

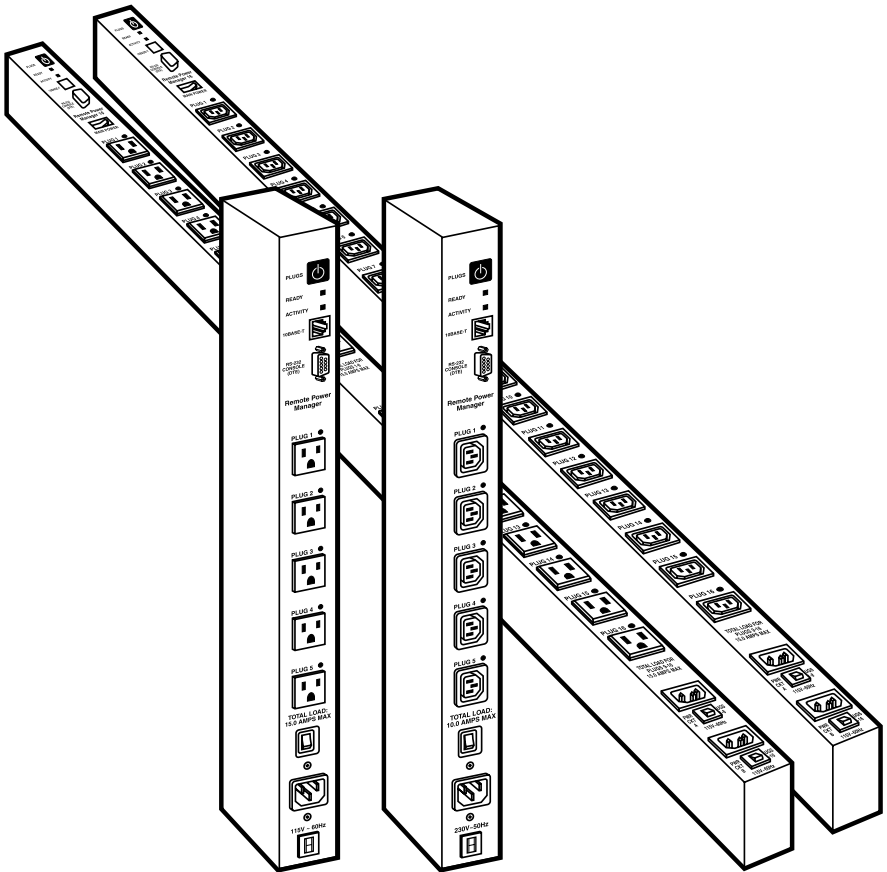


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1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax 724-746-0746



Remote Power Manager Remote Power Manager 16



**CUSTOMER
SUPPORT
INFORMATION**

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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
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**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.

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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.

Disconnect the Power Supply Cable(s)

The PS565A and PS565AE include one power supply cable. The PS567A and PS584A include two separate power circuits with a power supply cable for each circuit. Before attempting to service or remove this unit, make certain that the power cable (for PS565A or PS565AE) or both power cables (for PS567A or PS584A) are disconnected.

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1. Specifications

Coding: Serial ASCII, 8 bits, no parity

User Controls: PS565A, PS565AE: (1) Manual switch button, (1) master power switch, (1) circuit breaker;

PS567A, PS584A: (1) Manual switch button, (1) master power switch, (2) circuit breakers

Connectors: PS565A: (1) DB9 COM/RS-232 male, (1) RJ-45, (5) 3-prong 115-VAC NEMA 5-15R outlets, (1) IEC-320 power inlet;

PS565AE: (1) DB9 COM/RS-232 male, (1) RJ-45, (5) 230-VAC IEC 320-C13 outlets, (1) IEC-320 power inlet;

PS567A: (1) DB9 COM/RS-232 male, (1) RJ-45, (16) 3-prong 115-VAC NEMA 5-15R outlets, (2) IEC-320 power inlets;

PS584A: (1) DB9 COM/RS-232 male, (1) RJ-45, (16) 230-VAC IEC 320-C13 outlets, (1) IEC-320 power inlet

Indicators: (2) LEDs: (1) Ready, (1) Activity

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

Relative Humidity: Up to 90%

Power: PS565A: Input: 115 VAC, 60 Hz, 15 amps maximum;

Output: 15 amps maximum via (5) NEMA 5-15R outlets;

PS565AE: Input: 105 to 240 VAC, 50/60 Hz, 10 amps maximum;

Output: 10 amps maximum via (5) IEC 320-C13 outlets;

PS567A: Circuit A: Input: 115 VAC, 60 Hz, 15 amps maximum;

Output: 15 amps maximum via (8) NEMA 5-15R outlets numbered 1–8;

Circuit B: Input: 115 VAC, 60 Hz, 15 amps maximum;

Output: 15 amps maximum via (8) NEMA 5-15R outlets numbered 9–16;

PS584A: Input: 105 to 240 VAC, 50/60 Hz, 10 amps maximum;

Output: 10 amps maximum via (8) IEC 320-C13 outlets

Size: 21.3"H x 1.8"W x 3"D (54.1 x 4.6 x 7.6 cm)

Weight: 6 lb. (2.7 kg)

2. Quick Start Guide

To take full advantage of the complete range of features that the Remote Power Manager offers, we recommend that you read **Chapters 4 and 5** after performing this quick start procedure.

2.1 Hardware Installation

1. Connect the power cable(s) (included) to the Remote Power Manager's power inlet(s). Connect the other end of the cable(s) to an appropriate power outlet. Place the master power switch in the "On" position. After a brief pause, the plug indicators should switch on in sequence, indicating that power is on.

CAUTION

Review the safety precautions listed on page 5 and in Section 4.1.

NOTE

For the PS567A or PS584A, if you will only be using plugs 1 through 8, then you only need to connect Circuit A to your power supply. Likewise, if you will only be using plugs 9 through 16, you only need to connect Circuit B to your power supply.

2. Make sure the Ready indicator is blinking. This means the Remote Power Manager is operating properly and is ready to receive commands.
3. To initiate switching operations or select configuration parameters, you must issue commands to the Remote Power Manager via either the network port or the COM/RS-232 port. It's optional to connect to both the network port and the COM/RS-232 port.
 - a) Network Port: To communicate with the Remote Power Manager via the network, connect your 10BASE-T or 100BASE-T network interface to the Remote Power Manager's network port. For more information on network port connections, please refer to **Section 4.4**.
 - b) COM/RS-232 Port: To communicate with the Remote Power Manager via a local PC, use the supplied null-modem cable to connect your PC COM port to the Remote Power Manager's COM/RS-232 port. For more information, please refer to **Section 4.3**.

Or, connect an external modem to the COM/RS-232 port (see below).

External modem: Use a standard AT[®] to modem cable to connect an external modem to the Remote Power Manager's COM/RS-232 port.

4. Press the manual switch button and hold it down for approximately three seconds; the Remote Power Manager's five or sixteen switched AC outlets should be switched off or on.

NOTE

You can completely disable the manual switch button as described in Section 5.3.1.

2.2 Communicating with the Remote Power Manager

The Remote Power Manager offers two different user interfaces: a Web-browser interface and a text interface. The Web-browser interface allows you to contact the Remote Power Manager via a TCP/IP network using a standard JavaScript[®] enabled Web browser (such as Internet Explorer). The text interface consists of a series of ASCII text menus, accessible via a TCP/IP network, local PC, or external modem.

NOTES

The Remote Power Manager features a default IP address (192.168.168.168) and subnet mask (255.255.255.0). If you are contacting the Remote Power Manager from a node on the same subnet, this allows initial network access to the operating mode without first setting up the unit's network parameters. When attempting to access the Remote Power Manager from a node that is not on the same subnet, please refer to Section 5.3.4 for further instructions.

1. Access the operating mode: This procedure differs slightly, depending on whether you're contacting the Remote Power Manager via the Web-browser interface or the text interface.
 - a) From the Web-browser interface, start your JavaScript enabled Web browser. Enter the Remote Power Manager's default IP address (`http://192.168.168.168`) in your browser's address bar, then press **[Enter]**. A password prompt will be displayed. Since at this point the user name and password have not yet been defined, simply click on **OK** without typing in a user name or password. The Remote Power Manager's Plug Status screen appears as shown in Figures 2-1 or 2-2.

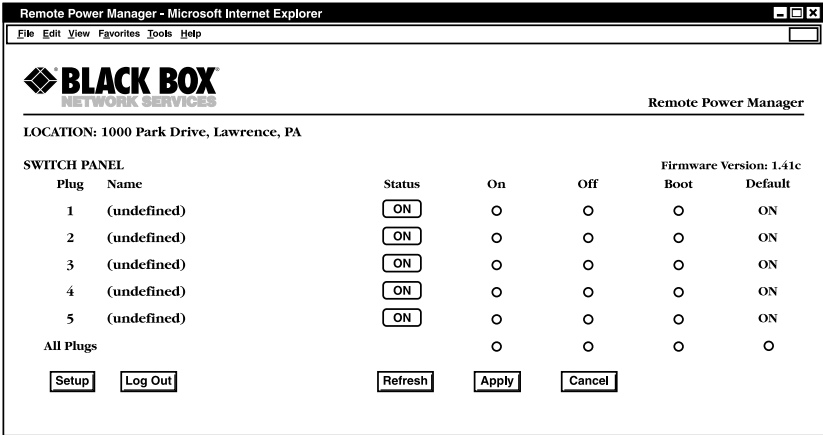


Figure 2-1. Plug Status screen—Web-browser interface for PS565A and PS565AE.

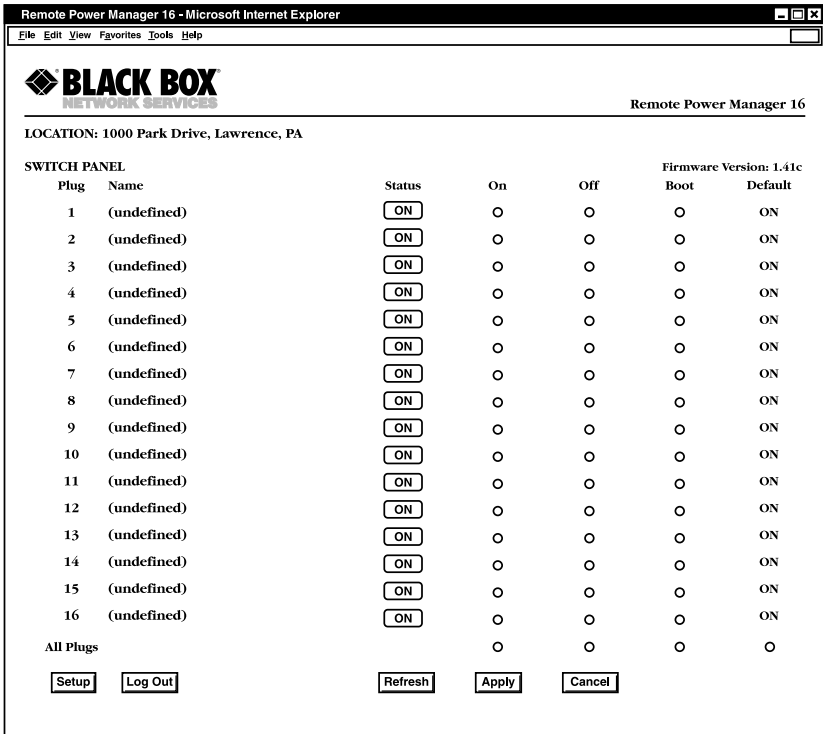


Figure 2-2. Plug Status screen—Web-browser interface for PS567A and PS584A.

b) From the text interface:

- i. Via Telnet: Start your Telnet program, then Telnet to the Remote Power Manager's default IP address (192.168.168.168). The Remote Power Manager's Plug Status screen (Figure 2-3 or 2-4) appears.
- ii. Via Local PC: Start your communications program (for example, HyperTerminal) and press [Enter]. The Remote Power Manager's Plug Status screen appears (Figure 2-3 or 2-4).
- iii. Via modem: Use your communications program to dial the number for the phone line that is connected to your external modem. To communicate with the unit via modem, you must first access the command mode via network or local PC, and use the Serial Parameters menu to set the port modem to modem.

NOTE

The default communications parameters for the console port are 9600 bps, no parity, 8 data bits, and 1 stop bit.

```
Remote Power Manager v1.41 Site ID: Black Box - Lawrence, PA
Plug | Name           | Password   | Status | Boot/Seq. | Default
      |                |            |        |            | Delay
-----|-----|-----|-----|-----|-----
1    | Server_1       | (undefined)| ON    | 0.5 Secs  | ON
2    | Server_2       | (undefined)| ON    | 1 min     | OFF
3    | Router         | (undefined)| ON    | 0.5 Secs  | ON
4    | Ethernet_Switch | (undefined)| ON    | 0.5 Secs  | ON
5    | DSU/CSU        | (defined)  | ON    | 0.5 Secs  | OFF

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

Figure 2-3. Plug Status screen—text interface for PS565A and PS565AE.

```

Remote Power Manager v1.41c Site ID: Black Box – Lawrence, PA
Plug | Name | Password | Status | Boot/Seq. | Default
      |      |          |        | Delay      |
-----|-----|-----|-----|-----|-----
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 |
5 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
6 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
7 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
8 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
9 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
10 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
11 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
12 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
13 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
14 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
15 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
16 | (undefined) | (undefined) | ON | 0.5 Secs | ON |

"/H" for help.
RPM>

```

Figure 2-4. Plug Status screen—text interface for PS567A and PS584A.

2. Perform the following tests to make sure that the Remote Power Manager is responding to commands.
 - a) Reboot outlet: If you are communicating with the Remote Power Manager via the Web-browser interface, select the button in the “Boot” column for plug 1, then click **Apply**. If you are operating the Remote Power Manager via the text interface, type `/BOOT 1` and press **[Enter]**. The status indicator for plug 1 should go off, pause for a moment, and then go back on (indicating that the boot cycle has been successfully completed).
 - b) Switch outlet off: From the Web-browser interface, select the button in the “Off” column for plug 1, then click **Apply**. From the text interface, type `/OFF 1` and press **[Enter]**. The status indicator for plug 1 should go off, indicating that the command has been successfully completed. Leave plug 1 in the “Off” state, then proceed to the next step.
 - c) Switch outlet on: From the Web-browser interface, select the button in the “On” column for plug 1, then click **Apply**. From the text interface, type `/ON 1` and press **[Enter]**. The status indicator for plug 1 should then go back on, indicating that the command has been successfully completed.

3. When you have finished communicating with the Remote Power Manager, always log off by issuing the appropriate Remote Power Manager command rather than simply closing your Telnet or communications program. Logging off with the proper command ensures that the Remote Power Manager has completely exited from operating mode and is not waiting for the inactivity timeout to elapse before allowing additional connections.

For the Web-browser interface, click on the **Log Out** button.

For the text interface, type `/X` and press **[Enter]**.

Please proceed to **Chapters 4 and 5** for complete installation and configuration procedures.

3. Overview

Electronic equipment sometimes “locks up,” requiring a service call just to flip the switch to perform a simple reboot. The Remote Power Manager gives you the ability to perform this function from anywhere. You can access the Remote Power Manager via Web-browser or text interfaces.

To access the Remote Power Manager via the Web-browser interface, assign an Internet IP address to the Remote Power Manager. Then type in the IP address in your Internet browser. You will be asked to enter a user name and password. (This password uses basic 64-bit encryption techniques to ensure secure access to your equipment.) Finally, a Web-browser interface screen will appear. Follow the instructions on the screen to remotely power on, off, or reboot your equipment. (See **Section 5.2.1** for more details.)

In addition to access via the Web browser, the Remote Power Manager can communicate over any TCP/IP network using standard Telnet, or out-of-band using an external modem and basic VT100™ type terminal emulation. To access the Remote Power Manager via the text interface by network, PC, or modem, follow the instructions in **Section 5.2.2**.

The Remote Power Manager provides two levels of passwords: the system administrator level, which allows access to all configuration and switching functions, and the user level, which allows access only to assigned plugs and cannot be used to change the Remote Power Manager’s configuration.

In addition to password security, the Remote Power Manager also includes an address-specific IP security mask. This prevents unauthorized network access to the Remote Power Manager’s operating mode.

Easy-to-use commands let you assign a location name, set system parameters, and view plug status. Switch outlets on or off, or boot using plug numbers or names.

Four models are available. The PS565A Remote Power Manager features a 115-VAC power supply and five NEMA 5-15R outlets. The second version (PS565AE) has a 230-VAC power supply and five IEC 320-C13 outlets. The PS567A Remote Power Manager 16 uses two 115-VAC power supplies and 16 NEMA 5-15R outlets. The PS584A Remote Power Manager 16 uses two 230-VAC power supplies and 16 IEC 320-C13 outlets.

Figures 3-1 (for PS565A) or 3-2 (for PS567A) correspond to the Remote Power Manager’s or Remote Power Manager 16’s components. The numbers in the illustrations correspond to the descriptions that follow.

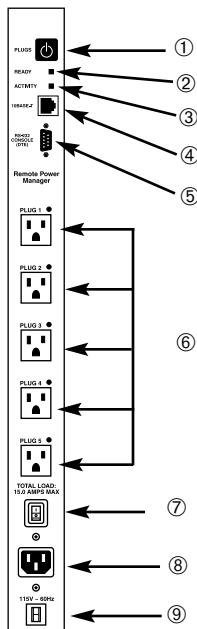


Figure 3-1. The Remote Power Manager’s components (PS565A shown).

- ① Manual switch button: A control button for the Remote Power Manager’s switched plugs. To manually switch the plugs “On” or “Off,” press and hold the button for one second.

NOTE

Section 5.3.1 describes how to disable the manual switch button.

- ② Ready indicator: This LED flashes when the Remote Power Manager is ready to receive commands.
- ③ Activity indicator: This LED flashes to indicate activity at the network port.
- ④ Network port: Use this RJ-45 Ethernet port to connect to your TCP/IP network. The default IP address is 192.168.168.168. For more information, please refer to **Section 5.3.4**.
- ⑤ COM/RS-232 port: This DB9 COM/RS-232 serial port (DTE) is used for connecting to a local terminal or external modem, as described in **Section 4.3**.

- ⑥ Switched plugs and plug indicators: Five 3-prong 115-VAC NEMA 5-15R outlets (for the PS565A) switch a total of up to 15 amps. Five IEC 320-C13 outlets (for the PS565AE) switch a total of up to 10 amps.
- ⑦ Master power switch: This switch must be “On” for the Remote Power Manager to function. You cannot use this switch to set the switched outlets’ on/off status.
- ⑧ Power inlet: This IEC-320, 115-VAC inlet (PS565A) or 105- to 240-VAC inlet (PS565AE) supplies power for the Remote Power Manager’s command functions and the switched plug. It includes a cable keeper (not shown).
- ⑨ Circuit breaker: 115 VAC, 15 amps (PS565A) or 230 VAC, 10 amps (PS565AE).
- ⑩ Rackmounting brackets (not shown): These brackets are used for mounting the Remote Power Manager in your equipment rack.

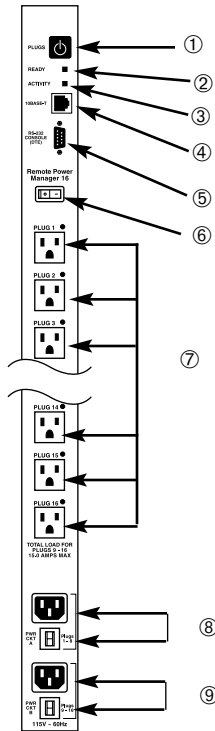


Figure 3-2. The Remote Power Manager 16’s components (PS567A).

- ① Manual switch button: A control button for the Remote Power Manager 16's switched plugs. To manually switch the plugs "On" or "Off," press and hold the button for one second.

NOTE

Section 5.3.1 describes how to disable the manual switch button.

- ② Ready indicator: This LED flashes when the Remote Power Manager 16 is ready to receive commands.
- ③ Activity indicator: This LED flashes to indicate activity at the network port.
- ④ Network port: Use this RJ-45 Ethernet port to connect to your TCP/IP network. The default IP address is 192.168.168.168. For more information, please refer to **Section 5.3.4**.
- ⑤ COM/RS-232 port: This DB9 COM/RS-232 serial port (DTE) is used for connecting to a local terminal or external modem, as described in **Section 4.3**.
- ⑥ Master power switch: This switch must be "On" for the Remote Power Manager 16 to function. You cannot use this switch to set the switched outlets' on/off status.
- ⑦ Switched plugs and plug indicators: 16 3-prong 115-VAC NEMA 5-15R outlets (for the PS567A) or 16 230-VAC IEC 320-C13 outlets (for the PS584A), split into two power circuits. Circuit A includes plugs 1 through 8, and Circuit B includes plugs 9 through 16. Each power circuit can switch a total load of up to 15 amps (for the PS567A) or 10 amps (for the PS584A).
- ⑧ Power circuit A components: An AC inlet and circuit breaker that supply power to plugs 1 through 8. Includes a 115-VAC (PS567A) or 230-VAC (PS584A), IEC-320 or AC inlet and a cable keeper (not shown). Also includes a 115-VAC, 15-amp (for PS567A) or 230-VAC, 10-amp (for PS584A) circuit breaker.
- ⑨ Power circuit B components: An AC inlet and circuit breaker that supply power to plugs 9 through 16. Includes a 115-VAC (for PS567A) or 230-VAC (for PS584A), IEC-320 AC inlet and a cable keeper (not shown). Also includes a 115-VAC, 15-amp (for PS567A) or 230-VAC, 10-amp (for PS584A) circuit breaker.
- ⑩ Rackmounting brackets (not shown): These brackets are used for mounting the Remote Power Manager 16 in your equipment rack.

4. Installation

4.1 Connecting the Power Supply

To install the supplied cable keeper, first make certain that the power supply cable(s) is(are) disconnected from the Remote Power Manager. Next, loosen (but do not remove) the two Phillips head screws located directly above and below each power inlet. Connect the supplied power supply cable to the Remote Power Manager's power inlet(s) (#8 in Figure 3-1; #8 and #9 in Figure 3-2), then slip the cable keeper over the supply cable. The notch on the top of the keeper should line up with the cable, and the two slots on the bottom of the keeper slide over the loosened screws. Tighten the Phillips head screws, make sure that each cable is secure, then connect the other end of the cable to each power supply. The Remote Power Manager's master power switch must be on for the unit to operate.

CAUTION!

Operate this device only 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.

Maintain reliable grounding for the Remote Power Manager. Pay attention to supply connections when connecting to power strips, rather than directly to the branch circuit.

Check nameplate ratings to make sure that the supply circuits are not overloaded. If these circuits are overloaded, overcurrent protection and supply wiring might be compromised.

4.2 Connecting to Switched Outlets

Connect the power cord from up to five or sixteen switched devices to the switched AC outlets (#6 in Figure 3-1; #7 in Figure 3-2) on the Remote Power Manager. When power is applied to the Remote Power Manager, the switched AC outlets will be switched on. The PS565A can switch up to a total of 15 amps, the PS565AE can switch a total of 10 amps, the PS567A can switch a total of 30 amps (via two 15-amp circuits), and the PS584A can switch a total of 20 amps (via two 10-amp circuits).

4.3 COM/RS-232 Port Connection

The COM/RS-232 port is a male, RS-232C 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 4-1 shows the COM/RS-232 port interface.

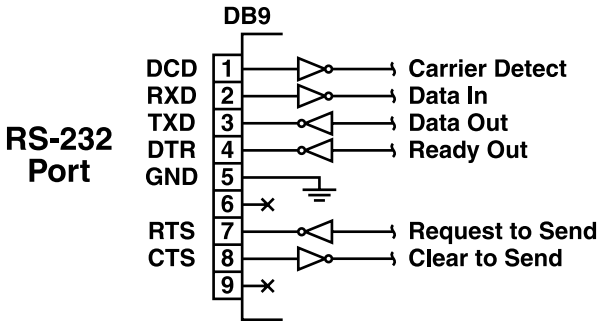


Figure 4-1. COM/RS-232 port interface.

The 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

You don't need to connect both the network and COM/RS-232 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 Remote Power Manager's network port. For more information, refer to **Section 4.4**.
- Local PC: Use the supplied null-modem cable to connect your PC 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 5.3.3**.

- 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 COM port. Be certain that the serial port mode is set to modem as described in **Section 4.3.3**.

4.4 Connecting the Network Cable

The network port (#4 in Figures 3-1 or 3-2) is an RJ-45 Ethernet jack that connects to a TCP/IP network. Connect your 10BASE-T cable to the network port. The Remote Power Manager includes a default IP address (192.168.168.168) and a default subnet mask (255.255.255.0). When installing the Remote Power Manager in a working network environment, define network parameters as described in **Section 5.3.4**.

NOTE

The Remote Power Manager features a half-duplex, 10BASE-T interface. If you're connecting a router switch to the 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 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.

Installation is now complete. See **Chapter 5** for configuration instructions.

5. Configuration

Once you've installed the Remote Power Manager, you're ready for configuration. First, select the operating mode (system or user). Then you'll learn how to communicate with the Remote Power Manager. Finally, you'll access the configuration menus and save configuration parameters.

5.1 System Mode and User Mode

To restrict access to sensitive command functions, the Remote Power Manager offers 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 5.3.1**), and the plug passwords are defined via the Plug Parameters menus (**Section 5.3.2**).

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.**
- **The password prompt will always be displayed when the power manager is contacted via the Web browser interface. However, if the system password is not defined, the prompt will not be displayed when you access the power manager via the text 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.**

5.2 Communicating with the 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.

5.2.1 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 you entered a valid password, the Plug Status screen appears (see Figures 5-1 and 5-2).

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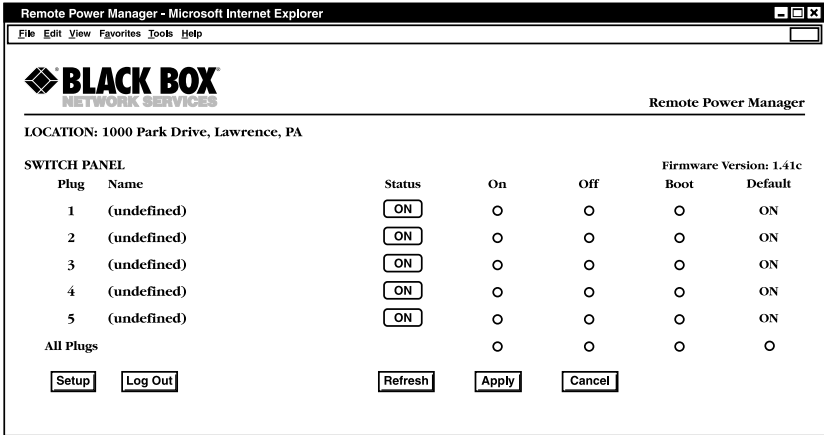


Figure 5-1. Plug Status screen—Web-browser interface for PS565A and PS565AE.

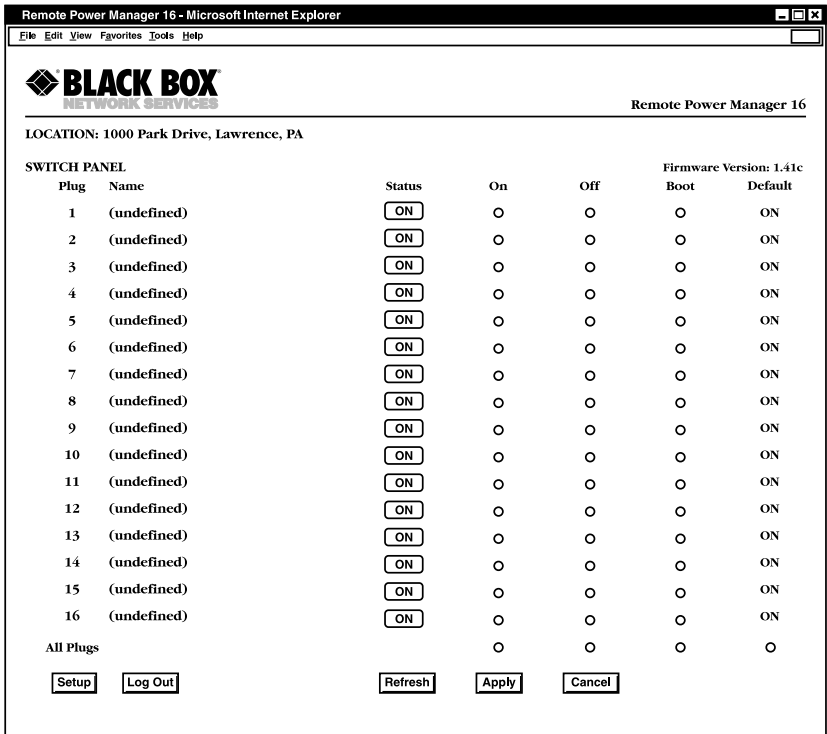


Figure 5-2. Plug Status screen—Web-browser interface for PS567A and PS584A.

5.2.2 ACCESSING THE TEXT INTERFACE

You can access the text interface via a network, a local PC, or a modem. 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 COM/RS-232 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 5.3.4**.

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 5.3.4**) 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. Instead, you'll see the Plug Status screen described in Step 3.

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 does not display actual passwords. The password column will read either "defined" or "undefined," depending upon whether or not the system or plug passwords are defined.

```

Remote Power Manager v1.41 Site ID: Black Box - Lawrence, PA
Plug | Name | Password | Status | Boot/Seq. | Default
      |      |          |      | Delay      |
-----|-----|-----|-----|-----|-----
1 | Server_1 | (undefined) | ON | 0.5 Secs | ON
2 | Server_2 | (undefined) | ON | 1 min | OFF
3 | Router | (undefined) | ON | 0.5 Secs | ON
4 | Ethernet_Switch | (undefined) | ON | 0.5 Secs | ON
5 | DSU/CSU | (defined) | ON | 0.5 Secs | OFF

"/H" for help.
RPM>

```

Figure 5-3. Plug Status screen—text interface for PS565A and PS565AE.

```

Remote Power Manager v1.41c Site ID: Black Box – Lawrence, PA
Plug | Name | Password | Status | Boot/Seq. | Default
      |      |          |        |            | Delay
-----|-----|-----|-----|-----|-----
 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
 5 | (undefined) | (undefined) | ON | 0.5 Secs | ON
 6 | (undefined) | (undefined) | ON | 0.5 Secs | ON
 7 | (undefined) | (undefined) | ON | 0.5 Secs | ON
 8 | (undefined) | (undefined) | ON | 0.5 Secs | ON
 9 | (undefined) | (undefined) | ON | 0.5 Secs | ON
10 | (undefined) | (undefined) | ON | 0.5 Secs | ON
11 | (undefined) | (undefined) | ON | 0.5 Secs | ON
12 | (undefined) | (undefined) | ON | 0.5 Secs | ON
13 | (undefined) | (undefined) | ON | 0.5 Secs | ON
14 | (undefined) | (undefined) | ON | 0.5 Secs | ON
15 | (undefined) | (undefined) | ON | 0.5 Secs | ON
16 | (undefined) | (undefined) | ON | 0.5 Secs | ON

"/H" for help.
RPM>

```

Figure 5-4. Plug Status screen—text interface for PS567A and PS584A.

5.3 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 5-1 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 5.3.1 through 5.3.4 describe the options and parameters that you can access via each of the configuration menus.

NOTE

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

NOTE

Configuration menus are only available when the system mode is active. Configuration menus are not available if you log in using a plug password.

5.3.1 GENERAL PARAMETERS MENU

The General Parameters menus are the same for the PS565A/PS565AE and the PS567A/PS584A. These menus allow you to select parameters such as the system password, user name, site ID, modem commands, and other options.

For the Web-browser interface, click on the **Setup** button to access the setup menus, then click on the **General Parameters** button. The General Parameters menu appears as shown in Figure 5-5.

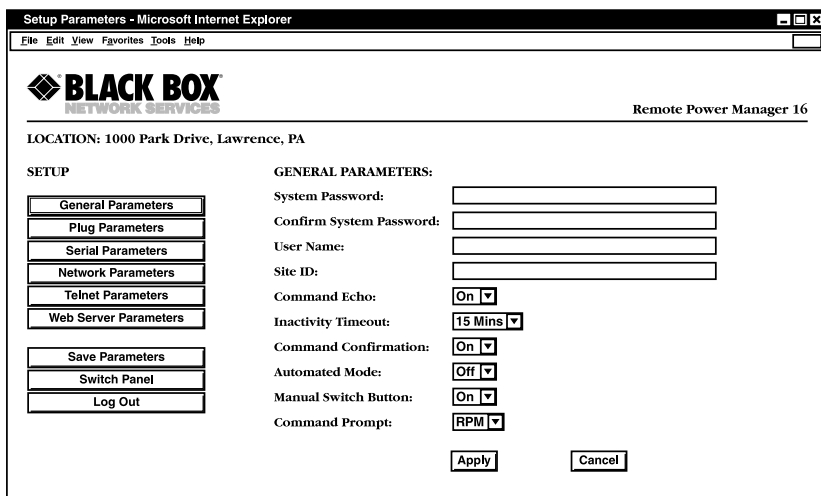


Figure 5-5. General Parameters menu—Web-browser interface.

For the text interface, type /G and press [Enter]. The General Parameters menu appears as shown in Figure 5-6.

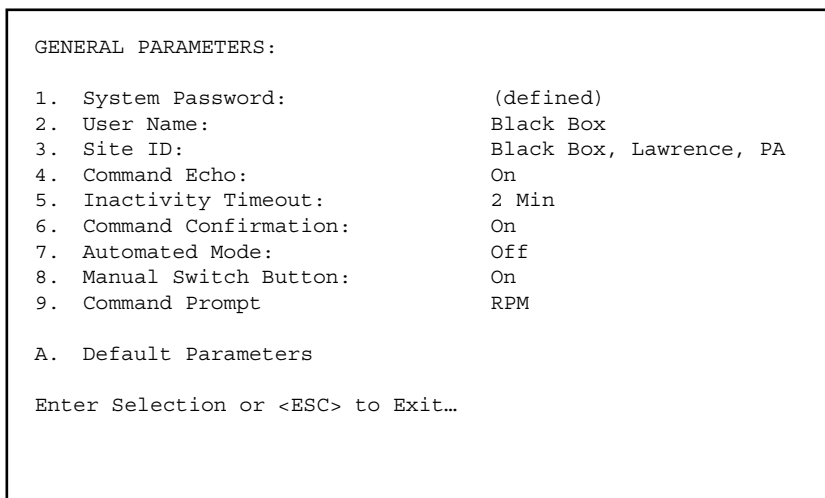


Figure 5-6. General Parameters menu—text interface.

The General Parameters menu lets you define the following parameters:

- **System password.** The Remote Power Manager displays a password prompt when you attempt to access operating mode. When you enter the system password, the system mode is active, allowing access to both switching functions and configuration menus. (The password can be 4 to 16 characters long. The default password is “undefined.”)

NOTES

If the system password is not defined, then the Remote Power Manager always starts up in system mode, and configuration functions are then available to anyone who accesses operating mode.

Passwords and user names cannot contain nonprintable characters (such as \$ or #), spaces, colons (:), plus signs (+), or quotation marks.

- **User name** (optional). The user name allows you to set up an additional layer of security for Web access to the operating mode by requiring that users correctly enter a name in addition to a password.

NOTE

The user name is required only when you access the Remote Power Manager via the Web interface. (The user name can be 4 to 16 characters long. The default user name is undefined.)

- **Site ID.** Defines a brief text message, which you can use to describe the Remote Power Manager’s installation location. (The installation location can be up to 32 characters long, and the default location is undefined.)

NOTE

The Site ID message cannot begin with a forward slash (/) or backslash (\) character and cannot include non-printable characters or quotation marks.

- **Command echo.** Enables or disables command echo. When enabled, ASCII commands sent via the text interface to the Remote Power Manager echo back, displaying keystrokes. This feature applies primarily to the text interface and has no visible effect on the Web-browser interface. (The default value is On.)
- **Inactivity timeout.** Determines how long the Remote Power Manager will wait for additional commands during periods of inactivity. When the timeout period elapses, the user disconnects from the Remote Power Manager operating mode. (The default timeout is 2 minutes.)

- **Command confirmation.** When enabled, the Remote Power Manager displays a confirmation prompt before executing certain commands. When disabled, the prompt is suppressed. (The default value is on or enabled.)
- **Automated mode.** When enabled, the Remote Power Manager executes on, off, boot, and exit commands without displaying a confirmation prompt, status screen, or confirmation messages. This allows the Remote Power Manager to be controlled by a device that generates commands to control switching without human intervention. For more information, please refer to **Section 6.4**. (The default value is Off.)

NOTE

This option suppresses security functions. When it's enabled, users can access system-level menus and control plugs without entering a password. If you're concerned about security but you require automated mode, we recommend that you use the IP security feature to restrict access.

- **Manual switch button.** Enables and configures the manual plug control button. (The default value is On.)

Off: Disables the manual switch button.

On: Enables the manual switch button. When pressed, the manual switch button switches all five outlets.

- **Command prompt.** Selects the prompt that is sent when the Remote Power Manager is contacted via the text interface. The default prompt is RPM.
- **Default parameters.** Resets the Remote Power Manager to default parameters. All menu-selected parameters, including port names and passwords, are cleared. This option is only available via the text interface.

NOTE

If you invoke this function via the network port, the IP address is not reset until you break the connection to the network port. If you invoke this function via the console port or modem port, the IP address resets immediately.

5.3.2 SERIAL (CONSOLE) PORT PARAMETERS MENU

The Serial Parameters menus define baud rate, data, parity, stop, port mode, and modem initialization string.

For the Web-browser interface (available only for the PS567A and PS584A), click on the **Setup** button to access the setup menus, then click on the **Serial Parameters** button. The Serial Parameters menu appears as shown in Figure 5-7.

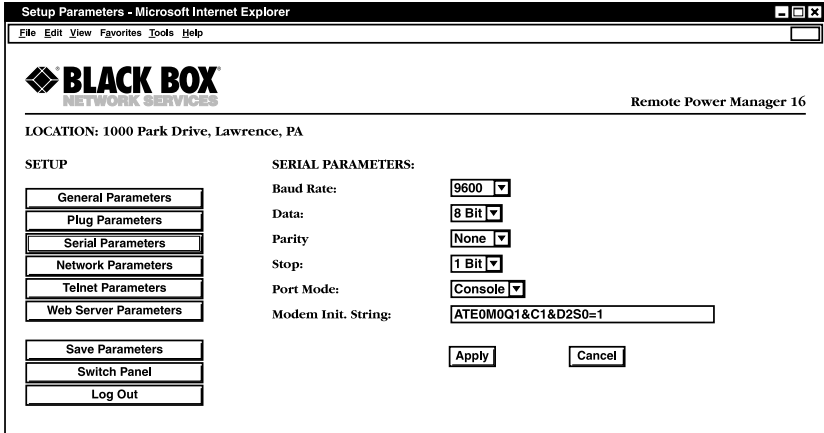


Figure 5-7. Serial Parameters menu—Web-browser interface.

For the text interface (available for all models), type /C and then press [Enter] . The Serial Parameters menu appears as shown in Figure 5-8.

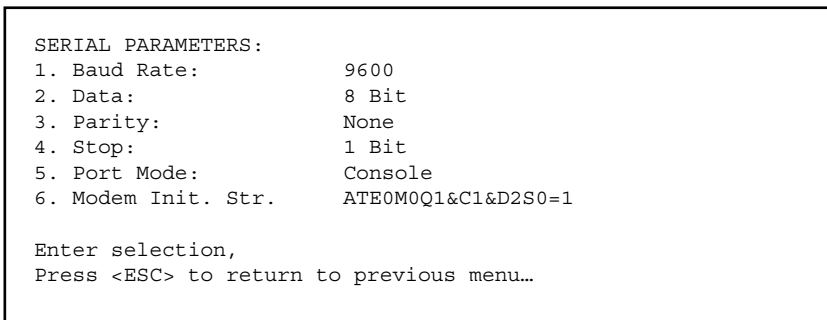


Figure 5-8. Serial Parameters menu—text interface.

The Serial Parameters menu defines the following parameters:

- Baud Rate: The data speed setting. (The default value is 9600 bps.)
- Data: The number of data bits. (The default value is 8 Bit.)
- Parity: The console port parity. (The default value is None.)
- Stop: The stop bits setting. (The default value is 1 Bit.)

NOTE

When baud rate, data bits, parity, or stop bits are changed via the console port, new values will not be applied until you exit and then re-enter the command mode.

- Port Mode: Sets up the serial console port for use with either a local PC (“console”) or external modem (“modem”). When port mode is set to modem, the initialization string will be sent every 15 minutes. (The default value is console.)
- Modem initialization string. This is a command string (up to 32 characters long; the default is ATE0M0Q1& C1& D2S0=1) that is sent out of the serial console port to initialize an external modem. If the serial port mode is set to “console,” the modem initialization string is not sent. For more information on initialization commands, refer to your modem’s users’ guide.
- Baud rate. The baud rate for the Remote Power Manager’s console port. (The default values are 9600 bps, no parity, 8 data bits, and 1 stop bit.)

NOTE

When this setting is changed, the new baud rate does not apply until you exit and then re-enter operating mode.

5.3.3 PLUG PARAMETERS MENUS

The Plug Parameters menus define plug names, plug passwords, and boot/sequence delay times for each of the Remote Power Manager’s five or sixteen switched AC outlets.

For the Web-browser interface, click on the **Setup** button to access the configuration menus, then click on the **Plug Parameters** button. The Plug Parameters menu appears as shown in Figures 5-9 or 5-10 To select the plug that you want to configure, first click the down arrow to display the drop-down menu under the **Select a Port** option. Next, scroll down the drop-down menu, click on the port that you want to configure, and click **Go**.

Setup Parameters - Microsoft Internet Explorer

File Edit View Favorites Tools Help

BLACK BOX
NETWORK SERVICES

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: ▾

Plug #4

Name:

Password:

Figure 5-9. Plug Parameters menu—Web-browser interface for PS565A and PS565AE.

Setup Parameters - Microsoft Internet Explorer

File Edit View Favorites Tools Help

BLACK BOX
NETWORK SERVICES

Remote Power Manager 16

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

SELECT A PLUG:

▾

PLUG #01 PARAMETERS:

Name:

Password:

Confirm Password:

Boot/Seq. Delay: ▾

Power Up Default: ▾

Figure 5-10. Plug Parameters menu—Web-browser interface for PS567A and PS584A.

For the text interface, type /P *n* (where *n* is the plug number or name that you want to configure) and then press [Enter]. The Plug Parameters menu appears as shown in Figure 5-11.

```
PLUG #1 PARAMETERS:
1. Plug Name:          Server_1
2. Password:           (undefined)
3. Boot/Seq. Delay:    0.5 Secs
4. Power Up Default:   On

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

Figure 5-11. Plug Parameters menu—text interface for PS565A, PS565AE, PS567A, and PS584A.

NOTE

For the 16-plug model only, in this case, the major difference between the Web-browser interface and text interface is that the Web interface allows you to select parameters for all sixteen plugs from a single menu, whereas the text interface includes a separate menu for each plug.

The Plug Parameters menu defines the following parameters:

- **Plug name.** Assigns a name to the plug. (The name can be up to 32 characters long, and the default name is undefined.)

NOTE

The plug name cannot begin with a number, a dash (-), an underscore (_), a slash (/), or a backslash (\). Plug names cannot contain nonprintable characters, colons (:), plus signs (+), spaces, or quotation marks (" ").

- **Plug password.** Assigns a password to the corresponding plug. When you enter this password at login, you can issue commands to this plug and any other Remote Power Manager plug that shares the same password as described below.

NOTE

This password does not allow access to configuration functions. (The password can be up to 16 characters long, and the default password is undefined.)

Passwords cannot begin with the slash character, and cannot contain nonprintable characters, asterisks (*), spaces, 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 elapses between switching operations. (The default boot/seq. delay is 5 seconds.)
- **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 restored. When the Default command is invoked, or power is restored, the Remote Power Manager will automatically switch each plug on or off as specified by the power-up default. (The default setting is on.)

NOTE

If you have accessed command mode using the System password, the Default command will apply to all 16 switched plugs. If you have accessed command mode using a plug password, then the command will only be applied to plugs that share the same password entered at login.

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.

The Boot/Sequence Delay Period

The boot/sequence delay value applies differently for reboot operations as opposed to simple on/off operation. See below for more information.

Reboot cycles:

Single plug: The boot/seq. delay determines how long the plug remains off before it switches back on again.

Several plugs: The boot/seq. delay determines how long the plug will remain in the “off” condition and how long the Remote Power Manager pauses before proceeding to the next plug specified by the reboot command.

On/off switching: The boot/seq. delay determines how long the Remote Power Manager pauses before proceeding to the next plug specified by the On command.

Examples: Assume that the boot/sequence delays for each plug are set as follows: Plug 1 = 1 second, Plug 2 = 2 seconds, Plug 3 = 5 seconds, Plug 4 = 1 minute, Plug 5 = 1 second.

If an “On” command is applied to plugs 1–5, the Remote Power Manager responds 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, wait 1 minute.
5. Turn on plug 5.

If a reboot command is applied to plug 3, the Remote Power Manager responds as follows:

Turn off plug 3, wait 5 seconds, turn on plug 3.

If a reboot command is applied to plugs 1–5, the Remote Power Manager will respond as follows:

1. Turn off all five 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, wait 1 minute.
6. Wait 1 second, turn on plug 5.

5.3.4 NETWORK PARAMETERS MENUS

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

For the 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 as shown in Figures 5-12 or 5-13. Once you select the appropriate menu options, click on **Apply** to save the settings or **Cancel** to start over.

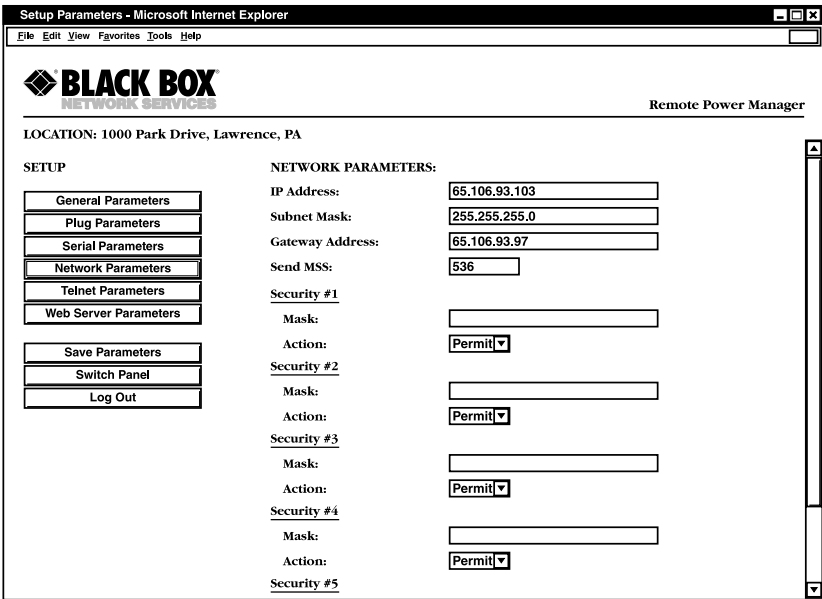


Figure 5-12. Network Parameters menu—Web-browser interface for PS565A and PS565AE.

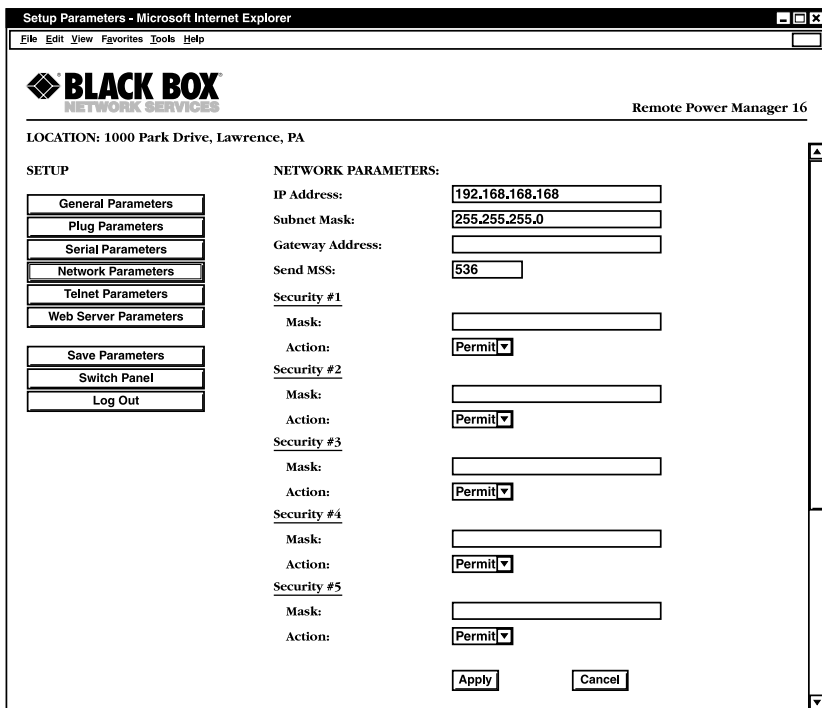


Figure 5-13. Network Parameters menu—Web-browser interface for PS567A and PS584A.

For the text interface, type /N and press [Enter]. The Network Parameters menu appears as shown in Figure 5-14.

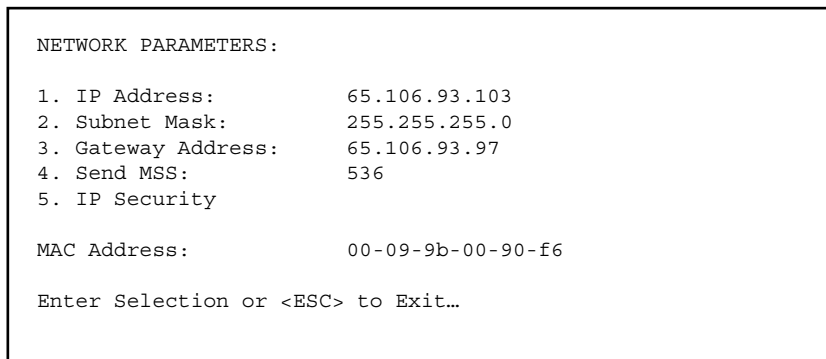


Figure 5-14. Network Parameters menu—text interface for PS565A, PS565AE, PS567A, and PS584A.

NOTES

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

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

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

- **IP address.** Defines the Remote Power Manager's IP address. (The default IP address is *192.168.168.168*.)
- **Subnet mask.** Defines the Remote Power Manager's subnet mask. (The default subnet mask is *255.255.255.0*.)
- **Gateway address.** Defines the Remote Power Manager's gateway address. (The default gateway address is undefined.)
- **Send MSS.** Defines the maximum segment size that will be sent by the Remote Power Manager. (The default maximum segment size is 536.)
- **IP security.** Please refer to the next page for a detailed description of the IP security feature.
- **MAC address.** Displays the Remote Power Manager's MAC address.

NOTE

This item only displays the assigned MAC address and can't be used to redefine the address.

NOTES

1. To display the Network Status screen, which lists all current network connections to the Remote Power Manager, type `/SN` and press [Enter].
2. To reset the network port, type `/R` and press [Enter].

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 5-15).

```

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 or <ESC> to Exit...

```

Figure 5-15. IP security menu—text interface.

2. The IP security menu lists five IP security “masks” and 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, 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 8-bit numbers. The number 255 is 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 by 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 by 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 by 192.1.1.5.

NOTE

Mask #5 has priority over the other four masks. If mask #5 is set to deny access by “255.255.255.255” (all wild cards), you can’t access the Remote Power Manager’s operating mode via a network. Access will only be allowed via a local PC or external modem connected to the Remote Power Manager’s console 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.

5.3.5 TELNET PARAMETERS MENUS

The Telnet Parameters menus enable/disable Telnet access to the Remote Power Manager operating mode and select the TCP port for Telnet connections.

For the 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 5-16. Once you select the appropriate menu options, click on **Apply** to save the settings or **Cancel** to start over.

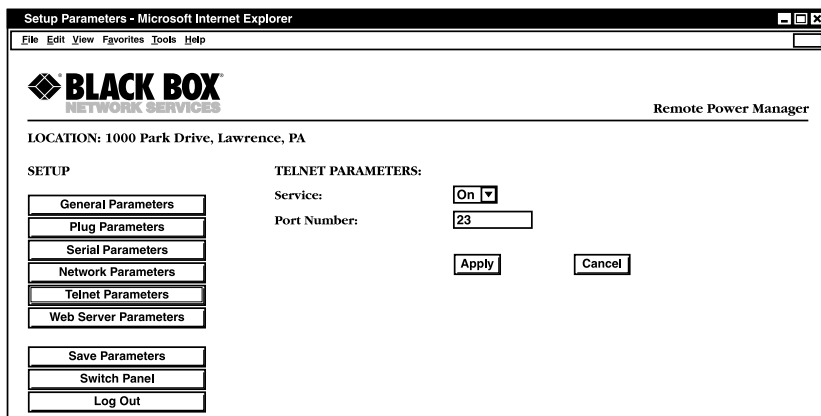


Figure 5-16. Telnet Parameters menu—Web-browser interface.

For the text interface, type /T and press [Enter]. The Telnet Parameters menu appears as shown in Figure 5-17.

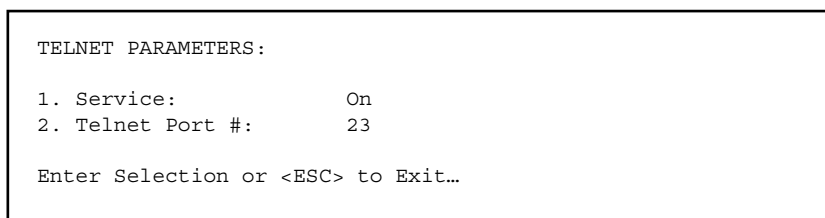


Figure 5-17. Telnet Parameters menu—text interface.

The Telnet Parameters menus define the following parameters. All parameters listed here are available via both the Web-browser interface and text interface.

- **Service.** Enables/disables Telnet communication with the Remote Power Manager. When it is set to “Off,” users cannot contact the Remote Power Manager via Telnet. (The default value is On.)

- **Telnet port number.** Selects the TCP/ IP port number that used for Telnet connections. (The default port number is 23.)

5.3.6 WEB SERVER PARAMETERS MENUS

The Web Server Parameters menus configure the Remote Power Manager’s internal Web server, which lets you operate the Remote Power Manager via the Web-browser interface.

For the Web-browser interface, click on the **Setup** button to access the configuration menus, then click on the **Web Server Parameters** button. The Web Server Parameters menu appears as shown in Figure 5-18. Once you select the appropriate menu options, click on **Apply** to save the settings or **Cancel** to start over.

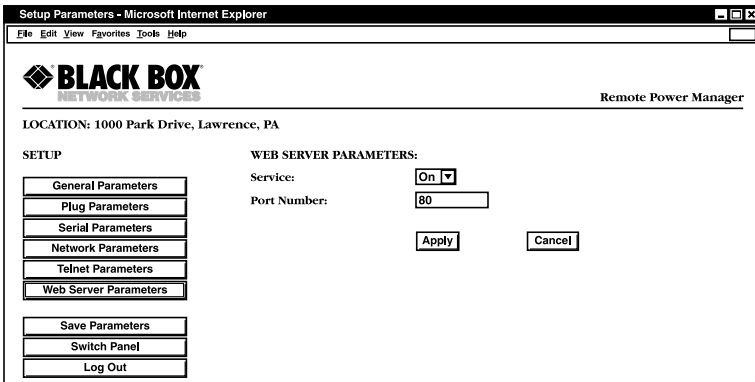


Figure 5-18. Web Server Parameters menu—Web-browser interface.

For the text interface, type `/W` and press **[Enter]**. The Web Server Parameters menu appears as shown in Figure 5-19.

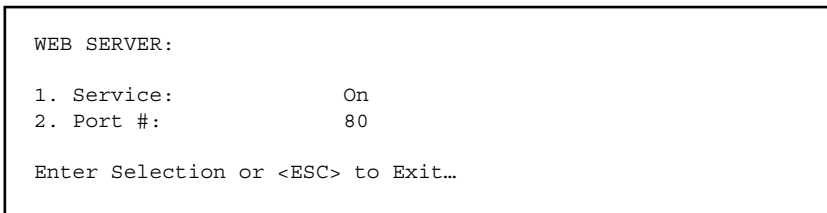


Figure 5-19. Web Server Parameters menu—text interface.

The Web Server Parameters menu defines the following parameters. All parameters listed here are available via both the Web-browser interface and text interface.

- **Service.** Enables/disables the Remote Power Manager's Web server. When the Web server is disabled, you cannot communicate via the Web-browser interface. (The default value is On.)
- **Port number.** Sets the TCP/IP port number. Set the port number to any valid number except 23; this is because 23 is the default port number used for communication with the Remote Power Manager via Telnet. (The default port number is 80.)

5.4 Save Configuration Parameters

The 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 remains intact if power to the Remote Power Manager is temporarily interrupted. After you change parameters via the configuration menus, the Remote Power Manager prompts you to save parameters before exiting from operating mode. At this point, the Remote Power Manager offers the options to save parameters, continue without saving, or revert to the previously saved parameters.

NOTE

The Remote Power Manager also includes command functions that can be used to save parameters to memory at any time. The text interface also provides the ability to recall currently defined parameters to memory. To save currently defined parameters to memory, proceed as follows.

For the Web interface, click on the **Set Up** button to access the configuration menus. When the General Parameters menu appears, click on the **Save Parameters** button.

For the text interface, at the command prompt, type /E and press **[Enter]**.

To abandon currently defined parameters and revert to previously saved parameters, access command mode via the text interface (system mode only), type /R, and press **[Enter]**.

Saving parameters to an ASCII file allows you to create a “backup” of your currently defined configuration. As described in **Chapter 7**, this provides quick recovery if the Remote Power Manager is accidentally reset to default parameters. It also allows you to copy parameters to other Remote Power Managers when several Remote Power Managers need to be configured with the same parameters.

NOTES

After new parameters are applied, the Remote Power Manager displays a “Save” prompt. In the Web-browser interface, this prompt appears when you leave the configuration menus. In the text interface, the “Save” prompt appears when you disconnect from the Remote Power Manager. At this point, you can save new parameters to memory, continue without saving, or revert to previously saved parameters.

If parameters are not saved, and if power to the Remote Power Manager is interrupted, newly defined parameters are lost. When power is restored, the Remote Power Manager is then configured with the previously saved parameters.

6. Operation

As discussed in **Chapter 5**, the 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 also apply when communicating via the text interface (and vice versa).

6.1 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 Remote Power Manager's five or sixteen switched outlets.

When you log onto the Remote Power Manager operating mode using the Web-browser interface, the first screen that appears after login is the Plug Status menu. The Plug Status menu (Figures 6-1 or 6-2) lists the current on/off status of the Remote Power Manager's switched outlets and provides a series of buttons that are used to control on/off/boot outlet switching.

To invoke on/off/boot commands or view plug status via the Web-browser interface:

1. Access the Remote Power Manager's operating mode as described in **Section 5.2.1**.
2. When the Plug Status menu (Figures 6-1 or 6-2) appears, note that the screen includes a status field and on/off/boot controls for each of the Remote Power Manager's five or 16 switched AC outlets.

NOTES

When boot/on/off operations are initiated, boot/sequence delay times apply as described in Section 5.3.3.

Users who log into operating mode using a plug password are only allowed to issue commands to the plugs allowed by that password.

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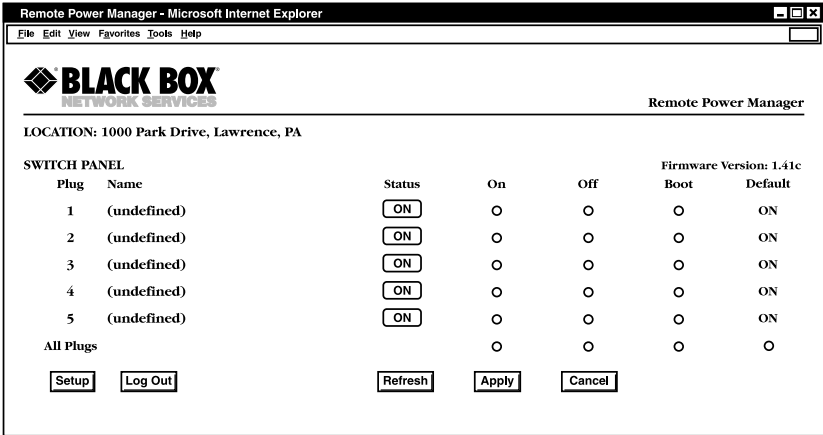


Figure 6-1. Plug Status menu—Web-browser interface for PS565A and PS565AE.

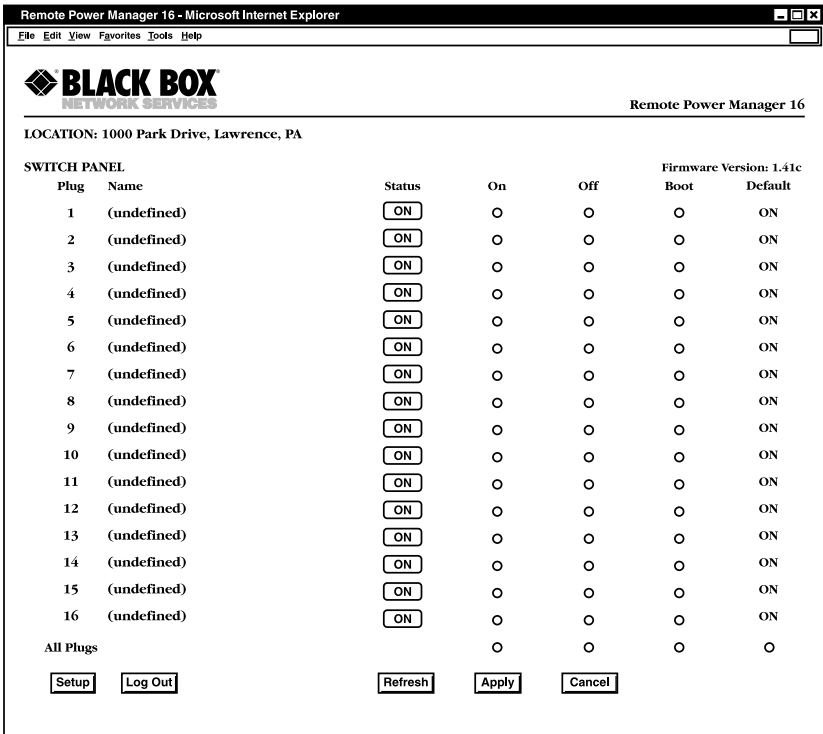


Figure 6-2. Plug Status menu—Web-browser interface for PS567A and PS584A.

3. To switch one or more plugs on, click the **On** button next to the desired plug(s), then click on the **Apply** button.
 - a) To switch all plugs on, click the **On** button in the “All Plugs” row, then click on **Apply**.
 - b) The Remote Power Manager displays a screen that indicates that the switching operation is in progress. It then returns to the updated Plug Status menu (which should now show the selected plugs in the On position).
4. To switch one or more plugs off, click the **Off** button next to the desired plug(s), then click on the **Apply** button.
 - a) To switch all plugs off, click the **Off** button in the “All Plugs” row, then click on **Apply**.
 - b) The Remote Power Manager displays a screen that indicates that the switching operation is in progress. It then returns to the updated Plug Status menu (which should now show the selected plugs in the Off position).
5. To initiate a reboot cycle, click the **Boot** button next to the desired plug(s), then click on the **Apply** button.
 - a) To reboot all plugs, click the **Boot** button in the “All Plugs” line, then click on **Apply**.
 - b) The Remote Power Manager displays a screen that indicates that the reboot cycle is in progress. It then returns to the Plug Status menu (which should now show the selected plugs in the On position.)
6. Set plugs to power up defaults: To set all plugs to their user-defined power up default on/off status, click the **Default** button in the All Plugs row and then click on **Apply**.

NOTE

For this command to function, power up default values for each plug must first be defined as described in Section 5.3.4.

6.2 Operation via the Text Interface

When using the text interface, all switching functions are invoked by simple ASCII commands. ASCII commands display status screens and allow you to log out of operating mode. The text interface also includes a Help menu, which summarizes all available Remote Power Manager commands. To display the text interface Help menu (Figure 6-3), type /H and press [Enter].

```

Remote Power Manager v1.41  Site ID: Black Box - Lawrence, PA

Display                               Configuration
/H Display Help Screen              /G View/Set General Parameters
/S Display Plug Status               /P [n] View/Set Plug Parameters
/SN Display Network Status          /N View/Set Network Parameters
                                   /T View/Set Telnet Parameters
Control                               /W View/Set Web Server
/D Set Plugs to Default              /E Save Parameters
/Boot <n> Boot Plug n                /R Recall Parameters
/On <n> Turn On Plug n               /DL Download Parameters to File
/Off <n> Turn Off Plug n
/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 6-3. The Remote Power Manager Help screen—text interface.

6.2.1 THE PLUG STATUS SCREEN

When you login to the Remote Power Manager operating mode using the text interface, the first screen that appears after login is the Plug Status screen. The Plug Status screen (Figure 6-4 or 6-5) lists the current status of the Remote Power Manager’s switched AC outlets and displays the firmware version and currently defined Site ID message.

```

Remote Power Manager v1.41 Site ID: Black Box - Lawrence, PA
Plug | Name | Password | Status | Boot/Seq. | Default
      |      |          |        | Delay
-----|-----|-----|-----|-----|-----
1 | Server_1 | (defined) | ON | 1 Sec | ON |
2 | Server_2 | (defined) | ON | 1 Sec | ON |
3 | Router | (defined) | ON | 1 Sec | ON |
4 | Ethernet_Switch | (defined) | ON | 1 Sec | ON |
5 | DSU/CSU | (defined) | ON | 1 Sec | ON |

"/H" for help.
RPM>

```

Figure 6-4. Plug Status screen—text interface for PS565A and PS565AE.

```

Remote Power Manager v1.41c Site ID: Black Box - Lawrence, PA
Plug | Name | Password | Status | Boot/Seq. | Default
      |      |          |        | Delay
-----|-----|-----|-----|-----|-----
1 | Server_1 | (defined) | ON | 15 Sec | ON |
2 | Server_2 | (defined) | ON | 15 Sec | ON |
3 | Server_3 | (defined) | ON | 15 Sec | ON |
4 | Server_4 | (defined) | ON | 15 Sec | OFF |
5 | Router_1 | (defined) | ON | 5 Sec | ON |
6 | Router_2 | (defined) | ON | 5 Sec | ON |
7 | Router_3 | (defined) | ON | 5 Sec | OFF |
8 | DSU/CSU_A | (defined) | ON | 30 Sec | ON |
9 | DSU/CSU_B | (defined) | OFF | 30 Sec | OFF |
10 | Ethernet_Switch | (defined) | ON | 15 Sec | ON |
11 | atmswitch_1 | (defined) | ON | 1 Sec | ON |
12 | atmswitch_2 | (defined) | ON | 1 Sec | OFF |
13 | atmswitch_3 | (defined) | OFF | 1 Sec | ON |
14 | LINUX_1 | (defined) | ON | 5 Sec | ON |
15 | LINUX_2 | (defined) | ON | 5 Sec | OFF |
16 | Modem | (undefined) | ON | 1 Sec | ON |

"/H" for help.
RPM>

```

Figure 6-5. Plug Status screen—text interface for PS567A and PS584A.

Normally, the Plug Status screen redisplay each time a command successfully executes. However, you can enable the automated mode (see **Section 6.4**) to suppress the Plug Status screen's display after each command.

6.2.2 BOOT/ON/OFF COMMANDS

These commands can boot or toggle the on/off status of the Remote Power Manager's switched plugs. Specify plugs 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 operating mode using a plug password are only allowed to issue commands to the plugs permitted by that password.

If command confirmation is enabled, the Remote Power Manager displays the status screen after the boot/on/off commands are successfully completed.

When boot/on/off operations are initiated, boot/sequence delay times apply as described in Section 5.3.3.

To switch plugs or initiate a boot cycle:

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

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

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

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

3. To initiate a boot cycle, type `/BOOT n` (where *n* is a the number or name of the desired plug) and press **[Enter]**. Note that the `/BOOT` command can also be entered as `/BO`. For example:

```
/BOOT 1 or /BO ATMSWTCH
```

4. 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
```

- 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 5.3.3**).

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.

6.2.3 APPLYING COMMANDS TO SEVERAL PLUGS

As described below, Boot/On/Off commands apply to only one switched AC outlet or to an assortment of outlets.

NOTE

When Boot/On/Off operations are initiated, Boot/Sequence Delay times apply as described in Section 5.3.3.

- To apply an On/Off/Boot command to several plugs, enter the numbers or names for the plugs, separated by a plus sign (+). For example, to switch plugs 1, 4, and 5 off, enter the following:

```
/OFF 1+4+5 [Enter]
```

- To apply a command to a series of Remote Power Manager plugs, enter 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, enter the following:

```
/ON 1:3 [Enter]
```

- 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]
```


6.3 Logging Out of Operating Mode

When you are finished communicating with the Remote Power Manager, always disconnect using either the Logout button (Web-browser interface) or /X command (text interface) rather than simply closing your browser window or communications program.

Disconnecting using the Logout button or /X command ensures that the Remote Power Manager has completely exited from operating mode and is not waiting for the inactivity timeout period before allowing additional connections. This ensures that the Remote Power Manager is available to other users and they will not have to wait for the timeout period before accessing the Remote Power Manager's operating mode.

6.4 The Automated Mode

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

When the automated mode is enabled, the /ON, /OFF, /BOOT, 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, which is displayed when the command is complete.

NOTES

Automated mode is designed primarily for users who want to send ASCII commands to the Remote Power Manager without operator intervention, so it does not specifically apply to a GUI-style, Web-browser interface. When the automated mode is enabled, the Web-browser interface can still be used to invoke On/Off/Boot commands.

When automated mode is enabled, all Remote Power Manager password security functions are disabled, and users can 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 Remote Power Manager configuration menus, enable and configure the IP security function as described in Section 5.3.4.

To enable/disable the automated mode, access the General Parameters menu (see **Section 5.3.1**) and set the “Automated Mode” option to “On.” When the automated mode is enabled, Remote Power Manager functions change as follows:

1. All password security is suppressed. When a user attempts to access the operating mode, the password prompt does not display at either the console port or network port. Unless specifically restricted by the IP security function, all users can access both switching and configuration functions, and all commands are immediately accepted without entering a password.
2. The status screens are suppressed. The status screens do not automatically display after commands are successfully executed. Note however, that the `/S` command still displays the status screen, if needed.
3. The “Sure?” prompt is suppressed. All commands are executed without prompting for user confirmation.
4. Error messages are suppressed. If you press the **[Enter]** key without entering a command, the Remote Power Manager does not respond with the “Invalid Command” message. However, an error message is still generated if commands are invoked using invalid formats or arguments.

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

6.5 Manual Operation

In addition to the command-driven functions available via the Web-browser interface and text interface, the Remote Power Manager’s switched plugs can also be toggled on and off manually. To manually toggle plugs on or off, press the manual switch button and hold it down for approximately three seconds.

If desired, the manual switch button option (accessed via the General Parameters menu) can completely disable the master power switch (#7 in Figure 3-1 and #6 in Figure 3-2) as described in **Section 5.3.1**.

NOTE

When the manual switch button is used, Boot/Sequence Delay times will be applied.

For more information on the manual switch button parameter, please refer to **Section 5.3.1**

7. Saving and Restoring Configuration Parameters

After the Remote Power Manager is 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 Remote Power Manager without manually assigning each parameter.

You can also upload saved parameters to other Remote Power Managers. This allows rapid setup when several Remote Power Managers are configured with the same parameters.

You can perform the Save Parameters procedure from any terminal emulation program (for example, ProComm, Crosstalk®, HyperTerminal, etc.) that allows downloading of ASCII files.

NOTE

Although this function is available only via the text interface, parameters defined via the Web-browser interface are also sent to the ASCII file.

7.1 Sending Parameters to a File

1. Start your communications program and access the Remote Power Manager's operating mode using the system-level password.
2. When the RPM command prompt appears, type /DL and press **[Enter]**. The Remote Power Manager prompts 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 Remote Power Manager's operating mode, and press **[Enter]** to proceed.
4. The Remote Power Manager sends a series of ASCII command lines that specify the currently selected parameters.

7.2 Restoring Saved Parameters

This section describes the procedure for using ProComm to send saved parameters to the Remote 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 Remote Power Manager's operating mode via the text interface as described in **Section 5.2.2**.
2. If the password prompt appears, type in your system 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, terminate the communications program's upload mode.

NOTE

The current on/off status of each Remote Power Manager plug is not saved or restored. However, the selected default on/off setting for each plug is saved and restored.

When the configuration file is sent to the Remote Power Manager via Telnet, the unit's IP address, subnet mask, and gateway address will not change until after you exit from operating mode.

If the console port is active, the baud rate, parity, data bits, and stop bits settings will not be changed until you disconnect from the console port.

At this point, saved parameters are restored to the Remote Power Manager. Check the Plug Status screen, General Parameters menu, Plug Parameters menu, and Network Parameters menu to make certain that saved parameters are accurately restored.

7.3 Uploading Saved Parameters to Other Power Managers

NOTE

To upload saved parameters to other power managers, follow the procedures listed in Section 7.2.

8. Upgrading Firmware

When new, improved versions of the Remote Power Manager firmware become available, the Upgrade Firmware function can be used to update the unit. 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 Remote Power Manager configuration parameters to an ASCII file (as described in Chapter 7) 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 Remote Power Manager 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 Remote Power Manager will display a screen that offers the following options.
 - Upgrade Sector 0
 - Upgrade Sectors 1–4
 - Upgrade Sectors 5–7
 - Abort Upgrade

NOTE

Instructions for 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 Remote 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 Remote 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 Remote Power Manager will break the network connection when the system is reinitialized. However, the Remote Power Manager will retain the current settings for the IP address, the Telnet port number, the Web server port number, the console port mode, and the baud rate.

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

Appendix: Troubleshooting

A.1 Calling Black Box

If you determine that your 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 Remote Power Manager:

- Package it carefully. We recommend that you use the original container.
- If you are shipping the 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.