WTI Part No. 13762
Rev. D

MPC Series

Managed Power Controllers

Models Covered:

MPC-8H-1
MPC-8H-2
MPC-16H-1
MPC-16H-2
MPC-20V-1
MPC-20V-2
MPC-DISPLAY

User's Guide

Warnings and Cautions:
Installation Instructions

Secure Racking

If Secure Racked units are installed in a closed or multi-unit rack assembly, they may require further evaluation by Certification Agencies. The following items must be considered.

1. The ambient within the rack may be greater than room ambient. Installation should be such that the amount of air flow required for safe operation is not compromised. The maximum temperature for the equipment in this environment is 45°C. Consideration should be given to the maximum rated ambient.
2. Installation should be such that a hazardous stability condition is not achieved due to uneven loading.

Input Supply

Check nameplate ratings to assure there is no overloading of supply circuits that could have an effect on overcurrent protection and supply wiring.

Grounding

Reliable earthing of this equipment must be maintained. Particular attention should be given to supply connections when connecting to power strips, rather than direct connections to the branch circuit.

No Serviceable Parts Inside; Authorized Service Personnel Only

Do not attempt to repair or service this device yourself. Internal components must be serviced by authorized personnel only.

- **Shock Hazard - Do Not Enter**
- **Lithium Battery**
  CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Disconnect Power

If any of the following events are noted, immediately disconnect the unit from the outlet and contact qualified service personnel:

1. If the power cord becomes frayed or damaged.
2. If liquid has been spilled into the device or if the device has been exposed to rain or water.

Two Power Supply Cables

Note that this unit features two separate power circuits, and that a power supply cable is required for each power circuit. Before attempting to service or remove this unit, please make certain that both power supply cables are disconnected from the power source.

15-Amp "Starter" Cables

MPC-8H-1 units, MPC-16H-1 units and MPC-20V-1 units are shipped with two 125 VAC, 15 Amp “Starter” Cables. These Starter Cables will allow you to connect the MPC to power for bench testing and initial start up and are adequate for applications that only require 15 Amps. For 20-Amp power switching applications, please refer to the WTI Power Cable guide supplied with the unit, or use appropriate 20-Amp cables.

Agency Approvals

FCC Part 15 Regulation

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

WARNING: ***Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment***

EMC, Safety, and R&TTE Directive Compliance

The CE mark is affixed to this product to confirm compliance with the following European Community Directives:

- **Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of Member States relating to electromagnetic compatibility;**

  and

- **Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits;**

  and

- **Council Directive 1999/5/EC of 9 March on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.**

Industry Canada - EMI Information

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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1. Introduction

WTI's MPC series Managed Power Controllers allow secure, remote monitoring and management of AC powered rack mount equipment via SSL, SSH, web browser, telnet, external modem or local terminal. The MPC can monitor power to your equipment, and automatically notify you when changes in current levels, temperature, circuit breaker status or other factors exceed user-defined threshold values.

The MPC features two separate power circuits with up to 20 Amps handling capacity per branch circuit, and is available in a horizontal, rack mount version with eight or sixteen switched outlets, or as a "zero unit" vertical mount model with 20 switched outlets.

Power Monitoring and Management:

The MPC can constantly monitor current consumption, temperature levels, ping response and other factors. If the MPC detects that user defined thresholds for these values have been exceeded, the unit can promptly notify you via email, SNMP, Syslog, LED or audible alarm. In addition, the MPC can also notify you when the Invalid Access Lockout has been triggered, when one of the MPC circuit breakers is open, or when a loss of communication with the optional auxiliary units is detected. The MPC also records current consumption data to a convenient log file, which can be retrieved in ASCII, XML, or CSV format or displayed in graph format.

Security and Co-Location Features:

Secure Shell (SSHv2) encryption and address-specific IP security masks prevent unauthorized access to command and configuration functions.

The MPC also provides four different levels of security for user accounts: Administrator, SuperUser, User and ViewOnly. The Administrator level provides complete access to all plug functions, operating features and configuration menus. The SuperUser level allows switching and rebooting of all plugs but does not allow access to configuration functions. The User level allows access to only a select group of Administrator-defined plugs. The ViewOnly level allows you to check plug status and unit status, but does not allow switching or rebooting of outlets or access to configuration menus.

The MPC includes full Radius support, LDAP capability, TACACS capability, DHCP and an invalid access lockout feature. An Audit Log records all user access, login and logout times and command actions.

Convenient, Durable Design:

The MPC features two separate power circuits and can support up to 40 Amps per unit; each power circuit is split into two circuit breakers. 120 VAC models include NEMA 5-20 R outlets and 240 VAC models include IEC320-C13 outlets. The MPC is also available with an optional remote front panel, which can be used to display the status of MPC units installed in hard-to-reach spots, deep inside equipment racks. Each MPC unit can also be connected to up to three additional units, allowing control of up to 80 outlets via a single IP Address .

Model Numbers

The MPC series includes horizontal/vertical 8/16/20 outlet and 120/240 VAC models to accommodate a variety of data center equipment racks and power distribution needs.

Eight and sixteen outlet MPC-H (Horizontal) Series:

- MPC-8H-1 120 VAC, 8 ea. NEMA 5-20R Outlets
- MPC-8H-2 240 VAC, 8 ea. IEC320-C13 Outlets
- MPC-16H-1 120 VAC, 16 ea. NEMA 5-20R Outlets
- MPC-16H-2 240 VAC, 16 ea. IEC320-C13 Outlets

20-outlet MPC-V (Vertical) Series:

- MPC-20V-1 120 VAC, 20 ea. NEMA 5-20R Outlets
- MPC-20V-2 240 VAC, 20 ea. IEC320-C13 Outlets

Standalone front panel display unit:

- MPC-DISPLAY

Typographic Conventions

^ (e.g. **^X**)	Indicates a control character. For example, the text "**^X**" (Control X) indicates the **[Ctrl]** key and the **[X]** key must be pressed simultaneously.
`COURIER FONT`	Indicates characters typed on the keyboard. For example, **`/RB`** or **`/ON A2`**.
[Bold Font]	Text set in bold face and enclosed in square brackets, indicates a specific key. For example, **[Enter]** or **[Esc]**.
`< >`	Indicates required keyboard entries: For Example: **`/P <n>`**.
`[ ]`	Indicates optional keyboard entries. For Example: **`/P [n]`**.

2. Unit Description

2.1. MPC-H Series - Front Panel

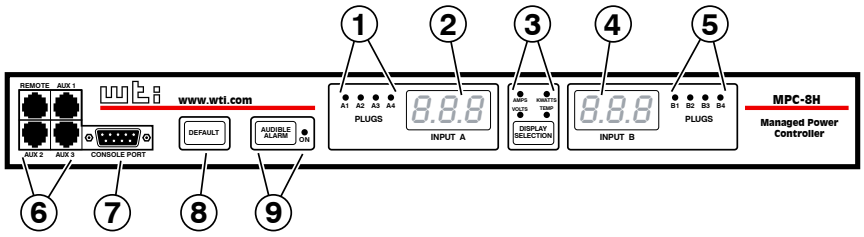

Figure 2.1: MPC-8H - Front Panel

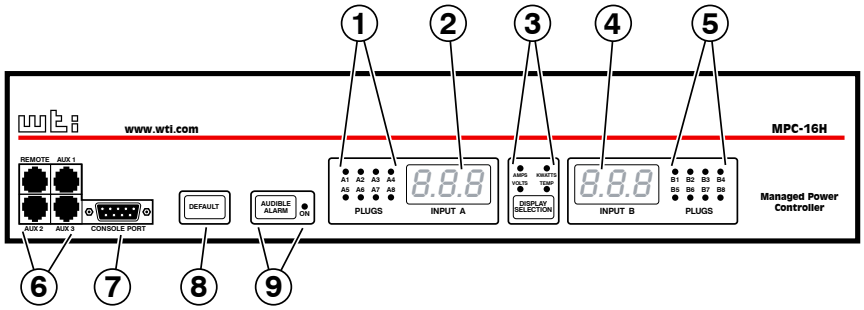

Figure 2.2: MPC-16H - Front Panel

As shown in Figures 2.1 and 2.2, the MPC-H Series Front Panel includes the following components:

1. **Power Circuit A - Indicator Lights:** LED indicators, which light when power is applied to the corresponding outlet on Power Circuit A.

2. **Power Circuit A - Digital Display:** An LED digital readout, which can be used to show Amps, Kilowatts, Volts or Temperature for Power Circuit A. Note that the Display Selection Button is used to determine which of these values will appear on the digital display..

3. **Display Selection Button and Indicators:** Determines which measurement will appear on the Digital Displays for Circuits A and B. Each time the Display Selection Button is pressed, the Digital Displays will toggle between Amps, Kilowatts, Volts and Temperature, and the LED indicators will light to show which measurement is currently selected. Please refer to Section 2.4 for additional button functions.

4. **Power Circuit B - Digital Display:** Same as Item 2 above, except displays values for Power Circuit B.

5. **Power Circuit B - Indicator Lights:** Same as Item 1 above, except LEDs light to indicate On/Off status of Power Circuit B outlets.

6. **Link Ports:** Four RJ45 connectors, which can be used to link the MPC unit to up to three other MPC units, plus the optional MPC-DISPLAY, status display panel. When your MPC unit is linked to other MPC units, this allows control of up to four MPC units via one IP address.

7. **Console Port:** A DB9, RS232 serial port (DTE), which can be used for connection to a local terminal or external modem, as described in Section 4. For a description of the Console Port interface, please refer to Appendix A.

8. **Default Button:** This button can be used to either reset the unit to default parameters or to perform several other functions, described in Section 2.4.

9. **Audible Alarm Button and LED:** When any of the Alarms discussed in Section 7 are triggered, this LED will light, and the MPC will emit an audible alarm signal. To turn off the audible alarm single, press the Audible Alarm Button once. Please refer to Section 2.4 for additional button functions.

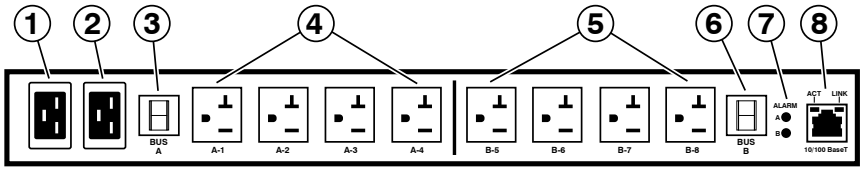

Figure 2.3: MPC-8H-1 - Back Panel

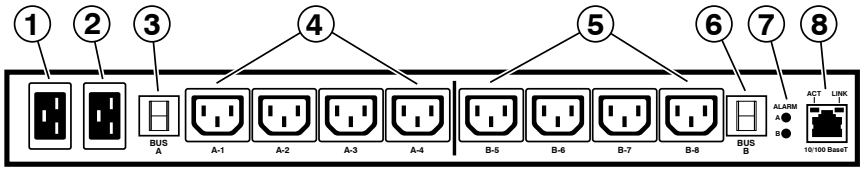

Figure 2.4: MPC-8H-2 - Back Panel

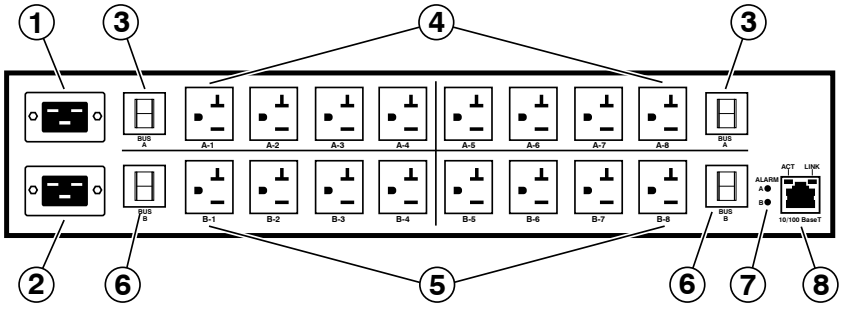

Figure 2.5: MPC-16H-1 - Back Panel

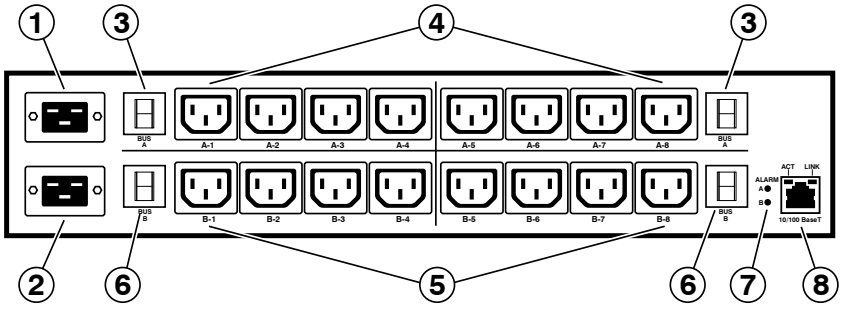

Figure 2.6: MPC-16H-2 - Back Panel

2.2. MPC-H Series - Back Panel

As shown in Figures 2.3, 2.4, 2.5 and 2.6, the MPC-H Series Back Panel includes the following components:

1. **Power Circuit A - Power Inlet:** An IEC320-C20 AC inlet which supplies power to MPC control functions and the Circuit "A" outlets. Also includes cable keeper (not shown.)
2. **Power Circuit B - Power Inlet:** An IEC320-C20 AC inlet which supplies power to MPC control functions and the Circuit "B" outlets. Also includes cable keeper (not shown.)
3. **Power Circuit A - Circuit Breaker(s):** Note that on 16 outlet models, there are two circuit breakers for each power circuit. The maximum amps for each circuit breaker are as follows:
   - **MPC-8H-1 and MPC-16H-1:** 20 Amp Circuit Breaker(s).
   - **MPC-8H-2 and MPC-16H-2:** 16 Amp Circuit Breaker(s).
4. **Power Circuit A - Switched Outlets:** AC Outlets that can be switched On, Off or rebooted in response to user commands:
   - **MPC-8H-1:** Four (4) each, NEMA 5-20R Outlets.
   - **MPC-8H-2:** Four (4) each, IEC320-C13 Outlets.
   - **MPC-16H-1:** Eight (8) each, NEMA 5-20R Outlets.
   - **MPC-16H-2:** Eight (8) each, IEC320-C13 Outlets.
5. **Power Circuit B - Switched Outlets:** Same as Item 4 above.
6. **Power Circuit B - Circuit Breaker(s):** Same as Item 3 above.
7. **Alarm Indicator Lights:** Two LEDs which light when an alarm condition is detected at the corresponding power circuit. For information on Alarm Configuration, please refer to Section 7.
8. **Network Port:** An RJ45 Ethernet port for connection to your 100Base-T, TCP/IP network. Note that the MPC features a default IP address (192.168.168.168). This allows you to connect to the unit without first assigning an IP address. Note that the Network Port also includes two, small LED indicators for Link and Data Activity. For more information on Network Port configuration, please refer to Section 5.9.

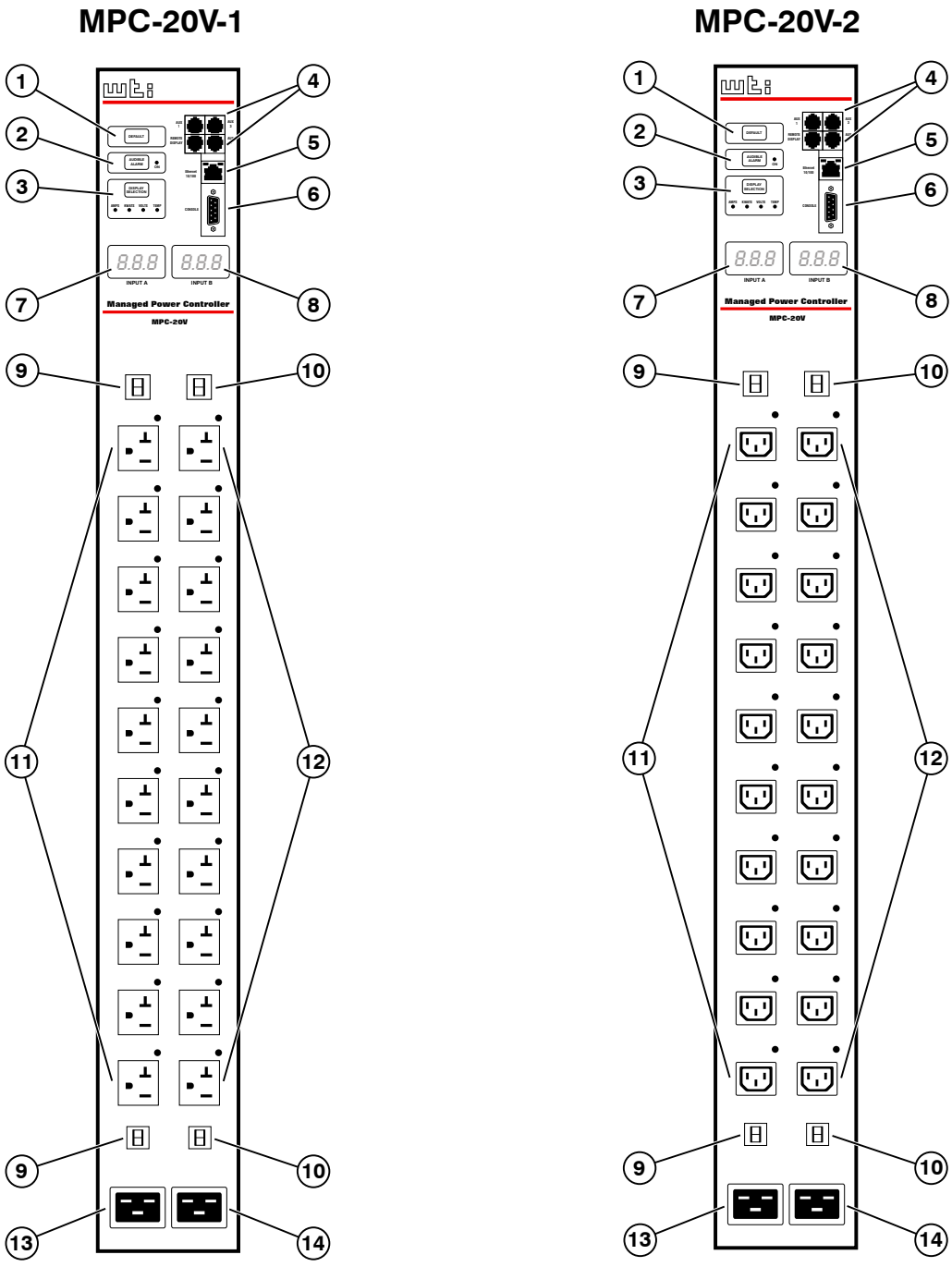

Figure 2.7: MPC-20V Series - Hardware Description

2.3. MPC-V Series - Hardware Description

As shown in Figure 2.7, MPC-V Series units include the following components:

1. **Default Button:** This button can be used to either reset the unit to default parameters or to perform several other functions, as described in Section 2.4.

2. **Audible Alarm Button and LED:** Two LEDs which light when an alarm condition is detected at the corresponding power circuit. For information on Alarm Configuration, please refer to Section 7. Please refer to Section 2.4 for additional button functions.

3. **Display Selection Button and Indicators:** Determines which measurement will appear on the Digital Displays for Circuits A and B. Each time the Display Selection Button is pressed, the Digital Displays will toggle between Amps, Kilowatts, Volts and Temperature, and the LED indicators will light to show which measurement is currently selected. Please refer to Section 2.4 for additional button functions.

4. **Link Ports:** Four RJ45 connectors, which can be used to link the MPC unit to up to three other MPC units, plus the optional MPC-DISPLAY, status display panel. When your MPC unit is linked to other MPC units, this allows control of up to four MPC units via one IP address.

5. **Network Port:** An RJ45 Ethernet port for connection to your 100Base-T, TCP/IP network. Note that the MPC features a default IP address (192.168.168.168). This allows you to connect to the unit without first assigning an IP address. Note that the Network Port also includes two, small LED indicators for Link and Data Activity. For more information on Network Port configuration, please refer to Section 5.9.

6. **Console Port:** A DB9, RS232 serial port (DTE), which can be used for connection to a local terminal or external modem, as described in Section 4. For a description of the Console Port interface, please refer to Appendix A.

7. **Power Circuit A - Digital Display:** An LED digital readout, which can be used to show Amps, Kilowatts, Volts or Temperature for Power Circuit A. Note that the Display Selection Button (Item 3) is used to determine which of these values will appear on the digital display.

8. **Power Circuit B - Digital Display:** Same as Item 7 above, except displays values for Power Circuit B.

9. **Power Circuit A - Circuit Breaker(s):** There are two circuit breakers for each power circuit. The maximum amps for each circuit breaker are as follows:

   - **MPC-20V-1:** 20 Amp Circuit Breaker(s).
   - **MPC-20V-2:** 16 Amp Circuit Breaker(s).

10. **Power Circuit B - Circuit Breaker(s):** Same as Item 9 above, except circuit breakers apply to Power Circuit B.

11. **Power Circuit A - Switched Outlets:** AC Outlets that can be switched On, Off or rebooted in response to user commands:
    - **MPC-20V-1:** Ten (10) each, NEMA 5-20R Outlets.
    - **MPC-20V-2:** Ten (10) each, IEC320-C13 Outlets.
12. **Power Circuit B - Switched Outlets:** Same as Item 11 above, except outlets are for Power Circuit B.
13. **Power Circuit A - Power Inlet:** An IEC320-C20 AC inlet which supplies power to the Circuit "A" outlets. Also includes cable keeper (not shown.)
14. **Power Circuit B - Power Inlet:** An IEC320-C20 AC inlet which supplies power to the Circuit "B" outlets. Also includes cable keeper (not shown.)

2.4. Button Functions

The Default, Audible Alarm and Display Selection buttons can be used to perform several functions described below:

1. **Reboot Operating System:**
    a) Press and hold the Default button for five seconds, and then release it.
    b) The MPC will reboot it's operating system; all plugs will be left in their current On/Off state.
    c) If the optional MPC-DISPLAY unit is installed, and this operation is performed at the MPC-DISPLAY unit, all connected MPC units will also be rebooted.
2. **Set Parameters to Factory Defaults:**
    a) Simultaneously press both the Default button and the Display Selection button, hold them for five seconds, and then release them.
    b) All MPC parameters will be reset to their original factory default settings, and the unit will then reboot. All plugs will be left in their current On/Off state.
    c) This function will not be applied to other connected MPC units.
3. **Toggle/Default All Plugs:**
    a) Simultaneously press both the Default button and Audible Alarm button, hold them for five seconds, and then release them.
    b) The MPC will switch all plugs to the Off state. If all plugs are already in the Off state, then the unit will reset all plugs to their user defined default states.
    c) This function will not be applied to other connected MPC units.

4. **Enable/Disable Audible Alarm:**

   a) In the default state, the Audible Alarm is Enabled.

   b) To disable the Audible Alarm, press and hold the Audible Alarm button for three seconds and then release it. To enable the Audible Alarm, press and hold the Audible Alarm button for three seconds again.

   c) If the optional MPC-DISPLAY unit is installed, and this operation is performed at the MPC-DISPLAY unit, all connected MPC units will also be rebooted, otherwise, the operation will only be applied to the unit where the buttons reside.

3. Getting Started

This Quick Start Guide describes a simplified installation procedure for the MPC series hardware, which will allow you to communicate with the unit in order to demonstrate basic features and check for proper operation.

Note that this Quick Start Guide does not provide a detailed description of unit configuration, or discuss advanced operating features in detail. In order to take full advantage of the features provided by this unit, it is recommended that you should refer to the remainder of this User's Guide.

3.1. Installing the MPC Hardware

Note: *This section describes the installation procedure for the MPC-20V, MPC-16H and MPC-8H hardware. For Quick Start installation instructions for the optional MPC-DISPLAY unit, please refer to Section 3.3.*

3.1.1. Apply Power to the MPC-20V

Refer to power rating nameplate on the MPC unit, and then connect the unit to an appropriate power source. Note that the MPC features two separate AC inputs and two separate power busses; connect power cables to the unit's Circuit "A" and Circuit "B" Power Inlets, install the cable keepers (as described in Section 4.1.1), then connect the cables to an appropriate power supply. Refer to the table below for information concerning power requirements and maximum load.

Model No.	Total Outlets	Input Voltage	Max. Load per Outlet	Max. Load per Bus	Max. Load per Unit
MPC-8H-1	8	100 to 120 VAC	20 Amps	20 Amps	40 Amps
MPC-8H-2	8	100 to 240 VAC	10 Amps	16 Amps	32 Amps
MPC-16H-1	16	100 to 120 VAC	20 Amps	20 Amps	40 Amps
MPC-16H-2	16	100 to 240 VAC	10 Amps	16 Amps	32 Amps
MPC-20V-1	20	100 to 120 VAC	20 Amps	20 Amps	40 Amps
MPC-20V-2	20	100 to 240 VAC	10 Amps	16 Amps	32 Amps

3.1.2. Connect your PC to the MPC

The MPC can either be controlled by a local PC, that communicates with the unit via serial port, controlled via external modem, or controlled via TCP/IP network. In order to switch plugs or select parameters, commands are issued to the MPC via either the Network Port or Console Port. Note that it is not necessary to connect to both the Network and Console Ports, and that the Console Port can be connected to either a local PC or External Modem.

- **Network Port:** Connect your 10Base-T or 100Base-T network interface to the MPC Network port.
- **Console Port:** Use a null modem cable to connect your PC COM port to the MPC COM (RS232) Port.
- **External Modem:** Use a standard AT to Modem cable to connect your external modem to the MPC Console (RS232) Port.

3.2. Communicating with the MPC-20V

When properly installed and configured, the MPC will allow command mode access via Telnet, Web Browser, SSH client, modem, or local PC.

Notes:

- *In order to ensure security, both Telnet and Web Browser access are disabled in the default state. To enable Telnet and/or Web Browser access, please refer to the User's Guide.*
- *Default MPC serial port parameters are set as follows: 9600 bps, RTS/CTS Handshaking, 8 Data Bits, One Stop Bit, No Parity. Although these parameters can be easily redefined, for this Quick Start procedure, it is recommended to configure your communications program to accept the default parameters.*
- *The MPC features a default IP Address (192.168.168.168) and a default Subnet Mask (255.255.255.0.) This allows network access to command mode, providing that you are contacting the MPC from a node on the same subnet. When attempting to access the MPC from a node that is not on the same subnet, please refer to Section 5.9 for further configuration instructions.*

1. **Access Command Mode:** The MPC includes two user interfaces; the Text Interface and the Web Browser Interface. The Text Interface is available via Local PC, SSH Client, Telnet, or Modem and can be used to both configure the MPC and create connections between ports. The Web Browser interface is only available via TCP/IP network, and can be used to configure the unit, but cannot create connections between ports. In addition, when contacted via PDA, the MPC will also present a third interface, which is similar to the Web Browser Interface, but offers limited command functions.

   a) **Via Local PC:** Start your communications program and then press **[Enter]**.

   b) **Via SSH Client:** Start your SSH client, enter the default IP address (192.168.168.168) for the MPC and invoke the connect command.

c) **Via Web Browser:** Make certain that Web Browser access is enabled as described in the Section 5.9 in this User's Guide. Start your JavaScript enabled Web Browser, enter the default MPC IP address (192.168.168.168) in the Web Browser address bar, and then press **[Enter]**.

d) **Via Telnet:** Make certain that Telnet access is enabled as described in Section 5.9. Start your Telnet client, and enter the MPC's default IP address (192.168.168.168).

e) **Via Modem:** Make certain that the MPC Console Port has been configured for Modem Mode as described in Section 5.8, then use your communications program to dial the number for the external Modem connected to the Console Port.

2. **Username** / **Password Prompt:** A message will be displayed, which prompts you to enter your username (Login) and password. The default username is "**`super`**" (all lower case, no quotes), and the default password is also "**`super`**". If a valid username and password are entered, the MPC will display either the Main Menu (Web Browser Interface) or the Port Status Screen (SSH, Telnet, or Modem.)

3. **Test Switching Functions:** You may wish to perform the following tests in order to make certain that the MPC is responding to commands.

   a) **Reboot Outlet:**

      i. **Web Browser Interface:** Click on the "Plug Control" link on the left hand side of the screen to display the Plug Control Menu. From the Plug Control Menu, click the down arrow in the row for Plug A1 to display the dropdown menu, then select "Reboot" from the drop down menu and click on the "Execute Plug Actions" button.

      ii. **Text Interface:** Type **`/BOOT A1`** and press **[Enter]**.

   b) **Switch Outlet Off:**

      i. **Web Browser Interface:** From the Plug Control Menu, click the down arrow in the "Action" column for Plug A1 to display the drop down menu, then select "Off" from the drop down menu and click on the "Execute Plug Actions" button.

      ii. **Text Interface:** Type **`/OFF A1`** and press **[Enter]**.

   c) **Switch Outlet On:**

      i. **Web Browser Interface:** From the Plug Control Menu, click the down arrow in the "Action" column for Plug A1 to display the drop down menu, then select "On" from the drop down menu and click on the "Execute Plug Actions" button.

      ii. **Text Interface:** Type **`/ON A1`** and press **[Enter]**.

3. **Logging Out:** When you log off using the proper MPC command, this ensures that the unit has completely exited from command mode, and is not waiting for the inactivity timeout to elapse before allowing additional connections.

   a) **Web Browser Interface:** Click on the "LOGOUT" link on the left hand side of the screen.

   b) **Text Interface:** Type **`/x`** and press **[Enter]**.

3.3. Installing and Operating the Optional MPC-DISPLAY Hardware

Use the supplied RJ-45 cable to connect the optional MPC-DISPLAY unit to the MPC-8H, MPC-16H or MPC-20V unit. Connect one end of the RJ-45 cable to the “Remote” connector on the MPC front panel; connect the other end of the cable to the RJ-45 receptacle on the back side of the MPC-DISPLAY unit.

The MPC-DISPLAY unit will receive five volts of power (for operation) via the RJ-45 cable connected to the MPC-20V unit.

To display amperage, kilowatts, volts and temperature for the MPC units that are attached to the MPC-DISPLAY, press the “Display” button to toggle to the LED for the desired MPC unit, and then press the “Display Selection” button several times to select the desired reading; each time the “Display Selection” button is pressed, the LED indicator adjacent to the button will toggle from Amps to Kilowatts to Volts to Temperature.

This completes the Quick Start Guide for the MPC. Prior to placing the unit into operation, it is recommended to refer to the remainder of this User’s Guide for important information regarding advanced configuration capabilities and more detailed operation instructions. If you have further questions regarding the MPC unit, please contact WTI Customer Support as described in Appendix C.

4. Hardware Installation

4.1. Connecting the Power Supply Cables

4.1.1. Installing the Power Supply Cable Keepers

The MPC includes cable keepers, which are designed to prevent the power supply cables from being accidentally disconnected from the unit.

Notes:

- *MPC-8H-1 units, MPC-16H-1 units and MPC-20V-1 units are shipped with two 125 VAC, 15 Amp "Starter" Cables. These Starter Cables will allow you to connect the MPC to power for bench testing and initial start up and are adequate for applications that only require 15 Amps. For 20-Amp power switching applications, please refer to the WTI Power Cable guide supplied with the unit, or use appropriate 20-Amp cables.*
- *In addition to the Power Supply Cable Keepers described in this section, a Power Outlet Cable Keeper is also included with MPC-20V units. Please refer to Appendix E for more information.*

- **MPC-8H-1 and MPC-8H-2:** The cable keepers for the eight-plug unit must be installed by the user.

  1. First make certain that both of the MPC's two power cables are disconnected from the power source.
  2. Install the two standoff screws (included with the cable keeper) in the two vacant screw holes, located between the two power inlets. When the standoff screws are in place, thread the two screws supplied with the cable keeper into the top end of both of the standoff screws.
  3. Connect the power cables to the power inlets. Check to make sure that both cables are firmly seated in the power inlet connectors.
  4. Install the cable keeper plate, by slipping the plate over the two screws which protrude from the top of the standoffs. Slip the cable keeper plate into place, so that the notches in the bottom of the plate slip over the power cables, and the holes in the middle of the plate align with the screws in the tops of the standoffs.
  5. Tighten the two screws into the standoffs to secure the plate and the power supply cables to the unit. Check to make certain that the cables are held firmly in place by the cable keepers.

- **MPC-16H-1 and MPC-16H-2:** Sixteen-plug units include pre-installed cable keepers. When attaching the power supply cables to the unit, first swing the cable keepers out of the way, then plug the power cables securely into the power inputs. When the cables are in place, snap the cable keepers over each plug to secure the cables to the unit.

- **MPC-20V-1 and MPC-20V-2:** The cable keepers for 20-outlet models must be installed by the user:

  1. First make certain that both of the MPC's two power cables are disconnected from the power source.
  2. Install the screws (included with the cable keeper) in the two vacant screw holes, located directly below the two power inlets. Do not overtighten the two screws; leave enough room for the Cable Keeper assembly to be slid into place in Step 4 below.
  3. Connect the power cables to the power inlets. Check to make sure that both cables are firmly seated in the power inlet connectors.
  4. Install the cable keeper plate, by slipping the plate over the two screws that were installed under the power inlets in Step 2 above. Slip the cable keeper into place, so that the notches in the front of the plate slip under the power cables, securing the cables in place.
  5. Tighten the two screws to secure the plate and the power supply cables to the unit. Check to make certain that the cables are held firmly in place by the cable keepers.

4.1.2. Connect the MPC to Your Power Supply

Refer to the cautions listed below and at the beginning of this User's Guide, and then connect the MPC unit to an appropriate power supply.

CAUTIONS:

- ***Before attempting to install this unit, please review the warnings and cautions listed at the front of the user's guide.***
- ***This device should only be operated with the type of power source indicated on the instrument nameplate. If you are not sure of the type of power service available, please contact your local power company.***
- ***Reliable earthing (grounding) of this unit must be maintained. Particular attention should be given to supply connections when connecting to power strips, rather than directly to the branch circuit.***

4.2. Connection to Switched Outlets

Connect the power cord from your switched device to one of the AC Outlets on the MPC unit. Note that when power is applied to the MPC, the AC Outlets will be switched "ON" by default.

Note that MPC units feature two separate power busses. Maximum power ratings are summarized in the table below:

Model No.	Total Outlets	Input Voltage	Max. Load per Outlet	Max. Load per Bus	Max. Load per Unit
MPC-8H-1	8	100 to 120 VAC	20 Amps	20 Amps	40 Amps
MPC-8H-2	8	100 to 240 VAC	10 Amps	16 Amps	32 Amps
MPC-16H-1	16	100 to 120 VAC	20 Amps	20 Amps	40 Amps
MPC-16H-2	16	100 to 240 VAC	10 Amps	16 Amps	32 Amps
MPC-20V-1	20	100 to 120 VAC	20 Amps	20 Amps	40 Amps
MPC-20V-2	20	100 to 240 VAC	10 Amps	16 Amps	32 Amps

4.3. Serial Console Port Connection

The MPC's Console Port is a male, RS-232C DB9 connector, wired in a DTE configuration. In the default state, the Console port is configured for 9600 bps, no parity, 8 data bits, 1 stop bit. The Console Port can be connected to either an external modem or a local PC, but not both items at the same time. Appendix A describes the COM Port interface.

4.3.1. Connecting a Local PC

Use the supplied null modem cable to connect your PC COM port to the MPC's RS232 Console Port. Make certain that the Serial Port Mode is set to "Normal" as described in Section 5.8.

4.3.2. Connecting an External Modem

When connecting directly to an external modem, use a standard AT to Modem cable. Make certain that the modem is initialized at the same default parameters as the MPC Console Port. Make certain that the MPC Serial Port Mode is set to "Modem" as described in Section 5.8.

4.4. Connecting the Network Cable

The Network Port is an RJ45 Ethernet jack, for connection to a TCP/IP network. Connect your 100Base-T cable to the Network Port. Note that the MPC includes a default IP address (192.168.168.168) and a default subnet mask (255.255.255.0.) When installing the MPC in a working network environment, it is recommended to define network parameters as described in Section 5.9.

4.5. Connecting the Optional MPC-DISPLAY Unit

Use an RJ-45 cable to connect the optional MPC-DISPLAY unit to the MPC-8H, MPC-16H or MPC-20V unit. Connect one end of the RJ-45 cable to the "Remote" connector on the MPC front panel; connect the other end of the cable to the RJ-45 receptacle on the back side of the MPC-DISPLAY unit.

The MPC-DISPLAY unit will receive five volts of power (for operation) via the RJ-45 cable connected to the MPC-20V unit.

To display amperage, kilowatts, volts and temperature for the MPC units that are attached to the MPC-DISPLAY, press the "Display" button to toggle to the LED for the desired MPC unit, and then press the "Display Selection" button several times to select the desired reading; each time the "Display Selection" button is pressed, the LED indicator adjacent to the button will toggle from Amps to Kilowatts to Volts to Temperature.

This completes the MPC installation instructions. Please proceed to the next Section for instructions regarding unit configuration.

5. Basic Configuration

This section describes the basic configuration procedure for all MPC units. For more information on Reboot Options and Alarm Configuration, please refer to Section 6 and Section 7.

5.1. Communicating with the MPC Unit

In order to configure the MPC, you must first connect to the unit, and access command mode. Note that, the MPC offers two separate configuration interfaces; the Web Browser Interface and the Text Interface.

In addition, the MPC also offers three different methods for accessing command mode; via network, via modem, or via local console. The Web Browser interface is only available via network, and the Text Interface is available via network (SSH or Telnet), modem or local PC.

5.1.1. The Text Interface

The Text Interface consists of a series of simple ASCII text menus, which allow you to set options and define parameters by entering the number for the desired option using your keyboard, and then typing in the value for that option.

Since the Web Browser Interface and Telnet accessibility are both disabled in the default state, you will need to use the Text Interface to contact the unit via Local PC or SSH connection when setting up the unit for the first time. After you have accessed command mode using the Text Interface, you can then enable Web Access and Telnet Access, if desired, in order to allow future communication with the unit via Web Browser or Telnet. You will not be able to contact the unit via Web Browser or Telnet until you have specifically enabled those options.

Once Telnet Access is enabled, you will then be able to use the Text Interface to communicate with the MPC via local PC, Telnet or SSH connection. You can also use the Text Interface to access command mode via an external modem installed at the MPC's serial Console Port.

In order to use the Text Interface, your installation must include:

- **Access via Network:** The MPC must be connected to your TCP/IP Network, and your PC must include a communications program (such as HyperTerminal.)
- **Access via Modem:** An external modem must be installed at the MPC's RS-232 Console Port, a phone line must be connected to the external modem, and the Console Port must be configured for Modem Mode. In addition, your PC must include a communications program.
- **Access via Local PC:** Your PC must be physically connected to the MPC's RS232 Console Port as described in Section 4, the Console Port must be configured for Normal Mode, and your PC must include a communications program.

To access command mode via the Text Interface, proceed as follows:

> **Note:** *When communicating with the unit for the first time, you will not be able to contact the unit via Telnet, until you have accessed command mode, via Local PC or SSH Client, and used the Network Parameters Menu to enable Telnet as described in Section 5.9.*

1. Contact the MPC Unit:

   a) **Via Local PC:** Start your communications program and press **[Enter]**. Wait for the connect message, then proceed to Step 2.

   b) **Via Network:** The MPC includes a default IP address (192.168.168.168) and a default subnet mask (255.255.255.0.) This allows you to contact the unit from any network node on the same subnet, without first assigning an IP Address to the unit. For more information, please refer to Section 5.9.

      i. **Via SSH Client:** Start your SSH client, and enter the MPC's IP Address. Invoke the connect command, wait for the connect message, then proceed to Step 2.

      ii. **Via Telnet:** Start your Telnet Client, and then Telnet to the MPC's IP Address. Wait for the connect message, then proceed to Step 2.

   c) **Via Modem:** Use your communications program to dial the number for the external modem which you have connected to the MPC's Console Port.

2. **Login** / **Password Prompt:** A message will be displayed, which prompts you to enter a username (login name) and password. The default username is "**super**" (all lower case, no quotes), and the default password is also "**super**".

3. If a valid username and password are entered, the MPC will display the Plug Status Screen, shown in Figure 5.1.

```
LOCAL - Managed Power Controller      Site ID: (undefined)

PLUG |           NAME            | STATUS | Boot/Seq. Delay | Default
-----+----------------------------+--------+-----------------+----------
 A1  | Local_InfeedA_Outlet1      |  ON    |    0.5 Secs     |   ON    |
 A2  | Local_InfeedA_Outlet2      |  ON    |    0.5 Secs     |   ON    |
 A3  | Local_InfeedA_Outlet3      |  ON    |    0.5 Secs     |   ON    |
 A4  | Local_InfeedA_Outlet4      |  ON    |    0.5 Secs     |   ON    |
 A5  | Local_InfeedA_Outlet5      |  ON    |    0.5 Secs     |   ON    |
 A6  | Local_InfeedA_Outlet6      |  ON    |    0.5 Secs     |   ON    |
 A7  | Local_InfeedA_Outlet7      |  ON    |    0.5 Secs     |   ON    |
 A8  | Local_InfeedA_Outlet8      |  ON    |    0.5 Secs     |   ON    |
 A9  | Local_InfeedA_Outlet9      |  ON    |    0.5 Secs     |   ON    |
 A10 | Local_InfeedA_Outlet10     |  ON    |    0.5 Secs     |   ON    |
 B1  | Local_InfeedB_Outlet1      |  ON    |    0.5 Secs     |   ON    |
 B2  | Local_InfeedB_Outlet2      |  ON    |    0.5 Secs     |   ON    |
 B3  | Local_InfeedB_Outlet3      |  ON    |    0.5 Secs     |   ON    |
 B4  | Local_InfeedB_Outlet4      |  ON    |    0.5 Secs     |   ON    |
 B5  | Local_InfeedB_Outlet5      |  ON    |    0.5 Secs     |   ON    |
 B6  | Local_InfeedB_Outlet6      |  ON    |    0.5 Secs     |   ON    |


Enter ">" for more plugs, <ESC> to quit...
```

Figure 5.1: The Plug Status Screen (Text Interface; MPC-20V Shown)

5.1.2. The Web Browser Interface

The Web Browser Interface consists of a series of web forms, which can be used to select configuration parameters and perform reboot operations, by clicking on radio buttons and/or entering text into designated fields.

> **Note:** *In order to use the Web Browser Interface, Web Access must first be enabled via the Text Interface Network Parameters Menu (/N), the MPC must be connected to a TCP/IP network, and your PC must be equipped with a JavaScript enabled web browser.*

1. Start your JavaScript enabled Web Browser, key the MPC's IP address (default = 192.168.168.168) into the web browser's address bar, and press **[Enter]**.
2. **Username / Password Prompt:** A message box will prompt you to enter your username and password. The default username is "**`super`**" (all lower case, no quotes), and the default password is also "**`super`**".
3. If a valid username and password are entered, the MPC Home Screen will appear as shown in Figure 5.2.

Figure 5.2: The Home Screen (Web Browser Interface)

5.1.3. Access Via PDA

In addition to the Web Browser Interface and Text Interface, the MPC command mode can also be accessed by PDA devices. Note however, that due to nature of most PDAs, only a limited selection of MPC operating and status display functions are available to users who communicate with the unit via PDA.

When the MPC is operated via a PDA device, only the following functions are available:

- Plug Status Screen (Section 8.2)
- Plug Group Status Screen (Section 8.3)
- Plug Control Screen (Section 9.1.1)
- Plug Group Control Screen (Section 9.1.2)
- Current Monitor (Section 8.4)
- Current History Graph (Section 8.5)
- Unit Info (Shows Site I.D. message and firmware version.)

For more information on these functions, please refer to the appropriate section listed next to each function in the list above.

These screens will allow PDA users to review Plug Status and Plug Group Status, invoke switching and reboot commands, display Current Monitor Readings, show Current History and display the Site I.D. and firmware version. Note however, that PDA users are not allowed to change or review MPC configuration parameters.

To configure the MPC for access via PDA, first consult your IT department for appropriate settings. Access the MPC command mode via the Text Interface or Web Browser interface as described in this section, then configure the MPC's Network Port accordingly, as described in Section 5.9.

In most cases, this configuration will be adequate to allow communication with most PDAs. Note however, that if you wish to use a BlackBerry to contact the MPC, you must first make certain to configure the BlackBerry to support HTML tables, as described below:

1. Power on the BlackBerry, and then click on the BlackBerry Internet Browser Icon.
2. Press the Menu button, and then choose "Options."
3. From the Options menu, choose "Browser Configuration," then verify to make certain that "Support HTML Tables" is checked (enabled.)
4. Press the Menu button, and select "Save Options."

When you have finished communicating with the MPC via PDA, it is important to always close the session using the PDA's menu functions, rather than by simply closing the browser window, in order to ensure that the MPC has completely exited from command mode, and is not waiting for the inactivity timeout period to elapse. For example, to close a session on a BlackBerry, press the Menu button and then choose "Close."

5.2. Configuration Menus

Although the Web Browser Interface and Text Interface provide two separate means for selecting parameters, both interfaces allow access to the same set of basic parameters, and parameters selected via one interface will also be applied to the other. To access the configuration menus, proceed as follows:

- **Text Interface:** Refer to the Help Screen (/H) and then enter the appropriate command to access the desired menu. When the configuration menu appears, key in the number for the parameter you wish to define, and follow the instructions in the resulting submenu.
- **Web Browser Interface:** Click the appropriate link on the left hand side of the screen (Figure 5.2) to access the desired configuration menu. To change parameters, click in the desired field and key in the new value or select a value from the pull-down menu. To apply newly selected parameters, click on the "Change Parameters" button at the bottom of the menu or the "Set" button next to the field.

The following sections describe options and parameters that can be accessed via each of the configuration menus. Please note that essentially the same set of parameters and options are available to both the Web Browser Interface and Text Interface.

Notes:

- *Configuration menus are only available when you have logged into command mode using a password that permits Administrator Level commands. SuperUser accounts are able to view configuration menus, but are not allowed to change parameters.*
- *Configuration menus are not available when you are communicating with the MPC via PDA*
- *When defining parameters via the Text Interface, make certain to press the [Esc] key to completely exit from the configuration menu and save newly defined parameters. When parameters are defined via the Text Interface, newly defined parameters will not be saved until the "Saving Configuration" message is displayed.*

5.3. Defining System Parameters

The System Parameters menus are used to define the Site ID Message, set the system clock and calendar, and configure the Invalid Access Lockout feature and Callback feature.

In the Text Interface, the System Parameters menu is also used to create and manage user accounts and passwords. Note however, that when you are communicating with the unit via the Web Browser Interface, accounts and passwords are managed and created via a separate menu that is accessed by clicking on the "Users" link on the left hand side of the menu.

- **Text Interface:** Type **`/F`** and press **[Enter]**. The System Parameters Menu will appear as shown in Figure 5.3.
- **Web Browser Interface:** Click the "System Parameters" link on the left hand side of the screen. The System Parameters menu will be displayed as shown in Figure 5.4.

```
SYSTEM PARAMETERS:

  1. User Directory
  2. Site-ID:                    (undefined)
  3. Real Time Clock:            08/03/2007 11:22:30
  4. Invalid Access Lockout:     On
  5. Command Confirmation:      On
  6. Automated Mode:             Off
  7. Command Prompt:             MPC
  8. Temperature Format:         Fahrenheit
  9. Temperature Calibration     (undefined)
 10. Log Configuration
     21. Audit Log               On - Without Syslog
     22. Alarm Log               On - Without Syslog
     23. Current Monitor Log     On - Monthly
 11. Callback Security:          On - Callback (Without Password Prompt)


Enter: #<CR> to change,
       <ESC> exit ...
```

Figure 5.3: The System Parameters Menu (Text Interface)

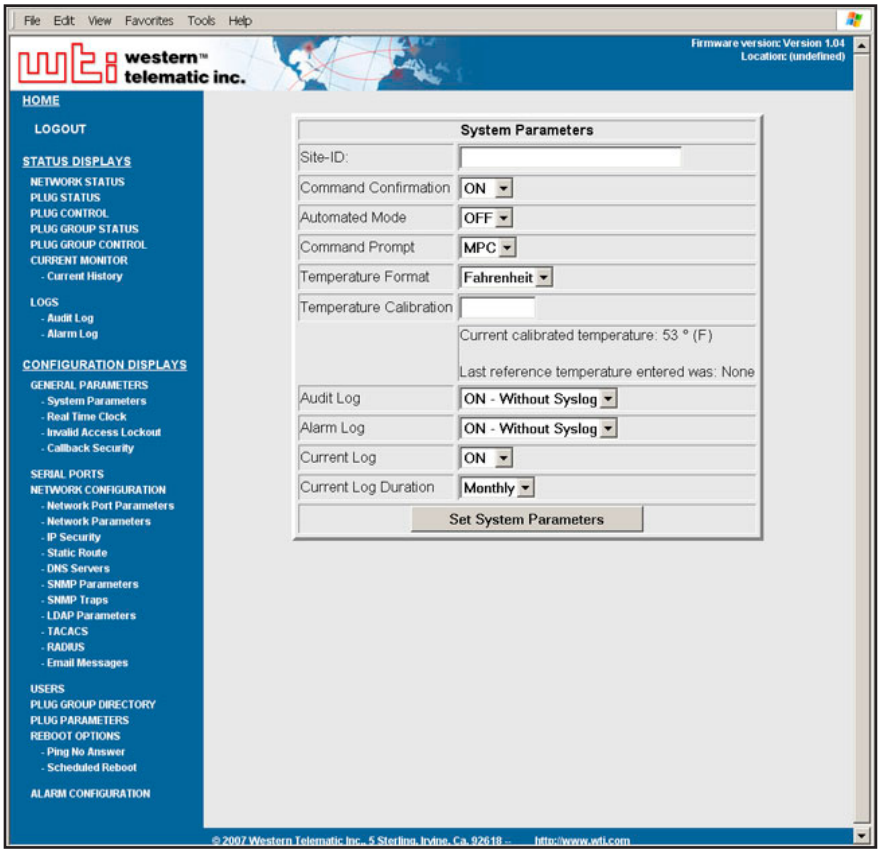

Figure 5.4: The System Parameters Menu (Web Browser Interface)

The System Parameters Menus are used to define the following:

- **User Directory:** This function is used to view, add, modify and delete user accounts and passwords. As discussed in Section 5.4 and Section 5.5, the User Directory allows you to set the security level for each account as well as determine which plugs each account will be allowed to control.

  Note: *The "User Directory" option does not appear in the Web Browser Interface's System Parameters menu, and is instead, accessed via the "Users" link on the left hand side of the menu.*

- **Site ID:** A text field, generally used to note the installation site or name for the MPC unit. (Up to 32 chars.; Default = undefined.)

  Notes:

  - *The Site ID cannot include double quotes.*
  - *The Site ID will be cleared if the MPC is reset to default settings.*

- **Real Time Clock:** This prompt provides access to the Real Time Clock menu, which is used to set the clock and calendar, and to enable and configure the NTP (Network Time Protocol) feature as described in Section 5.3.1.

  Note: *The "Real Time Clock" option does not appear in the Web Browser Interface's System Parameters menu, and is instead, accessed via the "Real Time Clock" link on the left hand side of the screen.*

- **Invalid Access Lockout:** If desired, this feature can be used to automatically disable the MPC Console Port or Network Port after a user specified number of unsuccessful login attempts are made. For more information, please refer to Section 5.3.2. (Default = On.)

  Note: *The "Invalid Access Lockout" item does not appear in the Web Browser Interface's System Parameters menu, and is instead, accessed via the link on the left hand side of the screen.*

- **Command Confirmation:** Enables/Disables the Command Confirmation feature. When enabled, a "Sure" prompt will be displayed before power control commands are executed. When disabled, commands will be executed without further prompting. (Default = On.)

- **Automated Mode:** When enabled, the MPC will execute switching and reboot commands without displaying a confirmation prompt, status screen or confirmation messages. For more information, please refer to Section 9.3. (Default = Off.)

  Note: *When this option is enabled, security functions are suppressed, and users are able to access configuration menus and control plugs without entering a password. If security is a concern and the Automated Mode is required, it is recommended to use the IP Security feature (Section 5.9.3) to restrict access.*

- **Command Prompt:** Allows the Text Interface command prompt to be set to either "MPC", "IPS", "NPS", or "NBB." (Default = MPC.)

- **Temperature Format:** Determines whether the temperature is displayed as Fahrenheit or Celsius. (Default = Fahrenheit.)
- **Temperature Calibration:** Used to calibrate the unit's internal temperature sensing abilities. To calibrate the temperature, place a thermometer inside your equipment rack, in a location that usually experiences the highest temperature. After a few minutes, take a reading from the thermometer, and then key the reading into the configuration menu. In the Web Browser Interface, the temperature is entered at the System Parameters menu, in the Temperature Calibration field; in the Text Interface, the temperature is entered in a submenu of the System Parameters menu, accessed via the Temperature Calibration item. (Default = undefined.)
- **Log Configuration:** Enables and configures the Audit Log, Alarm Log and Current Log. For more information on the MPC's event logging functions, please refer to Section 5.3.4. (Default = Audit Log = On without Syslog, Alarm Log = On without Syslog, Current Log = On, Current Log Duration = Monthly.)

Notes:

- *The Audit Log will create a record of all command activity at the MPC unit.*
- *The Alarm Log will create a record of each instance where an Alarm is triggered at the MPC unit.*
- *The Current Log will create a record of current consumption by each circuit of the MPC unit.*

- **Callback Security:** Enables / configures the Callback Security Function as described in Section 5.3.5. In order for this feature to function, a Callback number must also be defined for each desired user account as described in Section 5.5. (Default = On, Callback, Without Password Prompt.)

Notes:

- *In the Text Interface, Callback Security Parameters are defined via a submenu of the Systems Parameters Menu, which is accessed via the Callback Security item.*
- *In the Web Browser Interface, Callback Security Parameters are defined via a separate menu, which is accessed by clicking the "Callback Security" link on the left hand side of the screen.*

5.3.1. The Real Time Clock and Calendar

The Real Time Clock menu is used to set the MPC's internal clock and calendar. To access the Real Time Clock Menu, proceed as follows:

- **Text Interface:** Type `/F` and press **[Enter]**. The System Parameters menu will appear as shown in Figure 5.3. At the System Parameters menu, type `3` and press **[Enter]** to display the Real Time Clock menu.
- **Web Browser Interface:** Click on the "Real Time Clock" link on the left hand side of the screen to access the Real Time Clock menu.

The configuration menu for the Real Time Clock offers the following options:

- **Date:** Sets the Month, Date, Year and day of the week for the MPC's real-time clock/calendar.
- **Time:** Sets the Hour, Minute and Second for the MPC's real time clock/calendar. Key in the time using the 24-hour (military) format.
- **Time Zone:** Sets the time zone, relative to Greenwich Mean Time. Note that the Time Zone setting will function differently, depending upon whether or not the NTP feature is enabled and properly configured. (Default = GMT (No DST).)
  - **NTP Enabled:** The Time Zone setting is used to adjust the Greenwich Mean Time value (received from the NTP server) in order to determine the precise local time for the selected time zone.
  - **NTP Disabled:** If NTP is disabled, or if the MPC is not able to access the NTP server, then status screens and activity logs will list the selected Time Zone and current Real Time Clock value, but will not apply the correction factor to the displayed Real Time Clock value.
- **NTP Enable:** When enabled, the MPC will contact an NTP server (defined via the NTP IP Address prompts) once a day, and update its clock based on the NTP server time and selected Time Zone. (Default = Off.)

  Notes:
  - *The MPC will also contact the NTP server and update the time whenever you change NTP parameters.*
  - *To cause MPC to immediately contact the NTP server at any time, make certain that the NTP feature is enabled and configured, then type* **`/F`** *and press* **[Enter]**. *When the System Parameters menu appears, press* **[Esc]**. *The MPC will save parameters and then attempt to contact the server, as specified by currently defined NTP parameters.*
- **Primary NTP Address:** Defines the IP address or domain name (up to 64 characters long) for the primary NTP server. (Default = undefined.)

  Note: *In order to use domain names for web addresses, DNS Server parameters must first be defined as described in Section 5.9.5.*
- **Secondary NTP Address:** Defines the IP address or domain name (up to 64 characters long) for the secondary, fallback NTP Server. (Default = undefined.)

  Note: *In order to use domain names for web addresses, DNS Server parameters must be defined as described in Section 5.9.5.*
- **NTP Timeout:** The amount of time in seconds, that will elapse between each attempt to contact the NTP server. When the initial attempt is unsuccessful, the MPC will retry the connection four times. If neither the primary nor secondary NTP server responds, the MPC will wait 24 hours before attempting to contact the NTP server again. (Default = 3 Seconds.)

5.3.2. The Invalid Access Lockout Feature

When properly configured and enabled, the Invalid Access Lockout feature will watch all login attempts made at the Network Port and RS232 Console Port. If the port exceeds the selected number of invalid attempts, then the port where the Invalid Attempts occurred will be automatically disabled for a user-defined length of time (Lockout Duration.) The Invalid Access Lockout feature uses two separate counters to track invalid access attempts:

- **Serial Port Counter:** Counts invalid access attempts at the RS232 Console Port. If the number of invalid attempts at the port exceeds the user-defined Lockout Attempts value, then the port will be locked.
- **Telnet, SSH and Web Browser Counter:** Counts all invalid attempts to access command mode via Telnet, SSH or Web Browser interface. If the number of cumulative invalid attempts exceeds the user-defined Lockout Attempts value, then the Network Port will be locked.

Note that when an Invalid Access Lockout occurs, you can either wait for the Lockout Duration period to elapse (after which, the MPC will automatically reactivate the port), or you can issue the /UL command (type **`/UL`** and press **[Enter]**) via the Text Interface to instantly unlock all of the MPC's logical network ports.

Notes:

- *Invalid Access Lockout parameters, defined via the System Parameters menu, will apply to both the Serial Console Port and the Network Port.*
- *When the Console Port is locked, an external modem connected to that port will not answer.*
- *When either the Console Port or Network Port are locked, the other port will remain unlocked, unless the Invalid Access Lockout feature has also been triggered at that port.*
- *If any one of the MPC's logical network ports is locked, all other network connections to the unit will also be locked.*
- *All invalid access attempts at the MPC Network Port are cumulative (the count for invalid access attempts is determined by the total number of all invalid attempts at all 16 logical network ports.) If a valid login name/password is entered at any of the logical network ports, then the count for all MPC logical network ports will be restarted.*
- *A Port that has been locked by the Invalid Access Lockout feature will still respond to the ping command (providing that the ping command has not been disabled.)*

The Invalid Access menus allow you to select the following:

- **Lockout Enable:** Enables/Disables the Invalid Access Lockout feature. (Default = On.)
- **Lockout Attempts:** The number of invalid attempts required in order to activate the Invalid Access Lockout feature. (Default = 9.)
- **Lockout Duration:** The length of time that logical network ports will remain locked when an Invalid Access Lockout occurs. If the duration is set at "Infinite", then ports will remained locked until the /UL command is issued. (Default = 30 Minutes.)

5.3.3. Automated Mode

The Automated Mode allows the MPC to execute switching and reboot commands, without displaying menus or generating response messages. Automated Mode is designed to allow the MPC to be controlled by a device which can generate commands to control power switching functions without human intervention.

When Automated Mode is enabled, power switching and reboot commands are executed without a "Sure?" confirmation prompt and without command response messages; the only reply to these commands is the "MPC>" prompt, which is re-displayed when each command is completed.

Note that although Automated Mode can be enabled using either the Web Browser Interface or Text Interface, Automated Mode is designed primarily for users who wish to send ASCII commands to the MPC without operator intervention, and therefore does not specifically apply to the Web Browser Interface. When Automated Mode is enabled, the Web Browser Interface can still be used to invoke switching and reboot commands.

Notes:

- *When the Automated Mode is enabled, password prompts will not be displayed at login, and you will be able to access Administrator Level command functions (including the configuration menus) and control plugs without entering a password.*
- *If you need to enable the Automated Mode, but want to restrict network access to configuration menus, it is strongly recommended to enable and configure the IP Security Function as described in Section 5.9.3.*

To enable/disable the Automated Mode, go to the System Parameters menu (see Section 5.3,) and then set the "Automated Mode" option to "On". When Automated Mode is enabled, MPC functions will change as follows:

1. **All Password Security Suppressed:** When a user attempts to access command mode, the password prompt will not be displayed at either the Console Port or Network Port. Unless specifically restricted by the IP Security Function, all users will be allowed to access both switching and configuration functions, and all commands will be immediately accepted without the requirement to enter a password.
2. **Status Screen Suppressed:** The plug status screen will not be automatically displayed after commands are successfully executed. Note however, that the /S command can still be invoked to display the status screen as needed.
3. **"Sure?" Prompt Suppressed:** All commands are executed without prompting for user confirmation.
4. **Error Messages Suppressed:** If the **[Enter]** key is pressed without entering a command, the MPC will not respond with the "Invalid Command" message. Note however, that an error message will still be generated if commands are invoked using invalid formats or arguments.

All other status display and configuration commands will still function as normal.

5.3.4. Log Configuration

This feature allows you to create records of command activity, alarm actions and current consumption for the MPC unit. The Log features are enabled and configured via the System Parameters Menus.

The MPC features three different event logs: the Audit Log, the Alarm Log and the Current Log:

- **Audit Log:** The Audit log creates a record of all command activity at the MPC unit. Each Log record includes a description of the command invoked, the username for the account that invoked the command, and the time and date that the command was invoked.
- **Alarm Log:** The Alarm log creates a record of all Alarm Activity at the MPC unit. Each time that an alarm is triggered, the MPC will generate a record that lists the time and date of the alarm, the name of the Alarm that was triggered, and a description of the Alarm.
- **Current Log:** The Current Log provides a record of current consumption over time at the MPC unit. Each Log record will include the time and date, current readings for power circuits A and B, voltage readings for power circuits A and B, and the temperature reading. The Current Log can be downloaded in ASCII, CSV or XML format, and when viewed via the Web Browser Interface, can also be displayed as a graph.

5.3.4.1. The Audit Log and Alarm Log

The System Parameters menu allows you to select three different configuration parameters for the Audit Log and Alarm Log. Note that the Audit Log and Alarm Log function independently, and parameters selected for one log will not be applied to the other.

- **Off:** The Log is disabled, and command activity and/or alarm events will not be logged.
- **On - With Syslog:** The Log is enabled, and command activity and/or alarm events will be logged. The MPC will generate a Syslog Message every time a Log record is created.
- **On - Without Syslog:** The Log is enabled, and command activity and/or alarm events will be logged, but the MPC will not generate a Syslog Message every time a Log record is created.

Notes:

- *In order for the Audit Log or Alarm Log to generate Syslog Messages, Syslog Parameters must first be defined as described in Section 5.9.*
- *The Audit Log will truncate usernames that are longer than 22 characters, and display two dots (..) in place of the remaining characters.*

5.3.4.2. The Current Log

The System Parameters menu allows you to select two different configuration parameters for the Current Log:

- **Current Log (Enabled):** Enabled/disables the Current Log function. When disabled, the MPC will not log current, voltage, or temperature readings.
- **Current Log Duration:** Determines how often the Current Log will be cleared and a new Log will be started. The Current Log Duration can be set to Monthly or Weekly.

5.3.4.3. Reading and Erasing Logs

To read the Audit Log, Alarm Log or Current log, access the command mode, then proceed as follows:

- **Text Interface:** Type **/L** and press **[Enter]** to display the Display Log menu. Select the desired Log from the menu, key in the appropriate number and press **[Enter]**, and then follow the instructions in the resulting submenu.
- **Web Browser Interface:** To view the Audit Log, click on the "Audit Log" link on the left hand side of the screen. To view the Alarm Log, click on the "Alarm Log" link on the left hand side of the screen. To view the Current Log, click on the "Current History" link on the left hand side of the screen to access the Current Monitory Log menu. The Current Monitor Log Menu allows you to display the Current Log in either graph format, ASCII format, CSS format or XML format.

  Note: *In addition to the Current Log, you can also display current readings via the Current Monitor Function. In the Text Interface, type* **/M** *and then press* ***[Enter]****. In the Web Browser Interface, click on the "Current Monitor" link on the left hand side of the screen.*

To erase all Current Log data, access command mode via the Text Interface, using an account that permits Administrator level commands, then type **/L** and press **[Enter]** to access the Display Logs menu. At the Display Logs menu, type **3** and press **[Enter]** to display the Current Monitor Log menu. From the Current Monitor Log menu, type **4** and press **[Enter]** to erase all current monitor log records. Note that once records have been erased, they cannot be recovered.

Notes:

- *The MPC dedicates a fixed amount of internal memory for Audit Log records, and if log records are allowed to accumulate until this memory is filled, memory will eventually "wrap around," and older records will be overwritten by newer records.*
- *To save the Audit Log or Alarm Log as an ASCII file via the Web Browser Interface, click on the "Logs" link on the left hand side of the screen. When the Logs menu appears, right click the link for the Audit Log or Alarm Log, select "Save Target As", select text format, and save the document with a ".txt" filename extension.*

5.3.5. Callback Security

The Callback function provides an additional layer of security when callers attempt to access command mode via modem. When this function is properly configured, modem users will not be granted immediate access to command mode upon entering a valid password; instead, the unit will disconnect, and dial a user-defined number before allowing access via that number. If desired, users may also be required to re-enter the password *after* the MPC dials back.

In order for Callback Security to function properly, you must first enable and configure the feature via the System Parameters menu as described in this section, and then define a callback number for each desired user account as described in Section 5.5. To configure and enable the Callback function, proceed as follows:

- **Text Interface:** Type **`/F`** and press **[Enter]** to access the System Parameters menu, then type **`6`** and press **[Enter]** to display the Callback Security Menu.
- **Web Browser Interface:** Click the "System Properties" link on the left hand side of the screen to access the System Configuration menu, then click the "Configure Callback Security" link to display the Callback Security Menu.

In both the Text Interface and Web Browser Interface, the Callback Security Menu offers the following options:

- **Callback Enable:** This prompt offers five different configuration options for the Callback Security feature: (Default = On - Callback (Without Password Prompt.)
  - **Off:** All Callback Security is disabled.
  - **On - Callback (Without Password Prompt):** Callbacks will be performed for user accounts that include a Callback Number, and the login prompt will *not* be displayed when the user's modem answers. If the account *does not* include a Callback Number, that user will be granted immediate access and a Callback will *not* be performed.
  - **On - Callback (With Password Prompt):** Callbacks will be performed for user accounts that include a Callback Number, and the login prompt *will* be displayed when the user's modem answers (accounts that include a Callback Number will be required to re-enter their username/password when their modem answers.) If the account *does not* include a Callback Number, then that user will be granted immediate access and a Callback will *not* be performed.

- **On - Callback ONLY (Without Password Prompt):** Callbacks will be performed for user accounts that include a Callback Number, and the username/password prompt will *not* be displayed when the user's modem answers. Accounts that *do not* include a Callback Number will *not* be able to access command mode via modem.
- **On - Callback ONLY (With Password Prompt):** Callbacks will be performed for user accounts that include a Callback Number, and the username/password prompt *will* be displayed when the user's modem answers (users will be required to re-enter their username/password when their modem answers.) Accounts that *do not* include a Callback Number will *not* be able to access command mode via modem.

- **Callback Attempts:** The number of times that the MPC will attempt to contact the Callback number. (Default = 3 attempts.)
- **Callback Delay:** The amount of time that the MPC will wait between Callback attempts. (Default = 30 seconds.)

Notes:

- *After configuring and enabling Callback Security, you must then define a callback phone number for each desired user account (as described in Section 5.5) in order for this feature to function properly.*
- *When using the "On - Callback (With Password Prompt)" option, it is important to remember that accounts that do not include a callback number will be allowed to access command mode without callback verification.*

5.4. User Accounts

Each time that you attempt to access command mode, you will be prompted to enter a username (login) and password. The username and password entered at login determine which plug(s) you will be allowed to control and what type of commands you will be allowed to invoke. Each username / password combination is defined within a "user account."

The MPC allows up to 128 user accounts; each account includes a username, password, security level, plug access rights, service access rights and an optional callback number.

5.4.1. Command Access Levels

In order to restrict access to important command functions, the MPC allows you to set the command access level for each user account. The MPC offers four different access levels: Administrator, SuperUser, User and View Only. The command privileges for each user account are set using the "Access Level" parameter in the Add User or Modify User menus.

Each access level grants permission to use a different selection of commands; lower access levels are restricted from invoking configuration commands, while Administrators are granted access to all commands. The four different access levels can be summarized as follows:

- **Administrator:** Administrators are allowed to invoke all configuration and operation commands, can view all status screens, and can always direct switching and reboot commands to all of the MPC's switched outlets .
- **SuperUser:** SuperUsers are allowed to invoke all On, Off and Reboot commands and view all status screens. SuperUsers can view configuration menus, but are not allowed to change configuration parameters. In the default state, SuperUsers are granted access to all MPC outlets, but when necessary, SuperUsers can also be denied access to specific plugs via the Plug Access parameter in the Add User or Modify User menus.
- **User:** Users are allowed to invoke On, Off and Reboot commands and view all status screens, but can only apply commands to the outlets that they are specifically granted access to. In addition, Users are not allowed to view configuration menus or change configuration parameters.
- **ViewOnly:** Accounts with ViewOnly access, are allowed to view Status Menus, but are not allowed to invoke reboot and switching commands, and cannot view configurations menus or change configuration parameters. ViewOnly accounts can display the Plug Status screen, but can only view the status of plugs that are allowed by the account.

Section 15.2 summarizes command access for all four access levels.

In the default state, the MPC includes one predefined account that provides access to Administrator commands and allows control of all of the MPC's switched power outlets. The default username for this account is "**super**" (lowercase, no quotation marks), and the password for the account is also "**super**".

Notes:

- *In order to ensure security, it is recommended that when initially setting up the unit, a new user account with Administrator access should be created, and the "super" account should then be deleted.*
- *If the MPC is reset to default parameters, all user accounts will be cleared, and the default "super" account will be restored.*

5.4.2. Plug Access

Each account can be granted access to a different selection of switched power outlets (Plugs). When accounts are created, the Plug Access parameter in the Add User menu or Modify User menu can be used to grant or deny access to each switched outlet for that account.

In addition, each command access level also restricts the plugs that the account can be allowed to access:

- **Administrator:** Accounts *with* Administrator access are always allowed to control all plugs. Plug access cannot be disabled for Administrator level accounts.
- **SuperUser:** SuperUser accounts allow access to all plugs by default, yet access to specific plugs can also be denied via the Add User and Modify User menus as described in Section 5.5.
- **User:** Accounts with User level access are only allowed to issue switching and reboot commands to the plugs that have been specifically permitted via the "Plug Access" parameter in the Add User and Modify User menus.
- **ViewOnly:** Accounts with ViewOnly access are not allowed to issue switching and reboot commands to outlets. ViewOnly accounts can display the On/Off state of plugs, but are limited to the plugs specified by the account.

5.5. Managing User Accounts

The User Directory function is employed to create new accounts, display parameters for existing accounts, modify accounts and delete accounts. Up to 128 different user accounts can be created. The "User Directory" function is only available when you have logged into command mode using an account that permits Administrator commands.

- **Text Interface:** Type `/F` and press **[Enter]** to access the System Parameters Menu. From the System Parameters Menu, type `1` and press **[Enter]** to access the User Directory.
- **Web Interface:** Click the "Users" link on the left hand side of the screen to access the User Directory management menus.

In both the Text Interface and the Web Browser Interface, the user configuration menu offers the following functions:

- **View User Directory:** Displays currently defined parameters for any MPC user account as described in Section 5.5.1.
- **Add Username:** Creates new user accounts, and allows you to assign a username, password, command level, plug access, service access and callback number, as described in Section 5.5.2.
- **Modify User Directory:** This option is used to edit or change account information, as described in Section 5.5.3.
- **Delete User:** Clears user accounts, as described in Section 5.5.4.

5.5.1. Viewing User Accounts

The "View User Directory" option allows you to view details about each account, including the plugs the account is allowed to control and whether or not the account is allowed to invoke Administrator commands. The View User option will not display actual passwords, and instead, the password field will read "defined". Note that the View User Accounts function is only available to users who have accessed command mode using a password that permits Administrator Level commands. To view account details, proceed as follows:

- **Text Interface:** From the User Directory menu, type `1` and press **[Enter]**. The MPC will display a screen which lists all defined user accounts. Key in the name of the desired account and then press **[Enter]**.
- **Web Browser Interface:** From the User menu, click the "View/Modify User" link. The MPC will display a menu that allows you to select the desired user and directory function. Select the "View User" button, and then click on the down arrow, scroll to the desired username, select the username, and then click "Choose User."

```
ADD USERNAME TO DIRECTORY:

1. Username:              (undefined)
2. Password:              (undefined)
3. Access Level:          User
4. Plug Access:           (undefined)
5. Plug Group Access      (undefined)
6. Service Access         Serial Port, Telnet/SSH, Web
7. Current Monitoring     On
8. Callback Phone #:      (undefined)


Enter: #<CR> to select,
       <ESC> to return to previous menu ...
```

Figure 5.5: The Add User Menu (Text Interface)

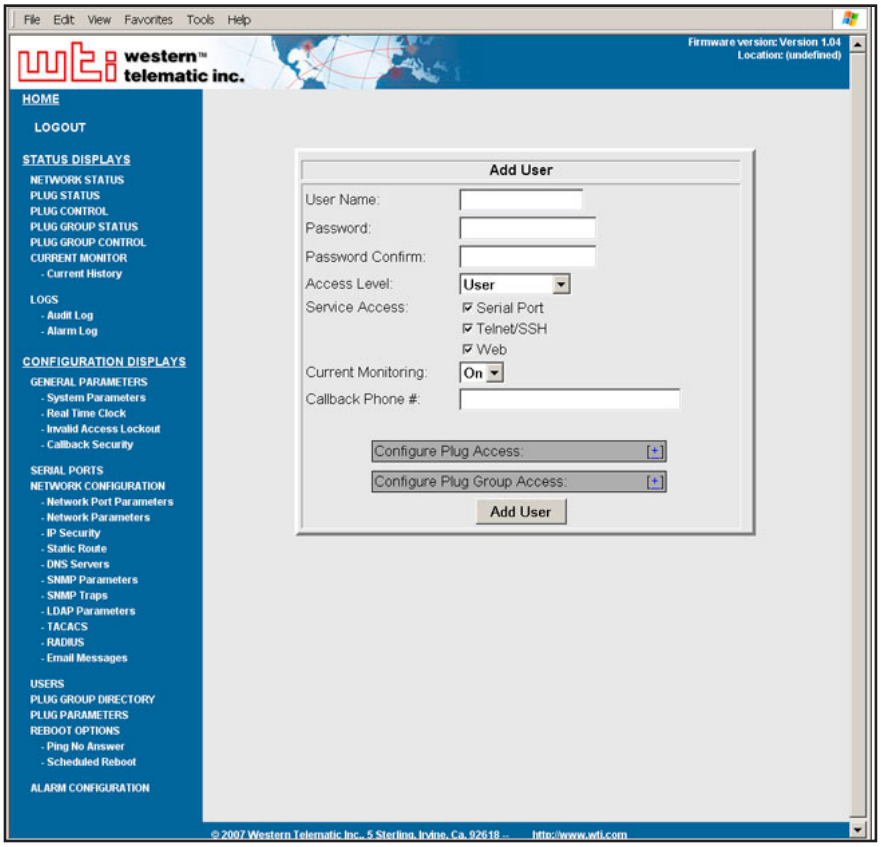

Figure 5.6: The Add User Menu (Web Browser Interface)

5.5.2. Adding User Accounts

The "Add Username" option allows you to create new accounts and assign usernames, passwords and plug access rights to each account. Note that the Add User function is only available when you have accessed command mode using a password that permits Administrator Level commands.

To create new user accounts, activate the command mode using an account that permits access to Administrator level commands and then proceed as follows:

- **Text Interface:** Type **/F** and press **[Enter]** to access the System Parameters menu. From the System Parameters Menu, type **1** and press **[Enter]** to display the User Directory Menu. From the User Directory menu, type **2** and press **[Enter]**. The Add User menu (Figure 5.5) will be displayed.
- **Web Browser Interface:** Click the "Users" link to display the User Configuration menu. At the User Configuration menu, click the "Add User" link. The MPC will display the Add User menu (Figure 5.6.)

The Add User Menu can define the following parameters for each new account:

- **Username:** Up to 32 characters long, and cannot include non-printable characters. Duplicate usernames are not allowed. (Default = undefined.)
- **Password:** Five to sixteen characters long, and cannot include non-printable characters. Note that passwords are case sensitive. (Default = undefined.)
- **Access Level:** Determines which commands this account will be allowed to access. This option can set the access level for this account to "Administrator", "SuperUser", "User" or "ViewOnly." For more information on Command Access Levels, please refer to Section 5.4.1 and Section 15.2. (Default = User.)
- **Plug Access:** Determines which outlet(s) this account will be allowed to control. (Defaults; Administrator & SuperUser = All Plugs On, User = All Plugs Off, ViewOnly = All Plugs Off.)

Notes:

- *In the Text Interface, Plug Access is configured by selecting item 4 and then selecting the desired plugs from the resulting submenu.*
- *In the Web Browser Interface, Plug Access is configured by clicking on the "plus" symbol to display the drop down menu, and then selecting the desired plugs from the drop down menu.*
- *Administrator level accounts will always have access to all plugs.*
- *In the default state, SuperUsers are granted access to all MPC outlets, but when necessary, SuperUsers can also be denied access to specific plugs via the Plug Access parameter.*
- *ViewOnly accounts are allowed to display the On/Off status of plugs via the Plug Status Screen, but are limited to the plugs specified by the account. ViewOnly accounts are not allowed to invoke switching and reboot commands.*

- **Plug Group Access:** Determines which plug groups this account will be allowed to control. Plug Groups allow you to define a selection of outlets, and then quickly assign those outlets to new account by allowing the account to access the Plug Group. For more information on Plug Groups, please refer to Section 5.6. (Default = All Plug Groups Off.)

Notes:

- *In order to use this feature, Plug Groups must first be defined as described in Section 5.6.*
- *In the Text Interface, Plug Group Access is configured by selecting item 4 and then selecting the desired Plug Group(s) from the resulting submenu.*
- *In the Web Browser Interface, Plug Group Access is configured by clicking on the "plus" symbol to display the drop down menu, and then selecting the desired Plug Group(s) from the drop down menu.*

- **Service Access:** Determines whether this account will be able to access command mode via Serial Port, Telnet/SSH or Web. For example, if Telnet/SSH Access is disabled for this account, then this account will not be able to access command mode via Telnet or SSH. (Default = Serial Port = On, Telnet/SSH = On, Web = On.)
- **Current Monitoring:** Enables/Disables current monitoring for this account. When disabled, this account will not be able to read the current at the MPC power outlets. (Default = On.)
- **Callback Number:** Assigns a number that will be called when this account attempts to access command mode via modem, and the Callback Security Function has been enabled as described in Section 5.3.5. (Default = undefined.)

Notes:

- *If the Callback Number is not defined, then Callbacks will not be performed for this user.*
- *If the Callback Number is not defined for a given user, and the Callback Security feature is configured to use either of the "On - Callback" options, then this user will be granted immediate access to command mode via modem.*
- *If the Callback Number is not defined for a given user, and the Callback Security feature is configured to use the "On - Callback ONLY" option, then this user will not be able to access command mode via Modem.*
- *When using the "On - Callback (With Password Prompt)" option, it is important to remember that accounts that do not include a callback number will be allowed to access command mode without callback verification.*

Note: *After you have finished selecting account parameters, make certain to save the new account information before proceeding. In the Web Browser Interface, click on the "Add User" button to save parameters; in the Text Interface, press the **[Esc]** key several times until you have exited from the System Parameters menu and the MPC displays the "Saving Configuration" message.*

5.5.3. Modifying User Accounts

The "Edit User Directory" function allows you to edit existing user accounts in order to change parameters, plug access rights or Administrator Command capability. Note that the Edit/Modify User function is only available when you have accessed command mode using a password that permits Administrator Level commands. To modify a user account, proceed as follows:

- **Text Interface:** From the User Directory menu, type 3 and press **[Enter]**. The MPC will display a screen which lists all user accounts. Key in the name of the account you wish to modify, and press **[Enter]**.
- **Web Browser Interface:** From the User Configuration menu, click the "View/Modify User" link. The MPC will display a menu that allows you to select the user. Select the "Modify User" button, then click the down arrow, scroll to the name of the desired account, select the username, and then click "Choose User" to display the "Modify User" menu.

Once you have accessed the Modify Users menu, use the menu options to redefine parameters in the same manner that is used for the Add User menu, as discussed in Section 5.5.2.

> **Note:** *After you have finished changing parameters, make certain to save the changes before proceeding. In the Web Browser Interface, click on the "Modify User" button to save parameters; in the Text Interface, press the **[Esc]** key several times until you have exited from the System Parameters menu and the MPC displays the "Saving Configuration" message.*

5.5.4. Deleting User Accounts

This function is used to delete individual user accounts. Note that the Delete User function is only available when you have accessed command mode using a password that permits Administrator Level commands. To delete an existing user account, proceed as follows:

- **Text Interface:** From the Users Directory menu, type 4 and press **[Enter]**. The MPC will display a screen which lists all currently defined accounts. Key in the name of the account you wish to delete and press **[Enter]**. The MPC will delete the specified account without further prompting.
- **Web Browser Interface:** From the User Configuration menu, click the "View/Modify Users" link. The MPC will display a menu that lists all currently defined accounts. Select the "Delete User" box, then click the down arrow, scroll to the account you wish to delete, select the account, and then click "Choose User." The MPC will display a screen that lists details for the specified account; click "Delete User" to confirm deletion.

Notes:

- *Deleted accounts cannot be automatically restored.*
- *The MPC allows you to delete the default "super" account, which is included to permit initial access to command mode. Before deleting the "super" account, make certain to create another account that permits Administrator Access. If you do not retain at least one account with Administrator Access, you will not be able to invoke Administrator level commands.*

5.6. The Plug Group Directory

The Plug Group Directory allows you to designate "groups" of plugs that are dedicated to a similar function, and will most likely be switched or rebooted all at the same time or controlled by the same user account.

For example, an individual equipment rack might include an assortment of devices that belong to different departments or clients. In order to simplify the process of granting plug access rights to the accounts that will control power to these devices, you could assign all of the plugs for the devices belonging to Department A to a Plug Group named "Dept_A", and all of the plugs for the devices belonging to Department B to a Plug Group named "Dept_B". When user accounts are defined later, this would allow you to quickly grant access rights for all of the plugs for the devices belonging to Department A to the appropriate user accounts for Department A, by merely granting access to the Dept_A Plug Group, rather than by selecting the specific, individual plugs for each Department A user account.

Likewise, Plug Groups allow you to direct On/Off/Boot commands to a series of plugs, without addressing each plug individually. Given the example above, you could quickly reboot all plugs for Department A, by either including the "Dept_A" Plug Group name in a /BOOT command line via the Text Interface, or by using the Plug Group Control menu via the Web Browser Interface.

The Plug Group Directory function is only available when you have logged into command mode using an account that permits Administrator commands. To access the Plug Group Directory, proceed as follows:

- **Text Interface:** Type `/G` and press **[Enter]** to display the Plug Group Directory menu.
- **Web Interface:** Click the "Plug Group Directory" link on the left hand side of the screen to display the Plug Group Directory menu.

In both the Text Interface and the Web Browser Interface, the Plug Group Directory menu offers the following functions:

- **View Plug Group Directory:** Displays currently defined plug access rights for any MPC Plug Group as described in Section 5.6.1.
- **Add Plug Group to Directory:** Creates new Plug Groups, and allows you to assign plug access rights to each group as described in Section 5.6.2.
- **Modify Plug Group Directory:** This option is used to edit or change plug access rights for each Plug Group, as described in Section 5.6.3.
- **Delete Plug Group from Directory:** Clears Plug Groups that are no longer needed, as described in Section 5.6.4.

5.6.1. Viewing Plug Groups

The "View Plug Group Directory" option allows you to view the configuration of each Plug Group. Note that the View Plug Group Directory function is only available when you have accessed command mode using a password that permits Administrator Level commands. To view Plug Group details, proceed as follows:

- **Text Interface:** Type `/G` and press **[Enter]** to display the Plug Group Directory menu. From the Plug Group Directory menu, type `1` and press **[Enter]**. The MPC will display a screen which lists all defined Plug Groups. Key in the name of the Plug Group that you need to review and then press **[Enter]**.
- **Web Browser Interface:** Click the "Plug Group Directory" link on the left hand side of the screen to display the Plug Group Directory menu. From the Plug Group Directory menu, click the "View/Modify Plug Group" link. The MPC will display a menu that allows you to select the desired Plug Group and directory function. Select the "View Plug Group" button, and then click on the down arrow, scroll to the desired Plug Group, select the Plug Group, and then click "Choose Plug Group" to view the selected Plug Group.

5.6.2. Adding Plug Groups

The "Add Plug Group to Directory" option allows you to create new Plug Groups and assign plug access rights to each group. Note that the Add Plug Group function is only available when you have accessed command mode using a password that permits Administrator Level commands. To create new Plug Groups, proceed as follows:

- **Text Interface:** Type `/G` and press **[Enter]** to display the Plug Group Directory menu. From the Plug Group Directory menu, type `2` and press **[Enter]**. The MPC will display the Add Plug to Group menu as shown in Figure 5.7.
- **Web Browser Interface:** Click the "Plug Group Directory" link on the left hand side of the screen to display the Plug Group Directory menu. From the Plug Group Directory menu, click the "Add Plug to Group" link to display the Add Plug to Group menu as shown in Figure 5.8.

The Add Plug Group Menu can be used to define the following parameters for each new account:

- **Plug Group Name:** Assigns a name to the Plug Group. (Default = undefined.)
- **Plug Access:** Determines which plugs this Plug Group will be allowed to control. (Default = undefined.)

Notes:

- *In the Text Interface, Plug Access is configured by selecting item 2 and then selecting the desired plugs from the resulting submenu.*
- *In the Web Browser Interface, Plug Access is configured by selecting the desired plugs from a list of all plugs in the Add Plug Group menu.*
- *After you have finished defining Plug Group parameters, make certain to save the changes before proceeding. In the Web Browser Interface, click on the "Add Plug Group" button to save parameters; in the Text Interface, press the **[Esc]** key several times until you have exited from the Plug Group Parameters menu and the MPC displays the "Saving Configuration" message.*

```
ADD PLUG TO GROUP:

1. Plug Group Name:       (undefined)
2. Plug Access:           (undefined)




Enter: #<CR> to select,
       <ESC> to return to previous menu ...
```

Figure 5.7: The Add Plug to Group Menu (Text Interface)

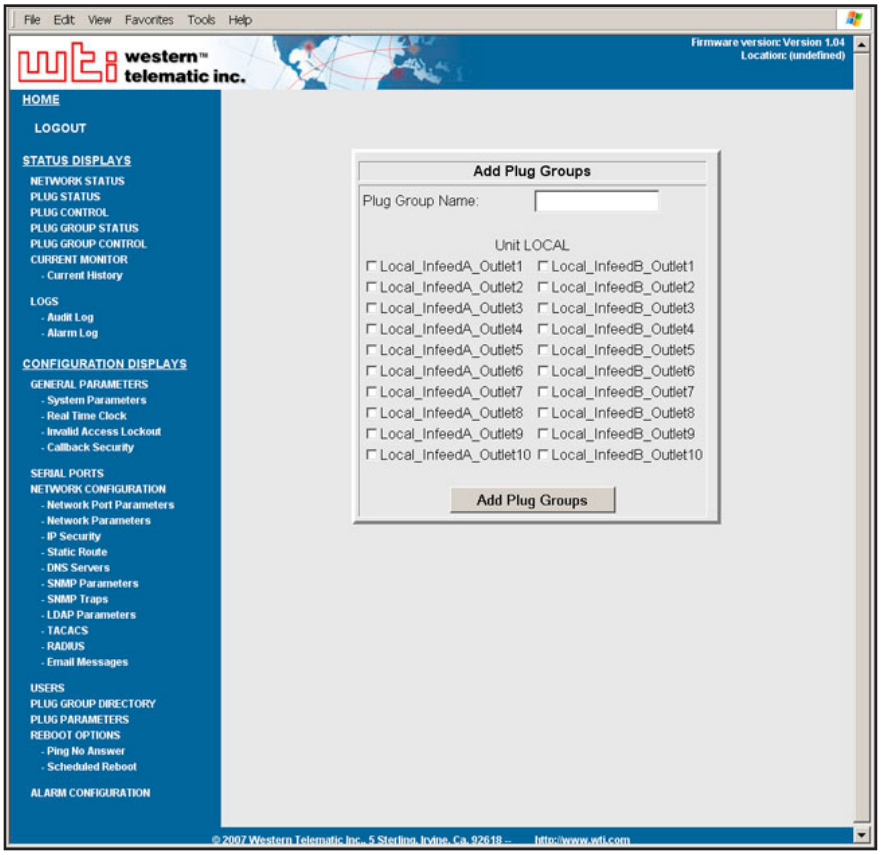

Figure 5.8: The Add Plug to Group Menu (Web Browser Interface)

5.6.3. Modifying Plug Groups

The "Modify Plug Group" function allows you to edit existing Plug Groups in order to change plug access rights. Note that this function is only available when you have accessed command mode using a password that permits Administrator Level commands. To modify an existing Plug Group , proceed as follows:

- **Text Interface:** Type `/G` and press **[Enter]** to display the Plug Group Directory menu. From the Plug Group Directory menu, type `3` and press **[Enter]**. The MPC will display the Modify Plug Group menu.
- **Web Browser Interface:** Click the "Plug Group Directory" link on the left hand side of the screen to display the Plug Group Directory menu. From the Plug Group Directory menu, click the "View/Modify Plug Group" link. The MPC will display a menu that lists all currently defined Plug Groups. Select the "Modify Plug Group" button, then click the down arrow, scroll to the Plug Group that you wish to modify, select the Plug Group, and then click "Choose Plug Group." The MPC will display the Modify Plug Group menu.

Once you have accessed the Modify Plug Group menu, use the menu options to redefine parameters in the same manner that is used for the Add Plug Group menu, as discussed in Section 5.6.2.

> **Note:** *After you have finished changing parameters, make certain to save the changes before proceeding. In the Web Browser Interface, click on the "Modify Plug Groups" button to save parameters; in the Text Interface, press the **[Esc]** key several times until you have exited from the Plug Group Parameters menu and the MPC displays the "Saving Configuration" message.*

5.6.4. Deleting Plug Groups

This function is used to delete individual Plug Groups. Note that this function is only available when you have accessed command mode using a password that permits Administrator Level commands. To delete an existing user account, proceed as follows:

- **Text Interface:** Type `/G` and press **[Enter]** to display the Plug Group Directory menu. From the Plug Group Directory menu, type `4` and press **[Enter]**. The MPC will display a screen which lists all currently defined Plug Groups. Key in the name of the Plug Group that you wish to delete and press **[Enter]**. The MPC will delete the specified account without further prompting.
- **Web Browser Interface:** Click the "Plug Group Directory" link on the left hand side of the screen to display the Plug Group Directory menu. From the Plug Group Directory menu, click the "View/Modify Plug Group" link. The MPC will display a menu that lists all currently defined Plug Groups. Select the "Delete Plug Group" button, then click the down arrow, scroll to the Plug Group you wish to delete, select the Plug Group, and then click "Delete Plug Group." The MPC will display a screen that lists details for the specified Plug Group; click "Delete Plug Group" to confirm deletion.

> **Note:** *Deleted accounts cannot be automatically restored.*

5.7. Defining Plug Parameters

The Plug Parameters Menu is used to define Plug Names, boot/sequence delay times and Power Up Default values for each of the MPC's Switched AC Outlets. Note that this function is only available when you have accessed command mode using a password that permits Administrator Level commands. To define Plug Parameters, proceed as follows:

- **Text Interface:** Type **`/PL`** and then press **[Enter]**. The Plug Parameters Menu will be displayed as shown in Figure 5.9. To define Plug Parameters, key in the number for the desired parameter, press **[Enter]** and then follow the instructions in the resulting submenu.
- **Web Browser Interface:** Click the "Plug Parameters" link on the left hand side of the screen to display the Plug Group Directory menu (Figure 5.10.) To define Plug Parameters, either place the cursor in the Plug Name field and key in a new name, or locate the drop down menu for the desired parameter, click on the down arrow, and scroll to the desired parameter and select it. When you are finished selecting Plug Parameters, click the "Change Plugs" button to apply he new parameters.

The Plug Parameters Menu allows you to define the following parameters:

- **Plug Name:** (Up to 16 Characters, Default = undefined.)

  Note: *Plug Names cannot begin with a number, dash (-), underscore character (_), forward slash character (/) or backslash character (\), and cannot include non printable characters, spaces, asterisks (*), colons (:), the plus symbol (+) or quotation marks.*

- **Boot/Seq. Delay:** When more than one plug is switched On/Off or a reboot cycle is initiated, the Boot/Sequence delay determines how much time will elapse between switching operations, as described in Section 5.7.1. (Default = 0.5 Second.)

- **Power Up Default:** Determines how this plug will react when the Default command (/D) is invoked, or after power to the unit has been interrupted and then restored. After the default command is invoked, or power is restored, the MPC will automatically switch each plug On or Off as specified by the Power-Up Default. (Default = On).

  Note: *If you have accessed command mode using an account that has Administrator level command access, then the Default command will be applied to all switched plugs. If you have accessed command mode using an account that does not allow access to all outlets, then the Default command will only be applied to plugs allowed by your account.*

```
PLUG_PARAMETERS - LOCAL

 1. A1 Plug Name:           Local_InfeedA_Outlet1
 2. A1 Boot/Seq. Delay:     0.5 Secs
 3. A1 Power Up Default:    On
 4. A2 Plug Name:           Local_InfeedA_Outlet2
 5. A2 Boot/Seq. Delay:     0.5 Secs
 6. A2 Power Up Default:    On
 7. A3 Plug Name:           Local_InfeedA_Outlet3
 8. A3 Boot/Seq. Delay:     0.5 Secs
 9. A3 Power Up Default:    On
10. A4 Plug Name:           Local_InfeedA_Outlet4
11. A4 Boot/Seq. Delay:     0.5 Secs
12. A4 Power Up Default:    On
13. A5 Plug Name:           Local_InfeedA_Outlet5
14. A5 Boot/Seq. Delay:     0.5 Secs
15. A5 Power Up Default:    On


Enter: #<CR> to select, ">" for more plugs.
       <ESC> to return to previous menu ...
```

Figure 5.9: The Plug Parameters Menu (Text Interface)

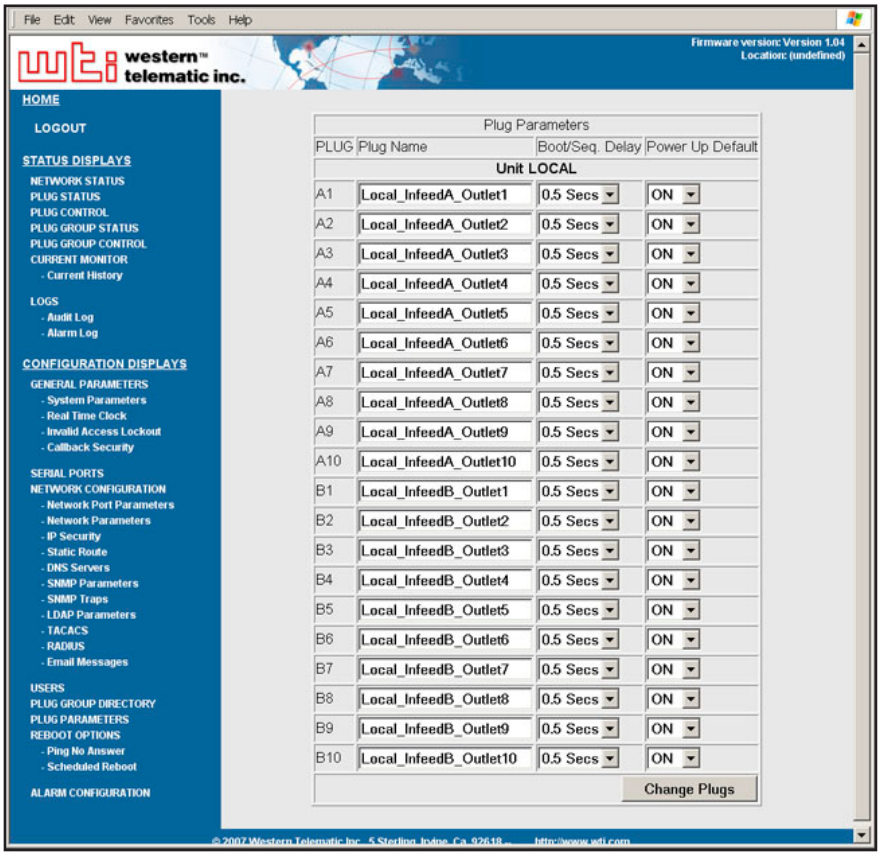

Figure 5.10: The Plug Parameters Menu (Web Browser Interface)

5.7.1. The Boot / Sequence Delay Period.

The Boot / Sequence Delay value will be applied differently for Reboot operations as opposed to simple On/Off operations as described below:

1. **Reboot Cycles:**

   a) Single Plug: The Boot/Seq. Delay determines how long the plug will remain Off before it is switched back On again.

   b) Several Plugs: The Boot/Seq. Delay determines how long the plug will remain "Off", and also how long the MPC will pause before proceeding to the next plug.

2. **On/Off Switching:** The Boot/Seq. Delay determines how long the MPC will pause before proceeding to the next plug.

Examples:
Assume that a user is only allowed access to plugs A1 through A4, and that the Boot / Sequence Delays for each plug have been set as follows: Plug A1 = 1 Second, Plug A2 = 2 Seconds, Plug A3 = 5 Seconds, Plug A4 = 1 Minute.

If the user applies an "On" command to all four plugs, the MPC will respond as follows:

1. Turn On Plug A1, Wait 1 Second.
2. Turn On Plug A2, Wait 2 Seconds.
3. Turn On Plug A3, Wait 5 Seconds.
4. Turn On Plug A4.

If a "Reboot" Command is applied to Plug A3, the MPC will respond as follows:

1. Turn Off Plug 3, Wait 5 Seconds, Turn On Plug 3.

If a Reboot Command is applied to all four plugs, the MPC will respond as follows:

1. Turn Off all four plugs (short delay between plugs.)
2. Wait 1 Second, Turn On Plug A1, Wait 1 Second.
3. Wait 2 Seconds, Turn On Plug A2, Wait 2 Seconds.
4. Wait 5 Seconds, Turn On Plug A3, Wait 5 Seconds.
5. Wait 1 Minute, Turn on Plug A4.

5.8. Serial Port Configuration

When responding to prompts, invoking commands, and selecting items from port configuration menus, note the following:

- Configuration menus are only available to accounts that permit Administrator level commands.
- If you are configuring the MPC via modem, modem parameters will not be changed until after you exit command mode and disconnect from the MPC.

5.8.1. Serial Port Modes

The MPC offers two different port operation modes for the Serial Console Port:

- **Normal Mode:** Allows communication with local PC and permits access to command mode. The Normal Mode is the default Port Mode for the Serial Console Port.
- **Modem Mode:** Allows communication with remote PC, permits access to command mode and simplifies connection to an external modem. Modem Mode ports can perform all functions normally available in Normal Mode, but Modem Mode also allows definition of a Hang-Up String, Reset String, and Initialization String.

5.8.2. Serial Port Configuration Menu

The Port Configuration Menu is used to select communications parameters and enable/disable options for the RS232 Console Port.

- **Text Interface:** Type `/P 1` and then press **[Enter]**. The Port Parameters menu will be displayed as shown in Figure 5.11.
- **Web Browser Interface:** Click the "Serial Port" link on the left hand side of the screen to display the Serial Port Configuration Menu. From the Serial Port Configuration menu, use the dropdown menu to select Port 1 (the Console Port) and the click on the Select Port button to display the Serial Port 1 Configuration Menu, as shown in Figure 5.12.

```
PORT PARAMETERS #01:

COMMUNICATION SETTING                PORT MODE PARAMETERS
 1. Baud Rate:          9600         21. Port Name:          (undefined)
 2. Bits/Parity:        8-None       22. Port Mode:          Normal
 3. Stop Bits:          1            23. DTR Output:         Pulse
 4. Handshake:          RTS/CTS      24. Modem Params:       ---


GENERAL PARAMETERS
11. Supervisor Mode:    Permit
12. Logoff Char:        ^X
13. Sequence Disc:      One Char
14. Inact Timeout:      5 Min
15. Command Echo:       On
16. Accept Break:       On


Enter: <ESC> exit ...
```

Figure 5.11: Serial Port Configuration Menu (Text Interface)

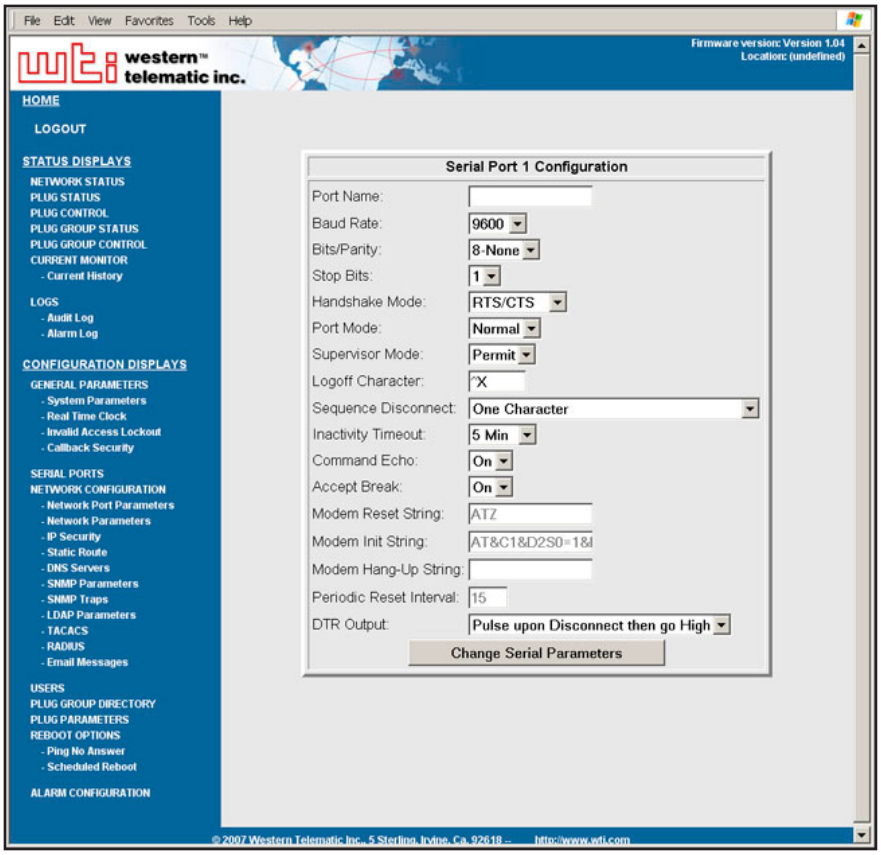

Figure 5.12: Port Configuration Menu (Web Browser Interface)

The Port Configuration menu allows the following parameters to be defined. Note that all of these parameters are available via both the Text Interface and Web Browser Interface, and that parameters selected via one interface are also applied to the other.

Communication Settings:

- **Baud Rate:** Any standard rate from 300 bps to 115.2K bps. (Default = 9600 bps)
- **Bits/Parity:** (Default = 8-None).
- **Stop Bits:** (Default = 1).
- **Handshake Mode:** XON/XOFF, RTS/CTS (hardware), Both, or None. (Default = RTS/CTS).

General Parameters:

- **Supervisor Mode:** Permits/denies port access to Administrator and SuperUser level accounts. When enabled (Permit), the port will be allowed to invoke Administrator and SuperUser level commands, providing they are issued by an account that permits them. If disabled (Deny), then accounts that permit Administrator and SuperUser level commands will not be allowed to access command mode via this port. (Default = Permit).
- **Logoff Character:** The Logoff Character determines the command(s) or character(s) that must be issued at this port in order to disconnect. Note that the Logoff Character does not apply to Direct Connections. (Default = **`^x.`**)
- **Sequence Disconnect:** Enables/Disables and configures the Resident Disconnect command. This offers the option to disable the Sequence Disconnect, select a one character format or a three character format. (Default = One Character.)
- **Inactivity Timeout:** Enables and selects the Timeout Period for this port. If enabled, the Console Port will disconnect when no additional data activity is detected for the duration of the timeout period. (Default = 5 Minutes.)
- **Command Echo:** Enables or Disables command echo at the Console Port. When disabled, commands that are sent to the Console Port will still be invoked, but the actual keystrokes will not be displayed on your monitor. (Default = On.)
- **Accept Break:** Determines whether the port will accept breaks received from the attached device. When enabled, breaks received at the port will be passed to any port that this port is connected to. When disabled, breaks will be refused at this port. (Default = On.)

Port Mode Parameters:

- **Port Name:** Allows you to assign a name to the Console Port. (Default = undefined.)
- **Port Mode:** The operation mode for this port. (Default = Normal Mode)

  Depending on the Port Mode selected, the MPC will also display the additional prompts listed below. In the Text Interface, these parameters are accessible via a submenu, which will only be active when the appropriate port mode is selected. In the Web Browser Interface, fields will be "grayed out" unless the corresponding port mode is selected.

  - **Normal Mode:** Allows the following Mode-specific parameter to be defined:
    - **DTR Output:** Determines how DTR will react when the port disconnects. DTR can be held low, held high, or pulsed for 0.5 seconds and then held high. (Default = Pulse.)
  - **Modem Mode:** Allows the following mode-specific parameters to be defined:
    - **Reset String:** Redefines the modem reset string. The Reset String can be sent prior to the Initialization string. (Default = **`ATZ.`**)
    - **Initialization String:** Defines a command string that can be sent to initialize a modem to settings required by your application. (Default = **`AT&C1&D2S0=1&B1&H1&R2`**)
    - **Hang-Up String:** Although the MPC will pulse the DTR line to hang-up an attached modem, the Hang-Up string is often useful for controlling modems that do not use the DTR line. (Default = undefined.)
    - **Periodic Reset Value:** Determines how often the Reset String will be sent to the modem at this port.

  Note: *When communicating with the MPC via modem, these parameters will not be changed until after you exit command mode and disconnect.*

```
NETWORK PARAMETERS:

COMMUNICATION SETTING                    SERVERS AND CLIENTS
1.  IP Address:         192.168.168.168  21. Telnet Access:     On
2.  Subnet Mask:        255.255.255.0    22. SSH Access:        On
3.  Gateway Addr:       207.212.30.1     23. Web Access:        On
4.  DHCP:               Off              24. SYSLOG Addr:       Off
5.  IP Security:        Off              25. SNMP Access:       Off
6.  Static Route:       Off              26. SNMP Trap:         Off
7.  DNS Servers:        (undefined)      27. LDAP:              Off
                                         28. TACACS:            Off
GENERAL PARAMETERS                       29. RADIUS:            Off
11. Supervisor Mode:    Permit           30. PING Access:       On
12. Logoff Char:        ^X               31. Multiple Logins:   On
13. Sequence Disc:      One Char         32. Email Message:     Off
14. Inact Timeout:      Off
15. Command Echo:       On
16. Accept Break:       On


Enter: #<CR> to change,
       <ESC> exit ...
```

Figure 5.13: Network Parameters Menu (Text Interface)

Figure 5.14: Network Configuration Menu (Web Browser Interface)

5.9. Network Configuration

The Network Parameters Menus are used to select parameters and options for the Network Port and also allow you to implement IP Security features, which can restrict access based on the user's IP Address.

Although the Web Browser Interface and Text Interface allow definition of essentially the same parameters, parameters are arranged differently in the two interfaces. In the Text Interface, most network parameters are defined via one menu. But in the Web Browser Interface, network parameters are divided into separate submenus as described in this section.

To access the Network Parameters Menus, proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]**. The Network Parameters Menu shown in Figure 5.13 will be displayed.
- **Web Browser Interface:** Click on the "Network Configuration" link on the left hand side of the screen. The MPC will display the Network Configuration menu shown in Figure 5.14, which allows you to access the various submenus used to configure the network port.

Notes:

- *Settings for network parameters depend on the configuration of your network. Please contact your network administrator for appropriate settings.*
- *The Network Parameters Menu selects parameters for all 16 logical Network Ports.*
- *When a new IP Address is selected, or the status of the DHCP feature is changed, the unit will disconnect and reconfigure itself with the new values when you exit the Network Parameters Menu. When configuring the unit via Web or Telnet, make certain your DHCP server is set up to assign a known, fixed IP address in order to simplify reconnection to the unit after the new address has been assigned.*
- *The Network Parameters menu is only available when you have logged into command mode using an account and port that permit Administrator commands.*

The Network Parameters menu allows you to define the parameters that are discussed in the following sections. Note that although the descriptions of network parameters are arranged according to the Web Browser Interface, in the Text Interface, most parameters are included in a single menu.

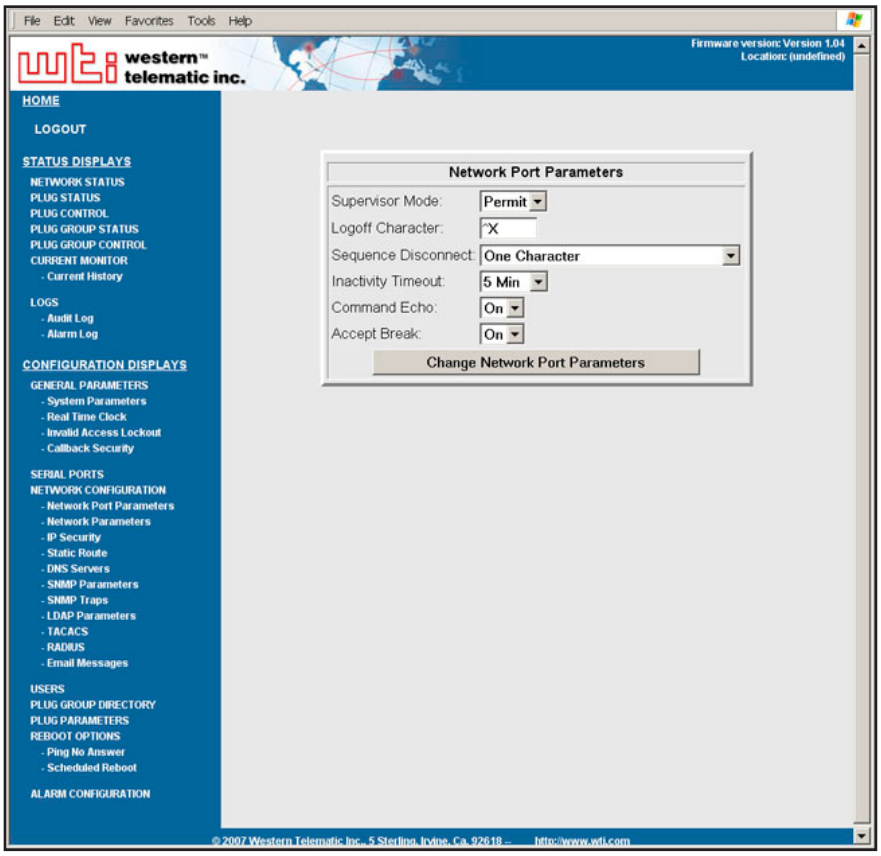

Figure 5.15: Network Port Parameters Menu (Web Browser Interface)

5.9.1. Network Port Parameters

In the Text Interface, these parameters are found in the main Network Configuration menu (Figure 5.13.) In the Web Browser Interface, these parameters are found by clicking the "Network Port Parameters" link on the left hand side of the screen to display the Network Port Configuration Menu (Figure 5.15.)

- **Supervisor Mode:** Permits/denies port access to accounts that allow Administrator or SuperUser level commands. When enabled (Permit), the port will be allowed to invoke Administrator and SuperUser level commands, providing they are issued by an account that permits them. If disabled (Deny), then accounts that permit Administrator and SuperUser level commands will not be allowed to access command mode via this port. (Default = Permit)
- **Logoff Character:** Defines the Logoff Character for this port. This determines which command(s) must be issued at this port in order to disconnect from a second port. The Logoff Character does not apply to Telnet Direct Connections. (Default = **^x** (**[Ctrl]** plus **[X]**).)

- **Sequence Disconnect:** Enables/Disables and configures the Resident Disconnect command. Offers the option to either disable the Sequence Disconnect, or select a one character, or three character command format. (Default = One Character).

  Notes:

  - *The One Character Disconnect is intended for situations where the destination port should **not** receive the disconnect command. When the Three Character format is selected, the disconnect sequence **will** pass through to the destination port prior to breaking the connection.*
  - *When Three Character format is selected, the Resident Disconnect uses the format "**[Enter]**`LLL`**[Enter]**", where* `L` *is the selected Logoff Character.*

- **Inactivity Timeout:** Enables and selects the Inactivity Timeout period for the Network Port. If enabled, and the port does not receive or transmit data for the specified time period, the port will disconnect. (Default = 5 Minutes).

  Note: *The Inactivity Timeout value is also applied to Direct Connections.*

- **Command Echo:** Enables or Disables the command echo for the Network Port. (Default = On).

- **Accept Break:** Determines whether the port will accept breaks received from the attached device, and pass them along to a connected port. When enabled, breaks received at this port will be passed to any port this port is connected to, and sent to the device connected to the other port. When disabled, breaks will be refused at this port. (Default = On.)

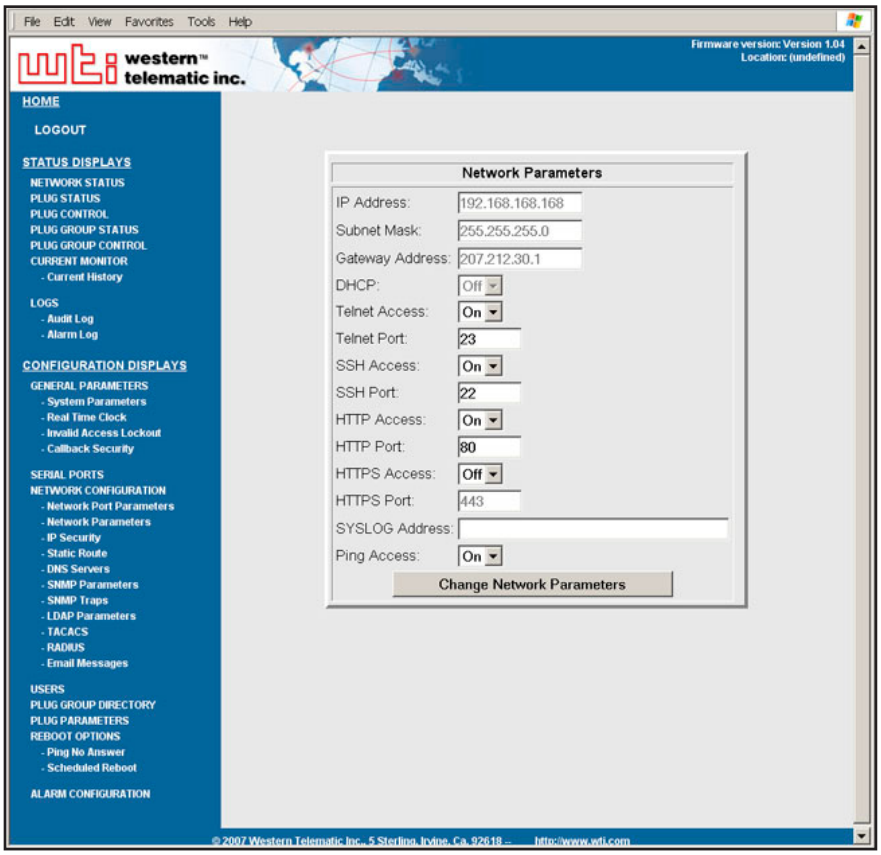

Figure 5.16: Network Parameters Menu (Web Browser Interface)

5.9.2. Network Parameters

In the Text Interface, these parameters are accessed via the Network Configuration menu (Figure 5.13.) In the Web Browser Interface, these parameters can be found by clicking the "Network Parameters" link on the left hand side of the screen to display the Network Parameters menu (Figure 5.16.)

- **IP Address:** (Default = 192.168.168.168.)
- **Subnet Mask:** (Default = 255.255.255.0.)
- **Gateway Address:** (Default = undefined.)
- **DHCP:** Enables/Disables Dynamic Host Configuration Protocol. When this option is "On", the MPC will perform a DHCP request. Note that in the Text Interface, the MAC address for the MPC is listed on the Network Status Screen. (Default = Off.)

  Note: *Before configuring this feature via Telnet or Web, make certain your DHCP server is set up to assign a known, fixed IP address. You will need this new IP address in order to reestablish a network connection with the MPC unit.*
- **Telnet Access:** Enables/disables Telnet access. When Telnet Access is "Off," users will not be allowed to establish a Telnet connection to the unit. (Default = On.)
- **Telnet Port:** Selects the TCP/IP port number that will be used for Telnet connections. (Default = 23.)

- **SSH Access:** Enables/disables SSH communication. (Default = On.)
- **SSH Port:** Selects the TCP/IP port number that will be used for SSH connections. (Default = 22.)
- **HTTP Access (Web Access):** Enables/disables the Web Browser Interface. When disabled, users will not be allowed to contact the unit via the Web Browser Interface. (Default = Off.)

Notes:

- *This parameter is identical to the "Web Access" parameter in the Text Interface's Network Parameters Menu.*
- *When the Web Access parameter is accessed via the Text Interface, the resulting submenu will also allow you to select SSL (encryption) parameters as described in Section 5.9.2.1*

- **HTTP Port:** Selects the TCP/IP port number that will be used for SSH connections. (Default = 80.)
- **HTTPS Access:** Enables/disables HTTPS communication. (Default = On.)
- **HTTPS Port:** Selects the TCP/IP port number that will be used for HTTPS connections. (Default = 443.)
- **SYSLOG Address:** The IP Address or domain name (up to 64 characters) for the Syslog Daemon that will receive log records generated by the MPC. For more information, please refer to Section 11. (Default = undefined.)
- **Ping Access:** Enables/Disables response to the ping command. When Disabled, the MPC will not respond to Ping commands. (Default = On.)

```
WEB ACCESS:

HTTP:
1.  Enable: On
2.  Port:   80

HTTPS:
3.  Enable: Off
4.  Port:   443

SSL Certificates:
5.  Common Name:
6.  State or Province:
7.  Locality:
8.  Country:
9.  Email Address:
10. Organization Name:
11. Organizational Unit:
12. Create CSR:
13. View CSR:
14. Import CRT:

Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 5.17: Web Access Parameters (Text Interface Only)

5.9.2.1. Setting Up SSL Encryption

This section describes the procedure for setting up a secure connection via an https web connection to the MPC.

> **Note:** *SSL parameters cannot be defined via the Web Browser Interface. In order to set up SSL encryption, you must contact the MPC via the Text Interface.*

There are two different types of https security certificates: "Self Signed" certificates and "Signed" certificates.

Self Signed certificates can be created by the MPC, without the need to go to an outside service, and there is no need to set up your domain name server to recognize the MPC. The principal disadvantage of Self Signed certificates, is that when you access the MPC command mode via the Web Browser Interface, the browser will display a message which warns that the connection might be unsafe. Note however, that even though this message is displayed, communication will still be encrypted, and the message is merely a warning that the MPC is not recognized and that you may not be connecting to the site that you intended.

Signed certificates must be created via an outside security service (e.g., VeriSign, Thawte, etc.) and then uploaded to the MPC unit to verify the user's identity. In order to use Signed certificates, you must contact an appropriate security service and set up your domain name server to recognize the name that you will assign to the MPC unit (e.g., service.wti.com.) Once a signed certificate has been created and uploaded to the MPC, you will then be able to access command mode without seeing the warning message that is normally displayed for Self Signed certificate access.

Creating a Self Signed Certificate

To create a Self Signed certificate, access the Text interface via Telnet or SSH, using a password that permits access to Administrator level commands and then proceed as follows:

1. Type **/N** and press **[Enter]** to display the Network Parameters menu (Figure 5.13.)

2. At the Network Parameters menu, type **23** and press **[Enter]** to display the Web Access menu (Figure 5.17.) Type **3** and press **[Enter]** and then follow the instructions in the resulting submenu to enable HTTPS access.

3. Next, use the Web Access menu to define the following parameters.

   Note: *When configuring the MPC, make certain to define all of the following parameters. Although most SSL applications require only the Common Name, in the case of the MPC all of the following parameters are mandatory.*

   - **5. Common Name:** A domain name, that will be used to identify the MPC unit. If you will use a Self Signed certificate, then this name can be any name that you choose, and there is no need to set up your domain name server to recognize this name. However, if you will use a Signed certificate, then your domain name server must be set up to recognize this name (e.g., service.wti.com.)

   - **6. State or Province:** The name of the state or province where the MPC unit will be located (e.g., California.)

   - **7. Locality:** The city or town where the MPC unit will be located (e.g., Irvine.)

   - **8. Country:** The two character country code for the nation where the MPC will be located (e.g., US.)

   - **9. Email Address:** An email address, that can be used to contact the person responsible for the MPC (e.g., jsmith@wti.com.)

   - **10. Organizational Name:** The name of your company or organization (e.g., Western Telematic.)

   - **11. Organizational Unit:** The name of your department or division; if necessary, any random text can be entered in this field (e.g., tech support.)

4. After you have defined parameters 5 through 11, type **12** and press **[Enter]** (Create CSR) to create a Certificate Signing Request. By default, this will overwrite any existing certificate, and create a new Self Signed certificate.

   a) The MPC will prompt you to create a password. Key in the desired password (up to 16 characters) and then press **[Enter]**. When the MPC prompts you to verify the password, key it again and then press **[Enter]** once. After a brief pause, the MPC will return to the Web Access Menu, indicating that the CSR has been successfully created.

   b) When the Web Access Menu is redisplayed, press **[Esc]** several times until you exit from the Network Parameters menu and the "Saving Configuration" message is displayed.

5. After the new configuration has been saved, test the Self Signed certificate by accessing the MPC via the Web Interface, using an HTTPS connection.

   a) Before the connection is established, the MPC should display the warning message described previously. This indicates that the Self Signed certificate has been successfully created and saved.

   b) Click on the "Yes" button to proceed. The MPC will prompt you to enter a user name and password. After keying in your password, the main menu should be displayed, indicating that you have successfully accessed command mode.

Creating a Signed Certificate

To create a Signed certificate, and eliminate the warning message, first set up your domain name server to recognize the Common Name (item 5) that you will assign to the unit. Next, complete steps one through five as described in the Self Signed Certificate procedure above and then proceed as follows:

6. **Capture the Newly Created Certificate:** Type **13** and press **[Enter]** (View CSR). The MPC will prompt you to configure your communications (Telnet) program to receive the certificate. Set up your communications program to receive a binary file, and then press **[Enter]** to capture the file and save it. This is the Code Signing Request that you will send to the outside security service (e.g., VeriSign, Thawte, etc.) in order to have them sign and activate the certificate.

7. **Obtain the Signed Certificate:** Send the captured certificate to the outside security service. Refer to the security service's web page for further instructions.

8. **Upload the Signed Certificate to the MPC:** After the "signed" certificate is returned from the security service, return to the Web Access menu.

   a) Access the MPC command mode via the Text Interface using an account that permits Administrator level commands as described previously, then type **/N** and press **[Enter]** to display the Network Parameters menu, and then type **23** and press **[Enter]** to display the Web Access menu.

   b) From the Web Access menu, type **14** and press **[Enter]** (Import CRT) to begin the upload process. At the CRT Server Key submenu, type **1** and press **[Enter]** to choose "Upload Server Key."

   c) Use your communications program to send the binary format Signed Certificate to the MPC unit. When the upload is complete, press **[Escape]** to exit from the CRT Server Key submenu.

   d) After you exit from the CRT Server Key submenu, press [Escape] several times until you have exited from the Network Parameters menu and the "Saving Configuration" message is displayed.

9. After the configuration has been saved, test the signed certificate by accessing the MPC via the Web Browser Interface, using an HTTPS connection. For example, if the common name has been defined as "service.wti.com", then you would enter "**https://service.wti.com**" in your web browser's address field. If the Signed Certificate has been properly created and uploaded, the warning message should no longer be displayed.

5.9.3. IP Security

The IP Security feature allows the MPC to restrict unauthorized IP addresses from establishing inbound Telnet connections to the unit. This allows you to grant Telnet access to only a specific group of IP addresses, or block a particular IP address completely. In the default state, the MPC accepts incoming IP connections from all hosts.

In the Text Interface, IP Security parameters are defined via item 5 in the Network Configuration menu (Figure 5.13.) In the Web Browser Interface, these parameters are found by clicking the "IP Security" link on the left hand side of the screen. In the default state, IP Security is disabled.

The IP Security Function employs a TCP Wrapper program which allows the use of standard, Linux operators, wild cards and net/mask pairs to create a host based access control list.

The IP Security configuration menus include "hosts.allow" and "hosts.deny" client lists. Basically, when setting up IP Security, you must enter IP addresses for hosts that you wish to allow in the Allow list, and addresses for hosts that you wish to deny in the Deny list. Since Linux operators, wild cards and net/mask pairs are allowed, these lists can indicate specific addresses, or a range of addresses to be allowed or denied.

When the IP Security feature is properly enabled, and a client attempts to connect, the MPC will perform the following checks:

1. If the client's IP address is found in the "hosts.allow" list, the client will be granted immediate access. Once an IP address is found in the Allow list, the MPC will not check the Deny list, and will assume you wish to allow that address to connect.
2. If the client's IP address is not found in the Allow list, the MPC will then proceed to check the Deny list.
3. If the client's IP Address *is* found in the Deny list, the client *will not* be allowed to connect.
4. If the client's IP Address *is not* found in the Deny list, the client *will* be allowed to connect, even if the address was not found in the Allow list.

Notes:

- *If the MPC finds an IP Address in the Allow list, it will not check the Deny list, and will allow the client to connect.*
- *If both the Allow and Deny lists are left blank, then the IP Security feature will be disabled, and all IP Addresses will be allowed to connect (providing that the proper password and/or SSH key is supplied.)*
- *When the Allow and Deny lists are defined, the user is only allowed to specify the Client List; the Daemon List and Shell Command cannot be defined.*

5.9.3.1. Adding IP Addresses to the Allow and Deny Lists

To add an IP Address to the Allow or Deny list, and begin configuring the IP Security feature, proceed as follows.

Notes:

- *Both the Allow and Deny list can include Linux operators, wild cards, and net/mask pairs.*
- *In some cases, it is not necessary to enter all four "digits" of the IP Address. For example, if you wish to allow access to all IP addresses that begin with "192," then you would only need to enter "192."*
- *The IP Security Configuration menu is only available when the Administrator Mode is active.*

1. Access the IP Security Configuration Menu.

   a) **Text Interface:** Type **`/N`** **[Enter]** to display the Network Configuration Menu. From the Network Configuration Menu, type **`5`** **[Enter]** to display the IP Security Menu.

   b) **Web Browser Interface:** Click on the "IP Security" Link on the left hand side of the screen to display the IP Security Menu shown.

2. **Allow List:** Enter the IP Address(es) for the clients that you wish to allow. Note that if an IP Address is found in the Allow list, the client will be allowed to connect, and the MPC will not check the Deny list.

   a) **Text Interface:** Note the number for the first empty field in the Allow list, then type that number at the command prompt, press **[Enter]**, and then follow the instructions in the resulting submenu.

   b) **Web Browser Interface:** Place the cursor in the first empty field in the parameters menu, then key in the desired IP Address, operators, wild cards, and/or net/mask pairs.

3. **Deny List:** Enter the IP Address(es) for the clients that you wish to deny. Note that if the client's IP Address is not found in the Deny List, that client will be allowed to connect. Use the same procedure for entering IP Addresses described in Step 2 above.

5.9.3.2. Linux Operators and Wild Cards

In addition to merely entering a specific IP address or partial IP address in the Allow or Deny list, you may also use any standard Linux operator or wild card. In most cases, the only operator used is "EXCEPT" and the only wild card used is "ALL," but more experienced Linux users may note that other operators and wild cards may also be used.

EXCEPT:

This operator creates an exception in either the "allow" list or "deny" list.

For example, if the Allow list includes a line which reads "192. EXCEPT 192.255.255.6," then all IP address that begin with "192." will be allowed; except 192.255.255.6 (providing that this address appears in the Deny list.)

ALL:
The ALL wild card indicates that all IP Addresses should be allowed or denied. When ALL is included in the Allow list, all IP addresses will be allowed to connect; conversely, if ALL is included in the Deny list, all IP Addresses will be denied (except for IP addresses listed in the Allow list.)

For example, if the Deny list includes a line which reads "ALL EXCEPT 168.255.192.192," then all IP addresses except 168.255.192.192 will be denied (except for IP addresses that are listed in the Allow list.)

Net/Mask Pairs:
An expression of the form "n.n.n.n/m.m.m.m" is interpreted as a "net/mask" pair. A host address is matched if "net" is equal to the bitwise AND of the address and the "mask."

For example, the net/mask pattern "131.155.72.0/255.255.254.0" matches every address in the range "131.155.72.0" through "131.155.73.255."

5.9.3.3. IP Security Examples

1. **Mostly Closed:** Access is denied by default and the only clients allowed, are those explicitly listed in the Allow list. To deny access to all clients except 192.255.255.192 and 168.112.112.05, the Allow and Deny lists would be defined as follows:

   - Allow List:
     1. 192.255.255.192
     2. 168.112.112.05

   - Deny List:
     1. ALL

2. **Mostly Open:** Access is granted by default, and the only clients denied access, are those explicitly listed in the Deny list, and as exceptions in the Allow list. To allow access to all clients except 192.255.255.192 and 168.112.112.05, the Allow and Deny lists would be defined as follows:

   - Allow List:
     1. ALL EXCEPT 192.255.255.192, 168.112.112.05

   - Deny List:
     1. 192.255.255.192, 168.112.112.05

Notes:

- *When defining a line in the Allow or Deny list that includes several IP addresses, each individual address is separated by either a space, a comma, or a comma and a space as shown in Example 2 above.*
- *Take care when using the "ALL" wild card. When ALL is included in the Allow list, it should always include an EXCEPT operator in order to allow the unit to proceed to the Deny list and determine any addresses you wish to deny.*

5.9.4. Static Route

The Static Route menu allows you to type in Linux routing commands that will be automatically executed each time that the unit powers up or reboots. In the Text Interface, the Static Route menu is accessed via item 6 in the Network Configuration menu. In the Web Browser Interface, the Static Route menu is accessed by clicking the Static Route link.

To access the Static Route Menus, proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]** to display the Network Parameters Menu (Figure 5.13.) At the Network Parameters Menu, type **6** and press **[Enter]** to display the Static Route Menu.
- **Web Browser Interface:** Click on the "Static Route" link on the left hand side of the screen to display the Static Route Menu.

5.9.5. Domain Name Server

The DNS menu is used to select IP addresses for Domain Name Servers. When web and network addresses are entered, the Domain Name Server interprets domain names (e.g., www.wti.com), and translates them into IP addresses. Note that if you don't define at least one DNS server, then IP addresses must be used, rather than domain names.

To access the Domain Name Server Menu, proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]** to display the Network Parameters Menu (Figure 5.13.) At the Network Parameters Menu, type **7** and press **[Enter]** to display the Domain Name Server menu.
- **Web Browser Interface:** Click on the "DNS Server" link to display the Domain Name Server menu.

```
SNMP ACCESS:

1.  Enable:             Off
2.  Version:            V1/V2 Only
3.  Read Only:          No
4.  Auth/Priv:          ----------
5.  User Name:          ----------
6.  Password:           ----------
7.  Auth Protocol:      ----------
8.  Contact:            (undefined)
9.  Location:           (undefined)
10. Community:          public


Enter: #<CR> to change,
       <ESC> to return to previous menu ...
```

Figure 5.18: SNMP Access Menu (Text Interface)

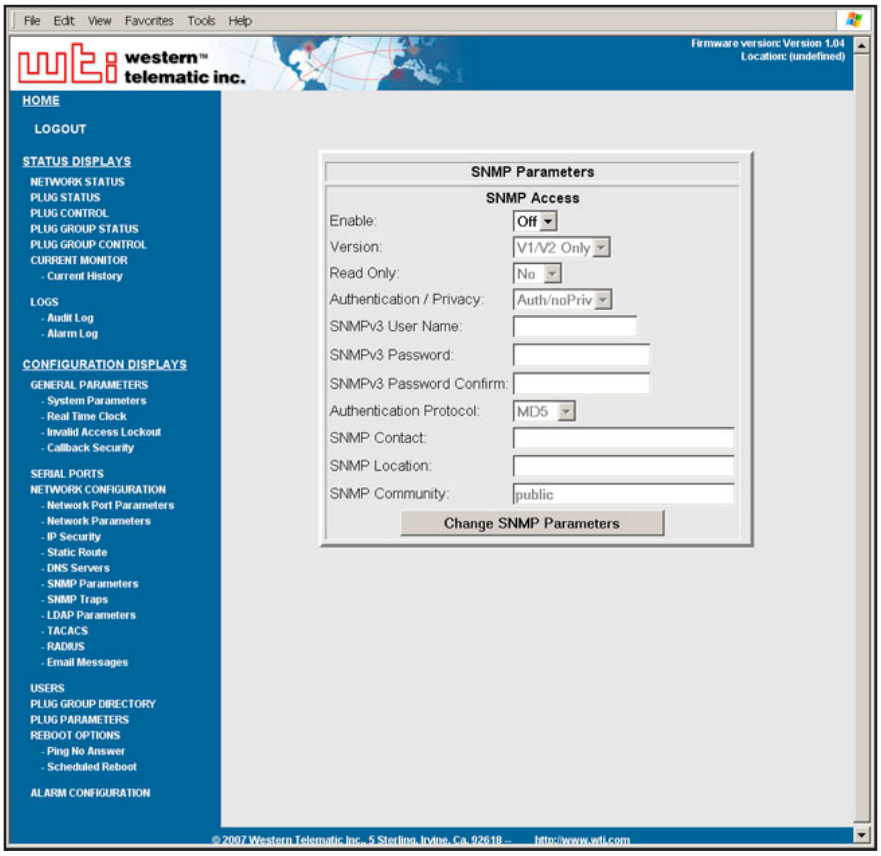

Figure 5.19: SNMP Parameters Menu (Web Browser Interface)

5.9.6. SNMP Parameters

These menus are used to select parameters for the SNMP feature. To define or change SNMP MIB parameters, proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]** to display the Network Parameters Menu (Figure 5.13.) At the Network Parameters Menu, type **25** and press **[Enter]** to display the SNMP Access (Parameters) Menu (Figure 5.18.)
- **Web Browser Interface:** Click on the "SNMP Parameters" link on the left hand side of the MPC Home screen to display the menu shown in Figure 5.19.

Both the Text Interface and Web Browser Interface allow the following parameters to be defined:

- **Enable:** Enables/disables SNMP Polling. (Default = Off.)

  Note: *This item only applies to external SNMP polling of the MPC; it does not effect the ability of the MPC to send SNMP traps.*

- **Version:** This parameter determines which SNMP Version the MPC will respond to. For example, if this item is set to V3, then clients who attempt to contact the MPC using SNMPv2 will not be allowed to connect. (Default = V1/V2 Only.)
- **Read Only:** Enables/Disables the "Read Only Mode", which controls the ability to access configuration functions and invoke switching commands. When Enabled ("Yes"), you will not be able to change configuration parameters or invoke other commands when you contact the MPC via SNMP. (Default = No.)

  Note: *In order to define user names for the MPC via your SNMP client, the Read Only feature must be disabled. When the Read Only feature is enabled, you will not be able to issue configuration commands to the MPC unit via SNMP.*

- **Authentication** / **Privacy:** Configures the Authentication and Privacy features for SNMPv3 communication. The Authentication / Privacy parameter offers two options, which function as follows:

  1. **Auth**/**noPriv:** An SNMPv3 username and password will be required at log in, but encryption will not be used. (Default Setting.)
  2. **Auth**/**Priv:** An SNMPv3 username and password will be required at log in, and all messages will be sent using encryption.

Notes:

- *The Authentication / Privacy item is not available when the Version parameter is set to V1/V2.*
- *If the Version Parameter is set to V1/V2/V3 (all) and Authentication / Privacy parameter is set to "Auth/Priv", then only V3 data will be encrypted.*
- *The MPC supports DES encryption, but does not currently support the AES protocol.*
- *The MPC does not support "noAuth/noPriv" for SNMPv3 communication.*

- **SNMPv3 User Name:** Sets the User Name for SNMPv3. Note that this option is not available when the Version parameter is set to V1/V2. (Default = undefined.)
- **SNMPv3 Password:** Sets the password for SNMPv3. Note that this option is not available when the Version parameter is set to V1/V2. (Default = undefined.)
- **SNMPv3 Password Confirm:** This prompt is used to confirm the SNMPv3 password that was entered at the prompt above. Note that this option is not available when the Version parameter is set to V1/V2. (Default = undefined.)
- **Authentication Protocol:** This parameter determines which authentication protocol will be used. The MPC supports both MD5 and SHA1 authentication. (Default = MD5.)

Notes:

- *The Authentication Protocol that is selected for the MPC must match the protocol that your SNMP client will use when querying the MPC unit.*
- *The Authentication Protocol option is not available when the Version parameter is set to V1/V2*

- **SNMP Contact:** (Default = undefined.)
- **SNMP Location:** (Default = undefined.)
- **SNMP Community:** Note that this parameter is not available when the SNMP Version is set to V3. (Default = Public.)

5.9.6.1. MPC SNMP Agent

The MPC's SNMP Agent supports various configuration, control, status and event notification capabilities. Managed objects are described in the WTI-MPC-MIB.txt document, which can be found on the CDROM included with the MPC unit, or in the user's guide archive on the WTI web site (http://www.wti.com/manuals.htm). The WTI-MPC-MIB.txt document can be compiled for use with your SNMP client.

5.9.6.2. SNMPv3 Authentication and Encryption

The major limitations of SNMPv2 were the failure to include proper username/password login credentials (v2 only used a password type of login, i.e., community name) and the exclusion of encryption for data moving over the internet. SNMPv3 addresses both of these shortcomings.

For SNMPv3, the MPC supports two forms of Authentication/Privacy: Auth/noPriv which requires a username/password, but does not encrypt data going over the internet and Auth/Priv which requires a username/password AND encrypts the data going over the internet using using DES (AES is not supported at this time). For the Password protocol, the MPC supports either MD5 or SHA1.

5.9.6.3. Configuration via SNMP

MPC User accounts can be viewed, created, modified, and deleted via SNMP. User accounts are arranged in a table of 128 rows, and indexed 1-128. User account parameters, as seen through the SNMP, are summarized below.

- **`userTable::userName`** – 32 character username
- **`userTable::userPassword`** – 16 character password
- **`userTable::userAccessLevel`** – Account access level.
  - `0` – View Access
  - `1` – User Access
  - `2` – Superuser Access
  - `3` – Administrator Access
- **`userTable::userLocalAccess`** – A string of 20 characters, with one character for each of the 20 possible plugs on the LOCAL MPC unit. A '`0`' indicates that the account **does not** have access to the plug, and a '`1`' indicates that the user *does* have access to the plug.
- **`userTable::userAux1Access`** – A string of 20 characters, with one character for each of the 20 possible plugs on the AUX1 MPC unit. A '`0`' indicates that the account **does not** have access to the plug, and a '`1`' indicates that the user *does* have access to the plug.
- **`userTable::userAux2Access`** – A string of 20 characters, with one character for each of the 20 possible plugs on the AUX2 MPC unit. A '`0`' indicates that the account **does not** have access to the plug, and a '`1`' indicates that the user *does* have access to the plug.
- **`userTable::userAux3Access`** – A string of 20 characters, with one character for each of the 20 possible plugs on the AUX3 MPC unit. A '`0`' indicates that the account **does not** have access to the plug, and a '`1`' indicates that the user *does* have access to the plug.
- **`userTable::userGroupAccess`** – A string of 54 characters, with one character for each of the 54 possible plug groups in the system. A '`0`' indicates that the account **does not** have access to the plug group, and a '`1`' indicates that the user *does* have access to the plug group.
- **`userTable::userSerialAccess`** – Access to the serial interface
  - `0` – No access
  - `1` – Access
- **`userTable::userTelnetSshAccess`** – Access to the Telnet/SSH interface
  - `0` – No access
  - `1` - Access
- **`userTable::userWebAccess`** – Access to the Web interface
  - `0` – No access
  - `1` - Access
- **`userTable::userCurrentMonitor`** – Access to the systems current monitoring
  - `0` – No access
  - `1` – Access
- **`userTable::userCallbackNum`** – 32 character callback number for account
- **`userTable::userSubmit`** – Set to `1` to submit changes.

Viewing Users:
Issue a GET request on any of the user parameters for the index corresponding to the desired user.

Adding Users:
For an empty index, issue a SET request on the desired parameters. Minimum requirement is a username and password to create a user, all other parameters will be set to defaults if not specified. To create the user, issue a SET request on the userSubmit object.

Modifying Users:
For the index corresponding to the user you wish to modify, issue a SET request on the desired parameters to be modified. Once complete, issue a SET request on the userSubmit object.

Deleting Users:
For the index corresponding to the user you wish to delete, issue a SET request on the username with a blank string. Once complete, ussue a SET request on the userSubmit object.

5.9.6.4. Plug Control via SNMP

Controlling Plugs:
ON, OFF, BOOT, and DEFAULT commands can be issued for plugs via SNMP. Plugs are arranged in a table of N rows, where N is the number of plugs in the system. Plug parameters are described below.

- **`plugTable::plugID`** – String indicating the plugs ID
- **`plugTable::plugStatus`** – Current state of the plug
  - `0` – Plug is OFF
  - `1` – Plug is ON
- **`plugTable::plugAction`** – Action to be taken on plug
  - `1` – Mark to turn ON (does not execute)
  - `2` – Mark to turn OFF (does not execute)
  - `3` – Mark to BOOT (does not execute)
  - 4 – Mark to DEFAULT (does not execute)
  - 5 – Mark to turn ON and execute plug actions
  - 6 - Mark to turn OFF and execute plug actions
  - 7 - Mark to BOOT and execute plug actions
  - 8 - Mark to DEFAULT and execute plug actions

Set **`plugTable::plugAction`** to desired action, as specified by values 1-4 above, for each plug index the action is to be applied to. For the last plug you wish to set before executing the commands, use values 5-8 instead, which will invoke the requested commands all at once.

Controlling Plug Groups:
ON, OFF, BOOT, and DEFAULT commands can be issued for plug groupss via SNMP. Plug groups are arranged in a table of 54 rows, one row for each plug group in the system. Plug Group parameters are described below.

- **`plugGroupTable::plugGroupName`** – String indicating the plug groups name
- **`plugGroupTable::plugGroupAction`** – Action to be taken on plug group
  - **`1`** – Mark to turn ON (does not execute)
  - **`2`** – Mark to turn OFF (does not execute)
  - **`3`** – Mark to BOOT (does not execute)
  - **`4`** – Mark to DEFAULT (does not execute)
  - **`5`** – Mark to turn ON and execute plug group actions
  - **`6`** - Mark to turn OFF and execute plug group actions
  - **`7`** - Mark to BOOT and execute plug group actions
  - **`8`** - Mark to DEFAULT and execute plug group actions

Set **`plugGroupTable::plugGroupAction`** to desired action, as specified by values 1-4 above, for each plug group index the action is to be applied to. For the last plug group you wish to set before executing the commands, use values 5-8 instead, which will invoke the requested commands all at once.

5.9.6.5. Viewing MPC Status via SNMP

Status of various components of the MPC can be retrieved via SNMP. Plug Status, and Environmental Status are currently supported.

Plug Status:
The status of each plug in the system can be retrieved using the command below.

- **`plugTable::plugStatus`** – The status of the plug.
  - **`0`** – Plug is OFF
  - **`1`** – Plug is ON

Unit Environment Status:
The environment status can be retrieved for various variables for all of the MPC units in the system. The environmentUnitTable contains four rows, one row for each unit in the system (LOCAL, AUX1, AUX2, AUX3.)

- **`environmentUnitTable::environmentUnitName`** – The unit (LOCAL, AUX1, AUX2, or AUX3.)
- **`environmentUnitTable::environmentUnitTemperature`** – The temperature of the given unit.
- **`environmentUnitTable::environmentUnitCurrentA`** – Unit's total current for BUS A
- **`environmentUnitTable::environmentUnitVoltageA`** – Unit voltage for BUS A
- **`environmentUnitTable::environmentUnitPowerA`** – Power drawn by BUS A
- **`environmentUnitTable::environmentUnitCurrentB`** – Unit's total current for BUS B
- **`environmentUnitTable::environmentUnitVoltageB`** – Unit voltage for BUS B
- **`environmentUnitTable::environmentUnitPowerB`** – Power drawn on BUS B

System Environment Status:
The system environment status for the local MPC unit and all connected AUX units can be retrieved for the entire system.

- **`environmentBusATotalCurrent`** – Total BUS A current for MPC system (LOCAL and AUX units)
- **`environmentBusATotalPower`** – Total BUS A power for MPC system (LOCAL and AUX units)
- **`environmentBusBTotalCurrent`** – Total BUS B current for MPC system (LOCAL and AUX units)
- **`environmentBusBTotalPower`** – Total BUS B power for MPC system (LOCAL and AUX units)

5.9.6.6. Sending Traps via SNMP

Traps that report various unit conditions can be sent to an SNMP Management Station from the MPC. The following traps are currently supported.

- **`WarmStart`** Trap – Trap indicating a warm start
- **`ColdStart`** Trap – Trap indicating a cold start
- **`Alarm`** Trap – Trap indicating an alarm condition
- **`Test`** Trap – Test trap invoked by user via CLI

```
SNMP TRAP:

Note: The SNMP trap feature is enabled by defining at least one manager.

1. Manager 1:          (undefined)
2. Manager 2:          (undefined)
3. Community:          public


Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 5.20: SNMP Trap Menu (Text Interface)

Figure 5.21: SNMP Trap Menu (Web Browser Interface)

5.9.7. SNMP Trap Parameters

These menus are used to select parameters that will be used when SNMP traps are sent. To define or change SNMP Trap parameters, proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]** to display the Network Parameters Menu (Figure 5.13.) At the Network Parameters Menu, type **26** and press **[Enter]** to display the SNMP Trap Menu (Figure 5.20.)
- **Web Browser Interface:** Click on the "SNMP Traps" link on the left hand side of the MPC Home screen to display the menu shown in Figure 5.21.

Both the Text Interface and Web Browser Interface allow the following parameters to be defined:

- **SNMP Manager 1:** The IP Address for the first SNMP Manager. For more information, please refer to Section 12. (Default = Undefined.)

  Note: *In order to enable the SNMP Trap feature, you must define at least one SNMP Manager.*

- **SNMP Manager 2:** (Default = Undefined.)
- **Trap Community:** (Default = Public.)

```
LDAP:

1.  Enable:                        Off
2.  LDAP Port:                     389
3.  Primary Host:                  (undefined)
4.  Secondary Host:                (undefined)
5.  Bind Type:                     Simple
6.  Search Bind DN:                (undefined)
7.  Search Bind Password:          (undefined)
8.  User Search Base DN:           (undefined)
9.  User Search Filter:            (undefined)
10. Group Membership Attribute:    (undefined)
11. Group Membership Value Type:   DN
12. Fallback:                      Off
13. LDAP Group Setup


Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 5.22: LDAP Parameters Menu (Text Interface)

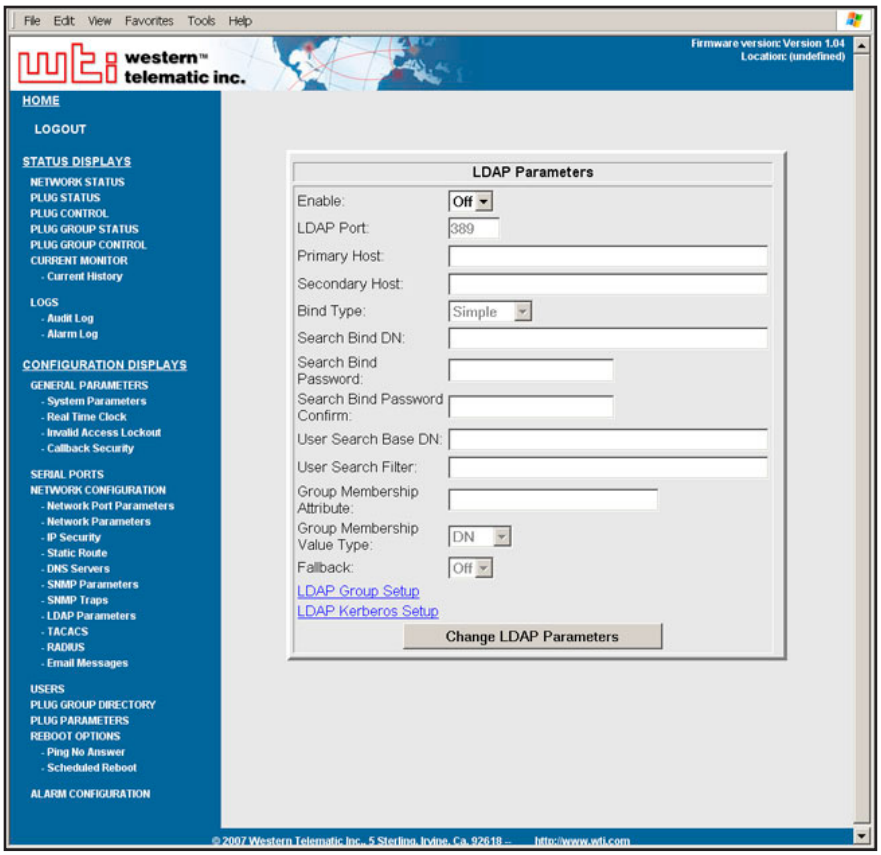

Figure 5.23: LDAP Parameters Menu (Web Browser Interface)

5.9.8. LDAP Parameters

The MPC supports LADP (Lightweight Directory Access Protocol,) which allows authentication via the "Active Directory" network Directory Service. When LDAP is enabled and properly configured, command access rights can be granted to new users without the need to define individual new accounts at each MPC unit, and existing users can also be removed without the need to delete the account from each MPC unit.

This type of authentication also allows administrators to assign users to LDAP groups, and then specify which plugs the members of each group will be allowed to control at each MPC unit.

In order to apply the LDAP feature, you must first define User Names and associated Passwords and group membership via your LDAP server, and then access the MPC command mode to enable and configure the LDAP settings and define port access rights and command access rights for each group that you have specified at the LDAP server.

To access the LDAP Parameters menu, login to MPC command mode using a password that permits Administrator Level commands and then proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]** to display the Network Parameters Menu (Figure 5.13.) At the Network Parameters Menu, type **27** and press **[Enter]** to display the LDAP parameters menu (Figure 5.22.)
- **Web Browser Interface:** Click on the "LDAP Parameters" link on the left hand side of the screen to display the LDAP Parameters menu (Figure 5.23.)

Notes:

- *Plug access rights are not defined at the LDAP server. They are defined via the LDAP Group configuration menu on each MPC unit and are specific to that MPC unit alone.*
- *When LDAP is enabled and properly configured, LDAP authentication will supersede any passwords and access rights that have been defined via the MPC user directory.*
- *If no LDAP groups are defined on a given MPC unit, then access rights will be determined as specified by the "default" LDAP group.*
- *The "default" LDAP group cannot be deleted.*

The LDAP Parameters Menu (Figure 5.22 or Figure 5.23) allows you to define the following parameters:

- **Enable:** Enables/disables LDAP authentication. (Default = Off.)
- **LDAP Port:** Defines the port that will be used to communicate with the LDAP server. (Default = 389.)
- **Primary Host:** Defines the IP address or domain name (up to 64 characters) for the primary LDAP server. (Default = undefined.)
- **Secondary Host:** Defines the IP address or domain name (up to 64 characters) for the secondary (fallback) LDAP server. (Default = undefined.)

- **Bind Type:** Sets the LDAP bind request password type. Note that in the Text Interface, when the Bind Type is set to "Kerberos" LDAP menu will include an additional prompt (item 14) that is used to select Kerberos parameters as described in Section 5.9.8.5. In the Web Interface, the link to the kerberos parameters menu is located at the bottom of the LDAP Parameters Menu. (Default = Simple.)
- **Search Bind DN:** Selects the user name who is allowed to search the LDAP directory. (Default = undefined.)
- **Search Bind Password:** Sets the Password for the user who is allowed to search the LDAP directory. (Default = undefined.)
- **User Search Base DN:** Sets the directory location for user searches. (Default = undefined.)
- **User Search Filter:** Selects the attribute that lists the user name. Note that this attribute should always end with "=%s" (no quotes.) (Default = undefined.)
- **Group Membership Attribute:** Selects the attribute that list group membership(s). (Default = undefined.)
- **Group Membership Value Type:** (Default = DN.)
- **Fallback:** Enables/Disables the LDAP fallback feature. When enabled, the MPC will revert to it's own internal user directory (see Section 5.5) if no defined users are found via the LDAP server. In this case, port access rights will then be granted as specified in the default LDAP group. (Default = Off.)
- **LDAP Group Setup:** Provides access to a submenu, which is used to define LDAP Groups as described in the sections that follow.

```
ADD LDAP GROUP:

1. LDAP Group
2. Access Level:          User
3. Plug Access:
4. Plug Group Access
5. Service Access         Serial Port, Telnet/SSH, Web
6. Current Monitoring     Off


Enter: #<CR> to select,
       <ESC> to return to previous menu ...
```

Figure 5.24: Add LDAP Group Menu (Text Interface)

Figure 5.25: Add LDAP Group Menu (Web Browser Interface)

5.9.8.1. Adding LDAP Groups

Once you have defined several users and passwords via your LDAP server, and assigned those users to LDAP Groups, you must then grant command and port access rights to each LDAP Group at each individual MPC unit.

To add LDAP groups to your MPC unit, log in to the command mode using a password that permits access to Administrator Level commands, and then proceed as follows:

- **Text Interface:** Type `/N` and press **[Enter]** to display the Network Parameters Menu (Figure 5.13.) At the Network Parameters Menu, type `27` and press **[Enter]** to display the LDAP parameters menu (Figure 5.20), then type `13` and press **[Enter]** to display the LDAP Group Menu. At the LDAP Group Menu, type `2` and press **[Enter]** to display the Add LDAP Group menu (Figure 5.24.)
- **Web Browser Interface:** Click on the LDAP Parameters link to display the LDAP Parameters menu (Figure 5.21.) At the LDAP Parameters menu, click on the LDAP Group Configuration link to display the LDAP Group Configuration menu, then click the Add LDAP Group link to display the Add LDAP Group menu (Figure 5.25.)

The Add LDAP Group menu allows the following parameters to be defined:

- **LDAP Group:** Note that this name must match the LDAP Group names that you have assigned to users at your LDAP server. (Default = undefined.)
- **Access Level:** Sets the command access level to either Administrator, SuperUser, User or ViewOnly. For more information on Access Levels, please refer to Section 5.4.1. (Default = User.)
- **Plug Access:** This item is used to determine which plugs members of this group will be allowed to control. (Default = All Plugs Off.)
- **Plug Group Access:** This item is used to determine which plug groups the members of this LDAP Group will be allowed to control. (Default = undefined.)
- **Service Access:** This item determines how members of this LDAP Group will be allowed to access command mode. The Service Access parameter is used to allow members of this LDAP group to access command mode via Serial Port, Telnet/SSH, Web or any combination thereof. (Default = Serial Port = On, Telnet/SSH = On, Web = On.)
- **Current Monitoring:** Determines whether or not members of this LDAP Group will be allowed to view current, voltage and temperature readings from the MPC unit.

  Note: *After you have finished defining LDAP Group parameters, make certain to save the changes before proceeding. In the Web Browser Interface, click on the "Add LDAP Group" button to save parameters; in the Text Interface, press the **[Esc]** key several times until you have exited from the Network Parameters menu and the MPC displays the "Saving Configuration" message.*

5.9.8.2 Viewing LDAP Groups

If you want to examine an existing LDAP group definition, the "View LDAP Groups" function can be used to review the group's parameters and Plug Access Settings. To view an existing LDAP group on your MPC unit, proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]** to display the Network Parameters Menu (Figure 5.13.) At the Network Parameters Menu, type **27** and press **[Enter]** to display the LDAP parameters menu (Figure 5.22), then type **13** and press **[Enter]** to display the LDAP Group Menu, then type **1** and press **[Enter].** The MPC will prompt you to select the desired group; key in the name of the group and press **[Enter]**, the MPC will display the View LDAP Group screen.
- **Web Browser Interface:** At the MPC Home Screen, click on the "LDAP Parameters" link on the left hand side of the screen to display the LDAP Parameters menu (Figure 5.23.) At the LDAP Parameters menu, click on the "LDAP Group Configuration" link to display the LDAP Group Configuration menu, then click the "View/Modify LDAP Group" link to display the Choose LDAP Group menu; use the drop down menu to select the desired group, select "View LDAP Group" and then click the "Choose LDAP Group" button.

5.9.8.3. Modifying LDAP Groups

If you want to modify an existing LDAP Group in order to change parameters or plug access rights, the "Modify LDAP Group" function can be used to reconfigure group parameters. To Modify an existing LDAP Group, access the MPC command mode using a password that permits access to Administrator Level commands, and then proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]** to display the Network Parameters Menu (Figure 5.13.) At the Network Parameters Menu, type **27** and press **[Enter]** to display the LDAP parameters menu (Figure 5.22), then type **13** and press **[Enter]** to display the LDAP Group Menu, then type **3** and press **[Enter].** The MPC will prompt you to select the desired group; key in the name of the group and press **[Enter]**, the MPC will display the Modify LDAP Group screen.
- **Web Browser Interface:** Click on the "LDAP Parameters" link on the left hand side of the screen to display the LDAP Parameters menu (Figure 5.23.) At the LDAP Parameters menu, click on the "LDAP Group Configuration" link to display the LDAP Group Configuration menu, then click the "View/Modify LDAP Group" link to display the Choose LDAP Group menu; use the drop down menu to select the desired group, select "Modify LDAP Group" and then click the "Choose LDAP Group" button.

Once you have accessed the Modify LDAP Group menu, use the menu options to redefine parameters in the same manner that is used for the Add LDAP Group menu, as discussed in Section 5.9.8.1.

> **Note:** *After you have finished modifying LDAP Group parameters, make certain to save the changes before proceeding. In the Web Browser Interface, click on the "Modify LDAP Group" button to save parameters; in the Text Interface, press the **[Esc]** key several times until you have exited from the Network Parameters menu and the MPC displays the "Saving Configuration" message.*

5.9.8.4. Deleting LDAP Groups

The Delete LDAP Group function is used to delete LDAP Groups that are no longer in use. To delete an existing LDAP Group, proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]** to display the Network Parameters Menu (Figure 5.13.) At the Network Parameters Menu, type **27** and press **[Enter]** to display the LDAP parameters menu (Figure 5.22), then type **13** and press **[Enter]** to display the LDAP Group Menu, then type **4** and press **[Enter].** The MPC will prompt you to select the desired group; key in the name of the group and press **[Enter]**, the MPC will delete the specified LDAP Group immediately, without further prompting.
- **Web Browser Interface:** Click on the "LDAP Parameters" link on the left hand side of the screen to display the LDAP Parameters menu (Figure 5.23.) At the LDAP Parameters menu, click on the "LDAP Group Configuration" link to display the LDAP Group Configuration menu, then click the "View/Modify LDAP Group" link to display the Choose LDAP Group menu; use the drop down menu to select the desired group, select "Delete LDAP Group" and then click the "Choose LDAP Group" button to display the Delete LDAP Group menu. If the Delete LDAP Group menu shows the desired group, then click the "Delete LDAP Group" button to immediately delete the group.

```
LDAP KERBEROS SETUP

1. Port  : 88
2. Realm :

KDC (KDC1 - KDC5)
3.
4.
5.
6.
7.

Domain Realm (Domain Realm1 - Domain Realm5)
8.
9.
10.
11.
12.


Enter: #<CR> to select,
       <ESC> for previous menu ...
```

Figure 5.26: LDAP Kerberos Set Up Menu (Text Interface)

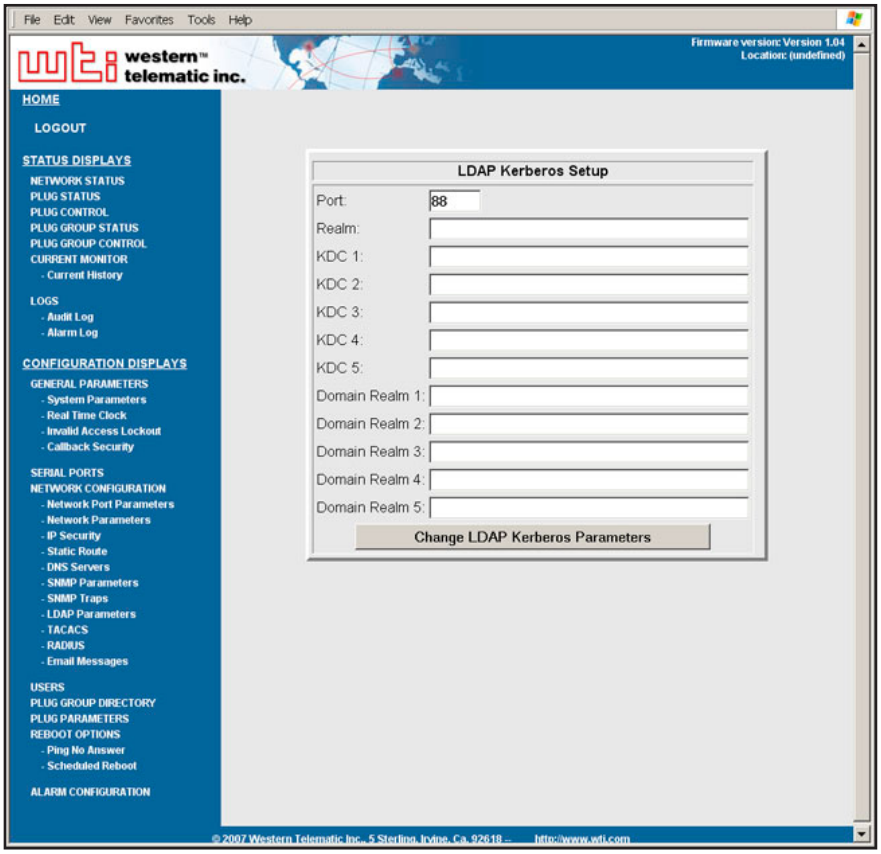

Figure 5.27: LDAP Kerberos Set Up Menu (Web Browser Interface)

5.9.8.5. LDAP Kerberos Set Up

Kerberos is a network authentication protocol, which provides a secure means of identity verification for users who are communicating via an insecure network.

To access the LDAP Kerberos Set Up menu, access the command mode using a password that permits access to Administrator Level commands and then proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]** to display the Network Parameters Menu (Figure 5.13.) At the Network Parameters Menu, type **27** and press **[Enter]** to display the LDAP Parameters menu (Figure 5.22.) At the LDAP Parameters Menu, type **5** and press **[Enter]** and then use the resulting submenu to set the Bind Type to Kerberos. Next, return to the LDAP Parameters menu. Note that the LDAP Parameters Menu now includes a prompt which is used to select Kerberos parameters. Type **14** and press **[Enter]** to display the Kerberos Set Up menu as shown in Figure 5.26.
- **Web Browser Interface:** Click on the LDAP Parameters link on the left hand side of the screen to display the LDAP Parameters menu (Figure 5.23.) At the LDAP Parameters menu, click on the LDAP Kerberos Setup link to display the LDAP Kerberos Setup menu as shown in Figure 5.27.

The LDAP Kerberos Setup menu allows you to define the following parameters:

- **Port:** (Default = 88.)
- **Realm:** (Default = Undefined.)
- **Key Distribution Centers (KDC1 through KDC5):** (Default = Undefined.)
- **Domain Realms 1 through 5:** (Default = Undefined.)

```
TACACS:

1. Enable:               Off
2. Primary address:      (undefined)
3. Secondary address:    (undefined)
4. Secret Word:          (undefined)
5. Fallback Local:       Off
6. Authentication Port: 49


Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 5.28: The TACACS Parameters Menu (Text Interface)

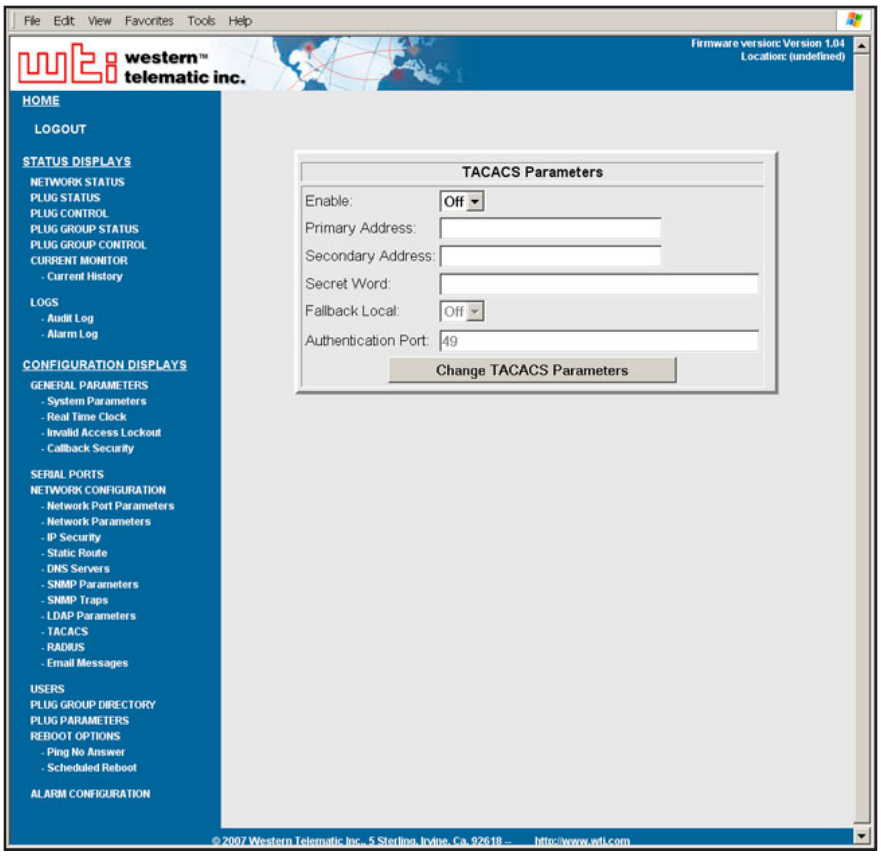

Figure 5.29: The TACACS Parameters Menu (Web Browser Interface)

5.9.9. TACACS Parameters

To access the TACACS Configuration Menus, proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]** to access the Network Configuration Menu. From the Network Configuration Menu, type **28** and press **[Enter]** to display the TACACS Configuration Menu (Figure 5.28.)
- **Web Browser Interface:** Click on the "TACACS Parameters" link, located on the left hand side of the screen, to display the TACACS Configuration Menu (Figure 5.29.)

The TACACS Configuration Menus offer the following options:

- **Enable:** Enables/disables the TACACS feature at the Network Port. (Default = Off.)
- **Primary Address:** Defines the IP address or domain name (up to 64 characters) for your primary TACACS server. (Default = undefined.)
- **Secondary Address:** Defines the IP address or domain name (up to 64 characters) for your secondary, fallback TACACS server (if present.) (Default = undefined.)
- **Secret Word:** Defines the shared TACACS Secret Word for both TACACS servers. (Default = undefined.)
- **Fallback Local:** Determines whether or not the MPC will fallback to its own password/username directory when an authentication attempt fails. When enabled, the MPC will first attempt to authenticate the password by checking the TACACS Server; if this fails, the MPC will then attempt to authenticate the password by checking its own internal username directory. (Default = Off.)
- **Authentication Port:** The port number for the TACACS function. (Default = 49.)

```
RADIUS:

1. Enable:                Off
2. Primary Address:       (undefined)
3. Primary Secret Word:   (undefined)
4. Secondary Address:     (undefined)
5. Secondary Secret Word: (undefined)
6. Fallback Timer:        3 Sec
7. Fallback Local:        Off
8. Authentication Port:   1812
9. Accounting Port:       1813


Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 5.30: The RADIUS Parameters Menu (Text Interface)

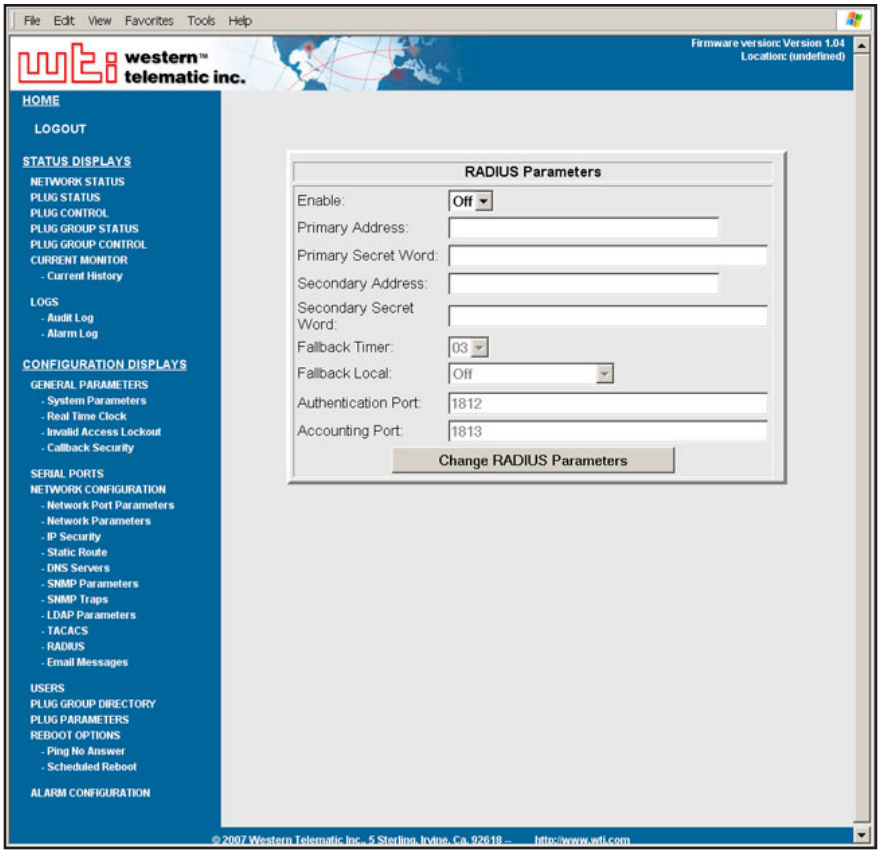

Figure 5.31: The RADIUS Parameters Menu (Web Browser Interface)

5.9.10. RADIUS Parameters

To access the RADIUS Configuration Menus, proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]** to access the Network Configuration Menu. From the Network Configuration Menu, type **29** and press **[Enter]** to display the RADIUS Configuration Menu (Figure 5.30.)
- **Web Browser Interface:** Click on the "RADIUS Parameters" link on the left hand side of the screen to display the RADIUS Configuration Menu (Figure 5.31.)

The RADIUS Configuration Menus offer the following options:

- **Enable:** Enables/disables the RADIUS feature at the Network Port. (Default = Off.)
- **Primary Address** Defines the IP address or domain name (up to 64 characters long) for your primary RADIUS server. (Default = undefined.)
- **Primary Secret Word:** Defines the RADIUS Secret Word for the primary RADIUS server. (Default = undefined.)
- **Secondary Address:** Defines the IP address or domain name (up to 64 characters long) for your secondary, fallback RADIUS server (if present.) (Default = undefined.)
- **Secondary Secret Word:** Defines the RADIUS Secret Word for the secondary RADIUS server. (Default = undefined.)
- **Fallback Timer:** Determines how long the MPC will continue to attempt to contact the primary RADIUS Server before falling back to the secondary RADIUS Server. (Default = 3 Seconds.)
- **Fallback Local:** Determines whether or not the MPC will fallback to its own password/username directory when an authentication attempt fails. When enabled, the MPC will first attempt to authenticate the password by checking the RADIUS Server; if this fails, the MPC will then attempt to authenticate the password by checking its own internal username directory. This parameter offers three options:
  - **Off:** Fallback Local is disabled (Default.)
  - **On (All Failures):** Fallback Local is enabled, and the unit will fallback to it's own internal user directory when it cannot contact the Radius Server, or when a password or username does not match the Radius Server.
  - **On (Transport Failure):** Fallback Local is enabled, but the unit will only fallback to it's own internal user directory when it cannot contact the Radius Server.
- **Authentication Port:** The Authentication Port number for the RADIUS function. (Default = 1812.)
- **Accounting Port:** The Accounting Port number for the RADIUS function. (Default = 1813.)

```
EMAIL AND TEXT MESSAGING:

1.  Enable:                     Off
2.  SMTP Server                 (undefined)
3.  Port Number:                25
4.  Domain:                     (undefined)
5.  User Name:                  (undefined)
6.  Password:                   (undefined)
7.  Auth Type:                  None
8 .  From Name:                 (undefined)
9.  From Address:               (undefined)
10. To Address:                 (undefined)
11. To Address:                 (undefined)
12. To Address:                 (undefined)
13. Send Test Email


Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 5.32: The Email Messaging Parameters Menu (Text Interface)

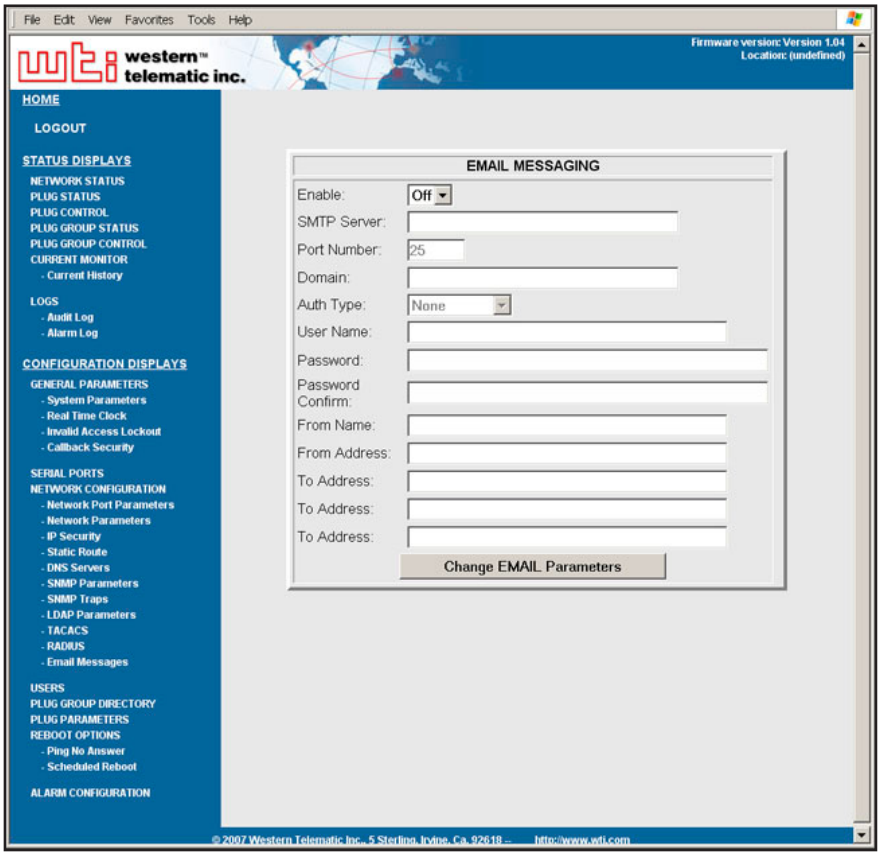

Figure 5.33: The Email Messaging Parameters Menu (Web Browser Interface)

5.9.11. Email Message Parameters

The Email Parameters menu is used to define parameters for email messages that the MPC can send to notify you when an alarm is triggered. To define email message parameters, access the MPC Command Mode using a password that permits access to Administrator Level commands and then proceed as follows:

- **Text Interface:** Type **/N** and press **[Enter]** to access the Network Configuration Menu. From the Network Configuration Menu, type **32** and press **[Enter]** to display the Email Configuration Menu (Figure 5.32.)
- **Web Browser Interface:** Click on the "Email Messages" link on the left hand side of the screen to display the menu shown in Figure 5.33.

The Email Configuration menu offers the following options:

- **Enable:** Enables/Disables the Email Messaging feature. When disabled, the MPC will not be able to send email messages when an alarm is generated. (Default = On.)
- **SMTP Server:** This prompt is used to define the address of your SMTP Email server. (Default = 192.168.100.43.)
- **Port Number:** Selects the TCP/IP port number that will be used for email connections. (Default = 25.)
- **Domain:** The domain name for your email server. (Default = undefined.)

  Note: *In order to use domain names, you must first define Domain Name Server parameters as described in Section 5.9.5.*
- **User Name:** The User Name that will be entered when logging into your email server. (Default = undefined.)
- **Password:** The password that will be used when logging into your email server. (Default = undefined.)
- **Auth Type:** The Authentication type; the MPC allows you to select None, Plain, Login, or CRAM-MD5 Authentication. (Default = Plain.)
- **From Name:** The name that will appear in the "From" field in email sent by the MPC. (Default = undefined.)
- **From Address:** The email address that will appear in the "From" field in email sent by the MPC. (Default = undefined.)
- **To Address:** The address(es) that will receive email messages generated by the MPC. Note that up to three "To" addresses may be defined, and that when Alarm Configuration parameters are selected as described in Section 7, you may then designate one, two or all three of these addresses as recipients for email messages that are generated by the alarms. (Default = undefined.)
- **Send Test Email:** Sends a test email, using the parameters that are currently defined for the Email configuration menu.

5.10. Save User Selected Parameters

It is strongly recommended to save all user-defined parameters to an ASCII file as described in Section 13. This will allow quick recovery in the event of accidental deletion or reconfiguration of port parameters.

When communicating via the Text Interface, it is also recommended to make certain that you have exited from all configuration menus, using the **[Escape]** key before invoking the /X command to exit command mode. This will ensure that newly defined parameters are saved to memory, and are not lost after you exit from command mode.

6. Reboot Options

In addition to performing reboot cycles in response to commands, the MPC can also be configured to reboot outlets when an attached device does not respond to a Ping command (Ping-No-Answer Reboot) or according to a user defined schedule (Scheduled Reboot.)

- **Ping-No-Answer Reboot:** When the Ping-No-Answer feature is enabled, the MPC will Ping a user selected IP address at regular intervals. If the IP address does not respond to the Ping command, the MPC will reboot one or more user selected outlet(s). Typically, this feature is used to reboot devices when they cease to respond to the Ping command.
- **Scheduled Reboot:** A scheduled reboot is used to initiate a reboot cycle at a user selected time and day of the week. When properly configured and enabled, the MPC will reboot one or more outlets on a daily or weekly basis. The Scheduled Reboot feature can also be used to switch outlet(s) Off at a user selected time, and then switch them back On again at a later, user selected time.

This section describes the procedure for configuring and enabling Ping-No-Answer Reboots and Scheduled Reboots.

> **Note:** *When defining parameters via the Text Interface, make certain to press the [Esc] key to completely exit from the configuration menu and save newly defined parameters. When parameters are defined via the Text Interface, newly defined parameters will not be saved until the "Saving Configuration" message is displayed.*

6.1. Ping-No-Answer Reboot

A Ping-No-Answer Reboot can be used to reboot one or more outlets whenever an attached device does not respond to a Ping Command. In addition, the Ping-No-Answer Reboot feature can also be configured to send an email, Syslog Message or SNMP Trap to notify you whenever a Ping-No-Answer Reboot occurs. Please refer to Section 7.6 for instructions on setting up email alarm notification for Ping-No-Answer reboots.

To set up a Ping-No-Answer Reboot, access command mode using a password that permits access to Administrator level commands and then proceed as follows:

- **Text Interface:** Type `/RB` and press **[Enter]**. The Reboot Options Menu will be displayed. At the Reboot Options menu, type `1` and press **[Enter]** to display the Ping-No-Answer Reboot Directory menu. From the Ping-No-Answer Reboot Directory Menu, you can Add, Modify, View or Delete Ping-No-Answer Reboots as described in the Sections that follow.
- **Web Browser Interface:** Click the "Ping-No-Answer Reboot" link on the left hand side of the screen. The Ping-No-Answer Reboot Configuration menu will be displayed. From the Ping-No-Answer Reboot Configuration menu, you can Add, Modify, View or Delete Ping-No-Answer Reboots as described in the Sections that follow.

```
ADD PING NO ANSWER TO DIRECTORY:

 1. IP Address:                  (undefined)
 2. Ping Interval:               15 Min
 3. Interval After Failed Ping:  01 Min
 4. Ping Delay After Reboot:     15 Min
 5. Consecutive Failures:        03
 6. Reboot:                      No
 7. Plug Access:                 (undefined)
 8. Plug Group Access:           (undefined)
 9. Ping Test


Enter: #<CR> to select,
       <ESC> to return to previous menu ...
```

Figure 6.1: The Add Ping-No-Answer Menu (Text Interface)

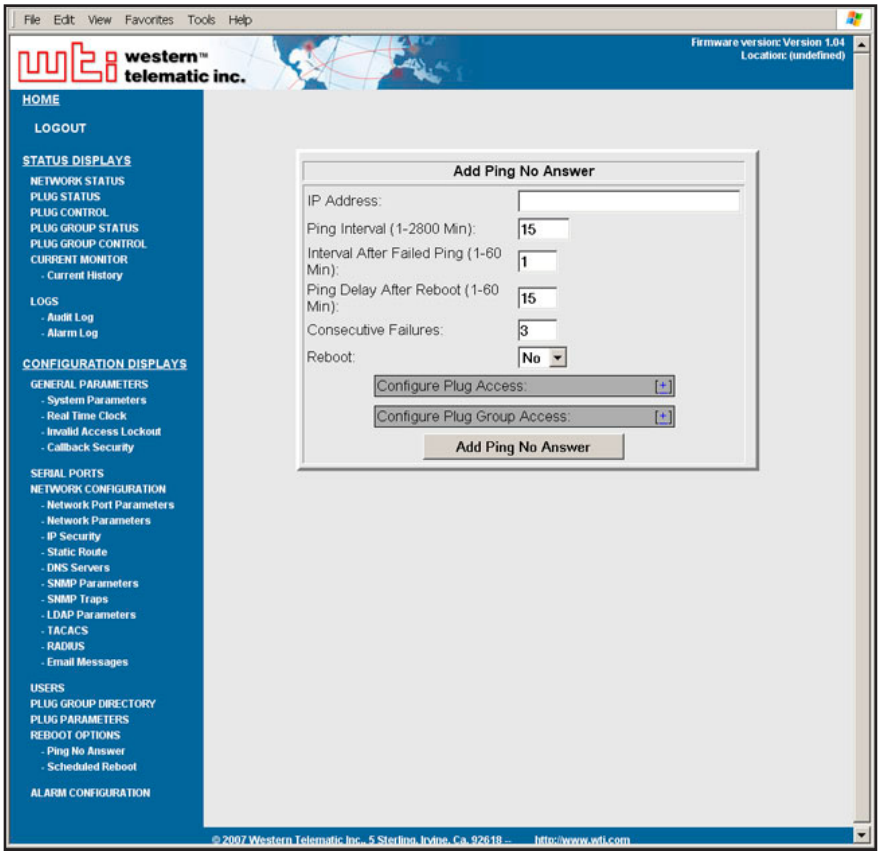

Figure 6.2: The Add Ping-No-Answer Menu (Web Browser Interface)

6.1.1. Adding Ping-No-Answer Reboots

To add a Ping-No-Answer Reboot, access command mode using a password that permits Administrator Level commands and then proceed as follows:

- **Text Interface:** Access the Ping-No-Answer Reboot Directory menu as described in Section 6.1, then type 2 and press **[Enter]** to display the Add Ping-No-Answer Reboot menu as shown in Figure 6.1.
- **Web Browser Interface:** Access the Ping-No-Answer Reboot Configuration menu as described in Section 6.1, then click on the Add Ping-No-Answer Reboot link to display the menu shown in Figure 6.2.

Up to 54 Ping-No-Answer Reboots can be defined. The Add Ping-No-Answer menu is used to define the following parameters for each new Ping-No-Answer Reboot:

- **IP Address:** The IP address for the device that you wish to Ping. When the device at this address fails to respond to the Ping command, the MPC will reboot the selected outlets. (Default = undefined.)
- **Ping Interval:** Determines how often the Ping command will be sent to the selected IP Address. The Ping Interval can be any whole number, from 1 to 2,800 minutes. (Default = 15 Minutes.)
- **Interval After Failed Ping:** Determines how often the Ping command will be sent after a previous Ping command receives no response. (Default = 1 Minute.)
- **Ping Delay After Reboot:** Determines how long the MPC will wait to send additional Ping commands, after a Ping-No-Answer Reboot has been initiated. Typically, this option is used to allow time for a device to fully "wake up" after a Ping-No-Answer Reboot before attempting to Ping the device again. (Default = 15 Minutes.)
- **Consecutive Failures:** Determines how many consecutive failures of the Ping command must be detected in order to initiate a Ping-No-Answer Reboot. For example, if this value is set to "3", then after three consecutive Ping failures, a Ping-No-Answer Reboot will be performed. (Default = 3.)
- **Reboot:** Enables/Disables the Ping-No-Answer Reboot function for the specified IP address. When this item is disabled, the MPC will not reboot the specified outlet(s) when a Ping-No-Answer is detected. However, the MPC will continue to notify you via Email, Syslog Message and/or SNMP Trap, providing that parameters for these functions have been defined as described in Section 5.9 and email notification for the Ping-No-Answer function has been enabled as described in Section 7.6. (Default = No.)

Notes:

- *In order for Email/Text Message Notification to function, you must first define Email/Text Message parameters as described in Section 5.9.11.*
- *In order for Syslog Message Notifcation to function, you must first define a Syslog Address as described in Section 5.9.2.*
- *In order for SNMP Trap Notification to function, you must first define SNMP parameters as described in Section 5.9.6 and Section 5.9.7.*

- **Plug Access:** Determines which outlet(s) will be rebooted when this IP address for this Ping-No-Answer operation does not respond to a Ping command. Note that in the Text Interface, Plug Access is defined via a separate submenu; in the Web Browser Interface, Plug Access is defined via a drop down menu, which may be accessed by clicking on the "plus" sign in the "Configure Plug Access" field. (Default = undefined.)
- **Plug Group Access:** Determines which Plug Group(s) the Ping-No-Answer Reboot for this IP Address will be applied to. Note that in the Text Interface, Plug Group Access is defined via a separate submenu; in the Web Browser Interface, Plug Group Access is defined via a drop down menu, which may be accessed by clicking on the "plus" sign. (Default = undefined.)
- **Ping Test:** Sends a test Ping command to the IP Address defined for this Ping-No-Answer Reboot.

6.1.2. Viewing Ping-No-Answer Reboot Profiles

After you have defined one or more Ping-No-Answer Reboot profiles, you can review the parameters selected for each profile using the View Ping-No-Answer feature. To view the configuration of an existing Ping-No-Answer profile, access command mode using a password that allows Administrator level commands and then proceed as follows:

- **Text Interface:** Access the Ping-No-Answer Reboot Directory menu as described in Section 6.1, then type `1` and press **[Enter]**. The MPC will display a menu which shows all defined Ping-No-Answer Profiles, listed by their IP Addresses. Key in the IP Address for the desired profile, and then press **[Enter]** to display the View Ping-No-Answer Profile menu.
- **Web Interface:** Access the Ping-No-Answer Reboot Configuration menu as described in Section 6.1, then click on the View/Modify Ping-No-Answer Reboot link. The MPC will display a menu that allows you to select the desired Ping-No-Answer Reboot and directory function. Select the "View Profile" button, and then click on the down arrow, scroll to the desired Ping-No-Answer Reboot Profile, select the profile, and then click "Choose Ping-No-Answer Profile."

The MPC will display a screen which lists all defined parameters for the selected Ping-No-Answer Reboot Profile.

6.1.3. Modifying Ping-No-Answer Reboot Profiles

After you have defined a Ping-No-Answer profile, you can modify the configuration of the profile using the Modify Ping-No-Answer feature. To modify the configuration of an existing Ping-No-Answer profile, access the command mode using a password that allows Administrator level commands and then proceed as follows:

- **Text Interface:** Access the Ping-No-Answer Reboot Directory menu as described in Section 6.1, then type **3** and press **[Enter]**. The MPC will display a menu which shows all defined Ping-No-Answer Profiles, listed by their IP Addresses. Key in the IP Address for the desired profile, and then press **[Enter]** to display the Modify Ping-No-Answer Profile menu.
- **Web Interface:** Access the Ping-No-Answer Reboot Configuration menu as described in Section 6.1, then click on the View/Modify Ping-No-Answer Reboot link. The MPC will display a menu that allows you to select the desired Ping-No-Answer Reboot and directory function. Select the "Modify Profile" button, and then click on the down arrow, scroll to the desired Ping-No-Answer Reboot Profile, select the profile, and then click "Choose Ping-No-Answer Profile."

The MPC will display a screen which allows you to modify parameters for the selected Ping-No-Answer Reboot Profile. Note that this screen functions identically to the Add Ping-No-Answer Reboot menu, as discussed in Section 6.1.1.

6.1.4. Deleting Ping-No-Answer Reboot Profiles

After you have defined one or more Ping-No-Answer profiles, you can delete profiles that are no longer needed using the Delete Ping-No-Answer feature. To delete an existing Ping-No-Answer profile, access the command mode using a password that allows Administrator level commands and then proceed as follows:

- **Text Interface:** Access the Ping-No-Answer Reboot Directory menu as described in Section 6.1, then type **4** and press **[Enter]**. The MPC will display a menu which shows all defined Ping-No-Answer Profiles, listed by their IP Addresses. Key in the IP Address for the desired profile, and then press **[Enter]** to delete the selected profile. The selected profile will be deleted immediately, with no further prompting.
- **Web Interface:** Access the Ping-No-Answer Reboot Configuration menu as described in Section 6.1, then click on the View/Modify Ping-No-Answer Reboot link. The MPC will display a menu that allows you to select the desired Ping-No-Answer profile and directory function. Select the "Delete Profile" button, and then click on the down arrow, scroll to the desired Ping-No-Answer Reboot Profile, select the profile, and then click "Choose Ping-No-Answer Profile." The MPC will display a screen which lists all defined parameters for the selected profile. To confirm deletion, Click on the "Delete Profile" button.

6.2. Scheduled Reboot

The Scheduled Reboot feature can be used to reboot one or more outlets according to a user-defined schedule, or to automatically turn outlets Off and then On according to a user defined schedule.

To configure a Scheduled Reboot, access command mode using a password that permits access to Administrator level commands and then proceed as follows:

- **Text Interface:** Type **/RB** and press **[Enter]**. The Reboot Options Menu will be displayed. At the Reboot Options menu, type **2** and press **[Enter]** to display the Scheduled Reboot Directory menu. From the Scheduled Reboot Directory Menu, you can Add, Modify, View or Delete Scheduled Reboots as described in the Sections that follow.
- **Web Browser Interface:** Click the "Scheduled Reboot" link on the left hand side of the screen. The Scheduled Reboot Configuration menu will be displayed. From the Scheduled Reboot Configuration menu, you can Add, Modify, View or Delete Scheduled Reboots as described in the Sections that follow.

6.2.1. Adding Scheduled Reboots

To add a Scheduled Reboot, access command mode using a password that permits Administrator Level commands and then proceed as follows:

- **Text Interface:** Access the Scheduled Reboot Directory menu as described in Section 6.2, then type **2** and press **[Enter]** to display the Add Scheduled Reboot menu as shown in Figure 6.3.
- **Web Browser Interface:** Access the Scheduled Reboot Configuration menu as described in Section 6.1, then click on the Add Scheduled Reboot link to display the menu shown in Figure 6.4.

The MPC allows up to 54 Scheduled Reboots to be defined.

```
ADD SCHEDULED REBOOT TO DIRECTORY:

 1. Name:                  (undefined)
 2. Plug Action:           Turn OFF
 3. Recurrence:            Daily
 4. Day:                   -----
 5. Time:                  12:00
 6. Turn ON Day:           -----
 7. Turn ON Time:          12:01
 8. Plug Access:           (undefined)
 9. Plug Group Access:     (undefined)


Enter: #<CR> to select,
       <ESC> to return to previous menu ...
```

Figure 6.3: The Add Scheduled Reboot Menu (Text Interface)

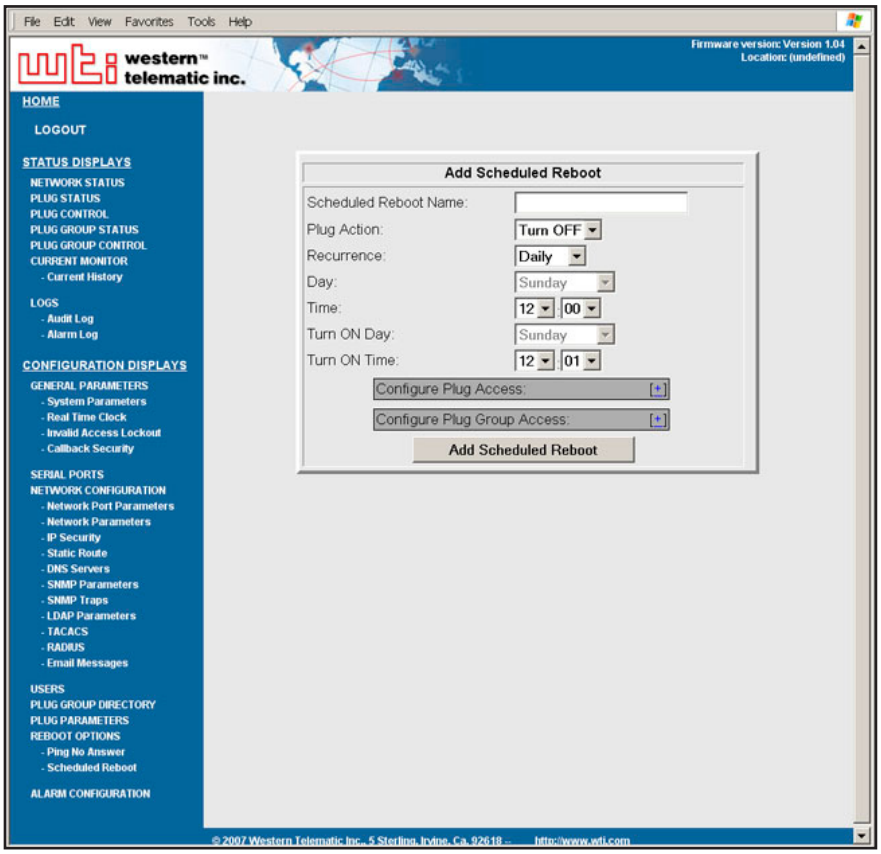

Figure 6.4: The Add Scheduled Reboot Menu (Web Browser Interface)

The Add Scheduled Reboot menu allows you to define the following parameters for each new Scheduled Reboot:

- **Scheduled Reboot Name:** Assigns a name to this Scheduled Reboot. (Default = undefined.)
- **Plug Action:** Determines whether the Scheduled Reboot will result in the outlet(s) being switched off (Off), or cycled Off and then On again (Reboot.) Note that when "Off" is selected, the "Day On" option and the "Time On" option can be used to select a time and day when the outlet(s) will be switched back On again. (Default = Off.)
- **Recurrance:** Determines whether the Scheduled Reboot will be performed on a Daily basis or a Weekly basis. (Default = Daily.)
- **Day:** Determines the day of the week that this Scheduled Reboot will occur on. (Default = undefined.)
- **Time:** Determines the time of the day that this Scheduled Reboot will occur on. (Default = 12:00.)
- **Turn ON Day:** When the "Action" parameter is set to "Off", this parameter can be used to determine the day that the outlet(s) will be switched back On again. (Default = undefined.)
- **Turn ON Time:** When the "Action" parameter has been set to "Off", this parameter can be used to determine the time when the outlet(s) will be switched back On again. (Default = 12:01.)
- **Plug Access:** Determines which outlet(s) this Scheduled Reboot action will be applied to. In the Text Interface, outlets are selected by typing 9, pressing [Enter] and then following the instructions in the resulting submenu. In the Web Browser Interface, outlets are designated by clicking on the "plus" sign in the Plug Access field, and then selecting the desired outlets from the drop down menu. (Default = undefined.)
- **Plug Group Access:** Determines which Plug Group(s) this Scheduled Reboot action will be applied to. Note that in the Text Interface, Plug Group Access is defined via a separate submenu; in the Web Browser Interface, Plug Group Access is defined via a drop down menu, which may be accessed by clicking on the "plus" sign in the Plug Group Access field. (Default = undefined.)

6.2.2. Viewing Scheduled Reboot Actions

After you have defined one or more Scheduled Reboots, you can review the parameters selected for each Reboot using the View Scheduled Reboot feature. To view the configuration of an existing Scheduled Reboot, access the command mode using a password that allows Administrator level commands and then proceed as follows:

- **Text Interface:** Access the Scheduled Reboot Directory menu as described in Section 6.2, then type `1` and press **[Enter]**. The MPC will display a menu which lists all defined Scheduled Reboots. Key in the name of the desired Scheduled Reboot, and then press **[Enter]** to display the View Scheduled Reboot menu.
- **Web Interface:** Access the Scheduled Reboot Configuration menu as described in Section 6.2, then click on the View/Modify Scheduled Reboot link. The MPC will display a menu that allows you to select the desired Scheduled Reboot and directory function. Select the "View Scheduled Reboot" button, and then click on the down arrow, scroll to the desired Scheduled Reboot, select the reboot, and then click the "Choose Scheduled Reboot" button.

The MPC will display a screen which lists all defined parameters for the selected Scheduled Reboot action.

6.2.3. Modifying Scheduled Reboots

After you have defined a Scheduled Reboot, you can edit the configuration of the Reboot action using the Modify Scheduled Reboot feature. To modify the configuration of an existing Scheduled Reboot action, access the command mode using a password that allows Administrator level commands and then proceed as follows:

- **Text Interface:** Access the Scheduled Reboot Directory menu as described in Section 6.2, then type `3` and press **[Enter]**. The MPC will display a menu which lists all defined Scheduled Reboot actions. Key in the name of the desired Scheduled Reboot action, and then press **[Enter]** to display the Modify Scheduled Reboot menu.
- **Web Interface:** Access the Scheduled Reboot Configuration menu as described in Section 6.2, then click on the View/Modify Scheduled Reboot link. The MPC will display a menu that allows you to select the desired Scheduled Reboot action and directory function. Select the "Modify Scheduled Reboot" button, and then click on the down arrow, scroll to the desired Scheduled Reboot action, select the Scheduled Reboot, and then click the "Choose Scheduled Reboot" button.

The MPC will display a screen which allows you to modify parameters for the selected Scheduled Reboot action. Note that this screen functions identically to the Add Scheduled Reboot menu, as discussed in Section 6.2.1.

6.2.4. Deleting Scheduled Reboots

After you have defined one or more Scheduled Reboot actions, you can delete Reboot actions that are no longer needed using the Delete Scheduled Reboot feature. To delete an existing Scheduled Reboot, access the command mode using a password that allows Administrator level commands and then proceed as follows:

- **Text Interface:** Access the Scheduled Reboot Directory menu as described in Section 6.2, then type **4** and press **[Enter]**. The MPC will display a menu which lists all defined Scheduled Reboot actions. Key in the name of the desired reboot action, and then press **[Enter]** to delete the selected Scheduled Reboot. The selected Scheduled Reboot action will be deleted immediately, with no further prompting.
- **Web Interface:** Access the Scheduled Reboot Configuration menu as described in Section 6.2, then click on the View/Modify Scheduled Reboot link. The MPC will display a menu that allows you to select the desired Scheduled Reboot action and directory function. Select the "Delete Scheduled Reboot" button, and then click on the down arrow, scroll to the desired Scheduled Reboot, select the Reboot, and then click the "Choose Scheduled Reboot" button. The MPC will display a screen which lists all defined parameters for the selected Scheduled Reboot. To confirm deletion, Click on the "Delete Scheduled Reboot" button.

7. Alarm Configuration

When properly configured, the MPC can monitor current, temperature and voltage readings, and log this information for future review. In addition, the MPC can also generate alarms when current or temperature readings exceed user defined trigger levels, when input voltage is lost, when a circuit breaker is open, when communication with the AUX units is disrupted, when a Ping-No-Answer condition is detected, and when the Invalid Access Lockout feature is triggered.

When any of these conditions are detected, the MPC can also send an "Alarm" to the proper personnel via Email, Syslog Message or SNMP trap. This section describes the procedure for setting up the MPC to send alarm messages when any of these critical situations are detected. For instructions regarding configuration of the Log function, please refer to Section 5.3.4.

Notes:

- *In order to send alarm notification via email, email addresses and parameters must first be defined as described in Section 5.9.11. Email alarm notification will then be sent for all alarms that are enabled as described in this Section.*
- *In order to send alarm notification via Syslog Message, a Syslog address must first be defined as described in Section 5.9.2. Once the Syslog address has been defined, Syslog Messages will be sent for every alarm that is discussed in this Section, providing that the Trigger Enable parameter for the alarm has been set to "On."*
- *In order to send alarm notification via SNMP Trap, SNMP parameters must first be defined as described in Section 5.9.6 and Section 5.9.7. Once SNMP Parameters have been defined, SNMP Traps will be sent for every alarm that is discussed in this Section, providing that the Trigger Enable parameter for the alarm has been set to "On."*
- *When defining parameters via the Text Interface, make certain to press the [Esc] key to completely exit from the configuration menu and save newly defined parameters. When parameters are defined via the Text Interface, newly defined parameters will not be saved until the "Saving Configuration" message is displayed.*

To configure the MPC's Alarm functions, access the command mode using a password that allows Administrator level commands and then proceed as follows:

- **Text Interface:** Type **/AC** and then press **[Enter]**. The Alarm Configuration menu will be displayed as shown in Figure 7.1.
- **Web Browser Interface:** Click the "Alarm Configuration" link, located on the left hand side of the screen. The Alarm Configuration menu will be displayed as shown in Figure 7.2.

```
ALARM CONFIGURATION:

1. Over Current (Initial Threshold):       On - 16.0 Amps -  80% of max
2. Over Current (Critical Threshold):      On - 18.0 Amps -  90% of max
3. Over Temperature (Initial Threshold):   On - 100 Degrees F
4. Over Temperature (Critical Threshold):  On - 125 Degrees F
5. Circuit Breaker Open:                   On
6. Lost Communication with AUX Units:      On
7. Lost Voltage (Line In):                 On
8. Ping-No-Answer:                         On
9. Invalid Access Lockout:                 On


Enter: #<CR> to select,
       <ESC> to exit ...
```

Figure 7.1: The Alarm Configuration Menu (Text Interface)

Figure 7.2: The Alarm Configuration Menu (Web Browser Interface)

7.1. The Over Current Alarms

The Over Current Alarms are designed to inform you when current consumption reaches or exceeds certain user-defined levels. There are two separate Over Current Alarms; the Initial Threshold alarm and the Critical Threshold Alarm.

Typically, the Initial Threshold alarm is used to notify you when the level of current consumption reaches a point where you *might* want to investigate it, whereas the Critical Threshold alarm is used to notify you when the level of current consumption approaches the maximum allowed level. The trigger for the Initial Threshold alarm is generally set lower than the Critical Threshold alarm.

Notes:

- *In order for the MPC to provide alarm notification via Email, communication parameters must first be defined as described in Section 5.9.11.*
- *In order for the MPC to provide alarm notification via Syslog Message, Syslog parameters must first be defined and Syslog Messages must be enabled as described in Section 5.9.2.*
- *In order for the MPC to provide alarm notification via SNMP Trap, SNMP parameters must first be defined, and SNMP Traps must be enabled as described in Section 5.9.6 and Section 5.9.7.*

To configure the Over Current Alarms, access the MPC command mode using a password that permits Administrator Level commands, and then proceed as follows:

- **Text Interface:** Type `/AC` and then press **[Enter]** to display the Alarm Configuration menu (Figure 7.1). From the Alarm Configuration menu, either type `1` and press **[Enter]** to access the Over Current (Initial Threshold) alarm, or type `2` and press **[Enter]** to access the Over Current (Critical Threshold) alarm. The Over Current alarm menu will appear as shown in Figure 7.3.
- **Web Browser Interface:** Click the "Alarm Configuration" link, located on the left hand side of the screen to display the Alarm Configuration menu (Figure 7.2.) From the Alarm Configuration menu, click on either the "Over Current (Initial Threshold)" link or the "Over Current (Critical Threshold)" link to access the menu shown in Figure 7.4.

Note that both the Initial Threshold menus and Critical Threshold menus offer essentially the same set of parameters, but the parameters defined for each alarm are separate and unique. Therefore, parameters defined for the Critical Threshold Alarm will not be applied to the Initial Threshold Alarm and vice versa.

```
OVER CURRENT (INITIAL THRESHOLD):

1. Trigger Enable:                On
   11. Current Threshold (A):  16.0 Amps
   12. Current Threshold (%):    80%
2. Resend Delay:                  60 Min
3. Notify Upon Clear:             On
4. Email Message:                 On
   41. Address 1:                 On
       (undefined)
   42. Address 2:                 On
       (undefined)
   43. Address 3:                 On
       (undefined)
   44. Subject:
       Alarm: Over Current (Initial)


Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 7.3: The Over Current Alarm Menu (Initial Threshold, Text Interface Shown)

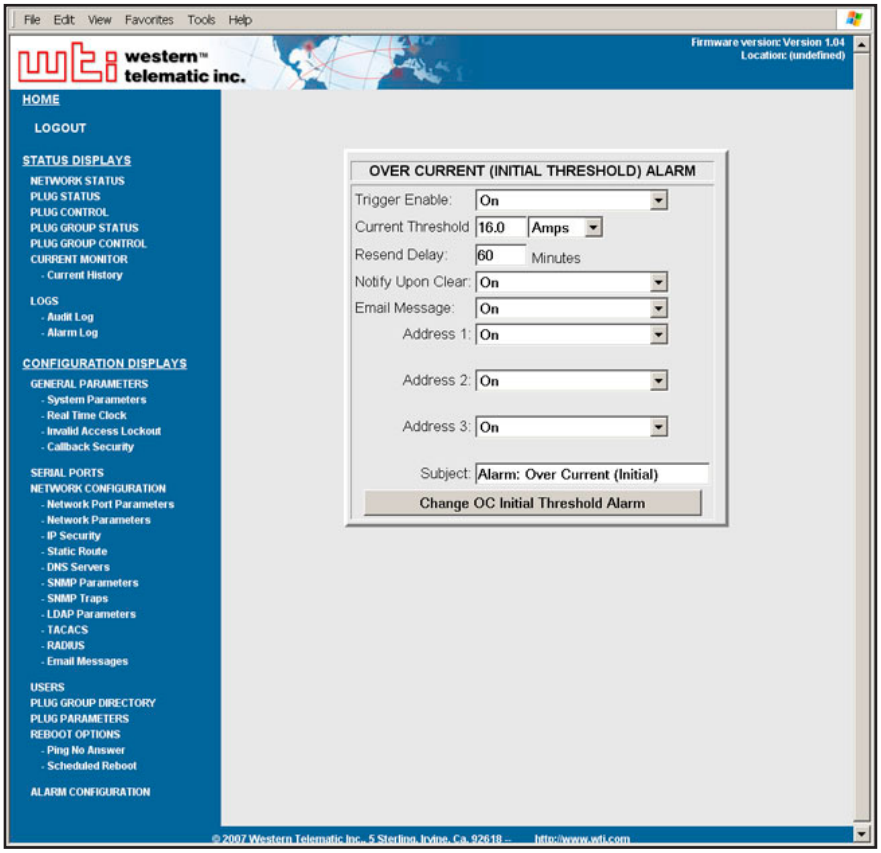

Figure 7.4: The Over Current Alarm Menu (Initial Threshold, Web Browser Interface Shown)

Both the Over Current (Initial Threshold) alarm and the Over Current (Critical Threshold) alarm offer the following parameters:

- **Trigger Enable:** Enables/Disables the trigger for this alarm. When Disabled, this alarm will be suppressed. (Default = On.)

  Note: *To cancel an alarm without correcting the condition that caused the alarm, simply toggle the Trigger Enable parameter Off and then back On again.*

- **Current Threshold :** The trigger level for this alarm. Note that the Current Threshold can be entered either in Amps, or as a percentage of the maximum rating of the MPC power circuit. (Initial Threshold: Default = 16.0 Amps or 80%; Critical Threshold: Default = 18.0 Amps or 90%.)

- **Resend Delay:** Determines how long the MPC will wait to resend an email message generated by this alarm, when the initial attempt to send the notification was unsuccessful. (Default = 60 Minutes.)

- **Notify Upon Clear:** When this item is enabled, the MPC will send additional notification when the situation that caused the alarm has been corrected. For example, when Notify Upon Clear is enabled, the MPC will first send notification when it detects that current consumption has exceeded the trigger value, and then send a second notification when it determines that the current consumption has fallen below the trigger value. (Default = On.)

- **Email Message:** Enables/Disables email notification for this alarm. (Default = On.)

  Note: *The Email Message parameter offers four different options: On, Off, On (Copy to All Triggers) or Off (Copy to All Triggers). If either of the "Copy to All Triggers" options is selected, then email notification for all other alarms will be switched On or Off as indicated by this parameter. For example, If "Off (Copy to All Triggers)" is selected, then Email notification will be disabled for all other alarms too.*

- **Address 1, 2, and 3:** These parameters are used to select which of the three email addresses defined via the "Email Messages" menu (see Section 5.9.11) will receive the email alarm notification messages generated by this alarm. The Address parameters can be used to select one, or any combination of the addresses defined via the Email Messages menu. (Default = All On.)

  Note: *If Email addresses have been previously defined, then the text under the parameters will list the current, user selected email addresses.*

- **Subject:** This parameter is used to define the text that will appear in the "Subject" field for all email notification messages generated by this alarm. (Default = "Alarm: Over Current (Initial)" or "Alarm: Over Current (Critical)".)

7.2. The Over Temperature Alarms

The Over Temperature Alarms are designed to inform you when the temperature level inside your equipment rack reaches or exceeds certain user-defined levels. There are two separate Over Temperature Alarms; the Initial Threshold alarm and the Critical Threshold Alarm.

Typically, the Initial Threshold alarm is used to notify you when the temperature within your equipment rack reaches a point where you *might* want to investigate it, whereas the Critical Threshold alarm is used to notify you when the temperature approaches a level that may harm equipment or inhibit performance. The trigger for the Initial Threshold alarm is generally set lower than the Critical Threshold alarm.

Notes:

- *In order for the MPC to provide alarm notification via Email, communication parameters must first be defined as described in Section 5.9.11.*
- *In order for the MPC to provide alarm notification via Syslog Message, Syslog parameters must first be defined and Syslog Messages must be enabled as described in Section 5.9.2.*
- *In order for the MPC to provide alarm notification via SNMP Trap, SNMP parameters must first be defined, and SNMP Traps must be enabled as described in Section 5.9.6 and Section 5.9.7.*

To configure the Over Temperature Alarms, access the MPC command mode using a password that permits Administrator Level commands, and then proceed as follows:

- **Text Interface:** Type `/AC` and then press **[Enter]** to display the Alarm Configuration menu (Figure 7.1). From the Alarm Configuration menu, either type `3` and press **[Enter]** to access the Over Temperature (Initial Threshold) alarm, or type `4` and press **[Enter]** to access the Over Temperature (Critical Threshold) alarm. The Over Temperature alarm menu will appear as shown in Figure 7.5.
- **Web Browser Interface:** Click the "Alarm Configuration" link, located on the left hand side of the screen to display the Alarm Configuration menu (Figure 7.2.) From the Alarm Configuration menu, click on either the "Over Temperature (Initial Threshold)" link or the "Over Temperature (Critical Threshold)" link to access the desired menu as shown in Figure 7.6.

Note that both the Initial Threshold menus and Critical Threshold menus offer essentially the same set of parameters, but the parameters defined for each alarm are separate and unique. Therefore, parameters defined for the Critical Threshold Alarm will not be applied to the Initial Threshold Alarm and vice versa.

```
OVER TEMPERATURE (INITIAL THRESHOLD):

1. Trigger Enable:                On
   11. Temperature Threshold:    100 Degrees F
2. Resend Delay:                  60 Min
3. Notify Upon Clear:             On
4. Email Message:                 On
   41. Address 1:                 On
       (undefined)
   42. Address 2:                 On
       (undefined)
   43. Address 3:                 On
       (undefined)
   44. Subject:
       Alarm: Over Temperature (Initial)


Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 7.5: The Over Temperature Alarm Menu (Initial Threshold, Text Interface Shown)

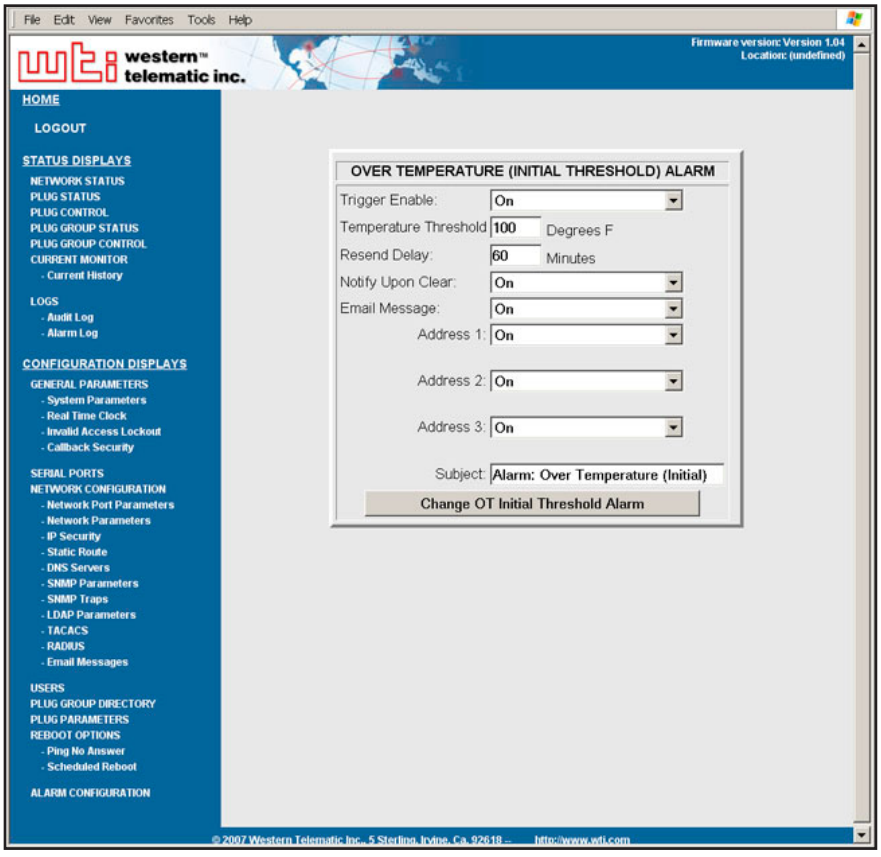

Figure 7.6: The Over Temperature Alarm Menu (Initial Threshold, Web Browser Interface Shown)

Both the Over Temperature (Initial Threshold) alarm and the Over Temperature (Critical Threshold) alarm offer the following parameters:

- **Trigger Enable:** Enables/Disables the trigger for this alarm. When Disabled, this alarm will be suppressed. (Default = On.)

  Note: *To cancel an alarm without correcting the condition that caused the alarm, simply toggle the Trigger Enable parameter to Off and then back On again.*

- **Temperature Threshold :** The temperature level that will trigger this alarm. (Initial Threshold: Default = 100˚F or 38˚C; Critical Threshold: Default = 125˚F or 52˚C.)

- **Resend Delay:** Determines how long the MPC will wait to resend an email message generated by this alarm, when the initial attempt to send notification was unsuccessful. (Default = 60 Minutes.)

- **Notify Upon Clear:** When this item is enabled, the MPC will send additional notification when the situation that caused the alarm has been corrected. For example, when Notify Upon Clear is enabled, the MPC will send initial notification when it detects that the temperature has exceeded the trigger value, and then send a second notification when it determines that the temperature has fallen below the trigger value. (Default = On.)

- **Email Message:** Enables/Disables email notification for this alarm. (Default = On.)

  Note: *The Email Message parameter offers four different options: On, Off, On (Copy to All Triggers) or Off (Copy to All Triggers). If either of the "Copy to All Triggers" options is selected, then email notification for all other alarms will be switched On or Off as indicated by this parameter. For example, If "Off (Copy to All Triggers)" is selected, then Email notification will be disabled for all other alarms too.*

- **Address 1, 2, and 3:** These parameters are used to select which of the three email addresses, defined via the "Email Messages" menu (see Section 5.9.11,) will receive the email alarm notification messages generated by this alarm. The Address parameters can be used to select one, or any combination of the addresses defined via the Email Messages menu. (Default = All On.)

  Note: *If Email addresses have been previously defined, then the text under the parameters will list the current, user defined email addresses.*

- **Subject:** This parameter is used to define the text that will appear in the "Subject" field for all email notification messages generated by this alarm. (Default = "Alarm: Over Temperature (Initial)" or "Alarm: Over Temperature (Critical)".)

7.3. The Circuit Breaker Open Alarm

The Circuit Breaker Alarm is intended to provide notification in the event that one of the MPC's circuit breakers is opened. When a circuit breaker is open, the MPC can provide prompt notification via Email, Syslog Message or SNMP Trap.

Notes:

- *In order for the MPC to provide alarm notification via Email, communication parameters must first be defined as described in Section 5.9.11.*
- *In order for the MPC to provide alarm notification via Syslog Message, Syslog parameters must first be defined and Syslog Messages must be enabled as described in Section 5.9.2.*
- *In order for the MPC to provide alarm notification via SNMP Trap, SNMP parameters must first be defined, and SNMP Traps must be enabled as described in Section 5.9.6 and Section 5.9.7.*

To configure the Circuit Breaker Alarm, access the MPC command mode using a password that permits Administrator Level commands, and then proceed as follows:

- **Text Interface:** Type **/AC** and then press **[Enter]** to display the Alarm Configuration menu (Figure 7.1.) From the Alarm Configuration menu, type **5** and press **[Enter]** to access the configuration menu for the Circuit Breaker Alarm, shown in Figure 7.7.
- **Web Browser Interface:** Click the "Alarm Configuration" link, located on the left hand side of the screen to display the Alarm Configuration menu (Figure 7.2.) From the Alarm Configuration menu, click on the "Circuit Breaker Open" link to access the configuration menu as shown in Figure 7.8.

The Circuit Breaker Open alarm configuration menu offers the following parameters:

- **Trigger Enable:** Enables/Disables the trigger for this alarm. When Disabled, this alarm will be suppressed. (Default = On.)

  Note: *To cancel an alarm without correcting the condition that caused the alarm, simply toggle the Trigger Enable parameter Off and then back On again.*

- **Resend Delay:** Determines how long the MPC will wait to resend an email message generated by this alarm, when the initial attempt to send the notification was unsuccessful. (Default = 60 Minutes.)
- **Notify Upon Clear:** When this item is enabled, the MPC will send additional notification when the situation that caused the alarm has been corrected. For example, when Notify Upon Clear is enabled, the MPC can send initial notification when it detects an open circuit breaker, and then send a second notification when it determines that the circuit breaker has been closed. (Default = On.)

```
CIRCUIT BREAKER OPEN:

1. Trigger Enable:                On
2. Resend Delay:                  60 Min
3. Notify Upon Clear:             On
4. Email Message:                 On
   41. Address 1:                 On
       (undefined)
   42. Address 2:                 On
       (undefined)
   43. Address 3:                 On
       (undefined)
   44. Subject:
       Alarm: Circuit Breaker Open


Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 7.7: The Circuit Breaker Open Alarm Menu (Text Interface)

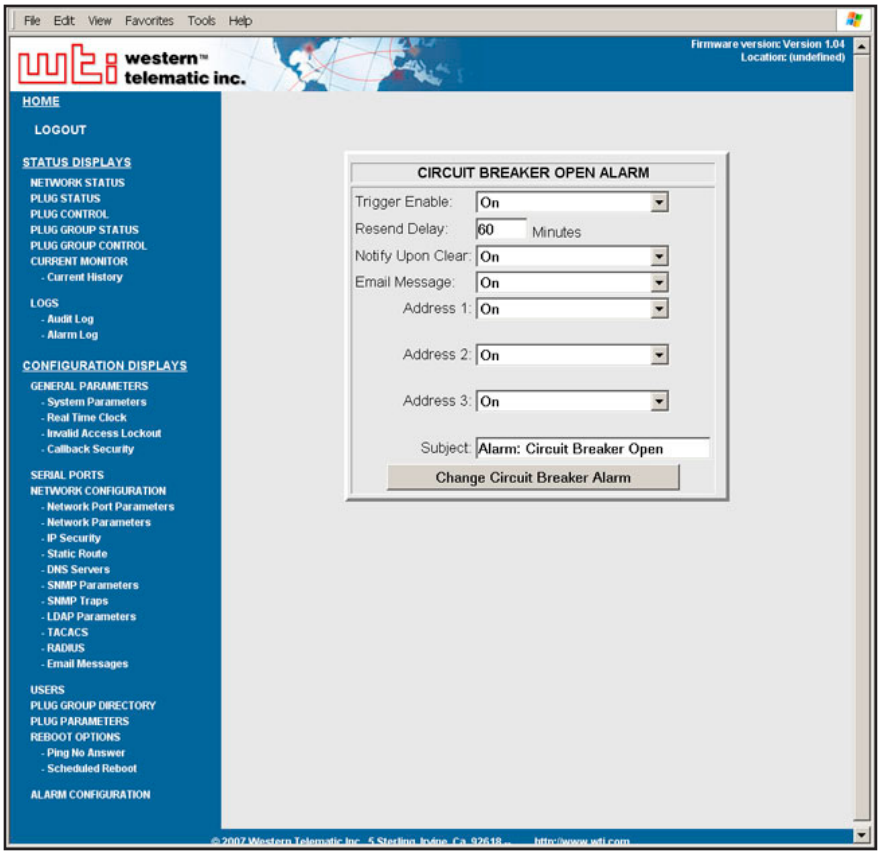

Figure 7.8: The Circuit Breaker Open Alarm Menu (Web Browser Interface)

- **Email Message:** Enables/Disables email notification for this alarm. (Default = On.)

  Note: *The Email Message parameter offers four different options: On, Off, On (Copy to All Triggers) or Off (Copy to All Triggers). If either of the "Copy to All Triggers" options is selected, then email notification for all other alarms will be switched On or Off as indicated by this parameter. For example, If "Off (Copy to All Triggers)" is selected, then Email notification will be disabled for all other alarms too.*

- **Address 1, 2, and 3:** These parameters are used to select which of the three email addresses defined via the "Email Messages" menu (see Section 5.9.11) will receive the email alarm notification messages generated by this alarm. The Address parameters can be used to select one, or any combination of the addresses defined via the Email Messages menu. (Default = All On.)

  Note: *If Email addresses have been previously defined, then the text under the parameters will list the current, user selected email addresses.*

- **Subject:** This parameter is used to define the text that will appear in the "Subject" field for all email notification messages generated by this alarm. (Default = "Alarm: Circuit Breaker Open.")

7.4. The Lost Communication with AUX Units Alarm

The Lost Communication with AUX Units Alarm is intended to provide prompt notification when communication with the optional AUX MPC units is disrupted. When communication with an attached AUX unit is interrupted, the MPC can provide notification via Email, Syslog Message or SNMP Trap.

Notes:

- *In order for the MPC to provide alarm notification via Email, communication parameters must first be defined as described in Section 5.9.11.*
- *In order for the MPC to provide alarm notification via Syslog Message, Syslog parameters must first be defined and Syslog Messages must be enabled as described in Section 5.9.2.*
- *In order for the MPC to provide alarm notification via SNMP Trap, SNMP parameters must first be defined, and SNMP Traps must be enabled as described in Section 5.9.6 and Section 5.9.7.*

To configure the Lost Communication with AUX Alarm, access the MPC command mode using a password that permits Administrator Level commands, then proceed as follows:

- **Text Interface:** Type **/AC** and then press **[Enter]** to display the Alarm Configuration menu (Figure 7.1.) From the Alarm Configuration menu, type **6** and press **[Enter]** to access the configuration menu for the Lost Communication with AUX Units Alarm, as shown in Figure 7.9.
- **Web Browser Interface:** Click the "Alarm Configuration" link, located on the left hand side of the screen to display the Alarm Configuration menu (Figure 7.2.) From the Alarm Configuration menu, click on the "Lost Communication with AUX Units" link to access the configuration menu as shown in Figure 7.10.

The Lost Communication with AUX Units alarm configuration menu offers the following parameters:

- **Trigger Enable:** Enables/Disables the trigger for this alarm. When Disabled, this alarm will be suppressed. (Default = On.)

  Note: *To cancel an alarm without correcting the condition that caused the alarm, simply toggle the Trigger Enable parameter Off and then back On again.*

- **Resend Delay:** Determines how long the MPC will wait to resend an email message generated by this alarm, when the initial attempt to send the notification was unsuccessful. (Default = 60 Minutes.)

```
LOST COMMUNICATION WITH AUX UNITS:

1. Trigger Enable:                On
2. Resend Delay:                  60 Min
3. Notify Upon Clear:             On
4. Email Message:                 On
   41. Address 1:                 On
       (undefined)
   42. Address 2:                 On
       (undefined)
   43. Address 3:                 On
       (undefined)
   44. Subject:
       Alarm: Lost Comm with AUX Units


Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 7.9: The Lost Communication with AUX Units Alarm Menu (Text Interface)

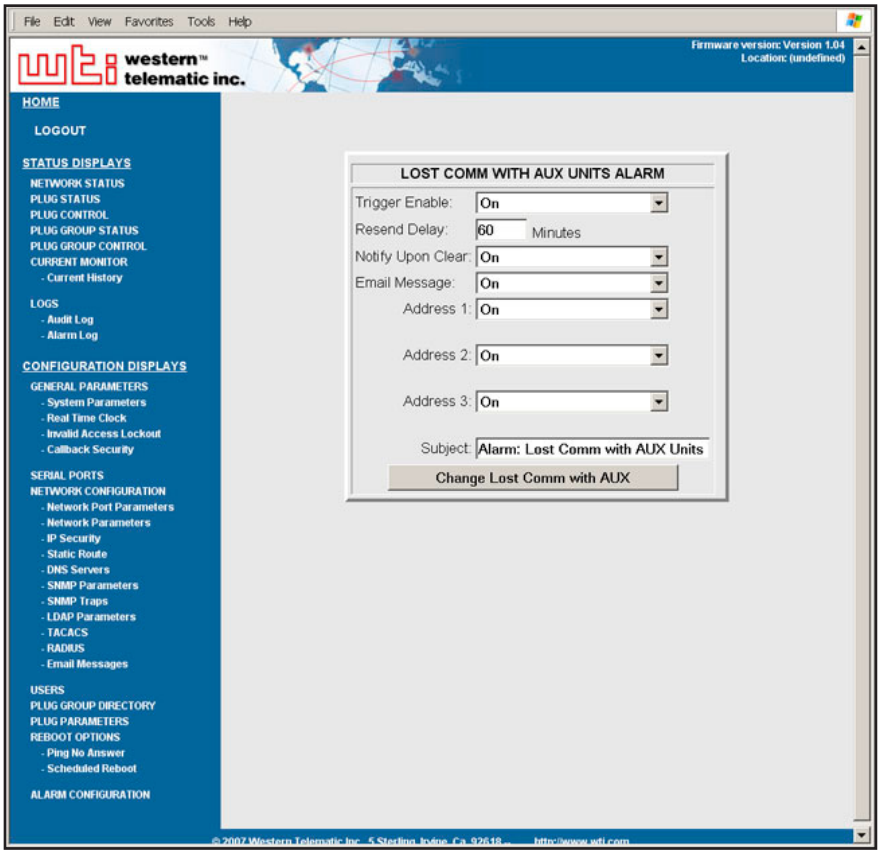

Figure 7.10: The Lost Communication with AUX Units Alarm Menu (Web Browser Interface)

- **Notify Upon Clear:** When this item is enabled, the MPC will send additional notification when the situation that caused the alarm has been corrected. For example, when Notify Upon Clear is enabled, the MPC will send initial notification when it detects lost communication with the AUX unit, and then send a second notification when it determines that communication has been restored. (Default = On.)

- **Email Message:** Enables/Disables email notification for this alarm. (Default = On.)

  Note: *The Email Message parameter offers four different options: On, Off, On (Copy to All Triggers) or Off (Copy to All Triggers). If either of the "Copy to All Triggers" options is selected, then email notification for all other alarms will be switched On or Off as indicated by this parameter. For example, If "Off (Copy to All Triggers)" is selected, then Email notification will be disabled for all other alarms too.*

- **Address 1, 2, and 3:** These parameters are used to select which of the three email addresses defined via the "Email Messages" menu (see Section 5.9.11) will receive the email alarm notification messages generated by this alarm. The Address parameters can be used to select one, or any combination of the addresses defined via the Email Messages menu. (Default = All On.)

  Note: *If Email addresses have been previously defined, then the text under the parameters will list the current, user defined email addresses.*

- **Subject:** This parameter is used to define the text that will appear in the "Subject" field for all email notification messages generated by this alarm. (Default = "Alarm: Lost Comm with AUX Units.")

7.5. The Lost Voltage (Line In) Alarm

The Lost Voltage (Line In) Alarm is intended to provide notification when one of the power supplies connected to the MPC unit, is lost or disconnected When one of the power supplies is lost, the MPC can provide notification via Email, Syslog Message or SNMP Trap.

Notes:

- *The Lost Voltage (Line In) alarm will provide notification when one of the two available power supplies is lost or disconnected. This alarm will not function if both power supplies are lost or disconnected.*
- *In order for the MPC to provide alarm notification via Email, communication parameters must first be defined as described in Section 5.9.11.*
- *In order for the MPC to provide alarm notification via Syslog Message, Syslog parameters must first be defined and Syslog Messages must be enabled as described in Section 5.9.2.*
- *In order for the MPC to provide alarm notification via SNMP Trap, SNMP parameters must first be defined, and SNMP Traps must be enabled as described in Section 5.9.6 and Section 5.9.7.*

To configure the Lost Voltage (Line In) Alarm, access the MPC command mode using a password that permits Administrator Level commands, and then proceed as follows:

- **Text Interface:** Type **/AC** and then press **[Enter]** to display the Alarm Configuration menu (Figure 7.1.) From the Alarm Configuration menu, type **7** and press **[Enter]** to access the configuration menu for the Lost Voltage (Line In) Alarm, as shown in Figure 7.11.
- **Web Browser Interface:** Click the "Alarm Configuration" link, located on the left hand side of the screen to display the Alarm Configuration menu (Figure 7.2.) From the Alarm Configuration menu, click on the "Lost Voltage (Line In)" link to access the configuration menu as shown in Figure 7.12.

The Lost Voltage alarm configuration menu offers the following parameters:

- **Trigger Enable:** Enables/Disables the trigger for this alarm. When Disabled, this alarm will be suppressed. (Default = On.)

  Note: *To cancel an alarm without correcting the condition that caused the alarm, simply toggle the Trigger Enable parameter Off and then back On again.*

- **Resend Delay:** Determines how long the MPC will wait to resend an email message generated by this alarm, when the initial attempt to send the notification was unsuccessful. (Default = 60 Minutes.)
- **Notify Upon Clear:** When this item is enabled, the MPC will send additional notification when the situation that caused the alarm has been corrected. For example, when Notify Upon Clear is enabled, the MPC will send initial notification when it detects that one of it's power supplies has been lost or disconnected, and then send a second notification when it determines that power has been restored. (Default = On.)

```
LOST VOLTAGE (LINE-IN):

1. Trigger Enable:                On
2. Resend Delay:                  60 Min
3. Notify Upon Clear:             On
4. Email Message:                 On
   41. Address 1:                 On
       (undefined)
   42. Address 2:                 On
       (undefined)
   43. Address 3:                 On
       (undefined)
   44. Subject:
       Alarm: Lost Voltage (Line In)


Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 7.11: The Lost Voltage (Line In) Alarm Menu (Text Interface)

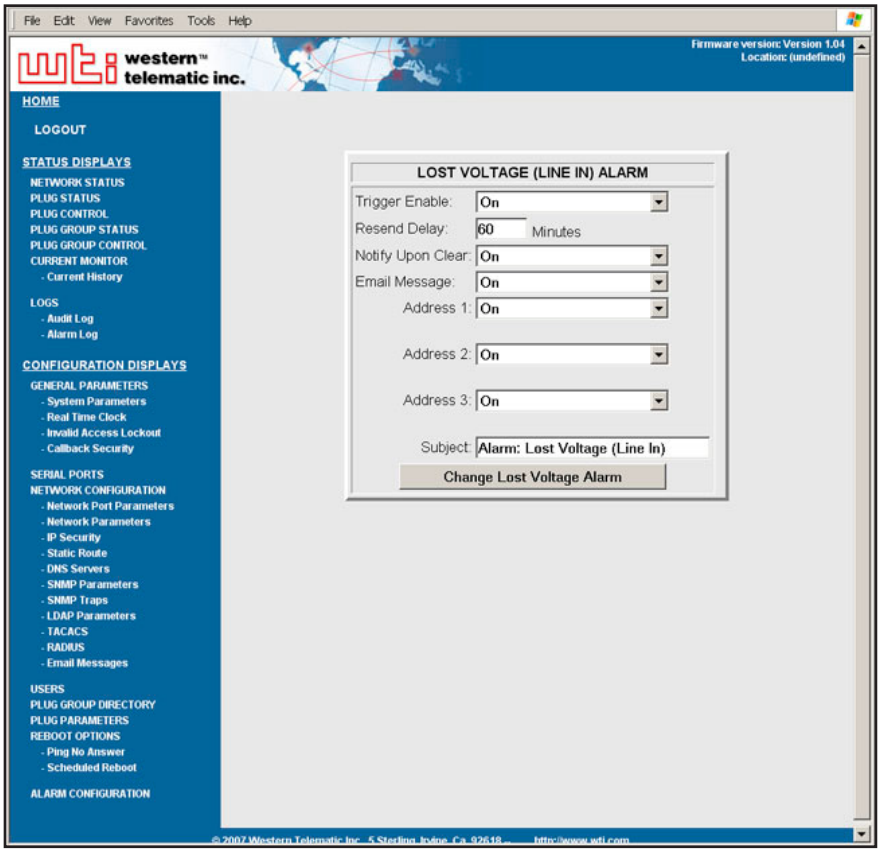

Figure 7.12: The Lost Voltage (Line In) Alarm Menu (Web Browser Interface)

- **Email Message:** Enables/Disables email notification for this alarm. (Default = On.)

  Note: *The Email Message parameter offers four different options: On, Off, On (Copy to All Triggers) or Off (Copy to All Triggers). If either of the "Copy to All Triggers" options is selected, then email notification for all other alarms will be switched On or Off as indicated by this parameter. For example, If "Off (Copy to All Triggers)" is selected, then Email notification will be disabled for all other alarms too.*

- **Address 1, 2, and 3:** These parameters are used to select which of the three email addresses defined via the "Email Messages" menu (see Section 5.9.11) will receive the email alarm notification messages generated by this alarm. The Address parameters can be used to select one, or any combination of the addresses defined via the Email Messages menu. (Default = All On.)

  Note: *If Email addresses have been previously specified, then the text under the parameters will list the current, user defined email addresses.*

- **Subject:** This parameter is used to define the text that will appear in the "Subject" field for all email notification messages generated by this alarm. (Default = "Alarm: Lost Voltage (Line In).")

7.6. The Ping-No-Answer Alarm

The Ping-No-Answer Alarm is intended to provide notification when one of the IP addresses defined via the Ping-No-Answer Reboot feature (as described in Section 6.1) fails to respond to a Ping command. When one of the user-defined IP addresses fails to answer a Ping command, the MPC can provide notification via Email, Syslog Message or SNMP Trap.

Notes:

- *In order for this alarm to function, IP Addresses for the Ping-No-Answer reboot feature must first be defined as described in Section 6.1.*
- *When a Ping-No-Answer condition is detected, the MPC can still reboot the user-selected outlet(s) as described in Section 6.1, and can also send an email, Syslog Message and/or SNMP trap if properly configured as described in this section.*
- *In order for the MPC to provide Email alarm notification, communication parameters must first be defined as described in Section 5.9.11.*
- *In order for the MPC to provide Syslog Message notification, Syslog parameters must first be defined and Syslog Messages must be enabled as described in Section 5.9.2.*
- *In order for the MPC to provide SNMP Trap notification when this alarm is triggered, SNMP parameters must first be defined, and SNMP Traps must be enabled as described in Section 5.9.6 and Section 5.9.7.*

To configure the Lost Voltage (Line In) Alarm, access the MPC command mode using a password that permits Administrator Level commands, and then proceed as follows:

- **Text Interface:** Type **/AC** and then press **[Enter]** to display the Alarm Configuration menu (Figure 7.1.) From the Alarm Configuration menu, type **8** and press **[Enter]** to access the configuration menu for the Ping-No-Answer Alarm, shown in Figure 7.13.
- **Web Browser Interface:** Click the "Alarm Configuration" link, located on the left hand side of the screen to display the Alarm Configuration menu (Figure 7.2.) From the Alarm Configuration menu, click on the "Ping-No-Answer" link to access the configuration menu, shown in Figure 7.14.

```
PING-NO-ANSWER:

1. Trigger Enable:                On
2. Resend Delay:                  60 Min
3. Notify Upon Clear:             On
4. Email Message:                 On
   41. Address 1:                 On
       (undefined)
   42. Address 2:                 On
       (undefined)
   43. Address 3:                 On
       (undefined)
   44. Subject:
       Alarm: Ping-No-Answer


Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 7.13: The Ping-No-Answer Alarm Menu (Text Interface)

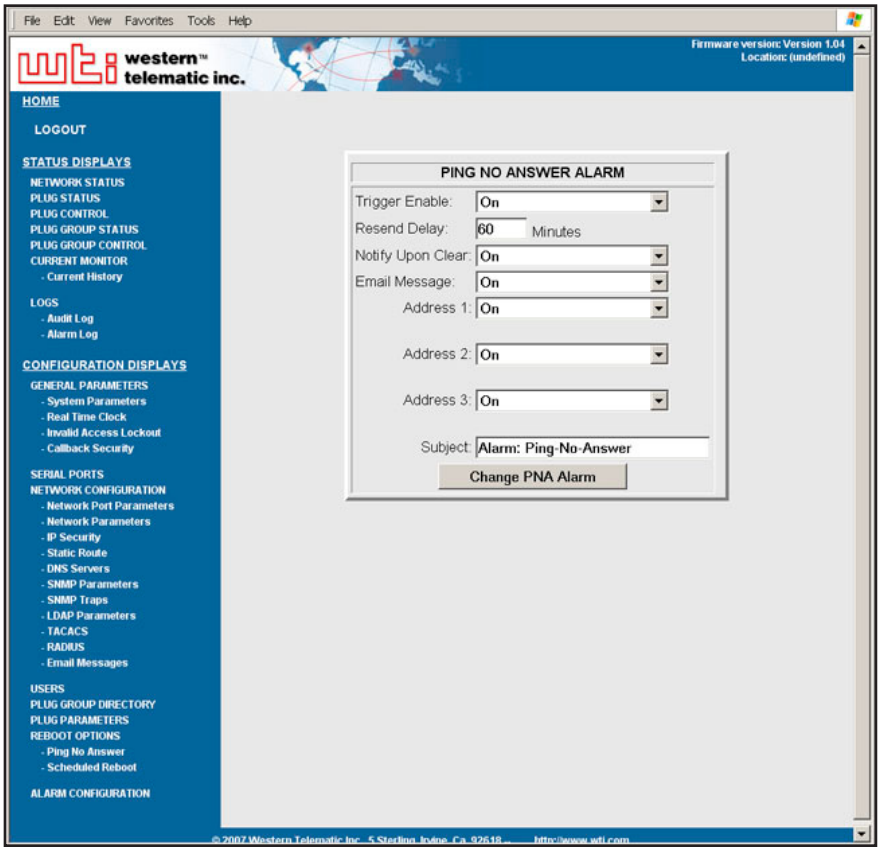

Figure 7.14: The Ping-No-Answer Alarm Menu (Web Browser Interface)

The Ping-No-Answer alarm configuration menu offers the following parameters:

- **Trigger Enable:** Enables/Disables the trigger for this alarm. When Disabled, this alarm will be suppressed. (Default = On.)

  Note: *To cancel an alarm without correcting the condition that caused the alarm, simply toggle the Trigger Enable parameter to Off and then back On again.*

- **Resend Delay:** Determines how long the MPC will wait to resend an email message generated by this alarm, when the initial attempt to send the notification was unsuccessful. (Default = 60 Minutes.)

- **Notify Upon Clear:** When this item is enabled, the MPC will send additional notification when the situation that caused the alarm has been corrected. For example, when Notify Upon Clear is enabled, the MPC will send initial notification when it detects that a Ping command has failed, and then send a second notification when it determines that the IP address is again responding to the Ping command. (Default = On.)

- **Email Message:** Enables/Disables email notification for this alarm. (Default = On.)

  Note: *The Email Message parameter offers four different options: On, Off, On (Copy to All Triggers) or Off (Copy to All Triggers). If either of the "Copy to All Triggers" options is selected, then email notification for all other alarms will be switched On or Off as indicated by this parameter. For example, If "Off (Copy to All Triggers)" is selected, then Email notification will be disabled for all other alarms too.*

- **Address 1, 2, and 3:** These parameters are used to select which of the three email addresses defined via the "Email Messages" menu (see Section 5.9.11) will receive the email alarm notification messages generated by this alarm. The Address parameters can be used to select one, or any combination of the addresses defined via the Email Messages menu. (Default = All On.)

  Note: *If Email addresses have been previously specified, then the text under the parameters will list the current, user defined email addresses.*

- **Subject:** This parameter is used to define the text that will appear in the "Subject" field for all email notification messages that are generated by this alarm. (Default = "Alarm: Ping-No-Answer.")

7.7. The Invalid Access Lockout Alarm

The Invalid Access Lockout Alarm is intended to provide notification when the MPC has locked the Network port due to repeated, invalid attempts to access command mode. Normally, the Invalid Access Lockout feature (discussed in Section 5.3.2) will lock the network port whenever the MPC detects that a user-defined number of invalid passwords have been entered at the Network Port. When the Invalid Access Lockout Alarm is properly configured and enabled as described in this section, the MPC can also provide notification via Email, Syslog Message or SNMP Trap.

Notes:

- *In order for this alarm to function, Invalid Access Lockout parameters must first be configured and enabled as described in Section 5.3.2.*
- *When an Invalid Access Lockout occurs, the MPC can still lock the network port as described in Section 5.3.2, and can also send an email, Syslog Message and/or SNMP trap if properly configured.*
- *If desired, the MPC can be configured to count Invalid Access attempts and provide notification when the counter exceeds a user defined trigger level, without actually locking the port in question. To do this, enable the Invalid Access Lockout Alarm as described here, but when you configure Invalid Access Lockout parameters as described in Section 5.3.2, set the Lockout Attempts and Lockout Duration as you would normally, and then set the "Lockout Enable" parameter to "Off."*
- *In order for the MPC to provide Email alarm notification, communication parameters must first be defined as described in Section 5.9.11.*
- *In order for the MPC to provide Syslog Message notification, Syslog parameters must first be defined and Syslog Messages must be enabled as described in Section 5.9.2.*
- *In order for the MPC to provide SNMP Trap notification when this alarm is triggered, SNMP parameters must first be defined, and SNMP Traps must be enabled as described in Section 5.9.6 and Section 5.9.7.*

To configure the Invalid Access Lockout Alarm, access the MPC command mode using a password that permits Administrator Level commands, and then proceed as follows:

- **Text Interface:** Type **/AC** and then press **[Enter]** to display the Alarm Configuration menu (Figure 7.1.) From the Alarm Configuration menu, type **9** and press **[Enter]** to access the configuration menu for the Invalid Access Lockout Alarm, shown in Figure 7.15.
- **Web Browser Interface:** Click the "Alarm Configuration" link, located on the left hand side of the screen to display the Alarm Configuration menu (Figure 7.2.) From the Alarm Configuration menu, click on the "Invalid Access Lockout" link to access the configuration menu, shown in Figure 7.16.

```
INVALID ACCESS LOCKOUT:

1. Trigger Enable:                On
2. Resend Delay:                  60 Min
3. Notify Upon Clear:             On
4. Email Message:                 On
   41. Address 1:                 On
       (undefined)
   42. Address 2:                 On
       (undefined)
   43. Address 3:                 On
       (undefined)
   44. Subject:
       Alarm: Invalid Access Lockout


Enter: #<CR> to change,
       <ESC> for previous menu ...
```

Figure 7.15: The Invalid Access Lockout Alarm Menu (Text Interface)

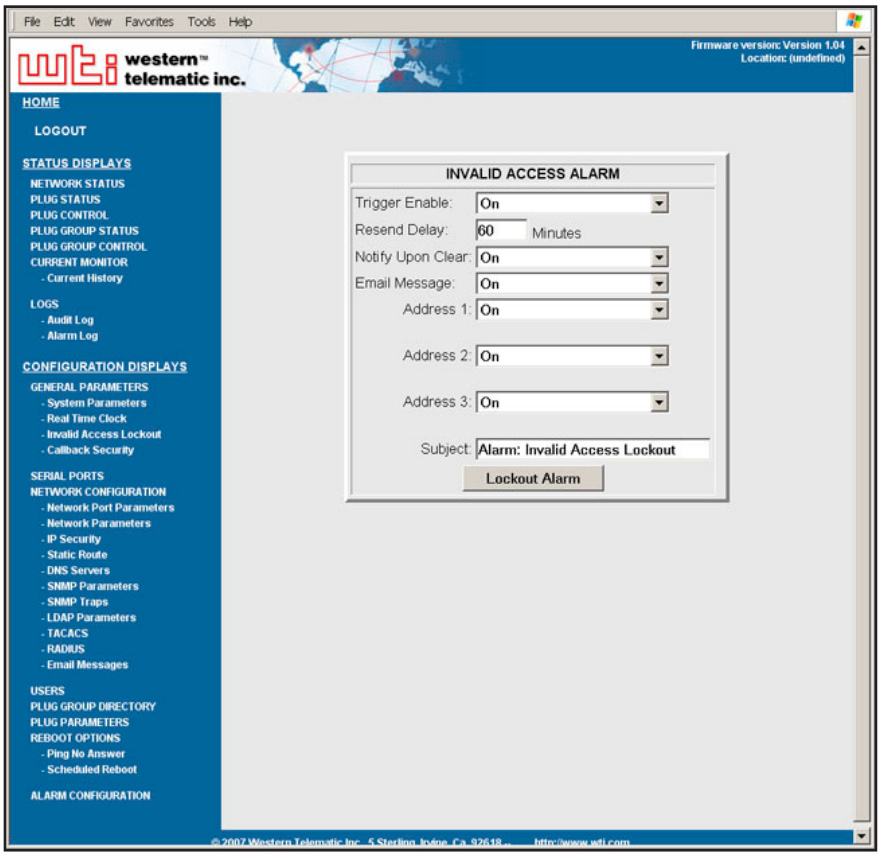

Figure 7.16: The Invalid Access Lockout Alarm Menu (Web Browser Interface)

The Invalid Access Lockout alarm configuration menu offers the following parameters:

- **Trigger Enable:** Enables/Disables the trigger for this alarm. When Disabled, this alarm will be suppressed. (Default = On.)

  Note: *To cancel an alarm without unlocking the port, simply toggle the Trigger Enable parameter Off and then back On again.*

- **Resend Delay:** Determines how long the MPC will wait to resend an email message generated by this alarm, when the initial attempt to send the notification was unsuccessful. (Default = 60 Minutes.)

- **Notify Upon Clear:** When this item is enabled, the MPC will send additional notification when the situation that caused the alarm has been corrected. For example, when Notify Upon Clear is enabled, the MPC will send initial notification when it detects that an Invalid Access Lockout has occurred, and then send a second notification when it determines that the port has been unlocked. (Default = On.)

- **Email Message:** Enables/Disables email notification for this alarm. (Default = On.)

  Note: *The Email Message parameter offers four different options: On, Off, On (Copy to All Triggers) or Off (Copy to All Triggers). If either of the "Copy to All Triggers" options is selected, then email notification for all other alarms will be switched On or Off as indicated by this parameter. For example, If "Off (Copy to All Triggers)" is selected, then Email notification will be disabled for all other alarms too.*

- **Address 1, 2, and 3:** These parameters are used to select which of the three email addresses defined via the "Email Messages" menu (see Section 5.9.11) will receive the email alarm notification messages generated by this alarm. The Address parameters can be used to select one, or any combination of the addresses defined via the Email Messages menu. (Default = All On.)

  Note: *If Email addresses have been previously specified, then the text under the parameters will list the current, user defined email addresses.*

- **Subject:** This parameter is used to define the text that will appear in the "Subject" field for all email notification messages generated by this alarm. (Default = "Alarm: Invalid Access Lockout.")

8. The Status Screens

The Status Screens are used to display the status of the switched outlets, Network Port, Plug Groups, Current Monitor and the Alarm Log and Audit Log. The status screens are available via both the Text Interface and Web Browser Interface.

8.1. The Network Status Screen

The Network Status screen shows activity at the MPC's 16 virtual network ports, and lists the TCP Port Number, Active/Free Status and current user name for each virtual network port as shown in Figures 8.1 and 8.2.

To view the Network Status Screen, access command mode using a password that permits access to Administrator Level commands and then proceed as follows:

- **Text Interface:** Type **/SN** and press **[Enter]**. The Network Status Menu, shown in Figure 8.1 will be displayed.
- **Web Browser Interface:** Click on the "Network Status" link on the left hand side of the screen. The Network Status Menu, shown in Figure 8.2 will be displayed.

The Network Status Screen lists the following items:

- **Port:** The virtual network port for each connection.
- **TCP Port:** The number of the TCP Port for each connection.
- **Status:** This column will read "Free" if no users are currently connected to the corresponding port, or "Active" if a user has currently accessed command mode via this port.
- **User Name:** The user name for the account that has currently accessed command mode via this port. Note that when the Network Status Screen is viewed via the Text Interface, usernames that are longer than 22 characters will be truncated and the remaining characters will be displayed as two dots (..).

```
NETWORK STATUS:                          MAC Address:    00-09-9b-00-f7-40

PORT|TCP PORT|STATUS| USERNAME        |PORT|TCP PORT|STATUS| USERNAME        |
-------------------------------------------------------------------------------
N1  |      23|Active|super           |N9  |        | Free |                 |
N2  |        | Free |                |N10 |        | Free |                 |
N3  |        | Free |                |N11 |        | Free |                 |
N4  |        | Free |                |N12 |        | Free |                 |
N5  |        | Free |                |N13 |        | Free |                 |
N6  |        | Free |                |N14 |        | Free |                 |
N7  |        | Free |                |N15 |        | Free |                 |
N8  |        | Free |                |N16 |        | Free |                 |
-------------------------------------------------------------------------------


MPC>
```

Figure 8.1: The Network Status Screen (Text Interface)

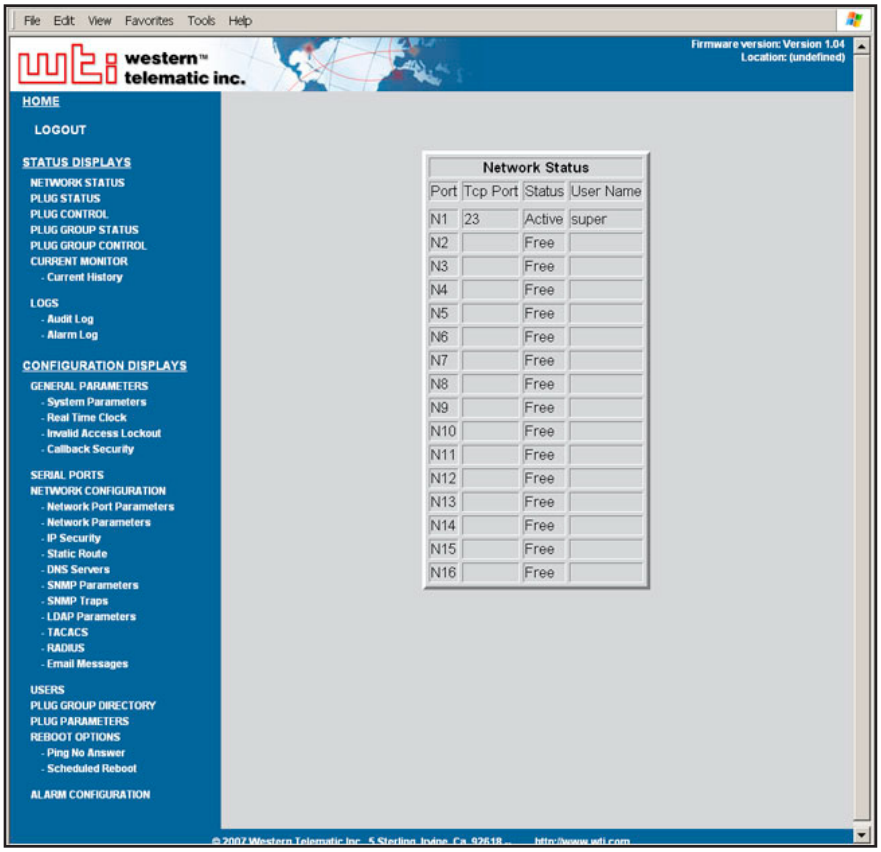

Figure 8.2: The Network Status Screen (Web Browser Interface)

8.2. The Plug Status Screen

The Plug Status screen shows the On/Off status of the MPC's switched outlets, and lists user-defined Plug Names, Boot/Sequence Delay values, and Default On/Off settings.

> **Note:** *When the Plug Status Screen is viewed by an account with "Administrator" or "SuperUser" command access, all MPC plugs are listed. When the Plug Status Screen is viewed by an account with "User" or "ViewOnly" command access, then the screen will list only the outlets that are allowed by that account.*

To view the Plug Status Screen, access the MPC command mode and then proceed as follows:

- **Text Interface:** Type `/s` and press **[Enter]**. The Plug Status Screen, shown in Figure 8.3, will be displayed.
- **Web Browser Interface:** Click on the "Plug Status" link on the left hand side of the screen. The Plug Status Screen, shown in Figure 8.4, will be displayed.

The Plug Status Screen lists the following parameters for each switched outlet:

- **Plug:** The alphanumeric number of each switched outlet.
- **Name:** The user-defined name for each switched outlet.
- **Status:** The current On/Off status of each switched outlet.
- **Boot Seq. Delay:** The user-defined Boot/Sequence Delay for each switched outlet. Section 5.7.1 describes the procedure for setting the Boot/Sequence Delay.
- **Default:** The Default On/Off value for each switched outlet. Section 5.7 describes the procedure for setting Default values for each switched outlet.

```
LOCAL - Managed Power Controller      Site ID: (undefined)

PLUG |           NAME            | STATUS | Boot/Seq. Delay | Default
-----+-------------------------+--------+-----------------+----------
 A1  | Local_InfeedA_Outlet1     |  ON    |     0.5 Secs    |   ON    |
 A2  | Local_InfeedA_Outlet2     |  ON    |     0.5 Secs    |   ON    |
 A3  | Local_InfeedA_Outlet3     |  ON    |     0.5 Secs    |   ON    |
 A4  | Local_InfeedA_Outlet4     |  ON    |     0.5 Secs    |   ON    |
 A5  | Local_InfeedA_Outlet5     |  OFF   |     0.5 Secs    |   ON    |
 A6  | Local_InfeedA_Outlet6     |  OFF   |     0.5 Secs    |   ON    |
 A7  | Local_InfeedA_Outlet7     |  OFF   |     0.5 Secs    |   ON    |
 A8  | Local_InfeedA_Outlet8     |  ON    |     0.5 Secs    |   ON    |
 A9  | Local_InfeedA_Outlet9     |  ON    |     0.5 Secs    |   ON    |
 A10 | Local_InfeedA_Outlet10    |  ON    |     0.5 Secs    |   ON    |
 B1  | Local_InfeedB_Outlet1     |  OFF   |     0.5 Secs    |   ON    |
 B2  | Local_InfeedB_Outlet2     |  OFF   |     0.5 Secs    |   ON    |
 B3  | Local_InfeedB_Outlet3     |  OFF   |     0.5 Secs    |   ON    |
 B4  | Local_InfeedB_Outlet4     |  OFF   |     0.5 Secs    |   ON    |
 B5  | Local_InfeedB_Outlet5     |  OFF   |     0.5 Secs    |   ON    |
 B6  | Local_InfeedB_Outlet6     |  OFF   |     0.5 Secs    |   ON    |


Enter ">" for more plugs, <ESC> to quit...
```

Figure 8.3: The Plug Status Screen (Administrator Mode; Text Interface)

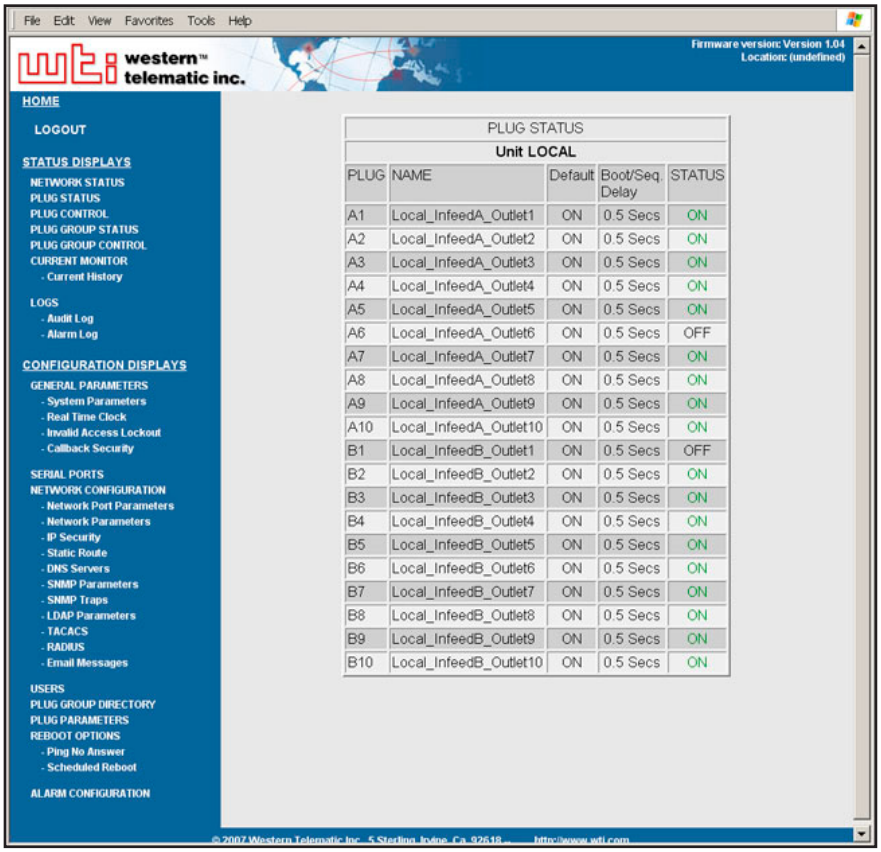

Figure 8.4: The Plug Status Screen (Administrator Mode; Web Browser Interface)

8.3. The Plug Group Status Screen

The Plug Group Status screen shows the configuration details and On/Off status for the MPC's user-defined Plug Groups.

> **Note:** *When the Plug Group Status Screen is viewed by an account with "Administrator" or "SuperUser" command access, all MPC plugs and plug groups are listed. When the Plug Status Screen is viewed by an account with "User" or "ViewOnly" command access, then the screen will list only the plugs and plug groups that are allowed by that account.*

To view the Plug Group Status Screen, access the MPC command mode and then proceed as follows:

- **Text Interface:** Type `/SG` and press **[Enter]**. The Plug Group Status Screen, shown in Figure 8.5, will be displayed. If the Plug Group includes more outlets than will fit on to one screen, type **>** and press **[Enter]** to scroll to the next screen.
- **Web Browser Interface:** Click on the "Plug Group Status" link on the left hand side of the screen. The MPC will display a screen that lists all currently defined Plug Groups. Click the check box(es) next to the Plug Group(s) that you want to review, and then click on the "Get Plug Group Status" button. The Plug Group Status Screen, shown in Figure 8.6 will be displayed.

The Plug Group Status Screen lists the following parameters for each Plug Group:

- **Group Name:** The user-defined name for each Plug Group. Section 5.6 describes the procedure for creating and editing Plug Groups.
- **Unit:** This field will read "Local" if the outlet is located on your local MPC unit, or "Remote", if the outlet is located on an optional, remote AUX MPC unit.
- **Plug:** The alphanumeric number of each switched outlet in the Plug Group.
- **Plug Name:** The User Defined name for each switched outlet in the Plug Group.
- **Default:** The Default On/Off value for each switched outlet in the Plug Group. Section 5.7 describes the procedure for setting Default On/Off values.
- **Boot Seq. Delay:** The user-defined Boot/Sequence Delay for each switched outlet in the Plug Group. Section 5.7.1 describes the procedure for setting the Boot/ Sequence Delay.
- **Status:** The On/Off status of each switched outlet in the Plug Group.

```
GROUP STATUS:

      GROUP NAME          | UNIT  | PLUG | STATUS | Boot/Seq. Delay | Default
--------------------------+-------+------+--------+-----------------+---------
DEPT_A                    | Local |  A1  |  ON    |    0.5 Secs     |  ON     |
DEPT_A                    | Local |  A2  |  ON    |    0.5 Secs     |  ON     |
DEPT_A                    | Local |  A3  |  ON    |    0.5 Secs     |  ON     |
DEPT_A                    | Local |  A4  |  ON    |    0.5 Secs     |  ON     |
DEPT_A                    | Local |  A5  |  OFF   |    0.5 Secs     |  ON     |
TECH_SUPPORT              | Local |  A8  |  ON    |    0.5 Secs     |  ON     |
TECH_SUPPORT              | Local |  A9  |  ON    |    0.5 Secs     |  ON     |
TECH_SUPPORT              | Local |  A10 |  ON    |    0.5 Secs     |  ON     |
TECH_SUPPORT              | Local |  B1  |  OFF   |    0.5 Secs     |  ON     |
TECH_SUPPORT              | Local |  B2  |  OFF   |    0.5 Secs     |  ON     |
TECH_SUPPORT              | Local |  B3  |  OFF   |    0.5 Secs     |  ON     |
TECH_SUPPORT              | Local |  B4  |  OFF   |    0.5 Secs     |  ON     |
SERVERS                   | Local |  B5  |  OFF   |    0.5 Secs     |  ON     |
SERVERS                   | Local |  B6  |  OFF   |    0.5 Secs     |  ON     |
SERVERS                   | Local |  B7  |  OFF   |    0.5 Secs     |  ON     |
SERVERS                   | Local |  B8  |  OFF   |    0.5 Secs     |  ON     |


Enter ">" for more plugs, <ESC> to quit...
```

Figure 8.5: The Plug Group Status Screen (Administrator Mode; Text Interface)

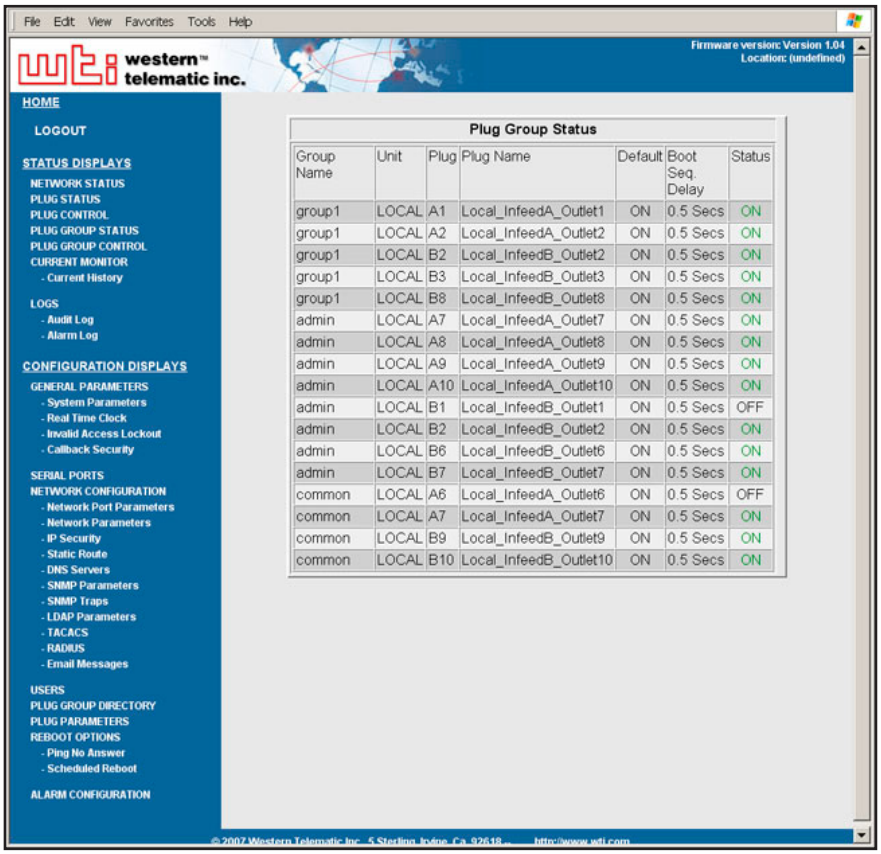

Figure 8.6: The Plug Group Status Screen (Administrator Mode; Web Browser Interface)

8.4. The Current Monitor

The Current Monitor Screen is used to display readings for Amps, Watts, Voltage and temperature for the MPC unit as well as any optional AUX MPC units that may be connected.

To view the Current Monitor Screen, access the MPC command mode and then proceed as follows:

- **Text Interface:** Type **/M** and press **[Enter]**. The Current Monitor Screen, shown in Figure 8.7, will be displayed.
- **Web Browser Interface:** Click on the "Current Monitor" link on the left hand side of the screen. The Current Monitor Screen, shown in Figure 8.8 will be displayed.

The Current Monitor Screen lists the following parameters:

- **Current A:** The total current consumption, in Amps, for power circuit A.
- **Voltage A:** The total voltage for power circuit A.
- **Power A:** The total power consumption, in Watts, for power circuit A.
- **Current B:** The total current consumption, in Amps, for power circuit B.
- **Voltage B:** The total voltage for power circuit B.
- **Power B:** The total power consumption, in Watts, for power circuit B.
- **Total Current:** The total current, in Amps, for both power circuits.
- **Total Power:** The total power, in Watts, for both power circuits.

In addition, the following values are also included when the Current Monitor is viewed via the Web Interface:

- **Over Temperature:** Lists the values for the Initial Threshold and Critical Threshold for the Over Temperature Alarms. For more information on the Over Temperature Alarms, please refer to Section 7.2.
- **Over Current:** Lists the values for the Initial Threshold and Critical Threshold for the Over Current Alarms. For more information on the Over Current Alarms, please refer to Section 7.1.

```
CURRENT MONITOR STATUS:

             |  LOCAL  |  AUX1   |  AUX2   |  AUX3   | BUS TOTAL |
-------------+---------+---------+---------+---------+-----------+
 Temperature |    60F  |  -----  |  -----  |  -----  |   -----   |
             |         |         |         |         |           |
 Current A   |   0.3A  |  -----  |  -----  |  -----  |    0.3A   |
 Voltage A   |   117V  |  -----  |  -----  |  -----  |   -----   |
 Power   A   |    35W  |  -----  |  -----  |  -----  |     35W   |
             |         |         |         |         |           |
 Current B   |   0.0A  |  -----  |  -----  |  -----  |    0.0A   |
 Voltage B   |     0V  |  -----  |  -----  |  -----  |   -----   |
 Power   B   |     0W  |  -----  |  -----  |  -----  |      0W   |
-------------+---------+---------+---------+---------+-----------+
Total Current =  0.3A    Total Power =   35W

    THRESHOLD     |   1st    | CRITICAL |
------------------+----------+----------+
 Over Temperature |   100F   |   125F   |
 Over Current     |   16.0A  |   18.0A  |
------------------+----------+----------+
Log Duration: MONTHLY

MPC>
```

Figure 8.7: The Current Monitor Screen (Text Interface)

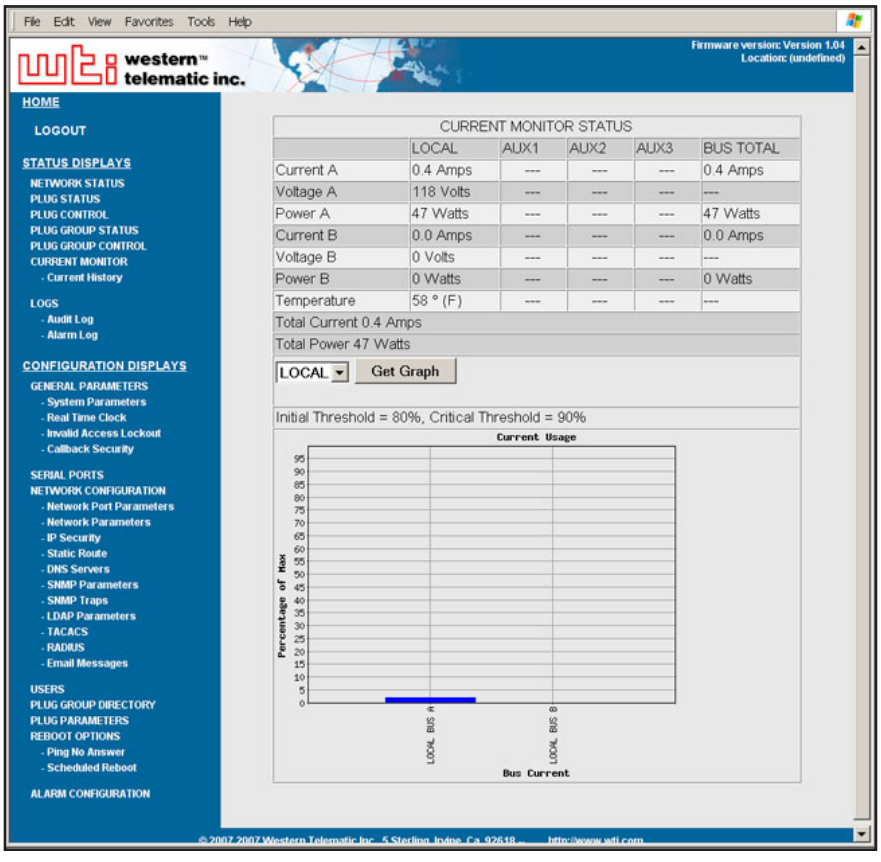

Figure 8.8: The Current Monitor Screen (Web Browser Interface)

8.5. The Current History Screen

The Current History Screen is used to display all current, voltage and temperature readings stored in the MPC's memory. In the Web Browser Interface, the Current History can be displayed as a graph, downloaded in CSV format, or downloaded in XML format. In the Text Interface, the Current History can be displayed as straight, ASCII data, or can be downloaded in CSV or XML format.

To view the Current History Screen, access the MPC command mode and then proceed as follows:

- **Text Interface:** Type `/L` and press **[Enter]** to access the "Display Logs" main menu. From the "Display Logs" menu, type `3` and press **[Enter]** to display the "Current Monitor Log" menu. From the Current Monitor Log Menu, type `1` and press **[Enter]** to display the screen shown in Figure 8.9, or type `2` and press **[Enter]** to download saved data in CSV format, or type `3` and press **[Enter]** to download saved data in XML format.
- **Web Browser Interface:** Click on the "Current History" link on the left hand side of the screen to access the Current Monitor Log menu. At the Current Monitor Log menu, you may either click on the "Display History Graph" link to display a graphic diagram that summarizes the Current History (Figure 8.10), click on "Display ASCII" to show all saved data in ASCII format, click on "Display CSV" to show all saved data in CSV format, or click on "Display XML" to show all saved data in XML format.

For more information on the Current Monitor, please refer to Section 5.3.4.

```
CURRENT MONITOR LOG:

DATE                UNIT   CURRENT-A CURRENT-B VOLTAGE-A VOLTAGE-B TEMPERATURE
-------------------------------------------------------------------------------
01/15/2000 03:30:33 LOCAL     0.3A      0.0A      118V       0V        57F
                    AUX1      0.0A      0.0A       0V        0V         0F
                    AUX2      0.0A      0.0A       0V        0V         0F
                    AUX3      0.0A      0.0A       0V        0V         0F

01/15/2000 04:00:33 LOCAL     0.3A      0.0A      118V       0V        57F
                    AUX1      0.0A      0.0A       0V        0V         0F
                    AUX2      0.0A      0.0A       0V        0V         0F
                    AUX3      0.0A      0.0A       0V        0V         0F

01/15/2000 04:30:33 LOCAL     0.3A      0.0A      118V       0V        57F
                    AUX1      0.0A      0.0A       0V        0V         0F
                    AUX2      0.0A      0.0A       0V        0V         0F
                    AUX3      0.0A      0.0A       0V        0V         0F

01/15/2000 05:00:33 LOCAL     0.3A      0.0A      118V       0V        56F
                    AUX1      0.0A      0.0A       0V        0V         0F
                    AUX2      0.0A      0.0A       0V        0V         0F
                    AUX3      0.0A      0.0A       0V        0V         0F
Enter for more entries, <ESC> to quit...
```

Figure 8.9: The Current History Screen (Text Interface)

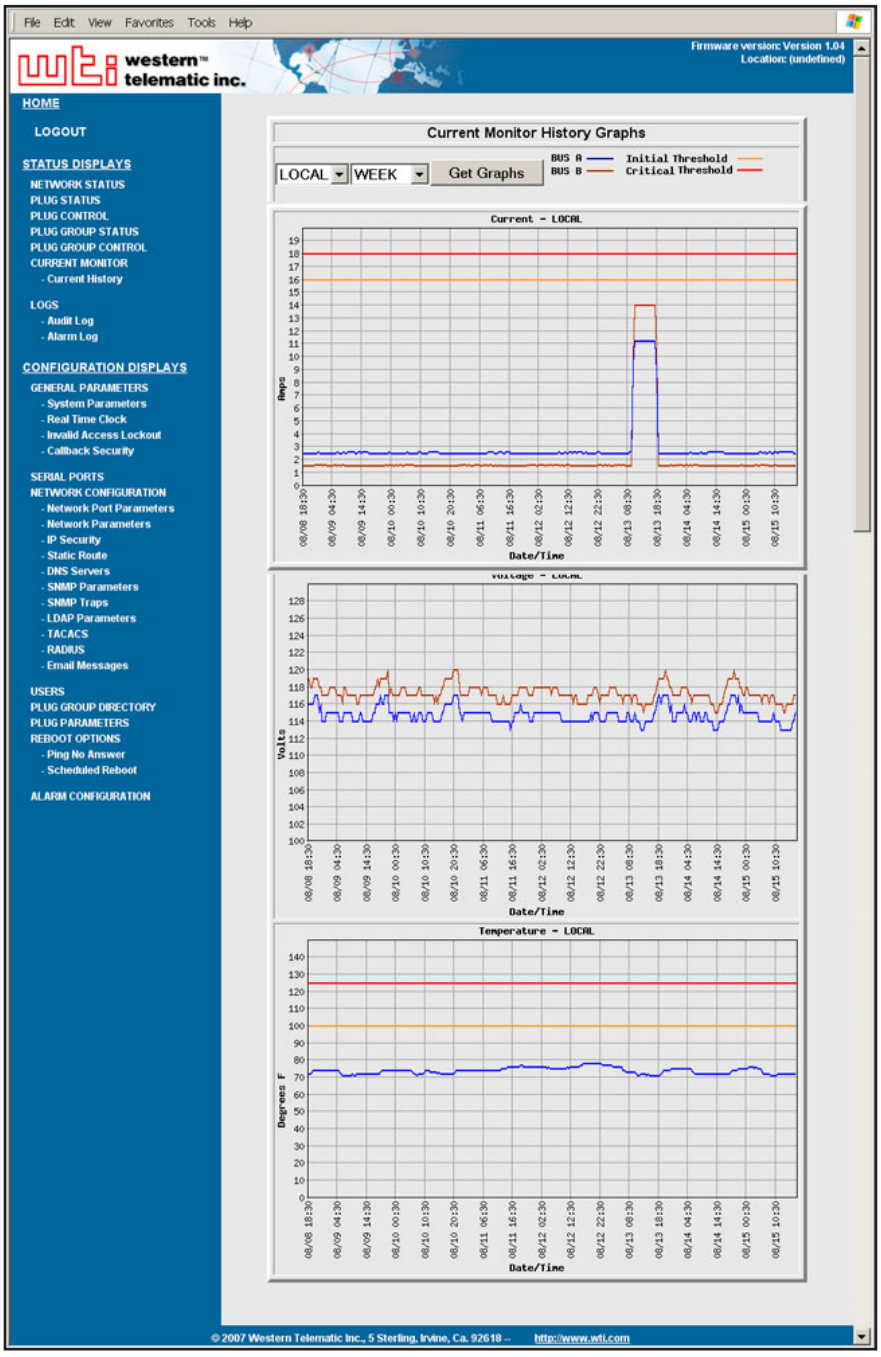

Figure 8.10: The Current History Screen (Web Browser Interface)

9. Operation

As discussed in Section 5, the MPC offers two separate command interfaces; the Web Browser Interface and the Text Interface. Both interfaces offer essentially the same command options and features, and in most cases, parameters defined via the Web Browser Interface will also apply when communicating via the Text Interface (and vice versa.)

9.1. Operation via the Web Browser Interface

When using the Web Browser Interface, switching commands are invoked via the Plug Control Screen and Plug Group Control Screen.

9.1.1. The Plug Control Screen - Web Browser Interface

The Plug Control Screen, shown in Figure 9.1, lists the current On/Off status of the MPC's Switched Outlets and provides a series of functions which are used to control switching of the outlets.

To invoke On, Off, or Reboot commands, proceed as follows:

1. Access the MPC Command Mode as described in Section 5.1.
2. Click on the "Plug Control" link on the left hand side of the screen to display the Plug Control Screen.

Notes:

- *When switching and reboot operations are initiated, Boot/Sequence Delay times will be applied as described in Section 5.7.1.*
- *When the Plug Control Screen is displayed by an account that permits Administrator or SuperUser level commands, all switched outlets will be displayed.*
- *When the Plug Control Screen is displayed by an account that permits "User" command access, the screen will only include the switched outlets that are allowed by the account.*

3. **Initiating a Reboot Cycle:** From the Plug Control Menu, click the down arrow in the "Action" column for the desired outlet(s) to display the dropdown menu, then select "Reboot" from the dropdown menu and click on the "Execute Plug Actions" button.
4. **Switching Outlets Off:** From the Plug Control Menu, click the down arrow in the "Action" column for the desired outlet(s) to display the dropdown menu, then select "Off" from the dropdown menu and click on the "Execute Plug Actions" button.
5. **Switching Outlets On:** From the Plug Control Menu, click the down arrow in the "Action" column for the desired outlet(s) to display the dropdown menu, then select "On" from the dropdown menu and click on the "Execute Plug Actions" button.

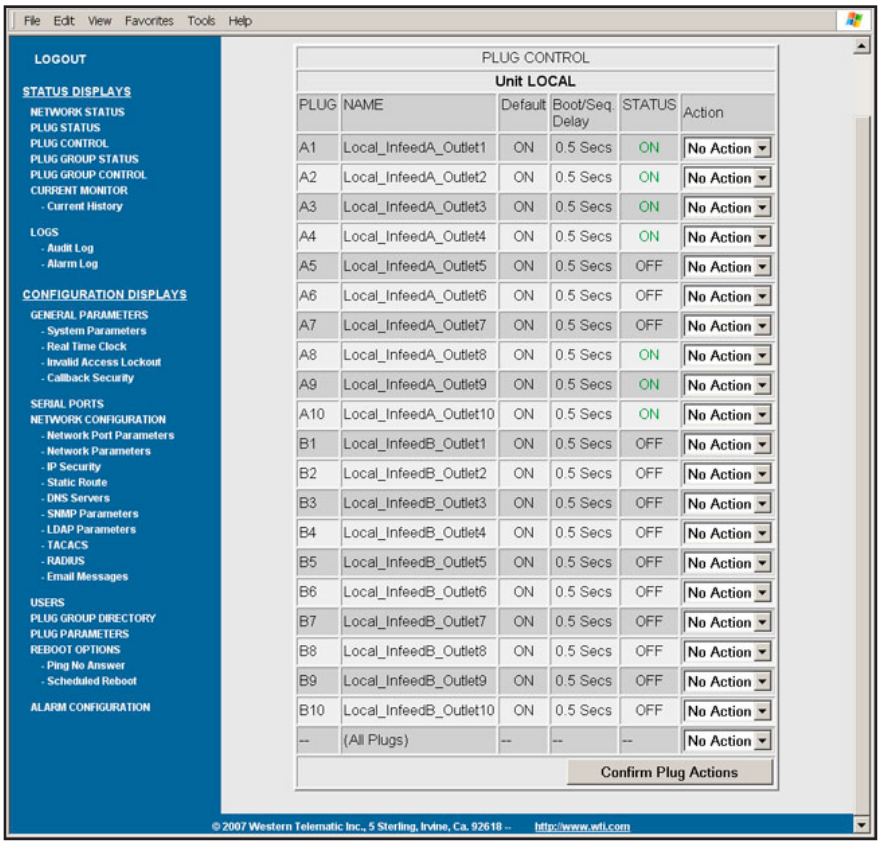

Figure 9.1: The Plug Control Screen (Administrator Mode; Web Browser Interface)

When each switching or reboot command is invoked, the MPC will display a screen which indicates that a switching operation is in progress, then display the Plug Status screen when the command is complete. At that time, the Status Screen will list the updated On/Off status of each plug.

9.1.2. The Plug Group Control Screen - Web Browser Interface

The Plug Group Control Screen, shown in Figure 9.2, is used to send switching and reboot commands to the user-defined Plug Groups. As described in Section 5.6, Plug Groups allow you to define a group of outlets, dedicated to a similar purpose or client, and then direct switching and reboot commands to the group, rather than switching one plug at a time.

To invoke On, Off, or Reboot commands, proceed as follows:

1. Access the MPC Command Mode as described in Section 5.1.
2. Click on the "Plug Group Control" link on the left hand side of the screen to display the Plug Group Control Screen as shown in Figure 9.2.

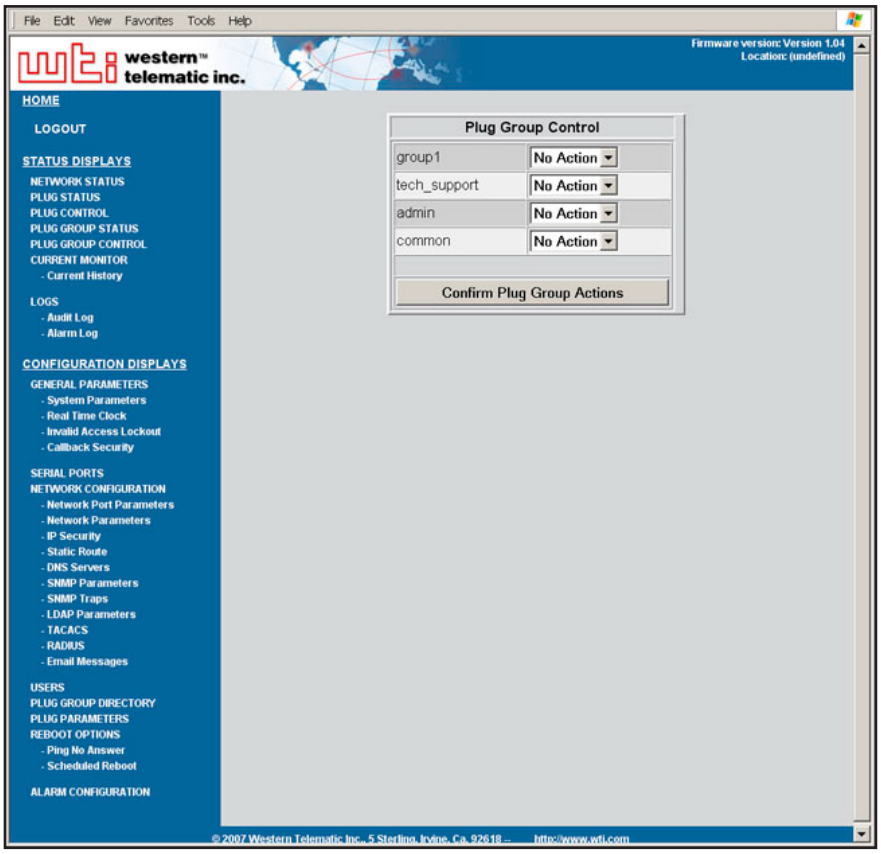

Figure 9.2: The Plug Group Control Screen (Administrator Mode; Web Browser Interface)

Notes:

- *When switching and reboot operations are initiated, Boot/Sequence Delay times will be applied as described in Section 5.7.1.*
- *When the Plug Group Control Screen is displayed by an account that permits Administrator level commands, all user-defined Plug Groups will be displayed.*
- *When the Plug Control Screen is displayed by an account that permits "SuperUser" or "User" level commands, the screen will only include the Plug Groups that are allowed by the account.*

3. **Initiating a Reboot Cycle:** From the Plug Group Control Screen, locate the Plug Group(s) that you wish to control, then click the down arrow in the task selector box next to the Plug Group name, and use the dropdown menu to select the "Reboot" option. Then click on the "Confirm Plug Group Actions" button to execute the Reboot command.

4. **Switching Plug Groups Off:** From the Plug Group Control Screen, locate the Plug Group(s) that you wish to control, then click the down arrow in the task selector box next to the Plug Group name, and use the dropdown menu to select the "Off" option. Then click on the "Confirm Plug Group Actions" button to switch all plugs in the group Off.

5. **Switching Plug Groups On:** From the Plug Group Control Screen, locate the Plug Group(s) that you wish to control, then click the down arrow in the task selector box next to the Plug Group name, and use the dropdown menu to select the "On" option. Then click on the "Confirm Plug Group Actions" button to switch all plugs in the group On.

When each switching or reboot command is invoked, the MPC will display a screen which indicates that a switching operation is in progress, then display the Plug Status screen when the command is complete. At that time, the Status Screen will list the updated On/Off status of each plug.

```
COMMAND MENU:                          Version 1.00

DISPLAY                                CONFIGURATION
/S            Plug Status              /F            System Parameters
/SG           Plug Group Status        /P [n]        Port Parameters
/SN           Network Status           /PL [n]       Plug Parameters
/H            Command Menu (Help)      /G            Plug Grouping Parameters
/L            Log                      /N            Network Configuration
/M            Current Monitor          /RB           Reboot Options
/J            Site ID                  /AC           Alarm Configuration
                                       /I            Reboot System
CONTROL                                /UF           Upgrade Firmware
<Enter>       Enter Command Mode       /TEST         Test Network Options
/X            Exit Command Mode
/BOOT <n>     Boot Plug n                   +-------------------------------+
/ON <n>       Turn on Plug n                | n   Plug# or name            |
/OFF <n>      Turn off Plug n               | n:n = plug n through plug n   |
/DPL          Default all plugs             | n+n = plug n and plug n       |
/U            Send Parameter File           | k   Key type (1-3)            |
/K <k>        Send SSH Keys                 | *   "all"                     |
/UL           Unlock (Invalid Access)       | <>  Required entry            |
                                            | []  Optional entry            |
Add ,Y to bypass "Sure?"                    +-------------------------------+
MPC>
```

Figure 9.3: The Help Menu (Administrator Mode; Text Interface)

9.2. Operation via the Text Interface

When using the Text Interface, all switching functions are performed by invoking simple, ASCII commands. ASCII commands are also used to display status screens and to log out of command mode. The Text Interface includes a Help Menu, which summarizes all available MPC commands. To display the Text Interface Help Menu (Figure 9.3), type **/H** and press **[Enter]**.

> **Note:** *When the Help Menu is displayed by an account that permits "User" or "ViewOnly" commands, the screen will not include commands that are only available to Administrators and SuperUsers.*

9.2.1. The Plug Status Screen - Text Interface

When you login to the MPC command mode via the Text Interface, the first screen displayed after login is the Plug Status Screen. The Plug Status Screen (Figure 9.4) lists the current status of the MPC's Switched AC Outlets and displays the currently defined Site I.D. Message.

Normally, the Plug Status Screen will also be re-displayed each time a command is successfully executed. Note however, that if desired, the Automated Mode (See Section 9.3) can be enabled to suppress the display of the Plug Status Screen after each command.

```
LOCAL - Managed Power Controller      Site ID: (undefined)

PLUG |           NAME            | STATUS | Boot/Seq. Delay | Default
-----+-------------------------+--------+-----------------+----------
 A1  | Local_InfeedA_Outlet1     |  OFF   |    0.5 Secs     |   ON    |
 A2  | Local_InfeedA_Outlet2     |  OFF   |    0.5 Secs     |   ON    |
 A3  | Local_InfeedA_Outlet3     |  OFF   |    0.5 Secs     |   ON    |
 A4  | Local_InfeedA_Outlet4     |  ON    |    0.5 Secs     |   ON    |
 A5  | Local_InfeedA_Outlet5     |  ON    |    0.5 Secs     |   ON    |
 A6  | Local_InfeedA_Outlet6     |  ON    |    0.5 Secs     |   ON    |
 A7  | Local_InfeedA_Outlet7     |  ON    |    0.5 Secs     |   ON    |
 A8  | Local_InfeedA_Outlet8     |  ON    |    0.5 Secs     |   ON    |
 A9  | Local_InfeedA_Outlet9     |  ON    |    0.5 Secs     |   ON    |
 A10 | Local_InfeedA_Outlet10    |  ON    |    0.5 Secs     |   ON    |
 B1  | Local_InfeedB_Outlet1     |  ON    |    0.5 Secs     |   ON    |
 B2  | Local_InfeedB_Outlet2     |  ON    |    0.5 Secs     |   ON    |
 B3  | Local_InfeedB_Outlet3     |  ON    |    0.5 Secs     |   ON    |
 B4  | Local_InfeedB_Outlet4     |  ON    |    0.5 Secs     |   ON    |
 B5  | Local_InfeedB_Outlet5     |  ON    |    0.5 Secs     |   ON    |
 B6  | Local_InfeedB_Outlet6     |  ON    |    0.5 Secs     |   ON    |


Enter ">" for more plugs, <ESC> to quit...
```

Figure 9.4: The Plug Status Screen (Administrator Mode; Text Interface)

9.2.2. Switching and Reboot Commands - Text Interface

These commands can be used to switch or reboot the MPC's switched plugs, and can also be used to set plugs to the user-defined Power-Up Default values. Plugs may be specified by name or number.

Notes:

- *Wait for the "MPC>" prompt to appear before entering commands. The prompt will not reappear until the previous command is complete.*
- *Commands are not case sensitive. All commands are invoked by pressing* **[Enter]**.
- *When the Plug Control Screen is displayed by an account that permits Administrator level command access, all switched outlets will be displayed.*
- *When the Plug Control Screen is displayed by an account that permits "View Only", "User" or "SuperUser" command access, the screen will only include the switched outlets that are specifically allowed by the account.*
- *When you have accessed command mode using an account that permits Administrator level commands, the switching and reboot commands can be applied to all plugs.*
- *When you have accessed command mode using an account that permits "User" or "SuperUser" commands, switching and reboot commands can only be applied to the plugs that are specifically allowed by that account.*
- *If command confirmation is enabled, the MPC will display the Status Screen after commands are successfully completed.*
- *When switching and reboot operations are initiated, Boot/Sequence Delay times will be applied as described in Section 5.7.1.*
- *When used in On/Off/Reboot command lines, plug names and plug group names are* ***not*** *case sensitive.*

When switching and reboot commands are executed, the MPC will display a "Sure?" prompt, wait for user response, and then complete the command. The unit will pause for a moment while the command is executed, and then return to the Plug Status Screen.

To Switch Plugs, or initiate a Reboot Cycle, proceed as follows:

1. **Switch Plug(s) On:** To power-on a plug or Plug Group, type **/ON *n*** and press **[Enter]**. Where "**n**" is the alphanumeric number or name of the desired plug or Plug Group. For example:

   /ON A1 or **/ON ROUTER**

2. **Switch Plug(s) Off:** To power-off a plug or Plug Group, type **/OFF n** and press **[Enter]**. Where "**n**" is the alphanumeric number or name of the desired plug or Plug Group. Note that the "/OFF" command can also be entered as "/OF". For example:

   /OFF B2 or **/OF ROUTER**

3. **Reboot Plug(s):** To initiate a Boot cycle, type **/BOOT n** and press **[Enter]**. Where "**n**" is the alphanumeric number or name of the desired plug or Plug Group. Note that the "**/BOOT**" command can also be entered as "**/BO**". For example:

   /BOOT B3 or **/BO ATMSWTCH**

4. **Set All Plugs to Power Up Defaults:** Type **/DPL** and press **[Enter]**. All plugs permitted by your account will be set to their default On/Off status, which is defined via the Plug Parameters Menu as described in Section 5.7.

   Notes:

   - *When you have accessed command mode using an account that permits Administrator level command access, the Default command will be applied to all plugs.*
   - *When you have accessed command mode using an account that permits "User" or "SuperUser" command access, the Default command will only be applied to the plugs specifically allowed by that account.*
   - *The /DPL command is not available in ViewOnly mode.*

5. **Suppress Command Confirmation Prompt:** To execute a Boot/On/Off command without displaying the "Sure?" prompt, include the "**,Y**" option at the end of the command line. For example:

   /ON ROUTER,Y or **/BOOT B2,Y**

9.2.3. Applying Commands to Several Plugs - Text Interface

As described below, switching and reboot commands can be applied to only one Switched AC Outlet, or to an assortment of outlets.

Note: *When switching and reboot operations are initiated, Boot/Sequence Delay times will be applied as described in Section 5.7.1.*

1. **Several Plugs:** To apply a command to several plugs, enter the numbers or names for the plugs, separated by a "plus sign" (+). For example to switch plugs 1, 3, and 4 Off, enter the following:

   `/OFF A1+A3+A4` [Enter]

   Note: *In order for the "+" operator to work, there must be no spaces between the plug name or number and the plus sign.*

2. **Series of Plugs:** To apply a command to a series of plugs, enter the alphanumeric number for the plugs that mark the beginning and end of the series, separated by a colon. For example, to switch plugs A1 through A4 On, enter the following:

   `/ON A1:A4` [Enter]

4. **All Plugs:** To apply a command to all plugs, enter an asterisk in place of the name or number. For example, to Boot all plugs, enter the following:

   `/BO *` [Enter]

   Note: *When this command is invoked by an account that does not permit access to Administrator level commands, it will only be applied to the plugs that are allowed for that account.*

9.3. The Automated Mode

The Automated Mode allows the MPC to execute switching and reboot commands, without displaying menus or generating response messages. Automated Mode is designed to allow the MPC to be controlled by a device which can generate commands to control power switching functions without human intervention.

When Automated Mode is enabled, the /ON, /OFF, /BOOT, /DPL and /X commands are executed without a "Sure?" confirmation prompt and without command response messages; the only reply to these commands is the "MPC>" prompt, which is displayed when the command is complete.

Note that although Automated Mode can be enabled using either the Web Browser Interface or Text Interface, Automated Mode is designed primarily for users who wish to send ASCII commands to the MPC without operator intervention, and therefore does not specifically apply to the Web Browser Interface. When Automated Mode is enabled, the Web Browser Interface can still be used to invoke On / Off / Boot commands.

Notes:

- *When Automated Mode is enabled, all MPC password security functions are disabled, and users are able to access System Level command functions (including the configuration menus) and control plugs without entering a password.*
- *If you need to enable the Automated Mode, but want to restrict network access to MPC configuration menus, it is recommended to enable and configure the IP Security Function as described in Section 5.9.3.*

To enable/disable Automated Mode, access the System Parameters menu (see Section 5.3,) then set the "Automated Mode" option to "On". When Automated Mode is enabled, MPC functions will change as follows:

1. **All Password Security Suppressed:** When a user attempts to access command mode, the password prompt will not be displayed at either the Console Port or the Network Port. Unless specifically restricted by the IP Security Function, all users will be allowed to access both switching and configuration functions, and all commands will be immediately accepted without the requirement to enter a password.
2. **Status Screen Suppressed:** The status screens will not be automatically displayed after commands are successfully executed. Note however, that the /S command can still be invoked to display the status screen as needed.
3. **"Sure?" Prompt Suppressed:** All commands are executed without prompting for user confirmation.
4. **Error Messages Suppressed:** If the **[Enter]** key is pressed without entering a command, the MPC will not respond with the "Invalid Command" message. Note however, that an error message will still be generated if commands are invoked using invalid formats or arguments.

All other status display and configuration commands will still function as normal.

9.4. Manual Operation

In addition to the command driven functions available via the Web Browser Interface and Text Interface, some MPC functions can also be controlled manually. For a summary of front panel control functions, please refer to Section 2.3.

9.5. Logging Out of Command Mode

When you have finished communicating with the MPC, it is important to always disconnect using either the "LogOut" link (Web Browser Interface) or the /X command (Text Interface), rather than by simply closing your browser window or communications program. When communicating via a PDA, use the PDA's "Close" function to disconnect and logout.

When you disconnect using the LogOut link or /X command, this ensures that the MPC has completely exited from command mode, and is not waiting for the inactivity timeout period to elapse before allowing additional connections.

10. SSH Encryption

In addition to standard Telnet protocol, the MPC also supports SSH connections, which provide secure, encrypted access via network. In order to communicate with the MPC using SSH protocol, your network node must include an appropriate SSH client.

Note that when the /K (Send SSH Key) command is invoked, the MPC can also provide you with a public SSH key, which can be used to streamline connection to the MPC when using SSH protocol.

Although you can establish an SSH connection to the unit *without* the public key, the public key provides validation for the MPC, and once this key is supplied to the SSH client, the client will no longer display a warning indicating that the MPC is not a recognized user when the client attempts to establish a connection.

The /K command uses the following format:

`/K <k>` [Enter]

Where **`k`** is an argument that determines which type of public key will be displayed, and the **`k`** argument offers the following options:

1. SSH1
2. SSH2 RSA
3. SSH2 DSA

For example, to obtain the public SSH key for an SSH2 RSA client, type **`/K 2`** and then press **[Enter]**.

> **Note:** *Although the MPC does not support SSH1, the /K 1 command will still return a key for SSH1.*

11. Syslog Messages

The Syslog feature can create log records of each Alarm Event. As these event records are created, they are sent to a Syslog Daemon, located at an IP address defined via the Network Parameters menu.

11.1. Configuration

If you wish to employ this feature, you must set the real-time clock and calendar via the System Parameters Menu, and define the IP address for the Syslog Daemon via the Network Port Configuration menu.

To configure the Syslog function, please proceed as follows:

1. **Access command mode:** Note that the following configuration menus are only available to accounts that permit Administrator level commands.
2. **System Parameters Menu:** Access the System Parameters Menu as described in Section 5.3, then set the following parameters:
    a) **Set Clock and Calendar:** Set the Real Time Clock and Calendar and/or configure and enable the NTP server feature.
3. **Network Parameters Menu:** Access the Network Parameters Menu as described in Section 5.9, then set the following parameters:
    a) **Syslog IP Address:** Determine the IP address for the device that will run the Syslog Daemon, then use the Network Port Configuration menu to define the IP Address for the Syslog Daemon.
5. **Syslog Daemon:** In order to capture messages sent by the MPC, a computer must be running a Syslog Daemon (set to UDP Port 514) at the IP address specified in Step 4 above.

Once the Syslog Address is defined, Syslog messages will be generated whenever one of the alarms discussed in Section 7 is triggered.

```
TEST NETWORK OPTIONS:

1. SNMP Trap Test Manager 1
2. SNMP Trap Test Manager 2
3. Syslog Test
4. Ping




Enter: #<CR> to select,
       <ESC> to exit ...
```

Figure 11.1: The Test Menu (Text Interface, Administrator Mode Only)

11.2. Testing Syslog Configuration

After you have configured the MPC as described in Section 11.1, the /TEST command can be used to make certain that the function is properly set up. To test the Syslog function, access the MPC command mode via the text interface using an account that permits Administrator level commands, then type **`/TEST`** and press **[Enter]** to display the Test Menu shown in Figure 11.1.

When the Syslog Test feature is selected, the MPC will attempt to send a test Syslog message, using the current Syslog configuration. If the test message is not received by your Syslog Daemon, review the procedure outlined in Section 11.1 to make certain the MPC and the Syslog Daemon are properly configured.

In addition to providing a means to test the Syslog and SNMP Trap features, the Test Menu also includes a Ping command option, which can be used in a manner similar to the DOS ping command to check to make certain that the unit is communicating properly. Note that in order for the Ping command to function with domain names, you must first configure Domain Name Server parameters as described in Section 5.9.5.

12. SNMP Traps

SNMP is an acronym for "Simple Network Management Protocol". The SNMP Trap function allows the MPC to send Alarm Notification messages to two different SNMP managers, each time one of the Alarms discussed in Section 7 is triggered.

Note:

- *The SNMP feature cannot be configured via the SNMP Manager.*
- *SNMP reading ability is limited to the System Group.*
- *The SNMP feature includes the ability to be polled by an SNMP Manager.*
- *Once SNMP Parameters have been defined, SNMP Traps will be sent each time an Alarm is triggered. For more infomration on Alarm Configuration, please refer to Section 7.*

12.1. Configuration:

To configure the SNMP Trap function, proceed as follows:

1. Access command mode using an account that permits Administrator level commands.
2. **Network Parameters Menu:** Access the Network Parameters Menu as described in Section 5.9. Set the following:
   a) **Enable:** SNMP Access must be enabled in order for SNMP traps to function.
   b) **SNMP Contact:** (Optional.)
   c) **SNMP Location:** (Optional.)
   d) **SNMP Community:** Consult your network administrator, and then use the Network Parameters menu to set the SNMP Community.
   e) **SNMP Managers 1 and 2:** The address(es) that will receive SNMP Traps that are generated by one of the Alarms discussed in Section 7. Consult your network administrator to determine the IP address(es) for the SNMP Manager(s), then use the Network Parameters menu to set the IP address for each SNMP Manager. Note that it is not necessary to define both SNMP Managers.
   f) **Trap Community:** Consult your network administrator, and then use the Network Parameters menus to set the Trap Community.

Once SNMP Trap Parameters have been defined, the MPC will send an SNMP Trap each time an alarm is triggered.

12.2. Testing the SNMP Trap Function

After you have finished setting up the SNMP Trap function, it is recommended to test the configuration to ensure that it is working correctly. To test configuration of the SNMP Trap function, proceed as follows:

1. Configure the SNMP Trap function as described in Section 12.1.
2. Access the Text Interface command mode using an account that permits Administrator level commands, then invoke the "/TEST" command at the MPC command prompt. Note that the /TEST Command is only available in Administrator Mode.
3. Select Item 1 or 2 to send an SNMP test trap to Manager 1 or 2, respectively. It is possible that the ARP table will not be properly setup. If this occurs a message to that effect is displayed and the MPC immediately refreshes the ARP table. Repeat steps 2 and 3 to try again.

For more information on the **/TEST** command and the Test Menu, please refer to Section 11.2.

13. Saving and Restoring Configuration Parameters

Once the MPC is properly configured, parameters can be downloaded and saved as an ASCII text file. Later, if the configuration is accidentally altered, the saved parameters can be uploaded to automatically reconfigure the unit without the need to manually assign each parameter.

Saved parameters can also be uploaded to other MPC units, allowing rapid set-up when several units will be configured with the same parameters.

The "Save Parameters" procedure can be performed from any terminal emulation program (e.g. HyperTerminal, TeraTerm, etc.), that allows downloading of ASCII files.

> **Note:** *The Save and Restore features described in this section are only available via the Text Interface.*

13.1. Sending Parameters to a File

1. Start your terminal emulation program (e.g. HyperTerminal) and access the Text Interface command mode using an account that permits Administrator level commands.
2. When the command prompt appears, type `/u` and press **[Enter]**. The MPC will prompt you to configure your terminal emulation program to receive an ASCII download.
    a) Set your terminal emulation program to receive an ASCII download, and the specify a name for a file that will receive the saved parameters (e.g. MPC.PAR).
    b) Disable the Line Wrap function for your terminal emulation program. This will prevent command lines from being broken in two during transmission.
3. When the terminal emulation program is ready to receive the file, return to the MPC's Save Parameter File menu, and press **[Enter]** to proceed. MPC parameters will be saved on your hard drive in the file specified in Step 2 above.
4. The MPC will send a series of ASCII command lines which specify currently selected parameters. When the download is complete, press **[Enter]** to return to the command prompt.

13.2. Restoring Saved Parameters

This section describes the procedure for using your terminal emulation program to send saved parameters to the MPC.

1. Start your terminal emulation program and access the MPC's Text Interface command mode using an account that permits Administrator level commands.
2. Configure your terminal emulation program to upload an ASCII text file.
3. Upload the ASCII text file with the saved MPC parameters. If necessary, key in the file name and directory path.
4. Your terminal emulation program will send the ASCII text file to the MPC. When the terminal program is finished with the upload, make certain to terminate the Upload mode.

   Note: *If the MPC detects an error in the file, it will respond with the "Invalid Parameter" message. If an error message is received, carefully check the contents of the parameters file, correct the problem, and then repeat the Upload procedure.*

5. If the parameter upload is successful, the MPC will send a confirmation message, and then return to the command prompt. Type `/s` and press **[Enter]**, the Status Screen will be displayed. Check the Status Screen to make certain the unit has been configured with the saved parameters.

14. Upgrading MPC Firmware

When new, improved versions of the MPC firmware become available, the "Upgrade Firmware" function can be used to update the unit. Updates can be uploaded via FTP or SFTP protocols.

Notes:

- *The FTP/SFTP servers can only be started via the Text Interface.*
- *All other ports will remain active during the firmware upgrade procedure.*
- *If the upgrade includes new parameters or features not included in the previous firmware version, these new parameters will be set to their default values.*

1. Obtain the update file. Firmware modifications can either be mailed to the customer on a CDR, or downloaded from WTI. Place the upgrade CDR in your disk drive or copy the file to your hard drive.
2. Access Text Interface command mode via Serial Port, Telnet or SSH client session, using a username/password and port that permit Supervisor commands.
3. When the command prompt appears, type `/UF` and then press **[Enter]**. The MPC will display a screen which offers the following options:

   a) **Start FTP/SFTP Servers Only (Do NOT default parameters):** To proceed with the upgrade, while retaining user-defined parameters, type `1` and press **[Enter]**. All existing parameter settings will be restored when the upgrade is complete.

   b) **Start FTP/SFTP Servers & Default (Keep IP parameters & SSH Keys):** To proceed with the upgrade and default al user-defined parameters except for the IP Parameters and SSH Keys, type `2` and press **[Enter]**. When the upgrade is complete, all parameter settings except the IP Parameters and SSH Keys, will be reset to factory default values.

   c) **Start FTP/SFTP Servers & Default (Default ALL parameters):** To proceed with the upgrade, and reset parameters to default settings, type `3` and press **[Enter]**. When the upgrade is complete, all parameters will be set to default values.

   Note that after any of the above options is selected, the MPC will start the receiving servers and wait for an FTP/SFTP client to make a connection and upload a valid firmware binary image.

4. To proceed with the upgrade, select either option 1 or option 2. The MPC will display a message that indicates that the unit is waiting for data. Leave the current Telnet/SSH client session connected at this time.

5. Open your FTP/SFTP application and login to the MPC unit, using a username and password that permit access to Supervisor Level commands.

6. Transfer the binary format upgrade file to the MPC.

7. After the file transfer is complete, the MPC will install the upgrade file and then reboot itself and break all port connections. Note that it will take approximately 10 minutes to complete the installation process. The unit will remain accessible until it reboots.

   a) Some FTP/SFTP applications may not automatically close when the file transfer is complete. If this is the case, you may close your FTP/SFTP client manually after it indicates that the file has been successfully transferred.

   b) When the upgrade process is complete, the MPC will send a message to all currently connected network sessions, indicating that the MPC is going down for a reboot.

   Note: *Do not power down the MPC unit while it is in the process of installing the upgrade file. This can damage the unit's operating system.*

8. If you have accessed the MPC via the Network Port, in order to start the FTP/SFTP servers, the MPC will break the network connection when the system is reinitialized.

   - If you initially selected "Start FTP/SFTP Servers and Save Parameters", you may then reestablish a connection with the MPC using your former IP address.

   - If you initially selected "Start FTP/SFTP Servers and Default Parameters", you must then login using the MPC's default IP address (Default = 192.168.168.168) or access command mode via Serial Port 1 or 2 or via Modem.

When firmware upgrades are available, WTI will provide the necessary files via download or mailed CDR. At that time, an updated Users Guide or addendum will also be available.

15. Command Reference Guide

15.1. Command Conventions

Most commands described in this section conform to the following conventions:

- **Text Interface:** Commands discussed in this section, can only be invoked via the Text Interface. These commands *cannot* be invoked via the Web Browser Interface.
- **Slash Character:** Most MPC Text Interface commands begin with the Slash Character (**/**).
- **Apply Command to All Plugs:** When an asterisk is entered as the argument of the **/ON** (Switch Plugs On), **/OFF** (Switch Plugs Off) or **/BOOT** (Reboot Plugs) commands, the command will be applied to all plugs. For example, to reboot all allowed plugs, type **/BOOT * [Enter]**.
- **Plug Name Wild Card:** It is not always necessary to enter the entire plug name. Plug names can be abbreviated in command lines by entering the first character(s) of the name followed by an asterisk (*****). For example, a plug named "SERVER" can be specified as "**S***". Note however, that this command would also be applied to any other plug name that begins with an "S".
- **Suppress Command Confirmation Prompt:** When the **/ON** (Switch Plug On), **/OFF** (Switch Plug Off), **/BOOT** (Reboot Plug) or **/DPL** (Default All Plugs) commands are invoked, the "**,Y**" option can be included to override the Command Confirmation ("Sure?") prompt. For example, to reboot Plug A4 without displaying the Sure prompt, type **/BOOT A4,Y [Enter]**.
- **Enter Key:** Most commands are invoked by pressing **[Enter]**.
- **Configuration Menus:** To exit from a configuration menu, press **[Esc]**.

15.2. Command Summary

Function	Command Syntax	Command Access Level			
		Admin.	SuperUser	User	ViewOnly
Display					
Plug Status	`/S` **[Enter]**	X❶	X❶	X❶	X❶
Plug Group Status	`/SG` **[Enter]**	X❷	X❷	X❷	X❷
Network Status	`/SN` **[Enter]**	X	X	X	X
Help Menu	`/H` **[Enter]**	X❸	X❸	X❸	X❸
Log Functions	`/L` **[Enter]**	X	X	X	X
Current Monitor	`/M` **[Enter]**	X	X	X	X
Site ID	`/J` **[Enter]**	X	X	X	X
Control					
Exit Command Mode	`/X` **[Enter]**	X	X	X	X
Boot Plug *n*	`/BOOT <n>[,Y]` **[Enter]**❹	X	X	X	
Turn Plug *n* On	`/ON <n>[,Y]` **[Enter]**❹	X	X	X	
Turn Plug *n* Off	`/OFF <n>[,Y]` **[Enter]**❹	X	X	X	
Default All Plugs	`/DPL[,Y]` **[Enter]**❹	X	X	X	
Send Parameter File	`/U` **[Enter]**	X			
Send SSH Keys	`/K <n>` **[Enter]**	X			
Unlock Invalid Access	`/UL` **[Enter]**	X			
Configuration					
System Parameters	`/F` **[Enter]**	X	❺		
Serial Port Parameters	`/P` **[Enter]**	X	❺		
Plug Parameters	`/PL <n>` **[Enter]**	X	❺		
Plug Group Parameters	`/G` **[Enter]**	X	❺		
Network Configuration	`/N` **[Enter]**	X	❺		
Reboot Options	`/RB` **[Enter]**	X	❺		
Alarm Configuration	`/AC` **[Enter]**	X	❺		
Reboot System	`/I` **[Enter]**	X			
Upgrade Firmware	`/UF` **[Enter]**	X			
Test Network Configuration	`/TEST` **[Enter]**	X			

❶ In Administrator Mode and SuperUser Mode, all MPC outlets are displayed. In User Mode and ViewOnly Mode, the Plug Status Screen will only include the plugs that are allowed by your account.

❷ In Administrator Mode, all Plug Groups are displayed. In SuperUser Mode, User Mode and ViewOnly Mode, the Plug Group Status Screen will only include the Plug Groups that are allowed by your account.

❸ In Administrator Mode and SuperUser Mode, the Help Menus will list all MPC commands. In the User Mode and ViewOnly Mode, the Help Menus will only list the commands that are allowed by that access level.

❹ The ",Y" argument can be included in the command line to suppress the command confirmation prompt.

❺ In SuperUser Mode, configuration menus can be displayed, but parameters cannot be changed.

15.3. Command Set

This Section provides information on all Text Interface commands, sorted by functionality

15.3.1. Display Commands

/S Display Plug Status Screen

Displays the Plug Status Screen, which lists the current On/Off state, plus the plug number, plug name, Boot/Sequence Delay value and Default On/Off value for each plug. For more information, please refer to Section 8.2.

> **Note:** *In Administrator Mode and SuperUser Mode, all MPC outlets are displayed. In User Mode and ViewOnly Mode, the Plug Status Screen will only include the plugs that are allowed by your account.*

Availability: Administrator, SuperUser, User, ViewOnly

Format: `/S` **[Enter]**

/S Display Plug Group Status Screen

Displays the Plug Group Status Screen, which lists the available Plug Groups, the numbers of the plugs that are included in each Plug Group, the current On/Off state, the user-defined Boot/Sequence Delay value, and the Default On/Off value for each plug. For more information, please refer to Section 8.3.

> **Note:** *In Administrator Mode all user defined Plug Groups are displayed. In SuperUser Mode, User Mode and ViewOnly Mode, the Plug Group Status Screen will only include the Plug Groups that are allowed by your account.*

Availability: Administrator, SuperUser, User, ViewOnly

Format: `/S` **[Enter]**

/SN Display Network Status

Displays the Network Status Screen, which lists current network connections to the MPC's Network Port. For more information, please refer to Section 8.1.

Availability: Administrator, SuperUser, User, ViewOnly

Format: `/SN` **[Enter]**

/H Help

Displays a Help Screen, which lists all available Text Interface commands along with a brief description of each command.

> **Note:** *In the Administrator Mode and SuperUser Mode, the Help Screen will list the entire MPC Text Interface command set. In User Mode and ViewOnly Mode, the Help Screen will only list the commands that are allowed for the User Mode or ViewOnly Mode.*

Availability: Administrator, SuperUser, User, ViewOnly
Format: `/H` **[Enter]**

/L Log Functions

Provides access to a menu which allows you to display the Audit Log, Alarm Log and Current Monitor Log. For more information on Log Functions, please refer to Section 5.3.4.

Availability: Administrator, SuperUser, User, ViewOnly
Format: `/L` **[Enter]**

/M Current Monitor Status

Displays the Current Monitor Status Screen, which lists current, voltage and power readings for both power circuits, and also lists the trigger settings for the Over Temperature Alarm and the Over Current Alarm. For more information on the Current Monitor, please refer to Section 8.4. For more information on Alarm Configuration, please refer to Section 7.

Availability: Administrator, SuperUser, User, ViewOnly
Format: `/M` **[Enter]**

/J Display Site ID

Displays the user-defined Site I.D. message.

Availability: Administrator, SuperUser, User, ViewOnly
Format: `/J` **[Enter]**

15.3.2. Control Commands

/X Exit Command Mode

Exits command mode. When issued at the Network Port, also ends the Telnet session.

> **Note:** *If the /X command is invoked from within a configuration menu, recently defined parameters may not be saved. In order to make certain that parameters are saved, always press the **[Esc]** key to exit from all configuration menus before issuing the /X command.*

Availability: Administrator, SuperUser, User, ViewOnly

Format: **`/X`** **[Enter]**

/BOOT Initiate Boot Cycle

Initiates a boot cycle at the selected plug(s) or Plug Group(s). When a Boot cycle is performed, the MPC will first switch the selected plug(s) Off, then pause for the user-defined Boot/Sequence Delay Period, then switch the plug(s) back on. For more information on the Boot/Sequence Delay Period, please refer to Section 5.7.1. The /BOOT command can also be entered as /BO.

> **Note:** *When this command is invoked in Administrator Mode, it can be applied to all MPC plugs and Plug Groups. When this command is invoked in SuperUser Mode or User Mode, it can only be applied to the plugs and/or Plug Groups that have been enabled for your account.*

Availability: Administrator, SuperUser, User

Format: **`/BOOT <n>[,Y]`** **[Enter]** or **`/BO <n>[,Y]`** **[Enter]**

Where:

- **`n`** The number or name of the plug(s) or Plug Group(s) that you intend to boot. To apply the command to several plugs, enter a plus sign (+) between each plug number. To apply the command to a range of plugs, enter the numbers for the first and last plugs in the range, separated by a colon character (:). To apply the command to all plugs allowed by your account, enter an asterisk character (*).
- **`,Y`** (Optional) Suppresses the command confirmation prompt.

Example: Assume that your account allows access to Plug A2 and Plug A3. To initiate a boot cycle at Plugs A2 and A3, without displaying the optional command confirmation prompt, invoke either one of the following command lines:

`/BOOT 2+3,Y` **[Enter]** or **`/BO,Y 2+3`** **[Enter]**

/ON Switch Plug(s) ON

Switches selected plugs(s) or Plug Group(s) On, as described in Section 9.2.2. When the /ON command is used to switch more than one plug, Boot/Sequence Delay Period will be applied as described in Section 5.7.1.

> **Note:** *When this command is invoked in Administrator Mode, it can be applied to all MPC plugs and Plug Groups. When this command is invoked in SuperUser Mode or User Mode, it can only be applied to the plugs and/or Plug Groups that have been enabled for your account.*

Availability: Administrator, SuperUser, User

Format: **`/ON <n>[,Y]`** **[Enter]**

Where:

`n`	The number or name of the plug(s) or Plug Group(s) that you intend to Switch On. To apply the command to several plugs, enter a plus sign (+) between each plug number. To apply the command to a range of plugs, enter the numbers for the first and last plugs in the range, separated by a colon character (:). To apply the command to all plugs allowed by your account, enter an asterisk character (*).
`,Y`	(Optional) Suppresses the command confirmation prompt.

Example: Assume that your account allows access to Plug A2 and Plug A3. To switch Plugs A2 and A3 On, without displaying the optional command confirmation prompt, invoke following command line:

`/ON A2+A3,Y` **[Enter]**

/OFF Switch Plug(s) OFF

Switches selected plugs(s) or Plug Group(s) Off, as described in Section 9.2.2. When the /OFF command is used to switch more than one plug, Boot/Sequence Delay Period will be applied as described in Section 5.7.1. The /OFF command can also be entered as /OF.

> **Note:** *When this command is invoked in Administrator Mode, it can be applied to all MPC plugs and Plug Groups. When invoked in SuperUser Mode or User Mode, the command can only be applied to the plugs and/or Plug Groups that are enabled for your account.*

Availability: Administrator, SuperUser, User

Format: **`/OFF <n>[,Y]`** **[Enter]** or **`/OF <n>[,Y]`** **[Enter]**

Where:

`n` The number or name of the plug(s) or Plug Group(s) that you intend to Switch Off. To apply the command to several plugs, enter a plus sign (+) between each plug number. To apply the command to a range of plugs, enter the numbers for the first and last plugs in the range, separated by a colon character (:). To apply the command to all plugs allowed by your account, enter an asterisk character (*).

`,Y` (Optional) Suppresses the command confirmation prompt.

Example: Assume that your account allows access to Plug A2 and Plug A3. To switch Plugs A2 and A3 Off, without displaying the optional command confirmation prompt, invoke following command line:

`/OFF A2+A3,Y` **[Enter]** or **`/OFF A2+A3,Y`** **[Enter]**

/DPL Set All Plugs to Default States

Sets all switched outlets to their user-defined default state. For information on setting outlet defaults, please refer to Section 5.7.

> **Note:** *When this command is invoked in Administrator Mode, it will be applied to all MPC outlets. When invoked in SuperUser Mode or User Mode, the command will only be applied to the plugs that are allowed by your account.*

Availability: Administrator, SuperUser, User

Format: **`/DPL[,Y]`** **[Enter]**

Where ,Y is an optional command argument, which can be included to suppress the command confirmation prompt.

/U Send Parameters to File

Sends all MPC configuration parameters to an ASCII text file as described in Section 13. This allows you to back up the configuration of your MPC unit.

Availability: Administrator

Format: **`/U`** **[Enter]**

/K Send SSH Key

Instructs the MPC to provide you with a public SSH key for validation purposes. This public key can then be provided to your SSH client, in order to prevent the SSH client from warning you that the user is not recognized when you attempt to create an SSH connection. For more information, please refer to Section 10.

Availability: Administrator

Format: **`/K k`** **[Enter]**

Where k is a required argument, which indicates the key type. The k argument provides the following options: 1 (SSH1), 2 (SSH2 RSA), 3 (SSH2 DSA.)

/UL Unlock Port (Invalid Access Lockout)

Manually cancels the MPC's Invalid Access Lockout feature. Normally, when a series of unsuccessful login attempts are detected, the Invalid Access Lockout feature can shut down the network port for a user specified time period in order to prevent further access attempts. When the /UL command is invoked, the MPC will immediately unlock all network ports that are currently in the locked state.

Availability: Administrator

Format: **`/UL`** **[Enter]**

Response: The MPC will unlock all MPC RS232 Ports.

15.3.3. Configuration Commands

/F Set System Parameters

Displays a menu which is used to define the Site ID message, create user accounts, set the system clock, and configure and enable the Invalid Access Lockout feature. Note that all functions provided by the /F command are also available via the Web Browser Interface. For more information, please refer to Section 5.3.

Availability: Administrator

Format: **`/F`** **[Enter]**

/P Set Serial Console Port Parameters

Displays a menu that is used to select options and parameters for the MPC's Serial Console Port. Note that all functions provided by the /P command are also available via the Web Browser Interface. Section 5.8 describes the procedure for defining serial Console port parameters.

Availability: Administrator

Format: **`/P`** **[Enter]**

/PL Set Plug Parameters

Displays a menu that is used to select options and parameters for the MPC's switched outlets (plugs). Note that all functions provided by the /PL command are also available via the Web Browser Interface. Section 5.7 describes the procedure for defining plug parameters.

Availability: Administrator

Format: **`/PL [n]`** **[Enter]**

Where **`n`** is an optional command argument, that is used to denote the number or name of the plug to be configured. If the **`n`** argument is omitted, the MPC will display a menu which can be used to define parameters for *all* switched outlets.

/G Plug Group Parameters

Displays a menu that is used to View, Add, Modify or Delete Plug Groups. For more information on Plug Groups, please refer to Section 5.6.

Availability: Administrator

Format: **`/G`** **[Enter]**

/N Network Port Parameters

Displays a menu which is used to select parameters for the Network Port. Also allows access to the IP Security function, which can restrict network access by unauthorized IP addresses. Note that all of the functions provided by the /N command are also available via the Web Browser Interface. For more information, please refer to Section 5.9.

Availability: Administrator

Format: **`/N`** **[Enter]**

/RB Reboot Options

Displays a menu that is used to configure Scheduled Reboots and Ping-No-Answer Reboots. Scheduled Reboots allow the MPC to be rebooted on a regular basis, according to a user defined schedule. Ping-No-Answer Reboots allow the MPC to automatically reboot user-designated outlets when a user-specified IP address does not respond to a Ping command. For more information on Reboot options, please refer to Section 6.

> **Note:** *If desired, the Ping-No-Answer Reboot function can also be configured to send email notification whenever a Ping-No-Answer Reboot is generated. For more information, please refer to Section 7.6.*

Availability: Administrator

Format: **`/RB`** **[Enter]**

/AC Alarm Configuration Parameters

Displays a menu that is used to configure and enable the Over Current Alarm, Over Temperature Alarm, Circuit Breaker Open Alarm, Lost Communication with AUX Units Alarm, Lost Voltage Alarm, Ping-No-Answer Alarm, and the Invalid Access Lockout Alarm. For more information on Alarm Configuration, please refer to Section 7.

Availability: Administrator
Format: **`/AC`** **[Enter]**

/I Reboot System (Default)

Reinitializes the MPC unit and offers the option to keep user-defined parameters or reset to default parameters. When the /I command is invoked, the unit will offer three reboot options:

- Reboot Only (Do NOT default parameters)
- Reboot & Default (Keep IP Parameters & SSH Keys; Default all other parameters)
- Reboot & Default (Default ALL parameters)

Availability: Administrator
Format: **`/I`** **[Enter]**

/UF Upgrade Firmware

When new versions of the MPC firmware become available, this command is used to update existing firmware as described in Section 14.

Availability: Administrator
Format: **`/UF`** **[Enter]**

/TEST Test Network Parameters

Displays a menu which is used to test configuration of the Syslog and SNMP Trap functions and can also be used to invoke a Ping Command. For more information, please refer to Section 11.2 and Section 12.2.

Notes:

- *In order for the ping command to function with domain names, Domain Name Server parameters must be defined as described in Section 5.9.5.*
- *The Test Menu's Ping command is not effected by the status of the Network Parameters Menu's Ping Access function.*

Availability: Administrator
Format: **`/TEST`** **[Enter]**

Appendix A. RS232 Port Interface

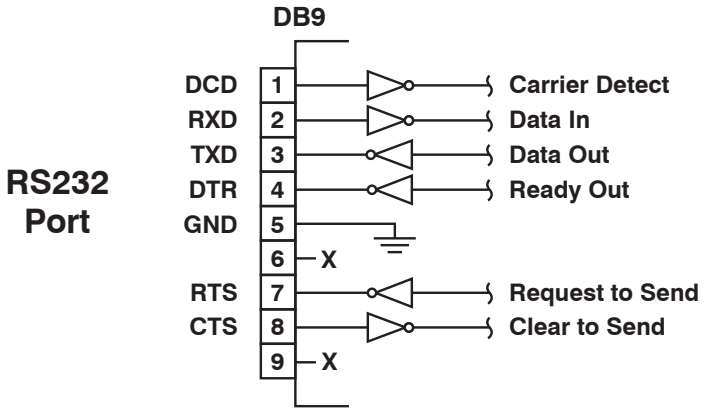

Figure A.1: RS232 Console Port Interface

DCD and DTR hardware lines function as follows:

1. **When connected:**

   a) If either port is set for Modem Mode, the DTR output at either port reflects the DCD input at the other end.

   b) If *neither* port is set for Modem Mode, DTR output is held high (active).

2. **When not connected:**

   a) If the port is set for Modem Mode, upon disconnect DTR output is pulsed for 0.5 seconds and then held high.

   b) If the port is *not* set for Modem Mode, DTR output is controlled by the DTR Output option (Serial Port Parameters Menu, Option 23). Upon disconnect, Option 23 allows DTR output to be held low, held high, or pulsed for 0.5 seconds and then held high.

Appendix B. Specifications

Power Input/Output:

Voltage: 100 - 120 VAC or 208 - 240 VAC, 50/60 Hz

AC Inputs: Two separate circuits:

120 VAC Models: 20 Amps Max. Load per Circuit

240 VAC Models: 16 Amps Max. Load per Circuit

AC Inlets: Two (2) IEC320-C20

AC Outlets:

120 VAC Models: 8, 16 or 20 each, NEMA 5-20R Outlets

240 VAC Models: 8, 16, or 20 each, IEC320-C13 Outlets

Current Load:

120 VAC Models: 20 Amps Max. per Circuit, 40 Amps Max. Total Load per unit

240 VAC Models: 16 Amps Max. per Circuit, 32 Amps Max. Total Load per unit.

Physical/Environmental:

Models MPC-8H-1 & MPC-8H-2:

Width: 17" (43.2 cm)

Depth: 8.7" (22.1 cm)

Height: 1.75" (4.5 cm) One Rack U

Models MPC-16H-1 & MPC-16H-2:

Width: 17" (43.2 cm)

Depth: 8.7" (22.1 cm)

Height: 3.5" (8.9 cm) Two Rack U

Models MPC-20V-1 & MPC-20V-2:

Width: 4.5" (11.4 cm)

Depth: 3.0" (7.6 cm)

Length: 31" (78.7 cm) Zero Rack U

Operating Temperature: 32˚F to 122˚F (0˚C to 50˚C)

Humidity: 10 - 90% RH

Agency Approvals: FCC, UL, CE (240 VAC Units)

Venting: Side vents are used to dissipate heat generated within the unit. When mounting the unit in an equipment rack, make certain to allow adequate clearance for venting.

Control Ports:

Ethernet Port: 100Base-T

Console Port: DB9M, RS232C

AUX/Link Ports: RJ-45, RS232C

Appendix C. Customer Service

Customer Service hours are from 8:00 AM to 5:00 PM, PST, Monday through Friday. When calling, please be prepared to give the name and make of the unit, its serial number and a description of its symptoms. If the unit should need to be returned for factory repair it must be accompanied by a Return Authorization number from Customer Service.

WTI Customer Service
5 Sterling
Irvine, California 92618

Local Phone: (949) 586-9950
Toll Free Service Line: 1-888-280-7227
Service Fax: (949) 457-8138

Email: service@wti.com

Appendix D: Rack Mounting

The MPC offers a variety of different mounting options that allow the unit to be easily mounted in almost any equipment rack available. In addition to the standard "L" brackets included with all units, MPC-20V series units can also be mounted using standard mounting buttons, "Hook" Brackets for Dell style racks or Zero-U Pocket Brackets for APC style racks or any rack that features a "pocket" or channel for Zero Unit mounting.

D.1. "L" Bracket Mounting

The standard "L" brackets, included with the unit, can be used to mount all MPC-8H, MPC-16H or MPC-20V units in most standard equipment racks.

The "L" brackets allow horizontal format MPC-H units to be mounted facing forward or facing backward or mounted in the front of the rack or rear of the rack. When the "L" brackets are used with the vertical format MPC-20V, units can also be mounted facing either side of the rack.

1. **Attaching the Brackets to the MPC:** First determine which direction the MPC will face after mounting, and then secure the "L" Brackets to the MPC accordingly, using the screws provided with the mounting brackets.

    a) **MPC-8H (Horizontal) Units:** Each end of the unit has four screw holes that are used for mounting the "L" brackets to the MPC. The "L" brackets can either be mounted facing the front of the unit or the rear of the unit, using the same four holes. Use four screws (supplied with the bracket) to secure each bracket to the MPC.

    b) **MPC-16H (Horizontal) Units:** Each end of the unit has eight screw holes; four screw holes for front mounting, and four screw holes for rear mounting. Use four screws (supplied with the bracket) to secure an "L" bracket to each side of the unit. If the front of the MPC unit will face outwards, use the front four holes; if the back of the MPC unit will face outward, use the rear four holes.

    c) **MPC-20V (Vertical) Units:** The "L" brackets can either be attached to the back or side of the unit, and the unit can also be installed to face the front, rear, or either side of the equipment rack. Each end of the MPC features seven screw holes for attaching the brackets, this allows you to mount the brackets on either side of the unit, and in one of two possible positions on the back. When mounting the brackets on the back of the unit, use screw holes 1 and 2 or 2 and 3 as shown in Figure D.1. Use two screws (supplied with the bracket) to secure one bracket to the top of the MPC and the second bracket to the bottom of the MPC.

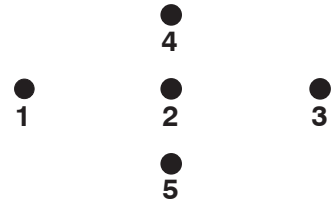

Figure D.1: Mounting Holes; MPC-20V Back Panel

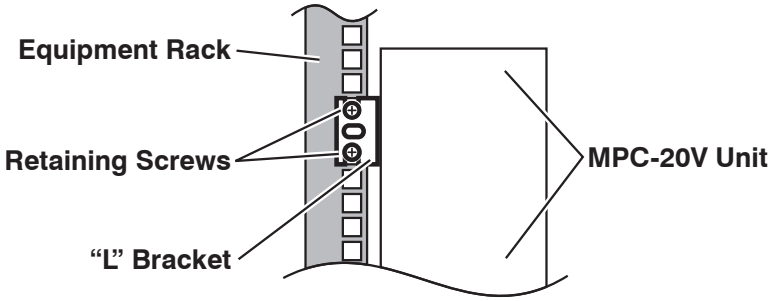

Figure D.2: Attaching the "L" Brackets to the Equipment Rack (MPC-20V Shown)

2. **Attaching the "L" Brackets to the Equipment Rack:** Determine which direction the MPC unit will face in the rack, then line the "U" slots in the "L" Bracket up with two holes in the equipment rack mounting strip. Make certain that the unit is level, and then use two screws to secure each "L" bracket to the rack as shown in Figure D.2.

D.2. Mounting Buttons

The Mounting Buttons allow MPC-20V (vertical) units to be mounted in any equipment rack that includes mounting button holes, as shown in Figure D.4. Depending on the location of the mounting button holes in your equipment rack, this can allow the MPC-20V to be mounted on the posts at the rear of the equipment rack, or in some cases, even mounted on the outside of the rack corner posts.

1. **Attaching the Mounting Buttons to the MPC-20V:** Attach four Mounting Buttons to the back panel of the MPC-20V unit as described below:

   a) Insert a retaining screw into each Mounting Button with the top of the screw aligned with the large end of the Mounting Button, as shown in Figure D.3.

   b) Locate the screw holes for the Mounting Buttons on the MPC-20V back panel. There are two screw holes at the top of the back panel and two holes at the bottom. Note that the screw holes for the Mounting Buttons are not the same holes shown in Figure D.1; the Mounting Button screw holes are located at the top of the unit, directly above the screw holes shown in Figure D.1, and at the bottom, about three inches below the holes shown in Figure D.1.

   c) Firmly attach two Mounting Buttons to the screw holes at the top of the MPC and two Mounting Buttons to the screw holes at the bottom of the unit.

2. **Attach the MPC to the Equipment Rack:** Align the Mounting Buttons with the top end of each mounting button hole (see Figure D.4.) Press the mounting buttons into the mounting button holes, and then slide the unit downwards, so each Mounting Button seats firmly in the lower end of each corresponding mounting button hole.

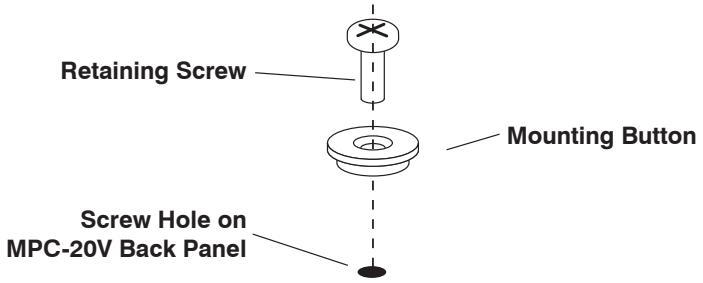

Figure D.3: Attaching Mounting Buttons to MPC-20V (Vertical) Units

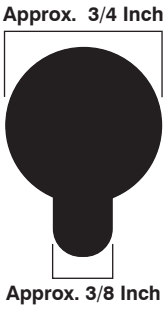

Figure D.4: Mounting Button Holes

D.3. Hook Bracket Mounting (MPC-20V Only)

The Hook Brackets allow MPC-20V (vertical) units to be easily mounted in Dell style equipment racks. The Hook Brackets can be used to mount the MPC-20V in any rack that includes Dell style mounting rails as shown in Figure D.5.

The Hook Brackets, which are supplied in a right and left hand pair, allow MPC-20V units to be mounted to any one of the four corner posts in a Dell style equipment rack.

1. **Attaching the Brackets to the MPC-20V:** First determine which direction the MPC will face after mounting, and then secure the Hook Brackets to the MPC-20V accordingly, using the screws provided.

   a) The Hook Brackets can be attached to the back or side of the unit, and the unit can also be installed to face the front, rear, or either side of the equipment rack.

   b) Each end of the MPC features seven screw holes for attaching the brackets, this allows you to mount the brackets on either side of the unit, and in one of two possible positions on the back. When mounting the brackets on the back of the unit, use screw holes 1 and 2 or 2 and 3 as shown in Figure D.1.

   c) Use two screws (supplied with the bracket) to secure one bracket to the top of the MPC-20V and the second bracket to the bottom of the MPC-20V.

2. **Attaching the Hook Brackets to the Equipment Rack:** Insert each Hook Bracket's tab into one of the square holes in the corner post, then slide the bracket down until the hook locks in place with the rack as shown in Figure D.5. After each Hook Bracket is firmly seated, use a retaining screw to secure each Hook Bracket to the equipment rack.

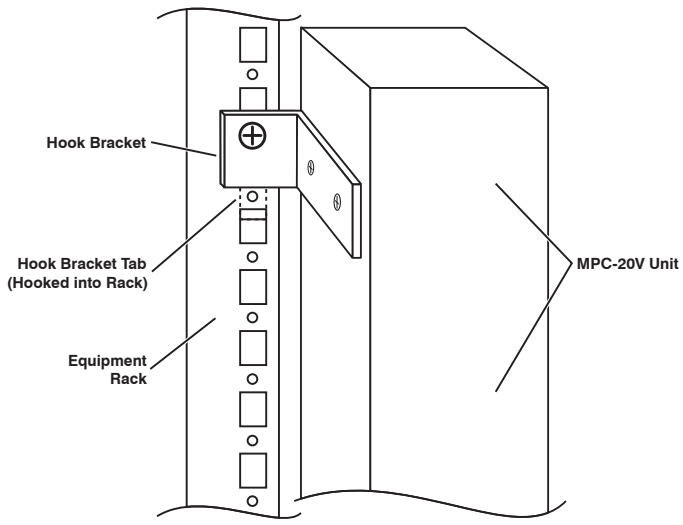

Figure D.5: Attaching the Hook Brackets to the Equipment Rack

D.4. Zero-U Pocket Bracket Mounting (MPC-20V Only)

The Zero-U Pocket Brackets allow you to mount the MPC-20V in APC style racks, that include a pocket or channel for zero unit mounting as shown in Figures D.6 and D.7.

The Zero-U Pocket Brackets allow MPC-20V units to be mounted directly into the channel or pocket at the rear of the rack, and can either be nested inside the pocket in order to use as little space as possible, or mounted on top of the pocket, in order to provide a convenient cavity for cable routing. When the Zero-U Pocket Bracket is used, the MPC-20V will always be mounted facing the interior of the rack.

1. **Attaching the Zero-U Pocket Brackets to the MPC:**

   a) Determine whether the MPC-20V will be nested within the rack pocket, or will be mounted outside the pocket in order to provide a cavity for cable routing.

   b) Insert the screws supplied with the bracket into the three holes in the center of the Zero-U Pocket Bracket and then thread them into holes 4, 2 and 5 (see Figure D.1) on the back of the MPC-20V unit as shown in Figures D.6 and D.7.

2. **Attaching the Zero-U Pocket Brackets to the Equipment Rack:** Align the MPC with the rack pocket and then use appropriate retaining screws to secure the Zero-U Pocket Brackets to the rack pocket as shown in Figures D.6 and D.7.

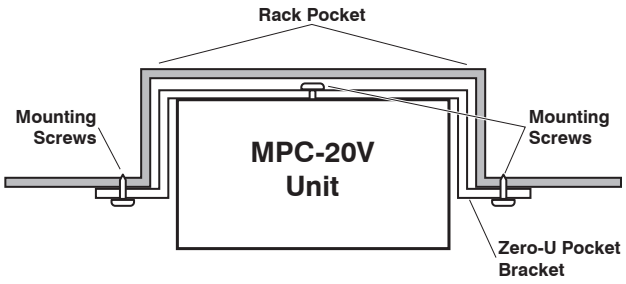

Figure D.6: Zero-U Pocket Brackets (Cross Section; Nested in Pocket)

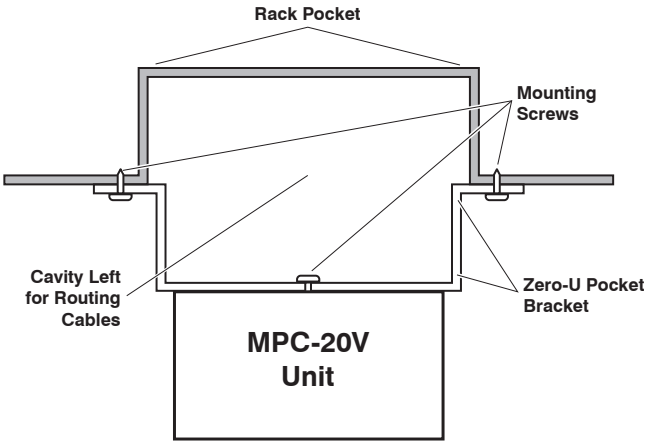

Figure D.7: Zero-U Pocket Brackets (Cross Section; Outside Pocket to Allow Cable Cavity)

Appendix E: Output Cable Keeper

The Output Cable Keeper extends approximately two inches above the face of the MPC-20V unit, and provides a convenient means to tie output cables in place, to prevent them from being accidentally disconnected.

To install the Output Cable Keeper on your MPC-20V unit, please proceed as follows:

1. Refer to the electrical safety warnings in Chapter 4 and at the beginning of this user's guide, and then disconnect the input power supply cables from the MPC-20V unit. Next, remove the output cables from the MPC-20V, noting the precise plug/location where each output cable was plugged in.

2. Align the Output Cable Keeper with the face of the MPC-20V unit as shown in Figure E.1 below. Note that there are two horizontally aligned screw holes at the top of the MPC-20V unit, and two vertically aligned screw holes at the bottom of the MPC-20V unit. Use the supplied mounting screws to securely attach the Cable Keeper to the face of the MPC-20V unit.

3. Reconnect the output cables to the same locations where they were previously plugged in, and then use a tie wrap to secure each output cable to the Cable Keeper.

4. Reconnect the input power supply cables to the MPC-20V unit.

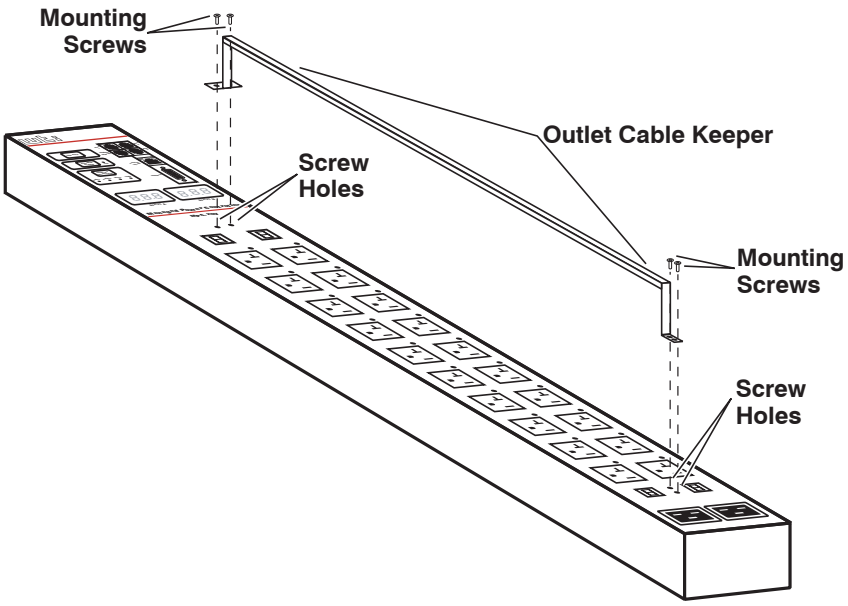

Figure E.1: Installing the Output Cable Keeper (MPC-20V Units Only)

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