

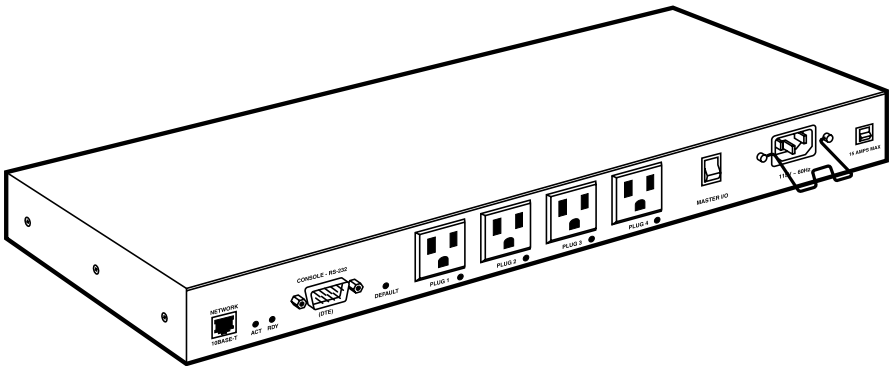


© Copyright 2005. Black Box Corporation. All rights reserved.

1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax 724-746-0746



Rackmount Remote Power Manager



**CUSTOMER
SUPPORT
INFORMATION**

Order toll-free in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: www.blackbox.com • E-mail: info@blackbox.com

**FEDERAL COMMUNICATIONS COMMISSION
AND
INDUSTRY CANADA
RADIO FREQUENCY INTERFERENCE STATEMENTS**

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

EUROPEAN UNION DECLARATION OF CONFORMITY

This equipment complies with the requirements of the European EMC Directive 89/336/EEC.



NORMAS OFICIALES MEXICANAS (NOM) ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

TRADEMARKS USED IN THIS MANUAL

BLACK BOX and the Double Diamond logo are registered trademarks of BB Technologies, Inc.

ProComm is a registered trademark of DATASTORM TECHNOLOGIES, INC.™

Crosstalk is a registered trademark of Digital Communications Associates, Inc.

VT100 is a trademark of Digital Equipment Corporation.

AT is a registered trademark of International Business Machines Corporation.

Netscape Navigator is a registered trademark of Netscape Communications Corporation.

JavaScript is a registered trademark of Sun Microsystems, Inc.

Telnet is a trademark of Telnet Communications, Inc.

UNIX is a registered trademark of UNIX System Laboratories, Inc.

Any other trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

WARNINGS AND CAUTIONS

Secure Racking

If secure racked units are installed in a closed or multi-unit rack assembly, they may require further evaluation by certification agencies. Consider the following items:

1. The ambient temperature within the rack may be greater than the room ambient temperature. Installation should be such that the amount of airflow required for safe operation is not compromised. The maximum temperature for the equipment in this environment is 122°F (50°C).
2. Install the unit so that it doesn't become unstable from uneven loading.

Input Supply

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

Grounding

Maintain reliable grounding of this equipment. Give particular attention to supply connections when connecting to power strips, rather than direct connections to the branch circuit.

Shock Hazard

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

Disconnect Power

If any of the following events occurs, immediately disconnect the unit from the outlet and contact Black Box at 724-746-5500.

1. The power cord is frayed or damaged.
2. Liquid has been spilled into the device or the device has been exposed to rain or water.

Contents

Chapter	Page
1. Specifications	8
2. Overview	9
2.1 What's Included	10
2.2 Hardware Description	10
2.2.1 Rear Panel	10
2.2.2 Front Panel	12
3. Installation	13
3.1 Power Cable (and Cable Keeper) Connection	13
3.2 Connection to Switched Outlets	14
3.3 COM/RS-232 Port Connection	14
3.4 Connecting the Network Cable	15
4. Configuration	16
4.1 System Mode and User Mode	16
4.2 Communicating with the Rackmount Remote Power Manager	17
4.2.1 Accessing the Web Browser Interface	17
4.2.2 Accessing the Text Interface	18
4.3 Configuration Menus	20
4.3.1 General Parameters Menu	21
4.3.2 Plug Parameters Menu	24
4.3.3 Serial Parameters Menu	28
4.3.4 Network Parameters Menu	31
4.3.5 Telnet Parameters Menu	35
4.3.6 Web Server Parameters Menu	36
4.3.7 Save Parameters Button	38
4.3.8 Switch Panel Button	38
4.3.9 Log Out Button	38
4.4 Saving Configuration Parameters	38
5. Operation	39
5.1 Operation via the Web Browser Interface	39
5.1.1 The Plug Status Screen	39
5.1.2 Invoking Commands	40

Chapter	Page
5.2 Operation via the Text Interface	41
5.2.1 The Plug Status Screen	42
5.2.2 Switching and Reboot Commands	42
5.2.3 Applying Commands to Several Plugs	44
5.3 Logging Out of Command Mode	44
5.4 Automated Mode	45
5.5 Manual Operation	46
6. Saving and Restoring Configuration Parameters	47
6.1 Sending Parameters to a File	47
6.2 Restoring Saved Parameters	48
6.3 Uploading Saved Parameters to Other Power Managers	48
7. Upgrading the Power Manager's Firmware	49
Appendix: Troubleshooting	51
A.1 Calling Black Box	51
A.2 Shipping and Packaging	51

1. Specifications

User Controls: (1) Default button, (1) Master I/O switch

Connectors: PS580A: (1) RJ-45 10BASE-T, (1) DB9 male COM/RS-232 (DTE),
(4) NEMA 5-15R outlets, (1) IEC-320-C14 inlet;

PS581A: (1) RJ-45 10BASE-T, (1) DB9 male COM/RS-232 (DTE), (4) IEC-320-C13
outlets, (1) IEC-320-C14 inlet

Indicators: Rear panel: (6) LEDs: (1) ACT, (1) RDY, (4) Plug indicators
(1 through 4)

Temperature Tolerance: Operating: 32 to 122°F (0 to 50°C)

Humidity Tolerance: Relative: 10 to 90%, noncondensing

Power: PS580A: AC Input: (1) 100- to 120-VAC, 50- to 60-Hz IEC-320-C14 inlet,
15 amps maximum;

AC Outputs: (4) 100- to 120-VAC, 50- to 60-Hz NEMA 5-15R outlets;
PS581A: AC Inputs: (1) 208- to 240-VAC, 50- to 60-Hz IEC-320-C14 inlet,
10 amps maximum;

AC Outputs: (4) 208- to 240-VAC IEC-320-C13 outlets

Size: 1.75"H (1U) x 19"W x 4.5"D (4.4 x 48.3 x 11.3 cm)

Weight: 6 lb. (2.7 kg)

2. Overview

Electronic equipment sometimes “locks up,” requiring a service call just to flip the power switch to perform a simple reboot. The Rackmount Remote Power Manager lets you perform this function from anywhere. Simply point your browser to the power manager’s IP address, enter the secure password, and you’re just a click away from remote power on, off, or reboot.

In addition to Web browser access, the Rackmount Remote Power Manager can also communicate over any TCP/IP network using standard Telnet™, or out-of-band using an external modem and basic VT100™ type terminal emulation.

To ensure security, Web browser access requires an assigned user name and password. Passwords transmitted via a Web browser use basic 64-bit encryption techniques for secure access to your equipment.

The Rackmount Remote Power Manager provides two levels of operational passwords: the system administrator level (it allows access to all configuration and switching functions) and the user level (it allows access only to assigned plugs and can’t be used to change the power manager’s configuration).

In addition to password security features, the power manager also includes an address-specific IP security mask that can be used to prevent unauthorized network access to the power manager’s command mode.

The power manager can be configured over the network, via modem, or locally via its COM port. Easy-to-use commands let you assign a location name, set system parameters, and view plug status. Outlets can be switched on, off, or booted using plug numbers or names.

Two models are available. The Rackmount Remote Power Manager (PS580A) has four switched 100- to 120-VAC power outlets. The PS581A has four switched 208- to 240-VAC power outlets.

2.1 What's Included

Your package should include the following items. If anything is missing or damaged, please contact Black Box Technical Support.

- (1) Rackmount Remote Power Manager
- (1) AC power cord
- This user's manual

2.2 Hardware Description

2.2.1 REAR PANEL

The Rackmount Remote Power Manager (PS580A) is pictured in Figure 2-1. The PS581A has four 208- to 240-VAC IEC-320-C13 AC outlets instead of four 100- to 120-VAC, 50- to 60-Hz NEMA 5-15R AC outlets. Back-panel connectors, indicators, and switches are described in Table 2-1. The numbers in the figures correspond to the numbers in the table.

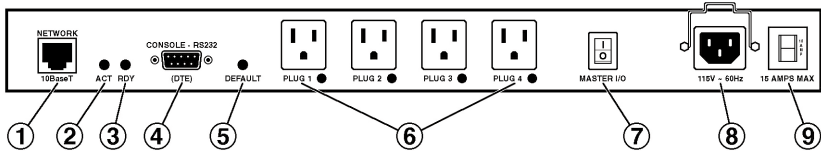


Figure 2-1. Rackmount Remote Power Manager (PS580A).

Table 2-1. Back-panel components.

Component	Description
❶ Network port	An RJ-45 Ethernet port for connection to your TCP/IP network. The default IP address is 192.168.168.168. For more information, refer to Section 4.3.4 .
❷ ACT LED	Flashes to indicate activity at the network port.
❸ RDY LED	Flashes continuously when the power manager is ready to receive commands.
❹ COM/RS-232 port	This DB9, COM/RS-232 (DTE) serial port connects to a local terminal or external modem, as described in Section 3.3 .
❺ Default button	<p>This button resets the unit to default parameters or manually toggles all plugs on or off.</p> <p>Default parameters: With the master I/O switch (master power switch) set to the Off position, press and hold the default button, then set the master I/O switch to the On position and release the default button. All menu-defined parameters will reset to default values.</p> <p>Manual plug toggle: Press the default button and hold it down for three seconds. All power outlets will be toggled on or off.</p>
❻ Switched plugs and plug indicators	Four 100- to 120-VAC, NEMA 5-15R or 208- to 240-VAC IEC-320-C13 AC outlets that can be switched on, off, or rebooted in response to user commands. The outlets have indicator lights and support 15 or 10 amps total load.

Table 2-1 (continued). Back-panel components.

Component	Description
⑦ Master I/O switch	This switch applies power to the power manager. The switch must be “On” for the power manager to function. This switch is not used to set the on/off status of the switched outlets.
⑧ Power inlet	An IEC-320 AC inlet (with attached cable keeper) that supplies AC power for the power manager’s command functions and the switched plugs.
⑨ Circuit breaker	A 15-amp or 10-amp circuit breaker supplies power to the outlets.

NOTE

If desired, the Default button’s manual plug control capabilities can also be disabled as described in Section 4.3.1.

2.2.2 FRONT PANEL

The Rackmount Remote Power Manager’s front panel has two indicators. Located from left to right are LEDs for Power On and Sys Rdy (flashes when the system is ready).

3. Installation

3.1 Power Cable (and Cable Keeper) Connection

The Rackmount Remote Power Manager includes a cable keeper, which is designed to prevent the power supply cable from being accidentally disconnected from the power manager. The Rackmount Remote Power Manager (PS580A or PS581A) uses a pivoting, clip-style cable keeper.

NOTE

The power manager's master power switch must be on in order for the unit to operate.

CAUTION

- **Before attempting to install the power manager, review the warnings and cautions listed on page 5.**
- **This device should be operated only with the type of power source indicated on the instrument nameplate. If you are not sure of the type of power service available, contact your local power company.**
- **Maintain reliable grounding of the power manager. Pay particular attention to supply connections when connecting to power strips, rather than directly to the branch circuit.**

To install the power cables to the PS580A or PS581A, follow these steps:

1. First, make sure that the power manager's power cable is disconnected from the power supply.
2. Next, swing the pivoting cable keeper out of the way.
3. The Rackmount Remote Power Manager has one AC power input. Connect the power cable (included) to the power inlet, then swing the cable keeper back, making sure that it snaps into place on the power manager, and make certain that the cable is secure.
4. Connect the cable to an appropriate power inlet. Each power manager supports up to 15 amps (PS580A) or 10 amps (PS581A) maximum.

Once the power supply is connected to the PS580A or PS581A, set the master power switch to the on position. The Power On LED will light, and the Sys Rdy LED will flash. This indicates that the system is ready.

3.2 Connection to Switched Outlets

Connect the power cord from each switched device to a switched AC outlet on the power manager. When power is applied to the power manager, the switched AC outlets will be switched on. The power manager includes a power bus. The PS580A bus supports a total of 15 amps; the PS581A bus supports a total of 10 amps.

3.3 COM/RS-232 Port Connection

The COM/RS-232 port is a male, DB9 connector, wired in a DTE configuration. In the default state, the COM/RS-232 port is configured for 9600 bps, eight data bits, one stop bit, and no parity. The COM/RS-232 port can be connected to either an external modem or a local PC, but not to both items at the same time. Figure 3-1 shows the COM/RS-232 port interface.

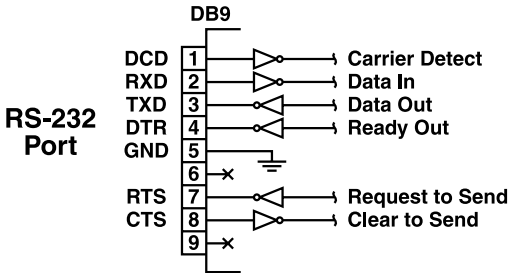


Figure 3-1. COM/RS-232 port interface.

The Rackmount Remote Power Manager can be controlled via a TCP/IP network, controlled by a local PC that communicates with the unit via cable, or controlled via an external modem. To switch plugs or select parameters, commands are issued to the power manager either via the network or via the COM/RS-232 port.

NOTE

It's optional to connect both the network and console ports.

The COM/RS-232 port can be connected to either a local PC or an external modem.

- Network port: Connect your 10BASE-T or 100BASE-T network interface to the Rackmount Remote Power Manager's network port. For more information, refer to **Section 3.4**.

- **Local PC:** Use the supplied null-modem cable to connect your PC's COM/RS-232 port to the power manager's COM/RS-232 port. Make sure that the serial port mode is set to console as described in **Section 4.3.3**.
- **External modem:** Use a standard AT[®] to modem cable to connect your external modem to the power manager's COM/RS-232 port. Make sure that the modem is initialized at the same default parameters as the console port. Make certain that the serial port mode is set to modem as described in **Section 4.3.3**.

NOTE

When the power manager is shipped from the factory, RS-232 port parameters are set as follows: 9600 bps, 8 data bits, one stop bit, no parity. The power manager allows these parameters to be easily redefined: see Section 4.3.3 for details.

3.4 Connecting the Network Cable

The network port is an RJ-45 Ethernet jack for connection to a TCP/IP network. Connect your 10BASE-T cable to the network port. The power manager includes a default IP address (192.168.168.168) and a default subnet mask (255.255.255.0). When installing the power manager in a working network environment, we recommend that you define network parameters as described in **Section 4.3.4**.

NOTE

The Rackmount Remote Power Manager features a half-duplex, 10BASE-T interface. If you're connecting a router switch to the Rackmount Remote Power Manager, note the following: When connecting to a 100BASE-T interface, most router switches will autosense to determine if the device is 100BASE-T or 10BASE-T and then configure the network interface accordingly. If your router switch does not autosense, the manager's network interface port must be manually set to half-duplex, 10BASE-T.

4. Configuration

4.1 System Mode and User Mode

To restrict access to sensitive command functions, the Rackmount Remote Power Manager features two operating modes: system mode and user mode.

- System mode allows access to all configuration menus, switching functions, and status screens. The system mode status screens show on/off conditions for all switched outlets and list all currently defined system parameters.
- User mode allows access to switching and reboot commands but does not allow access to configuration functions. Users may only issue commands to, or view status of, the plugs that are specifically allowed by their password.

The power manager displays a password prompt when the unit is contacted via the network port or the COM/RS-232 port. The password entered at this prompt determines whether the unit will start up in system mode or user mode. If the system password is entered, the system mode will be active. If a plug password is entered, the user mode will be active. The system password is defined via the General Parameters menus (**Section 4.3.1**), and the plug passwords are defined via the Plug Parameters menus (**Section 4.3.2**).

NOTES

- **If you want to restrict access to configuration menus, you must define the system password.**
- **If the system password is not defined, the power manager will always start up in system mode, allowing unprotected access to configuration and switching functions.**
- **If the system password is not defined, the password prompt will not be displayed when you access the power manager via the text interface. The prompt will always be displayed when the power manager is contacted via the Web browser interface.**
- **When the power manager is contacted via the network, the password prompt will also include a field for the user name. If you have not defined a user name, leave this field blank, and only the password is required to gain access to the power manager. The user name prompt is not displayed when the power manager is contacted via the text interface.**

4.2 Communicating with the Rackmount Remote Power Manager

To configure the power manager or invoke command functions, you must first connect to the power manager and access command mode. The power manager offers two separate command interfaces: the Web browser interface and the text interface. The Web browser interface allows you to contact the power manager via a TCP/IP network by using a standard JavaScript® enabled Web browser (such as Internet Explorer or Netscape Navigator®). The text interface consists of a series of ASCII text menus, which you can access via a TCP/IP network, local PC, or modem.

The power manager also offers three different methods for accessing command mode: via a network, via a local PC, or via an external modem.

NOTE

Configuration functions are only available when you have logged into the power manager's command mode using the system password.

4.2.1 ACCESSING THE WEB BROWSER INTERFACE

To use the Web browser interface, the power manager must be connected to a TCP/IP network. Also, your PC must be equipped with a JavaScript enabled Web browser (such as Internet Explorer or Netscape Navigator).

1. Start your JavaScript enabled Web browser.
2. Type the power manager's IP address (default = `http://192.168.168.168`) into the Web browser's address bar, then press **Enter**.
3. The power manager will display a prompt that asks for your name and password.
 - a. User name: If you have not previously defined a user name, then this field should be left blank. A user name is only required when one has been defined via the General Parameters menu.
 - b. Password: Type in your system password or plug password, then click on **OK**.

NOTE

Plug passwords do not permit access to configuration functions.

- c. If the system password has not been defined, simply click on the **OK** button without typing in a name or password.

If a valid password is entered, the Plug Status screen will appear as shown in Figure 4-1. Option buttons include Setup (to access configuration menus), Log Out (to exit the system), Refresh (to refresh the screen), Apply (to save your selections), and Cancel (to start over without saving).

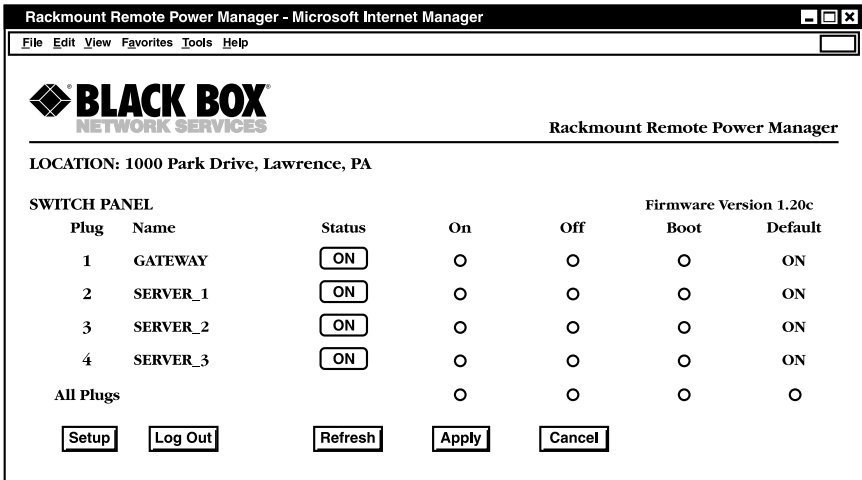


Figure 4-1. Plug Status screen—Web browser interface.

4.2.2 ACCESSING THE TEXT INTERFACE

You can access the text interface via a network, a modem, or a local PC. To access the text interface, your installation must include the following.

- Access via network: The power manager must be connected to your TCP/IP network, and your PC must include a communications program (such as Hyperterminal).
- Access via local PC: Your local PC must include a communications program.
- Access via modem: An external modem must be connected to the power manager's RS-232 COM port, and a phone line must be connected to the external modem. Your PC must include a communications program.

To access command mode via the text interface, proceed as follows:

1. The power manager is transparent to parity and will accept 7- or 8-bit characters, but it will always answer back at 8 bits, no parity. Make sure that your communications program is set for the appropriate baud rate, parity, and communications port.
 - a. Via network: The power manager includes a default IP address (192.168.168.168) that allows you to contact the unit from any network node on the same subnet. When the power manager is installed in a working network environment, we recommend that you redefine the IP address, subnet mask, and gateway address as described in **Section 4.3.4**.

Telnet to the power manager's IP address. For example, if the IP address is 192.168.168.168, then on a UNIX® system, the Telnet command would be:

```
$ telnet 192.168.168.168 [Enter]
```

If the Telnet connection is refused, this may mean that either the IP security feature has denied the connection (see **Section 4.3.4**) or that the power manager is operating on a 100BASE-T network that does not autosense for 10BASE-T devices.

- b. Via local PC: Start your communications program and press **Enter**. Wait for the connect message, then proceed to step 2.
 - c. Via modem: Start your communications program. Dial the external modem connected to the power manager. Wait for the connect message, then proceed to step 2.
2. Password: If the system password has been defined, the power manager will display the password prompt. Type in either the system password or plug password, and press **Enter**. If the system password has not been defined, the prompt will not display when the power manager is accessed via the text interface.

NOTE

The password is case-sensitive.

3. If a valid system password or plug password is entered, the power manager will display the Plug Status screen shown in Figure 4-2, followed by the `RPM>` command prompt.

NOTE

The Plug Status screen will not display actual passwords. Instead, the password column will display “defined” or “undefined.”

```

Rackmount Remote Power Manager          v1.41h Site ID: (undefined)

Plug  |Name          |Password  |Status  |Boot/Seq.Delay |Default  |
-----|-----|-----|-----|-----|-----|
1     |(undefined)  |(undefined)|ON      |0.5 Secs      |ON       |
2     |(undefined)  |(undefined)|ON      |0.5 Secs      |ON       |
3     |(undefined)  |(undefined)|ON      |0.5 Secs      |ON       |
4     |(undefined)  |(undefined)|ON      |0.5 Secs      |ON       |

"/H" for help.
RPM>
    
```

Figure 4-2. Plug Status screen—text interface.

4.3 Configuration Menus

As described in the sections that follow, the power manager’s configuration parameters can be selected via the Web browser interface or via the text interface. Although the Web browser and text interface provide two separate means for selecting parameters, both interfaces allow access to essentially the same set of parameters, and parameters selected via one interface will also apply to the other.

- Web browser interface: Click on the **Setup** button in Figure 4-1 to gain access to the configuration menus. A row of buttons will appear along the left edge of the screen. Click on the appropriate button to access the desired menu.

NOTES

Newly selected parameters will not be activated until you click on the **Apply** button.

Click on **Switch Panel** to return to the main status screen.

- Text interface: Refer to the Help screen (/H), then type in the appropriate command to access the desired menu. When the configuration menu appears, type in the number or letter for the parameter that you want to define and follow the instructions in the resulting submenu.

NOTE

To exit from a parameters menu, press the **Esc** key.

Sections 4.3.1 through 4.3.9 describe options and parameters that can be accessed via each of the configuration menus.

NOTES

Essentially the same selection of parameters and options are available via both the Web browser interface and the text interface.

Configuration menus are only available when the System mode is active. Configuration menus are not available if you have logged in using a plug password.

4.3.1 GENERAL PARAMETERS MENU

The General Parameters menus allow you to select parameters such as the system password, user name, site ID, and other options.

- Web browser interface: Click on the **Setup** button to access the setup menus, then click on the **General Parameters** button. The General Parameters menu will appear (see Figure 4-3). Once you select the appropriate menu options, click on **Apply** to save the settings or **Cancel** to start over.

The screenshot shows a web browser window titled "Setup Parameters - Microsoft Internet Explorer". The browser's address bar and menu bar are visible. The main content area features the "BLACK BOX NETWORK SERVICES" logo on the left and "Remote Power Manager" on the right. Below the logo, the location is listed as "1000 Park Drive, Lawrence, PA".

The interface is divided into two main sections:

- SETUP:** A vertical column of buttons on the left side, including "General Parameters" (which is highlighted), "Plug Parameters", "Serial Parameters", "Network Parameters", "Telnet Parameters", "Web Server Parameters", "Save Parameters", "Switch Panel", and "Log Out".
- GENERAL PARAMETERS:** A list of configuration options on the right side, each with a corresponding input field or dropdown menu:
 - System Password: [Text Input]
 - Confirm System Password: [Text Input]
 - User Name: [Text Input]
 - Site ID: [Text Input]
 - Command Echo: [On ▼]
 - Inactivity Timeout: [2 Mins ▼]
 - Command Confirmation: [On ▼]
 - Automated Mode: [Off ▼]
 - Manual Switch Button: [On ▼]
 - Command Prompt: [IPS ▼]

At the bottom right of the configuration area, there are two buttons: "Apply" and "Cancel".

Figure 4-3. General Parameters menu—Web browser interface.

- Text interface: Type `/G` and press **Enter**. The General Parameters menu will appear (see Figure 4-4).


```
GENERAL PARAMETERS:

1. System Password:      (undefined)
2. User Name:           (undefined)
3. Site ID:             (undefined)
4. Command Echo:       On
5. Inactivity Timeout:  2 Mins
6. Command Confirmation: On
7. Automated Mode:     Off
8. Manual Switch Button: On
9. Command Prompt:     RPM

A. Default Parameters

Enter Selection,
Press <ESC> to Exit...
```

Figure 4-4. General Parameters menu—text interface.

The General Parameters menus allow you to define the following parameters.

- **System password:** The power manager will display a password prompt when you attempt to access command mode. When the system password is entered at logon, the system mode will be active, allowing access to both switching functions and configuration menus. (The system password must be 4 to 16 characters, and the default value is undefined.)

NOTES

- **If the system password is not defined, then the power manager will always start up in system mode, and configuration functions will then be available to anyone who accesses command mode.**
- **The system password cannot begin with a forward slash (/) or backslash (\) character.**
- **The system password cannot include non-printable characters, spaces, asterisks (*), or quotation marks.**
- **User name:** The user name allows you to set up an additional layer of security for Web access to command mode by requiring that users correctly enter both a name and a password.

NOTES

The user name is required only when the power manager is accessed via the Web browser interface. (The user name must be 4 to 16 characters, and the default is undefined.)

If a user name is defined, then users who log in with a plug password (user mode) will also need to enter this same user name at the login prompt when attempting to access command mode via the Web browser interface.

The user name cannot begin with a forward slash (/) or backslash (\) character.

The user name cannot include non-printable characters, spaces, asterisks (*), or quotation marks.

- Site ID: The site ID defines a brief text message that describes the power manager's location. (The site ID must be up to 32 characters, and the default value is undefined.)

NOTES

The site ID message cannot begin with a forward slash (/) or backslash (\) character.

The site ID message cannot include non-printable characters or quotation marks.

- Command echo: When command echo is enabled, ASCII commands sent via the text interface will be echoed back, allowing keystrokes to be displayed. This feature applies only to the text interface and has no visible effect on the Web browser interface. (The default value is on.)
- Inactivity timeout: The inactivity timeout setting determines how long the power manager will wait for additional commands during periods of inactivity. When the timeout period elapses, the user will be disconnected from the power manager's command mode. (The default value is 2 minutes.)
- Command confirmation: When enabled, the power manager will display a confirmation prompt before executing certain commands. When disabled, the prompt will be suppressed and commands will be executed immediately. (The default value is on/enabled.)
- Automated mode: When enabled, the power manager will execute switching, reboot, and exit commands without displaying a confirmation prompt, status screen, or confirmation messages. For more information, please refer to **Section 5.4**. (The default value is 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, we recommend using the IP security feature (see Section 4.3.4) to restrict access.

- Manual switch button: This button enables and configures the default button's manual plug control function, but it does not affect the default button's ability to reset parameters to default values. (The default value is on.)
 - Off: Disables the manual plug control function.
 - On: Enables manual plug control. When the manual switch button is pressed and held for three seconds, all outlets will be toggled on or off.
- Command prompt: Allows the text interface command prompt to be set to either IPS, RPM, or NBB. (The default value is RPM.)
- Default parameters: Resets the power manager to its default settings.

4.3.2 PLUG PARAMETERS MENU

The Plug Parameters menus are used to define plug names, plug passwords, and boot/sequence delay times for each of the power manager's switched AC outlets.

- Web browser interface: Click on the **Setup** button to access the configuration menus, then click on the **Plug Parameters** button. The Plug Parameters menu will appear (Figures 4-5a and 4-5b). Once you select the appropriate menu options, click on **Apply** to save the settings or **Cancel** to start over.

Setup Parameters - Microsoft Internet Explorer

File Edit View Favorites Tools Help

BLACK BOX
NETWORK SERVICES

Rackmount Remote Power Manager

LOCATION: 1000 Park Drive, Lawrence, PA

SETUP

General Parameters
Plug Parameters
 Serial Parameters
 Network Parameters
 Telnet Parameters
 Web Server Parameters

Save Parameters
 Switch Panel
 Log Out

PLUG PARAMETERS:

Plug #1

Name:
 Password:
 Confirm Password:
 Boot/Seq. Delay:
 Power Up Default:

Plug #2

Name:
 Password:
 Confirm Password:
 Boot/Seq. Delay:
 Power Up Default:

Plug #3

Name:
 Password:
 Confirm Password:
 Boot/Seq. Delay:
 Power Up Default:

Figure 4-5a. Plug Parameters menu—Web browser interface.

Setup Parameters - Microsoft Internet Explorer

File Edit View Favorites Tools Help

BLACK BOX
NETWORK SERVICES

Rackmount Remote Power Manager

LOCATION: 1000 Park Drive, Lawrence, PA

SETUP

General Parameters
Plug Parameters
 Serial Parameters
 Network Parameters
 Telnet Parameters
 Web Server Parameters

Save Parameters
 Switch Panel
 Log Out

Plug #2

Name:
 Password:
 Confirm Password:
 Boot/Seq. Delay:
 Power Up Default:

Plug #3

Name:
 Password:
 Confirm Password:
 Boot/Seq. Delay:
 Power Up Default:

Plug #4

Name:
 Password:
 Confirm Password:
 Boot/Seq. Delay:
 Power Up Default:

Apply Cancel

Figure 4-5b. Plug Parameters menu—Web browser interface (continued).

- Text interface: Type /P *n* and then press **Enter** (where *n* is the number or name of the plug you want to configure). The Plug Parameters menu will be displayed as shown in Figure 4-6.

```
PLUG #1 PARAMETERS:

1. Plug Name:                (undefined)
2. Password:                 (undefined)
3. Boot/Seq. Delay:         1 Sec
4. Power Up Default:        On

Enter selection,
Press <ESC> to return to previous menu...
```

Figure 4-6. Plug Parameters—text interface.

NOTE

In this case, there's one major difference between the Web browser interface and the text interface. The Web browser interface allows you to select parameters for all plugs from a single menu, whereas the text interface includes a separate menu for each plug.

The Plug Parameters menu allows you to define the following parameters.

- Plug name: Assigns a name to the plug. (This value can be up to 16 characters, and the default value is undefined.)

NOTES

The plug name cannot begin with a number, dash (-), underscore character (_), forward slash character (/), or backslash character (\).

The plug name cannot include non-printable characters, spaces, asterisks (*), colons (:), the plus symbol (+), or quotation marks.

- Password: Assigns a password to the plug. When this password is entered at login, the user will be able to issue commands to this plug and any other plug that shares the same password as this plug. (The plug password can be 4 to 16 characters, and the default value is undefined.)

NOTES (continued on the next page)

The plug password cannot begin with the forward slash character (/) or the backslash character (\).

NOTES (continued from the previous page)

The plug passwords cannot include non-printable characters, spaces, asterisks (*), 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. (The default value is 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 power manager will automatically switch each plug on or off as specified by the power-up default. (The default value is On.)

Plug Passwords and Co-Location Features

The plug passwords allow you to determine which plugs an individual user will be permitted to control. When a plug password is entered at the login prompt, the user will be able to issue switching and reboot commands for the corresponding plug and every other plug that shares this same password.

For example, if the password “switch” is defined for plugs 1, 2, and 3, then a user who logs into command mode using the password “switch” will only be allowed to issue commands to plugs 1, 2, and 3, but will not be allowed to issue commands to the remaining plugs.

NOTE

Plug passwords do not allow access to configuration menus, and users are only allowed to view the status of plugs permitted by their password.

Boot/Sequence Delay Features

The boot/sequence delay value will be applied differently for reboot cycles than it will be for simple on/off switching as described in #1 and #2 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 power manager will pause before proceeding to the next plug.

2. On/off switching: The boot/seq. delay determines how long the power manager will pause before proceeding to the next plug.

Examples

Assume that a user is only allowed access to plugs one through four, and that the boot sequence delays for each plug have been set as follows: plug 1 = 1 second, plug 2 = 2 seconds, plug 3 = 5 seconds, plug 4 = 1 minute.

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

1. Turn on plug 1, wait 1 second.
2. Turn on plug 2, wait 2 seconds.
3. Turn on plug 3, wait 5 seconds.
4. Turn on plug 4.

If a reboot command is applied to plug 3, the power manager 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 power manager will respond as follows:

1. Turn off all four plugs (short delay between plugs).
2. Wait 1 second, turn on plug 1, wait 1 second.
3. Wait 2 seconds, turn on plug 2, wait 2 seconds.
4. Wait 5 seconds, turn on plug 3, wait 5 seconds.
5. Wait 1 minute, turn on plug 4.

4.3.3 SERIAL PARAMETERS MENUS

The Serial Parameters menus are used to configure the power manager's serial COM port and allow you to select parameters such as the baud rate, parity, and modem initialization string. To access the Serial Parameters menu, proceed as follows.

- Web browser interface: Click on the **Setup** button to access the Setup menus, then click on the **Serial Parameters** button. The Serial Parameters menu appears (Figure 4-7). Once you select the appropriate menu options, click on **Apply** to save the settings or **Cancel** to start over.

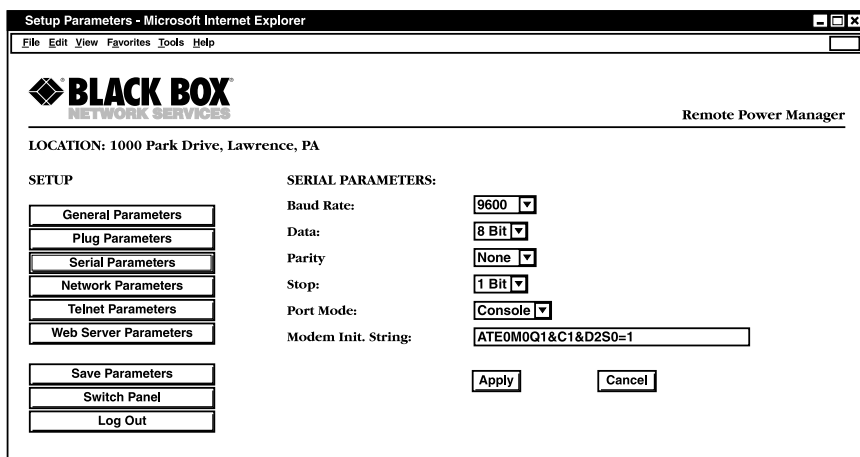


Figure 4-7. Serial Parameters menu—Web browser interface.

- Text Interface: Type `/C` and press **Enter**. The Serial Parameters menu will appear as shown in Figure 4-8.

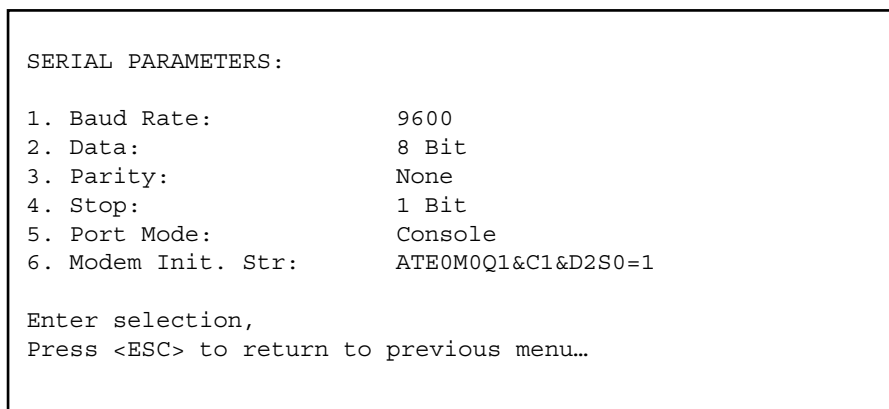


Figure 4-8. Serial Parameters menu—text interface.

As shown in Figures 4-7 and 4-8, the Serial Parameters menus allow you to define the following parameters.

- **Baud rate:** This is the baud rate for the power manager's COM port. (The default value is 9600 bps.)

NOTE

When this setting is changed, the new baud rate will not be applied until the user exits and then re-enters command mode.

- **Data:** This is the data bits setting for the power manager's COM port. (The default value is 8 bits.)
- **Parity:** This is the parity setting for the power manager's COM port. (The default value is none.)
- **Stop:** This is the stop bits setting for the power manager's COM port. (The default value is 1 bit.)
- **Port mode:** This sets up the serial COM/RS-232 port for use with either a local PC or an external modem.

NOTE

When the port mode is set to modem, the modem initialization string will be sent every 15 minutes. (The default value is console.)

- **Modem initialization string:** This defines a command string (up to 32 characters long) that can be sent out the serial COM port to initialize an external modem. If the port mode is set to console, the modem initialization string will not be sent. For more information on initialization commands, refer to your modem's user's guide. (The default value is ATE0M0Q1&C1&D2S0=1.)

NOTES

The modem initialization string cannot begin with a forward slash (/) or backslash (\) character.

The modem initialization string cannot include non-printable characters or quotation marks.

4.3.4 NETWORK PARAMETERS MENUS

The Network Parameters menus are used to select the IP address and other network parameters.

- Web browser interface: Click on the **Setup** button to access the Setup menus, then click on the **Network Parameters** button. The Network Parameters menu appears (Figure 4-9). Once you select the appropriate menu options, click on **Apply** to save the settings or **Cancel** to start over.

The screenshot shows a web browser window titled "Setup Parameters - Microsoft Internet Explorer". The page header includes the "BLACK BOX NETWORK SERVICES" logo and "Remote Power Manager". Below the header, the location is listed as "1000 Park Drive, Lawrence, PA".

The main content is divided into two sections: "SETUP" and "NETWORK PARAMETERS".

SETUP section contains a vertical list of buttons: General Parameters, Plug Parameters, Serial Parameters, Network Parameters (highlighted), Telnet Parameters, Web Server Parameters, Save Parameters, Switch Panel, and Log Out.

NETWORK PARAMETERS section contains the following fields:

- IP Address: 207.212.30.88
- Subnet Mask: 255.255.255.0
- Gateway Address: 207.212.30.1
- Send MSS: 536
- Security #1: Mask: [empty], Action: Permit
- Security #2: Mask: [empty], Action: Permit
- Security #3: Mask: [empty], Action: Permit
- Security #4: Mask: [empty], Action: Permit
- Security #5: Mask: [empty], Action: Permit

At the bottom of the form are "Apply" and "Cancel" buttons.

Figure 4-9. Network Parameters menu—Web browser interface.

- Text interface: Type /N and press **Enter**. The Network Parameters menu will appear (see Figure 4-10).

```
NETWORK PARAMETERS :  
  
1. IP Address:           207.212.30.88  
2. Subnet Mask:         255.255.255.0  
3. Gateway Address:    207.212.30.1  
4. Send MSS:           536  
5. IP Security:  
  
MAC Address:           00-09-9b-00-90-e0  
  
Enter Selection,  
Press <ESC> to Exit...
```

Figure 4-10. Network Parameters menu—text interface.

NOTES

Although both interfaces allow configuration of the same network parameters, for the text interface, the IP security feature is configured via a separate submenu.

Settings for network parameters depend on the configuration of your individual network. Contact your network administrator for appropriate settings.

The Network Parameters menus allow the following parameters to be defined. Except where noted, all parameters listed here are available via both the Web browser interface and text interface.

- **IP Address:** Defines the IP address for the power manager. (The default value is 192.168.168.168.)
- **Subnet Mask:** Defines the subnet mask for the power manager. (The default value is 255.255.255.0.)
- **Gateway Address:** Defines the gateway address for the power manager. (The default value is undefined.)
- **Send MSS:** Defines the maximum segment size that will be sent by the power manager. (The default value is 536.)
- **IP Security:** Sets up the IP security feature. The IP Security feature is described below.

- MAC Address (for Text interface only): Displays the power manager's MAC address.

NOTE

This item merely displays the assigned MAC address and cannot be used to redefine the address.

The MAC address is not displayed in the Web browser interface.

IP Security Feature

The IP Security feature can be used to restrict unauthorized IP addresses from establishing a connection with the power manager. In the default state, the power manager accepts incoming IP connections from all hosts. To configure the IP security feature, proceed as follows.

1. Access the IP Security Menu.
 - a) Web browser interface: The IP Security feature is configured using the fields at the bottom of the Network Parameters menu as shown in Figure 4-9.
 - b) Text interface: Go to the Network Parameters menu (/N), type 5, then press **Enter**. The IP Security menu will appear (see Figure 4-11).

IP SECURITY:

- | | |
|----------------------|-------------|
| 1. Security Mask 1: | (undefined) |
| 2. Mask #1 Action: | Permit |
| 3. Security Mask 2: | (undefined) |
| 4. Mask #2 Action: | Permit |
| 5. Security Mask 3: | (undefined) |
| 6. Mask #3 Action: | Permit |
| 7. Security Mask 4: | (undefined) |
| 8. Mask #4 Action: | Permit |
| 9. Security Mask #5: | (undefined) |
| 10. Mask #5 Action: | Permit |

Enter selection,
Press <ESC> to return to previous menu...

Figure 4-11. IP Security menu—text interface.

2. The IP Security menu lists five IP security “masks” along with the selected permit/deny action for each mask.
 - a) Each security mask prompt defines a specific IP address or range of addresses. Each mask action prompt defines the permit/deny action for the corresponding mask.
 - b) Masks are listed in order of ascending priority: mask 1 has the lowest priority, and mask 5 has the highest priority.
 - c) Masks have a cumulative effect; high-priority masks supersede the effect of lower-priority masks.
 - d) Each IP address consists of a series of four eight-bit numbers. The number 255 is used as a wild card.

Example 1: Deny access to all hosts except 192.1.1.5.

Security Mask #1: 255.255.255.255 Mask #1 Action: Deny

Security Mask #2: 192.1.1.5 Mask #2 Action: Permit

Since 255 is a wild card, mask #1 blocks all IP addresses. Mask #2 then specifically grants access to 192.1.1.5 only.

Example 2: Allow access only for addresses that begin with 192.

Security Mask #1: 255.255.255.255 Mask #1 Action: Deny

Security Mask #2: 192.255.255.255 Mask #2 Action: Permit

Since 255 is a wild card, mask 1 blocks all IP addresses. Mask 2 then grants access to all addresses that begin with 192.

Example 3: Allow access only for addresses that begin with 192, deny access to 192.1.1.5.

Security Mask #1: 255.255.255.255 Mask #1 Action: Deny

Security Mask #2: 192.255.255.255 Mask #2 Action: Permit

Security Mask #3: 192.1.1.5 Mask #3 Action: Deny

Since 255 is a wild card, mask 1 blocks all IP addresses. Mask 2 then grants access to all addresses that begin with 192. Finally, mask 3 specifically blocks access for 192.1.1.5.

NOTE

Mask #5 has priority over the other four masks. If mask #5 is set to deny access to 255.255.255.255 (all wild cards), you will not be able to access the Rackmount Remote Power Manager's command mode via the network. Access will be allowed only via a local PC or an external modem connected to the power manager's COM port.

When using the wild card address 255.255.255.255, make certain that at least one higher priority mask permits access by your IP address.

4.3.5 TELNET PARAMETERS MENUS

The Telnet Parameters menus are used to enable/disable Telnet access to the power manager's command mode and select the TCP port for Telnet connections.

- Web browser interface: Click on the **Setup** button to access the configuration menus, then click on the **Telnet Parameters** button to display the menu shown in Figure 4-12. Once you select the appropriate menu options, click on **Apply** to save the settings or **Cancel** to start over.

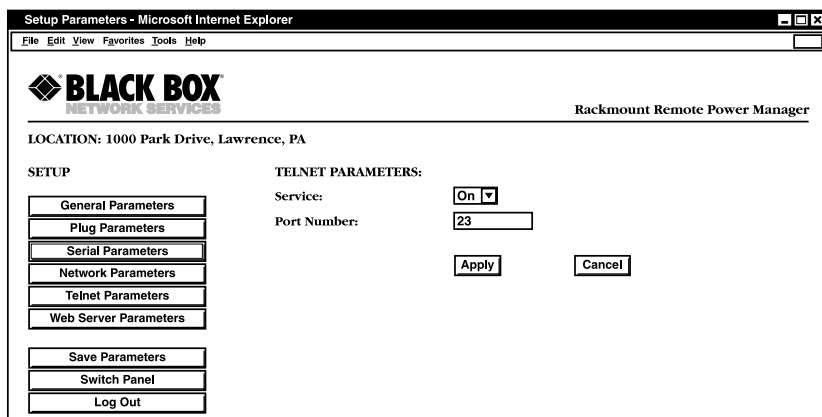


Figure 4-12. Telnet Parameters menu—Web browser interface.

- Text interface: Type /T and press **Enter**. The Telnet Parameters menu will appear (Figure 4-13).

TELNET PARAMETERS:

- | | |
|-------------------|----|
| 1. Service: | On |
| 2. Telnet Port #: | 23 |

Enter Selection,
Press <ESC> to Exit...

Figure 4-13. Telnet Parameters menu—text interface.

NOTE

All parameters listed here are available for both the Web browser interface and the text interface.

The Telnet Parameters menus allow the following parameters to be defined:

- **Service:** Enables/disables the Telnet communication with the power manager. When this item is off, users will not be able to contact the power manager via Telnet. (The default value is on.)
- **Port Number:** Selects the TCP/IP port number that will be used for Telnet connections. (The default value is 23.)

4.3.6 WEB SERVER PARAMETERS MENU

The Web Server Parameters menus are used to configure the internal Web server; it allows the power manager to be operated via the Web browser interface.

- **Web browser interface:** Click on the **Setup** button to access the configuration menus, and then click on the **Web Server Parameters** button. The Web Server Parameters menu will appear (Figure 4-14). Once you select the appropriate menu options, click on **Apply** to save the settings or **Cancel** to start over.

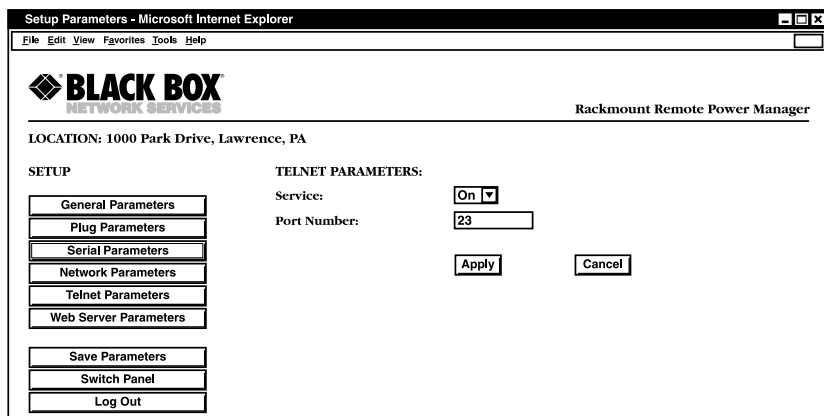


Figure 4-14. Web Server Parameters menu—Web browser interface.

- Text Interface: Type /W and press **Enter**. The Web Server Parameters menu will appear (Figure 4-15).

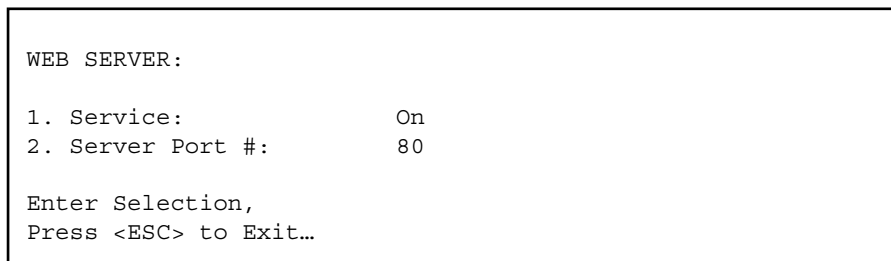


Figure 4-15. Web Server Parameters menu—text interface.

The Web Server Parameters menu allows you to define the following:

- Service: Enables/disables the Rackmount Remote Power Manager's Web server.

NOTE

When the Web server is disabled, you will not be able to communicate via the Web browser interface. (The default value is On.)

- Port Number: Sets the TCP/IP port number. The port number can be set to any valid number except 23; this is because 23 is the default port number that is used for communication with the power manager via Telnet. (The default value is 80.)

4.3.7 SAVE PARAMETERS BUTTON

Click on this button to save parameters and return to the Plug Status screen (Figure 4-1 or Figure 4-2).

4.3.8 SWITCH PANEL BUTTON

Click on this button to return to the Plug Status screen (Figure 4-1 or Figure 4-2) without saving.

4.3.9 LOG OUT BUTTON

Click on this button to log out of the system.

4.4 Saving Configuration Parameters

The Rackmount Remote Power Manager offers two methods for saving parameters: saving to memory and saving to an ASCII file.

Saving parameters to memory ensures that your user-defined configuration will remain intact if power to the power manager is temporarily interrupted. After the configuration menus have been used to change parameters, the power manager will prompt you to save parameters before exiting from command mode. At this point, the power manager offers the options to save parameters, continue without saving, or revert to the previously saved parameters.

Saving parameters to an ASCII file allows you to create a backup of your currently defined configuration. As described in **Chapter 6**, this provides quick recovery if the power manager is accidentally reset to default parameters, and also allows you to copy parameters to other power managers when several units need to be configured with the same parameters.

NOTES

After new parameters have been applied, the power manager will display a Save prompt. In the Web browser interface, this prompt appears when you leave the configurations menus. In the text interface, the Save prompt appears when you disconnect from the power manager. At this point, you have the option of saving new parameters to memory, continuing without saving, or reverting to previously saved parameters.

If parameters have not been saved, and if power to the power manager is interrupted, newly defined parameters will be lost. When power is restored, the power manager will then be configured with the previously saved parameters.

5. Operation

As discussed in **Chapter 4**, the Rackmount Remote Power Manager offers two separate command interfaces: the Web browser interface and the text interface. Both interfaces offer essentially the same command options and features, and parameters defined via the Web interface will also apply when communicating via the text interface (and vice versa).

5.1 Operation via the Web Browser Interface

When using the Web browser interface, all switching commands are invoked via the Plug Status screen, which also displays the status of the power manager's switched outlets.

5.1.1 THE PLUG STATUS SCREEN

When you log into the power manager's command mode using a standard JavaScript® enabled Web browser interface, the first screen that appears is the Plug Status screen (or Switch Panel). The Plug Status screen (Figure 5-1) lists the current on/off status of the power manager's switched outlets and provides a series of buttons that are used to control on/off/boot switching of the outlets.

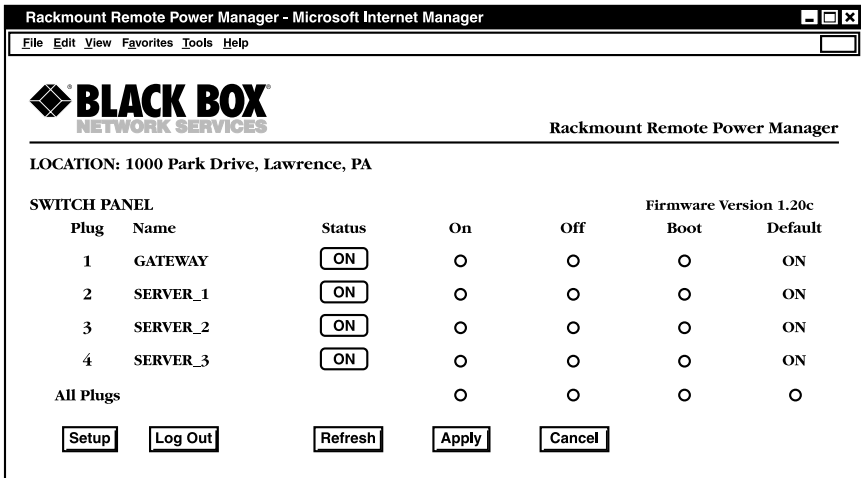


Figure 5-1. Plug Status screen—Web browser interface.

5.1.2 INVOKING COMMANDS

To invoke on/off/boot commands or view plug status via the Web browser interface, proceed as follows.

1. Access the power manager's command mode as described in **Section 4.2.1**.
2. When the Plug Status screen (Figure 5-1) appears, note that the screen includes a status field and on/off/boot controls for each of the power manager's switched AC outlets.

NOTES

When boot/on/off operations are initiated, boot/sequence delay times will be applied as described in Section 4.3.2.

Users who log into command mode using a plug password will only be allowed to issue commands to the plugs allowed by that password.

3. Switching plugs on: To switch one or more plugs on, click the **On** button next to the desired plug(s), then click on **Apply**.
 - a. To switch all plugs on, click the **On** button in the All Plugs row, then click on **Apply**.
 - b. The power manager will display a screen indicating that the operation is in progress and then return to the Plug Status screen (which should now show that selected plugs are on).
4. Switching plugs off: To switch one or more plugs off, click the **Off** button next to the desired plug(s), then click on **Apply**.
 - a. To switch all plugs off, click the **Off** button in the All Plugs row, then click on **Apply**.
 - b. The power manager will display a screen indicating that the operation is in progress and then return to the Plug Status screen (which should now show that selected plugs are off).
5. Reboot cycles: To initiate a reboot cycle, click on the **Boot** button next to the desired plug(s), then click on the **Apply** button.
 - a. To reboot all plugs, click on the **Boot** button in the All Plugs row, then click on the **Apply** button.
 - b. The power manager will display a screen that indicates the reboot cycle is in progress and then return to the Plug Status screen (which should now show that selected plugs are on).

6. Set plugs to default on/off values: To set all outlets to their user-defined on/off status, click on the **Default** button in the All Plugs row and then click on the **Apply** button. For this feature to function properly, the default on/off values for each outlet must first be defined.

5.2 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 that summarizes all available power manager commands. To display the text interface Help menu (Figure 5-2), type /H and press **Enter**.

```
Rackmount Remote Power Manager v1.41h Site ID: (undefined)

Display                                Configuration
/H Display Help Screen                 /G View/Set General Parameters
/S Display Plug Status                 /F [n] View/Set Plug Parameters
/SH Display Network Status             /C View/Set Serial Parameters
                                        /N View/Set Network Parameters
Control                                 /T View/Set Telnet Parameters
/D Set Plugs to Default                /W View/Set Web Server
/Boot <n> Boot Plug n                  /E Save Parameters
/On <n>                                 /R Recall Parameters
/Off <n>                                /DL Download Parameters to File
/X Exit/Disconnect

+-----+ Utilities
|[n]=optional plug name or number| /I Reset Network Interface
|<n>=required plug name or number| /U Upgrade Firmware
|n+n or n n=plug n and plug n    |
|n:n=plug n through plug n      |
|*=all plugs                      |
|,y=bypass "Sure [y/n]"         |
+-----+

RPM>
```

Figure 5-2. Help menu—text interface.

5.2.1 THE PLUG STATUS SCREEN

When you log into the power manager's command mode using the text interface, the first screen displayed after login is the Plug Status screen. This screen (Figure 5-3) lists the current status of the power manager's switched AC outlets and displays the firmware version and currently defined site ID message.

```
Rackmount Remote Power Manager          v1.41h Site ID: (undefined)

Plug  |Name          |Password  |Status  |Boot/Seq.Delay |Default  |
-----|-----|-----|-----|-----|-----|
1     |(undefined)  |(undefined)|ON      |0.5 Secs      |ON       |
2     |(undefined)  |(undefined)|ON      |0.5 Secs      |ON       |
3     |(undefined)  |(undefined)|ON      |0.5 Secs      |ON       |
4     |(undefined)  |(undefined)|ON      |0.5 Secs      |ON       |

"/H" for help.
RPM>
```

Figure 5-3. Plug Status screen—text interface.

Normally, the Plug Status screen will also be redisplayed each time a command is successfully executed.

NOTE

If desired, the automated mode (see Section 5.4) can be enabled to suppress the display of the Plug Status screen after each command.

5.2.2 SWITCHING AND REBOOT COMMANDS

These commands can boot or toggle the power manager's switched plugs. Plugs may be specified by name or number.

NOTES

Wait for the RPM> 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.

Users who log into command mode using a plug password will only be allowed to issue commands to the plugs allowed by that password.

If command confirmation is enabled, the power manager will display the status screen after the commands are successfully completed.

NOTES (continued)

When switching and reboot operations are initiated, boot/sequence delay times will be applied as described in Section 4.3.2.

To switch plugs, or to initiate a boot cycle, proceed as follows:

1. Switch plug(s) on: To power on a plug, type `/ON n` and press **Enter** (where *n* is the number or name of the desired plug).

For example:

```
/ON 1 or /ON ROUTER
```

2. Switch plug(s) off: To power off a plug, type `/OFF n` and press **Enter** (where *n* is the number or name of the desired plug).

NOTE

The `/OFF` command can also be entered as `/OF`. For example:

```
/OFF 2 or /OF ROUTER
```

3. Boot plug(s): To initiate a boot cycle, type `/BOOT n` and press **Enter** (where *n* is the number or name of the desired plug).

NOTE

The `/BOOT` command can also be entered as `/BO`. For example:

```
/BOOT 1 or /BO ATMSWCH
```

4. Set plugs to power up defaults: Type `/D` and press **Enter**. Plugs will be set to their default on/off status, which is defined using the Plug Parameters menu (see Section 4.3.2).

NOTES

When you have accessed command mode using the system password, the Default command will be applied to all plugs.

When you have accessed command mode using a plug (user) password, the Default command will only be applied to the plugs permitted by the password.

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 2, Y
```

5.2.3 APPLYING COMMANDS TO SEVERAL PLUGS

As described below, boot/on/off 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 4.3.2.

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, type the following and press **Enter**.

```
/OFF 1+3+4
```

2. Series of plugs: To apply a command to a series of power manager plugs, type the number for the plugs that mark the beginning and end of the series, separated by a colon. For example, to switch plugs 1 through 3 on, type the following and press **Enter**.

```
/ON 1 : 3
```

3. All plugs: To apply a command to all plugs, type an asterisk in place of the name or number. For example, to boot all plugs, type the following and press **Enter**.

```
/BO *
```

5.3 Logging Out of Command Mode

When you have finished communicating with the power manager, it is important to always disconnect using either the **Log Out** button (Web browser interface) or /X command (text interface) rather than simply closing your browser window or communications program.

Disconnecting using the Log Out button or /X command ensures that the power manager has completely exited from command mode and is not waiting for the inactivity timeout period to elapse before allowing additional connections.

5.4 Automated Mode

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

When automated mode is enabled, the /ON, /OFF, /BOOT, /D, and /X commands are executed without a **Sure?** confirmation prompt and without command response messages; the only reply to these commands is the RPM> prompt that appears when the command is complete.

NOTES

Although automated mode can be enabled using either the Web browser interface or text interface, automated mode is designed primarily for users who want to send ASCII commands to the power manager without operator intervention; therefore, it 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.

When automated mode is enabled, all power manager 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 power manager configuration menus, we recommend that you enable and configure the IP Security feature as described in Section 4.3.4.

To enable/disable automated mode, access the General Parameters menu (see **Section 4.3.1**), then set the automated mode option to On. When automated mode is enabled, power manager 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 COM/RS-232 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. (When password security is suppressed, you do not have to enter a password.)
2. Status screen suppressed: The status screens will not be automatically displayed after commands are successfully executed. However, 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 power manager will not respond with the Invalid Command message. However, 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.

5.5 Manual Operation

In addition to the command-driven functions available via the Web browser interface and text interface, the power manager's switched plugs can also be toggled on and off manually. To manually toggle all plugs on or off, press the Default button and hold it down for approximately three seconds.

If desired, the Default button's manual plug control ability can also be disabled via the General Parameters menu as described in **Section 4.3.1**.

6. Saving and Restoring Configuration Parameters

After the power manager has been properly configured, parameters can be downloaded and saved as an ASCII text file on your local or remote PC. Later, if the configuration is accidentally altered, the file with the saved parameters can be uploaded to automatically reconfigure the power manager without the need to manually assign each parameter.

Saved parameters can also be uploaded to other power managers. This allows rapid setup when several units will be configured with the same parameters.

The save parameters procedure can be performed from any terminal emulation program (for example, ProComm®, Crosstalk®, Hyperterminal, etc.) that allows downloading of ASCII files.

NOTES

Although the saving and restoring configuration function is only available via the text interface, parameters that are defined via the Web browser interface will also be sent to the ASCII file.

The current on/off status of each power manager plug will not be saved or restored.

6.1 Sending Parameters to a File

1. Start your communications program and access the power manager's command mode using the system level password.
2. When the power manager command prompt appears, type /DL and press **Enter**. The power manager will prompt you to prepare your communications program. Set up your communications program to receive an ASCII download, and specify a name for the file that will receive the saved parameters (for example, RPM.PAR).
3. When the communications program is ready to receive the file, return to the power manager's command mode, and press **Enter** to proceed.
4. The power manager will send a series of ASCII command lines that specify the currently selected power manager parameters.

6.2 Restoring Saved Parameters

This section describes the procedure for using your communications program to send saved parameters to the power manager.

NOTE

Parameters saved to an ASCII file can only be restored via the text interface. This procedure cannot be performed via the Web browser interface.

1. Start your communications program and access the power manager's command mode via the text interface as described in **Section 4.2.2**.
2. If the password prompt is displayed, type in your system level password and press **Enter**.
3. Configure your communications program to upload an ASCII text file.
4. Upload the file with the saved parameters. If necessary, type in the file name and directory path.
5. When the upload is complete, make sure you terminate the communications program's upload mode.

NOTE

When the configuration file is sent to the power manager via Telnet, the unit's IP address, subnet mask, and gateway address will not be changed until after you exit from command mode.

At this point, saved parameters should have been restored to the power manager. Check the Plug Status screen, General Parameters menu, Plug Parameters menu, and Network Parameters menu to make certain that saved parameters have been accurately restored.

6.3 Uploading Saved Parameters to Other Power Managers

NOTE

To upload saved parameters to other power managers, follow the procedures listed in Section 6.2.

7. Upgrading the Power Manager's Firmware

When new, improved versions of the power manager's firmware become available, the upgrade firmware function can be used to update the power manager. Updates can be installed via the console port or the network port.

NOTES

The upgrade procedure can only be performed via the text interface.

All other network ports will be disabled during the firmware upgrade procedure.

When the upgrade procedure is complete, all parameters will be set to their default states. Therefore, we recommend that you save the power manager's configuration parameters to an ASCII file (as described in Chapter 6) before beginning this upgrade procedure.

1. Download the update file onto your local or remote PC. Firmware modifications can be downloaded from the Black Box Web site (www.blackbox.com).
2. Access the power manager's command mode via the text interface. When the password prompt is displayed, type in the system level password.
3. When the command prompt appears, type `/U` and press **Enter**. The power manager will display a screen that offers the following options:
 1. Upgrade Sector 0
 2. Upgrade Sectors 1–4
 3. Upgrade Sectors 5–7
 4. Abort Upgrade

NOTE

Instructions regarding the proper sector option will be supplied when upgrades become available.

Select the sector option indicated for the upgrade and press **Enter**, or type 4 and press **Enter** to abort the upgrade procedure.

4. Set your communication program for ASCII mode, then use the program's Send File function to transfer the upgrade file to the power manager. Select ASCII format, then specify the filename and directory location where the firmware upgrade file resides.
5. If the upload is successful, the power manager will load the upgrade firmware into memory and then reboot itself.

NOTE

If you are performing the upgrade procedure via the network port, the power manager will break the network connection when the system is reinitialized. However, the power manager will retain the current settings for the IP address, the Telnet port number, the Web server port number, and the console port mode and baud rate.

6. Incomplete upload: If the upload is interrupted, times-out, or if the update file becomes corrupted during transfer, the power manager will display a screen that asks for confirmation before proceeding. To proceed, type 1 and press **Enter**, then return to step 4 (above) to retry the upload, or press **Esc** to reboot the power manager.
7. Recovery mode: In the rare event that the power manager's operating system becomes corrupted during installation, front panel indicators will blink, and the power manager will automatically switch to recovery mode. If the power manager switches to recovery mode, first access the power manager's command mode to reset the console port to 9600 bps, 8 data bits, no parity, one stop bit, and then return to step 3 (previous page) and repeat the upload procedure.

Appendix: Troubleshooting

A.1 Calling Black Box

If you determine that your Rackmount Remote Power Manager is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box at 724-746-5500.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

A.2 Shipping and Packaging

If you need to transport or ship your Rackmount Remote Power Manager:

- Package it carefully. We recommend that you use the original container.
- If you are shipping the Rackmount Remote Power Manager for repair, make sure you include everything that came in the original package. Before you ship, contact Black Box to get a Return Authorization (RA) number.