, Issue 5; pg. 4-257

General Description: Instructs LMS1000 to send the current state and standing condition (alarm or status) associated with one or more equipment units, facilities, etc. within LMS1000.

In addition, it may be used to summarize the status of the LMS1000 by providing entity states.

Related Messages: REPORT CONDITION EQUIPMENT

LMS1000 Access Level: 1

LMS1000 Equivalent: None

LMS1000 Input Format Variations: The command code modifier COM is not supported.

<aid>

Specifying a value of ALL for the access identifier (<aid>) parameter requests retrieval of conditions for all access identifiers of the type defined by the command code modifier. Use of the command code modifier ALL results in retrieval of all conditions in the LMS1000. If the command code modifier is ALL, the value of the access identifier must be ALL. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<typereq>

Specifies the type of condition or state to be retrieved. A valid value can be any condition type (<condtype>) parameter. Values are derived from the CONDITION TYPE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated. A NULL value causes all condition types to be retrieved. Invalid values for this parameter return an error response with the error code IDNV.

<locn>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values for this parameter return an error response with the error code INUP.

<dirn>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values for this parameter return an error response with the error code INUP.

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This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values for this parameter return an error response with the error code INUP.

LMS1000 Response Format Variations:

<aidtype>

Valid values for an access identifier type response parameter are:

    EQPT   equipment
    COM   common

<ntfcncde>

This is the notification code parameter associated with a single condition given in this block. Values are derived from the NOTIFICATION CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated.

Valid values for this parameter are as follows:

    CR   critical alarm
    MJ   major alarm
    MN   minor alarm
    NA   not alarmed
    NR   not reported

NULLdefaults to NA when the <typerep> parameter is a condition type, and has no meaning if the <typerep> parameter is a state

<typereq>

This is the type of the condition being given in this block. Values are derived from the CONDITION TYPE attribute of the LMS1000 channel or limit configuration with which the condition is associated. If no condition exists on an LMS1000 channel, then the value of this parameter is IS-NR (in service-normal).

<srveff>

This is the service effect parameter associated with a single alarm condition given in this block. Valid values are the same as for the input format. Values are derived from the SERVICE EFFECT CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated. A NULL value implies that the effect on service is unknown or that the <srveff> parameter does not apply.

<ocrdat>

This is the date when the triggering event occurred. The format for this parameter is MOY-DOM (Month-Of-Year - Day-Of-Month). MOY ranges from 1 to 12, and DOM ranges from 1 to 31. A NULL value for this parameter defaults to the current date unless the <ocrtm> parameter is NULL, then this parameter does not apply.

<ocrtm>

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This is the time when the triggering event occurred. The format for this parameter is HOD-MOH-SOM (Hour-Of-Day - Minute-Of-Hour - Second-Of-Minute). HOD ranges from 0 to 23. MOH and SOM range from 0 to 59. A NULL value means this parameter and the <ocrdat> parameter are not applicable.

<locn>, <dirn>

These parameters do not apply to LMS1000. A NULL value is inserted for them when the <tmper> parameter has a value other than NULL.

<tmper>

This is the accumulation time period for Performance Monitoring (PM) parameters. It represents the length of time the condition has been active. If the condition or state is normal, it defaults to NULL. The format for this parameter is VAL-UN, where valid values for VAL (value) and UN (unit) are:

VAL (value)	UN (unit)
1	DAY (day)
1 to 24	HR (hour)
1 to 1440	MIN (minute)

<conddescr>

This parameter is a text message which provides a detailed description of the alarm, event, or condition. It is an ASCII string enclosed within a pair of escaped quotes (\"). It may also be used to describe any action to be taken as a result of the condition. For this application, values are derived from the CONDITION DESCRIPTION parameter of the LMS1000 channel or limit configuration with which the alarm condition is associated. If the channel or limit parameter has not been configured, a NULL will be inserted for this parameter.

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RETRIEVE-EXTERNAL-CONTROL
(RTRV-EXT-CONT)

Referenced In: TR-NWT-000833, Issue 5; pg. 4-279

General Description: Instructs LMS1000 to retrieve the state of the specified LMS1000 relay channels controlling external controls.

Related Commands: OPERATE-EXTERNAL-CONTROL, RELEASE-EXTERNAL-CONTROL

LMS1000 Access Level: 1

LMS1000 Equivalent: None

LMS1000 Input Format Variations:

<aid>

Specifying a value of ALL for the access identifier (<aid>) parameter requests the retrieval of all external control states specified by the control type (<conttype>) parameter. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<conttype>

The control type (<conttype>) parameter is an attribute of the LMS1000 relay channel configuration. A NULL value requests retrieval of all LMS1000 relay channel states identified by the access identifier (<aid>) parameter. When the access identifier (<aid>) parameter is ALL, the control type (<conttype>) parameter should not be NULL. Invalid values received for this parameter return an error response with the error code IDNV.

LMS1000 Response Format Variations:

<aid>

Identifies the external control for which the state is being retrieved.

<conttype>

This is the control type parameter associated with the LMS1000 relay channel. Values are derived from the CONTROL TYPE attribute of the LMS1000 relay channel configuration.

<dur>

This is the duration for which an LMS1000 relay channel is to be activated.

Valid values for the <dur> parameter are as follows:

CONTS   Continuous

LMS1000 does not support the value of MNTRY for this parameter.

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<contstate>

This is the state of the LMS1000 relay channel.

Valid values for the <contstate> parameter are:

OPER   Operated
RLS   Released

The value of NA for this parameter is not supported by LMS1000. The value of this parameter also cannot be NULL.

RETRIEVE-HEADER
(RTRV-HDR)

Referenced In: TR-NWT-000833, Issue 5; pg. 4-283

General Description: Requests that LMS1000 reply with a "normal" response indicating COMPLD.

The information of interest in the reply, is the reply itself along with information that the LMS1000 has about itself, namely the source identifier parameter, the date parameter, and the time parameter.

This command provides information similar to that provided by the LMS1000's UNIT command. This command can be used to verify the access to a specific LMS1000. There is no allowances in the response format to send additional information.

Related Commands: None

LMS1000 Access Level: 1

LMS1000 Equivalent: UNIT

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter does not apply. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IIAC.

LMS1000 Response Format Variations: None

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RETRIEVE-LOG
(RTRV-LOG)

Referenced In: TA-NWT-000200, Issue 5; pg. 242

General Description: Instructs LMS1000 to retrieve the contents of an existing log.

Related Commands: None

LMS1000 Access Level: 1

LMS1000 Equivalent: LOG, HSTRY, EVENTS

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter does not apply. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IIAC.

<lognm>

This is the name of the log.

Valid values for this parameter are the following text strings.

    ALARM   specifies the retrieval of the LMS1000s alarm log
    HSTRY   specifies retrieval of the predetermined number of alarm log entries
                    specified by the LMS1000s mechanized interface configuration
    ACTIV   specifies the retrieval of the LMS1000s event log

Invalid values for this parameter return an error response with the error code IDNV.

LMS1000 Response Format Variations:

<lognm>

This is the name of the log. Valid values are the same as for the input format.

RETRIEVE-PERFORMANCE MONITORING
(RTRV-PM-{EQPT|ALL})

Referenced In: TR-NWT-000833, Issue 5; pg. 4-307

General Description: Instructs LMS1000 to send its current set of Performance Monitoring (PM) data associated with one or more equipment units, facilities, etc. within LMS1000.

Parameters are provided to retrieve past PM data for LMS1000s that can store a history of performance monitoring information.

The TL1 command language allows for reporting of Performance Monitoring information, enabling/disabling of these reports, and scheduling of these reports. In addition, the TL1 commands for Performance Monitoring can specify the equipment unit(s) on which performance monitoring is to be done. LMS1000 does not currently have these types of capabilities for statistical information.

Related Commands: None

LMS1000 Access Level: 1

LMS1000 Equivalent: STATS

LMS1000 Input Format Variations:

<aid>

Use of the command code modifier ALL causes retrieval of Performance Monitoring (PM) data for all access identifiers of the proper type. If the command code modifier is ALL, the value of the access identifier parameter must be ALL. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<montype>

Specifies the type of monitored parameter for which a value is requested. This parameter is not supported by LMS1000. The only valid value for this parameter is ALL. An ALL value for this parameter requests all types of monitored parameters be retrieved. Invalid values received for this parameter return an error response with the error code IDNV.

<monlev>

Specifies the discriminating level for the requested monitored parameter. This parameter is not supported by LMS1000. The only valid value for this parameter is NULL. A NULL value causes the parameter to default to 1-UP. Invalid values for this parameter return an error response with the error code IDNV.

<locn>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values for this parameter return an error response with the error code IDNV.

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<dirn>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IDNV.

<tmper>

This is the accumulation time period for the Performance Monitoring (PM) information. This parameter is not supported by LMS1000. The only valid value for this parameter is NULL. A NULL value causes the parameter to default to 1-HR. Invalid values received for this parameter return an error response with the error code INUP.

<mondat>

This parameter is not supported by LMS1000. The only valid value for this parameter is ALL. Invalid values received for this parameter return an error response with the error code IDNV.

<montm>

This parameter is not supported by LMS1000. The only valid value for this parameter is ALL. Invalid values received for this parameter return an error response with the error code IDNV.

LMS1000 Response Format Variations:

<aid>

The access identifier parameter identifies the equipment unit to which the retrieved monitored parameter value pertains.

<aidtype>

Valid values for an access identifier type response parameter are:

 EQPT   equipment

<montype>

This is the monitor type parameter for a retrieved performance monitoring value. Values are derived from the MONITOR TYPE attribute of the LMS1000 analog or function channel configuration. This parameter may contain a suffix to designate the type of performance monitoring value being retrieved. The suffix is separated from the MONITOR TYPE by a hyphen, and takes the form C or F to indicate maximum or minimum types respectively.

Example: DCVOLT-C

This is the monitor value format parameter for a retrieved performance monitoring value. Values are derived from the MONITOR TYPE attribute of the LMS1000 analog or function channel configuration.

<vldty>

This is the validity indicator for historical monitoring information. It indicates whether the information for the specified time period was accumulated for the entire period, or only a portion of it.

Valid values for this parameter are:

COMPLData accumulated over entire time period

A value of NULL for this parameter defaults to COMPL.

<locn>, <dirn>

These parameters do not apply to LMS1000. A NULL value is inserted for them when the <tmper> parameter has a value other than NULL.

<tmper>

This is the accumulation time period for Performance Monitoring (PM) parameters. The format for this parameter is VAL-UN, where valid values for VAL (value) and UN (unit) are:

VAL (value)	UN (unit)
1	DAY (day)
1 to 24	HR (hour)
1 to 1440	MIN (minute)

A value of NULL for this parameter defaults to 1-HR. A time period of 1-HR is used for hour averages, and a time period of 1-MIN is used to indicate maximum and minimum peaks.

<mondat>

This is the date of the beginning of the Performance Monitoring (PM) period. The format for this parameter is MOY-DOM (Month-Of-Year - Day-Of-Month). MOY ranges from 1 to 12, and DOM ranges from 1 to 31.

<montm>

This is the beginning of the time of day of the Performance Monitoring (PM) period. The format for this parameter is HOD-MOH (Hour-Of-Day - Minute-Of-Hour). HOD ranges from 0 to 23. MOH and SOM range from 0 to 59.

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RETRIEVE-THRESHOLD
(RTRV-TH-{EQPT|ALL})

Referenced In: TR-NWT-000833, Issue 5; pg. 4-337

General Description: Instructs LMS1000 to send the current threshold level (alarm limits) of one or more monitored parameters for which violation will trigger an automatic message.

These threshold levels may apply to one or more equipment units, facilities, etc. within LMS1000.

Related Commands: SET-THRESHOLD

LMS1000 Access Level: 2

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: LIMITS <t<n>>

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter identifies the equipment for which threshold levels are being retrieved. Specifying a value of ALL requests retrieval of thresholds for all access identifiers of the type defined by the command code modifier. If the command code modifier is ALL, the value of the access identifier parameter should be ALL. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<montype>

The monitor type (<montype>) parameter identifies the particular monitored parameter for which the threshold is being retrieved. Values are derived from the MONITOR TYPE attribute of the LMS1000 analog or function channel configuration. This parameter may contain a suffix to designate the type of threshold to be retrieved. The suffix is separated from the monitor type parameter by a hyphen and takes the form LT or HT to indicate low or high threshold types, respectively.

Example: DCVOLT-LT

A NULL value implies that threshold levels for all applicable monitored parameters are requested. Valid values for this parameter can only contain alpha characters. Invalid values received for this parameter return an error response with the error code IDNV.

<locn>

A NULL value is the only valid value for this parameter. Invalid values received for this parameter return an error response with the error code INUP.

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IDNV.

LMS1000 Response Format Variations: If no threshold can be found which matches the input parameters, an error response with the error code IDNV is returned.

<aid>

The access identifier parameter identifies the single equipment unit for which a threshold is being retrieved.

<aidtype>

Valid values for an access identifier type response parameter are:

EQPTequipment

<montype>

This is the monitor type parameter of the threshold given in this block.   Values are derived from the MONITOR TYPE attribute of the LMS1000 analog or function channel configuration. This parameter contains a suffix to designate the type of threshold being retrieved. The suffix is separated from the monitor type parameter by a hyphen, and takes the form LT or HT to indicate low or high threshold types, respectively.

Example: DCVOLT-LT

<locn>

This is the location of the threshold being retrieved. This parameter specifies the threshold number (alarm limit number) of the specified analog or function channel. Valid values for this parameter are LILMS1000-x, where x is a positive integer from one through four, which specifies the threshold number of the channel with which the threshold is associated.

<dirn>

This parameter does not apply to LMS1000. The value of this parameter is returned as a NULL value.

<thlev>

This is the current threshold level for the monitored parameter. Valid data types for the threshold level for a given monitor type are the same as for the corresponding monitor type parameter (e.g., for the channel with which the threshold is associated).

<tmper>

This parameter does not apply in LMS1000. A NULL value is inserted for this parameter.

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RETRIEVE-USER-SECURITY
(RTRV-USER-SECU)

Referenced In: TR-TSY-000835, Issue 3; pg. 103

General Description: Retrieves a user's security parameters. The calling identifier (<cid>) parameter (i.e., LMS1000 user primary phone number), and user access privilege (<uap>) parameter (i.e., LMS1000 user access level) of the specified user is retrieved.

Related Commands: None

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: None

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter is the same value as the user identifier (<uid>) parameter for the user whose security parameters are being retrieved. If the user being retrieved is not an active user, then an error response is returned with the error code IIAC.

LMS1000 Response Format Variations:

<cid>

This is the calling identifier parameter of the user whose security parameters are being retrieved. The value is derived from the PRIMARY PHONE attribute from the specified user's LMS1000 user configuration. It can either be the network address or the phone number of the specified user. If the primary phone number parameter does not meet the syntax requirements for the <cid> parameter, the error code PIFC is returned.

<uap>

This is the user access privilege parameter of the user whose security parameters are being retrieved. The value is derived from the ACCESS LEVEL attribute from the specified user's LMS1000 user configuration.

<keyword-defined block>

This parameter has no relevance in LMS1000 and is not be returned.

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SET-ATTRIBUTE
(SET-ATTR-{EQPT})

Referenced In: TR-NWT-000833, Issue 5; pg. 4-385

General Description: Instructs LMS1000 to set the current notification code associated with the specified events.

An entry is made in the LMS1000's event log indicating this command was executed by the current user.

Related Commands: RETRIEVE-ATTRIBUTE

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: None

LMS1000 Input Format Variations: The command code modifier COM is not supported.

<aid>

Specifying a value of ALL for the access identifier (<aid>) parameter requests setting of attributes for all access identifiers of the type defined by the command code modifier. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<ntfcncde>

Specifies the notification code parameter associated with the alarm conditions being set. This parameter is an attribute of the LMS1000 channel or limit configuration.

Valid values for this parameter are as follows:

    CR   critical alarm
    MJ   major alarm
    MN   minor alarm
    NA   not alarmed
    NR   not reported
    NULL   defaults to NA

Invalid values for this parameter return an error response with the error code IDNV.

<condtype>

The condition type (<condtype>) parameter identifies the type of event for which a notification code (<ntfcncde>) parameter is being changed. This parameter is an attribute of the LMS1000 channel or limit configuration. This parameter is required in the input. Invalid values for this parameter return an error response with the error code IDNV.

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<locn>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values for this parameter return an error response with the error code IDNV.

<dirn>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values for this parameter return an error response with the error code IDNV.

<tmper>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values for this parameter return an error response with the error code INUP.

LMS1000 Response Format Variations: None

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SET-ATTRIBUTE-ENVIRONMENT
(SET-ATTR-ENV)

Referenced In: TR-NWT-000833, Issue 5; pg. 4-395

General Description: Instructs LMS1000 to set the current attributes associated with the specified environmental alarm.

An entry is made in the LMS1000's event log indicating this command was executed by the current user.

Related Commands: RETRIEVE-ATTRIBUTE-ENVIRONMENT

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: None

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter identifies equipment associated with the environmental alarm for which attributes are being set. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<ntfcncde>

Specifies the value for the notification code parameter associated with the environmental alarm conditions being set. Parameter grouping cannot be used with this parameter. This parameter is an attribute of the LMS1000 channel or limit configuration and is required in the input.

Valid values for this parameter are as follows:

    CR   critical alarm
    MJ   major alarm
    MN   minor alarm
    NULL   leaves <ntfcncde> unchanged

Invalid values for this parameter return an error response with the error code IDNV.

<almtype>

Specifies the alarm type parameter associated with the attribute being set. Parameter grouping cannot be used with this parameter. Values are derived from the CONDITION TYPE attribute of the LMS1000 channel or limit configuration. This parameter is required in the command input. The error code for an invalid value for this parameter is IDNV.

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This parameter is not implemented in LMS1000. A NULL value leaves the <almmsg> parameter unchanged, and is the only value which is accepted. Parameter grouping cannot be used with this parameter. Invalid values for this parameter return an error response with the error code INUP.

LMS1000 Response Format Variations: None

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SET-SYSTEM_IDENTIFICATION
(SET-SID)

Referenced In: TA-NWT-000199, Issue 6, Supplement 1; pg. 3-30

General Description: Instructs LMS1000 to change its system identifier (SID) parameter to a given value. The system identifier parameter can also be set using the "SET UNIT" command.

LMS1000 uses the value of the system identifier parameter as the target identifier in an input command and source identifier in a command response or autonomous message.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user.

Related Commands: None

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: SET UNIT

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter does not apply. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IIAC.

<sid>

This parameter determines the new system identifier to be assigned to LMS1000. The value may be any valid simple or compound TL1 identifier, or a text string with a maximum length of twenty characters. Valid character values are any alphanumeric characters or the - character. Invalid values for this parameter return an error response with the error code IDNV.

LMS1000 Response Format Variations: None

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SET-THRESHOLD
(SET-TH-{EQPT})

Referenced In: TR-NWT-000833, Issue 5; pg. 4-417

General Description: Instructs LMS1000 to set threshold levels (alarm limits) for a monitored parameter that, when exceeded, will trigger an automatic message.

These threshold levels may apply to one or more equipment units, facilities, etc. within LMS1000.

An entry is made in the LMS1000's event log indicating this command was executed by the current sessions user.

Related Commands: RETRIEVE-THRESHOLD

Related Messages: None

LMS1000 Access Level: 6

An error response with the error code PICC is returned if this command is entered by a valid user whose level of access is less than the access level of this command.

LMS1000 Equivalent: SET LIMITS <tn>

LMS1000 Input Format Variations:

<aid>

The access identifier (<aid>) parameter identifies the equipment for which threshold levels are being set. Specifying a value of ALL requests setting of thresholds for all access identifiers of the type defined by the command code modifier. A NULL value is not permitted for this parameter. Invalid values received for this parameter return an error response with the error code IIAC.

<montype>

The monitor type (<montype>) parameter identifies the particular monitored parameter for which the threshold is being set. Values are derived from the MONITOR TYPE attribute of the LMS1000 analog or function channel configuration. This parameter must contain a suffix to designate the type of threshold to be set. The suffix is separated from the monitor type parameter by a hyphen and takes the form LT or HT to indicate low or high threshold types, respectively.

Example: DCVOLT-LT

Parameter grouping cannot be used with this parameter. This parameter cannot have a value of NULL. Valid values for this parameter can contain only alpha characters. This parameter is required in the input. Invalid values received return an error response with the error code IDNV.

This is the desired threshold level to be set for the monitor type parameter specified. Valid data types for the threshold level parameter for a given monitor type parameter are the same as for the corresponding monitor type parameter (e.g., for the channel with which the threshold is associated). This parameter is required in the input.

<locn>

This is the location of the threshold being set. This parameter specifies the threshold number (alarm limit number) of the specified analog or function channel. Valid values for this parameter are LINE-x, where x is a positive integer from one through four, which specifies the threshold number of the channel with which the threshold is associated. This parameter is required in the input. Invalid values received for this parameter return an error response with the error code IDNV.

<dirn>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IDNV.

<tmper>

This parameter does not apply to LMS1000. The only valid value for this parameter is NULL. Invalid values received for this parameter return an error response with the error code IDNV.

LMS1000 Response Format Variations: None

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TL1 Autonomous
Messages Supported

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TL1 AUTONOMOUS MESSAGES SUPPORTED
(IN ALPHABETICAL ORDER)

This section lists the specific autonomous messages (in alphabetical order) LMS1000 supports when the TL1 software option is furnished. A brief description of each is provided.

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CANCEL SESSION
(TIMEOUT)

Referenced In: TR-TSY-000835, Issue 2; pg. 12.5-13

General Description: This is an automatic message transmitted by LMS1000 when an established session is terminated because of a "timeout", i.e., no messages were exchanged for an interval equal to TMOUT (Appendix B, section B.2.2, item 3.5).

Related Commands: None

Related Messages: None

LMS1000 Equivalent: "User Timeout" message

LMS1000 Message Format Variations:

<uid>

This refers to the user whose session is terminated due to timeout.

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REPORT ALARM
(REPT ALM {EQPT/COM})

Referenced In: TR-NWT-000833, Issue 5; pg. 5-5

General Description: Generated by an LMS1000 to report the occurrence of alarmed events. Trouble events occurring in LMS1000 are classified as alarmed or non-alarmed events.

Related Commands: RETRIEVE-ALARM, RETRIEVE-CONDITION

Related Messages: REPORT EVENT

LMS1000 Equivalent: None

LMS1000 Message Format Variations:

<aid>

Identifies the single entity in LMS1000 to which the alarm pertains. If the message code modifier is COM, then this parameter must be COM, indicating a system-wide failure that is not specific to a particular sub-unit. A NULL value is not permitted with this parameter. Parameter grouping cannot be used with this parameter.

<ntfcncde>

This is the notification code parameter associated with a single alarm condition given in this block.

Valid values are as follows:

CR	Critical alarm
MJ	Major alarm
MN	Minor alarm
CL	Cleared alarm

Values are derived from the NOTIFICATION CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated. Parameter grouping cannot be used with this parameter.

<condtype>

This is the condition type parameter of the alarm indication being given in this block. Values are derived from the CONDITION TYPE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated. Parameter grouping cannot be used with this parameter.

<srveff>

This is the service effect parameter associated with a single alarm condition given in this block.

Valid values are as follows:

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SA   Service-affecting condition immediate action required.
NSA   Nonservice-affecting condition, action required.

Values are derived from the SERVICE EFFECT CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated. Parameter grouping cannot be used with this parameter.

<ocrdat>

This is the date when the triggering event occurred (i.e., the threshold was crossed). The format for this parameter is MOY-DOM (Month-Of-Year - Day-Of-Month). MOY ranges from 1 to 12, and DOM ranges from 1 to 31. A null value for this parameter defaults to the date in the message header.

<ocrtm>

This is the time when the triggering event occurred. The format for this parameter is HOD-MOH-SOM (Hour-Of-Day - Minute-Of-Hour - Second-Of-Minute). HOD ranges from 0 to 23. MOH and SOM range from 0 to 59. A null value for this parameter defaults to the time in the message header.

<locn>, <dirn>

These parameters do not apply in LMS1000. A NULL value is inserted for them.

<monval>

This is the measured value of the monitored value associated with the alarm condition. A NULL value is inserted if there is no measured value associated with this trouble. Parameter grouping cannot be used with this parameter.

<thlev>

This is the value of the threshold level if the condition type parameter is a threshold violation. A NULL value means there is no threshold level associated with the alarm condition. Parameter grouping cannot be used with this parameter.

<tmper>

This is the accumulation time period for Performance Monitoring (PM) parameters. It represents the length of time the alarm condition has been active. Parameter grouping cannot be used with this parameter. The format for this parameter is VAL-UN, where valid values for VAL (value) and UN (unit) are:

VAL (value)	UN (unit)
1	DAY (day)
1 to 24	HR (hour)
1 to 1440	MIN (minute)

<conddescr>

This parameter is a text message which provides a detailed description of the alarm, event, or condition. It is an ASCII string enclosed within a pair of escaped quotes (\"). It may also be used to describe any action to be taken as a result of the condition. For this application, values are derived from the CONDITION DESCRIPTION parameter of the

LMS1000 channel or limit configuration with which the alarm condition is associated. If the channel or limit parameter has not been configured, a NULL will be inserted for this parameter.

<aiddet>, <obsdbhvr>, <exptdbhvr>, <dgntype>, <tblistl>

These parameters do not apply or are not implemented in LMS1000. A NULL value is inserted for them.

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REPORT ALARM ENVIRONMENT
(REPT ALM ENV)

Referenced In: TR-NWT-000833, Issue 5; pg. 5-13

General Description: Generated by an LMS1000 to report the occurrence of environmental alarms.

Related Commands: RETRIEVE-ALARM ENVIRONMENT

Related Messages: None

LMS1000 Equivalent: None

LMS1000 Message Format Variations:

<ntfcncde>

This is the notification code parameter associated with the environmental alarm conditions being reported.

Valid values for this parameter are as follows:

    CR   critical alarm
    MJ   major alarm
    MN   minor alarm
    CL   cleared alarm

Values are derived from the NOTIFICATION CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated. Parameter grouping cannot be used with this parameter.

<almtype>

This is the alarm type parameter of environmental alarm(s) to be reported. Values are derived from the CONDITION TYPE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated. Parameter grouping cannot be used with this parameter.

<ocrdat>

This is the date when the triggering event occurred (i.e., the threshold was crossed). The format for this parameter is MOY-DOM (Month-Of-Year - Day-Of-Month). MOY ranges from 1 to 12, and DOM ranges from 1 to 31. A NULL value for this parameter defaults to the date in the message header. Parameter grouping cannot be used with this parameter.

<ocrtm>

This is the time when the triggering event occurred. The format for this parameter is HOD-MOH-SOM (Hour-Of-Day - Minute-Of-Hour - Second-Of-Minute). HOD ranges from 0 to 23. MOH and SOM range from 0 to 59. A NULL value for this parameter defaults to the time in the message header. Parameter grouping cannot be used with this parameter.

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<almmsg>

This parameter is not implemented in LMS1000. A NULL value is inserted for this parameter.

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REPORT CONDITION
(REPT COND {EQPT/COM})

Referenced In: TR-NWT-000833, Issue 5; pg. 5-21

General Description: Provides a periodic report of selected LMS1000 standing conditions such as equipment units out of service, etc. The reporting period and conditions are defined in the LMS1000's requirements.

Related Commands: RETRIEVE-CONDITION

Related Messages: REPORT EVENT

LMS1000 Equivalent: None

LMS1000 Message Format Variations:

<aid>

Identifies the single entity in the LMS1000 to which the condition pertains. If the message code modifier is COM, then this parameter must be COM, indicating a system-wide condition that is not specific to a particular sub-unit. A NULL value is not permitted with this parameter. Parameter grouping cannot be used with this parameter.

<ntfcncde>

This is the notification code parameter associated with a single alarm condition given in this block.

Valid values are as follows:

    CR   Critical alarm
    MJ   Major alarm
    MN   Minor alarm
    NA   Not alarmed
    NR   Not reported when the event occurs

A NULL value for the notification code defaults to NA.

Values are derived from the NOTIFICATION CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated. Parameter grouping cannot be used with this parameter.

<condtype>

This is the condition type parameter of the alarm indication given in this block. Values are derived from the CONDITION TYPE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated. Parameter grouping cannot be used with this parameter.

<srveff>

This is the service effect parameter associated with a single alarm condition given in this block.

Valid values are as follows:

SA   Service-affecting condition immediate action required.
NSA   Nonservice-affecting condition, action required.

Values are derived from the SERVICE EFFECT CODE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated. Parameter grouping cannot be used with this parameter.

<ocrdat>

This is the date when the triggering event occurred (i.e., the threshold was crossed). The format for this parameter is MOY-DOM (Month-Of-Year - Day-Of-Month). MOY ranges from 1 to 12 and DOM ranges from 1 to 31. A null value for this parameter defaults to the current date unless <ocrtm> is null, then this parameter does not apply. Parameter grouping cannot be used with this parameter.

<ocrtm>

This is the time when the triggering event occurred. The format for this parameter is HOD-MOH-SOM (Hour-Of-Day - Minute-Of-Hour - Second-Of-Minute). HOD ranges from 0 to 23. MOH and SOM range from 0 to 59. A NULL value means this parameter and the <ocrdat> parameter are not applicable. Parameter grouping cannot be used with this parameter.

<locn>, <dirn>

These parameters do not apply to LMS1000. A NULL value is inserted for them.

<tmper>

This is the accumulation time period for Performance Monitoring (PM) parameters. It represents the length of time the alarm condition has been active. Parameter grouping cannot be used with this parameter. The format for this parameter is VAL-UN, where valid values for VAL (value) and UN (unit) are:

VAL (value)	UN (unit)
1	DAY (day)
1 to 24	HR (hour)
1 to 1440	MIN (minute)

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REPORT EVENT
(REPT EVT {EQPT/COM})

Referenced In: TR-NWT-000833, Issue 5; pg. 5-35

General Description: Generated by LMS1000 to report the occurrence of non-alarmed events. Trouble events occurring in LMS1000 are classified as alarmed and non-alarmed events. This message may also be used to report the recovery from off-normal or trouble conditions. This is done by using the value NORMAL for the parameter CONDTYPE, and associating the previous trouble report by the fractional part of the automatic tags (atag).

Related Commands: RETRIEVE-ALARM, RETRIEVE-CONDITION

Related Messages: REPORT ALARM

LMS1000 Equivalent: None

LMS1000 Message Format Variations:

<aid>

Identifies the single entity in LMS1000 to which the alarm pertains. If the message code modifier is COM, then this parameter must be COM, indicating a system-wide failure that is not specific to a particular sub-unit. A NULL value is not permitted with this parameter. Parameter grouping cannot be used with this parameter.

<condtype>

This is the condition type parameter of the event given in this block. Values are derived from the CONDITION TYPE attribute of the LMS1000 channel or limit configuration with which the alarm condition is associated. Parameter grouping cannot be used with this parameter.

<condeff>

Indicates the effect of the event on the condition of LMS1000. The event may initiate a standing condition (i.e., a non-alarmed condition occurrence), or may clear a standing condition or alarm. Parameter grouping cannot be used with this parameter.

Valid values are as follows:

CL	Standing condition cleared. This indicates that an existing alarmed or non-alarmed condition has cleared.
SC	Standing condition raised. This indicates that a non-alarmed condition has occurred.
TC	Transient condition (this condition is not supported).

<ocrdat>

This is the date when the triggering event occurred (i.e., the threshold was crossed). The format for this parameter is MOY-DOM (Month-Of-Year - Day-Of-Month). MOY ranges from 1 to 12, and DOM ranges from 1 to 31. A null value for this parameter defaults to the date in the message header.

This is the time when the triggering event occurred. The format for this parameter is HOD-MOH-SOM (Hour-Of-Day - Minute-Of-Hour - Second-Of-Minute). HOD ranges from 0 to 23. MOH and SOM range from 0 to 59. A null value for this parameter defaults to the time in the message header.

<locn>, <dirn>

These parameters do not apply to LMS1000. A NULL value is inserted for them.

<monval>

This is the measured value of the monitored value associated with the alarm condition. A NULL value is inserted if there is no measured value associated with this trouble. Parameter grouping cannot be used with this parameter.

<thlev>

This is the value of the threshold level if the condition type parameter is a threshold violation. A NULL value means there is no threshold level associated with the alarm condition. Parameter grouping cannot be used with this parameter.

<tmper>

This is the accumulation time period for Performance Monitoring (PM) parameters. It represents the length of time the alarm condition has been active. Parameter grouping cannot be used with this parameter. The format for this parameter is VAL-UN, where valid values for VAL (value) and UN (unit) are:

VAL (value)	UN (unit)
1	DAY (day)
1 to 24	HR (hour)
1 to 1440	MIN (minute)

<conddescr>

This parameter is a text message which provides a detailed description of the alarm, event, or condition. It is an ASCII string enclosed within a pair of escaped quotes (\"). It may also be used to describe any action to be taken as a result of the condition. For this application, values are derived from the CONDITION DESCRIPTION parameter of the LMS1000 channel or limit configuration with which the alarm condition is associated. If the channel or limit parameter has not been configured, a NULL will be inserted for this parameter.

<aiddet>, <obsdbhvr>, <exptdbhvr>, <dgntype>, <tblistl>

These parameters do not apply or are not implemented in LMS1000. A NULL value is inserted for them.

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List of Error Codes for
TL1 Commands Supported

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LIST OF ERROR CODES FOR TL1 COMMANDS SUPPORTED (IN ALPHABETICAL ORDER)

This section provides a list of error codes for the TL1 commands supported.

ENAC - Equipage, Not equipped with Alarm Cutoff

ENEQ - Equipage, Not EQuipped

ENPM - Equipage, Not equipped for Performance Monitoring

ENRI - Equipage, Not equipped for Retrieving specified Information

ENSI - Equipage, Not equipped for Setting specified Information

ICNV - Input, Command Not Valid

IDNV - Input, Data Not Valid

IDRG - Input, Data RanGe

IIAC - Input, Invalid Access Identifier

IICT - Input, Invalid Correlation Tag

IIFM - Input, Invalid Data Format

IIPG - Input, Invalid Parameter Grouping

IISP - Input, Invalid Syntax or Punctuation

IITA - Input, Invalid TArget identifier

INUP - Input, Non-null Unimplemented Parameter

IORD - Input, Out of Range Data

PICC - Privilege, Illegal Command Code

PIFC - Privilege, Illegal Field Code

PIUC - Privilege, Illegal User Code

PIUI - Privilege, Illegal User Identity

SARB - Status, All Resources Busy

SAOP - Status, Already OPerated

SCNF - Status, Command Not Found

SDNR - Status, Data Not Ready

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SPNF - Status, Process Not Found

SROF - Status, Requested Operation Failed

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CHAPTER 4
MAINTAINING LMS1000

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OBSERVE THE FOLLOWING ADMONISHMENT

Danger: *AC and DC power may be present. This system operates from DC input power. Various AC and/or DC voltages may be connected to the input/output circuit cards contained within the system. Performing the following procedures may expose service personnel to hazards. These procedures should be performed by qualified service personnel familiar with the hazards associated with this type of equipment. These hazards may include shock, energy, and/or burns. To avoid these hazards:*

a) *The tasks should be performed in the order indicated.*

b) *Remove watches, rings, and other jewelry.*

c) *Prior to contacting any uninsulated surface or termination, use a voltmeter to verify that no voltage or the expected voltage is present.*

d) *Wear eye protection, and use recommended tools.*

Warning: *Before handling any circuit card, read and follow the instructions contained on the Static Warning Page located at the beginning of this manual. DC input power should always be removed from the shelf before inserting or removing a circuit card. To avoid possibility of circuit card damage from static discharge, a static wrist strap grounded through a one megohm resistor should always be worn when handling the circuit cards.*

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REPLACING THE CPU MEMORY BACKUP BATTERY (586505000/586505500 MAIN CABINET OR 582140000 PRIMARY BAY ONLY)

Caution: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Emerson Network Power recommends that the memory backup battery be replaced once a year.

The CPU circuit card employs a 3 volt 170 mAH lithium battery (P/N 241163100) which has a shelf life of ten years. Under typical discharge conditions (25 degrees C), the battery can power the memory for about 5000 hours. If the circuit card is removed from service for an extended period of time, the battery should be insulated from the battery holding clamp using a piece of cardstock or similar material. However, this action will destroy all contents of the memory and clock. If it is necessary to save the configuration of a system, download the information to a floppy disk and then later upload the information back into the system. Refer to "UPLOADING AND DOWNLOADING THE CONFIGURATION" in "Chapter 2. Operating LMS1000".

When the lithium battery reaches approximately 2.5 volts, a local indicator illuminates. When this happens it means the lithium battery, under typical conditions, will be able to power the memory for about another ten days.

Procedure:

Note: Refer to Figure 4-1 as this procedure is performed.

1) Remove DC input power from the LMS CPU circuit card.

2) **586505000/586505500 LMS Cabinet:** Rotate the two captive fasteners on the front of the shelf until the arrow on the fastener points up or down, and pivot the door open.
   or
   582140000 LPS Power System: Open the bay's front door.

3) Connect an approved grounding strap to your wrist. Attach the other end to a suitable ground.

4) If external CPU/hardware fail alarms are connected to J4 on the circuit card, gently remove the top half of connector J4 from the bottom half.

5) Remove the CPU circuit card by loosening the retaining screw. In a 582140000 LPS Power System, note that if a modem is installed, it also contains a bracket with a retaining screw. Remove the modem cable, if present.

6) When you remove the CPU battery, memory is maintained because the capacitor supplies power to the memory for at least one minute (worst case). Do not remove the battery until the replacement battery is ready to be inserted.

7) Remove the existing battery, and insert the replacement battery, observing correct polarity.

8) Re-install the CPU circuit card by sliding the CPU circuit card into its mounting position, ensuring the rear edge connector is firmly seated. Secure the circuit card by tightening the retaining screw located on the circuit card assembly (this is also the RS-232 Connector Grounding Screw). In a 582140000 LPS Power System, note that if a modem is installed, it also contains a bracket with a retaining screw.

9) Attach the top half of J4 to the bottom half , if previously removed.

10) Remove the grounding wrist strap.

11) **586505000/586505500 LMS Cabinet:** Close the shelf door and secure with the two captive fasteners (arrow on fastener points towards outside of cabinet).
or
582140000 LPS Power System: Close the bay's front door.

12) Re-apply DC input power to the LMS CPU circuit card.

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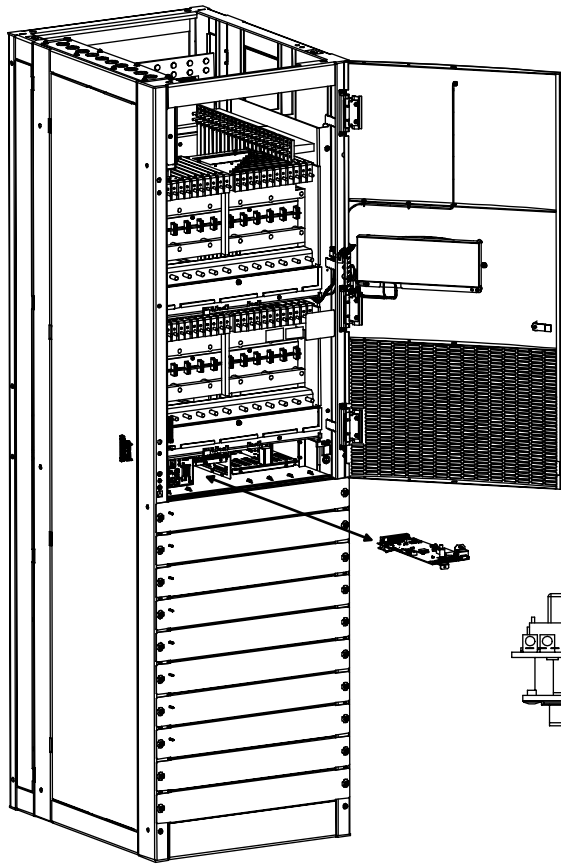
582140000
Primary Bay
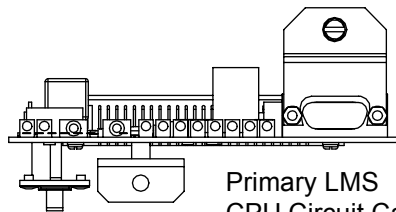
Primary LMS
CPU Circuit Card
(P/N 521185)

586505000
Main Cabinet
(586505500 similar)
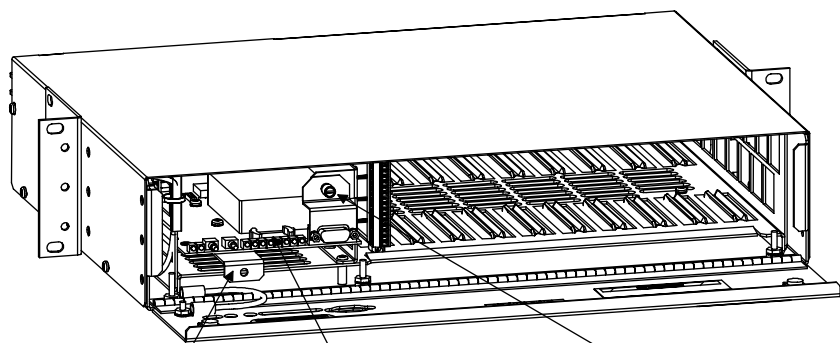
Primary LMS
CPU Circuit Card
(P/N 514024)

CPU Memory
Backup Battery
(Located Behind LEDs)
(Plus Located on Top)

BT1

RS-232 Connector
Grounding Screw
(Main Cabinet Only)

Figure 4-1
Replacing the CPU Memory Backup Battery (Main Cabinet or Primary Bay Only)

Chapter 4. Maintaining LMS1000

ADDING AN INPUT/OUTPUT (I/0) CIRCUIT CARD

Refer to the *Installation Instructions* (Section 5879) located in the separate INSTALLATION MANUAL for procedures to do the following. Section 5879 is also provided on the CD (Electronic Documentation Package) furnished with your system.

- Install the circuit card.

- Wire to the circuit card.

- Configure the associated channels of the circuit card.

Note: *When adding or removing a circuit card from the network, the associated Node must be re-initialized before the network recognizes the addition or removal of the circuit card. If the Node is not re-initialized, alarms may be present. Re-initialize the Node to clear the alarms. Note that the configuration for the channels on the source node may need re-configuring after executing the NODE INITIO command. Refer to the "NODE INITIO" command in the Commands chapter.*

ADDING A MODEM CIRCUIT CARD

Refer to the *Installation Instructions* (Section 5879) located in the separate INSTALLATION MANUAL for procedures to do the following. Section 5879 is also provided on the CD (Electronic Documentation Package) furnished with your system.

- Install the circuit card.

- Connect the phone line.

- Configure modem parameters.

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UPGRADING THE FIRMWARE

Contact an Emerson Network Power service facility. Contact information is provided in a Service Information Sheet (Section 4154). Section 4154 can be accessed via the CD (Electronic Documentation Package) furnished with your system.

ADDING SOFTWARE OPTIONS

Contact an Emerson Network Power service facility. Contact information is provided in a Service Information Sheet (Section 4154). Section 4154 can be accessed via the CD (Electronic Documentation Package) furnished with your system.

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CHAPTER 5
TROUBLESHOOTING AND
REPAIRING LMS1000

Refer to Section 4154 (Service Information Sheet) for service contact information. You can find Section 4154 on the CD (Electronic Documentation Package) furnished with your system.

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OBSERVE THE FOLLOWING ADMONISHMENTS

Danger: *AC and DC power may be present. This system operates from DC input power. Various AC and/or DC voltages may be connected to the input/output circuit cards contained within the system. Performing the following procedures may expose service personnel to hazards. These procedures should be performed by qualified service personnel familiar with the hazards associated with this type of equipment. These hazards may include shock, energy, and/or burns. To avoid these hazards:*

    a) *The tasks should be performed in the order indicated.*

    b) *Remove watches, rings, and other jewelry.*

    c) *Prior to contacting any uninsulated surface or termination, use a voltmeter to verify that no voltage or the expected voltage is present.*

    d) *Wear eye protection, and use recommended tools.*

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> *Warning:* *Installation or removal of the circuit cards requires careful handling. Before handling any circuit card, read and follow the instructions contained on the Static Warning Page located at the beginning of this manual. DC input power should always be removed from the circuit card before inserting or removing the circuit card. To avoid possibility of circuit card damage from static discharge, a static wrist strap grounded through a one megohm resistor should always be worn when handling the circuit cards.*

PRELIMINARY TROUBLESHOOTING

Before attempting to troubleshoot the system, it must be determined that a failure has occurred in the system, and not in any equipment connected to it. Eliminate any interconnected equipment as a trouble cause before proceeding.

Once trouble has been isolated to the system, and before attempting to replace any circuit cards, various visual and operational checks should be made to eliminate any obvious failure causes. Before starting any troubleshooting procedure, check the following:

> *Danger:* *Battery voltage may be present at the DC input terminals. Servicing personnel must observe all safety precautions normally associated with the maintenance and repair of electronic equipment, and must avoid direct contact with any energized electrical termination.*

a) Check to be sure DC input power is available to the system.

b) Check all electrical and alarm connections for disconnected or loose terminations.

c) Insure that all circuit cards are properly seated.

Component failures are sometimes evident during visual inspection of the circuitry. Obvious trouble symptoms such as loose connections; overheated, discolored, or burned components; open fuses; or burned and melted wire insulation should be corrected and the cause determined before proceeding with more detailed troubleshooting procedures.

DIAGNOSTIC MODE

The system contains a self diagnostic feature. If the system automatically enters the diagnostic mode (distinguished by RED flashing LEDs or no response to access attempts), contact an Emerson Network Power service facility. Contact information is provided in a Service Information Document (Section 4154). The Service Information Document can be accessed via the CD (Electronic Documentation Package) furnished with your system.

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LMS1000 SELF DIAGNOSTIC ALARMS
(BINARY CHANNELS B0081 – B0096)

The system provides for connection of an external Self Diagnostic Alarm. This alarm activates when one or more of the Hardware Fail channels alarm.

Contact an Emerson Network Power service facility if the following "Actions" do not eliminate the error condition. Contact information is provided in a Service Information Sheet (Section 4154). Section 4154 can be accessed via the CD (Electronic Documentation Package) furnished with your system.

ERROR TYPE (CHANNEL #)	DESCRIPTION/ACTION
Self Diagnostics Error (B0081)	**Description:** Clock Battery Low, Application check during power up tests failed, SRAM check during power up tests failed, Real Time Clock check during power up tests failed, Bus Clock check during power up tests failed. **Action:** Replace Main Cabinet CPU Memory Backup Battery if 'Clock Battery low' listed by ALARMS command. Otherwise, remove and restore power to Main Cabinet to perform power on diagnostics and replace Main Cabinet CPU if alarm persists.
Main Cabinet H/W Failure (B0082)	**Description:** The specified card(s) has been removed or failed. The type of card failed can be determined via the BOARDS command. All cards to the right of a failed or missing card will be reported as failed. **Action:** Replace failed or missing cards with exact type.
Main Cabinet H/W Mismatch (B0083)	**Description:** I/O card does not match that which is recorded in memory. **Action:** Determine the exact card number and type via the ALARMS command. Replaced errant card as described in "Adding an Input/Output (I/O) Circuit Card" subsection of the MAINTAINING LMS1000 section of the manual. Otherwise enter the NODE INITIO command as described in the COMMANDS section of the manual.
Main Cabinet Foreign H/W (B0084)	**Description:** I/O card in main cabinet is not a recognized assembly of the current firmware revision. **Action:** Call an Emerson Network Power service and request an upgrade of the firmware to a revision capable of recognizing the new I/O card.
Power System Comm. Link Failure (B0085)	**Description:** Communication Link to Power System has failed. **Action:** Verify proper connection of LMS/MCA communications cable. Verify recognition of the remote interface on the MCA inventory menu. Verify proper seating of MCA communications daughter card on the MCA assembly. Verify proper MCA communications daughter card on the MCA assembly.
Network Failure (B0086)	**Description:** I/O network firmware has failed. **Action:** Enter the SYSTEM RESET command. Call an Emerson Network Power services if alarm persists.
Foreign Node Error (B0087)	**Description:** Node assembly number that is not in list of known node assembly numbers. **Action:** Call an Emerson Network Power service and request an upgrade of the firmware to a revision capable of recognizing the new node assembly.

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ERROR TYPE (CHANNEL #)	DESCRIPTION/ACTION
Unexpected Response (B0088)	**Description:** May have multiple nodes with identical address on network or additional hardware in a node. **Action:** Determine the source node via the ALARMS command. Enter the NODE ADD command and check the resulting list of nodes for new nodes discovered. If the alarm persists for more than 60 seconds, enter the NODE INITIO command. Note that the configuration for the channels on the source node may need re-configuring after executing the NODE INITIO command.
Node Communication Error (B0089)	**Description:** Unable to communicate with expansion cabinet or assembly. **Action:** Determine the source node via the ALARMS and NODE LIST command. First, verify the node has power. Next, verify the echelon network connection. For Expansion Cabinets, verify all installed I/O cards are recognized types for the version of firmware installed in the LMS1000. Refer to SAG586505000/SAG586505500 for valid card types. The SAG can be accessed via the Electronic Documentation Package provided on the CD shipped with your system.
Node Watch Dog Reset Error (B0090)	**Description:** A node on the network has been reset by it's watchdog supervisory circuit. **Action:** Note the occurrence in a record or log (such as an LMS1000 INFO page). Replace node CPU circuit card in any node exhibiting this error more than one time in any given six month period.
Node Configuration Mismatch (B0091)	**Description:** Reported node configuration parameter does not match configuration stored on Master: Cabinet spec, Cabinet serial, Cabinet location, Point use flags, Distribution module number. **Action:** Determine the source node via the ALARMS command. Execute the NODE CONFIG command and verify the configuration stored is correct. Be sure to save changes whether any made or not when prompted. Verify the nodes channels as well.
Node Assembly Mismatch (B0092)	**Description:** Reported Assembly Number doesn't match information stored on Master node. **Action:** Determine the source node via the ALARMS command. Execute the NODE CONFIG command and verify the assembly number stored is correct. Be sure to save changes whether any made or not when prompted. Verify the nodes channels as well.
Node H/W Mismatch (B0093)	**Description:** Hardware reported by node does not match information stored on Master node: Number of boards, Board style, Number of point groups, Point type, Number of points, Failure to get point group. **Action:** Determine the source node via the ALARMS command. Verify the I/O circuit cards in the node are the desired configuration. Enter the NODE INITIO command. Note that the configuration for the channels on the source node may need re-configuring after executing the NODE INITIO command.
Node I/O H/W Failure (B0094)	**Description:** Expansion Cabinet: I/O card failure. All cards to the right of a failed or missing card will be reported as failed. Expansion Assembly: A/D Malfunction, Neuron Circuitry Failure. **Action:** Expansion Cabinet: Determine the source card via the ALARMS command. Replace failed or missing cards with exact type. Expansion Assembly: Replace the Expansion Assembly as described in the "Replacing an Expansion Assembly Card" subsection of the "Troubleshooting and Repairing" section of the manual.

ERROR TYPE (CHANNEL #)	DESCRIPTION/ACTION
Analog H/W Configuration Error (B0095)	**Description:** Reported configuration of universal A/D point does not match configuration stored in Network or Master Node I/O Subsystem. **Action:** Determine the source channel via the ALARMS command. Enter the CONFIG Axxxx command and verify the channel configuration is as desired. Be sure to save changes even if none are made. Verify the error clears within 15 seconds.
Temperature Probe Failure (B0096)	**Description:** Temperature probe sensor has failed. **Action:** Replace the temperature probe specified by the ALARMS command.

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TROUBLESHOOTING FOUR INPUT ANALOG CIRCUIT CARDS

TROUBLESHOOTING FOUR INPUT ANALOG CIRCUIT CARDS		
POSSIBLE CAUSES	**TEST PROCEDURE**	**LOOK FOR ...**
1) Jumpers on Analog Input circuit card incorrectly set.	Refer to Figure 2-4 in Section 5879 (Installation Instructions) and verify correct jumper placement for each analog input.	--
2) Analog inputs connected to wrong terminals on Analog Input circuit card.	Refer to Figure 2-10 in Section 5879 (Installation Instructions) and verify correct terminal block connection for each analog input.	--
3) Shunt size is incorrect.	Visually inspect shunt to verify that it is the correct size (full scale millivolts are as desired).	--
4) Analog input source to Analog Input circuit card defective.	Verify the analog input source for proper reading going into the circuit card.	--
5) High impedance or open input leads connected to the Analog Input circuit card giving the false reading.	Remove input power to the LMS. Remove one input lead at the source. Short it to the other input lead. Measure the resistance (ohms) between the input leads at the Analog Input circuit card terminal block. This value should not be significantly greater than the sum of any current limit resistors located in the input leads.	Open current limit fuses or resistors. Wrong value current limit resistors. (49.9 ohm resistor recommended when monitoring shunts). Open input leads. Poor solder connections. Poor terminal connections.
6) Shorted or low impedance input leads connected to the Analog Input circuit card giving the false reading.	Remove input power to the LMS. Remove and isolate one input lead at the source. Measure the resistance (ohms) between the input leads at the analog circuit card terminal block. This value should be infinite.	Leads damaged or pinched. Poor connection at terminal block.
7) Noise injected onto the input leads.	If another analog channel appears to operate correctly, swap the input leads of the analog circuit card associated with this channel with those associated with the defective channel. If the problem now exists on the swapped channel, the problem is external to the LMS.	Input leads should always be twisted pairs. Input leads running with other leads carrying AC signals or near electrically noisy equipment may pick up noise.
8) SCALE FACTOR attribute incorrectly set in the analog channel configuration.	Log on to the unit. Enter the command CONFIG Ax, where x is the number of the analog channel giving the false reading. Verify (and change if necessary) the scale factor of this channel.	--

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TROUBLESHOOTING FOUR INPUT ANALOG CIRCUIT CARDS		
POSSIBLE CAUSES	**TEST PROCEDURE**	**LOOK FOR ...**
9) Open terminal block connection on the analog input circuit card giving the false reading.	Remove input power to the LMS. The terminal block on the circuit card is a two piece unit that can be separated. Remove the detachable half of the terminal block. Visually inspect both halves of the terminal block for damaged pins. Reconnect the terminal block half. Measure the resistance between the stationary half of the terminal block and the detachable half. You should measure near zero ohms.	--
10) Defective Analog Input circuit card causing false reading.	On the Analog Input circuit card, remove the wires from a pair of input terminals and jumper the pair of input terminals together. If the reading for that input does not got to zero or one, the fuse on the Analog Input circuit card may be open or the circuit card may not be calibrated properly. Try a different channel (preferably swap the wiring from the defective input with the wiring of a known working channel on that circuit card or another circuit card) to see if the problem follows the input wiring or the channel. Replace the analog input circuit card with a known working Analog Input circuit card.	--

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REPAIR AND REPLACEMENT INFORMATION

> *Warning:* *Ensure that DC input power is removed from the system before performing any repair or replacement procedures.*

Circuit Cards

> *Warning:* *Installation or removal of the circuit cards requires careful handling. Before handling any circuit card, read and follow the instructions contained on the Static Warning Page located at the beginning of this manual. DC input power should always be removed from the circuit card before inserting or removing the circuit card. To avoid possibility of circuit card damage from static discharge, a static wrist strap grounded through a one megohm resistor should always be worn when handling the circuit cards.*

When a trouble symptom is localized to a faulty circuit card, that particular circuit card should be replaced in its entirety. No attempt should be made to troubleshoot or repair individual components on any circuit card.

A circuit card can easily be replaced if a failure condition should occur. For circuit card replacement, follow the procedures presented in this chapter.

DC input power should always be removed from the circuit card when inserting or removing a circuit card. When a circuit card is removed from the system shelf, it should immediately be placed in a static protective bag.

The terminal blocks located on the circuit cards can be removed by first loosening the two screws, then gently pulling the terminal block body away from the circuit card. This feature facilitates circuit card replacement.

Replacement Circuit Card Part Numbers

Refer to SAG586505000/SAG586505500 (System Application Guide) for replacement part numbers. The SAG can be accessed via the CD (Electronic Documentation Package) furnished with your system.

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REPLACEMENT PROCEDURES

Replacing a 586505000/586505500 Main Cabinet or 582140000 LPS Primary Bay CPU Circuit Card

Note: *Refer to Figure 5-1 as this procedure is performed.*

Note: *When performing any step in this procedure which requires removal of existing hardware, retain all hardware for use in subsequent steps.*

Procedure:

Observe Admonishments

1) Observe the admonishments presented at the beginning of this chapter, and in the previous section titled "REPAIR AND REPLACEMENT INFORMATION".

Download the LMS Configuration

1) Download the configuration from the LMS1000 to a PC by following one of the procedures detailed next.

Downloading the Configuration from the LMS1000 to a PC using XMODEM

Note: *A fully configured system downloaded over a phone line at 1200 bits/s may require up to 15 minutes.*

Note: *The communications parameters of the remote terminal must match the system's default parameters. The default parameters are 8 data bits, 1 stop bit, and no parity. These defaults cannot be changed.*

    a) Log on to the system. The user must have access to level 6 commands.

    b) Enter the command **DOWNLOAD**, then press **ENTER**. You have up to 1 minute to initiate a file transfer.

    c) The system will wait up to 1 minute before aborting the process if no file transfer occurs. The system waits for a 'C' character, which is the synchronization character for starting an XMODEM CRC file transfer.

    d) At the PC, initiate a file transfer using XMODEM CRC protocol.

Downloading the Configuration from the LMS1000 to a PC using TFTP

    a) Start a separate TFTP client session on the host to which the configuration file is transferred.

    b) Log on to the system. The user must have access to level 6 commands.

    c) Enter the command **DOWNLOAD TFTP**, then press **ENTER**. The following will be displayed.

```
DOWNLOAD using TFTP
```

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    d)   After seeing the above prompt, start the download process from the client. **DO NOT ATTEMP THE DOWNLOAD UNTIL THE PROMPT ABOVE IS DISPLAYED.**

Save the Node Configuration

1) Enter the command NODE LIST, and copy the displayed information. This information is currently not saved when the configuration is downloaded using the DOWNLOAD command. This information has to be manually re-entered after replacing the CPU card.

Replace the CPU Circuit Card

1) Remove DC input power from the LMS CPU circuit card.

2) **586505000/586505500 LMS Cabinet:** Rotate the two captive fasteners on the front of the shelf until the arrow on the fastener points up or down, and pivot the door open.
or
582140000 LPS Power System: Open the bay's front door.

3) Connect an approved grounding strap to your wrist. Attach the other end to a suitable ground.

4) If external CPU/hardware fail alarms are connected to J4 on the circuit card, gently remove the top half of connector J4 from the bottom half located on the existing CPU circuit card.

5) Remove the CPU circuit card by loosening the retaining screw. In a 582140000 LPS Power System, note that if a modem is installed, it also contains a bracket with a retaining screw. Remove the modem cable, if present.

6) Remove the modem circuit card, if present.

7) Reinstall the modem circuit card onto the replacement CPU circuit card, if present. Replace the modem cable, if present.

8) Slide the replacement CPU circuit card into its mounting position, ensuring the rear edge connector is firmly seated. Secure the circuit card by tightening the retaining screw located on the circuit card assembly (this is also the RS-232 Connector Grounding Screw). In a 582140000 LPS Power System, note that if a modem is installed, it also contains a bracket with a retaining screw.

9) If external hardware fail alarms where connected to J4 on the existing circuit card, remove the supplied top half of J4 from the replacement CPU circuit card. This piece is not used, and may be saved or discarded. Attach the top half of J4 (removed from the old CPU circuit card) to the bottom half of J4 located on the replacement CPU circuit card.

10) Remove the grounding wrist strap.

11) **586505000/586505500 LMS Cabinet:** Close the shelf door and secure with the two captive fasteners (arrow on fastener points towards outside of cabinet).
or
582140000 LPS Power System: Close the bay's front door.

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12) Reapply DC input power to the LMS CPU circuit card.

13) Log onto the system using the default level six password (6).

14) Enter the command SYSTEM INIT.

Upload the LMS Configuration

1) Upload the configuration from a PC to the LMS1000 by following one of the procedures detailed next.

Uploading the Configuration from a PC to the LMS1000 using XMODEM

Note: *The communications parameters of the remote terminal must match the system's default parameters. The default parameters are 8 data bits, 1 stop bit, and no parity. These defaults cannot be changed.*

a) Log onto the system using the default level six password (6).

b) Enter the command ***UPLOAD***, then press ***ENTER***. The following will be displayed.

```
UPLOAD using XMODEM Protocol with CRC error
checking
```

You have up to 1 minute to initiate a file transfer. Each second during this 1 minute period the system sends a 'C' character, which is the synchronization character for starting an XMODEM CRC file transfer.

c) At the PC, initiate a file transfer using XMODEM CRC protocol.

d) When the transfer is complete, the following is displayed.

```
84 blocks received OK.
Upload Complete.
```

The number of blocks received may vary.

Note: *If an error message (as shown below) appears, the file being uploaded must be re-edited to correct the appropriate program line. The CLR PROG command may be used instead of re-editing the upload file. Refer to the CLR PROG command in the COMMANDS Chapter.*

```
202 blocks received OK.

R01=h1

     ^

Program error -- Bad Character

Upload Complete.
```

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Uploading the Configuration from a PC to the LMS1000 using TFTP

a) Start a separate TFTP client session on the host from which the configuration file is transferred.

b) Log onto the system using the default level six password (6).

c) Enter the command *UPLOAD TFTP*, then press *ENTER*. The following will be displayed.

```
UPLOAD using TFTP
```

d) After seeing the above prompt, start the upload process from the client. **DO NOT ATTEMP THE UPLOAD UNTIL THE PROMPT ABOVE IS DISPLAYED.**

Configuring the Nodes

1) Enter the NODE LIST command and verify all nodes that were previously present are still present.

    Note: *Node numbers and names will NOT be the same as before. Verify the nodes using the neuron ID and other node parameters.*

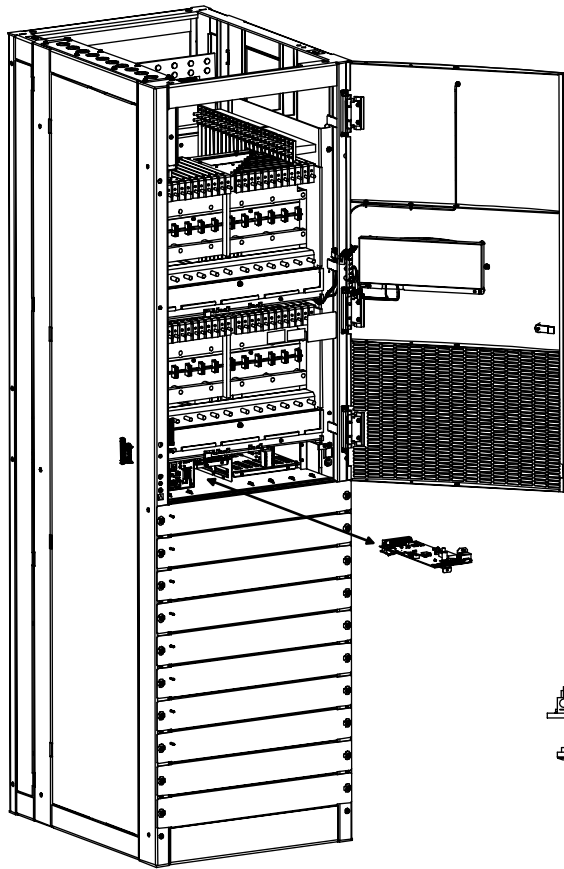2) Enter the NODE CONFIG command and configure the node numbers and names using the information recorded earlier.

Replacing an Expansion Cabinet CPU Circuit Card

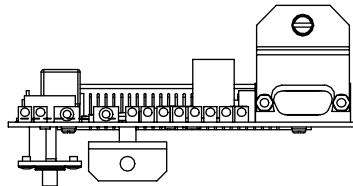*Note:* *Refer to Figure 5-1 as this procedure is performed.*

Note: *When performing any step in this procedure which requires removal of existing hardware, retain all hardware for use in subsequent steps.*
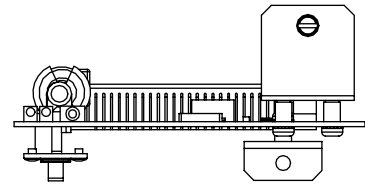
Procedure:

1) Observe the admonishments presented at the beginning of this chapter, and in the previous section titled "REPAIR AND REPLACEMENT INFORMATION".

2) Remove DC input power from the LMS CPU circuit card.

3) **586505000/586505500 LMS Cabinet:** Rotate the two captive fasteners on the front of the shelf until the arrow on the fastener points up or down, and pivot the door open.
or
582140000 LPS Power System: Open the bay's front door.

4) Connect an approved grounding strap to your wrist. Attach the other end to a suitable ground.

5) Remove the CPU circuit card by loosening the retaining screw.

6) Make a note of the replacement CPU circuit card's neuron identifier number (written on the card). Slide the replacement CPU circuit card into its mounting position, ensuring the rear edge connector is firmly seated. Secure the circuit card by tightening the retaining screw located on the circuit card assembly.

7) Remove the grounding wrist strap.

8) **586505000/586505500 LMS Cabinet:** Close the shelf door and secure with the two captive fasteners (arrow on fastener points towards outside of cabinet).
or
582140000 LPS Power System: Close the bay's front door.

9) Reapply DC input power to the LMS CPU circuit card.

10) Log onto the system as a level 6 user.

11) Enter the command NODE REPLACE. Enter the correct information for the node whose CPU is being replaced and the new node CPU being installed.

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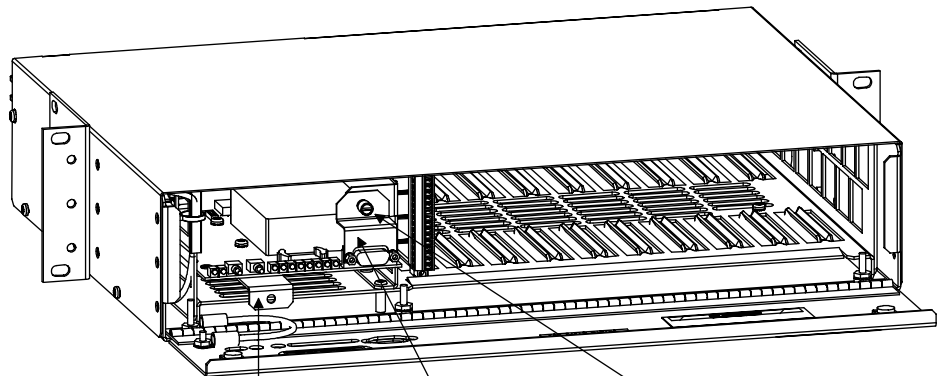
**582140000
Primary and Secondary Bay**

Primary LMS
CPU Circuit Card
(P/N 521185 in 582140000)
(P/N 514024 in 586505000
and 586505500)

Secondary LMS
CPU Circuit Card
(P/N 506153)

**586505000
Main Cabinet
(586505500 similar)**

Main Cabinet Shown.
Expansion Cabinet Similar,
Except J4 and Grounding
Screw.

CPU Circuit Card

J4
(located behind bracket)
(Main Cabinet Only)

RS-232 Connector
Grounding Screw
(Main Cabinet Only)

Figure 5-1
CPU Circuit Card Replacement

Replacing a 586505000/586505500 Expansion Assembly

Note: *When performing any step in this procedure which requires removal of existing hardware, retain all hardware for use in subsequent steps.*

Procedure:

1) Observe the admonishments presented at the beginning of this chapter, and in the previous section titled "REPAIR AND REPLACEMENT INFORMATION".

2) Remove DC input power to the assembly.

3) Connect an approved grounding strap to your wrist. Attach the other end to a suitable ground.

4) Disconnect all cable connections and remove the assembly.

5) Install the new assembly (make a note of the assembly's neuron identifier number [written on the assembly]). Reconnect all cables.

6) Remove the grounding wrist strap.

7) Reapply DC input power to the assembly.

8) Log onto the system as a level 6 user.

9) Enter the command NODE REPLACE. Enter the correct information for the node whose CPU is being replaced and the new node CPU being installed.

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Modem Circuit Card Replacement

Refer to the *Installation Instructions* (Section 5879) located in the separate INSTALLATION MANUAL for procedures to do the following. Section 5879 is also provided on the CD (Electronic Documentation Package) furnished with your system.

- Install the circuit card.

- Connect the phone line.

- Configure modem parameters.

I/O Circuit Card Replacement

Refer to the *Installation Instructions* (Section 5879) located in the separate INSTALLATION MANUAL for procedures to do the following. Section 5879 is also provided on the CD (Electronic Documentation Package) furnished with your system.

- Install the circuit card.

- Wire to the circuit card.

- Configure the associated channels of the circuit card.

    Note: *When removing a circuit card from the network, the associated Node must be re-initialized before the network recognizes the removal of the circuit card. If the Node is not re-initialized, alarms may be present. Re-initialize the Node to clear the alarms. Note that the configuration for the channels on the source node may need re-configuring after executing the NODE INITIO command. Refer to the "NODE INITIO" command in the Commands chapter.*

APPENDIX (a record of changes made to this document)

Issue	Change Number (ECO)	Description of Change
AA	LLP031444	New
AB	LLP033546	Installation information moved to separate document (Section 5879). Boards and Node List commands updated.
AC	LLP034497	Web Interface added. Battery Discharge Timer feature added.
AD	LLP200321	LMS integration into 582140000 added. Email notification feature added. Instructions for Lists 23, 80, 84, and 85 added.
AE	LLP200624	List 60 and 61 (LMS Display option) operation reference added.
AF	LLP202800	Logo/Name Change.
AG	LLP203057	TL1/X.25 and TL1 (over Ethernet) Software options added.
AH	LLP203937	Number of function channels now 64 (was 32). Support for LPS MCA CAN I/O cards added.
AJ	LLP204609	Gateway Port Software Option added.
AK	LLP204737	586505500 added. 586505000 23" version added.
AL	LLP206670	"Alarm Polarity" attribute added to Analog Channel configurations. Digital Temperature input readings can now be set to display in Fahrenheit.

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