



NetSure™

-48V DC Power System

User Manual (Section 6028), Revision J

Specification Number: 582126100

Model Number: 702NBDB

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TABLE OF CONTENTS

| | |
|--|------------|
| Admonishments Used in this Document..... | 6 |
| Important Safety Instructions | 7 |
| General Safety | 7 |
| Voltages..... | 7 |
| AC Input Voltages..... | 7 |
| DC Output and Battery Voltages..... | 7 |
| Battery..... | 8 |
| Personal Protective Equipment (PPE)..... | 9 |
| Hazardous Voltage..... | 9 |
| Handling Equipment Containing Static Sensitive Components..... | 9 |
| Maintenance and Replacement Procedures..... | 9 |
| Static Warning..... | 10 |
| FCC Information..... | 11 |
| System Overview..... | 13 |
| Preface..... | 13 |
| System Description | 13 |
| System Overview Illustrations..... | 16 |
| Navigating the MCA | 30 |
| MCA Local Control Panel and Display..... | 30 |
| MCA Messages..... | 34 |
| Operating Procedures..... | 93 |
| LMS Operating Procedures..... | 93 |
| Rectifier Operating Procedures..... | 93 |
| Local Controls and Indicators..... | 93 |
| External Alarms..... | 95 |
| Starting and Stopping System Operation..... | 96 |
| Restarting Procedures when Rectifier Module is Automatically or Manually Inhibited, Shut Down, or Locked Out..... | 97 |
| Output Voltage Mode of Operation Selection..... | 97 |
| Placing the System into the Float Mode of Operation | 97 |
| Placing the System into the Test/Equalize Mode of Operation..... | 97 |
| Setting MCA Audible Alarm Cutoff Reset Time Period..... | 103 |
| Setting Rectifier Module Sequencing Delay Time Period..... | 104 |
| Setting MCA Custom Text Messages (Names)..... | 105 |
| Mapping LMS LED Channels to the MCA Display and MCA Customer Alarm Relays..... | 105 |
| Using the Alarm Relay Test Feature..... | 106 |
| MCA “Power Share” Feature..... | 106 |
| MCA “Alternate Current Limit” Feature..... | 109 |
| Power System Remote Temperature Compensation Feature..... | 110 |
| MCA System Adjustments..... | 111 |

| | |
|--|------------|
| Adjustment Location and Identification..... | 111 |
| Adjusting Float Output Voltage..... | 111 |
| Adjusting Test/Equalize Output Voltage..... | 113 |
| Adjusting High Voltage Shutdown..... | 114 |
| Adjusting Rectifier Module Current Limit..... | 115 |
| Adjusting System High Voltage Alarm 1..... | 116 |
| Adjusting System High Voltage Alarm 2..... | 117 |
| Adjusting System Battery On Discharge Alarm..... | 118 |
| Adjusting System Very Low Voltage Alarm..... | 119 |
| Adjusting Total Distribution Load Alarm..... | 120 |
| Adjusting Distribution Group A Load Alarm..... | 121 |
| Adjusting Distribution Group B Load Alarm..... | 122 |
| Adjusting Battery Ambient High Temperature #1 Alarm (if Battery Charge Digital Temperature Compensation Probe is installed)..... | 123 |
| Adjusting Battery Ambient High Temperature #2 Alarm (if Battery Charge Digital Temperature Compensation Probe is installed)..... | 124 |
| Adjusting Battery Ambient Low Temperature #1 Alarm (if Battery Charge Digital Temperature Compensation Probe is installed)..... | 125 |
| Adjusting Battery Ambient Low Temperature #2 Alarm (if Battery Charge Digital Temperature Compensation Probe is installed)..... | 126 |
| Configuring Battery Charge Digital Temperature Compensation Slope..... | 127 |
| Configuring Battery Charge Digital Temperature Compensation Maximum Voltage..... | 128 |
| Configuring Battery Charge Digital Temperature Compensation Minimum Voltage..... | 129 |
| Configuring Degree Units Displayed (°F or °C)..... | 130 |
| Configuring the System Date and Time..... | 131 |
| Configuring MCA I/O Circuit Card Analog Input(s)..... | 132 |
| Configuring MCA I/O Circuit Card Analog Output(s)..... | 133 |
| Configuring MCA I/O Circuit Card Binary Input(s)..... | 134 |
| MCA Audible Alarm Cutoff Reset Time Period..... | 135 |
| MCA Rectifier Module Sequencing Feature..... | 135 |
| Manually Initiated Timed Test/Equalize Feature..... | 135 |
| Automatic Test/Equalize Feature..... | 135 |
| MCA Power Share Feature..... | 135 |
| Alarm Relay Test Feature..... | 135 |
| MCA “Alternate Current Limit” Feature..... | 135 |
| Maintenance | 136 |
| Admonishments..... | 136 |
| LMS Maintenance Procedures..... | 136 |
| System Maintenance Procedures..... | 136 |
| Adding a Rectifier Module to an Existing Shelf..... | 144 |
| Troubleshooting and Repair..... | 146 |
| Contact Information..... | 146 |

| | |
|--|-----|
| Admonishments..... | 146 |
| LMS Troubleshooting Procedures..... | 147 |
| Rectifier Module Troubleshooting Procedures..... | 147 |
| Troubleshooting Information..... | 147 |
| Replacement Information..... | 148 |
| Replacement Procedures..... | 149 |
| Adding a Battery Charge Digital Temperature Compensation Probe to a Previously Operated System..... | 159 |
| Removing a Battery Charge Digital Temperature Compensation Probe from a Previously Operated System..... | 159 |

ADMONISHMENTS USED IN THIS DOCUMENT



DANGER! Warns of a hazard the reader **will** be exposed to that will **likely** result in death or serious injury if not avoided. (ANSI, OSHA)



WARNING! Warns of a potential hazard the reader **may** be exposed to that **could** result in death or serious injury if not avoided. This admonition is not used for situations that pose a risk only to equipment, software, data, or service. (ANSI)



CAUTION! Warns of a potential hazard the reader **may** be exposed to that **could** result in minor or moderate injury if not avoided. (ANSI, OSHA) This admonition is not used for situations that pose a risk only to equipment, data, or service, even if such use appears to be permitted in some of the applicable standards. (OSHA)



ALERT! Alerts the reader to an action that **must be avoided** in order to protect equipment, software, data, or service. (ISO)



ALERT! Alerts the reader to an action that **must be performed** in order to prevent equipment damage, software corruption, data loss, or service interruption. (ISO)



FIRE SAFETY! Informs the reader of fire safety information, reminders, precautions, or policies, or of the locations of fire-fighting and fire-safety equipment. (ISO)



SAFETY! Informs the reader of general safety information, reminders, precautions, or policies not related to a particular source of hazard or to fire safety. (ISO, ANSI, OSHA)

IMPORTANT SAFETY INSTRUCTIONS

General Safety



DANGER! YOU MUST FOLLOW APPROVED SAFETY PROCEDURES.

Performing the following procedures may expose you to hazards. These procedures should be performed by qualified technicians 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 metal objects.
- c) Prior to contacting any uninsulated surface or termination, use a voltmeter to verify that no voltage or the expected voltage is present. Check for voltage with both AC and DC voltmeters prior to making contact.
- d) Wear eye protection.
- e) Use certified and well maintained insulated tools. Use double insulated tools appropriately rated for the work to be performed.

Voltages

AC Input Voltages



DANGER! This system operates from AC input voltage capable of producing fatal electrical shock. AC input power must be completely disconnected from the branch circuits wiring used to provide power to the system before any AC electrical connections are made. Follow local lockout/tagout procedures to ensure upstream branch circuit breakers remain de-energized during installation. DO NOT apply AC input power to the system until all electrical connections have been completed and checked.

DC Output and Battery Voltages



DANGER! This system produces DC power and may have a battery source connected to it. Although the DC voltage is not hazardously high, the rectifiers and/or battery can deliver large amounts of current. Exercise extreme caution not to inadvertently contact or have any tool inadvertently contact an output terminal or battery terminal or exposed wire connected to an output terminal or battery terminal. NEVER allow a metal object, such as a tool, to contact more than one termination or battery terminal at a time, or to simultaneously contact a termination or battery terminal and a grounded object. Even a momentary short circuit can cause sparking, explosion, and injury.



DANGER! Follow local lockout/tagout procedures to ensure DC branch circuit protection devices remain de-energized during installation at loads, as required.

Battery

Refer to the battery manufacturer documentation for specific battery safety instructions. The following are general guidelines.



WARNING! Correct polarity must be observed when connecting battery leads.



WARNING! Special safety precautions are required for procedures involving handling, installing, and servicing batteries. Observe all battery safety precautions in this manual and in the battery instruction manual. These precautions should be followed implicitly at all times.



WARNING! A battery can present a risk of electrical shock and high short circuit current. Servicing of batteries should be performed or supervised only by properly trained and qualified personnel knowledgeable about batteries and the required precautions.

The following precautions should be observed when working on batteries:

- Remove watches, rings, and other metal objects.
- Eye protection should be worn to prevent injury from accidental electrical arcs.
- Use certified and well maintained insulated tools. Use double insulated tools appropriately rated for the work to be performed. Ensure that wrenches with more than one working end have only one end exposed.
- Do not lay tools or metal parts on top of batteries.
- Disconnect charging source prior to connecting or disconnecting battery terminals.
- Risk of explosion if battery is replaced with an incorrect type or if polarity is reversed. Recommended to replace batteries with the same manufacturer and type, or equivalent.
- Dispose of used batteries according to the instructions provided with the batteries. Do not dispose of batteries in a fire. They may explode.
- ALWAYS FOLLOW THE BATTERY MANUFACTURER'S RECOMMENDATIONS AND SAFETY INSTRUCTIONS.



DANGER! This equipment may be used in conjunction with lead-acid batteries. Working near lead-acid batteries is dangerous!

In addition to the hazard of electric shock, gas produced by batteries can be explosive and sulfuric acid can cause severe burns.

- Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes, and is toxic.
- Batteries contain sulfuric acid.
- Batteries generate explosive gases during normal operation. Systems containing batteries should never be installed in an airtight room or space. Only install in a ventilated environment.
- Batteries are an energy source that can produce high amounts of electrical current.

FOR THESE REASONS, IT IS OF CRITICAL IMPORTANCE THAT YOU READ THESE INSTRUCTIONS AND FOLLOW THEM EXACTLY.

WHEN WORKING WITH LEAD-ACID BATTERIES:

- Follow the recommended PPE requirements per the SDS for the battery to be used.
- If battery acid enters your eye, immediately flush your eye with running cold water for at least 15 minutes. Get medical attention immediately.
- If battery acid contacts skin or clothing, wash immediately with soap and water.



ALERT! Performing maintenance and/or troubleshooting procedures may interrupt power to the loads, if battery reserve is not sufficient.

Personal Protective Equipment (PPE)



DANGER! ARC FLASH AND SHOCK HAZARD.

Appropriate PPE and tools required when working on this equipment. An appropriate flash protection boundary analysis should be done determine the “hazard/risk” category, and to select proper PPE.



This product is intended only for installation in a Restricted Access Location.

Only authorized and properly trained personnel should be allowed to install, inspect, operate, or maintain the equipment.

Do not work on LIVE parts. If required to work or operate live parts, obtain appropriate Energized Work Permits as required by the local authority, per NFPA 70E “Standard for Electrical Safety in the Workplace”.

Hazardous Voltage



DANGER! HAZARD OF ELECTRICAL SHOCK.

More than one disconnect may be required to de-energize the system before servicing.

Handling Equipment Containing Static Sensitive Components



ALERT! Installation or removal of equipment containing static sensitive components requires careful handling. Before handling any equipment containing static sensitive components, read and follow the instructions contained on the Static Warning Page.

Maintenance and Replacement Procedures



CAUTION! When performing any step in procedures that requires removal or installation of hardware, use caution to ensure no hardware is dropped and left inside the unit; otherwise service interruption or equipment damage may occur.



NOTE! When performing any step in procedures that requires removal of existing hardware, retain all hardware for use in subsequent steps, unless otherwise directed.

STATIC WARNING



This equipment contains 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. Strictly adhere to the procedures provided in this document.
2. Before touching any equipment containing static sensitive components, discharge all static electricity from yourself by wearing a wrist strap grounded through a one megohm resistor. Some wrist straps 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 traces or components on equipment containing static sensitive components. Handle equipment containing static sensitive components only by the edges that do not have connector pads.
4. After removing equipment containing static sensitive components, place the equipment 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 equipment containing static sensitive components only in static shielding containers.
6. If necessary to repair equipment containing static sensitive components, wear an appropriately grounded wrist strap, work on a conductive surface, use a grounded soldering iron, and use grounded test equipment.

FCC INFORMATION

The MCA Interface Modem Option (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 affected.
- 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 MCA Interface Modem Option (if installed).

| JACK | RINGER EQUIVALENCE | FCC REGISTRATION NUMBER |
|-------|--------------------|-------------------------|
| RJ-11 | 0.2A | B46USA-22429-MM-E |

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SYSTEM OVERVIEW

Preface

This document (Section 6028) provides User Instructions for NetSure™ Power System Model **702NBDB**, Spec. No. **582126100**.

For *Installation Instructions*, refer to Section 6027 located in the separate *INSTALLATION MANUAL* and on the CD (Electronic Documentation Package) furnished with your system.

Refer to SAG582126100 (*System Application Guide*) for additional information. The SAG, along with the complete document set, can be accessed from the CD (Electronic Documentation Package) furnished with your system.

Refer to PD588705000 (Power Data Sheet) for Rectifier Module Mounting Shelf information. The PD can be accessed from the CD (Electronic Documentation Package) furnished with your system.

For Rectifier Module specifications, refer to UM1R483500E (Rectifier User Instructions), provided on the CD (Electronic Documentation Package) furnished with your system.

For a color MCA Menu Tree, refer to Section 5886. Section 5886 is provided in the separate *INSTALLATION MANUAL* and the *CD CARRIER MANUAL* (it is also provided on the CD).

Your power system contains an integrated LMS Monitoring System. Refer to Section 5879 (LMS1000 Installation Instructions), Section 5847 (*LMS1000 User Instructions*), and SAG586505500 (*LMS System Application Guide*) provided on the CD (Electronic Documentation Package) furnished with your system.

System Description

A -48V DC @ up to 10,000 amperes Power System.

This power system is designed to power a load while charging a positive grounded battery. This system is capable of operating in a batteryless installation or off battery for maintenance purposes. The system is designed for operation with the positive output grounded.

The NETSURE™ 702NBDB DC Power System is an integrated power system containing rectifiers, intelligent control, metering, monitoring, and a bulk DC output panel. This power system consists of the following components.

- **Power Bays**

The system consists of one (1) Main Power Bay and up to four (4) optional Supplemental Power Bays.

The Main and Supplemental Power Bays are equipped with six (6) Rectifier Module Mounting Shelves, each of which houses up to six (6) Rectifier Modules. Each Power Bay can be equipped with up to thirty-six (36) Rectifier Modules. Refer to PD588705000 for Rectifier Shelf and Rectifier Module information. The PD can be accessed via the CD (Electronic Documentation Package) furnished with your system.

Each Power Bay contains a Monitor and Control Panel. In the Main Power Bay, this panel houses the Meter-Control-Alarm (MCA) assembly. This panel in the Main Power Bay also houses the LMS Main CPU circuit card of the integrated LMS Monitoring System. In a Supplemental Power Bay, this panel can be equipped with an optional LMS Expansion CPU circuit card. (The LMS Monitoring System provides a higher level of monitoring and controlling capabilities to the power system.)

The Monitor and Control Panel in both Main and Supplemental Power Bays contain a seven-slot card cage to house MCA alarm relay circuit cards, optional MCA input/output (I/O) circuit cards, and optional LMS I/O circuit cards. (If a Supplemental Power Bay is to be equipped with optional LMS I/O circuit cards, it must also be equipped with the LMS Expansion CPU circuit card.)

- **Rectifier Modules**

The Rectifier Modules provide load power, battery float current, and battery recharge current during normal operating conditions. Refer to UM1R483500E for Rectifier Module information. The document can be accessed via the CD (Electronic Documentation Package) furnished with your system.

- **MCA (Meter-Control-Alarm)**

The MCA controls the operation of the Rectifier Modules and provides power system control, metering, monitoring, and alarm functions.

MCA Local Control Panel: This panel is located on the front of the Main Power Bay and contains a keypad, display, and indicators for local MCA user interface.

MCA Relay Circuit Card: Each MCA relay circuit card provides six (6) sets of Form C relay contacts for customer external alarms. These relays are user programmable for various power system alarms. The MCA can interface with up to sixteen (16) MCA relay circuit cards. The Main Power Bay is factory equipped with two (2) MCA relay circuit cards.

MCA I/O Circuit Cards: The MCA I/O circuit cards provide analog inputs/outputs and binary inputs. The MCA can interface with up to sixteen (16) MCA I/O circuit cards.

- **Integrated LMS Monitoring System**

The LMS Monitoring System consists of an LMS Main CPU circuit card, optional LMS Expansion CPU circuit card, optional LMS I/O circuit cards, optional LMS Expansion Cabinets, and optional LMS Expansion Assemblies.

The LMS Main CPU circuit card is mounted in the Main Power Bay. The Main Power Bay is factory equipped with one (1) LMS 4-input analog circuit card (586505500 List 20), two (2) LMS 8-input binary circuit cards (586505500 List 31), and four (4) LMS 4 output relay circuit cards (586505500 List 40). The 582126100 List 13 Main Bay comes with (2) 514348 6-output Form C relay cards. If a Supplemental Power Bay is to be equipped with optional LMS I/O circuit cards, it must contain an LMS Expansion CPU circuit card. LMS Expansion Cabinets and LMS Expansion Assemblies are available that mount into customer racks and equipment.

The LMS Monitoring System is factory integrated within each Power Bay, and requires no additional customer interconnections within the Power Bay. Simple cable connections between Power Bays complete the interbay connections required. Separate analog, binary, and relay circuit cards do not have to be supplied for power system monitoring. Analog, binary, relay, and temperature circuit cards can be provided to monitor equipment external to the power system.

The LMS input circuit cards monitor a variety of analog, binary, and temperature points external to the system. An LMS relay output circuit card is also available which provides programmable relays. These relays may be used for external alarms, or to control other equipment.

The LMS Monitoring System can be accessed via a local port, a modem port, an optional TL1 port, and an Ethernet port (for Telnet access, Web access, SNMP access, optional TL1 access, and Email alarm reporting).

The LMS Monitoring System collects data from the power system and the input circuit cards monitoring external points. The data collected is used for alarm processing and reporting, and to provide statistics.

The LMS Monitoring System is capable of reporting alarm conditions to a remote terminal, pager, Email address, via SNMP traps over Ethernet, or via TL1 (over Ethernet) when the 'TL1 over Ethernet' option is ordered. TL1 is also available via a serial connection in 'direct mode'. For remote terminal or pager notification, the LMS Main CPU circuit card is equipped with the modem. Two types of alarm reporting mechanisms are provided, System Alarm Reporting and Individual User Alarm Reporting.

Refer to SAG586505000/SAG586505500 for further LMS information. The SAG can be accessed via the CD (Electronic Documentation Package) furnished with your system.

- **Bulk DC Output Panel**

The Bulk DC Output Panel provides landing points for connection of customer power leads.

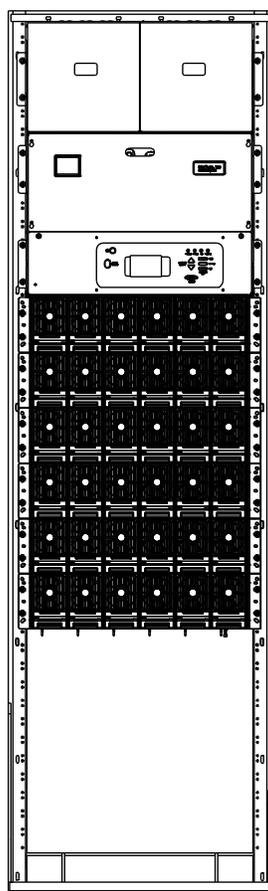
- **Applications**

The NETSURE™ 702NBDB Power Bay is capable of interfacing with NETSURE™ 801NL-B Distribution Bays (Spec. No. 582140001).

The NETSURE™ 702NBDB Power Bay is capable of interfacing with Vortex® Power Systems (VPS).

The NETSURE™ 702NBDB is capable of interfacing with legacy power systems.

System Overview Illustrations



Front View
Power Bay

Monitoring and Control Section

See Detail A and B

Rectifiers

See Separate

Rectifier User Manual

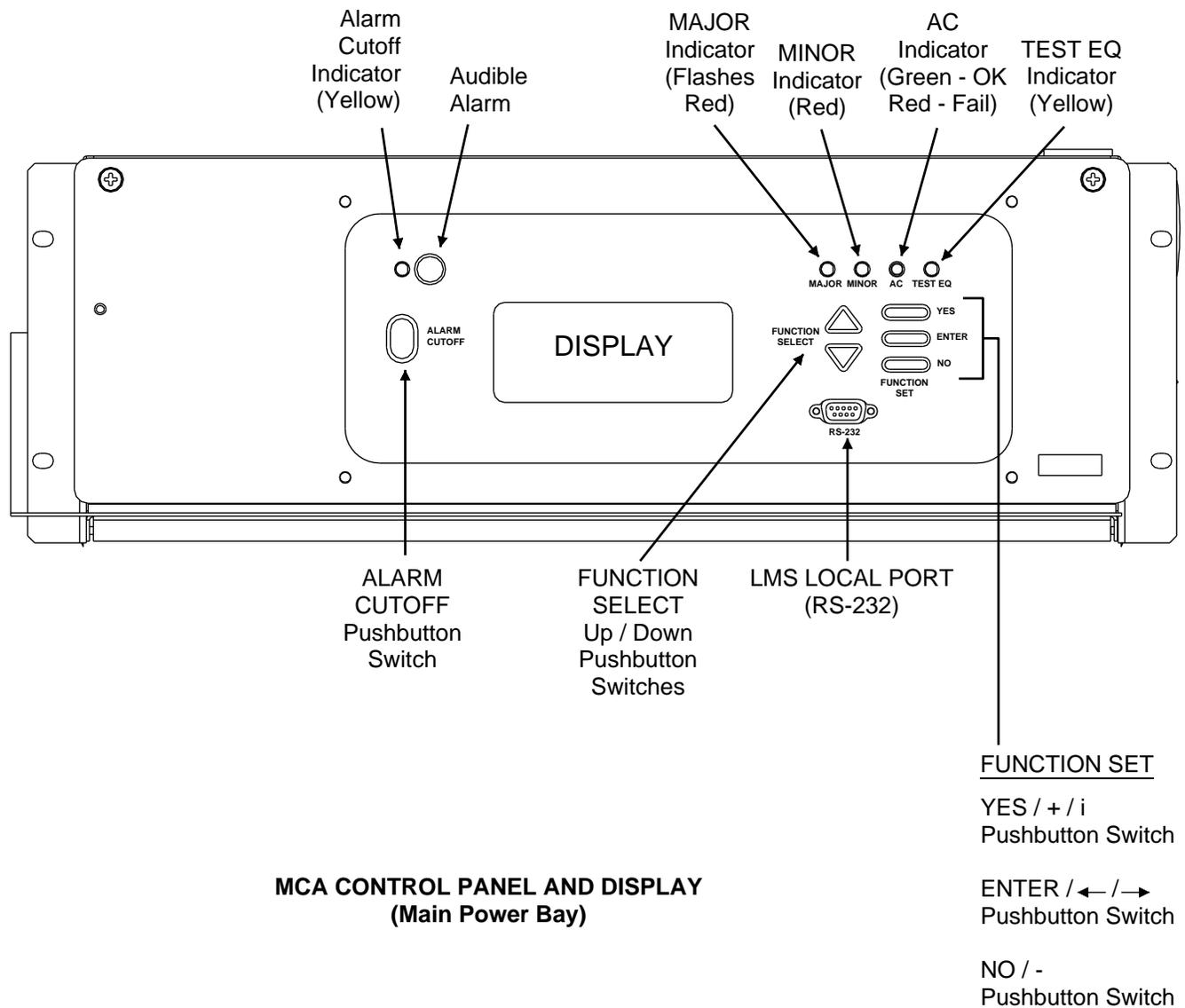
Note:

Each MCA component, except for the Rectifier, (i.e. Bay Router Circuit Card, MCA Relay Circuit Card) can be programmed with a custom text message (name) for the additional User defined identification.

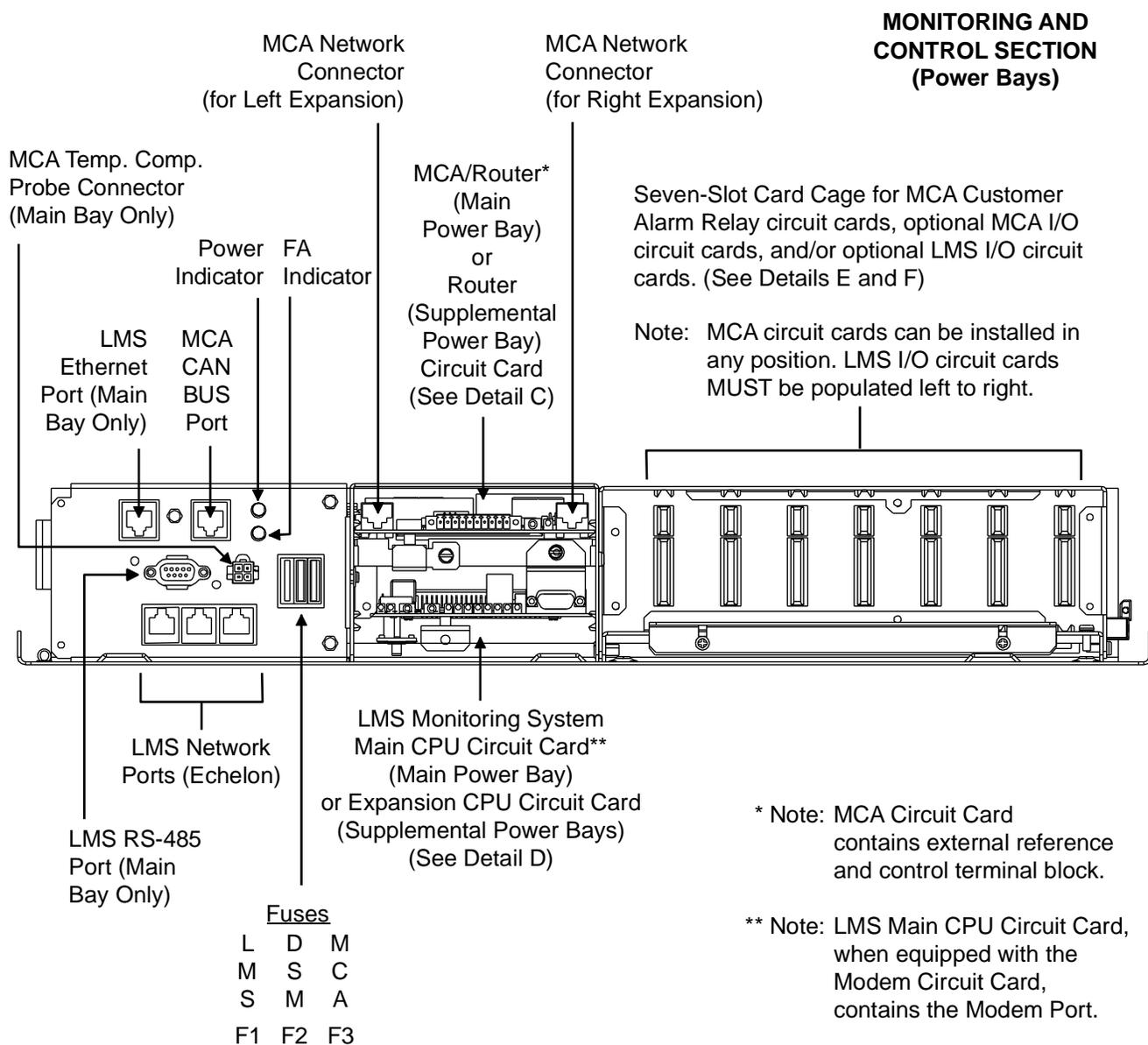
25 Relay Function Channels Provided

A User can program the alarm condition(s) for each Relay Function Channel. The User can then assign a Relay Function Channel to a relay on an MCA Relay Circuit Card installed in the system.

Detail A - MCA Control Panel and Display (Main Power Bay)



Detail B - Monitoring and Control Section (Power Bays)

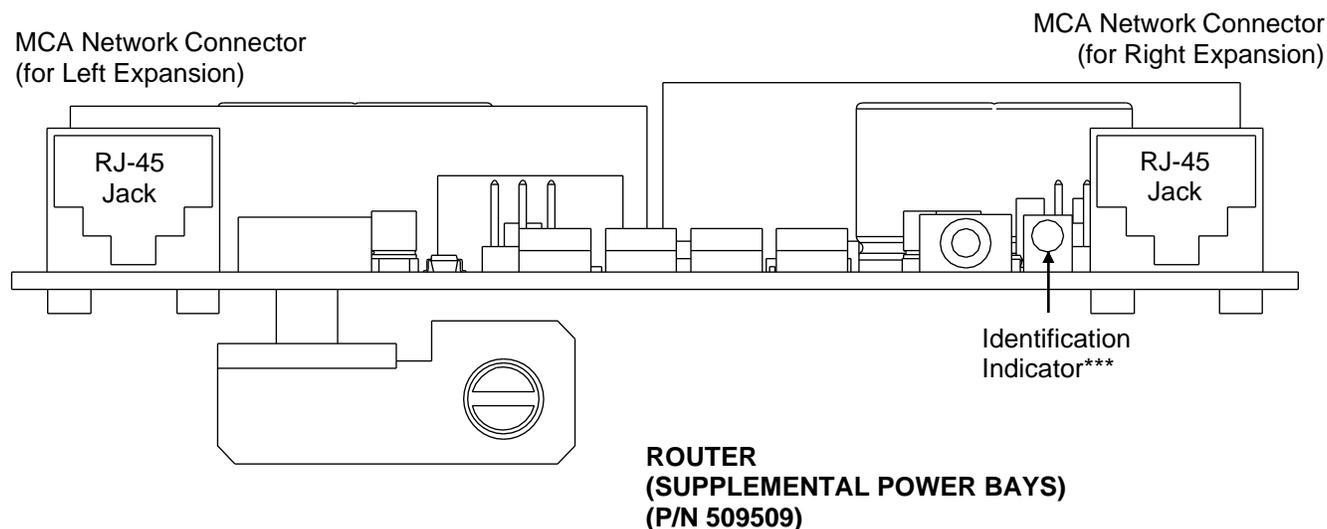
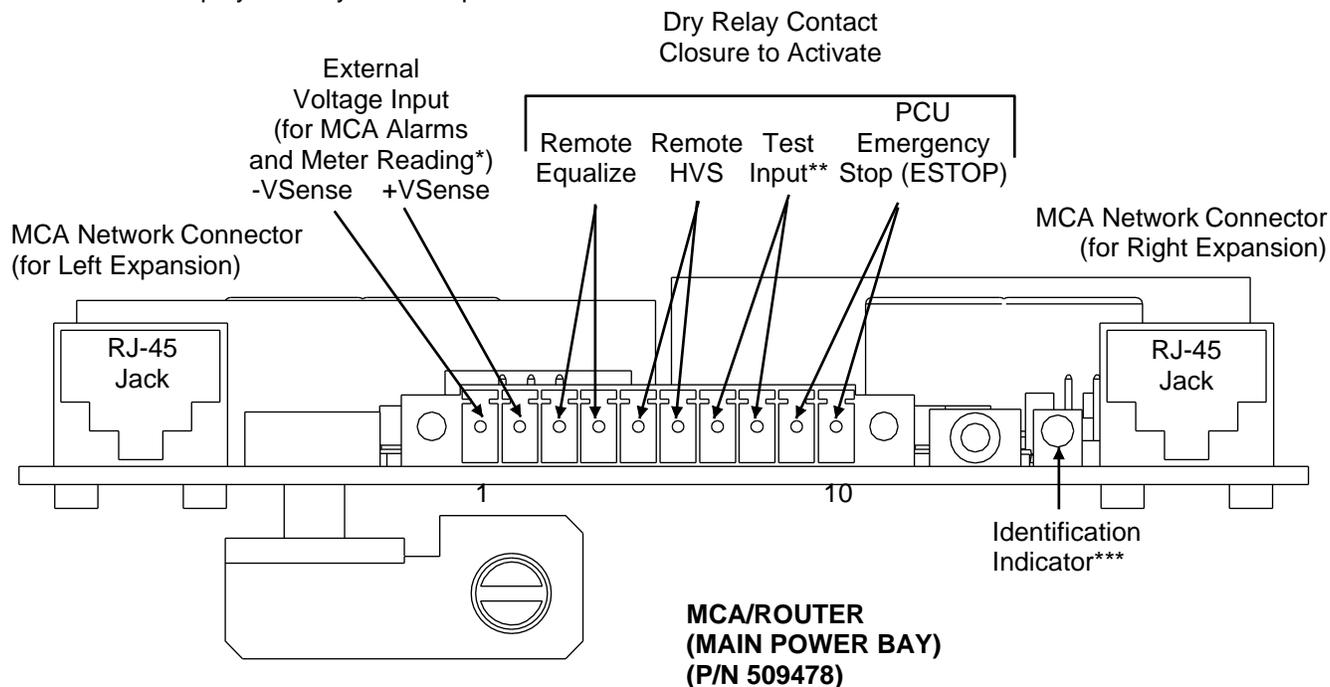


Detail C - MCA Circuit Card (Main Power Bay) and Router Circuit Card (Supplemental Power Bays)

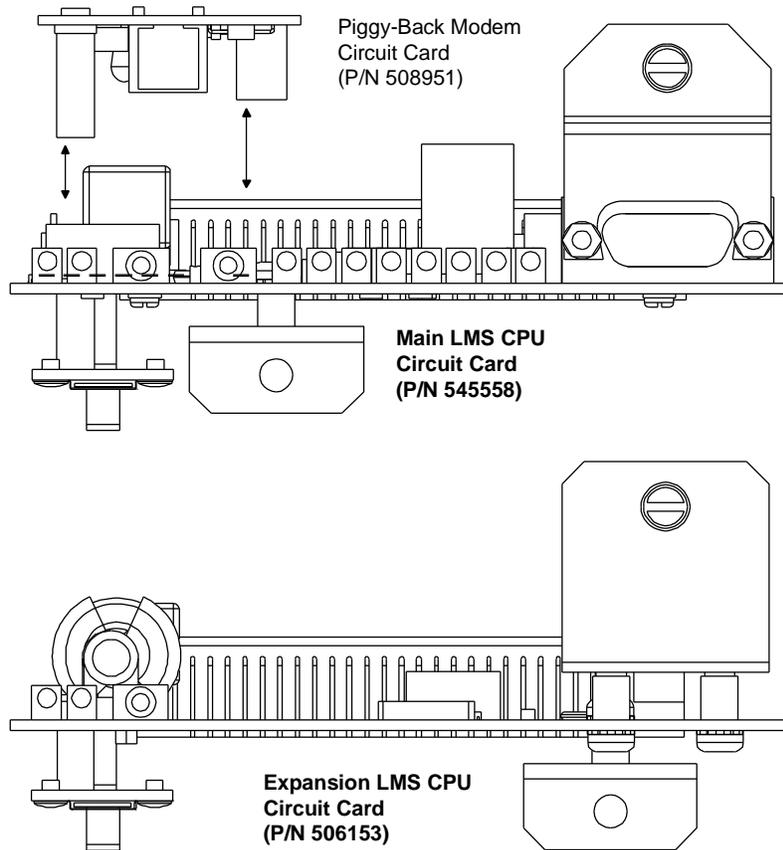
* Automatic internal sense when not connected.
 Note: If connected and removed, external A/D Volt Alarm activates. Clear alarm by updating inventory.

*** Green = OK
 Red = Failure
 Yellow (Flashing) = Communicating with MCA

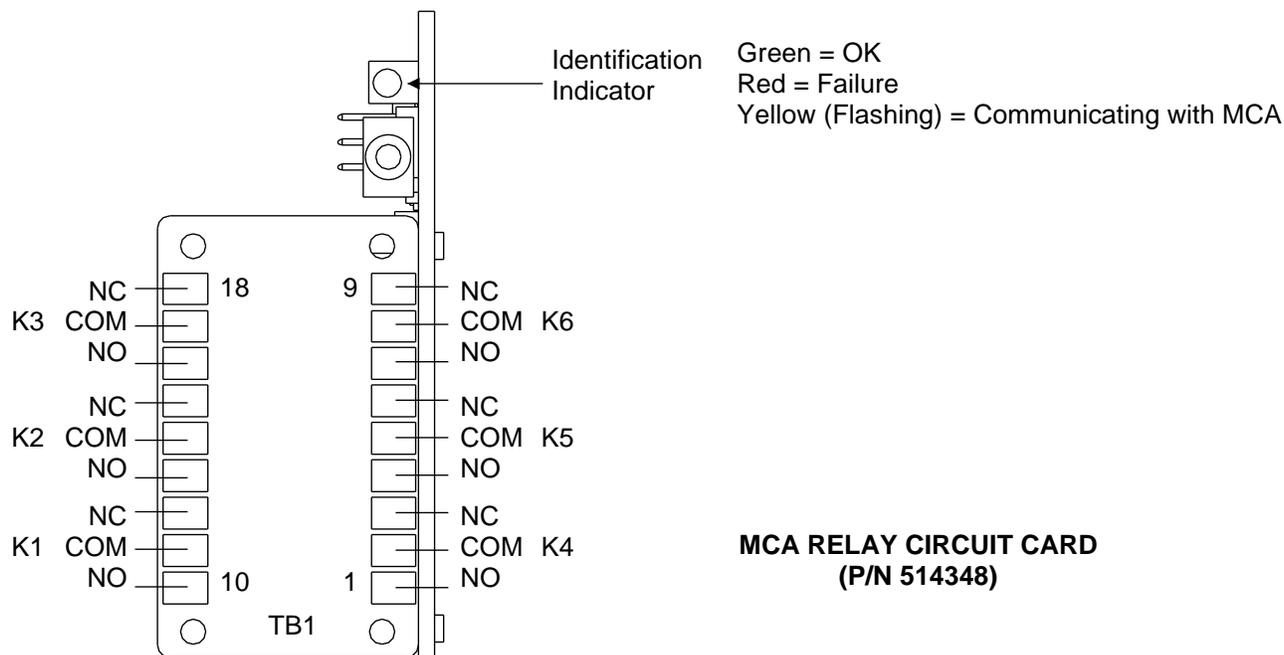
** Apply test contact closure, then apply HVS or ESTOP closure to test these circuits. See MCA display to verify circuits operational.



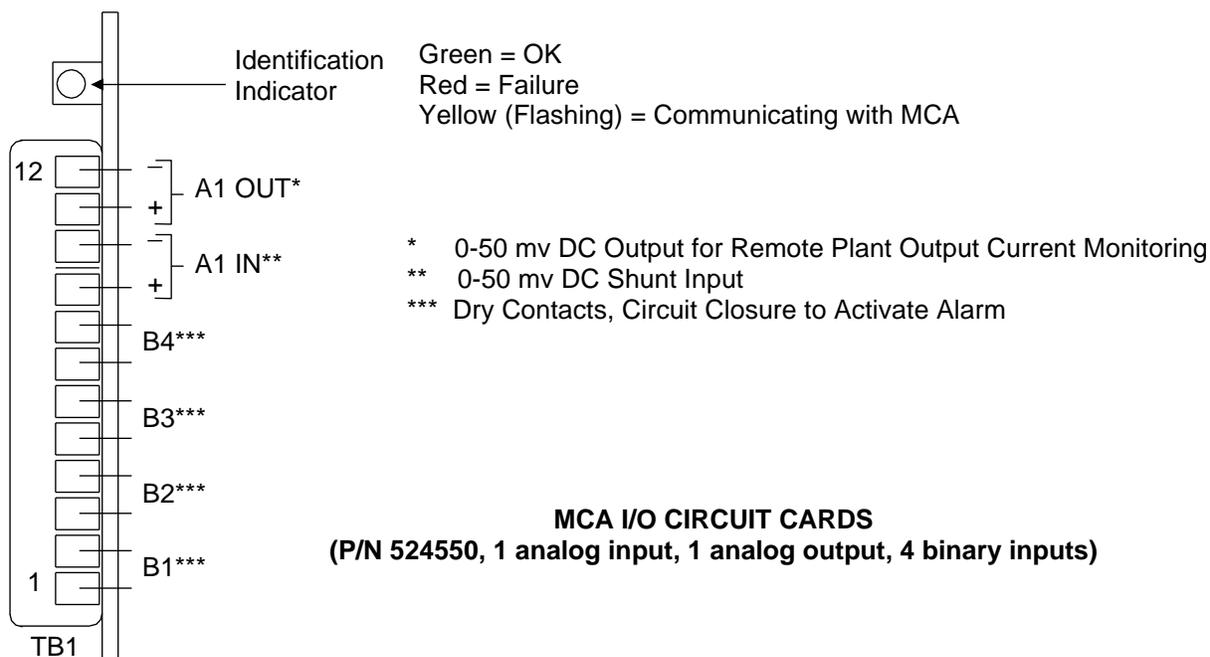
Detail D - LMS CPU Circuit Cards (Power Bays)



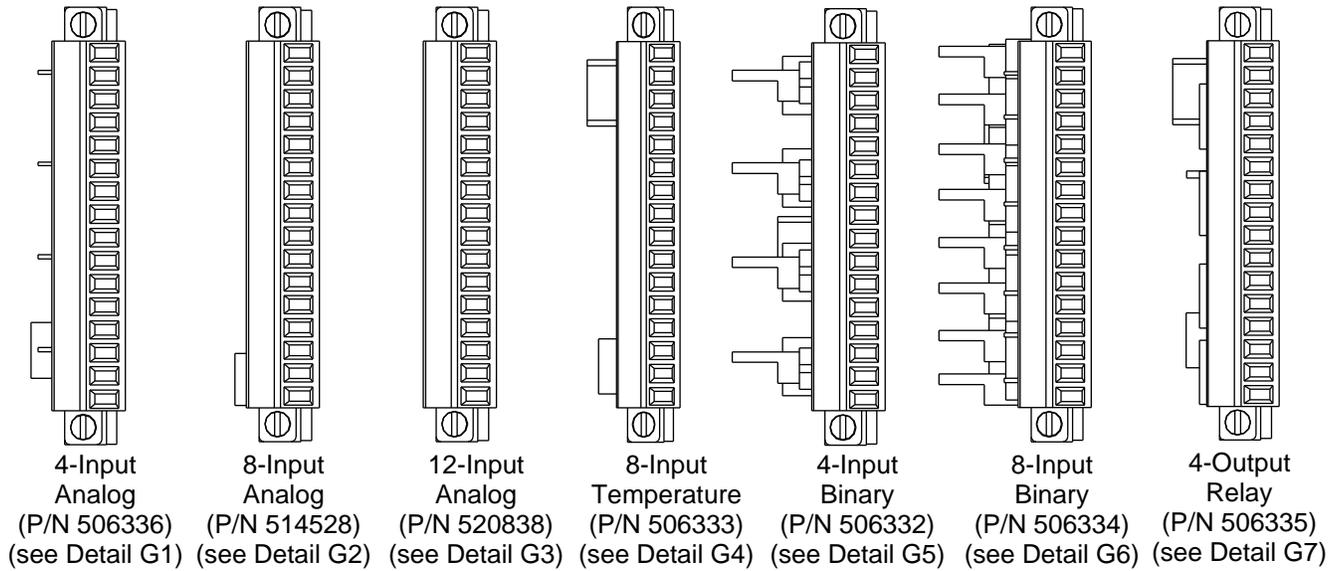
Details E - MCA I/O Circuit Cards (Power Bays)



Details E2 - MCA Analog/Binary Circuit Card (P/N 524550)

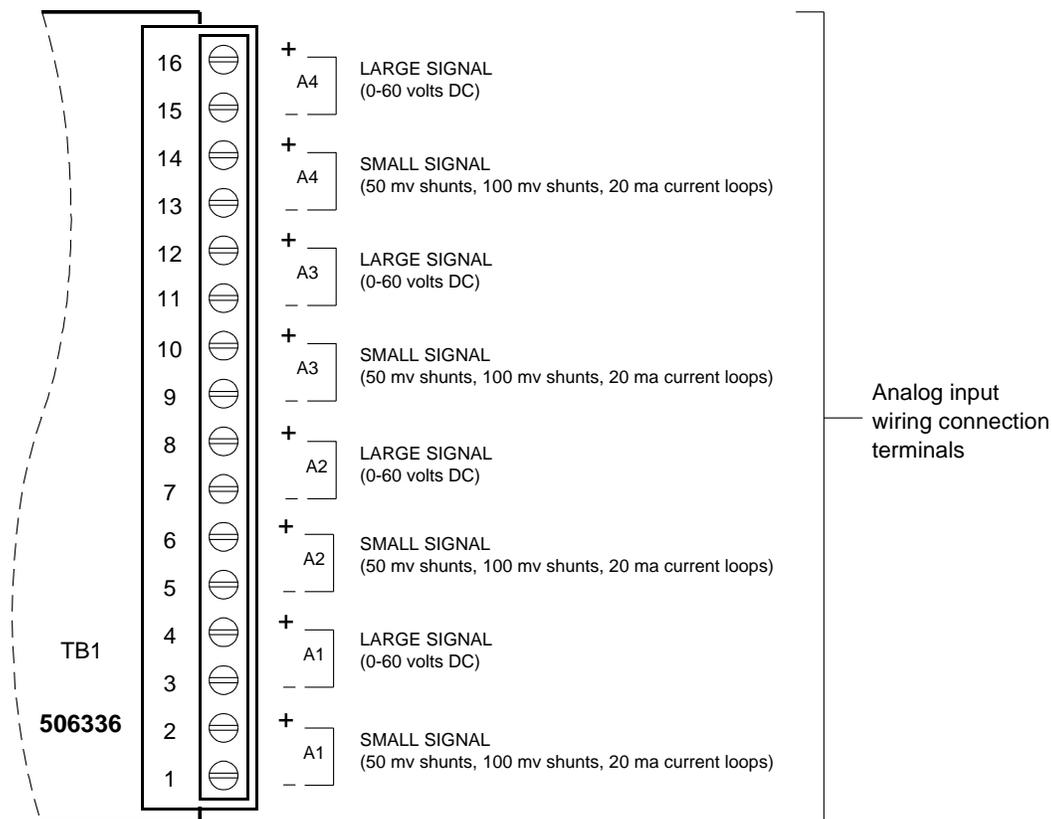


Detail F - LMS I/O Circuit Cards (Power Bays)



LMS I/O CIRCUIT CARDS

Detail F1 - LMS 4 Input Analog Circuit Card (P/N 506336)

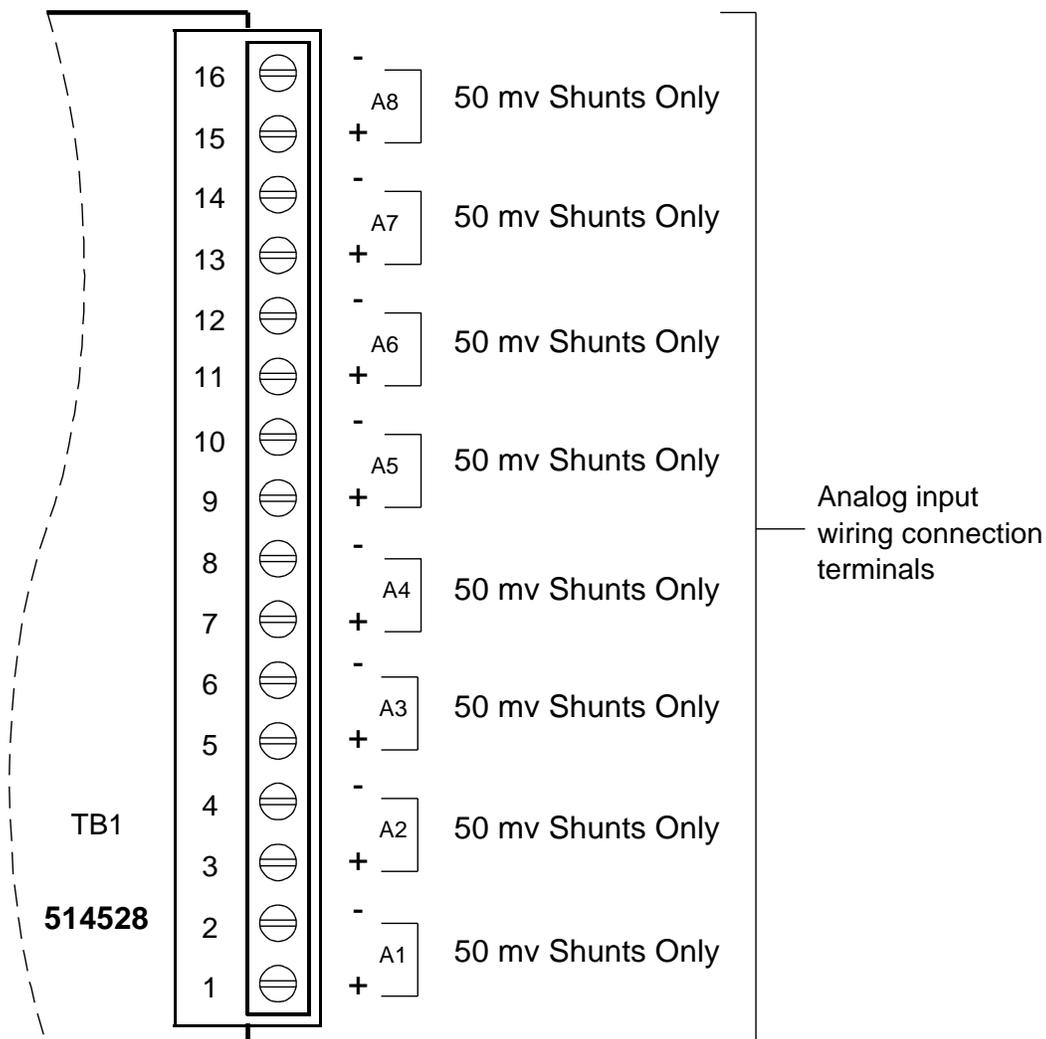


Note:

Analog input designations A1 through A4 as shown are for the circuit card only. The actual analog channel number depends upon the quantity of analog and temperature circuit cards installed and location of this analog circuit card in the system network.

LMS 4-INPUT ANALOG CIRCUIT CARD (P/N 506336)

Detail F2 - LMS 8 Input Analog Circuit Card (P/N 514528)

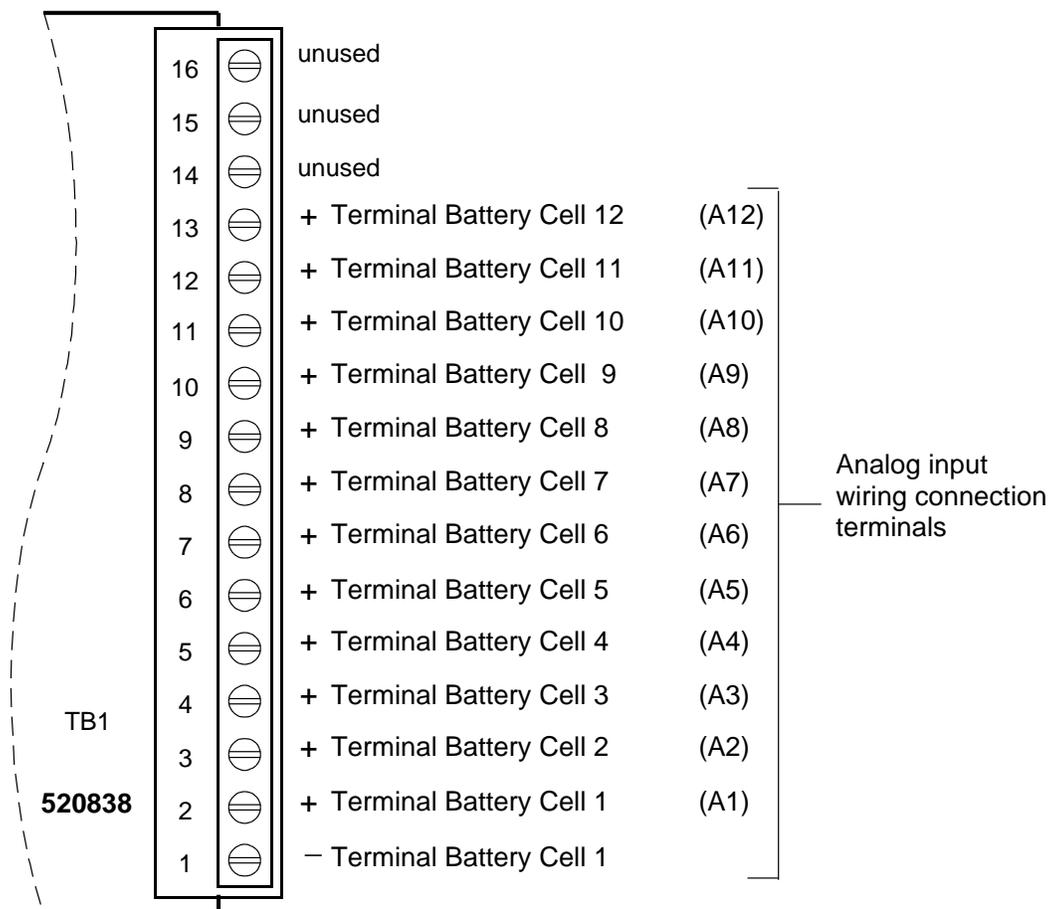


Note:

Analog input designations A1 through A8 as shown are for the circuit card only. The actual analog channel number depends upon the quantity of analog and temperature circuit cards installed and location of this analog circuit card in the system network.

**LMS 8-INPUT ANALOG
CIRCUIT CARD (P/N 514528)**

Detail F3 - LMS 12 Input Analog Circuit Card (P/N 520838)

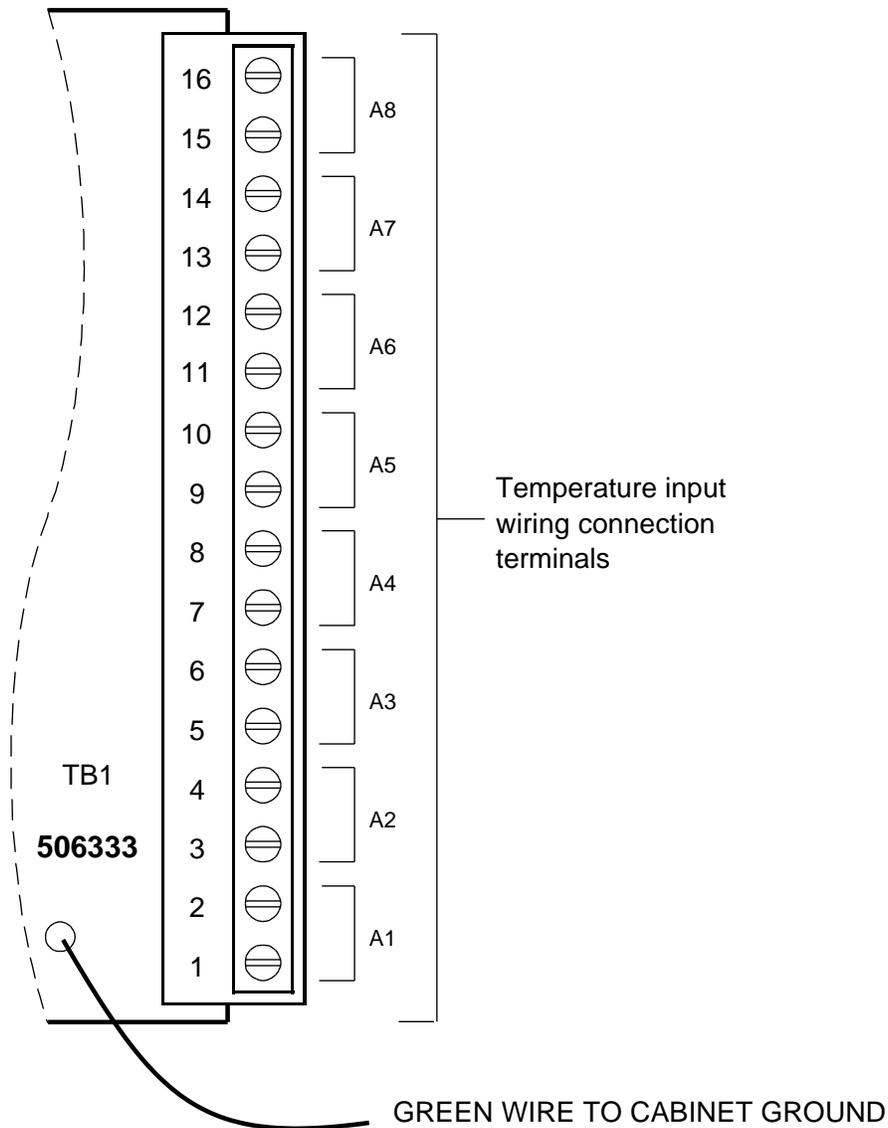


Note:

Analog input designations A1 through A12 as shown are for the circuit card only. The actual analog channel number depends upon the quantity of analog and temperature circuit cards installed and location of this analog circuit card in the system network.

LMS 12-INPUT ANALOG CIRCUIT CARD (P/N 520838)

Detail F4 - LMS 8 Input Temperature Circuit Card (P/N 506333)

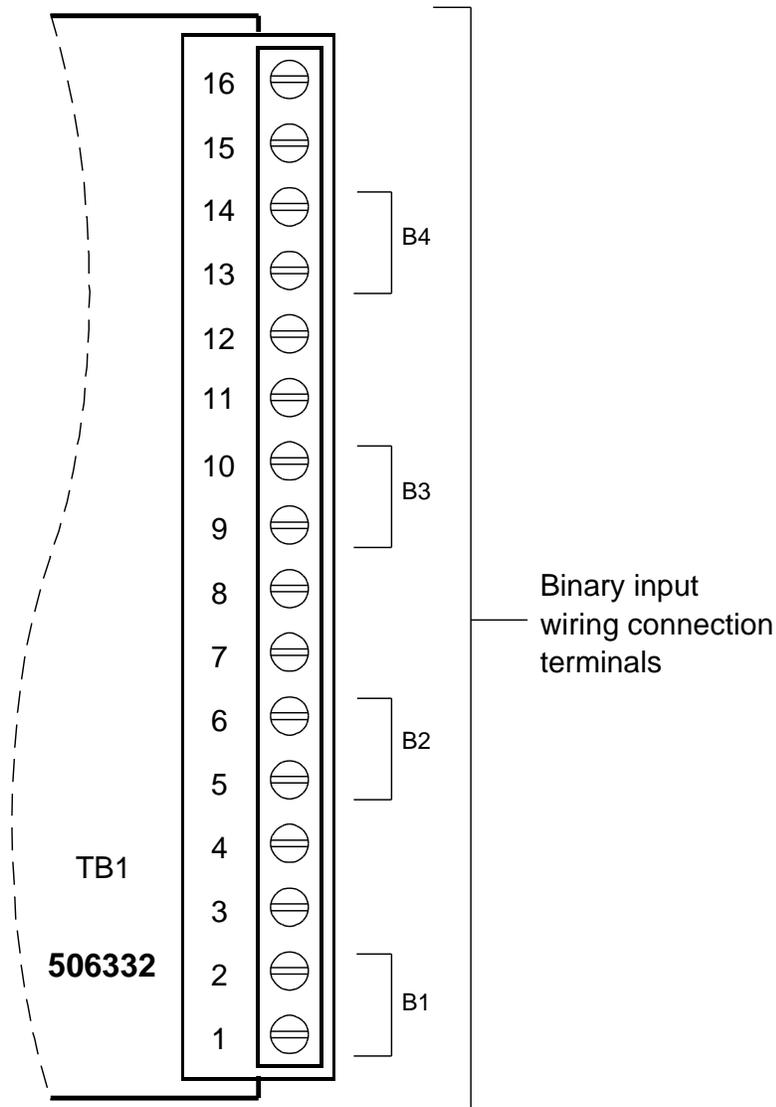


Note:

Analog input designations A1 through A8 as shown are for the circuit card only. The actual analog channel number depends upon the quantity of analog and temperature circuit cards installed and location of this temperature circuit card in the system network.

**LMS 8-INPUT TEMPERATURE
CIRCUIT CARD (P/N 506333)**

Detail F5 - LMS 4 Input Binary Circuit Card (P/N 506332)

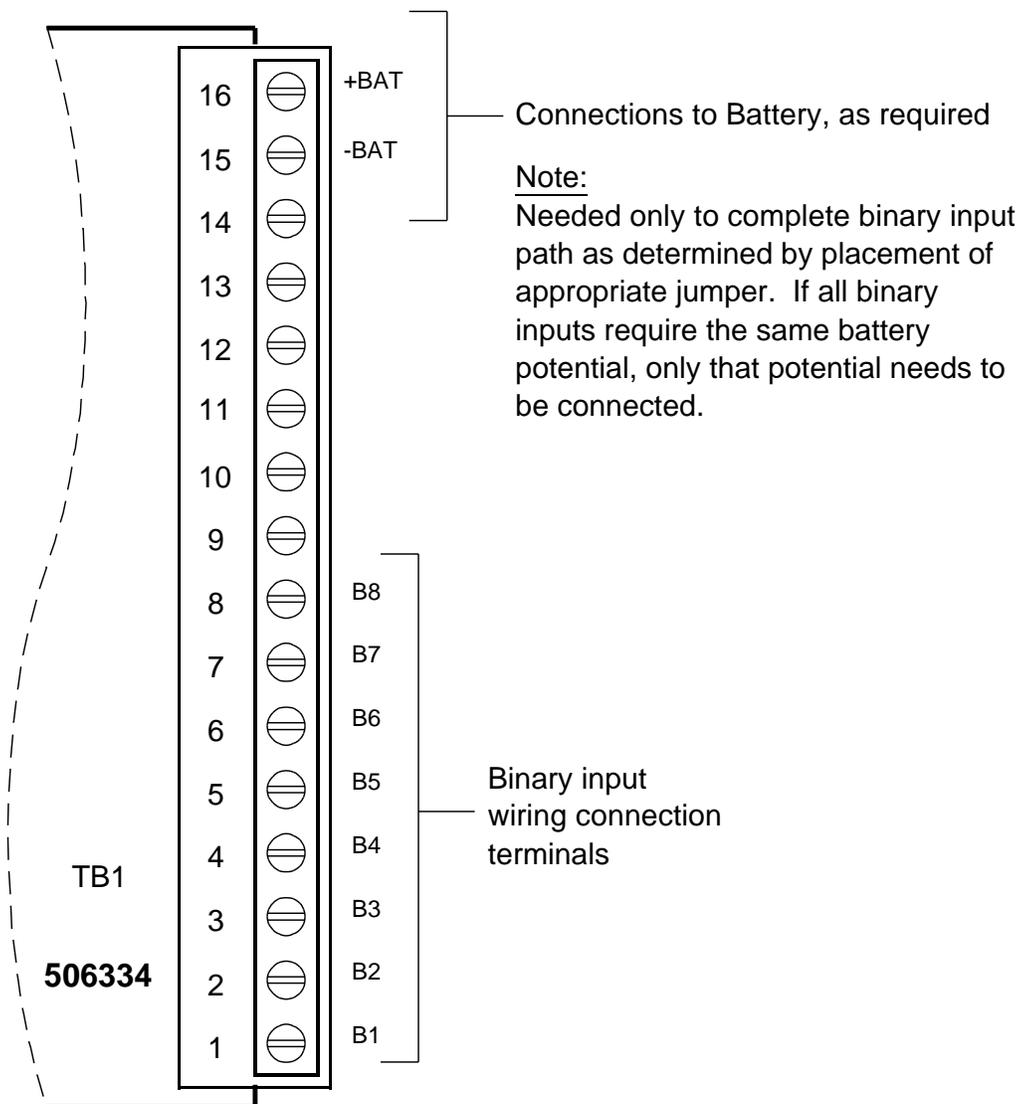


Note:

Binary input designations B1 through B4 as shown are for the circuit card only. The actual binary channel number depends upon the quantity of binary circuit cards installed and the location of this binary circuit card in the system network.

**LMS 4-INPUT BINARY
CIRCUIT CARD (P/N 506332)**

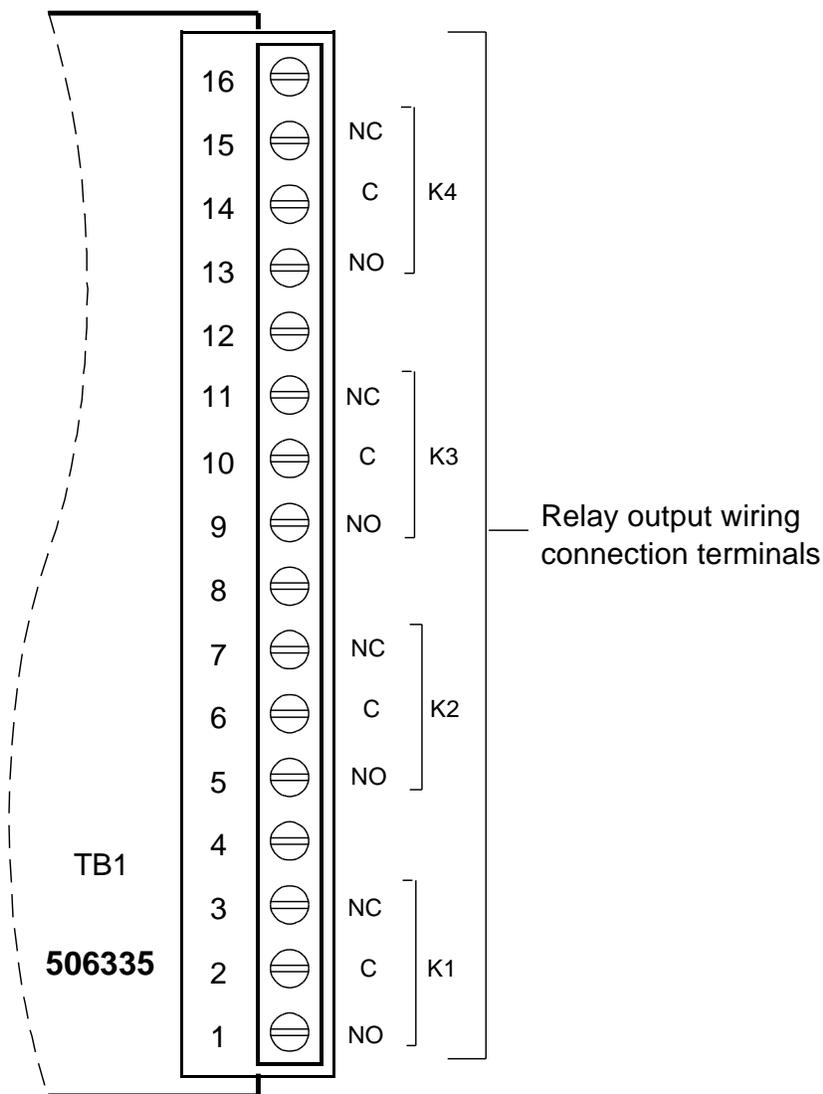
Detail F6 - LMS 8 Input Binary Circuit Card (P/N 506334)



Note:
 Binary input designations B1 through B8 as shown are for the circuit card only. The actual binary channel number depends upon the quantity of binary circuit cards installed and the location of this binary circuit card in the system network.

**LMS 8-INPUT BINARY
 CIRCUIT CARD (P/N 506334)**

Detail F7 - LMS 4 Output Relay Circuit Card (P/N 506335)



Note:

Relay designations K1 through K4 as shown are for the circuit card only. The actual relay channel number depends upon the number of relay circuit cards installed and the location of this relay circuit card in the system network.

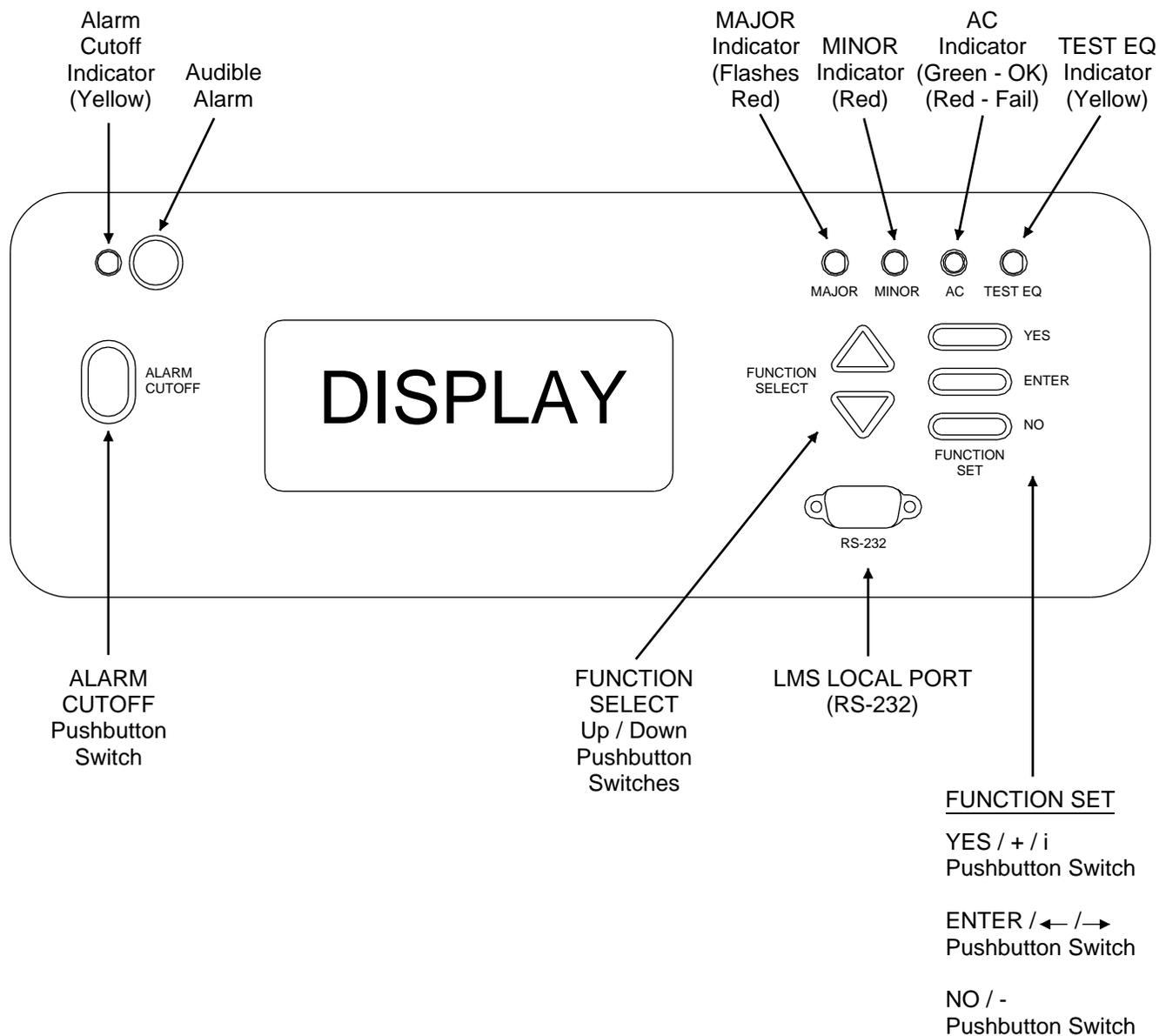
Relay contacts are shown with the relays deenergized.

**LMS 4-OUTPUT RELAY
CIRCUIT CARD (P/N 506335)**

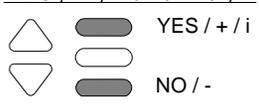
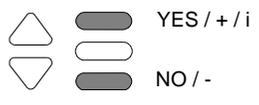
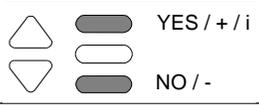
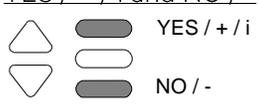
NAVIGATING THE MCA

MCA Local Control Panel and Display

Located on the Main Power Bay in the Monitoring and Control section.



Navigating the MCA is an easy process. You just have to remember a few key combinations (as shown in the following chart). The symbols that appear at the end of the fourth line of the display indicate which keypad buttons can be pressed at any given time.

| TASK | KEY OR KEY COMBINATIONS | NOTES |
|--|---|---|
| Getting to Home Position | <p><u>YES / + / i and NO / -</u></p>  | At any level in the MCA menus, pressing YES / + / i and NO / - simultaneously takes you back to the beginning of the MCA menu tree. |
| Moving from One Menu to Another Menu | <p><u>ENTER</u></p>  | You can travel left to right from one menu to another by pressing ENTER . You can also go back to a specified menu by pressing ENTER while the menu's name is being displayed. |
| Moving Within a Menu | <p><u>UP ARROW, DOWN ARROW</u></p>  | Press UP ARROW to move up the list of available entries in the active menu. Press DOWN ARROW to move down the list of available entries in the active menu. |
| Changing a Value or Setting Entering the Adjustment/Change Setting Mode | <p><u>ENTER and ALARM CUTOFF</u></p>  | <p>Changing a value or setting requires four (4) steps.</p> <ol style="list-style-type: none"> 1. With the current value or setting being displayed, simultaneously press ENTER and ALARM CUTOFF. 2. To increase the value or change the setting, press YES / + / i. To decrease the value or change the setting, press NO / -. 3. With the correct value or setting being displayed, press ENTER. 4. To accept the change, at the "ARE YOU SURE?" prompt press YES / + / i. To reject the change, at the "ARE YOU SURE?" prompt press NO / -. |
| Changing the Value or Setting | <p><u>YES / + / i and NO / -</u></p>  | |
| Locking the Change | <p><u>ENTER</u></p>  | |
| Confirming the Change | <p><u>YES / + / i and NO / -</u></p>  | |
| Changing a Control Function Entering the Adjustment/Change Setting Mode | <p><u>ENTER and ALARM CUTOFF</u></p>  | <p>Changing a control function requires two (2) steps.</p> <ol style="list-style-type: none"> 1. With the control function menu item being displayed, simultaneously press ENTER and ALARM CUTOFF. 2. To accept the change, at the "ARE YOU SURE?" prompt press the YES / + / i. To reject the change, at the "ARE YOU SURE?" prompt press NO / -. |
| Confirming the Change | <p><u>YES / + / i and NO / -</u></p>  | |

MCA Numbering Scheme

The MCA identifies (numbers) the components of the system as follows.

| COMPONENT | MCA IDENTIFICATION NUMBER | | |
|-------------------------------|--|--|---|
| | MCA NUMBERING SCHEME (note that each line shown below is separated with a dash in the MCA display) | NOTES | EXAMPLE |
| MCA/Router | Bay # | Primary Power Bay is #1, other bays are numbered consecutively, following the bay-to-bay cabling scheme. | Primary Power Bay 1 Second Bay (Power or Distribution) 2 Fifth Bay (Power or Distribution) 5 |
| Rectifier (PCU) | Bay # MCA Rectifier ID# within the Bay / # of Rectifiers Installed in System | Main Power Bay is #1, other bays are numbered consecutively, following the bay-to-bay cabling scheme. Rectifiers are identified from 1 to 24, as they are powered-up and recognized by the MCA. | Primary Power Bay, First Recognized Rectifier (w/ 36 rectifiers installed) 1-01/36 Second Bay, Third Recognized Rectifier (w/ 24 rectifiers installed) 2-03/24 Fifth Bay, Tenth Recognized Rectifier (w/ 12 rectifiers installed) 5-10/12 |
| MCA Relay Circuit Card | Bay # Card Position # w/in Bay Relay # w/in Card | Primary Bay is #1, other bays are numbered consecutively, following the bay-to-bay cabling scheme. Card #1 = left slot, Card #7 = right slot. Relay # (see illustration in System Overview Section of the USER INSTRUCTIONS). | Primary Bay, Relay Card in First Slot, Relay One on Card 1-1-1 Second Bay, Relay Card in Third Slot, Relay Four on Card 2-3-4 Fifth Bay, Relay Card in Seventh Slot, Relay Six on Card 5-7-6 |

| COMPONENT | MCA IDENTIFICATION NUMBER | | |
|---|--|--|---|
| | MCA NUMBERING SCHEME (note that each line shown below is separated with a dash in the MCA display) | NOTES | EXAMPLE |
| MCA I/O Circuit Card | Bay # Card Position # w/in Bay | Primary Bay is #1, other bays are numbered consecutively, following the bay-to-bay cabling scheme. Card #1 = left slot, Card #7 = right slot. | Primary Bay, I/O Card in First Slot 1-1 Second Bay, I/O Card in Third Slot 2-3 Fifth Bay, I/O Card in Seventh Slot 5-7 |
| Distribution Bay's Distribution Bus | Bay # Distribution Bus # w/in Bay (A or B Designation) | Primary Power Bay is #1, other bays are numbered consecutively, following the bay-to-bay cabling scheme. Distribution Bus #1 = Top Left, Distribution Bus #2 = Top Right, Distribution Bus #3 = Bottom Left, Distribution Bus #4 = Bottom Right, A or B as set by jumper on MCA Distribution Bus Monitoring Circuit Card. | Fifth Bay, Top Left Bus, Set for B Designation 5-1B Sixth Bay, Top Right Bus, Set for B Designation 6-2B Seventh Bay, Bottom Left Bus, Set for B Designation 7-3B Seventh Bay, Bottom Right Bus, Designation Not Set 7-4 |
| Distribution Bay's Distribution Device | Type Bay # Distribution Point # w/in Bay | Type = Breaker or Fuse or MISC 50-73. Primary Power Bay is #1, other bays are numbered consecutively, following the bay-to-bay cabling scheme. Distribution Point = 1-12 (bottom - top, Top Left Bus, Bus #1). 13-24 (top - bottom, Top Right Bus, Bus #2). 25-36 (bottom - top, Bottom Left Bus, Bus #3). 37-48 (top - bottom, Bottom Right Bus, Bus #4). Note that distribution components may take more than one mounting position, designation number is the left most mounting position. Note: The optional bullet-device fuse panel is displayed as MISC 50-73. | Fifth Bay, Circuit Breaker Mounted in Position One, Bus 1 Set for A Designation Breaker 5-01A Sixth Bay, Fuse Mounted in Position Thirteen, Bus 2 Designation Not Set Fuse 6-13 |

MCA Messages

The following chart provides an explanation of each MCA message appearing on the MCA Menu Tree (Section 5886). The MCA Menu Tree is located in the separate INSTALLATION MANUAL and the CD CARRIER MANUAL (it is also provided on the CD). Note that each line in the MCA Menu Tree contains a number. This number is referenced in the following chart.

 **NOTE!** Any references to specific distribution elements refer to the companion 582140001 Distribution Bay.

| MCA Menu Tree Line No. (Section 5886) | Message Displayed | Associated with ... | Definition |
|---------------------------------------|-------------------------------------|---------------------|---|
| 1 | EMERGENCY STOP INPUT ACTIVE | Main Alarm Menu | Rectifier Module (PCU) emergency shutdown or fire alarm disconnect signal applied to the system. |
| 2 | HI VOLTAGE SHUTDOWN INPUT ACTIVE | Main Alarm Menu | High voltage shutdown signal applied to the system. |
| 2A | ALTERNATE CURRENT LIMIT ACTIVE | Main Alarm Menu | Indicates that all rectifier modules (PCUs) are operating in the “Alternate Current Limit” mode. Rectifier output current will be limited to the percent of capacity specified by the “Alternate Current Limit Capacity” parameter setting. |
| 3 | SYSTEM VOLTAGE IS VERY LOW | Main Alarm Menu | System voltage below a preset adjustable value, indicating that the battery has been continuously supplying the load and has discharged to approximately half its reserve time. Press ENTER to view the alarm limit setpoint and the current value of the monitored input. |
| 3A | ALARM LIMIT vv.vvV NOW AT vv.vvV | -- | Displays the alarm limit setpoint and the actual value of the monitored input. |
| 4 | SYSTEM BATTERY IS ON DISCHARGE | Main Alarm Menu | System voltage below a preset adjustable value, indicating that the battery is supplying the load and is discharging. Press ENTER to view the alarm limit setpoint and the current value of the monitored input. |
| 4A | ALARM LIMIT vv.vvV NOW AT vv.vvV | -- | Displays the alarm limit setpoint and the actual value of the monitored input. |
| 5 | SYSTEM HIGH VOLTAGE #1 ALARM | Main Alarm Menu | System voltage above a preset adjustable value. Press ENTER to view the alarm limit setpoint and the current value of the monitored input. |
| 5A | ALARM LIMIT vv.vvV NOW AT vv.vvV | -- | Displays the alarm limit setpoint and the actual value of the monitored input. |

| | | | |
|----|--|-----------------|--|
| 6 | SYSTEM HIGH VOLTAGE #2 ALARM | Main Alarm Menu | System voltage above a preset adjustable value. Press ENTER to view the alarm limit setpoint and the current value of the monitored input. |
| 6A | ALARM LIMIT vv.vvV NOW AT vv.vvV | -- | Displays the alarm limit setpoint and the actual value of the monitored input. |
| 7 | 1 SYSTEM BREAKER OR FUSE ALARM or ### SYSTEM BREAKER & FUSE ALARMS | Fuse Alarm Menu | One or more system fuses or circuit breakers open. (### = number of open system fuses or circuit breakers.) Press ENTER to view which fuse(s) or circuit breaker(s) is open. Note that the individual fuses and/or circuit breakers on the optional bullet nose-type distribution panel are not counted. If any number of devices on the panel are open, only one will be counted. |
| 8 | F/CB/MISC 50-73 B#-P#A/B IS OPEN | Fuse Alarm Menu | Identification of open system fuse or circuit breaker. (F/CB/MISC 50-73 B#-P#A/B = Fuse or Circuit Breaker or Bullet Device, Bay Number-Distribution Device Position Number [Group A or B Designation if applicable.]) Press UP and DOWN ARROWS to scroll if multiple distribution devices are open. |
| 9 | GO TO MAIN ALARM MENU | Fuse Alarm Menu | Press ENTER to go to this menu. |
| 10 | GO BACK TO MENU TREE BEGINNING | Fuse Alarm Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 11 | AC POWER IS OFF TO ALL PCUs | Main Alarm Menu | AC input voltage to all Rectifier Modules (PCUs) below a preset non-adjustable value. |
| 12 | 1 PCU HAS FAILED or ### PCUs HAVE FAILED or NO PCUs ARE IN INVENTORY | Main Alarm Menu | One or more Rectifier Modules (PCUs) failed. (### = number of failed Rectifier Modules [PCUs].) Press ENTER to view which Rectifier Module (PCU) failed. or If the MCA does not recognize any Rectifier Module (PCU), NO PCUs ARE IN INVENTORY is displayed. |
| 13 | PCU B#-ID#/N# FAILURE | PCU Alarm Menu | Identification of failed Rectifier Module (PCU). (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) Press UP and DOWN ARROWS to scroll if multiple Rectifier Modules failed. Press ENTER to view why Rectifier Module failed. |

| | | | |
|----|--------------------------------|-----------------------|---|
| 14 | ### REMOTE PCUS HAVE FAILED | PCU Alarm Menu | More than one Remote Rectifier (PCU) failed. (### = number of failed Remote Rectifiers [PCUs].) |
| 15 | 1 REMOTE PCU HAS FAILED | PCU Alarm Menu | One Remote Rectifier (PCU) failed. |
| 16 | GO TO MAIN ALARM MENU | PCU Alarm Menu | Press ENTER to go to this menu. |
| 17 | GO BACK TO MENU TREE BEGINNING | PCU Alarm Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 18 | PCU B#-ID#/N# EMERG. STOP | PCU Alarm Detail Menu | Rectifier Module (PCU) is in Emergency Stop Mode. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 19 | PCU B#-ID#/N# H.V. SHUTDOWN | PCU Alarm Detail Menu | Rectifier Module (PCU) is in High Voltage Shutdown. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 20 | PCU B#-ID#/N# AC LINE OFF | PCU Alarm Detail Menu | No AC Input to Rectifier Module (PCU) or Rectifier Module's (PCU's) processor failed. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 21 | PCU B#-ID#/N# AC LINE LOW | PCU Alarm Detail Menu | Rectifier Module's (PCU's) Low AC Line Alarm active. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 22 | PCU B#-ID#/N# AC LINE HIGH | PCU Alarm Detail Menu | Rectifier Module's (PCU's) High AC Line Alarm active. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 23 | NO FUNCTION IN THIS SYSTEM | | |
| 24 | PCU B#-ID#/N# POWER FACTOR | PCU Alarm Detail Menu | Rectifier Module's (PCU's) internal power factor circuit failed. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 25 | PCU B#-ID#/N# DC/DC CONV. | PCU Alarm Detail Menu | Rectifier Module's (PCU's) internal DC/DC converter circuit failed. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 26 | NO FUNCTION IN THIS SYSTEM | | |
| 27 | PCU B#-ID#/N# INHIBITED | PCU Alarm Detail Menu | Rectifier Module's (PCU's) output inhibited or loss of AC phase. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 28 | NO FUNCTION IN THIS SYSTEM | | |

| | | | |
|----|--|--------------------------|---|
| 29 | PCU B#-ID#/N# THERMAL LIMIT | PCU Alarm Detail Menu | Rectifier Module (PCU) in Thermal Current Limit. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 30 | PCU B#-ID#/N# THERMAL STOP | PCU Alarm Detail Menu | Rectifier Module (PCU) in Thermal Shutdown. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 31 | PCU B#-ID#/N# HIGH AMBIENT | PCU Alarm Detail Menu | Rectifier Module's (PCU's) High Temperature Alarm active. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 32 | PCU B#-ID#/N# LOAD SHARE | PCU Alarm Detail Menu | Load is not balanced with the other Rectifier Modules (PCUs). (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 33 | NO FUNCTION IN THIS SYSTEM | | |
| 34 | PCU B#-ID#/N# 2+ FANS SPEED | PCU Alarm Detail Menu | 1 or more Rectifier Module (PCU) Fan Fail Alarms active. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 35 | PCU B#-ID#/N# NO VOLT SENSE | PCU Alarm Detail Menu | Not used at this time. |
| 36 | PCU B#-ID#/N# DUPLICATED | PCU Alarm Detail Menu | Duplicated Reference Designations. |
| 37 | PCU B#-ID#/N# NO RESPONSE | PCU Alarm Detail Menu | MCA communications with Rectifier Module (PCU) lost. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System.) |
| 38 | GO TO PCU ALARM MENU | PCU Alarm Detail Menu | Press ENTER to go to this menu. |
| 39 | GO BACK TO MENU TREE BEGINNING | PCU Alarm Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 40 | 1 DIST. PANEL HAS FAILED or ## DIST. PANELS HAVE FAILED or NO DIST. PANELS ARE IN INVENTORY | Main Alarm Menu | One or more Distribution Bus Monitoring Circuit Cards failed. (## = number of failed Distribution Bus Monitoring Circuit Cards.) Press ENTER to view which Distribution Bus Monitoring Circuit Card(s) failed. or If the MCA does not recognize any Distribution Bus Monitoring Circuit Card, NO DIST. PANELS ARE IN INVENTORY is displayed. |

| | | | |
|----|--|--------------------------------------|--|
| 41 | DIST. PANEL B#-P#A/B FAILURE | Distribution Alarm Menu | Identification of failed Distribution Bus Monitoring Circuit Card. (B#-P# A/B = Bay Number-Distribution Bus Monitoring Circuit Card Position Number [Group A or B Designation if applicable.]) Press UP and DOWN ARROWS to scroll if multiple Distribution Bus Monitoring Circuit Cards failed. Press ENTER to view why Distribution Bus Monitoring Circuit Card failed. |
| 42 | GO TO MAIN ALARM MENU | Distribution Alarm Menu | Press ENTER to go to this menu. |
| 43 | GO BACK TO MENU TREE BEGINNING | Distribution Alarm Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 44 | DIST. PANEL B#-P#A/B DISCONNECTED or DIST. PANEL B#-P#A/B RECONNECT? | Distribution Alarm Detail Menu | Not utilized at this time. |
| 45 | POSITION B#-P#A/B NOT FOUND or POSITION NOT FOUND PANEL B#-P#A/B | | MCA cannot find a distribution device. (B# P#A/B = Bay Number-Distribution Device Position Number [Group A or B Designation if applicable.]) (B#-P#A/B = Bay Number-Distribution Bus Monitoring Circuit Card Position Number [Group A or B Designation if applicable.]) Press UP and DOWN ARROWS to scroll if multiple distribution devices not found. |
| 46 | POSITION B#-P#A/B TYPE UNKNOWN | Distribution Alarm Detail Menu | MCA cannot identify the distribution device. (B#-P#A/B = Bay Number-Distribution Device Position Number [Group A or B Designation if applicable.]) Press UP and DOWN ARROWS to scroll if multiple distribution devices not identified. |
| 47 | F/CB/MISC 50-73 B#-P#A/B OVER CURRENT | Distribution Alarm Detail Menu | Distribution device current is above the shunt's rating. (F/CB/MISC 50-73 B#-P#A/B = Fuse or Circuit Breaker or Bullet Device, Bay Number-Distribution Device Position Number [Group A or B Designation if applicable.]) Press UP and DOWN ARROWS to scroll if multiple shunts are over-ranged. |
| 48 | DIST. PANEL B#-P#A/B LVD FAILURE | Distribution Alarm Detail Menu | Not utilized at this time. |

| | | | |
|----|---|--------------------------------------|--|
| 49 | DIST. PANEL B#-P#A/B A/B CHANGED | Distribution Alarm Detail Menu | Group A / Group B jumper setting on Distribution Bus Monitoring Circuit Card changed. (B#-P# = Bay Number- Distribution Bus Monitoring Circuit Card Position Number) |
| 50 | DIST. PANEL B#-P#A/B PROCESSOR | Distribution Alarm Detail Menu | Distribution Bus Monitoring Circuit Card's processor failed. (B#-P#A/B = Bay Number-Distribution Bus Monitoring Circuit Card Position Number [Group A or B Designation if applicable.]) |
| 51 | DIST. PANEL B#-P#A/B IS DUPLICATED | Distribution Alarm Detail Menu | Duplicated Reference Designations. |
| 52 | DIST. PANEL B#-P#A/B NO RESPONSE | Distribution Alarm Detail Menu | MCA communications with Distribution Bus Monitoring Circuit Card lost. (B#-P# = Bay Number-Distribution Bus Monitoring Circuit Card Position Number) |
| 53 | GO TO DISTRIBUTION ALARM MENU | Distribution Alarm Detail Menu | Press ENTER to go to this menu. |
| 54 | GO BACK TO MENU TREE BEGINNING | Distribution Alarm Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 55 | 1 I/O BOARD HAS FAILED or ## I/O BOARDS HAVE FAILED or NO I/O BOARD S ARE IN INVENTORY | Main Alarm Menu | One or more MCA I/O Circuit Cards failed. (## = number of failed MCA I/O Circuit Cards.) Press ENTER to view which MCA I/O Circuit Card(s) failed. or If the MCA does not recognize any MCA I/O Circuit Card, NO I/O BOARDS ARE IN INVENTORY is displayed. |
| 56 | I/O BOARD B#-P# FAILURE | I/O Board Alarm Menu | Identification of failed MCA I/O Circuit Card. (B#-P# = Bay Number-MCA I/O Circuit Card Position Number.) Press UP and DOWN ARROWS to scroll if multiple MCA I/O Circuit Cards failed. Press ENTER to view why MCA I/O Circuit Card failed. |
| 57 | GO TO MAIN ALARM MENU | I/O Board Alarm Menu | Press ENTER to go to this menu. |
| 58 | GO BACK TO MENU TREE BEGINNING | I/O Board Alarm Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |

| | | | |
|----|--|-----------------------------|---|
| 67 | ROUTER B# FAILURE | Router Alarm Menu | Identification of failed Distribution Bay Router Circuit Card. (B# = Bay Number.) Press UP and DOWN ARROWS to scroll if multiple Distribution Bay Router Circuit Cards failed. Press ENTER to view why Distribution Bay Router Circuit Card failed. |
| 68 | GO TO MAIN ALARM MENU | Router Alarm Menu | Press ENTER to go to this menu. |
| 69 | GO BACK TO MENU TREE BEGINNING | Router Alarm Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 70 | ROUTER B# REMOTE SENSE OPEN | Router Alarm Detail Menu | Distribution Bay Router Circuit Card External A/D Voltage Alarm active. (B# = Bay Number.) |
| 71 | ROUTER B# INTERNAL SENSE OPEN | Router Alarm Detail Menu | Distribution Bay Router Circuit Card Internal A/D Voltage Alarm active. (B# = Bay Number.) |
| 72 | ROUTER B# PROCESSOR | Router Alarm Detail Menu | Distribution Bay Router Circuit Card's processor failed. (B# = Bay Number.) |
| 73 | ROUTER B# REPORTS AN ILLEGAL NODE | Router Alarm Detail Menu | MCA does not recognize a node's type or identification number. (B# = Bay Number.) |
| 74 | ROUTER B# IS DUPLICATED | Router Alarm Detail Menu | Duplicated Reference Designations. |
| 75 | ROUTER B# NO RESPONSE | Router Alarm Detail Menu | MCA communications with Distribution Bay Router Circuit Card lost. (B# = Bay Number.) |
| 76 | GO TO ROUTER ALARM MENU | Router Alarm Detail Menu | Press ENTER to go to this menu. |
| 77 | GO BACK TO MENU TREE BEGINNING | Router Alarm Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 78 | 1 RELAY BOARD HAS FAILED or ## RELAY BOARDS HAVE FAILED or NO RELAY BOARDS ARE IN INVENTORY | Main Alarm Menu | One or more MCA Customer Alarm Relay Circuit Cards failed. (## = number of failed MCA Customer Alarm Relay Circuit Cards.) Press ENTER to view which MCA Customer Alarm Relay Circuit Card(s) failed. or If the MCA does not recognize any MCA Customer Alarm Relay Circuit Card, NO RELAY BOARDS ARE IN INVENTORY is displayed. |

| | | | |
|-----|---------------------------------------|-------------------------|---|
| 79 | RELAY BOARD B#-P# FAILURE | Relay Alarm Menu | <p>Identification of failed MCA Customer Alarm Relay Circuit Card. (B#-P# = Bay Number-Relay Circuit Card Position Number.)</p> <p>Press UP and DOWN ARROWS to scroll if multiple MCA Customer Alarm Relay Circuit Cards failed.</p> <p>Press ENTER to view why MCA Customer Alarm Relay Circuit Card failed.</p> |
| 80 | GO TO MAIN ALARM MENU | Relay Alarm Menu | Press ENTER to go to this menu. |
| 81 | GO BACK TO MENU TREE BEGINNING | Relay Alarm Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 82 | RELAY B#-P#-R# IS STUCK | Relay Alarm Detail Menu | Relay does not change state. (B#-P#-R# = Bay Number-Relay Circuit Card Position Number-Relay Number on Card.) |
| 83 | RELAY BOARD B#-P# PROCESSOR | Relay Alarm Detail Menu | MCA Customer Alarm Relay Circuit Card's processor failed. (B#-P# = Bay Number-Relay Circuit Card Position Number.) |
| 84 | RELAY BOARD B#-P# IS DUPLICATED | Relay Alarm Detail Menu | Duplicated Reference Designations. |
| 85 | RELAY BOARD B#-P# NO RESPONSE | Relay Alarm Detail Menu | MCA communications with MCA Customer Alarm Relay Circuit Card lost. (B#-P# = Bay Number-Relay Circuit Card Position Number.) |
| 86 | GO TO RELAY ALARM MENU | Relay Alarm Detail Menu | Press ENTER to go to this menu. |
| 87 | GO BACK TO MENU TREE BEGINNING | Relay Alarm Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 88 | HIGH TEMPERATURE #1 ALARM | Main Alarm Menu | <p>Battery ambient temperature above preset adjustable value.</p> <p>Press ENTER to view the alarm limit setpoint and the current value of the monitored input.</p> |
| 88A | ALARM LIMIT ttt°C/F NOW AT ttt°C/F | -- | Displays the alarm limit setpoint and the actual value of the monitored input. |
| 89 | HIGH TEMPERATURE #2 ALARM | Main Alarm Menu | <p>Battery ambient temperature above preset adjustable value.</p> <p>Press ENTER to view the alarm limit setpoint and the current value of the monitored input.</p> |
| 89A | ALARM LIMIT ttt°C/F NOW AT ttt°C/F | -- | Displays the alarm limit setpoint and the actual value of the monitored input. |
| 90 | LOW TEMPERATURE #1 ALARM | Main Alarm Menu | <p>Battery ambient temperature below preset adjustable value.</p> <p>Press ENTER to view the alarm limit setpoint and the current value of the monitored input.</p> |

| | | | |
|-----|--|--------------------|--|
| 90A | ALARM LIMIT ttt°C/F NOW AT ttt°C/F | -- | Displays the alarm limit setpoint and the actual value of the monitored input. |
| 91 | LOW TEMPERATURE #2 ALARM | Main Alarm Menu | Battery ambient temperature below preset adjustable value. Press ENTER to view the alarm limit setpoint and the current value of the monitored input. |
| 91A | ALARM LIMIT ttt°C/F NOW AT ttt°C/F | -- | Displays the alarm limit setpoint and the actual value of the monitored input. |
| 92 | TEMPERATURE SENSOR NO SIGNAL | Main Alarm Menu | MCA Temperature Sensor signal lost, if Temperature Sensor installed. |
| 93 | MAJOR MONITORING ALARM(S) or <i>Monitoring Major LED Messages</i> | Main Alarm Menu | Major Alarm conditions detected by LMS1000. <i>Alarm Messages derived from LMS1000 are displayed by the MCA.</i> |
| 94 | MINOR MONITORING ALARM(S) or <i>Monitoring Minor LED Messages</i> | Main Alarm Menu | Minor Alarm conditions detected by LMS1000. <i>Alarm Messages derived from LMS1000 are displayed by the MCA.</i> |
| 95 | MONITORING INFORMATION or <i>Monitoring Info LED Messages</i> | Main Alarm Menu | Status Messages detected by LMS1000. <i>Status Messages derived from LMS1000 are displayed by the MCA.</i> |
| 96 | MONITORING DOES NOT RESPOND | Main Alarm Menu | MCA communications with LMS1000 lost. |
| 97 | CONTROLLER FAILURE #### | Main Alarm Menu | MCA failed (#### = type of memory failure) |
| 98 | THE CONTROLLER IS INITIALIZING | Main Alarm Menu | The MCA is initializing. |
| 99 | TOTAL LOAD CURRENT ALARM | Main Alarm Menu | System load current above preset adjustable value (includes distribution loads monitored by the Distribution Bus Monitoring Circuit Cards and any MCA I/O Circuit Card set as "Distribution" [other setting choice is "Auxiliary"]). Press ENTER to view the alarm limit setpoint and the current value of the monitored input. |
| 99A | ALARM LIMIT aaaaaA NOW AT aaaaaA | -- | Displays the alarm limit setpoint and the actual value of the monitored input. |
| 100 | DISTRIBUTION GROUP A LOAD ALARM | Main Alarm Menu | Sum of load currents monitored by all Distribution Bus Monitoring Circuit Cards set as Group A designation above preset adjustable value. Press ENTER to view the alarm limit setpoint and the current value of the monitored input. |

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| 100A | ALARM LIMIT aaaaaA NOW AT aaaaaA | -- | Displays the alarm limit setpoint and the actual value of the monitored input. |
| 101 | DISTRIBUTION GROUP B LOAD ALARM | Main Alarm Menu | Sum of load currents monitored by all Distribution Bus Monitoring Circuit Cards set as Group B designation above preset adjustable value. Press ENTER to view the alarm limit setpoint and the current value of the monitored input. |
| 101A | ALARM LIMIT aaaaaA NOW AT aaaaaA | -- | Displays the alarm limit setpoint and the actual value of the monitored input. |
| 102 | THE DISPLAY DOES NOT RESPOND | Main Alarm Menu | MCA communications with MCA Display lost. |
| 103 | GO TO FUNCTION MENU | Main Alarm Menu | Press ENTER to go to this menu. |
| 104 | GO BACK TO MENU TREE BEGINNING | Main Alarm Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 105 | VIEW THE SYSTEM MEASUREMENTS | Function Menu | Press ENTER to go to this menu. |
| 106 | SYSTEM OUTPUT SENSE vv.vvV (REM) or SYSTEM OUTPUT SENSE vv.vvV (AVG) | Measurement Menu | The voltage of the external (remote) source connected to the MCA / Router circuit card (for MCA alarms and meter reading), if connected. or System output sense voltage (average of all bay's internal sense voltages). Press ENTER to view individual bay sense voltages. |
| 107 | ROUTER B# REMOTE SENSE vv.vvV | Router Voltage Menu | External (remote) sense voltage applied to the Distribution Bay MCA / Router Circuit Card, if connected. (B# = Bay Number). Press UP and DOWN ARROWS to view other Distribution Bay Router Circuit Cards' sense voltages. |
| 108 | ROUTER B# INTERNAL SENSE vv.vvV | Router Voltage Menu | Internal sense voltage applied to the Distribution Bay Router Circuit Card. (B# = Bay Number). Press UP and DOWN ARROWS to view other Distribution Bay Router Circuit Cards' sense voltages. |
| 109 | GO TO MEASUREMENT MENU | Router Voltage Menu | Press ENTER to go to this menu. |
| 110 | GO BACK TO MENU TREE BEGINNING | Router Voltage Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 111 | TOTAL SYSTEM LOAD aaaaaA | Measurement Menu | Total system load current. |

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| 112 | TOTAL DISTRIBUTION LOAD aaaaaA or TOTAL AUXILIARY LOAD aaaaaA | System Load Menu | Total distribution load current (includes distribution loads monitored by the Distribution Bus Monitoring Circuit Cards and any MCA I/O Circuit Card set as "Distribution" [other setting choice is "Auxiliary"]). Press ENTER to view individual bay distribution load currents. or Total (sum) load current monitored by MCA I/O Circuit Cards set as "Auxiliary". Press ENTER to view individual MCA I/O circuit card load currents. |
| 113 | DISTRIBUTION GROUP A LOAD aaaaaA | System Load Menu | Total load current monitored by Distribution Bus Monitoring Circuit Cards set as Group A designation. |
| 114 | DISTRIBUTION GROUP B LOAD aaaaaA | System Load Menu | Total load current monitored by Distribution Bus Monitoring Circuit Cards set as Group B designation. |
| 115 | REMOTE SYSTEM LOAD aaaaaA | System Load Menu | Total Remote Distribution load current reported by the LMS when LMS Function Channel 63 value is greater than zero. |
| 116 | GO TO MEASUREMENT MENU | System Load Menu | Press ENTER to go to this menu. |
| 117 | GO BACK TO MENU TREE BEGINNING | System Load Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 118 | DIST. PANEL B#-P#A/B LOAD aaaaaA | Distribution Load Menu | Sum of load currents monitored by the Distribution Bus Monitoring Circuit Card. (B#-P#A/B = Bay Number-Distribution Bus Monitoring Circuit Card Position Number [Group A or B Designation if applicable.]) Press UP and DOWN ARROWS to view other Distribution Bus Monitoring Circuit Cards' load currents. Press ENTER to view individual distribution device load currents. |
| 119 | I/O BOARD B#-P# LOAD aaaaaA | Distribution Load Menu | Load current monitored by the first MCA I/O Circuit Card (set as "Distribution" or "Auxiliary" as determined by what is being displayed on line #112). (B#-P# = Bay Number-MCA I/O Circuit Card Position Number.) Press UP and DOWN ARROWS to view other MCA I/O Circuit Cards' load currents. |
| 120 | GO TO SYSTEM LOAD MENU | Distribution Load Menu | Press ENTER to go to this menu. |
| 121 | GO BACK TO MENU TREE BEGINNING | Distribution Load Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |

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| 122 | F/CB/MISC 50-73 B#-P#A/B LOAD aaaaaA | Distribution Load Detail Menu | Distribution device identification number and load current. (F/CB/MISC 50-73 B#-P#A/B = Fuse or Circuit Breaker or Bullet Device, Bay Number-Distribution Device Position Number [Group A or B Designation if applicable.]) Press UP and DOWN ARROWS to view other Distribution Devices' load currents. |
| 123 | GO TO DISTRIBUTION LOAD MENU | Distribution Load Detail Menu | Press ENTER to go to this menu. |
| 124 | GO BACK TO MENU TREE BEGINNING | Distribution Load Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 125 | TOTAL PCU OUTPUT aaaaaA or TOTAL PCU/RECTIFIER aaaaaA | Measurement Menu | Total Rectifier Module (PCU) output current. Press ENTER to view individual Rectifier Module load currents. or Total Rectifier Module and legacy rectifier output current when LMS1000 Function Channel #64 reported value is greater than zero. Press ENTER to view individual Rectifier Module load currents and legacy system current. |
| 126 | PCU B#-ID#/N# aaaaaA | PCU Load Menu | Rectifier Module (PCU) output current. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System). Press UP and DOWN ARROWS to view other Rectifier Modules' load currents. |
| 127 | RECTIFIER OUTPUT aaaaaA | PCU Load Menu | Legacy Rectifier System output current as reported by the LMS1000 Function Channel #64. |
| 128 | GO TO MEASUREMENT MENU | PCU Load Menu | Press ENTER to go to this menu. |
| 129 | GO BACK TO MENU TREE BEGINNING | PCU Load Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 130 | TEMPERATURE SENSOR ttt°C/F or REMOTE TEMPERATURE ttt°C/F | Measurement Menu | Temperature detected by Temperature Sensor, if installed, or Remote Temperature Sensor. |
| 131 | GO TO FUNCTION MENU | Measurement Menu | Press ENTER to go to this menu. |
| 132 | GO BACK TO MENU TREE BEGINNING | Measurement Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |

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| 133 | FLOAT MODE IS ACTIVE SET TEST/EQ? or TEST/EQ MODE ACTIVE SET FLOAT? or TEST/EQUALIZE INPUT IS ACTIVE or TURN OFF POWER SHARE or TURN OFF ALTERNATE CURRENT LIMIT | Function Menu | Allows you to change the Rectifier Module (PCU) output voltage mode. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. or The user tried to set Float Mode while an external test/equalize input signal was being supplied to the system. Note: Test/Equalize Mode requires Power Share and Alternate Current Limit to be turned off. A message is displayed if Power Share or Alternate Current Limit is on. Turn Power Share or Alternate Current Limit off first then return to this menu. |
| 134 | VIEW THE SYSTEM INVENTORY | Function Menu | Press ENTER to go to this menu. |
| 135 | 1 PCU IS REPORTING or ### PCUs ARE REPORTING or NO PCUs ARE INSTALLED | Inventory Menu | Number of Rectifier Modules (PCUs) in MCA inventory. Press ENTER to view individual Rectifier Module inventory information. or No Rectifier Modules installed. |
| 136 | PCU B#-ID#/N# RATED aaaaaA | PCU Inventory Menu | Rectifier Module (PCU) identification number and output current rating. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System). Press UP and DOWN ARROWS to view other Rectifier Modules. |
| 137 | GO TO INVENTORY MENU | PCU Inventory Menu | Press ENTER to go to this menu. |
| 138 | GO BACK TO MENU TREE BEGINNING | PCU Inventory Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 139 | B#-ID#/N# ASSY. ##### | PCU Inventory Detail Menu | Rectifier Module (PCU) Assembly Number. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System). |
| 140 | B#-ID#/N# SERIAL ##### | PCU Inventory Detail Menu | Rectifier Module (PCU) Serial Number. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System). |

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| 141 | B#-ID#/N# BOOT ##### | PCU Inventory Detail Menu | Rectifier Module (PCU) Bootcode Number. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System). |
| 142 | B#-ID#/N# SW VER ##### | PCU Inventory Detail Menu | Rectifier Module (PCU) Software Number. (B#-ID#/N# = Bay Number-Rectifier Module MCA ID# w/in Bay/Number of Rectifier Modules in System). |
| 143 | NO FUNCTION IN THIS SYSTEM | | |
| 144 | NO FUNCTION IN THIS SYSTEM | | |
| 145 | NO FUNCTION IN THIS SYSTEM | | |
| 146 | NO FUNCTION IN THIS SYSTEM | | |
| 147 | GO TO PCU INVENTORY | PCU Inventory Detail Menu | Press ENTER to go to this menu. |
| 148 | GO BACK TO MENU TREE BEGINNING | PCU Inventory Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 149 | TOTAL PCU POSITIONS = ### | Inventory Menu | Enter the number of total Rectifier Module (PCU) positions available in the system. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 150 | 1 DIST. PANEL IS REPORTING or ## DIST. PANELS ARE REPORTING or NO DIST. PANELS ARE INSTALLED | Inventory Menu | Number of Distribution Bus Monitoring Circuit Cards in MCA inventory. Press ENTER to view individual Distribution Bus Monitoring Circuit Card inventory information. or No Distribution Bus Monitoring Circuit Cards installed. |
| 151 | PANEL B#-P#/A/B INCLUDES 1 POINT or PANEL B#-P#/A/B INCLUDES ## POINTS | Distribution Inventory Menu | Number of distribution devices this Distribution Bus Monitoring Circuit Card is monitoring. (B# P#/A/B = Bay Number- Distribution Bus Monitoring Circuit Card Position Number [Group A or B Designation if applicable.]) Press UP and DOWN ARROWS to view other Distribution Bus Monitoring Circuit Cards' distribution devices. Press ENTER to view individual distribution devices' inventory information. |
| 152 | GO TO INVENTORY MENU | Distribution Inventory Menu | Press ENTER to go to this menu. |
| 153 | GO BACK TO MENU TREE BEGINNING | Distribution Inventory Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |

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| 154 | POINT B#-P#A/B IS A F/CB/MISC 50-73 | Distribution Inventory Detail Menu | Distribution device identification number and type. (B#-P#A/B = Bay Number-Distribution Device Position Number [Group A or B Designation if applicable.]) (F/CB/MISC 50-73 = Fuse or Circuit Breaker or Bullet Device) Press UP and DOWN ARROWS to view other Distribution Devices' inventory information. |
| 155 | PANEL B#-P#A/B ASSEMBLY ##### | Distribution Inventory Detail Menu | Distribution Panel Assembly Number. (B# P#A/B = Bay Number-Distribution Bus Monitoring Circuit Card Position Number [Group A or B Designation if applicable.]) |
| 156 | PANEL B#-P#A/B SERIAL # ##### | Distribution Inventory Detail Menu | Distribution Panel Serial Number. (B#-P#A/B = Bay Number-Distribution Bus Monitoring Circuit Card Position Number [Group A or B Designation if applicable.]) |
| 157 | PANEL B#-P#A/B BOOTCODE ##### | Distribution Inventory Detail Menu | Distribution Panel Bootcode Number. (B# P#A/B = Bay Number-Distribution Bus Monitoring Circuit Card Position Number [Group A or B Designation if applicable.]) |
| 158 | PANEL B#-P#A/B SOFTWARE ##### | Distribution Inventory Detail Menu | Distribution Panel Software Number. (B# P#A/B = Bay Number-Distribution Bus Monitoring Circuit Card Position Number [Group A or B Designation if applicable.]) |
| 159 | GO TO DISTRIBUTION INVENTORY | Distribution Inventory Detail Menu | Press ENTER to go to this menu. |
| 160 | GO BACK TO MENU TREE BEGINNING | Distribution Inventory Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 161 | 1 I/O BOARD IS REPORTING or ## I/O BOARDS ARE REPORTING or NO I/O BOARDS ARE INSTALLED | Inventory Menu | Number of MCA I/O Circuit Cards in MCA inventory. Press ENTER to view individual MCA I/O Circuit Card inventory information. or No MCA I/O Circuit Cards installed. |
| 162 | I/O BOARD B#-P# IS INSTALLED | I/O Board Inventory Menu | MCA I/O Circuit Card identification number. (B#-P# = Bay Number-I/O Circuit Card Position Number). Press UP and DOWN ARROWS to view other MCA I/O Circuit Cards' identification numbers. |
| 163 | GO TO INVENTORY MENU | I/O Board Inventory Menu | Press ENTER to go to this menu. |

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| 164 | GO BACK TO MENU TREE BEGINNING | I/O Board Inventory Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 165 | BOARD B#-P# ASSEMBLY ##### | I/O Board Inventory Detail Menu | MCA I/O Circuit Card Assembly Number. (B# P# = Bay Number MCA I/O Circuit Card Position Number). |
| 166 | BOARD B#-P# SERIAL # ##### | I/O Board Inventory Detail Menu | MCA I/O Circuit Card Serial Number. (B#-P# = Bay Number MCA I/O Circuit Card Position Number). |
| 167 | BOARD B#-P# BOOTCODE ##### | I/O Board Inventory Detail Menu | MCA I/O Circuit Card Bootcode Number. (B# P# = Bay Number MCA I/O Circuit Card Position Number). |
| 168 | BOARD B#-P# SOFTWARE ##### | I/O Board Inventory Detail Menu | MCA I/O Circuit Card Software Number. (B# P# = Bay Number MCA I/O Circuit Card Position Number). |
| 169 | GO TO I/O BOARD INVENTORY | I/O Board Inventory Detail Menu | Press ENTER to go to this menu. |
| 170 | GO BACK TO MENU TREE BEGINNING | I/O Board Inventory Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 171 | 1 ROUTER IS REPORTING or ## ROUTERS ARE REPORTING or NO ROUTERS ARE INSTALLED | Inventory Menu | Number of Distribution Bay Router Circuit Cards in MCA inventory. Press ENTER to view individual Distribution Bay Router Circuit Card inventory information. or No Distribution Bay Router Circuit Cards installed. |
| 172 | ROUTER B# IS INSTALLED | Router Inventory Menu | Distribution Bay Router Circuit Card identification number. (B# = Bay Number). Press UP and DOWN ARROWS to view other Distribution Bay Router Circuit Cards' identification numbers. |
| 173 | GO TO INVENTORY MENU | Router Inventory Menu | Press ENTER to go to this menu. |
| 174 | GO BACK TO MENU TREE BEGINNING | Router Inventory Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 175 | ROUTER B# ASSEMBLY ##### | Router Inventory Detail Menu | Distribution Bay Router Assembly Number. (B# = Bay Number). |
| 176 | ROUTER B# SERIAL # ##### | Router Inventory Detail Menu | Distribution Bay Router Serial Number. (B# = Bay Number) |

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| 177 | ROUTER B# BOOTCODE ##### | Router Inventory Detail Menu | Distribution Bay Router Bootcode Number. (B# = Bay Number). |
| 178 | ROUTER B# SOFTWARE ##### | Router Inventory Detail Menu | Distribution Bay Router Software Number. (B# = Bay Number). |
| 179 | GO TO ROUTER INVENTORY | Router Inventory Detail Menu | Press ENTER to go to this menu. |
| 180 | GO BACK TO MENU TREE BEGINNING | Router Inventory Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 181 | 1 RELAY BOARD IS REPORTING or ## RELAY BOARDS ARE REPORTING or NO RELAY BOARDS ARE INSTALLEDINSTALLED | Inventory Menu | Number of MCA Customer Alarm Relay Circuit Cards in MCA inventory. Press ENTER to view individual MCA Customer Alarm Relay Circuit Card inventory information. or No MCA Customer Alarm Relay Circuit Cards installed. |
| 182 | RELAY BOARD B#-P# IS INSTALLED | Relay Inventory Menu | MCA Customer Alarm Relay Circuit Card identification number. (B#-P# = Bay Number-Relay Circuit Card Position Number). Press UP and DOWN ARROWS to view other MCA Customer Alarm Relay Circuit Cards' identification numbers. |
| 183 | GO TO INVENTORY MENU | Relay Inventory Menu | Press ENTER to go to this menu. |
| 184 | GO BACK TO MENU TREE BEGINNING | Relay Inventory Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 185 | BOARD B#-P# ASSEMBLY ##### | Relay Inventory Detail Menu | MCA Customer Alarm Relay Circuit Card Assembly Number. (B#-P# = Bay Number MCA Customer Alarm Relay Circuit Card Position Number). |
| 186 | BOARD B#-P# SERIAL # ##### | Relay Inventory Detail Menu | MCA Customer Alarm Relay Circuit Card Serial Number. (B#-P# = Bay Number MCA Customer Alarm Relay Circuit Card Position Number). |
| 187 | BOARD B#-P# BOOTCODE ##### | Relay Inventory Detail Menu | MCA Customer Alarm Relay Circuit Card Bootcode Number. (B#-P# = Bay Number MCA Customer Alarm Relay Circuit Card Position Number). |
| 188 | BOARD B#-P# SOFTWARE ##### | Relay Inventory Detail Menu | MCA Customer Alarm Relay Circuit Card Software Number. (B#-P# = Bay Number MCA Customer Alarm Relay Circuit Card Position Number). |

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| 189 | GO TO RELAY BOARD INVENTORY | Relay Inventory Detail Menu | Press ENTER to go to this menu. |
| 190 | GO BACK TO MENU TREE BEGINNING | Relay Inventory Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 191 | TEMPERATURE SENSOR REPORTING or NO TEMPERATURE SENSOR | Inventory Menu | Temperature Sensor is in MCA inventory. or No Temperature Sensor installed. |
| 192 | MONITORING IS REPORTING or NO MONITORING IS INSTALLED | Inventory Menu | LMS1000 is communicating with the MCA. or No LMS1000 installed in the MCA's inventory. |
| 193 | MONITORING ASSEMBLY ##### | Monitoring Inventory Detail Menu | Specification number (Spec. No.) of the LMS1000 Main CPU circuit card. |
| 194 | MONITORING SERIAL # ##### | Monitoring Inventory Detail Menu | Serial number of the LMS1000 Main CPU circuit card. |
| 195 | MONITORING BOOTCODE ##### | Monitoring Inventory Detail Menu | Software bootcode revision number of the LMS1000 Main CPU circuit card. |
| 196 | MONITORING SOFTWARE ##### | Monitoring Inventory Detail Menu | Software version number of the LMS1000 Main CPU circuit card. |
| 197 | GO TO INVENTORY MENU | Monitoring Inventory Detail Menu | Press ENTER to go to this menu. |
| 198 | GO BACK TO MENU TREE BEGINNING | Monitoring Inventory Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 199 | SENSE VOLTAGE IS REMOTE INPUT or SENSE VOLTAGE IS AVERAGED | Inventory Menu | Indicates if an external (remote) voltage input (for MCA alarms and meter reading) is applied to the MCA / Router circuit card, or If the voltage input for MCA alarms and meter reading is the average of each bay's sense voltages (no external input applied). |
| 200 | CONTROLLER ASSEMBLY ##### | Inventory Menu | Specification number (Spec. No.) of the MCA/Router circuit card. |
| 201 | CONTROLLER SERIAL # ##### | Controller Detail Menu | Serial number of the MCA/Router circuit card. |
| 202 | CONTROLLER BOOTCODE ##### | Controller Detail Menu | Software bootcode version number of the MCA/Router circuit card. |
| 203 | CONTROLLER SOFTWARE ##### | Controller Detail Menu | Software version number of the MCA/Router circuit card. |

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| 204 | DISPLAY ASSEMBLY ##### | Controller Detail Menu | Specification number (Spec. No.) of the Display circuit card. |
| 205 | DISPLAY SERIAL # ##### | Controller Detail Menu | Serial number of the Display circuit card. |
| 206 | DISPLAY BOOTCODE ##### | Controller Detail Menu | Software bootcode version number of the Display circuit card. |
| 207 | DISPLAY SOFTWARE ##### | Controller Detail Menu | Software version number of the Display circuit card. |
| 208 | GO TO INVENTORY MENU | Controller Detail Menu | Press ENTER to go to this menu. |
| 209 | GO BACK TO MENU TREE BEGINNING | Controller Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 210 | UPDATE THE INVENTORY | Inventory Menu | <p>Allows resetting the inventory count when an inventory item is removed from the system by the user.</p> <p>When an inventory item is removed from the system, an alarm will be reported until "UPDATE THE INVENTORY" is entered.</p> <p>Example, if a Rectifier Module (PCU) is removed from the system, the Rectifier Module (PCU) will not be removed from the MCA's inventory until "UPDATE THE INVENTORY" operation is completed.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 211 | GO TO FUNCTION MENU | Inventory Menu | Press ENTER to go to this menu. |
| 212 | GO BACK TO MENU TREE BEGINNING | Inventory Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 213 | ADJUST THE SYSTEM VOLTS & AMPS | Function Menu | Press ENTER to go to the System Adjustment Menu. |
| 214 | FLOAT SETPOINT = vv.vvV | System Adjustment Menu | <p>Allows you to change the Float Output Voltage set point.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 215 | TEST/EQUALIZE = vv.vvV | System Adjustment Menu | <p>Allows you to change the Test/Equalize Output Voltage set point.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |

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| 219 | HI VOLTAGE SHUTDOWN = vv.vvV | System Adjustment Menu | Enter the percentage value of the rated rectifier output capacity to which the rectifier output current should be limited. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 220 | NO FUNCTION IN THIS SYSTEM | | |
| 221 | PCU CURRENT LIMIT = aaaaaA or PCU CURRENT LIMIT = aaaaaMAX or PCU CURRENT LIMIT POWER SHARE or PCU CURRENT LIMIT ALT. LIMIT | System Adjustment Menu | Allows you to change the Current Limit set point. aaaaaA = System current limit setting, current limit circuit on all Rectifier Modules are automatically adjusted to ensure system current does not exceed this value. aaaaaMAX = System current limit setting is set to the sum of the maximum current capacities of all Rectifier Modules installed in the system. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. Note: When Power Share is enabled, current limit is controlled by the Power Share feature. Note: When Alternate Current Limit is enabled and active, current limit is controlled by the Alternate Current Limit feature. |
| 222 | 100% PCU CURRENT IS aaaaaA | System Adjustment Menu | This value is only displayed. MCA calculates the value from all Rectifier Modules (PCUs) installed. There is no user adjustment. |
| 223 | GO TO FUNCTION MENU | System Adjustment Menu | Press ENTER to go to this menu. |
| 224 | GO BACK TO MENU TREE BEGINNING | System Adjustment Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 225 | ADJUST THE ALARM SETPOINTS | Function Menu | Press ENTER to go to the Alarm Adjustment Menu. |
| 226 | SYSTEM HI VOLTAGE #1 = vv.vvV | Alarm Adjustment Menu | Allows you to change the System High Voltage #1 Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 227 | SYSTEM HI VOLTAGE #2 = vv.vvV | Alarm Adjustment Menu | Allows you to change the System High Voltage #2 Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |

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| 228 | BATTERY ON DISCHARGE = vv.vvV | Alarm Adjustment Menu | Allows you to change the Battery on Discharge Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 229 | VERY LOW VOLTAGE = vv.vvV | Alarm Adjustment Menu | Allows you to change the Very Low Voltage Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 230 | TOTAL LOAD CURRENT = aaaaaA | Alarm Adjustment Menu | Allows you to change the Total Load Current Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 231 | DISTRIBUTION GROUP A = aaaaaA | Alarm Adjustment Menu | Allows you to change the Distribution Group A Load Current Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 232 | DISTRIBUTION GROUP B = aaaaaA | Alarm Adjustment Menu | Allows you to change the Distribution Group B Load Current Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 233 | HIGH TEMPERATURE #1 = ttt C/F or NO HIGH TEMPERATURE #1 ALARM | Alarm Adjustment Menu | Allows you to change the High Temperature #1 Alarm set point, or disable the alarm. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. Note: To disable the feature, press YES / + / i when in the change setting mode to scroll to NO HIGH TEMPERATURE #1 ALARM (displayed when you scroll up to "100 C"). |
| 234 | HIGH TEMPERATURE #2 = ttt C/F or NO HIGH TEMPERATURE #2 ALARM | | Allows you to change the High Temperature #2 Alarm set point, or disable the alarm. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. Note: To disable the feature, press YES / + / i when in the change setting mode to scroll to NO HIGH TEMPERATURE #2 ALARM (displayed when you scroll up to "100 C"). |

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| 235 | LOW TEMPERATURE #1 = ttt C/F or NO LOW TEMPERATURE #1 ALARM | Alarm Adjustment Menu | Allows you to change the Low Temperature #1 Alarm set point, or disable the alarm. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. Note: To disable the feature, press NO / - when in the change setting mode to scroll to NO LOW TEMPERATURE #1 ALARM (displayed when you scroll down to "-50 C"). |
| 236 | LOW TEMPERATURE #2 = ttt C/F or NO LOW TEMPERATURE #2 ALARM | Alarm Adjustment Menu | Allows you to change the Low Temperature #2 Alarm set point, or disable the alarm. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. Note: To disable the feature, press NO / - when in the change setting mode to scroll to NO LOW TEMPERATURE #2 ALARM (displayed when you scroll down to "-50 C"). |
| 237 | GO TO FUNCTION MENU | Alarm Adjustment Menu | Press ENTER to go to this menu. |
| 238 | GO BACK TO MENU TREE BEGINNING | Alarm Adjustment Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 239 | TURN PCUs ON OR OFF or ENERGY MANAGEMENT IS IN CONTROL or PCU SEQUENCER IS IN CONTROL | Function Menu | Press ENTER to go to the Rectifier Module (PCU) Enable Menu. Note: Rectifier Modules cannot be turned on or off when they are being actively managed via the LMS. |

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| <p>251</p> | <p>AUDIBLE SILENT TIME = mm MINUTES or AUDIBLE ALARMS STAY SILENCED</p> | <p>Configure Menu</p> | <p>Allows you to enable the MCA Audible Alarm feature and set the Audible Alarm Cutoff Reset Time Period set point, or disable the feature.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: To disable the feature, press NO / - when in the change setting mode to scroll to AUDIBLE ALARMS STAY SILENCED (displayed when you scroll down to "zero minutes").</p> |
| <p>252</p> | <p>PCU SEQUENCING IS DISABLED or PCU SEQUENCING DELAY = ss SECONDS</p> | <p>Configure Menu</p> | <p>Allows you to enable the Rectifier Module (PCU) Sequencing feature and set the Rectifier Module (PCU) Sequencing Delay set point, or disable the feature.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: To disable the feature, press NO / - when in the change setting mode to scroll to PCU SEQUENCING IS DISABLED (displayed when you scroll down to "zero seconds").</p> |

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| <p>253</p> | <p>TEST EQUALIZE IS DISABLED or MANUAL TEST/EQUALIZE = hh HOURS or TEST/EQUALIZE STOP IS MANUAL or END TEST/EQUALIZE IN hh.hh HOURS or TURN OFF POWER SHARE or TURN OFF ALTERNATE CURRENT LIMIT</p> | <p>Configure Menu</p> | <p>Allows you to enable the Manual Timed Test/Equalize feature and set the Timed Test/Equalize set point, or disable the feature.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: To disable the feature, press NO / - when in the change setting mode to scroll to <i>TEST/EQUALIZE STOP IS MANUAL</i> (displayed when you scroll down to "zero hours"). This indicates the manually initiated timed test/equalize feature is disabled and the system must be manually returned to the float mode if placed in the test/equalize mode.</p> <p>or</p> <p>If manually initiated timed test/equalize feature is enabled and the system is placed in the test/equalize mode (via the MCA interface), remaining test/equalize time is displayed.</p> <p>Note: When <i>TEST/EQUALIZE STOP IS MANUAL</i> or <i>END TEST/EQUALIZE IN hhh.hh HOURS</i> is being displayed, press and release ENTER and ALARM CUTOFF simultaneously to change the <i>MANUAL TEST/EQUALIZE = hh HOURS</i> setting.</p> <p>or</p> <p>When the Power Share or Alternate Current Limit feature is enabled, the system cannot be placed in the Test/Equalize mode.</p> <p>Note: Test/Equalize Mode requires Power Share and Alternate Current Limit to be turned off. A message is displayed if Power Share or Alternate Current Limit is on. Turn Power Share or Alternate Current Limit off first then return to this menu.</p> |
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| 254 | <p>AUTO EQUALIZE IS DISABLED</p> <p>or</p> <p>AUTO EQUALIZE FOR ## x DISCHARGE</p> <p>or</p> <p>END AUTO EQUALIZE IN hhh.hh HOURS</p> <p>or</p> <p>TURN OFF POWER SHARE</p> <p>or</p> <p>TURN OFF ALTERNATE CURRENT LIMIT</p> | Configure Menu | <p>Allows you to enable the Auto Test/Equalize feature and set the Auto Test/Equalize Multiplier set point, or disable the feature.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: To disable the feature, press NO / - when in the change setting mode to scroll to <i>AUTO EQUALIZE IS DISABLED</i> (displayed when you scroll down to "zero x discharge").</p> <p>or</p> <p>Displays remaining auto test/equalize time if an auto test/equalize is in process.</p> <p>or</p> <p>When the Power Share or Alternate Current Limit feature is enabled, the system cannot be placed in the Test/Equalize mode.</p> <p>Note: Test/Equalize Mode requires Power Share and Alternate Current Limit to be turned off. A message is displayed if Power Share or Alternate Current Limit is on. Turn Power Share or Alternate Current Limit off first then return to this menu.</p> |
| 255 | DEFINE RELAY FUNCTIONS | Configure Menu | <p>Allows you to define a Relay Function Channel by assigning alarm conditions to a specific Relay Function Channel. Press ENTER to define relay functions.</p> |
| 256 | DEFINE RELAY FUNCTION A# | Relay Function Menu | <p>Select the Relay Function Channel to be defined.</p> <ol style="list-style-type: none"> 1. Press the UP and DOWN ARROWS to navigate to the desired Relay Function Channel. (A# = Relay Function Channel Number.) 2. Press ENTER to define the selected Relay Function Channel. <p>Note: See the table in Section 6027 (Installation Instructions) for the MCA default configuration</p> |
| 257 | GO TO CONFIGURE MENU | Relay Function Menu | Press ENTER to go to this menu. |
| 258 | GO BACK TO MENU TREE BEGINNING | Relay Function Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |

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| 259 | CHECKED CONDITIONS DE-ENERGIZE or CHECKED CONDITIONS ENERGIZE | Relay Function Definition Menu | Select whether the relay(s) assigned to this Relay Function Channel will energize or deenergize for any condition checked (selected) below. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 260 | ✓EMERGENCY STOP INPUT ACTIVE or EMERGENCY STOP INPUT ACTIVE | Relay Function Definition Menu | This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 261 | ✓HI VOLTAGE SHUTDOWN INPUT ACTIVE or HI VOLTAGE SHUTDOWN INPUT ACTIVE | Relay Function Definition Menu | This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 261A | ✓ALTERNATE CURRENT LIMIT ACTIVE or ALTERNATE CURRENT LIMIT ACTIVE | Relay Function Definition Menu | This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 262 | ✓SYSTEM VOLTAGE IS VERY LOW or SYSTEM VOLTAGE IS VERY LOW | Relay Function Definition Menu | This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 263 | ✓SYSTEM BATTERY ON DISCHARGE or SYSTEM BATTERY ON DISCHARGE | Relay Function Definition Menu | This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |

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| 264 | <p>✓SYSTEM HIGH VOLTAGE #1 ALARM</p> <p>or</p> <p>SYSTEM HIGH VOLTAGE #1 ALARM</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 265 | <p>✓SYSTEM HIGH VOLTAGE #2 ALARM</p> <p>or</p> <p>SYSTEM HIGH VOLTAGE #2 ALARM</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 266 | <p>✓1 SYSTEM BREAKER OR FUSE ALARM</p> <p>or</p> <p>1 SYSTEM BREAKER OR FUSE ALARM</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 267 | <p>✓2+ SYSTEM BREAKER & FUSE ALARMS</p> <p>or</p> <p>2+ SYSTEM BREAKER & FUSE ALARMS</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 268 | <p>✓AC POWER IS OFF TO 1 PCU</p> <p>or</p> <p>AC POWER IS OFF TO 1 PCU</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 269 | <p>✓AC POWER IS OFF TO 2+ PCUs</p> <p>or</p> <p>AC POWER IS OFF TO 2+ PCUs</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |

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| 270 | <p>✓ AC POWER IS OFF TO ALL PCUs</p> <p>or</p> <p>AC POWER IS OFF TO ALL PCUs</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 271 | <p>✓ 1 PCU FAILURE ANY TYPE</p> <p>or</p> <p>1 PCU FAILURE ANY TYPE</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 272 | <p>✓ 2+ PCU FAILURES ANY TYPE</p> <p>or</p> <p>2+ PCU FAILURES ANY TYPE</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 273 | <p>✓ 1 PCU FAILURE 'MAJOR' TYPE</p> <p>or</p> <p>1 PCU FAILURE 'MAJOR' TYPE</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: Thermal Current Limit, 1 Fan Failure, High Ambient Temperature, and Sense Loss are 'Minor' alarm conditions. All other Rectifier Module (PCU) alarms are 'Major' alarm conditions.</p> |
| 274 | <p>✓ 2+ PCU FAILURES 'MAJOR' TYPE</p> <p>or</p> <p>2+ PCU FAILURES 'MAJOR' TYPE</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: Thermal Current Limit, 1 Fan Failure, High Ambient Temperature, and Sense Loss are 'Minor' alarm conditions. All other Rectifier Module (PCU) alarms are 'Major' alarm conditions.</p> |

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| 275 | <p>✓1 PCU FAILURE 'MINOR' TYPE</p> <p>or</p> <p>1 PCU FAILURE 'MINOR' TYPE</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: Thermal Current Limit, 1 Fan Failure, High Ambient Temperature, and Sense Loss are 'Minor' alarm conditions. All other Rectifier Module (PCU) alarms are 'Major' alarm conditions.</p> |
| 276 | <p>✓2+ PCU FAILURES 'MINOR' TYPE</p> <p>or</p> <p>2+ PCU FAILURES 'MINOR' TYPE</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: Thermal Current Limit, 1 Fan Failure, High Ambient Temperature, and Sense Loss are 'Minor' alarm conditions. All other Rectifier Module (PCU) alarms are 'Major' alarm conditions.</p> |
| 277 | <p>✓NO PCUs ARE IN INVENTORY</p> <p>or</p> <p>NO PCUs ARE IN INVENTORY</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 278 | <p>✓1 DIST. PANEL FAILURE</p> <p>or</p> <p>1 DIST. PANEL FAILURE</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 279 | <p>✓2+ DIST. PANEL FAILURES</p> <p>or</p> <p>2+ DIST. PANEL FAILURES</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |

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| 280 | <p>✓NO DIST. PANELS IN INVENTORY or NO DIST. PANELS IN INVENTORY</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 281 | <p>✓1 I/O BOARD FAILURE or 1 I/O BOARD FAILURE</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 282 | <p>✓2+ I/O BOARD FAILURES or 2+ I/O BOARD FAILURES</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 283 | <p>✓NO I/O BOARDS ARE IN INVENTORY or NO I/O BOARDS ARE IN INVENTORY</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 284 | <p>✓1 ROUTER FAILURE or 1 ROUTER FAILURE</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 285 | <p>✓2+ ROUTER FAILURES or 2+ ROUTER FAILURES</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |

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| 286 | <p>✓NO ROUTERS ARE IN INVENTORY</p> <p>NO ROUTERS ARE IN INVENTORY</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 287 | <p>✓1 RELAY BOARD FAILURE</p> <p>or</p> <p>1 RELAY BOARD FAILURE</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 288 | <p>✓2+ RELAY BOARD FAILURES</p> <p>or</p> <p>2+ RELAY BOARD FAILURES</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 289 | <p>✓NO RELAY BOARDS ARE IN INVENTORY</p> <p>or</p> <p>NO RELAY BOARDS ARE IN INVENTORY</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 290 | <p>✓HIGH TEMPERATURE #1 ALARM</p> <p>or</p> <p>HIGH TEMPERATURE #1 ALARM</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 291 | <p>✓HIGH TEMPERATURE #2 ALARM</p> <p>or</p> <p>HIGH TEMPERATURE #2 ALARM</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |

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| 292 | <p>✓LOW TEMPERATURE #1 ALARM</p> <p style="text-align: center;">or</p> <p>LOW TEMPERATURE #1 ALARM</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 293 | <p>✓LOW TEMPERATURE #2 ALARM</p> <p style="text-align: center;">or</p> <p>LOW TEMPERATURE #2 ALARM</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 294 | <p>✓TEMPERATURE SENSOR NO SIGNAL</p> <p style="text-align: center;">or</p> <p>TEMPERATURE SENSOR NO SIGNAL</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 295 | <p>✓MAJOR MONITORING ALARM(S)</p> <p style="text-align: center;">or</p> <p>MAJOR MONITORING ALARM(S)</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: If any of these LMS1000 conditions are selected to contribute to an MCA alarm, the User must ensure that the LMS1000 is programmed so that the MCA does not contribute to the LMS1000 condition.</p> |

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| 296 | ✓MINOR MONITORING ALARM(S) or MINOR MONITORING ALARM(S) | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: If any of these LMS1000 conditions are selected to contribute to an MCA alarm, the User must ensure that the LMS1000 is programmed so that the MCA does not contribute to the LMS1000 condition.</p> |
| 297 | ✓All Monitoring LED Messages or All Monitoring LED Messages | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: If any of these LMS1000 conditions are selected to contribute to an MCA alarm, the User must ensure that the LMS1000 is programmed so that the MCA does not contribute to the LMS1000 condition.</p> |
| 298 | ✓MONITORING DOES NOT RESPOND or MONITORING DOES NOT RESPOND | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 299 | ✓CONTROLLER FAILURE or CONTROLLER FAILURE | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |

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| 300 | <p>✓THE CONTROLLER IS INITIALIZING or THE CONTROLLER IS INITIALIZING</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 301 | <p>✓TOTAL LOAD CURRENT ALARM or TOTAL LOAD CURRENT ALARM</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 302 | <p>✓DIST. GROUP A LOAD ALARM or DIST. GROUP A LOAD ALARM</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 303 | <p>✓DIST. GROUP B LOAD ALARM or DIST. GROUP B LOAD ALARM</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 304 | <p>✓THE DISPLAY DOES NOT RESPOND or THE DISPLAY DOES NOT RESPOND</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 305 | <p>✓TEST/EQUALIZE MODE IS ACTIVE or TEST/EQUALIZE MODE IS ACTIVE</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed. This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |

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| 306 | <p>✓THE AUDIBLE ALARM IS ACTIVE</p> <p>or</p> <p>THE AUDIBLE ALARM IS ACTIVE</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 307 | <p>✓AUDIBLE ALARMS ARE SILENCED</p> <p>or</p> <p>AUDIBLE ALARMS ARE SILENCED</p> | Relay Function Definition Menu | <p>This condition is selected when the ✓ (checkmark) symbol is displayed.</p> <p>This condition is deselected when a space is displayed instead of the ✓ (checkmark) symbol.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 308 | GO TO RELAY FUNCTION MENU | Relay Function Definition Menu | Press ENTER to go to this menu. |
| 309 | GO BACK TO MENU TREE BEGINNING | Relay Function Definition Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |

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| 310 | <p>START RELAY FUNCTION TEST</p> <p>or</p> <p>TIME PER FUNCTION = hh:mm:ss</p> <p>or</p> <p>TIME PER FUNCTION NO TIMEOUT</p> <p>or</p> <p>AUTOMATICALLY TEST ALL FUNCTIONS</p> <p>or</p> <p>TEST RELAY FUNCTION A#</p> <p>or</p> <p>STOP RELAY FUNCTION TEST</p> <p>or</p> <p>TESTING FUNCTION A# = hh:mm:ss</p> <p>or</p> <p>TESTING FUNCTION A# NO TIMEOUT</p> | Configure Menu | <p>Set, activate, monitor, or stop the progress of the MCA Customer Alarm Relay Test Feature.</p> <ol style="list-style-type: none"> 1. With START RELAY FUNCTION TEST being displayed, press ENTER and ALARM CUTOFF (at the same time). 2. Press the UP and DOWN ARROWS to select a time period for each Relay Function Channel test or select NO TIMEOUT. 3. Press ENTER. 4. Press the UP and DOWN ARROWS to select either AUTOMATICALLY TEST ALL FUNCTIONS (to test all relay function channels), or TEST RELAY FUNCTION A# (to test an individual relay function channel). 5. Press ENTER 6. To start the Relay Function Test; press the UP ARROW, to cancel press the DOWN ARROW. 7. The Relay Function being tested and the remaining time are displayed. 8. To terminate the test, press ENTER and ALARM CUTOFF (at the same time) until STOP RELAY FUNCTION TEST is displayed. 9. To stop the test, press UP ARROW. To keep the test running, press DOWN ARROW. 10. At the "ARE YOU SURE?" prompt, press YES / + / i. |
| 311 | ASSIGN RELAYS TO FUNCTIONS | Configure Menu | <p>Allows you to configure a relay by assigning a Relay Function Channel to a specific relay.</p> <p>Press ENTER to assign relays to functions.</p> |

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| 312 | ASSIGN RELAY B#-P#-R# FUNCTION A# | Relay Assignment Menu | <p>Select the MCA Customer Alarm Relay to be configured, and assign a relay function channel to this relay.</p> <ol style="list-style-type: none"> 1. Press the UP and DOWN ARROWS to navigate to the desired relay. (B#-P#-R# = Bay Number-MCA Customer Alarm Relay Circuit Card Position Number-Relay Number). 2. Refer to "Changing a Value or Setting" in the table at the beginning of this document to complete the operation. <p>Note: See the table in Section 6027 (Installation Instructions) for the MCA default configuration.</p> |
| 313 | GO TO CONFIGURE MENU | Relay Assignment Menu | Press ENTER to go to this menu. |
| 314 | GO BACK TO MENU TREE BEGINNING | Relay Assignment Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 315 | NO TEMPERATURE COMPENSATION or TEMPERATURE SLOPE = 0.vvvV/ C/F or TURN OFF POWER SHARE or TURN OFF ALTERNATE CURRENT LIMIT | Configure Menu | <p>Allows you to enable the Battery Charge Temperature Compensation feature and set the Battery Charge Temperature Compensation Slope set point, or disable the feature.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: To disable the feature, press NO / - when in the change setting mode to scroll to <i>NO TEMPERATURE COMPENSATION</i> (displayed when you scroll down to "0V/ C").</p> <p>Note: This is the voltage slope of the entire battery string, not individual cells.</p> <p>Note: The Temperature Compensation feature requires Power Share and Alternate Current Limit to be turned off. A message is displayed if Power Share or Alternate Current Limit is on. Turn Power Share or Alternate Current Limit off first then return to this menu to enable Temperature Compensation.</p> |

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| 316 | MAXIMUM COMPENSATION = vv.vvV | Configure Menu | Allows you to change the Maximum Voltage with Temperature Compensation set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 317 | MINIMUM COMPENSATION = vv.vvV | Configure Menu | Allows you to change the Minimum Voltage with Temperature Compensation set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 318 | NOW DISPLAYING C/F SET TO C/F? | Configure Menu | Allows you to change the temperature unit (degrees F or degrees C). 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 319 | IT IS NOW hh:mm:ss dd mon yy | Configure Menu | Allows you to change the time and date. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 320 | ERASE THE ALARM LOG | Configure Menu | Deletes all MCA Alarm Log entries. 1. Refer to "Changing a Control Function" in the table at the beginning of this section. |
| 320A | CHANGE NETWORK ADDRESSES | Configure Menu | Allows you to view and change the network IP, gateway, and netmask addresses used by the LMS1000 when connecting to the network. |
| 320B | ###.###.###.###.### MAC ADDRESS | Network Address Menu | Displays the Ethernet (MAC) address used by the LMS1000 when connecting to the network. Note: This address cannot be changed, only viewed. |
| 320C | ###.###.###.### IP ADDRESS | Network Address Menu | Allows you to change the IP address used by the LMS1000 when connecting to the network. |
| 320D | ###.###.###.### NET MASK ADDRESS | Network Address Menu | Allows you to change the netmask address used by the LMS1000 when connecting to the network. |
| 320E | ###.###.###.### GATEWAY ADDRESS | Network Address Menu | Allows you to change the gateway address used by the LMS1000 when connecting to the network. |

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| 320F | <p>VALIDATE THE ADDRESS CHANGES? or UPDATE/RESTART LMS WITH CHANGES? or THE CHANGES WERE REJECTED</p> | Network Address Menu | <p>This allows you to save the address changes that were made. The system must first verify that the new IP, netmask, and gateway addresses are compatible with each other.</p> <p>or</p> <p>This allows you to pass the saved addresses to the LMS1000. Note: The LMS1000 will need to be restarted for the address changes to take effect.</p> <p>or</p> <p>The new IP, netmask, and gateway addresses are not compatible with each other. The changes are not accepted.</p> |
| 320G | GO TO CONFIGURE MENU | Network Address Menu | Press ENTER to go to this menu. |
| 320H | GO BACK TO MENU TREE BEGINNING | Network Address Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 321 | ARRANGE PCU ORDER | Configure Menu | Allows you to change the order in which PCUs are identified in a system. Press ENTER to map PCUs to specific positions in each bay in the system. |
| 321A | BAY ## | PCU Mapping Menu | Allows you to select the bay in which each PCU will be assigned a position number. Press the FUNCTION SELECT UP or DOWN arrow keys to select the bay you wish to map, then press ENTER. |
| 321B | GO TO CONFIGURE MENU | PCU Mapping Menu | Press ENTER to go to this menu. |
| 321C | GO BACK TO MENU TREE BEGINNING | PCU Mapping Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 321D | SN# IN SLOT POSITION ## | PCU Mapping Menu | Allows you to assign a position number to a PCU. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| 321E | <p>SAVE PCU MAPPING or DUPLICATE MAPPING DETECTED</p> | PCU Mapping Menu | <p>Allows you to save the new PCU mapping in the selected bay.</p> <p>1. Refer to "Changing a Value or Setting" in the table at the beginning of this section.</p> <p>or</p> <p>More than one PCU was assigned to a position. The changes cannot be saved.</p> |
| 321F | GO TO PCU MAPPING MENU | PCU Mapping Menu | Press ENTER to go to this menu. |

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| 328A | ALTERNATE CURRENT LIMIT ACTIVE | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 329 | SYSTEM VOLTAGE IS VERY LOW | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 330 | SYSTEM BATTERY IS ON DISCHARGE | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 331 | SYSTEM HIGH VOLTAGE #1 ALARM | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 332 | SYSTEM HIGH VOLTAGE #2 ALARM | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 333 | NO PCUs ARE IN INVENTORY | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 334 | NO DIST. PANELS ARE IN INVENTORY | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 335 | NO ROUTERS ARE IN INVENTORY | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 336 | NO RELAY BOARDS ARE IN INVENTORY | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 337 | HIGH TEMPERATURE #1 ALARM | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 338 | HIGH TEMPERATURE #2 ALARM | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 339 | LOW TEMPERATURE #1 ALARM | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 340 | LOW TEMPERATURE #2 ALARM | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 341 | TEMPERATURE SENSOR NO SIGNAL | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 342 | MAJOR MONITORING ALARM(S) | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 343 | MINOR MONITORING ALARM(S) | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |

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| 344 | <i>Monitoring LED Messages</i> | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 345 | MONITORING DOES NOT RESPOND | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 346 | CONTROLLER FAILURE ##### | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 347 | THE CONTROLLER IS INITIALIZING | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 348 | TOTAL LOAD CURRENT ALARM | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 349 | GROUP A LOAD CURRENT ALARM | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 350 | GROUP B LOAD CURRENT ALARMALARM | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 351 | THE DISPLAY DOES NOT RESPOND | MCA Alarm Log Detail Menu | Recordable MCA (Controller) event. |
| 352 | SYSTEM OUTPUT SENSE vv.vvV | MCA Alarm Log Detail Menu | Recordable System Data. |
| 353 | TOTAL LOAD CURRENT aaaaaA | MCA Alarm Log Detail Menu | Recordable System Data. |
| 354 | GO TO ALARM LOG MENU | MCA Alarm Log Detail Menu | Press ENTER to go to this menu. |
| 355 | GO BACK TO MENU TREE BEGINNING | MCA Alarm Log Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 356 | dd-mon-yy hh:mm:ss♪ B#-SN# or dd-mon-yy hh:mm:ss✓ B#-SN# | Alarm Log Menu | Displays the alarms (with date and time stamp) recorded for the Rectifier Module (PCU) element of the system. Press UP and DOWN ARROWS to scroll if multiple alarms are recorded. A 'music note' (♪) after the date/time stamp indicates the alarm went active. A 'checkmark' (✓) indicates the alarm retired. |
| 357 | PCU B#-SN# NO ALARMS | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |

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| 358 | PCU B#-SN# EMERG. STOP | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 359 | PCU B#-SN# H.V. SHUTDOWN | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 360 | PCU B#-SN# AC LINE OFF | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 361 | PCU B#-SN# AC LINE LOW | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 362 | PCU B#-SN# AC LINE HIGH | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 363 | PCU B#-SN# AC PHASE LOST | PCU Alarm Log Detail Menu | NO FUNCTION IN THIS SYSTEM |
| 364 | PCU B#-SN# POWER FACTOR | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 365 | PCU B#-SN# DC/DC CONV. | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 366 | PCU B#-SN# FUSE/BREAKER | PCU Alarm Log Detail Menu | NO FUNCTION IN THIS SYSTEM |
| 367 | PCU B#-SN# INHIBITED | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 368 | PCU B#-SN# ON STANDBY | PCU Alarm Log Detail Menu | NO FUNCTION IN THIS SYSTEM |
| 369 | PCU B#-SN# THERMAL LIMIT | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 370 | PCU B#-SN# THERMAL STOP | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 371 | PCU B#-SN# HIGH AMBIENT | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 372 | PCU B#-SN# LOAD SHARE | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 373 | PCU B#-SN# 1 FAN SPEED | PCU Alarm Log Detail Menu | NO FUNCTION IN THIS SYSTEM |

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| 374 | PCU B#-SN# 2+ FANS SPEED | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 375 | PCU B#-SN# NO VOLT SENSE | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 376 | PCU B#-SN# DUPLICATED | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 377 | PCU B#-SN# NO RESPONSE | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 378 | PCU B#-SN# TURNED ON or PCU B#-SN# TURNED OFF | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 379 | PCU B#-SN# aaaaA | PCU Alarm Log Detail Menu | Recordable Rectifier Module (PCU) event. |
| 380 | SYSTEM OUTPUT SENSE vv.vvV | PCU Alarm Log Detail Menu | Recordable System Data. |
| 381 | TOTAL LOAD CURRENT aaaaA | PCU Alarm Log Detail Menu | Recordable System Data. |
| 382 | GO TO ALARM LOG MENU | PCU Alarm Log Detail Menu | Press ENTER to go to this menu. |
| 383 | GO BACK TO MENU TREE BEGINNING | PCU Alarm Log Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 384 | dd-mon-yy hh:mm:ss♪ PANEL B#-P#A/B or dd-mon-yy hh:mm:ss✓ PANEL B#-P#A/B | Alarm Log Menu | Displays the alarms (with date and time stamp) recorded for the Distribution Panel element of the system. Press UP and DOWN ARROWS to scroll if multiple alarms are recorded. A 'music note' (♪) after the date/time stamp indicates the alarm went active. A 'checkmark' (✓) indicates the alarm retired. |
| 385 | DIST. PANEL B#-P#A/B NO ALARMS | Distribution Alarm Log Detail Menu | Recordable Distribution Panel event. |
| 386 | DIST. PANEL B#-P#A/B DISCONNECTED | Distribution Alarm Log Detail Menu | Recordable Distribution Panel event. |

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| 387 | POSITION B#-P#A/B IS OPEN | Distribution Alarm Log Detail Menu | Recordable Distribution Panel event. |
| 388 | POSITION B#-P#A/B NOT FOUND or POSITION NOT FOUND PANEL B#-P#A/B | Distribution Alarm Log Detail Menu | Recordable Distribution Panel event. |
| 389 | POSITION B#-P#A/B TYPE UNKNOWN | Distribution Alarm Log Detail Menu | Recordable Distribution Panel event. |
| 390 | POSITION B#-P#A/B OVER CURRENT | Distribution Alarm Log Detail Menu | Recordable Distribution Panel event. |
| 391 | DIST. PANEL B#-P#A/B LVD FAILURE | Distribution Alarm Log Detail Menu | Recordable Distribution Panel event. |
| 392 | DIST. PANEL B#-P#A/B A/B CHANGED | Distribution Alarm Log Detail Menu | Recordable Distribution Panel event. |
| 393 | DIST. PANEL B#-P#A/B PROCESSOR | Distribution Alarm Log Detail Menu | Recordable Distribution Panel event. |
| 394 | DIST. PANEL B#-P#A/B IS DUPLICATED | Distribution Alarm Log Detail Menu | Recordable Distribution Panel event. |
| 395 | DIST. PANEL B#-P#A/B NO RESPONSE | Distribution Alarm Log Detail Menu | Recordable Distribution Panel event. |
| 396 | SYSTEM OUTPUT SENSE vv.vvV | Distribution Alarm Log Detail Menu | Recordable System Data. |
| 397 | TOTAL LOAD CURRENT aaaaaA | Distribution Alarm Log Detail Menu | Recordable System Data. |
| 398 | GO TO ALARM LOG MENU | Distribution Alarm Log Detail Menu | Press ENTER to go to this menu. |
| 399 | GO BACK TO MENU TREE BEGINNING | Distribution Alarm Log Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |

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| 400 | dd-mon-yy hh:mm:ss🎵 I/O B#-P# or dd-mon-yy hh:mm:ss✓ I/O B#-P# | Alarm Log Menu | Displays the alarms (with date and time stamp) recorded for the MCA I/O element of the system. Press UP and DOWN ARROWS to scroll if multiple alarms are recorded. A 'music note' (🎵) after the date/time stamp indicates the alarm went active. A 'checkmark' (✓) indicates the alarm retired. |
| 401 | I/O BOARD B#-P# NO ALARMS | I/O Board Alarm Log Detail Menu | Recordable Relay event. |
| 402 | I/O BOARD B#-P# BINARY I# | I/O Board Alarm Log Detail Menu | Recordable Relay event. |
| 403 | I/O BOARD B#-P# OVER CURRENT | I/O Board Alarm Log Detail Menu | Recordable Relay event. |
| 404 | I/O BOARD B#-P# PROCESSOR | I/O Board Alarm Log Detail Menu | Recordable Relay event. |
| 405 | I/O BOARD B#-P# IS DUPLICATED | I/O Board Alarm Log Detail Menu | Recordable Relay event. |
| 406 | I/O BOARD B#-P# NO RESPONSE | I/O Board Alarm Log Detail Menu | Recordable Relay event. |
| 407 | SYSTEM OUTPUT SENSE vv.vvV | I/O Board Alarm Log Detail Menu | Recordable Relay event. |
| 408 | TOTAL LOAD CURRENT aaaaaA | I/O Board Alarm Log Detail Menu | Recordable Relay event. |
| 409 | GO TO ALARM LOG MENU | I/O Board Alarm Log Detail Menu | Press ENTER to go to this menu. |
| 410 | GO BACK TO MENU TREE BEGINNING | I/O Board Alarm Log Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 411 | dd-mon-yy hh:mm:ss🎵 ROUTER B# or dd-mon-yy hh:mm:ss ROUTER B# | Alarm Log Menu | Displays the alarms (with date and time stamp) recorded for the Router element of the system. Press UP and DOWN ARROWS to scroll if multiple alarms are recorded. A 'music note' (🎵) after the date/time stamp indicates the alarm went active. A 'checkmark' (✓) indicates the alarm retired. |

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| 412 | ROUTER B# NO ALARMS | Router Alarm Log Detail Menu | Recordable Router event. |
| 413 | ROUTER B# REMOTE SENSE OPEN | Router Alarm Log Detail Menu | Recordable Router event. |
| 414 | ROUTER B# INTERNAL SENSE OPEN | Router Alarm Log Detail Menu | Recordable Router event. |
| 415 | ROUTER B# PROCESSOR FAILURE | Router Alarm Log Detail Menu | Recordable Router event. |
| 416 | ROUTER B# REPORTS AN ILLEGAL NODE | Router Alarm Log Detail Menu | Recordable Router event. |
| 417 | ROUTER B# IS DUPLICATED | Router Alarm Log Detail Menu | Recordable Router event. |
| 418 | ROUTER B# DOES NOT RESPOND | Router Alarm Log Detail Menu | Recordable Router event. |
| 419 | ROUTER B# REMOTE SENSE vv.vvV | Router Alarm Log Detail Menu | Recordable Router Data. |
| 420 | ROUTER B# INTERNAL SENSE vv.vvV | Router Alarm Log Detail Menu | Recordable Router Data. |
| 421 | SYSTEM OUTPUT SENSE vv.vvV | Router Alarm Log Detail Menu | Recordable Router Data. |
| 422 | TOTAL LOAD CURRENT aaaaaA | Router Alarm Log Detail Menu | Recordable Router Data. |
| 423 | GO TO ALARM LOG MENU | Router Alarm Log Detail Menu | Press ENTER to go to this menu. |
| 424 | GO BACK TO MENU TREE BEGINNING | Router Alarm Log Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 425 | dd-mon-yy hh:mm:ss♪ RELAY B#-P# or dd-mon-yy hh:mm:ss RELAY B#-P# | Alarm Log Menu | Displays the alarms (with date and time stamp) recorded for the Relay element of the system. Press UP and DOWN ARROWS to scroll if multiple alarms are recorded. A 'music note' (♪) after the date/time stamp indicates the alarm went active. A 'checkmark' (✓) indicates the alarm retired. |

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| 426 | RELAY BOARD B#-P# NO ALARMS | Relay Alarm Log Detail Menu | Recordable Relay event. |
| 427 | RELAY B#-P#-R# IS STUCK | Relay Alarm Log Detail Menu | Recordable Relay event. |
| 428 | RELAY BOARD B#-P# PROCESSOR | Relay Alarm Log Detail Menu | Recordable Relay event. |
| 429 | RELAY BOARD B#-P# IS DUPLICATED | Relay Alarm Log Detail Menu | Recordable Relay event. |
| 430 | RELAY BOARD B#-P# NO RESPONSE | Relay Alarm Log Detail Menu | Recordable Relay event. |
| 431 | SYSTEM OUTPUT SENSE vv.vvV | Relay Alarm Log Detail Menu | Recordable System Data. |
| 432 | TOTAL LOAD CURRENT aaaaA | Relay Alarm Log Detail Menu | Recordable System Data. |
| 433 | GO TO ALARM LOG MENU | Relay Alarm Log Detail Menu | Press ENTER to go to this menu. |
| 434 | GO BACK TO MENU TREE BEGINNING | Relay Alarm Log Detail Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 435 | GO TO FUNCTION MENU | Alarm Log Menu | Press ENTER to go to this menu. |
| 436 | GO BACK TO MENU TREE BEGINNING | Alarm Log Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |
| 437 | PCU B#-ID#/N# RECOGNIZED or DSM B#-P#A/B RECOGNIZED or I/O B#-P# RECOGNIZED or CRM B# RECOGNIZED or RCB B#-P# RECOGNIZED | Function Menu | Lists the last item in the system that was recognized by the MCA. |
| 438 | GO BACK TO MENU TREE BEGINNING | Function Menu | Press ENTER to go to the beginning of the MCA Menu Tree. |

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| 439 | REPLACE ### PCUs? AUTO IN ### | PCU Replacement Menu | <p>This prompt is displayed automatically when a new PCU is installed.</p> <p>In a system in which a PCU was removed and the inventory was NOT updated, this feature automatically replaces the old PCU with the new in the inventory. If system was mapped, feature automatically assigns the mapped position (slot) number to the newly installed PCU.</p> <ol style="list-style-type: none"> 1. Press YES/+/i to replace PCUs that were removed, or NO/- if additional new PCUs were installed (not replaced). <p>Note: If a key is not pressed, the update will start automatically when timer expires.</p> <p>Note: Pressing the NO (-) pushbutton aborts the process and enters the manual replacement mode.</p> <p>Note: When repopulating multiple slots at one time, PCUs should be inserted in order from lowest position number to highest position number.</p> <p>Note: When empty slots exist between mapped PCUs, newly inserted PCUs must be mapped manually. Not manually mapping PCUs may cause a PCU to be assigned an invalid slot number (displayed as "--").</p> |
| 440 | REPLACE ### PCUs MANUALLY? | PCU Replacement Menu | <p>Allows you to manually map position numbers when PCUs are installed.</p> <ol style="list-style-type: none"> 1. Press YES/+/i to manually map PCU position numbers. <p>Note: Pressing the NO (-) pushbutton aborts the PCU manual replacement function.</p> |
| 441 | BAY ### | PCU Replacement Menu | <p>Allows you to select the bay in which a PCU is being replaced.</p> <p>Press the FUNCTION SELECT UP or DOWN arrow keys to select the bay, then press ENTER.</p> |
| 442 | REPLACE PCU B#-P# | PCU Replacement Menu | <p>Allows you to select the slot (position) in the selected bay in which a PCU is being replaced. (B#-P# = Bay Number-Position Number.)</p> <p>Press the FUNCTION SELECT UP or DOWN arrow keys to select the slot, then press ENTER.</p> |

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| 443 | REPLACE PCU B#-P# W/ SN# | PCU Replacement Menu | <p>Selects the PCU (by serial number) to be assigned to the indicated slot.</p> <ol style="list-style-type: none"> 1. Press the UP and DOWN ARROWS to navigate to the desired PCU. 2. Refer to "Changing a Value or Setting" in the table at the beginning of this document to complete the operation. |
| 444 | REPOPULATE ### SLOTS? AUTO IN ###? | -- | <p>In a mapped system in which a PCU was removed and the inventory updated, this feature automatically assigns the mapped position number to a new PCU that is installed in that position.</p> <p>The prompt is displayed automatically when PCU is installed.</p> <ol style="list-style-type: none"> 1. Press YES/+/i to assign the slot number(s). <p>Note: If a key is not pressed, the update will start automatically when timer expires.</p> <p>Note: Pressing the NO () pushbutton aborts the process, and newly inserted PCUs will be assigned the next highest position number.</p> <p>Note: When repopulating multiple slots at one time, PCUs should be inserted starting from lowest position number to highest position number.</p> |
| A | ##### WAIT ## V##### | Initialization Menu | <p>When the system is initially started, an initialization time and MCA software version number are displayed.</p> |
| B | CHECK VALUES BEFORE STARTING | Initialization Menu | <p>Allows you to view (and change) the MCA settings stored in memory before starting the system.</p> <ol style="list-style-type: none"> 1. Press the UP and DOWN ARROWS to view (change) the following MCA settings. |
| C | FLOAT SETPOINT = vv.vvV | Initialization Menu | <p>Allows you to change the Float Output Voltage set point.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| D | TEST/EQUALIZE = vv.vvV | Initialization Menu | <p>Allows you to change the Test/Equalize Output Voltage set point.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |

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| E | HI VOLTAGE SHUTDOWN = vv.vvV | Initialization Menu | Allows you to change the High Voltage Shutdown set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| F | PCU CURRENT LIMIT = aaaaaA or PCU CURRENT LIMIT = aaaaaMAX or PCU CURRENT LIMIT POWER SHARE or PCU CURRENT LIMIT ALT. LIMIT | Initialization Menu | Allows you to change the Current Limit set point. aaaaaA = System current limit setting, current limit circuit on all Rectifiers are automatically adjusted to ensure system current does not exceed this value. aaaaaMAX = System current limit setting is set to the sum of the maximum current capacities of all Rectifier Modules installed in the system. Note: When Power Share is enabled, current limit is controlled by the Power Share feature. Note: When Alternate Current Limit is enabled and active, current limit is controlled by the Alternate Current Limit feature. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| G | SYSTEM HI VOLTAGE #1 = vv.vvV | Initialization Menu | Allows you to change the System High Voltage #1 Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| H | SYSTEM HI VOLTAGE #2 = vv.vvV | Initialization Menu | Allows you to change the System High Voltage #2 Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| I | BATTERY ON DISCHARGE = vv.vvV | Initialization Menu | Allows you to change the Battery on Discharge Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| J | VERY LOW VOLTAGE = vv.vvV | Initialization Menu | Allows you to change the Very Low Voltage Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| K | TOTAL LOAD CURRENT = aaaaaA | Initialization Menu | Allows you to change the Total Distribution Load Current Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |

| | | | |
|---|---|------------------------|--|
| L | DISTRIBUTION GROUP A = aaaaaA | Initialization Menu | Allows you to change the Distribution Group A Load Current Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| M | DISTRIBUTION GROUP B = aaaaaA | Initialization Menu | Allows you to change the Distribution Group B Load Current Alarm set point. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| N | HIGH TEMPERATURE #1 = ttt C/F or NO HIGH TEMPERATURE #1 ALARM | Initialization Menu | Allows you to change the High Temperature #1 Alarm set point, or disable the alarm. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. Note: To disable the feature, press YES / + / i when in the change setting mode to scroll to NO HIGH TEMPERATURE #1 ALARM (displayed when you scroll up to "100 C"). |
| O | HIGH TEMPERATURE #2 = ttt C/F or NO HIGH TEMPERATURE #2 ALARM | Initialization Menu | Allows you to change the High Temperature #2 Alarm set point, or disable the alarm. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. Note: To disable the feature, press YES / + / i when in the change setting mode to scroll to NO HIGH TEMPERATURE #2 ALARM (displayed when you scroll up to "100 C"). |
| P | LOW TEMPERATURE #1 = ttt C/F or NO LOW TEMPERATURE #1 ALARM | Initialization Menu | Allows you to change the Low Temperature #1 Alarm set point, or disable the alarm. 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. Note: To disable the feature, press NO / - when in the change setting mode to scroll to NO LOW TEMPERATURE #1 ALARM (displayed when you scroll down to "50 C"). |

| | | | |
|----------|---|--------------------------------|--|
| <p>Q</p> | <p>LOW TEMPERATURE #2 = ttt C/F or NO LOW TEMPERATURE #2 ALARM</p> | <p>Initialization Menu</p> | <p>Allows you to change the Low Temperature #2 Alarm set point, or disable the alarm.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: To disable the feature, press NO / - when in the change setting mode to scroll to NO LOW TEMPERATURE #1 ALARM (displayed when you scroll down to "50 C").</p> |
| <p>R</p> | <p>AUDIBLE SILENT TIME = mm MINUTES or AUDIBLE ALARMS STAY SILENCED</p> | <p>Initialization Menu</p> | <p>Allows you to enable the MCA Audible Alarm feature and set the Audible Alarm Cutoff Reset Time Period set point, or disable the feature.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: To disable the feature, press NO / - when in the change setting mode to scroll to AUDIBLE ALARMS STAY SILENCED (displayed when you scroll down to "zero minutes").</p> |
| <p>S</p> | <p>PCU SEQUENCING IS DISABLED or PCU SEQUENCING DELAY = ss SECONDS</p> | <p>Initialization Menu</p> | <p>Allows you to enable the Rectifier Module (PCU) Sequencing feature and set the Rectifier Module (PCU) Sequencing Delay set point, or disable the feature.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: To disable the feature, press NO / - when in the change setting mode to scroll to PCU SEQUENCING IS DISABLED (displayed when you scroll down to "zero seconds").</p> |

| | | | |
|----------|--|--------------------------------|--|
| <p>T</p> | <p>TEST EQUALIZE IS DISABLED TURN OFF POWER SHARE or MANUAL TEST/EQUALIZE = hh HOURS or TEST/EQUALIZE STOP IS MANUAL</p> | <p>Initialization Menu</p> | <p>Allows you to enable the Manual Timed Test/Equalize feature and set the Timed Test/Equalize set point, or disable the feature.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: To disable the feature, press NO / - when in the change setting mode to scroll to TEST/EQUALIZE STOP IS MANUAL (displayed when you scroll down to "zero hours"). This indicates the manually initiated timed test/equalize feature is disabled and the system must be manually returned to the float mode if placed in the test/equalize mode.</p> <p>or</p> <p>When the Power Share feature is enabled, the system cannot be placed in the Test/Equalize mode.</p> <p>Note: Test/Equalize Mode requires Power Share to be turned off. A message is displayed if Power Share is on. Turn Power Share off first then return to this menu.</p> |
| <p>U</p> | <p>AUTO EQUALIZE IS DISABLED or TURN OFF POWER SHARE or AUTO EQUALIZE FOR ## x DISCHARGE</p> | <p>Initialization Menu</p> | <p>Allows you to enable the Auto Test/Equalize feature and set the Auto Test/Equalize Multiplier set point, or disable the feature.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: To disable the feature, press NO / - when in the change setting mode to scroll to AUTO EQUALIZE IS DISABLED (displayed when you scroll down to "zero x discharge").</p> <p>Note: Test/Equalize Mode requires Power Share to be turned off. A message is displayed if Power Share is on. Turn Power Share off first then return to this menu.</p> |

| | | | |
|---|---|---------------------|--|
| V | NO TEMPERATURE COMPENSATION or TURN OFF POWER SHARE or TEMPERATURE SLOPE = 0.vvvV/ C/F | Initialization Menu | <p>Allows you to enable the Battery Charge Temperature Compensation feature and set the Battery Charge Temperature Compensation Slope set point, or disable the feature.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. <p>Note: To disable the feature, press NO / - when in the change setting mode to scroll to NO TEMPERATURE COMPENSATION (displayed when you scroll down to "OV / ~").</p> <p>Note: The Temperature Compensation feature requires Power Share to be turned off. A message is displayed if Power Share is on. Turn Power Share off first then return to this menu to enable Temperature Compensation.</p> |
| W | MAXIMUM COMPENSATION = vv.vvV | Initialization Menu | <p>Allows you to change the Maximum Voltage with Temperature Compensation set point.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| X | MINIMUM COMPENSATION = vv.vvV | Initialization Menu | <p>Allows you to change the Minimum Voltage with Temperature Compensation set point.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| Y | IT IS NOW hh:mm:ss dd mon yy | Initialization Menu | <p>Allows you to change the time and date.</p> <ol style="list-style-type: none"> 1. Refer to "Changing a Value or Setting" in the table at the beginning of this section. |
| Z | READY TO START THE SYSTEM NOW? | Initialization Menu | <p>Allows you to start the system with the selected settings.</p> <ol style="list-style-type: none"> 1. Press ENTER and ALARM CUTOFF (at the same time). Press ENTER and ALARM CUTOFF (at the same time). 2. At the "ARE YOU SURE?" prompt, press YES / + / i. |

OPERATING PROCEDURES

LMS Operating Procedures

Refer to the LMS User Instructions (Section 5847) for LMS operating procedures. Section 5847 can be accessed via the CD (Electronic Documentation Package) furnished with your system.

Refer also to the “LMS Dual Controller Option” in the LMS User Instructions for additional information if this power system is connected to a Vortex Power System or to a legacy power system.

Rectifier Operating Procedures

Refer to the Rectifier User Instructions (UM1R483500E) for rectifier operating procedures.

Local Controls and Indicators

Location and Identification

Refer to the illustrations in the System Overview section.

Rectifier Modules

Refer to the Rectifier User Instructions (UM1R483500E) for the indicators located on each Rectifier Module.

LMS Main/Expansion CPU Circuit Card Controls and Indicators

Refer to the LMS User Instructions (Section 5847). Section 5847 can be accessed via the CD (Electronic Documentation Package) furnished with your system.

MCA Component LED Indicator

Each MCA component (i.e. Bay MCA/Router Circuit Card, MCA Relay Circuit Card, MCA I/O Circuit Card) contains an LED Indicator.

| | |
|-------------------|--|
| Green (steady) | Component is 'OK' |
| Red (steady) | 'Component Failure' |
| Yellow (flashing) | Component is being 'Identified' by MCA |

Bay Monitoring and Control Section Indicators

Located in each Bay's Monitoring and Control Section (see illustrations in the System Overview section).

| | |
|-----------------|--|
| Power Indicator | Illuminates Green when DC input power is being supplied to the Bay's 'Monitor and Control Section'. |
| FA Indicator | Illuminates Red when any fuse on the Bay's 'Monitor and Control Section' opens (i.e. input fuse to Bay's MCA/Router circuit card or Bay's LMS Main/Expansion CPU circuit card). |

MCA Display

Refer to the “Navigating the MCA” section for MCA Display descriptions.

MCA Controls and Indicators

Refer to **Table 1**.

Table 1: MCA Controls and Indicators (cont'd on next page)

| Control / Indicator | Description |
|---|---|
| FUNCTION SELECT UP FUNCTION SELECT DOWN (Arrow Pushbuttons) | Moves up and down, respectively, through the list of available entries in the currently displayed menu. |
| FUNCTION SET ENTER (Pushbutton) | Used to move to another menu, as determined by the currently displayed entry. Also used to lock the displayed setting or value of the currently selected menu entry, when in the adjustment or change setting mode.  NOTE! Pressing the ALARM CUTOFF pushbutton and the FUNCTION SET ENTER pushbutton simultaneously, allows the User to enter the adjustment or change setting mode, to change the value or setting of the currently selected menu entry, if available. |
| FUNCTION SET YES (+) (i) FUNCTION SET NO (-) (Pushbuttons) | Used to increase or decrease the value of the currently selected menu entry when in the adjustment or change setting mode.  NOTE! Pressing the FUNCTION SET YES (+) and NO (-) pushbuttons simultaneously moves the user to the "Initial Message" display (beginning).  NOTE! When in the adjustment or change setting mode, depressing the FUNCTION SET YES (+) pushbutton after the "ARE YOU SURE?" prompt accepts the new value or setting, depressing the FUNCTION SET NO (-) pushbutton after the "ARE YOU SURE?" prompt cancels the adjustment or change setting mode without making any changes.  NOTE! You can view additional information when the MCA displays the "i" symbol by pressing this key. |
| ALARM CUTOFF (Pushbutton) | Silences the audible alarm. Any new alarms will reactivate the audible alarm.  NOTE! Pressing the ALARM CUTOFF pushbutton and the FUNCTION SET ENTER pushbutton simultaneously, allows the user to enter the adjustment or change setting mode, to change the value or setting of the currently selected menu entry, if available. |
| ALARM CUTOFF (Indicator) | Illuminates yellow when the MCA audible alarm has been silenced using the ALARM CUTOFF Pushbutton. |

Table 1: MCA Controls and Indicators (cont'd from previous page)

| | |
|---------------------------------------|--|
| <p>MAJOR (Indicator)</p> | <p>Flashes red if any condition listed below occurs.</p> <ul style="list-style-type: none"> • Rectifier Module fail alarm activates on two or more Rectifier Modules. • Battery On Discharge alarm activates. • Very Low Voltage alarm activates. • High Voltage Alarm 1 activates. • High Voltage Alarm 2 activates. • Emergency Stop or Remote HVS activated. • If any system distribution fuse or circuit breaker opens. • Any High or Low Temperature Alarm activates. • Any Router, Distribution, MCA Relay, or MCA I/O circuit card alarm activates. • Duplicate Rectifier Module, Router, Distribution, MCA Relay, or MCA I/O circuit card reference designation. • System component cannot be identified. • MCA Hardware/Software failure. • MCA Initializing. • Loss of communications with temperature probe. • No PCUs in inventory. • No routers in inventory. • Major alarm reported by LMS. |
| <p>MINOR (Indicator)</p> | <p>Illuminates red if any condition listed below occurs.</p> <ul style="list-style-type: none"> • Rectifier Module fail alarm activates on any single Rectifier Module. • If the over-current alarm activates. • Loss of communication to the display or LMS. • Minor alarm reported by LMS. |
| <p>AC (Indicator)</p> | <p>Illuminates green if AC input voltage to all Rectifier Modules is greater than the preset non-adjustable low AC input voltage inhibit and less than the preset non-adjustable high AC input voltage inhibit. Illuminates red if AC input voltage to any Rectifier Module decreases below or increases above the respective inhibit value.</p> |
| <p>TEST/EQ (Indicator)</p> | <p>Illuminates yellow when the system is placed in the test/equalize mode, locally or remotely.</p> |

External Alarms

MCA Customer Alarm Relay circuit cards may be installed. These alarm relays are mapped to the MCA alarms per the MCA configuration. See the table in Section 6027 (Installation Instructions) for the MCA default configuration. Another table is provided in Section 6027 (Installation Instructions) to document a custom configuration.

Starting and Stopping System Operation

Rectifier Module Normal Starting Procedure

Procedure

1. Apply input power to the Rectifier Module or insert the Rectifier Module into the shelf.

Rectifier Module Stopping Procedure (MCA Control Panel)

Complete Shutdown

1. Remove input power from the Rectifier Module or remove the Rectifier Module from the shelf.

Local TR Shutdown



NOTE! When a Rectifier Module is shut down via the Local TR Shutdown feature, it must be manually restarted. The Local TR Shutdown feature DOES NOT automatically restart Rectifier Modules to deliver current in any operational or alarm state of the DC plant. The Rectifier Module must be manually restarted by navigating the MCA and selecting to turn the Rectifier Module back ON as detailed in the following procedure.

1. With SYSTEM OK being displayed on the MCA Control Panel, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
2. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "TURN PCUs ON OR OFF" is displayed. Press and release the FUNCTION SET ENTER key.
3. Repeatedly press and release the FUNCTION SELECT UP or DOWN arrow key until the Rectifier Module to be stopped using the local TR feature is displayed.
4. With this Rectifier Module being displayed, press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
5. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.
6. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.
7. Repeat this procedure to restart the Rectifier Module.

Rectifier Module Stopping Procedure (via LMS)

Refer to the LMS User Instructions (Section 5847). Section 5847 can be accessed via the CD (Electronic Documentation Package) furnished with your system.

Restarting Procedures when Rectifier Module is Automatically or Manually Inhibited, Shut Down, or Locked Out

Rectifier Module High Voltage Shutdown Lockout

Turn AC power to the Rectifier Module off or remove the Rectifier Module, wait 5 seconds or more, then turn AC power to the Rectifier Module on or re-insert the Rectifier Module. Refer to the "Troubleshooting" section for a Rectifier Module removal procedure.

Rectifier Module Emergency Shutdown and Fire Alarm Disconnect

Remove the emergency shutdown and fire alarm disconnect signal. Turn AC power to the Rectifier Modules off then on, or remove and re-insert the Rectifier Modules. Refer to the "Troubleshooting" section for a Rectifier Module removal procedure.

Remote On/Off (TR)

Remove the remote on/off (TR) signal from the respective Rectifier Module. The signal can originate from the LMS or via the MCA Control Panel.

Output Voltage Mode of Operation Selection

Placing the System into the Float Mode of Operation

Manually place the system into float mode by navigating to and activating the "TEST/EQ MODE ACTIVE. SET FLOAT?" menu item in the MCA function menu. A step-by-step procedure is provided next.

Procedure

1. With SYSTEM OK being displayed on the MCA Control Panel, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.

 **NOTE!** In the following step, if "FLOAT MODE IS ACTIVE. SET TEST/EQ?" is displayed, the system is already operating in the float mode. In this case, DO NOT perform steps 2) through 4), proceed with step 5).

2. Press and release the FUNCTION SELECT DOWN arrow key to display "TEST/EQ MODE ACTIVE. SET FLOAT?".
3. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
4. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.
5. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Placing the System into the Test/Equalize Mode of Operation

 **ALERT!** Do **not** supply equalize output voltage for a longer period than necessary. Prolonged higher battery charge voltage overcharges the battery cells and reduces battery life.

 **NOTE!** Test/Equalize Mode requires Power Share to be turned off.

There are four methods of placing the system from the float mode to the test/equalize mode.

Method 1 (Manual Test/Equalize) Procedure

In this method, a user manually places the system into the test/equalize mode via the MCA Control Panel. A user must manually return the system to the float mode via the MCA Control Panel. Follow the procedures described below.

Setting for Manual Test/Equalize: Set the "MANUAL TEST/EQUALIZE = hh HOURS" menu item in the MCA configure menu to below 0. The display changes to "TEST/EQUALIZE STOP IS MANUAL" to indicate manual test/equalize mode is set. A step-by-step procedure is provided next.

1. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
2. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed. Press and release the FUNCTION SET ENTER key.
3. Press and release the FUNCTION SELECT DOWN arrow key to display "MANUAL TEST/EQUALIZE = hh HOURS" or "TEST/EQUALIZE STOP IS MANUAL" is displayed.

 **NOTE!** If "TEST/EQUALIZE STOP IS MANUAL" is displayed, the system is already set for manual test/equalize. In this case, proceed with step 8).

 **NOTE!** If "END TEST/EQUALIZE IN hhh.hh HOURS" is displayed, the system is set for manually initiated timed test/equalize, and a timed test/equalize is in progress. In this case, you can proceed with steps 4) through 7) to cancel the timed test/equalize in progress and change the current setting, or proceed with step 8) to proceed with the timed test/equalize in progress and make no changes.

4. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
5. Press the FUNCTION SET NO / - key to scroll the displayed value towards 0. Release the key when "TEST/EQUALIZE STOP IS MANUAL" is displayed. This indicates the manually initiated timed test/equalize feature is disabled and the system must be manually returned to the float mode if placed in the test/equalize mode.
6. Press and release the FUNCTION SET ENTER key.
7. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.
8. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Placing the System into Test/Equalize Mode: Manually place the system into test/equalize mode by navigating to and activating the "FLOAT MODE IS ACTIVE. SET TEST/EQ?" menu item in the MCA function

menu. The system is placed in the test/equalize mode and must be manually placed back to the float mode. A step-by-step procedure is provided next.

1. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.



NOTE! In the following step, if "TEST/EQ MODE ACTIVE. SET FLOAT?" is displayed, the system is already operating in the test/equalize mode. In this case, DO NOT perform steps 2) through 4), proceed with step 5).

2. Press and release the FUNCTION SELECT DOWN arrow key to display "FLOAT MODE IS ACTIVE. SET TEST/EQ?".
3. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
4. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.
5. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Returning to Float Mode: To return to float mode, navigate to and activate the "TEST/EQ MODE ACTIVE. SET FLOAT?" menu item in the MCA function menu, as previously described in this section.

Method 2 (Manually Initiated Timed Test/Equalize) Procedure

In this method, a user manually places the system into the test/equalize mode via the MCA Control Panel. The system automatically returns to the float mode after a preset programmable time period (1-99 hours, in increments of one hour). Follow the procedures described below.

Setting for Manually Initiated Timed Test/Equalize: Set the "MANUAL TEST/EQUALIZE = hh HOURS" menu item in the MCA configure menu to a value between 1 and 99. A step-by-step procedure is provided next.

6. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
7. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed. Press and release the FUNCTION SET ENTER key.
8. Press and release the FUNCTION SELECT DOWN arrow key to display "MANUAL TEST/EQUALIZE = hh HOURS" or "TEST/EQUALIZE STOP IS MANUAL" is displayed.



NOTE! If "MANUAL TEST/EQUALIZE = hh HOURS" is displayed, the system is already set for manually initiated timed test/equalize. In this case, you can proceed with steps 4) through 7) to change the current setting, or proceed with step 8) if no changes are required.

 **NOTE!** If "END TEST/EQUALIZE IN hhh.hh HOURS" is displayed, the system is already set for manually initiated timed test/equalize, and a timed test/equalize is in progress. In this case, you can proceed with steps 4) through 7) to cancel the timed test/equalize in progress and change the current setting, or proceed with step 8) to proceed with the timed test/equalize in progress and make no changes.

9. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
10. Press the FUNCTION SET YES (+) or FUNCTION SET NO (-) key until the desired value is displayed, then release the key. Note that as you scroll BELOW 0, "TEST/EQUALIZE STOP IS MANUAL" is displayed. Scroll back up to redisplay "MANUAL TEST/EQUALIZE =".
11. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
12. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.
13. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Placing the System into Test/Equalize Mode: Manually place the system into test/equalize mode by navigating to and activating the "FLOAT MODE ACTIVE. SET TEST/EQ?" menu item in the MCA function menu. The system is placed in the test/equalize mode for the time period set in "MANUAL TEST/EQUALIZE = hh HOURS". The system automatically returns to the float mode when this time period expires. A step-by-step procedure is provided next.

1. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.

 **NOTE!** In the following step, if "TEST/EQ MODE ACTIVE. SET FLOAT?" is displayed, the system is already operating in the test/equalize mode. In this case, DO NOT perform steps 2) through 4), proceed with step 5).

2. Press and release the FUNCTION SELECT DOWN arrow key to display "FLOAT MODE IS ACTIVE. SET TEST/EQ?".
3. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
4. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.
5. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Returning to Float Mode: The system automatically returns to float mode when the "timed test/equalize period" expires.

 **NOTE!** Navigating to "END TEST/EQUALIZE IN hhh.hh HOURS" of the MCA configure menu displays the hours remaining in the timed test/equalize period.

 **NOTE!** Timed test/equalize is canceled and the system is placed in the float mode if any of the following occurs.

- Manually placing the system in the float mode by navigating to and activating "TEST/EQ MODE ACTIVE. SET FLOAT?" menu item in the MCA function menu, as previously described in this section.
- Resetting the "MANUAL TEST/EQUALIZE = hh HOURS" value in the MCA configure menu when "END TEST/EQUALIZE IN hhh.hh HOURS" is being displayed, as described in the previous procedure
- Applying an external test/equalize signal as described in the next procedure.

Method 3 (Automatic Test/Equalize) Procedure

In this method, a user enables the Automatic Equalize feature via the MCA Control Panel. The system is automatically placed in the equalize mode and automatically returns to float mode for the conditions as described above. Follow the procedures described below.

 **NOTE!** *The automatic equalize feature is intended for use only with wet cell batteries. Using this feature with valve regulated batteries is not recommended.*

Description

This feature can be enabled or disabled by a user via the MCA. The default state is disabled.

The Automatic Equalize feature is a time based function which is controlled by a customer selectable multiplier and by the "System Battery is on Discharge" alarm setpoint. The MCA's default setting is for a multiplier of zero, which disables the Automatic Equalize feature.

When the Automatic Equalize feature is enabled, if system voltage drops to less than the "System Battery is on Discharge" alarm setpoint, the MCA initiates a timing cycle to measure the discharge time period. The MCA requires at least 15 minutes of continuous "System Battery is on Discharge" alarm in order to prevent nuisance equalization cycles. When system voltage rises to above the "System Battery is on Discharge" alarm setpoint, the MCA ends the discharge timing cycle and (assuming a minimum of 15 minutes has elapsed) places the Rectifier Modules into the equalize mode for a customer selectable multiple of the discharge time period (the discharge time period includes the initial 15 minutes).

The equalize time period can be set for 0 to 15 times the discharge time period, up to a maximum of 300 hours. A zero (0) setting disables the feature.

When the Automatic Equalize feature is enabled, the MCA prevents a user from setting the equalize value lower than the float setpoint. If the equalize value is set first, the MCA automatically sets the Automatic Equalize Multiplier to zero (0), disabling the feature.

Manually setting the system to float or equalize mode cancels the automatic function, if active.

 **NOTE!** *Equalization is only effective if the correct multiplier is entered to allow the battery to charge to capacity. It makes no sense to end the equalize cycle before battery capacity has been restored. To determine the multiplier, load current and system capacity must be known. For example, consider a system with 200 amps of Rectifier Module capacity and 150 amps of load. If there is a 2-hour outage of AC power, 300 amp-hours (150 x 2) will be drained from the battery. When AC power is restored, the battery charge current will be 50 amps (200-150), and it will take at least 6 hours (300/50) to replace the battery capacity. In this scenario, the multiplier must be set greater than 3 for the Automatic Equalize feature to have any effect.*

Enabling and Disabling the Automatic Equalize Feature: To enable, set the "AUTO EQUALIZE FOR ## x DISCHARGE" menu item in the MCA Configure Menu to a value between 0 and 15. To disable, set the "AUTO

EQUALIZE FOR ## x DISCHARGE" menu item in the MCA Configure Menu to 0. A step-by-step procedure is provided next.

1. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
2. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed. Press and release the FUNCTION SET ENTER key.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "AUTO EQUALIZE FOR ## x DISCHARGE" or "AUTO EQUALIZE IS DISABLED" is displayed.

 **NOTE!** If "AUTO EQUALIZE FOR ## x DISCHARGE" is displayed, the system is already set for Automatic Equalize. In this case, you can proceed with steps 4) through 7) to change the current setting, or proceed with step 8) if no changes are required.

 **NOTE!** If "END AUTO EQUALIZE IN hhh.hh HOURS" is displayed, the system is already set for Automatic Equalize, and an Automatic Equalize is in progress. In this case, you can proceed with steps 4) through 7) to cancel the Automatic Equalize in progress and change the current setting, or proceed with step 8) to proceed with the Automatic Equalize in progress and make no changes.

4. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
5. Press the FUNCTION SET YES (+) or FUNCTION SET NO (-) key until the desired value is displayed, then release the key. Note that as you scroll below 1, "AUTO EQUALIZE IS DISABLED" is displayed. Scroll back up to redisplay "AUTO EQUALIZE FOR ##".
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.
8. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Placing the System into Test/Equalize Mode: The MCA automatically does this for the conditions as previously described.

Returning to Float Mode: The MCA automatically does this for the conditions as previously described.

 **NOTE!** Navigating to "END AUTO EQUALIZE IN hhh.hh HOURS" of the MCA Configure Menu displays the hours remaining in an automatic equalize period, if active.

 **NOTE!** Auto Equalize is canceled and the system is placed in the float mode if any of the following occurs.

- Manually placing the system in the float mode by navigating to and activating "TEST/EQ MODE ACTIVE. SET FLOAT?" menu item in the MCA function menu, as previously described in this section.

- *Resetting the "MANUAL TEST/EQUALIZE = hh HOURS" value in the MCA configure menu when "END TEST/EQUALIZE IN hhh.hh HOURS" is being displayed, as described in the previous procedure*
- *Applying an external test/equalize signal as described in the next procedure.*

Method 4 (External Test/Equalize) Procedure

In this method, a user (or external equipment) places the system in the test/equalize mode by applying an external signal to the system. The system returns to the float mode when the external signal is removed. This method overrides the other three methods.

Placing the System into Test/Equalize Mode: Apply an external test/equalize loop closure to the system's remote equalize terminals.

Returning to Float Mode: Remove the external test/equalize loop closure from the system's remote equalize terminals.

 **NOTE!** *If a manual test/equalize, manually initiated timed test/equalize, or automatic equalize is in process; it is canceled and the system returns to float mode when system ground is removed from the test/equalize terminal.*

Setting MCA Audible Alarm Cutoff Reset Time Period

An audible alarm device is located on the MCA Control Panel. This alarm sounds when any alarm condition monitored by the MCA occurs. The alarm can be manually silenced (cut off) by pressing a local key. A local indicator illuminates when the audible alarm has been cut off. The alarm remains silenced for the current alarm condition only. If another alarm condition occurs, the audible alarm again sounds.

A programmable audible alarm cutoff reset feature is provided. Once an audible alarm has been cut off, it automatically resets (and sounds if the alarm condition is still present) after the time period programmed expires. If another alarm condition occurs, the audible alarm again sounds.

The MCA Audible Alarm Cutoff Reset feature is active when an "AUDIBLE SILENT TIME = mm MINUTES" value is selected.

The MCA Audible Alarm Cutoff Reset feature is inactive when "AUDIBLE ALARMS STAY SILENCED" is selected.

Procedure

1. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
2. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed. Press and release the FUNCTION SET ENTER key.
3. "AUDIBLE SILENT TIME = mm MINUTES" or "AUDIBLE ALARMS STAY SILENCED" is displayed.
4. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.

5. Observe the value displayed. Press and hold the FUNCTION SET YES (+) or NO (-) key until the desired value or "AUDIBLE ALARMS STAY SILENCED" is displayed. Release the key.
6. With the desired value or "AUDIBLE ALARMS STAY SILENCED" being displayed, press and release the FUNCTION SET ENTER key.
7. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! The audible alarm cutoff reset time period will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

8. To return to the beginning of the MCA Logic Tree, press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously.

Setting Rectifier Module Sequencing Delay Time Period

The MCA can be set to provide Rectifier Module Sequencing. When the MCA senses an "AC Power is OFF to All Rectifier Modules" alarm, it turns off all Rectifier Modules. When the "AC Power is OFF to All Rectifier Modules" alarm clears, the MCA turns on Rectifier Module #1, then turns on the other Rectifier Modules starting with Rectifier Module #2 every n seconds (n is user programmable from 1 to 20 seconds). If the MCA fails or the communication link is broken during a Rectifier Module Sequencing routine, all Rectifier Modules turn on immediately.

The time delay between turning individual Rectifier Modules on is adjustable from 1 to 20 seconds, or you can set the feature to be disabled. Refer to the following procedure.

Procedure

1. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
2. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed. Press and release the FUNCTION SET ENTER key.
3. Press and release the FUNCTION SELECT DOWN arrow key until "Rectifier Module Sequence Delay = ss Seconds" or "Rectifier Module Sequencing is Disabled" is displayed.
4. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
5. Observe the value displayed. Press and hold the FUNCTION SET YES (+) or NO (-) key until the desired value or "Rectifier Module SEQUENCING IS DISABLED" is displayed. Release the key.
6. With the desired value or "Rectifier Module SEQUENCING IS DISABLED" being displayed, press and release the FUNCTION SET ENTER key.
7. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! The Rectifier Module sequencing feature will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

8. To return to the beginning of the MCA Logic Tree, press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously.

Setting MCA Custom Text Messages (Names)

You can set a custom text message (name) to be displayed for the following MCA items...

MCA, Router (Bay), Distribution Bus, Individual Distribution Points, MCA Customer Alarm Relay Cards, Individual MCA Relays, MCA I/O Card Binary Alarms.

Whenever the MCA is displaying specific information pertaining to a specific MCA item, an i (information available) is also displayed on the fourth line. Pressing the **FUNCTION SET YES (+) (i)** key toggles the name of the displayed MCA item between the normal MCA naming convention and a custom test message (if set).

To enter or change a custom text message, perform the following procedure.

Procedure

1. Navigate to an MCA menu item that displays information about the particular MCA item you want to set a custom text message for. Note that the i is displayed on the fourth line.
2. Press the FUNCTION SET YES (+) (i) key to display the text message.
3. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
4. An underline appears below the first character. Repeatedly, press and release the FUNCTION SET YES (+) or NO (-) keys to enter the desired character.
5. Press the FUNCTION SET ENTER key to lock the character and to move to the next character.
6. You can enter up to 32 characters for the custom text message in this fashion. If the custom text message contains less than 32 characters, simply repeatedly press the FUNCTION SET ENTER key until you exit the text change mode.

Mapping LMS LED Channels to the MCA Display and MCA Customer Alarm Relays

You can set the MCA to display a message if an LMS LED channel activates. You can then map an MCA Customer Alarm Relay to also activate.

Procedure

1. Map the LMS LED Channel to one of the MCA Relay Function Channels by adding the Monitoring LED * Message condition to the MCA Relay Function Channel definition. Refer to the Setting and Testing MCA Customer Alarm Relays section of the separate INSTALLATION INSTRUCTIONS (Section 6027) for a procedure. (Note that if you add the LMS LED Channel condition to the default MCA Relay Function Channel **#1**, the condition will be mapped and displayed as an MCA **Major** Alarm condition. Note that if you add the LMS LED Channel condition to the default MCA Relay Function Channel **#2**, the condition will be mapped and displayed as an MCA **Minor** Alarm condition. Note that if you add the LMS LED Channel condition to any other MCA Relay Function Channel, the condition will be mapped and displayed as an MCA Info condition.)
2. Now you can map an MCA Customer Alarm Relay to activate when the LMS LED Channel activates by assigning the MCA Relay Function Channel defined above to a particular MCA Relay. Refer to the Setting and Testing MCA Customer Alarm Relays section in the separate INSTALLATION INSTRUCTIONS (Section 6027) for a procedure.

Using the Alarm Relay Test Feature

Refer to Setting and Testing MCA Customer Alarm Relays section in the separate INSTALLATION INSTRUCTIONS (Section 6027).

MCA “Power Share” Feature

Description

The MCA Power Share feature allows you to connect a Spec. No. 582126100 Power System (referred to as “New Power System” in this document) to an existing DC power system (referred to as “Existing Power System” in this document) instead of extending or completely replacing the Existing Power System.

The MCA Power Share feature provides for the sharing of the total load in a controlled manner.

When Power Share is programmed, the MCA in the New Power System adjusts PCU (Rectifier) output voltage per load demands to ensure proper sharing between the New and Existing Power Systems.

Operating Modes

Depending on the systems’ configurations, their PCU (rectifier) capacities, their distribution load capacities, and the Power Share configuration; four operating modes can occur.

Low Load Operation

When the total load current demand is lower than the programmed percentage value of the total capacity of the New Power System that will initially feed the load (**PS Initial Capacity Limit**), the New Power System voltage will be increased by the programmed **PS Voltage Offset** forcing the New Power System to carry the load. Make sure that the output voltage does not exceed the battery float range recommended by the manufacturer. In this operating mode, no current will be delivered by the Existing Power System.

Normal Load Operation

When the total load current demand reaches the **PS Initial Capacity Limit**, the New Power System output voltage will be decreased by the **PS Voltage Offset**, allowing the Existing Power System to deliver the remaining current up to the New Power System’s maximum capacity. Both New and Existing Power Systems are now providing current to the load.

High Load Operation

When the total load current demand exceeds the sum of the maximum capacity of the Existing Power System and the **PS Initial Capacity Limit** of the New Power System, the New Power System will deliver the remaining current up to the maximum of its capacity. The two systems will then reach their maximum capacities. This operation may occur when the batteries are being recharged, after a commercial AC failure for example.

Overload Operation

When the total load current demand is higher than the sum of the maximum capacity of the Existing Power System and the maximum capacity of the New Power System, both Existing and New Power Systems and the batteries will feed the load. The output voltage will depend on the conditions of the batteries. This operation occurs if the total capacity of the PCUs (rectifiers) is too low in relation to the need for increased current.

Requirements and Conditions

The two DC power systems must be connected in parallel as described in the Installation Instructions (Section 6027).

Programming the MCA Power Share Feature in the New Power System

After a New Power System has been connected to an Existing Power System and both systems set for the same float voltage, you will have to configure the Power Share parameters in the MCA of the New Power System.

 **NOTE!** The “Power Share” feature is not compatible with the temperature compensation feature. If temperature compensation is programmed ON, then “Turn Off Temperature Compensation” is displayed in the Power Share menu. If Power Share is programmed ON, then “Turn Off Power Share” is displayed in the temperature compensation menu.

 **NOTE!** The PCU (rectifier) current limit menu item setting is ignored when Power Share is enabled. When Power Share is enabled, the message “PCU Current Limit Power Share” is displayed in the PCU (Rectifier) Current Limit menu.

Enabling Power Share

1. With SYSTEM OK being displayed on the MCA Control Panel, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
2. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE SYSTEM VOLTS & AMPS" is displayed.
3. Press and release the FUNCTION SET ENTER key.
4. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "POWER SHARE IS OFF, TURN IT ON?" is displayed.

 **NOTE!** If “TURN OFF TEMPERATURE COMPENSATION” is displayed, the MCA is set for temperature compensation. Disable temperature compensation and then return to this procedure.

5. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.
6. Continue with the next procedure.

Setting the Power Share Initial Capacity Limit

1. From the previous procedure, press and release the FUNCTION SELECT DOWN arrow key to display "PS INITIAL CAPACITY LIMIT = ##%".
2. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
3. Press and hold the FUNCTION SET YES (+) or NO (-) key to change this setting as required. Release the key when the desired value is displayed.

 **NOTE!** Enter the percentage value of the total capacity of the New Power System that will initially feed the load. This value must be set to ensure that the current delivered by the New Power System is lower than the total load current from the existing and New Power Systems.

(Adjustable from 20% to 90%, factory set at 80%.)

4. With the desired value being displayed, press and release the FUNCTION SET ENTER key.
5. “ARE YOU SURE?” is displayed. Press and release the FUNCTION SET YES (+) key.
6. Continue with the next procedure.

Setting the Power Share Voltage Offset

From the previous procedure, press and release the FUNCTION SELECT DOWN arrow key to display "PS VOLTAGE OFFSET = v.vV".

Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.

Press and hold the FUNCTION SET YES (+) or NO (-) key to change this setting as required. Release the key when the desired value is displayed.

 **NOTE!** Enter the value that will be added to the float voltage to ensure the New Power System will initially carry the load. This value must be higher than the sum of the voltage drop in the cables connecting the two systems in parallel and the output voltage regulation specific to the rectifiers of the Existing Power System. If the sense leads are connected to the same sensing points as the Existing Power System, the Voltage Offset should take into consideration the output voltage regulation only.

(Adjustable from 0.1V to 1.0V, factory set at 0.2V.)

7. With the desired value being displayed, press and release the FUNCTION SET ENTER key.
8. “ARE YOU SURE?” is displayed. Press and release the FUNCTION SET YES (+) key.
9. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Verifying the Operation of the Power Share Feature

After programming the “Power Share” feature, verify its operation as follows.

1. In a Power Share application where the New Power System is taking all of the load and the rectifiers in the Existing Power System are all in the standby mode, use an external dry load bank of sufficient capacity to increase the load on the New Power System over the “PS Initial Capacity Limit”.
 - a) Verify that the New Power System limits the total output of its (PCUs) rectifiers to the current equivalent to this programmed percentage.
 - b) Verify that the New Power System lowers its output voltage by the value of the programmed “PS Voltage Offset”.
 - c) Verify that the rectifiers in the Existing Power System take the additional load as the load increases pass the “PS Initial Capacity Limit”.
 - d) Further increase the load in order to exceed the total capacity of the rectifiers in the Existing Power System (or shut down some of the rectifiers in the Existing Power System if the capacity of the external dry load bank is not sufficient). Verify that the New Power System starts taking the additional load as soon as the total capacity of the rectifiers in the Existing Power System is exceeded.

2. In a Power Share application where the New Power System is taking only part of the load (operating continuously at the current level equivalent to the programmed “PS Initial Capacity Limit” percentage) and the rectifiers in the Existing Power System are taking the rest of the load, use an external dry load bank of sufficient capacity to increase the load in order to exceed the total capacity of the rectifiers in the Existing Power System (or shut down some of the rectifiers in the Existing Power System if the capacity of the external dry load bank is not sufficient).
 - a) Verify that the New Power System starts taking the additional load as soon as the total capacity of the rectifiers in the Existing Power System is exceeded.

MCA “Alternate Current Limit” Feature

Description

The MCA Alternate Current Limit feature provides the means to automatically change the current limit operation of power system’s rectifiers (PCUs) when an external event/condition occurs.

Operating Modes

Normal Current Limit Operation

When the signal connected to the “Alternate Current Limit Input” is inactive, the system’s PCUs current limiting feature operates at the value based on the “PCU Current Limit” parameter setting.

Alternate Current Limit Operation

When the signal connected to the “Alternate Current Limit Input” is active, the system’s PCUs current limiting feature operates at the value based on the “Alternate Current Limit Capacity” parameter setting.

Requirements and Conditions

The system must have an MCA I/O circuit card installed.

Binary input #4 must be connected to a signal that will indicate to the MCA to place the rectifiers into the “Alternate Current Limit” mode.

Programming the MCA Alternate Current Limit Feature

When the Alternate Current Limit is first enabled, the “Alternate Current Limit Capacity” parameter defaults to a value of 100% of available capacity.



NOTE! The “Alternate Current Limit” feature is not compatible with the Power Share feature. If Power Share is programmed ON, then “Turn Off Power Share” is displayed in the Alternate Current Limit menu.



NOTE! The Rectifier current limit menu item setting is ignored when Alternate Current Limit is enabled AND the Alternate Current Limit Input is active. When this occurs, the message “ALT. LIMIT” is displayed in the Rectifier Current Limit menu.

Enabling Alternate Current Limit

1. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
2. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE SYSTEM VOLTS & AMPS" is displayed.

3. Press and release the FUNCTION SET ENTER key.
4. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ALT. LIMIT IS OFF, TURN IT ON?" is displayed.
5. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.
6. Continue with the next procedure.

Setting the Alternate Current Limit Initial Capacity Limit

1. From the previous procedure, press and release the FUNCTION SELECT DOWN arrow key to display "ALTERNATE CURRENT LIMIT = ##%".
2. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
3. Press and hold the FUNCTION SET YES (+) or NO (-) key to change this setting as required. Release the key when the desired value is displayed.



NOTE! Enter the percentage value of the total PCU output capacity at which the system will current limit when the "Alternate Current Limit Input" becomes active.

(Adjustable from 10% to 110%, factory set at 100%.)

4. With the desired value being displayed, press and release the FUNCTION SET ENTER key.
5. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.
6. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Power System Remote Temperature Compensation Feature

Refer to the LMS Installation Manual (Section 5879) for programming information.

Description

The LMS can provide a remote temperature compensation signal to the power system.

This feature utilizes temperature measurement reported by the LMS via function channel F58.

Remote Temperature compensation overrides local power system (temperature sensor) temperature compensation.

Remote Temperature displayed in MCA measurement menu only when reported by the LMS.

Remote Temperature compensation is disabled if the LMS stops issuing temperature measurement updates for more than 60 seconds. This includes loss of communication.

Allow local and remote power system adjustment of Temperature Compensation Slope setpoint and temperature units conversion when receiving remote temperature measurement from LMS.



NOTE! There is a restriction on the temperature measurement reported by the LMS. The temperature must be in Degree C only. This is the default units setting for LMS Function Channel F58.

MCA SYSTEM ADJUSTMENTS

Adjustment Location and Identification

All system alarm and control circuits intended for customer adjustment are accessible via the MCA Control Panel. Unless otherwise stated, these circuits have been factory set to the values listed in the System Application Guide. If readjustment is necessary, perform the appropriate adjustment procedure detailed below.

These adjustments can also be done remotely via the LMS. To adjust the system via LMS, refer to the LMS User Instructions (Section 5847). Section 5847 can be accessed via the CD (Electronic Documentation Package) furnished with your system.

Refer to the illustrations in the System Overview section for local adjustment controls locations.

Adjusting Float Output Voltage

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE SYSTEM VOLTS & AMPS" is displayed.
4. Press and release the FUNCTION SET ENTER key. "FLOAT SETPOINT = vv.vv" is displayed.
5. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
6. Observe the value displayed. This is the float voltage setting for all Rectifier Modules. If the system is used with a battery charge digital temperature compensation probe, this value is the float voltage setting at 25°C. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.

 **NOTE!** The float voltage value is prevented from being adjusted higher than 1V below the high voltage shutdown setting. When used with a Battery Charge Digital Temperature Compensation Probe, float voltage is prevented from being adjusted higher than the Maximum Voltage with Temperature Compensation setting, or lower than the Minimum Voltage with Temperature Compensation setting.

7. With the desired float voltage value being displayed, press and release the FUNCTION SET ENTER key.
8. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.

 **NOTE!** The Rectifier Modules will assume the new value at their prevailing load current.

 **NOTE!** The float voltage will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

9. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting Test/Equalize Output Voltage

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE SYSTEM VOLTS & AMPS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Press and release the FUNCTION SELECT DOWN arrow key to display "TEST/EQUALIZE = vv.vvV".
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the test/equalize voltage setting for all Rectifier Modules. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.



NOTE! The test/equalize voltage value is prevented from being adjusted higher than 1V below the high voltage shutdown setting. When used with a Battery Charge Digital Temperature Compensation Probe, test/equalize voltage is prevented from being adjusted higher than the Maximum Voltage with Temperature Compensation setting, or lower than the Minimum Voltage with Temperature Compensation setting.

8. With the desired test/equalize voltage value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! The Rectifier Modules will assume the new value at their prevailing load current.



NOTE! The test/equalize voltage will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting High Voltage Shutdown

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE SYSTEM VOLTS & AMPS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "HI VOLTAGE SHUTDOWN = vv.vvV" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the high voltage shutdown setting for all Rectifier Modules. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.



NOTE! *The system will not allow a value higher than 59.5 to be entered. Also, the high voltage shutdown value is prevented from being adjusted lower than 1V above the higher of the float or test/equalize setting. When used with a Battery Charge Digital Temperature Compensation Probe, high voltage shutdown is prevented from being adjusted lower than 1V above the Maximum Voltage with Temperature Compensation setting.*

8. With the desired high voltage shutdown value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! *The high voltage shutdown value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.*

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting Rectifier Module Current Limit

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE SYSTEM VOLTS & AMPS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "PCU CURRENT LIMIT = aaaaaA" or "PCU CURRENT LIMIT = aaaaaMAX" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the system current limit setting. Each Rectifier Module's current limit circuit will be automatically adjusted to ensure that system current does not exceed this value. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.



NOTE! PCU current limit = aaaaaMAX indicates system current limit is set to the sum of the maximum current capacities of all Rectifier Modules installed in the system.

8. With the desired current limiting value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! The system current limit value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting System High Voltage Alarm 1

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE ALARM SETPOINTS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. "SYSTEM HI VOLTAGE #1 = vv.vvV" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the high voltage alarm 1 setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.
8. With the desired high voltage alarm 1 value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! *The high voltage alarm 1 value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.*

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting System High Voltage Alarm 2

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE ALARM SETPOINTS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Press and release the FUNCTION SELECT DOWN arrow key to display "SYSTEM HI VOLTAGE #2 = vv.vvV".
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the high voltage alarm 2 setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.
8. With the desired high voltage alarm 2 value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! The high voltage alarm 2 value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting System Battery On Discharge Alarm

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE ALARM SETPOINTS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "BATTERY ON DISCHARGE = vv.vv" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the battery on discharge alarm setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.
8. With the desired battery on discharge alarm value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! The battery on discharge value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting System Very Low Voltage Alarm

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE ALARM SETPOINTS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "VERY LOW VOLTAGE = vv.vvV" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the very low voltage alarm setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.
8. With the desired very low voltage alarm value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! The very low voltage alarm value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting Total Distribution Load Alarm

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE ALARM SETPOINTS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "TOTAL DISTRIBUTION = aaaaaA" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the system current alarm setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.
8. With the desired system current alarm value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! *The system current alarm value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.*

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting Distribution Group A Load Alarm

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE ALARM SETPOINTS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "DISTRIBUTION GROUP A = aaaaaA" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the Group A Load Current alarm setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.
8. With the desired Group A Load Current alarm value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! The Group A Load Current alarm value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting Distribution Group B Load Alarm

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE ALARM SETPOINTS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "DISTRIBUTION GROUP B = aaaaaA" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the Group B Load Current alarm setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.
8. With the desired Group B Load Current alarm value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! *The Group B Load Current alarm value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.*

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting Battery Ambient High Temperature #1 Alarm (if Battery Charge Digital Temperature Compensation Probe is installed)

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE ALARM SETPOINTS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "NO HIGH TEMPERATURE #1 ALARM" or "HIGH TEMPERATURE #1 = ttt C/F" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the high temperature #1 alarm setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.
8. With the desired high temperature #1 alarm value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! *The high temperature #1 alarm value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.*

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting Battery Ambient High Temperature #2 Alarm (if Battery Charge Digital Temperature Compensation Probe is installed)

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE ALARM SETPOINTS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "NO HIGH TEMPERATURE #2 ALARM" or "HIGH TEMPERATURE #2 = ttt C/F" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the high temperature #2 alarm setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.
8. With the desired high temperature #2 alarm value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! The high temperature #2 alarm value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting Battery Ambient Low Temperature #1 Alarm (if Battery Charge Digital Temperature Compensation Probe is installed)

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE ALARM SETPOINTS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "NO LOW TEMPERATURE #1 ALARM" or "LOW TEMPERATURE #1 = ttt C/F" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the low temperature #1 alarm setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.
8. With the desired low temperature #1 alarm value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! The low temperature #1 alarm value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Adjusting Battery Ambient Low Temperature #2 Alarm (if Battery Charge Digital Temperature Compensation Probe is installed)

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "ADJUST THE ALARM SETPOINTS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "NO LOW TEMPERATURE #2 ALARM" or "LOW TEMPERATURE #2 = tt C/F" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the low temperature #2 alarm setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.
8. With the desired low temperature #2 alarm value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.

 **NOTE!** *The low temperature #2 alarm value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.*

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Configuring Battery Charge Digital Temperature Compensation Slope



NOTE! The Temperature Compensation feature requires Power Share to be turned off.

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "NO TEMPERATURE COMPENSATION" or "TEMPERATURE SLOPE = 0.vvvV C/F" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the Battery Charge Digital Temperature Compensation slope setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.



NOTE! Refer to Battery and Equipment Manufacturers' recommendations or site requirements for the value. Note that this is the compensation for the entire battery string, not per battery cell.

8. With the desired slope value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! The slope value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Configuring Battery Charge Digital Temperature Compensation Maximum Voltage

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "MAXIMUM COMPENSATION = vv.vvV" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the Battery Charge Digital Temperature Compensation maximum voltage setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.

 **NOTE!** Refer to Battery and Equipment Manufacturers' recommendations or site requirements for the value.

 **NOTE!** Maximum Voltage with Temperature Compensation is prevented from being adjusted higher than 1.0V below the High Voltage Shutdown setting, or lower than the float voltage setting.

8. With the desired maximum voltage with temperature compensation value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.

 **NOTE!** The maximum voltage with temperature compensation value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Configuring Battery Charge Digital Temperature Compensation Minimum Voltage

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "MINIMUM COMPENSATION = vv.vvV" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. Observe the value displayed. This is the Battery Charge Digital Temperature Compensation minimum voltage setting. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.



NOTE! Refer to Battery and Equipment Manufacturers' recommendations or site requirements for the value.

8. With the desired minimum voltage with temperature compensation value being displayed, press and release the FUNCTION SET ENTER key.
9. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! The minimum voltage with temperature compensation value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

10. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Configuring Degree Units Displayed (°F or °C)

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "NOW DISPLAYING °(C or F) SET TO °(F or C)" is displayed.
6. To toggle the degree units being displayed, press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
7. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.



NOTE! *The Degree Units Displayed (°F or °C) value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) key is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.*

8. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Configuring the System Date and Time

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "IT IS NOW hh:mm:ss dd-mon-yy" is displayed.
6. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously. The day of the month is underlined.
7. Press FUNCTION SET YES (+) and NO (-) keys to change the day of month.
8. Press FUNCTION SET ENTER key. Month is underlined.
9. Press FUNCTION SET YES (+) and NO (-) keys to change the month.
10. Press FUNCTION SET ENTER key. Year is underlined.
11. Press FUNCTION SET YES (+) and NO (-) keys to change the year.
12. Press FUNCTION SET ENTER key. Hour is underlined.
13. Press FUNCTION SET YES (+) and NO (-) keys to change the hour.
14. Press FUNCTION SET ENTER key. Minutes is underlined.
15. Press FUNCTION SET YES (+) and NO (-) keys to change the minutes.
16. Press FUNCTION SET ENTER key.

Configuring MCA I/O Circuit Card Analog Input(s)

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. CHANGE I/O BOARD PARAMETERS is displayed. Press and release the FUNCTION SET ENTER key.
6. ANALOG INPUT B#-P# IS DISTRIBUTION or ANALOG INPUT B#-P# IS AUXILIARY is displayed (B#-P# = Bay Number – MCA I/O Circuit Card Position Number).

This setting determines if the monitored input appears in the MCA DISTRIBUTION MEASUREMENT menus or in separate MCA AUXILIARY MEASUREMENT menus.

To toggle the setting, press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.

"ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.

To select another analog input (if available), press the FUNCTION SELECT DOWN arrow key.

7. When the last MCA I/O circuit card with an analog input is selected, press the FUNCTION SELECT DOWN arrow key to display ANALOG INPUT B#-P# 50mV = aaaaA (B#-P# = Bay Number – MCA I/O Circuit Card Position Number).

This sets the scale factor for the analog input.

Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.

Observe the value displayed. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.

With the desired value being displayed, press and release the FUNCTION SET ENTER key.

"ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.

To select another analog input (if available), press the FUNCTION SELECT DOWN arrow key.

8. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Configuring MCA I/O Circuit Card Analog Output(s)

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. CHANGE I/O BOARD PARAMETERS is displayed. Press and release the FUNCTION SET ENTER key.
6. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until ANALOG OUTPUT B#-P# 50mV = aaaaA (B#-P# = Bay Number – MCA I/O Circuit Card Position Number).

This sets the scale factor for the analog output.

Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.

Observe the value displayed. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) key. Release the key when the desired value is displayed.

With the desired value being displayed, press and release the FUNCTION SET ENTER key.

"ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.

To select another analog output (if available), press the FUNCTION SELECT DOWN arrow key.

7. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Configuring MCA I/O Circuit Card Binary Input(s)

1. All controls are located on the MCA Interface Pad.
2. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
3. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "CHANGE CONFIGURATION PARAMETERS" is displayed.
4. Press and release the FUNCTION SET ENTER key.
5. CHANGE I/O BOARD PARAMETERS is displayed. Press and release the FUNCTION SET ENTER key.
6. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until BINARY INPUT B#-P#-I# IS ALARM = CLOSED or BINARY INPUT B#-P#-I# IS ALARM = OPEN is displayed (B#-P#-I# = Bay Number – MCA I/O Circuit Card Position Number – Binary Input Number).

This setting determines the alarm state of the monitored binary input.

To toggle the setting press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.

"ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.

To select another binary input located on the card, press the FUNCTION SELECT DOWN arrow key. When the last binary input is selected, pressing the FUNCTION SELECT DOWN arrow key displays the next MCA I/O circuit card with binary inputs (if available).

7. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.



NOTE! If a binary input alarms, the MCA displays a "Binary Input Customer Text Message" in the I/O Board Alarm Detail Message. If you wish to change the default message, refer to 'System Operating Procedures' section for an adjustment procedure.

MCA Audible Alarm Cutoff Reset Time Period

Refer to the System Operating Procedures section for an adjustment procedure.

MCA Rectifier Module Sequencing Feature

Refer to the System Operating Procedures section for an adjustment procedure.

Manually Initiated Timed Test/Equalize Feature

Refer to the System Operating Procedures section for an adjustment procedure.

Automatic Test/Equalize Feature

Refer to the System Operating Procedures section for an adjustment procedure.

MCA Power Share Feature

Refer to the System Operating Procedures section for an adjustment procedure.

Alarm Relay Test Feature

Refer to Setting and Testing MCA Customer Alarm Relays section in the separate INSTALLATION INSTRUCTIONS (Section 6027).

MCA “Alternate Current Limit” Feature

Refer to the System Operating Procedures section for an adjustment procedure.

MAINTENANCE

Admonishments

General Safety



DANGER! SERVICE PERSONNEL MUST FOLLOW APPROVED SAFETY PROCEDURES.

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.
- e) Use insulated tools.

(To avoid danger to the installer or damage to the equipment, the tools used in this procedure should have insulated grips. All exposed metal shafts, extensions, handles, etc. should be completely insulated with a minimum of three half-lapped layers of electrical tape. Ensure that wrenches with more than one working end have only one end exposed.)

Voltages

AC Input Voltages



DANGER! This system operates from AC voltage capable of producing fatal electrical shock.

DC Input/Output Voltages



DANGER! This system produces DC Power and requires battery to be connected to it. Although the DC voltage is not hazardously high, the rectifier modules and/or battery can deliver large amounts of current. Exercise extreme caution not to inadvertently contact or have any tool inadvertently contact a battery terminal or exposed wire connected to a battery terminal. NEVER allow a metal object, such as a tool, to contact more than one termination at a time, or to simultaneously contact a termination and a grounded object. Even a momentary short circuit can cause explosion and injury.

LMS Maintenance Procedures

Refer to the LMS User Instructions (Section 5847) for LMS maintenance procedures. Section 5847 can be accessed via the CD (Electronic Documentation Package) furnished with your system.

System Maintenance Procedures

The maintenance procedures listed in **Table 2** should be performed and recorded at the recommended interval to ensure continual system operation.

The procedures listed in **Table 3** may be performed and recorded at the recommended interval to track system operation. **Table 3** procedures ARE NOT necessary for continual system operation. They are recommended only to provide a service record for the system.

The tables reference specific sections in these User Instructions (Section 6028) or the separate Installation Instructions (Section 6027) that help in performing these procedures.

Table 2: *Maintenance Procedures to be performed at 6-Month Intervals*

| PROCEDURE | REFERENCED IN |
|---|--|
| Check Ventilation Openings for Obstructions such as Dust, Papers, Manuals, etc. | -- |
| Inspect and Tighten All Installer's Connections | Section 6027, Making Electrical Connections. |

Table 3: Procedures that MAY be Performed at 12-Month Intervals to Track System Operation (cont'd on next page)

| PROCEDURE | REFERENCED IN | VALUE |
|---|---|-------|
| Measure and Record System Float (Output) Voltage and Compare MCA Display Voltage with Reference Meter | Section 6028 <i>Navigating the MCA,</i> (Line #133) to Place in Float Mode, if required. Record System Output Voltage as Shown on the MCA Display. Record also Reference Meter Voltage Connected to System Output Busbars. | |
| Measure and Record System Test/Equalize (Output) Voltage and Compare MCA Display Voltage with Reference Meter | Section 6028 <i>Navigating the MCA,</i> (Line #133) to Place in Test/Equalize Mode. Record System Output Voltage as Shown on the MCA Display. Record also Reference Meter Voltage Connected to System Output Busbars. Section 6028 <i>Navigating the MCA,</i> (Line #133) to Return to Float Mode. | |
| Measure and Record Total System Output Current | Record System Output Current as Shown on the MCA Display. | |
| Measure and Record Total Rectifier Module Output Current | Section 6028 <i>Navigating the MCA,</i> (Line #125). | |

Table 3: Procedures that MAY be Performed at 12-Month Intervals to Track System Operation (cont'd from previous page, cont'd on next page)

| PROCEDURE | REFERENCED IN | RECTIFIER MODULE | VALUE |
|---|--|-------------------------|-------|
| Measure and Record Output Current of Each Individual Rectifier Module | Section 6028, Navigating the MCA, (Line #126). | Bay # (), Rectifier 1 | |
| | | Bay # (), Rectifier 2 | |
| | | Bay # (), Rectifier 3 | |
| | | Bay # (), Rectifier 4 | |
| | | Bay # (), Rectifier 5 | |
| | | Bay # (), Rectifier 6 | |
| | | Bay # (), Rectifier 7 | |
| | | Bay # (), Rectifier 8 | |
| | | Bay # (), Rectifier 9 | |
| | | Bay # (), Rectifier 10 | |
| | | Bay # (), Rectifier 11 | |
| | | Bay # (), Rectifier 12 | |

Table 3: Procedures that MAY be Performed at 12-Month Intervals to Track System Operation (cont'd from previous page, cont'd on next page)

| PROCEDURE | REFERENCED IN | RECTIFIER MODULE | VALUE |
|---|--|-------------------------|-------|
| Measure and Record Output Current of Each Individual Rectifier Module | Section 6028, <i>Navigating the MCA</i> , (Line #126). | Bay # (), Rectifier 13 | |
| | | Bay # (), Rectifier 14 | |
| | | Bay # (), Rectifier 15 | |
| | | Bay # (), Rectifier 16 | |
| | | Bay # (), Rectifier 17 | |
| | | Bay # (), Rectifier 18 | |
| | | Bay # (), Rectifier 19 | |
| | | Bay # (), Rectifier 20 | |
| | | Bay # (), Rectifier 21 | |
| | | Bay # (), Rectifier 22 | |
| | | Bay # (), Rectifier 23 | |
| | | Bay # (), Rectifier 24 | |

Table 3: Procedures that MAY be Performed at 12-Month Intervals to Track System Operation (cont'd from previous page, cont'd on next page)

| PROCEDURE | REFERENCED IN | VALUE |
|--|--|-------|
| Record Rectifier Module High Voltage Shutdown Value | Section 6028, <i>Navigating the MCA</i> , (Line #219). | |
| Record Rectifier Module Current Limit Value | Section 6028, <i>Navigating the MCA</i> , (Line #221). | |
| Record System High Voltage 1 Alarm Value or Record and Check System High Voltage 1 Alarm Value | Section 6028 <i>Navigating the MCA</i> , (Line #226). or Section 6027, <i>Installing the Rectifier Modules and Initially Starting the Power System</i> . | |
| Record System High Voltage 2 Alarm Value or Record and Check System High Voltage 2 Alarm Value | Section 6028 <i>Navigating the MCA</i> , (Line #227). or Section 6027, <i>Installing the Rectifier Modules and Initially Starting the Power System</i> . | |

Table 3: Procedures that MAY be Performed at 12-Month Intervals to Track System Operation (cont'd from previous page, cont'd on next page)

| PROCEDURE | REFERENCED IN | VALUE |
|---|---|-------|
| Record System Battery On Discharge Alarm Value or Record and Check System Battery On Discharge Alarm Value | Section 6028 <i>Navigating the MCA,</i> (Line #228). or Section 6027, <i>Installing the Rectifier Modules and Initially Starting the Power System.</i> | |
| Record System Very Low Voltage Alarm Value or Record and Check System Very Low Voltage Alarm Value | Section 6028 <i>Navigating the MCA,</i> (Line #229). or Section 6027, <i>Installing the Rectifier Modules and Initially Starting the Power System.</i> | |
| Record System Total Distribution Load Current Alarm Value or Record and Check Total Distribution Load Current Alarm Value | Section 6028 <i>Navigating the MCA,</i> (Line #230). or Section 6027, <i>Installing the Rectifier Modules and Initially Starting the Power System.</i> | |

Table 3: Procedures that MAY be Performed at 12-Month Intervals to Track System Operation (cont'd from previous page)

| PROCEDURE | REFERENCED IN | VALUE |
|--|---|-------|
| Record Distribution Group A Load Current Alarm Value or Record and Check Distribution Group A Load Current Alarm Value | Section 6028 <i>Navigating the MCA,</i> (Line #231). or Section 6027, <i>Installing the Rectifier Modules and Initially Starting the Power System.</i> | |
| Record Distribution Group B Load Current Alarm Value or Record and Check Distribution Group B Load Current Alarm Value | Section 6028 <i>Navigating the MCA,</i> (Line #232). or Section 6027, <i>Installing the Rectifier Modules and Initially Starting the Power System.</i> | |

Adding a Rectifier Module to an Existing Shelf

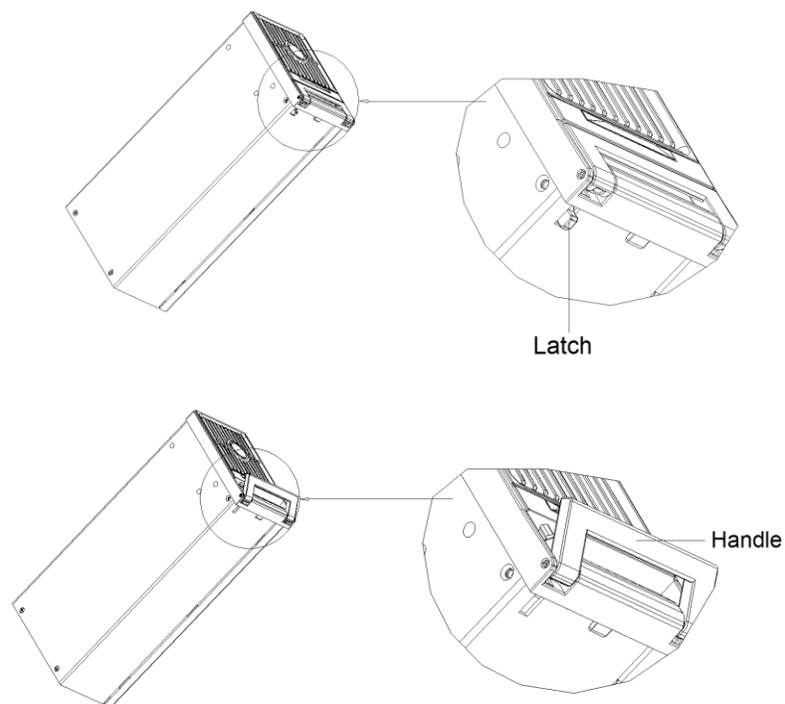
To increase system current capacity, a Rectifier Module (PCU) can easily be added to an existing shelf that contains an empty Rectifier Module mounting position. Follow the procedure detailed below.

Rectifier Modules can be inserted or removed with power applied (hot swappable).

NOTE! Each Rectifier Module locks into the Rectifier Module Mounting Shelf through a latch located on the underside of the Rectifier Module. The latch and Rectifier Module handle are interactive. Push the handle into the Rectifier Module's front panel, and the latch will pop out from the Rectifier Module bottom. Click the handle to pop it out from the Rectifier Module's front panel, and the latch will retract back into the Rectifier Module. See **Figure 1** for handle operation.

ALERT! To prevent damage to the latching mechanism, ensure the handle is in the open position when installing or removing a module. **NEVER** hold the handle in the closed position when installing a module into a shelf.

Figure 1: Handle/Latch Mechanism on the Rectifier Module



Procedure

1. Performing this procedure may activate external alarms. Do one of the following. If possible, disable these alarms. If these alarms cannot be easily disabled, notify the appropriate personnel to disregard any future alarms associated with this system.
2. If present, remove blank cover panel from the mounting position into which Rectifier Module is to be installed.

3. Place the Rectifier Module into the unoccupied mounting slot without sliding it in completely.
4. Click the Rectifier Module handle in order to pop it forwards out of the Rectifier Module's front panel (this will also retract the latch mechanism located on the underside of the Rectifier Module).
5. Now push the Rectifier Module completely into the shelf.
6. Push the handle into the front panel of the Rectifier Module. This will lock the module securely to the shelf.



NOTE! If "REPOPULATE ### SLOTS?" is displayed, the Rectifier Module has been installed in a slot previously populated and mapped. Press YES/+/i or allow the timer to expire to assign the previously mapped slot number to the new Rectifier Module. Press NO (-) to stop the process and assign the next highest available slot number to the Rectifier Module.

7. The MCA automatically adds the capacity of the new Rectifier Module to the current limit and displays the new current limit setting.
8. If the current limit setting is correct, go to step 14). If the current limit setting is not correct, press and release the ALARM CUTOFF and FUNCTION SET ENTER pushbuttons simultaneously.
9. Observe the value displayed. This is the system current limit setting. Reset this value to the new current limit setting. Each Rectifier Module's current limit circuit will be automatically adjusted to ensure that system current does not exceed this value. To change this value, press and hold the FUNCTION SET YES (+) or NO (-) pushbutton. Release the pushbutton when the desired value is displayed.
10. With the desired current limiting value being displayed, press and release the FUNCTION SET ENTER pushbutton.
11. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) pushbutton.



NOTE! The system current limit value will not be changed and the adjustment mode will be exited if the FUNCTION SET YES (+) pushbutton is not pressed within 10 seconds of the "ARE YOU SURE?" prompt.

12. Press and release the FUNCTION SET YES (+) and NO (-) pushbuttons simultaneously, to return to the beginning of the MCA menu tree.
13. Verify that the Rectifier Module is operating normally.
14. Enable the external alarms, or notify appropriate personnel that this procedure is finished.
15. Ensure that there are no local or remote alarms active on the system.

TROUBLESHOOTING AND REPAIR

Contact Information

Refer to Section 4154 (provided with your customer documentation) for support contact information.

Admonishments

General Safety



DANGER! SERVICE PERSONNEL MUST FOLLOW APPROVED SAFETY PROCEDURES.

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:

- f) The tasks should be performed in the order indicated.
- g) Remove watches, rings, and other jewelry.
- h) Prior to contacting any uninsulated surface or termination, use a voltmeter to verify that no voltage or the expected voltage is present.
- i) Wear eye protection, and use recommended tools.
- j) Use insulated tools.

(To avoid danger to the installer or damage to the equipment, the tools used in this procedure should have insulated grips. All exposed metal shafts, extensions, handles, etc. should be completely insulated with a minimum of three half-lapped layers of electrical tape. Ensure that wrenches with more than one working end have only one end exposed.)

Voltages

AC Input Voltages



DANGER! This system operates from AC voltage capable of producing fatal electrical shock.

DC Input/Output Voltages



DANGER! This system produces DC Power and requires battery to be connected to it. Although the DC voltage is not hazardously high, the rectifier modules and/or battery can deliver large amounts of current. Exercise extreme caution not to inadvertently contact or have any tool inadvertently contact a battery terminal or exposed wire connected to a battery terminal. NEVER allow a metal object, such as a tool, to contact more than one termination at a time, or to simultaneously contact a termination and a grounded object. Even a momentary short circuit can cause explosion and injury.



ALERT! Performing the following procedures may interrupt power to the loads, if battery reserve is not sufficient.

Circuit Card Handling



ALERT! 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 a circuit card 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.

LMS Troubleshooting Procedures

Refer to the LMS User Instructions (Section 5847) for LMS troubleshooting procedures. Section 5847 can be accessed via the CD (Electronic Documentation Package) furnished with your system.

Rectifier Module Troubleshooting Procedures

Refer to the Rectifier User Instructions (UM1R483500E) for troubleshooting and repair procedures. UM1R483500E can be accessed via the CD (Electronic Documentation Package) furnished with your system.

Troubleshooting Information

General

This system is designed for ease in troubleshooting and repair. The various indicators, as described in the *Operating Procedures* section, are designed to isolate a failure to a specific element. Once the faulty element has been identified, refer to the next sections, "Replacement Information" and "Replacement Procedures".

The procedures listed in the *Maintenance* section, can also be used by servicing personnel in identification and/or prevention of trouble symptoms in the system.

Adjustments

If the suspected cause of a trouble symptom is an out of adjustment condition, that particular adjustment setting should be checked or reset using the appropriate adjustment procedure detailed in the *MCA System Adjustments* section. If a failed Rectifier Module or circuit card is suspected, the adjustment procedures can also be used to verify the setpoints as well as the operation of the Rectifier Module or circuit card.

MCA Messages

An MCA Menu Tree (Section 5886) is provided in the separate *INSTALLATION MANUAL* and the *CD CARRIER MANUAL* (it is also provided on the CD). Each line in the MCA Menu Tree contains a number. This number is referenced in a chart provided in the *Navigating the MCA* section. This chart provides a description of each line listed on the MCA Menu Tree.

If the MCA displays an alarm message, find the line in the MCA Menu Tree showing this message. For an explanation of this alarm, locate the corresponding MCA Menu Tree Line Number in the chart provided in the *Navigating the MCA* section.



NOTE! If the MCA is replaced with an MCA previously used in another power system, the MCA may reflect inventory items not in the current power system and may display alarms. In this case, update the inventory as detailed in this section. Also, if you remove an inventory item (a component) from the power system, you must update the inventory to clear alarms.

 **NOTE!** *If you remove a Battery Charge Digital Temperature Compensation Probe, alarms are displayed. Manually set the Battery Charge Digital Temperature Compensation feature to off as described in "MCA System Adjustments" section to clear the alarms.*

Updating the Inventory after Changes to the System Have Been Made

When an inventory item is removed from the system, an alarm will be reported until the following procedure is performed.

Example, if a Rectifier Module is removed from the system, the Rectifier Module will not be removed from the MCA's inventory until "VIEW THE SYSTEM INVENTORY" is entered and the "UPDATE THE INVENTORY" operation is completed.

Procedure

1. With SYSTEM OK being displayed on the MCA Interface Pad, press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
or
In the MAIN ALARM MENU, repeatedly press and release the FUNCTION SELECT DOWN arrow key until "GO TO FUNCTION MENU" is displayed. Press and release the FUNCTION SET ENTER key. The FUNCTION MENU is displayed.
2. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "VIEW THE SYSTEM INVENTORY" is displayed.
3. Press and release the FUNCTION SET ENTER key.
4. Repeatedly press and release the FUNCTION SELECT DOWN arrow key until "UPDATE THE INVENTORY" is displayed.
5. Press and release the ALARM CUTOFF and FUNCTION SET ENTER keys simultaneously.
6. "ARE YOU SURE?" is displayed. Press and release the FUNCTION SET YES (+) key.
7. Press and release the FUNCTION SET YES (+) and NO (-) keys simultaneously, to return to the beginning of the MCA menu tree.

Replacement Information

Replacement Assemblies

When a trouble symptom is localized to a faulty Rectifier Module or circuit card, that particular Rectifier Module or circuit card should be replaced in its entirety. Other than a Rectifier Module fan replacement, no attempt should be made to troubleshoot or repair individual components on any Rectifier Module or circuit card.

Refer to SAG582126100 (System Application Guide) for replacement part numbers. The SAG can be accessed from the CD (Electronic Documentation Package) furnished with your system.

Replacement Cables

Refer to SAG582126100 (System Application Guide) for replacement part numbers. The SAG can be accessed via the CD (Electronic Documentation Package) furnished with your system.

Replacement Procedures

Rectifier Module (PCU) Replacement



DANGER! Take care when removing a Rectifier Module (PCU) that was in operation, as Rectifier Module surfaces could be very hot.



NOTE! If a Rectifier Module (PCU) is removed without being replaced, perform the *UPDATE INVENTORY* procedure found in this section under *TROUBLESHOOTING INFORMATION* to clear alarms.

If a Rectifier Module (PCU) is removed and replaced with a different module, alarms are activated for 2 minutes after inserting the new Rectifier Module. The MCA automatically removes the old Rectifier Module from inventory and adds the new Rectifier Module to the inventory. Refer to the following procedure for further explanation.

Rectifier Modules (PCUs) can be inserted or removed with power applied (hot swappable).

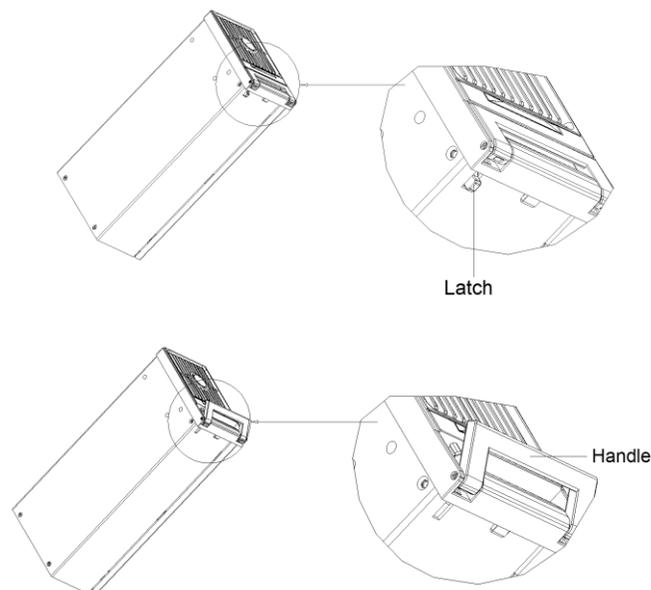


NOTE! The Rectifier Module locks into the Rectifier Module Mounting Shelf through a latch located on the underside of the Rectifier Module. The latch and Rectifier Module handle are interactive. Push the handle into the Rectifier Module's front panel, and the latch will pop out from the Rectifier Module bottom. Click the handle to pop it out from the Rectifier Module's front panel, and the latch will retract back into the Rectifier Module. The latch mechanism is shown in **Figure 2**.



ALERT! To prevent damage to the latching mechanism, ensure the handle is in the open position when installing or removing a module. **NEVER** hold the handle in the closed position when installing a module into a shelf.

Figure 2: Handle/Latch Mechanism on the Rectifier Module



Procedure

1. Performing this procedure may activate external alarms. Do one of the following. If possible, disable these alarms. If these alarms cannot be easily disabled, notify the appropriate personnel to disregard any future alarms associated with this system.
2. On the Rectifier Module to be removed, click the Rectifier Module's handle in order to pop it forwards out of the Rectifier Module's front panel. This will retract the latch mechanism located on the underside of the Rectifier Module and thus unlock the Rectifier Module from the shelf.
3. Slide the Rectifier Module out by pulling forwards.
4. Wait until the PCU NO REPLY alarm is generated.
5. Place the replacement Rectifier Module into the mounting slot without sliding it in completely.
6. On the replacement Rectifier Module, click the Rectifier Module's handle in order to pop it forwards out of the Rectifier Module's front panel (this will also retract the latch mechanism located on the underside of the Rectifier Module).
7. Now push the Rectifier Module completely into the shelf.
8. Push the handle into the front panel of the Rectifier Module. This will lock the module securely to the shelf.
9. The "REPLACE 1 PCU AUTO IN ###" message automatically displays.
10. To automatically assign the mapped position number to the new Rectifier Module (PCU) press and release the FUNCTION SET YES (+) pushbutton or allow the timer to expire.



NOTE! The "REPLACE ## PCUs AUTO IN ###" message is automatically displayed when a new Rectifier Module (PCU) is detected and a PCU no reply alarm is active, or becomes active within two minutes. The message is displayed for 2 minutes and the message timer is restarted every time a new Rectifier Module (PCU) is detected or a new PCU no reply alarm becomes active.

Rectifier Modules (PCUs) equal to the number of new Rectifier Modules (PCUs) or the number of PCU no reply alarms, whichever is less, are removed from the inventory if the YES (+) pushbutton is pressed or if the timer expires without a pushbutton being pressed. The MCA displays the PLEASE WAIT message while it updates the Rectifier Modules (PCUs) in its permanent inventory, and then displays the CURRLIM = #####A message.

The auto replacement process is aborted and the manual replacement process is entered if the NO (-) pushbutton is pressed before the timer expires. (See the MCA Messages section for details of the manual replacement process.)

11. Verify that the Rectifier Module is operating normally.
12. Enable the external alarms, or notify appropriate personnel that this procedure is finished.
13. Ensure that there are no local or remote alarms active on the system.

Rectifier Module Fan Replacement

Refer to the Rectifier User Instructions (UM1R483500E) for a fan replacement procedure. UM1R483500E can be accessed via the CD (Electronic Documentation Package) furnished with your system.

MCA Circuit Card Replacement

The MCA circuit card is installed in the Main Power Bay. Router circuit cards are installed in Supplemental Power Bays.



NOTE! Refer to **Figure 3** as this procedure is performed.

Procedure

1. Observe the admonishments presented at the beginning of this section, and those encountered in this procedure.
2. Performing this procedure may activate external alarms. Do one of the following. If possible, disable these alarms. If these alarms cannot be easily disabled, notify the appropriate personnel to disregard any future alarms associated with this system.
3. Replacing the MCA circuit card WILL result in all MCA settings being returned to their factory default values. In **Table 4** and **Table 5**, either manually record all existing MCA settings or record the required settings for your site from your company's DC Plant Set Points specifications (standards).



NOTE! The MCA configuration can be saved by downloading the configuration using the LMS Monitoring System.

Refer to the MCA Menu Tree (Section 5886) and the Navigating the MCA section to manually record MCA settings. The MCA Menu Tree is provided in the separate INSTALLATION MANUAL and the CD CARRIER MANUAL (it is also provided on the CD).

4. Open the Monitor and Control Panel's front door to access the MCA circuit card mounting positions.



ALERT! Damage to the MCA circuit card may result if the next step is not followed.

5. Connect an approved grounding strap to your wrist. Attach the other end to a suitable ground.
6. Remove fuse F3 that supplies input power to the MCA circuit card. Refer to **Figure 5** for location.
7. With an external voltmeter, verify plant voltage is correct (MCA is powered down at this point).
8. Remove any network cables from the circuit card, noting their locations for re-assembly.
9. Remove the alarm cable connector TB1 from the circuit card. Note that terminal block TB1 consists of two pieces snapped together. The two pieces can be separated by first loosening the two screws; then gently pulling the one half from the other.
10. Loosen the circuit card retaining screw.
11. Remove the circuit card.
12. Set the switches of S1 on the replacement circuit card to match the settings of the removed circuit card.

13. Slide the replacement circuit card into its mounting location, ensuring the rear edge connector is firmly seated.
14. Secure the circuit card by tightening the circuit card retaining screw.
15. Replace fuse F3 which supplies input power to the MCA circuit card. Refer to **Figure 5** for location.
16. The MCA goes through an initialization routine (as detailed in the Installing the Rectifier Modules and Initially Starting the System section of the INSTALLATION INSTRUCTIONS [Section 6027]). During this initialization routine, check (and if required change) the MCA settings for your Site. In lieu of manually entering new MCA settings, if the old MCA configuration was downloaded via the LMS; upload the configuration. Refer to the LMS User Instructions for a procedure.
17. Remove the grounding wrist strap.
18. Close the Monitor and Control Panel's front door.
19. Enable the external alarms, or notify appropriate personnel that this procedure is finished.
20. Ensure that there are no local or remote alarms active on the system.

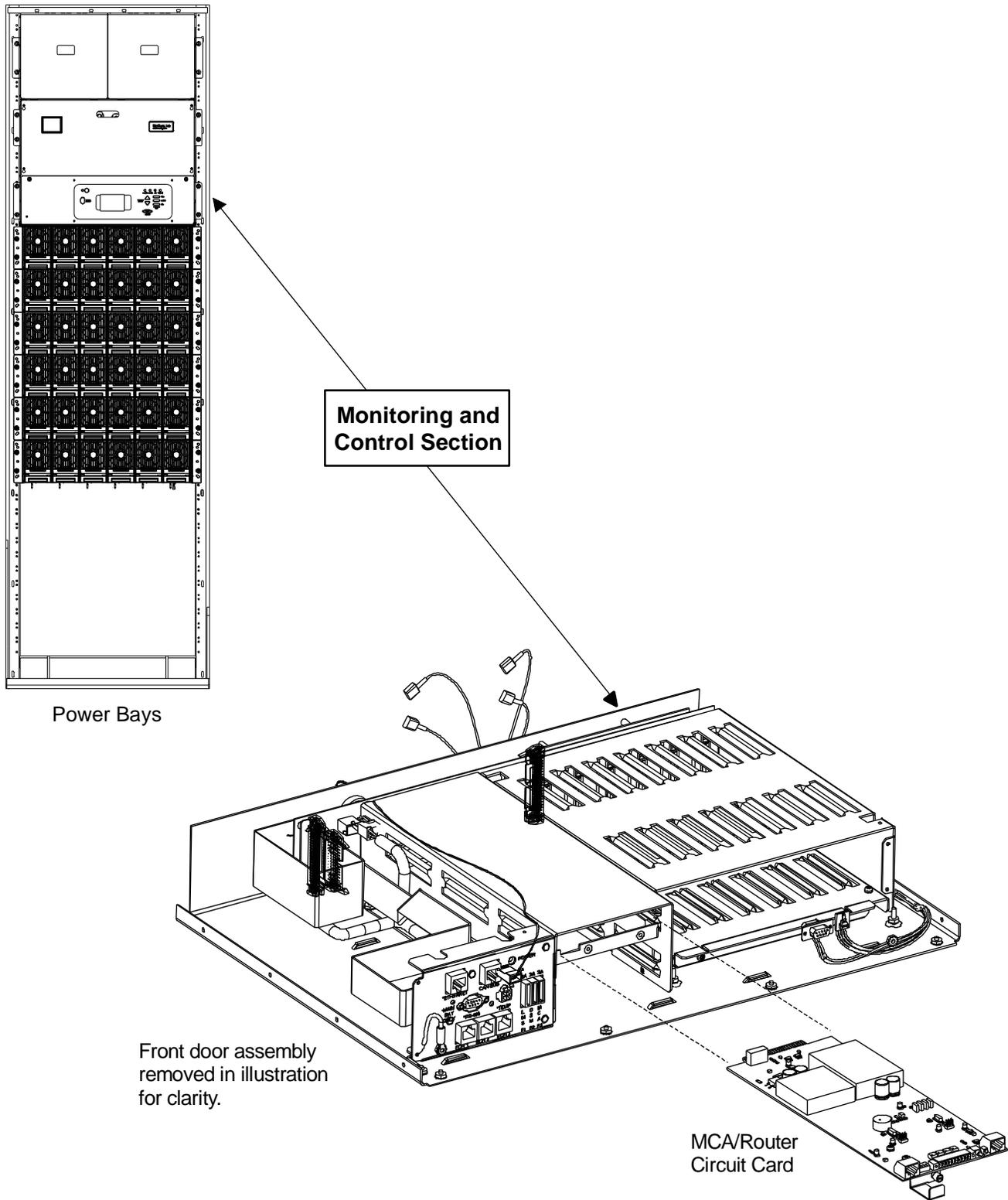
Table 4: MCA Basic Settings

| Setting | Factory Default Setting | Required Site Setting |
|---|-------------------------|-----------------------|
| Float Output Voltage | 52.00V | |
| Test/Equalize Output Voltage | 52.00V | |
| High Voltage Shutdown | 57.50V | |
| Rectifier Module Current Limit | 100% of Rated Full Load | |
| High Voltage #1 Alarm | 55.50V | |
| High Voltage #2 Alarm | 56.50V | |
| Battery On Discharge Alarm | 51.00V | |
| Very Low Voltage Alarm | 47.00V | |
| Total Distribution Load Alarm | 2000A | |
| Distribution Group A Load Alarm | 2000A | |
| Distribution Group B Load Alarm | 2000A | |
| High Battery Ambient Temperature #1 Alarm | Off | |
| High Battery Ambient Temperature #2 Alarm | Off | |
| Low Battery Ambient Temperature #1 Alarm | Off | |
| Low Battery Ambient Temperature #2 Alarm | Off | |
| Digital Temperature Compensation (Slope) | Off (0V/°C) | |
| Digital Temperature Compensation (Maximum Compensation) | 56.50V | |
| Digital Temperature Compensation (Minimum Compensation) | 50.00V | |

Table 5: MCA Advanced Setting

| Setting | Factory Default Setting | Required Site Setting |
|--|---|---|
| MCA Audible Alarm Silent Time Period | Off (Audible Alarms Stay Silenced) | |
| PCU Sequencing | 15 Seconds | |
| Manually Initiated Timed Test/Equalize Feature | 1 Hour | |
| Automatic Test/Equalize Feature | Disabled | |
| Power Share is | Off | |
| PS Initial Capacity Limit = | 80% | |
| PS Voltage Offset = | 0.20V | |
| Alarm Relay Test Feature | 45 Seconds | |
| MCA Customer Alarm Relays | For default relay assignments, refer to the Installation Instructions (Section 6027). | Program as required. Refer to the Installation Instructions (Section 6027). |
| Relay 1-6-1 Function | 1 | |
| Relay 1-6-2 Function | 2 | |
| Relay 1-6-3 Function | 6 | |
| Relay 1-6-4 Function | 12 | |
| Relay 1-6-5 Function | 5 | |
| Relay 1-6-6 Function | 13 | |
| Relay 1-7-1 Function | 8 | |
| Relay 1-7-2 Function | 7 | |
| Relay 1-7-3 Function | 4 | |
| Relay 1-7-4 Function | -- | |
| Relay 1-7-5 Function | -- | |
| Relay 1-7-6 Function | -- | |
| Analog Input x-x is | Distribution | |
| Analog Input x-x Scale | 6000A | |
| Analog Output x-x Scale | 6000A | |
| Binary Input x-x-1 Alarm On | Closed | |
| Binary Input x-x-2 Alarm On | Closed | |
| Binary Input x-x-3 Alarm On | Closed | |
| Binary Input x-x-4 Alarm On | Closed | |
| Now Displaying | °C | |

Figure 3: Power Bay MCA/Router Circuit Card Replacement



Router Circuit Card Replacement

The MCA circuit card is installed in the Main Power Bay. Router circuit cards are installed in Supplemental Power Bays.



NOTE! Refer to **Figure 3** as this procedure is performed.

Procedure

1. Observe the admonishments presented at the beginning of this section, and those encountered in this procedure.
2. Performing this procedure may activate external alarms. Do one of the following. If possible, disable these alarms. If these alarms cannot be easily disabled, notify the appropriate personnel to disregard any future alarms associated with this system.
3. Open the Monitor and Control Panel's front door to access the Router circuit card mounting position.



ALERT! Damage to the Router circuit card may result if the next step is not followed.

4. Connect an approved grounding strap to your wrist. Attach the other end to a suitable ground.
5. Remove the fuse which supplies input power to the Router circuit card. Refer to **Figure 5** for location.
6. Remove any network cables from the circuit card, noting their locations for re-assembly.
7. Loosen the circuit card retaining screw.
8. Remove the circuit card.
9. Slide the replacement circuit card into its mounting location, ensuring the rear edge connector is firmly seated.
10. Secure the circuit card by tightening the circuit card retaining screw .
11. Replace the fuse which supplies input power to the Router circuit card. Refer to **Figure 5** for location.
12. Remove the grounding wrist strap.
13. Close the Monitor and Control Panel's front door.
14. Enable the external alarms, or notify appropriate personnel that this procedure is finished.
15. Ensure that there are no local or remote alarms active on the system.

MCA Customer Alarm Relay Circuit Card Replacement

Refer to the Installation Procedure detailed in the Installation Instructions (Section 6027).

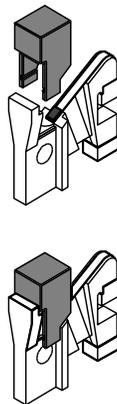
MCA I/O Circuit Card Replacement

Refer to the Installation Procedure detailed in the Installation Instructions (Section 6027).

Alarm, Reference, and Control Fuse Replacement

Safety Fuse Covers: Safety fuse covers are provided for all alarm-type fuses installed in the system. These covers snap onto the fuses and provide protection from exposed electrical terminations when a fuse opens. Insure that the safety fuse cover is installed after replacing a fuse. Refer to **Figure 4** for installation details.

Figure 4: *Installation of Safety Fuse Covers*

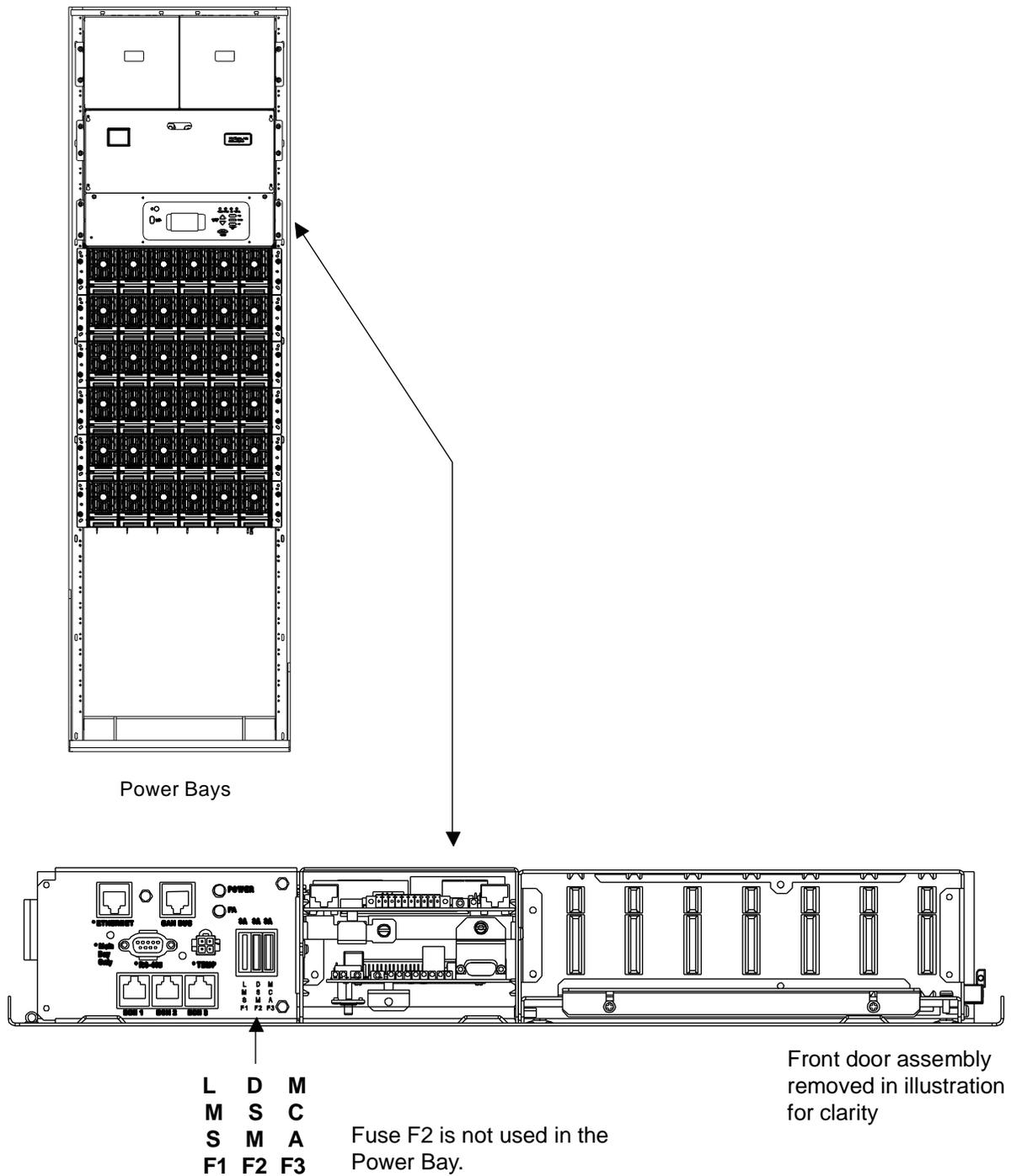


Safety Fuse Cover
P/N 248898600
(SAN-O SAX-1)

Power Bays: If an alarm, reference, or control fuse opens; replace with the same type and rating, or equivalent. Refer to SAG582126100 for fuse replacement part numbers. Refer to **Figure 5** for alarm, reference, and control fuse locations.

Rectifier Module: Each Rectifier Module contains an input and output fuse. These fuses are not customer replaceable. If a fuse opens, replace the entire Rectifier Module. An open fuse causes the unit's Rectifier Module FAIL alarm circuit to activate. The input fuse has a higher amperage rating than the recommended external branch circuit protection.

Figure 5: Power Bay Fuse Locations



Adding a Battery Charge Digital Temperature Compensation Probe to a Previously Operated System

This procedure details the steps to add a Battery Charge Digital Temperature Compensation Probe to a system that has been previously started, configured, and checked.

Procedure

1. Refer to the separate **Installation Manual**, “Making Electrical Connections”, and mount the Battery Charge Digital Temperature Compensation Probe near the batteries.
2. Refer to the separate **Installation Manual**, “Making Electrical Connections”, and connect the Battery Charge Digital Temperature Compensation Probe to the system. The MCA automatically detects the probe and adds it to the inventory without any alarms. The default slope setting is NO TEMPERATURE COMPENSATION.
3. Refer to “MCA System Adjustments” of these instructions, and set the following digital battery charge temperature compensation parameters: SLOPE, MAXIMUM COMPENSATION, and MINIMUM COMPENSATION.
4. Refer to “MCA System Adjustments” of these instructions, and set the following alarm parameters: HIGH TEMPERATURE #1 ALARM, HIGH TEMPERATURE #2 ALARM, LOW TEMPERATURE #1 ALARM, and LOW TEMPERATURE #2 ALARM.
5. Verify that battery charge temperature compensation has begun by comparing the SYSTEM voltage reading versus the FLOAT setting. Depending on the battery ambient temperature, the SYSTEM voltage should be higher or lower than the FLOAT setting by the amount of slope V/°C (note that SYSTEM voltage will also vary from the FLOAT setpoint depending on the load).



NOTE! *At 25°C, the battery charge temperature compensated SYSTEM voltage equals the FLOAT voltage setting.*



NOTE! *If the probe is disconnected or fails, a major alarm (local and extended) activates and the system returns to the FLOAT voltage setting.*

Removing a Battery Charge Digital Temperature Compensation Probe from a Previously Operated System

This procedure details the steps to remove a Battery Charge Digital Temperature Compensation Probe from a system that has been previously started, configured, and checked.

Procedure

1. In the Configure Menu, set the SLOPE = 0.vvvV C/F to NO TEMPERATURE COMPENSATION. Temperature Compensation stops and the System returns to the FLOAT voltage setting.
2. Remove the probe. The Major Alarm activates. Update inventory to clear this alarm, as described in this section.

