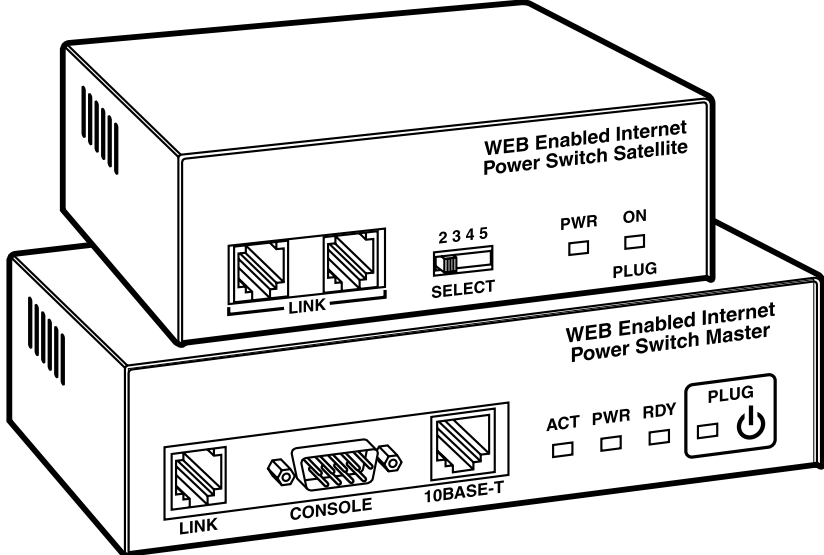




Web-Enabled Internet Power Switch



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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.

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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.

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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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1. Specifications

Coding: Serial ASCII, 8 bits, no parity

Indicators: SWI083A: ACT, PWR, RDY, PLUG;
SWI084A: PWR, PLUG

Connectors: SWI083A: (1) DB9 male (RS-232C, DTE), (1) RJ-45 (10BASE-T network), (1) RJ-11 (Link port), (1) IEC-320 inlet for power (line cord supplied), (1) NEMA 5-15 outlet for power;
SWI084A: (2) RJ-11 (Link ports)

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

Relative Humidity: Up to 90%, noncondensing

Power: Voltage: 105–120 VAC, 60 Hz; Input: 115 VAC, 15 amps maximum

Size: SWI083A: 1.75"H x 5.8"W x 7"D (4.4 x 14.7 x 17.8 cm);
SWI084A: 1.75"H x 4.6"W x 7"D (4.4 x 11.7 x 17.8 cm);
SWI085A: 1.75"H (1U) x 19"W x 7"D (4.4 x 48.3 x 17.8 cm)

2. Introduction

2.1 Overview

Electronic equipment sometimes “locks up,” requiring a service call just to flip the power switch to perform a simple reboot. Use the Web-Enabled Internet Power Switch (part number SWI083A) to reboot your equipment when it locks up. Perform this function from anywhere. Simply point your browser to the IPS’s IP address, enter the secure user name and password, and you’re just a click away from remote power on, off, or reboot.

The Internet Power Switch (IPS) provides intelligent power control. In addition to Web browser access, the IPS can also communicate over any TCP/IP network using standard Telnet, or out-of-band using an external modem and basic VT100™ terminal emulation.

It’s expandable, too! Link the IPS master to four additional low-cost Web-Enabled Internet Power Switch Satellites (part number SWI084A) for a total of five individually controlled outlets. If multiple satellites are assigned to each address, then up to 16 satellites can be linked together.

Rackmounting options are also available. Choose the Web-Enabled Internet Power Switch Zero U Sidemount Bracket (part number SWI086A) to mount the IPS on the outside of a standard 19-inch rack rail. To mount one master and two satellites in a 19-inch rack, select the Web-Enabled Internet Power Switch Rackmount Tray (part number SWI085A).

To assure security, Web browser access requires you to enter an assigned user name and password. This password uses basic 64-bit encryption techniques.

The IPS provides two levels of operational passwords: the system administrator level, which allows access to all configuration and switching functions, and the user level, which only allows switching of assigned plugs.

The IPS can be configured over the network, via modem, or locally via the IPS console 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.

2.2 The Web-Enabled Internet Power Switch Master (SWI083A)

You'll need one IPS master for your installation.

As shown in Figure 2-1 and described in Table 2-1, the IPS master's front panel includes connectors, LEDs, and a manual control button.

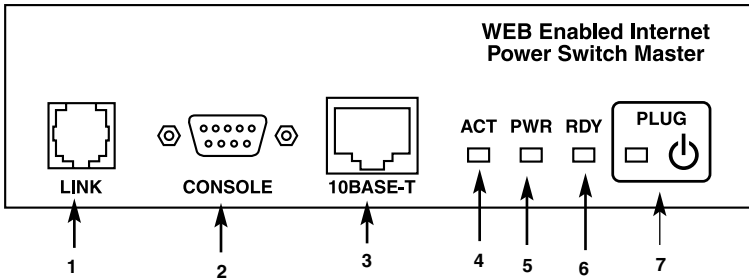


Figure 2-1. Master front panel.

The master's back panel includes a power switch, the switched AC outlet, a power inlet, and a circuit breaker. See Figure 2-2 and Table 2-1.

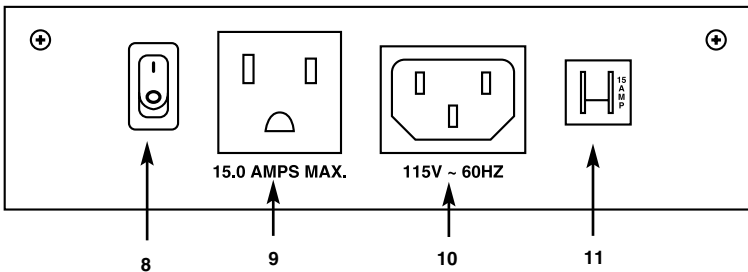


Figure 2-2. Master back panel.

Table 2-1. Master connectors, LEDs, and buttons.

Number	Name	Type	Function
1	Link	RJ-11 connector	Connects the master to the optional satellite. For more information, see Section 4.5 .
2	Console	DB9 connector	An RS-232 serial port (DTE) that connects to a local terminal or an external modem, as described in Section 4.3 .
3	10BASE-T	RJ-45 connector	An Ethernet port that connects to your TCP/IP network. The default IP address is 192.168.168.168. For more information, see Section 4.4 .
4	ACT	LED	Flashes to indicate activity on the network (10BASE-T) port.
5	PWR	LED	Lights when power is applied to the master. See the Note below.
6	RDY	LED	Flashes when the master is ready to receive commands.

NOTE

The PWR LED does not indicate the on/off status of the master's switched AC outlet.

Table 2-1 (continued). Master connectors, LEDs, and buttons.

Number	Name	Type	Function
7	Plug	LED and button	An on/off indicator and manual control button for the master's switched plug. To manually switch the plug on or off, press and hold the control button for one second. Also, see the Notes below.
8	—	Power switch	This switch must be on in order for the IPS to function.
9	—	NEMA 5-15 connector	A 115-VAC outlet that can switch up to 15 amps. If more than one switched outlet is required, you can add optional satellites to provide control of up to 17 outlets.
10	—	IEC-320 connector	A 115-VAC inlet that supplies power for the IPS's command functions and the switched plug.
11	—	Switch	This is a 115-VAC, 15-amp circuit breaker.

NOTE

If desired, the manual control button (Plug) can also be disabled, set to control only the plug on the master, or set to control the master plus all connected satellites as described in Section 5.3.1.

NOTE

The Plug button is not used to set the on/off status of the switched outlets.

2.3 The Web-Enabled Internet Power Switch Satellite (SWI084A)

The optional IPS satellite allows you to add switched outlets whenever you need them. Satellites can be switched on, off, or rebooted in response to commands issued at the IPS master.

The IPS satellite's front panel includes two link ports, an address selector switch, and power indicator lights. See Figure 2-3 and Table 2-2.

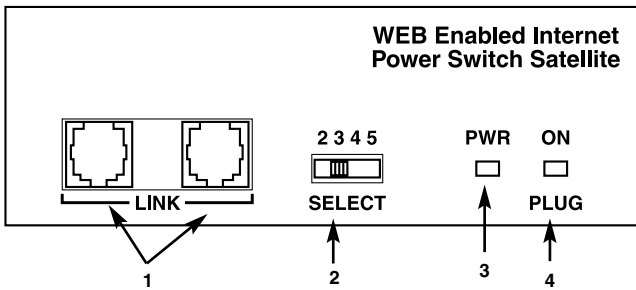


Figure 2-3. Satellite front panel.

The satellite's rear panel has a switched AC outlet, a power inlet, and a circuit breaker. See Figure 2-4 and Table 2-2.

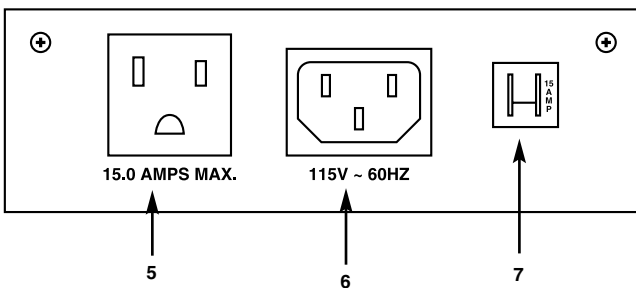


Figure 2-4. Satellite rear panel.

Table 2-2. Satellite connectors, LEDs, and buttons.

Number	Name	Type	Function
1	Link	RJ-11 connector	The Link ports are two RJ-11 jacks used to connect the satellite to the master, and/or to other satellites. Switching commands are sent from the master to the satellites via the link ports.
2	Select	Switch	A 4-position slide switch, which is used to select the address for each satellite.
3	PWR	LED	This indicator lights when power is applied to the satellite. See the second Note below.
4	Plug On	LED	This indicator lights when the satellite's switched AC outlet is switched on.
5	—	NEMA 5-15 connector	A 115-VAC outlet that can switch up to 15 amps. It can be switched on, off, or rebooted in response to commands issued at the master.
6	—	IEC-320 connector	A 115-VAC inlet that supplies power for both command functions and the switched plug.
7	—	Switch	A 115-VAC circuit breaker.

NOTE

The address for the master is always 1. For more information, see Section 4.5.

NOTE

The PWR LED does not indicate the on/off status of the satellite's switched AC outlet.

3. Quick Start

This quick-start guide provides a quick demonstration of IPS capabilities. To take full advantage of all of the IPS's features, see **Chapters 4** and **5** after completing the quick-start procedure.

3.1 Hardware Installation

Make the following connections as shown in Figure 3-1. The numbers in the illustration correspond to the numbered text that follows Figure 3-1.

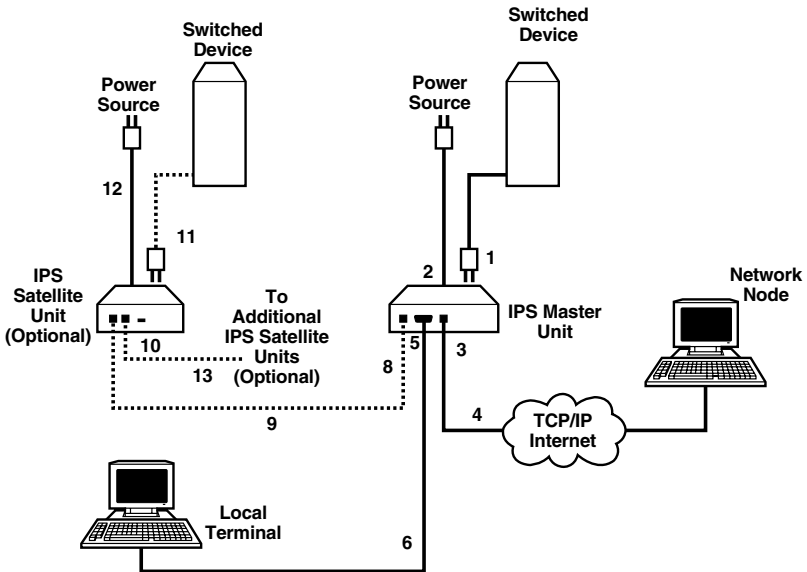


Figure 3-1. Connecting the hardware.

1. Switched AC outlet: Connect the power cable from the switched device to the switched AC outlet on the IPS master's back panel.
2. Power inlet: Connect the supplied power cable to the power inlet on the IPS master's back panel. Connect the other end of the power cable to an appropriate power supply.

CAUTION

Please read the safety cautions listed in Section 4.1.

3. 10BASE-T (network) port: Connect the 10BASE-T network interface to the IPS network port. For more information, refer to **Section 4.4**.

NOTE

The IPS features a 10BASE-T interface. 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, you must manually set the network interface port to 10BASE-T.

4. Network cable: This cable connects the IPS's 10BASE-T network interface to the TCP/IP internet.
5. Console port: The IPS's serial console port is an RS232-C, DB9 connector, wired in a DTE configuration. This allows you to attach either a local terminal or an external modem to the IPS master.

NOTE

You can't attach both a modem and a local PC simultaneously to the console port. Use the serial port mode prompt in the General Parameters menu to specifically configure the console port for use with either a modem or local PC.

- a) Modem: Use a standard serial modem cable to connect your external modem to the IPS's modem port. For more information, please refer to **Section 4.3.2**.
 - b) Local PC: Attach a standard null-modem cable from your PC COM port to the console port connector on the IPS's back panel.
6. Local PC cable: A standard null-modem cable. Use this cable to connect the IPS to a local terminal. For a description of the port interface, refer to **Appendix A**.

7. Modem cable (not pictured): A standard serial modem cable. Use this cable to connect the IPS to an external modem. For more information, refer to **Section 4.3.2**.

For optional Web-Enabled Internet Power Switch Satellites only (part number SWI084A):

Items 8 through 13 apply only to installations that include optional IPS satellites. If your installation does not include satellites, please skip steps 8 through 13.

8. Link port (optional): Use this RJ-11 jack to link IPS satellites to the IPS master.

NOTE

Do not place the master and satellites more than 100 ft. (30.5 m) apart.

9. RJ-11 cable (optional): Use a standard, straight-wired, six-conductor RJ-11 cable (such as EL06MS). For a description of straight-wired RJ-11 cables, please refer to **Section A.2**.
10. Satellite link ports (optional): Connect the satellite to the IPS master via this pair of RJ-11 jacks. If you want to install additional satellites, use the link port to connect to the next satellite in the chain.
11. Connect switched device to satellite (optional): Connect the power cable from your switched device to the switched AC outlet on the satellite's back panel.
12. Satellite power inlet (optional): Use the supplied power cord to connect the satellite to an appropriate power source. Observe the safety caution listed in **Section 4.1**.
13. RJ-11 cable to link additional satellites (optional): If your installation includes more than one satellite, repeat items 8 through 12 above for each of the remaining satellites.

3.2 Communicating with the Power Switch

The IPS offers two different user interfaces: a Web browser interface and a text interface. The Web browser interface (see **Section 3.2.1**) allows you to contact the IPS via a TCP/IP network using a standard, JavaScript® enabled Web browser (such as Internet Explorer or Netscape Navigator®.) The text interface (see **Section 3.2.2**) consists of a series of ASCII text menus, which may be accessed via a TCP/IP network, dial-up modem, or local PC.

3.2.1 THE WEB BROWSER INTERFACE

When communicating with the IPS via a Web browser, click the appropriate button(s) on the browser screen to access switch functions and status screens. This section briefly describes the procedure for contacting the IPS via Web browser and selecting items from the Web interface menus.

NOTES

In order to use a Web browser to communicate with the IPS, connect the IPS master to your network. Make sure that the PC used to control the IPS has a TCP/IP network connection and a JavaScript enabled Web browser.

The IPS includes a default IP address and subnet mask. This allows initial contact with the IPS via a network without first defining an IP address (providing you are contacting the IPS from another node on the same subnet). When installing the IPS in a working network environment, define network parameters as described in **Section 5.3.3**.

1. Web browser access: Start your JavaScript enabled Web browser. Enter the IPS's default IP address (`http://192.168.168.168`) in your Web browser's address bar and then press **Enter**.
2. Password prompt: When you access the IPS via the Web browser interface, the password prompt will always display. If the user name and/or system password have not yet been defined, click **OK** without typing in a user name or password. If the user name and/or system password have already been defined, type in the user name and system password, then click **OK**. The IPS Plug Status screen displays (see Figure 3-2).

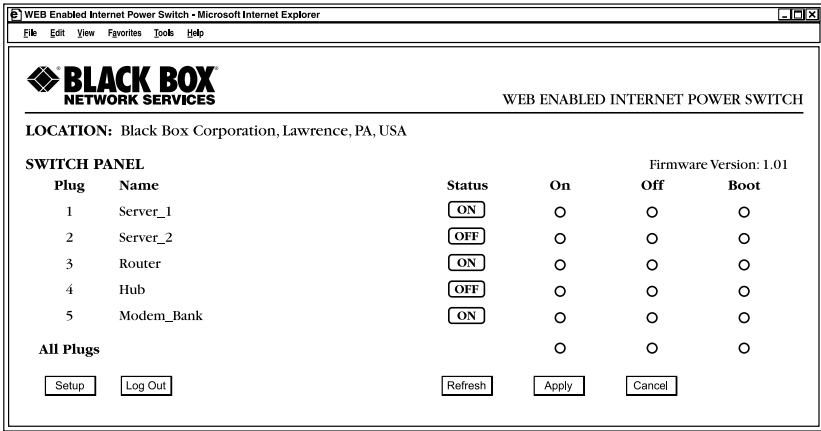


Figure 3-2. The IPS Plug Status screen (Web interface).

3. Test switching functions: When the IPS is powered on, the switched AC outlet is set in the On position. To test on/off/reboot functions, proceed as follows:
 - a) Reboot outlet: Click on the **Boot** button for plug 1. Next, click on the **Apply** button. The IPS displays a screen indicating that the reboot operation is in progress, then returns to the Plug Status screen. Plug 1 is now in the On position.
 - b) Switch outlet off: Click on the **Off** button for plug 1. Next, click on the **Apply** button. The IPS displays a screen indicating that the switch operation is in progress, then returns to the Plug Status screen.

NOTE

The status indicator for plug 1 now indicates that the plug is switched off.

- c) Switch outlet on: Click on the **On** button for plug 1. Next, click on the **Apply** button. The IPS displays a screen indicating that the switch operation is in progress, then returns to the Plug Status screen.

NOTE

The status indicator for plug 1 now indicates that the plug is switched on.

4. Log Out: When you finish exploring the IPS's Web interface, click on the **Log Out** button to terminate your connection to the IPS.

NOTE

When you finish communicating with the IPS, always log off rather than simply closing your Telnet or communications program. Logging off using either the Log Out button in the Web interface or the /X command in the text interface ensures that the IPS has completely exited from command mode and is not waiting for the inactivity timeout to elapse before allowing additional connections.

This completes the IPS Web interface introductory overview. For an overview of the text interface, go to **Section 3.2.2**, or refer to **Chapters 4 and 5** for complete installation and configuration procedures.

3.2.2 THE TEXT INTERFACE

The text interface is a series of simple ASCII menus used to invoke commands and select configuration parameters. Use the text interface to contact the IPS via Telnet, modem, or local PC.

NOTES

To contact the IPS via modem, connect an external modem to the IPS master's console port and attach a phone line to the external modem. Refer to Section 4.3.2 for further instructions regarding external modems.

The console port can be connected to either a local PC or an external modem, but not both at the same time.

To access the IPS text menus, your PC must include a communications program, such as HyperTerminal or ProComm®.

1. Access the IPS command mode: To invoke commands or view status screens, access the IPS command mode.
 - a) Telnet Access: Start your Telnet program, then Telnet to the IPS's default IP address (192.168.168.168.) For example, on a UNIX® system, the Telnet command would be invoked as shown below.

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

If the system password is defined, the IPS displays a password prompt; type in the system password and press **Enter**. If the system password is not defined, the IPS Plug Status screen (see Figure 3-3) displays, followed by the IPS> command prompt.

Internet Power Switch v1.01 Site ID: Black Box Internal Test Unit v 1.01

Plug	Name	Status	Boot Delay
1	Server_1	ON	5 sec
2	Server_2	OFF	5 sec
3	Router	ON	5 sec
4	Hub	OFF	5 sec
5	Modem_Bank	ON	5 sec

“/H” for help.

IPS>

Figure 3-3. The IPS Plug Status screen (text interface).

NOTE

If you contact the IPS from a node that is not on the same subnet, either change your PC's IP address to an address that is on the same subnet as the IPS (for example, 192.168.168. xxx), or access the IPS command mode via modem or console port and define network parameters as described in Section 5.3.3.

- b) Modem access: Start your communications program and dial the number for the external modem. The IPS Plug Status screen (see Figure 3-3) displays, followed by the IPS> command prompt.
 - c) Console port access (local PC): Start your communication program (9600, 8, N, 1). Make certain that it is set for the PC COM port that is attached to the IPS, then press **Enter**. The IPS Plug Status screen (see Figure 3-3) displays, followed by the IPS> command prompt.
2. Test switching commands: When the IPS is powered on, the switched AC outlet is set to the On position. To test on/off/reboot functions, proceed as follows:
- a) Reboot outlet: To initiate a boot cycle, go to the IPS> command prompt, type /BOOT 1 and press **Enter**. Power to the switched AC outlet will be switched off. After the boot delay period (default is 5 seconds), power to the switched outlet will then be switched back on.

- b) Switch outlet off: To power the switched AC outlet Off, go to the IPS> command prompt, type /OFF 1, and press **Enter**. Power to the switched outlet will be switched off.
 - c) Switch outlet on: To power the switched AC outlet On, go to the IPS> command prompt, type /ON 1, and press **Enter**. Power to the switched outlet will be switched on.
3. Exit command mode: After you finish testing the IPS, type /X and press **Enter** to exit from the command mode.

NOTE

Always disconnect using the /X command.

If the /X command is not invoked at the end of a command session, then the IPS will not exit from command mode until the no activity timeout feature closes the session. In this case, further access to the IPS command mode may not be allowed until the current session times out.

This completes the introductory overview of the IPS. Go to **Chapters 4** and **5** for complete installation and configuration procedures.

4. Installation

4.1 Power Supply Connection

Use the supplied power cord to connect the IPS master to an appropriate power supply. The power switch on the IPS back panel must be on in order for the IPS to operate.

NOTE

If your installation includes optional IPS satellites, repeat this procedure for each satellite in the chain.

CAUTIONS

- 1. Operate this device only with the type of power source indicated on the instrument's nameplate. If you are not sure of the type of power service available, contact your local power company.**
- 2. Maintain reliable earthing (grounding) of the IPS. Pay particular attention to supply connections when connecting to power strips, rather than directly to the branch circuit.**
- 3. Check nameplate ratings to avoid overloading supply circuits that could affect overcurrent protection and supply wiring.**

4.2 Connection to Switched Outlets

Connect the power cord from the switched device to the switched AC outlet on the IPS master's back panel. When the IPS is powered on, the switched AC outlet is switched on (this also applies to the switched outlets on any optional IPS satellites). The switched outlet can switch up to 15 amps AC. If your installation includes IPS satellites, then repeat this procedure for each satellite.

4.3 Console Port Connection

The console port is a male, RS-232C DB9 connector, wired in a DTE configuration similar to an AT[®] computer. The console port can be connected to either an external modem or a local PC, but not both at the same time. **Appendix A** describes the console port interface.

4.3.1 CONNECTING A LOCAL PC

When connected to a local PC, the console port is configured as DTE. After you connect the local PC, set the serial port mode to “console” as described in **Section 5.3.1**.

4.3.2 CONNECTING AN EXTERNAL MODEM

When connecting directly to an external modem, use a standard AT to modem cable. Make certain that the modem is initialized at the same communications parameters as the IPS console port (default is 9600 bps, no parity, 8 data bits, 1 stop bit). The modem must be set to auto-answer in one ring. Refer to your modem users' guide for more information. **Section 5.3.1** describes the procedure for defining modem command strings.

4.4 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.

NOTE

The IPS has a default IP address (192.168.168.168). When installing the IPS in a working network environment, define the network parameters as described in **Section 5.3.3**.

The IPS has a 10BASE-T interface. 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, you must manually set the network interface port to 10BASE-T.

4.5 Connecting Optional IPS Satellites

Up to 16 optional IPS satellites can be connected to each IPS master. Satellites are connected in a chain. The master is the first link in the chain as shown in Figure 4-1.

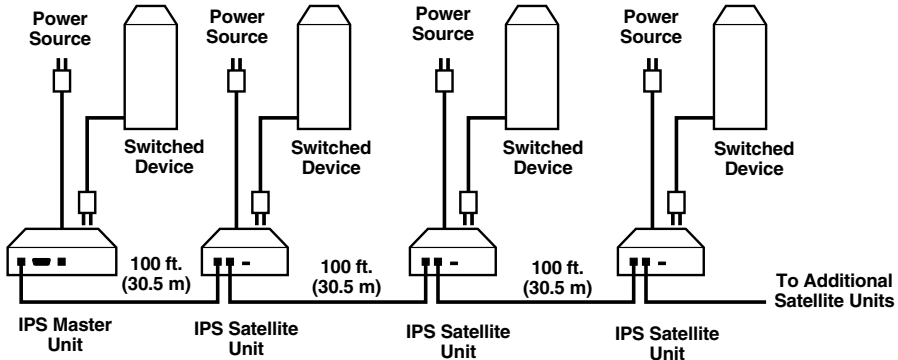


Figure 4-1. Connecting optional IPS satellites to the master.

To connect IPS satellites, proceed as follows:

1. Linking: Use a standard, straight-wired RJ-11 cable (such as part number EL06MS) to connect the master and the satellites.

NOTES

The two RJ-11 jacks on the satellite's link ports are interchangeable; use either RJ-11 jack.

The distance between each IPS should not exceed 100 ft. (30.5 m).

2. Address selection: When connecting the optional satellites, select an address for each satellite. Up to four satellites can share the same address. These addresses allow the IPS master to direct on/off/boot commands to a specific satellite or group of satellites.
 - a) The IPS master always has an address of 1.
 - b) Use the address selector slide switch on the front panel to set the address to 2, 3, 4, or 5 for each satellite.

- c) When addresses are assigned to a series of IPS satellites, all satellites that share a specific address (for example, 2), are part of the same zone. For example, if your application includes three satellites whose address selector switches are set to 2, then those three satellites are all part of zone 2, and any commands directed to zone 2 apply to those three satellites.
- d) For more information on satellite addresses and zones, see **Section 6.1**.

NOTES

The master will not recognize satellites that are connected while the master is powered on until the master has been powered off and back on again.

If you attempt to address a command to a satellite that was connected after power on, the IPS plug status screen indicates that the satellite is not recognized.

After connecting satellites to the master, use the power switch on the master's back panel to power the master off and then back on again. This allows the master to recognize all newly connected satellites.

Installation is complete. Please proceed to **Chapter 5** for configuration instructions.

5. Configuration

5.1 System Mode and User Mode

To restrict access to sensitive command functions, the IPS 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 lists currently defined system parameters.
- User mode permits access to all status screens and on/off/boot commands, but does not allow access to configuration menus and functions. In this mode, you can direct commands to all satellites and view status screens, but you're not allowed to change configuration parameters.

The IPS displays a password prompt when it is contacted via the console port or network port. The password entered at this prompt determines whether the IPS will start up in system mode or user mode. If you enter the system password, the system mode is active. If you enter the user password, the user mode is active. Both the system password and user password are defined via the General Parameters menu as described in **Section 5.3.1**.

NOTES

To restrict user access to configuration menus, define the system password. If the system password is not defined, the IPS will always start up in system mode.

If the system password is not defined, the password prompt does not display when you access the IPS via the text interface. The prompt always displays when you contact the IPS via the Web browser interface.

When you contact the IPS via the network, the password prompt includes a field for the user name. If you have not defined a user name, then leave this field blank. In this case, only the password is required to gain access to the IPS. The user name prompt does not display when you contact the IPS via the text interface.

5.2 Communicating with the IPS

To configure the IPS or invoke command functions, first connect to the IPS and access the command mode. As discussed in **Chapter 3**, the IPS offers two separate command interfaces: the Web browser interface and the text interface.

In addition, the IPS also offers three different methods for accessing the command mode: via network, via external modem, or via local console. The Web browser interface is only available when you contact the IPS via network, and the text interface is available via network, modem, or local PC.

5.2.1 ACCESSING THE WEB BROWSER INTERFACE

To issue commands via the Web browser interface, connect the IPS master to a TCP/IP network. Your PC or workstation must have a JavaScript enabled Web browser (such as Internet Explorer or Netscape Navigator).

1. Start your JavaScript enabled Web browser.
2. Type the IPS's IP address (default is `http:// 192.168.168.168`) into the Web browser's address bar and press **Enter**.
3. Password prompt: The IPS displays a prompt for your name and password.
 - a) User name: If you have not previously defined a user name, leave this field blank. A user name is only required when one was defined via the General Parameters menu.
 - b) Password: Type your system password or user password, then click on the **OK** button.
 - c) If the system password was not defined, simply click on the **OK** button without typing in a name or password.

If you enter a valid password, the Plug Status screen appears. See Figure 5-1.

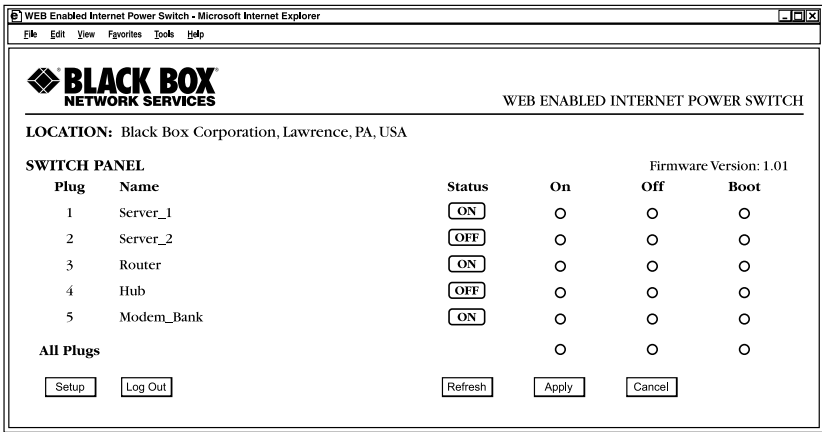


Figure 5-1. Plug Status screen (Web browser interface).

5.2.2 ACCESSING THE TEXT INTERFACE

Access the text interface via the network, a modem, or a local PC.

To access the text interface, your installation must include the following:

- Access via network: The IPS master must be connected to your TCP/ IP network and your PC must include a communications program (such as HyperTerminal or ProComm).
- Access via modem: An external modem must be connected to the IPS master's console port, and a phone line must be connected to the external modem. Your PC must include a communications program.
- Access via local PC: Your local PC must be connected to the IPS master's console port. The local PC must include a communications program.

To access command mode via the text interface:

1. The IPS is transparent to parity and accepts 7 or 8 bit characters, but always answers back at 8 bits, no parity. Set your communication program for the appropriate baud rate, bits, parity, and comm port.
 - a) Via modem: Start your communications program. Dial the external modem connected to the IPS. Wait for the connect message, then proceed to step 2.
 - b) Via local PC: Start your communications program and press **Enter**. Wait for the connect message, then proceed to step 2.
 - c) Via Network: The IPS includes a default IP address (192.168.168.168), which allows you to contact the IPS from any network node on the same subnet. When the IPS is installed in a working network environment, redefine the IP address, subnet mask, and gateway address as described in **Section 5.3.3**.
 - i. Telnet to the IPS's IP address. For example, if the IP address is 192.168.168.168, on a UNIX system the Telnet command is:

```
$ telnet 192.168.168.168 [Enter]
```
 - ii. If the Telnet connection is refused, either the IP security feature has denied the connection or the IPS is operating on a 100BASE-T network that does not autosense for 10BASE-T devices (see **Section 4.4**.)
2. Password: If the system password is defined, the IPS displays the password prompt. Type in either the system password or the user password, and press **Enter**. If the system password is not defined, the prompt does not display when you access the IPS via the text interface.

NOTE

The password is case-sensitive.

3. If you enter a valid system password or user password, the IPS displays the Plug Status screen as shown in Figure 5-2, followed by the IPS> command prompt.

```

Internet Power Switch v1.01  Site ID: Black Box Internal Test Unit v 1.01

Plug | Name          | Status |      | Boot Delay |
-----|-----|-----|-----|-----|
1    | Server_1      | ON     |      | 5 sec      |
2    | Server_2      | OFF    |      | 5 sec      |
3    | Router        | ON     |      | 5 sec      |
4    | Hub           | OFF    |      | 5 sec      |
5    | Modem_Bank    | ON     |      | 5 sec      |

"/H" for help.
IPS>

```

Figure 5-2. The Plug Status screen (text interface).

5.3 Configuration Menus

Select configuration parameters for the IPS via the Web browser interface or 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 also apply to the other.

- Web browser interface: Click on the **Setup** button to access the configuration menus. A row of buttons appear along the right-hand edge of the screen. Click on the appropriate button to access the desired menu.

NOTES

Newly selected parameters do not apply 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) and enter 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 5.3.5 describe the options and parameters that are available in each of the configuration menus.

NOTES

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

Configuration menus are only available when the system mode is active. Configuration menus are not available if you logged in with the user password.

5.3.1 THE GENERAL PARAMETERS MENU

The General Parameters menu allows you to select parameters such as the passwords, user name, site ID, modem commands, 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 appears (see Figure 5-3).

The screenshot shows a web browser window titled "Setup Parameters - Microsoft Internet Explorer". The page header includes the "BLACK BOX NETWORK SERVICES" logo and the text "WEB ENABLED INTERNET POWER SWITCH". Below the header, the location is listed as "Black Box Corporation, Lawrence, PA, USA".

The main content area is divided into two sections:

- SETUP:** A vertical list of buttons: "General Parameters", "Plug Parameters", "Network Parameters", "Telnet Parameters", "Web Server Parameters", "Save Parameters", "Switch Panel", and "Log Out".
- GENERAL PARAMETERS:** A list of configuration fields:
 - System Password: [*****]
 - Confirm System Password: [*****]
 - User Password: [*****]
 - Confirm User Password: [*****]
 - User Name: []
 - Site ID: [Black Box Corporation, Lawrence, PA]
 - Serial Port Mode: [Console]
 - Modem Init. String: [ATE0M0Q1&C1&D2S0=1]
 - Baud Rate: [9600]
 - Command Echo: [On]
 - Inactivity Timeout: [5 Mins]
 - Command Confirm: [On]
 - Automated Mode: [Off]
 - Button Mode: [One]

At the bottom right of the configuration area are "Apply" and "Cancel" buttons.

Figure 5-3. General Parameters menu (Web browser interface).

- Text Interface: Type /G and press **Enter**. The General Parameters menu appears (see Figure 5-4).

GENERAL PARAMETERS:

- | | |
|---------------------------|-------------------------------------|
| 1. System Password: | (defined) |
| 2. User Password: | (defined) |
| 3. User Name: | (undefined) |
| 4. Site ID | Black Box INternet Test Unit v 1.01 |
| 5. Serial Port Mode: | Console |
| 6. Modem Init. String: | ATE0M0Q1&C1&D2S0=1 |
| 7. Baud Rate: | 9600, N, 8, 1 |
| 8. Command Echo: | On |
| 9. Inactivity Timeout: | 5 Min |
| 10. Command Confirmation: | On |
| 11. Automated Mode: | Off |
| 12. Button Mode: | One |

A. Default Parameters

Enter Selection or <ESC> to Exit...

Figure 5-4. General Parameters menu (text interface).

The General Parameters menu defines the following parameters.

NOTE

Except where indicated, all parameters are available via both the Web browser interface and the text interface.

- System password: The IPS displays a password prompt when you attempt to access the command mode. When you enter the system password at log on, the system mode is active, allowing access to both switching command functions and configuration menus. (The system password can be up to 16 characters long and the default is “undefined”.)

NOTES

If the system password is not defined, the IPS starts up in system mode, and configuration functions are available to anyone who accesses the command mode.

When defining password via the Web browser interface, re-type the desired password in the confirm password field. When defining passwords via the text interface, the submenu asks you for confirmation.

- User password: The user password allows access to all on/off/boot command functions, but does not allow access to configuration menus. (The user password can be up to 16 characters long and the default is “undefined”.)
- User name (optional when accessing the IPS via the text interface): The user name allows you to set up an additional layer of security for Web access to the command mode by requiring that users correctly enter a name in addition to a password. (The user name can be up to 16 characters long, and the default is “undefined”.)

NOTE

The user name is only required when you access the IPS via the Web interface.

- Site ID: The site ID defines a brief text message, which is used to identify the installation location of the IPS. (The site ID can be up to 32 characters long and the default is “undefined”.)
- Serial port mode: The serial port mode sets up the IPS console port for use with either a local PC (console) or an external modem (modem). (The default value for the serial port mode is “console”.)

NOTE

When the serial port mode is set at “modem”, the modem initialization string is sent every 15 minutes.

- Modem initialization string: The modem initialization string defines a command string (up to 32 characters long) that can be sent out 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 the user’s guide for your modem. (The default value for the modem initialization string is ATE0M0Q1& C1& D2S0=1.)

- Baud rate: This is the baud rate for the IPS master's console port. (The default value for the baud rate is 9600 bps, no parity, 8 data bits, and 1 stop bit.)

NOTE

When this setting is changed, the new baud rate is not applied until you exit and then re-enter the IPS command mode.

- Command echo: Enables/disables command echo. When enabled, ASCII commands sent via the text interface to the IPS are echoed back, allowing keystrokes to display. (The default value for command echo is "on [enabled].")

NOTE

Command echo applies primarily to the text interface and has no visible effect on the Web browser interface.

- Inactivity timeout: Determines how long the IPS will wait for additional commands during periods of inactivity. When the timeout period lapses, you will be disconnected from the IPS command mode. (The default value for inactivity timeout is 2 minutes.)
- Command confirmation: When enabled, the IPS will display a confirmation prompt before switching, reboot, and default commands when the unit is controlled via text interface. When disabled, the prompt will be suppressed. (The default value for command confirm is "on [enabled].")
- Automated mode: When enabled, the IPS executes on, off, boot, and exit commands without displaying a confirmation prompt, status screen, or confirmation messages. This allows the IPS to be controlled by a device that generates commands to control switching without human intervention. For more information, please refer to **Section 6.5**. (The default value for automated mode is off.)

NOTE

When this option is enabled, security functions are suppressed, and users can access system-level menus and control plugs without entering a password. If security is a concern and the automated mode is required, use the IP security feature to restrict access.

- Button mode: Enables and configures the manual control button (Plug). (The default value for button mode is "one".)
 - None: Disables the manual button.

- One: The manual button only controls the outlet on the master; outlets on satellites are not affected by the manual button.
- All: The manual button controls the outlet on the master and all connected satellites.
- Default parameters: Resets the IPS 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 this function is invoked via the network port, the IP address is not reset. If this function is invoked via the console port or the modem port, the IP address is reset.

5.3.2 PLUG PARAMETERS MENU

The Plug Parameters menu defines names and boot delay times for each of the IPS's five zones. Plug 1 (zone 1) always refers to the switched outlet on the IPS master, and plugs 2 through 5 (zones 2 to 5) refer to satellites. Use the selector switch on the satellite's front panel to set the zone number for each satellite. For more information, refer to **Section 4.5**.

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 (see Figure 5-5).

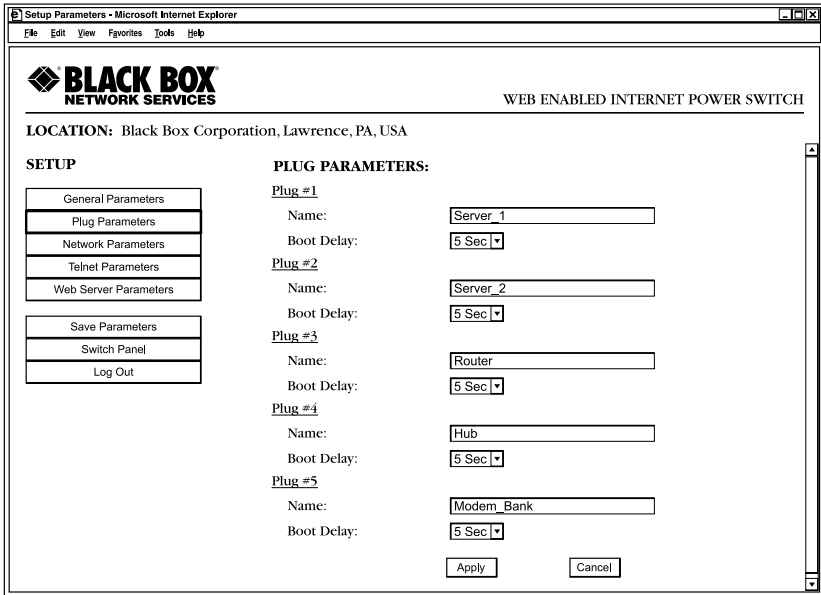


Figure 5-5. Plug Parameters menu (Web browser interface).

Text Interface: Type `/Pn` and then press **Enter** (where *n* is the number or name of the plug you want to configure). The Plug Parameters menu appears (see Figure 5-6).

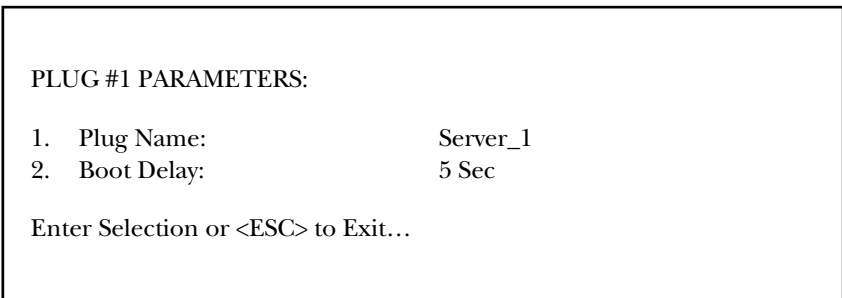


Figure 5-6. Plug Parameters menu (text interface).

NOTE

The major difference between the Web browser interface and text interface is that the Web interface allows you to select parameters for all five plugs/zones from a single menu, whereas the text interface includes a separate menu for each plug/zone. The plug parameters menu defines the following parameters:

- **Name:** Assigns a name to the plug. (The name can be up to 32 characters, default is “undefined”.)
- **Boot delay:** During a boot cycle, power to the outlet is switched off and then switched back on. The boot delay is the amount of time that elapses between power off and power on. (The boot delay default is 5 seconds.)

5.3.3 NETWORK PARAMETERS MENU

The Network Parameters menu selects 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 Web Parameters menu appears (see Figure 5-7).

Setup Parameters - Microsoft Internet Explorer

File Edit View Favorites Tools Help

BLACK BOX
NETWORK SERVICES

WEB ENABLED INTERNET POWER SWITCH

LOCATION: Black Box Corporation, Lawrence, PA, USA

SETUP

General Parameters
Plug Parameters
Network Parameters
Telnet Parameters
Web Server Parameters

Save Parameters
Switch Panel
Log Out

NETWORK PARAMETERS:

IP Address:

Subnet Mask:

Gateway Address:

Send MSS:

Security #1

Mask:

Action:

Security #2

Mask:

Action:

Security #3

Mask:

Action:

Security #4

Mask:

Action:

Security #5

Figure 5-7. Network Parameters menu (Web browser interface).

Text Interface: Type /N and press **Enter**. The Network Parameters menu appears (see Figure 5-8).

NETWORK PARAMETERS:	
1. IP Address:	65.106.93.120
2. Subnet Mask:	255.255.255.0
3. Gateway Address:	65.106.93.97
4. Send MSS:	1460
5. IP Security	
MAC Address:	00-0c-67-23-45-67
Enter Selection or <ESC> to Exit...	

Figure 5-8. Network Parameters menu (text interface).

NOTES

Although the Web browser interface and text interface both allow configuration of the same network parameters, when parameters are defined via 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 menu defines 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 IP address for the IPS. (The IPS address default is 192.168.168.168.)
- Subnet mask: Defines the subnet mask for the IPS. (The subnet mask default is 255.255.255.0.)
- Gateway address: Defines the gateway address for the IPS. (The gateway address default is “undefined”.)
- Send MSS: Defines the maximum segment size that will be sent by the IPS. (The send MSS default is 536.)

- IP Security: See below for a detailed description of the IP security feature.
- MAC address: Displays the IPS's MAC address.

NOTE

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

IP Security Feature

Use the IP security feature to restrict unauthorized IP addresses from establishing a connection with the IPS. In the default state, the IPS 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: Use the the fields at the bottom of the Network Parameters menu (see Figure 5-7) to configure the IP security feature.
 - b) Text interface: Go to the Network Parameters menu (/N), type 5, and press **Enter**. The IP Security menu appears (see Figure 5-9).

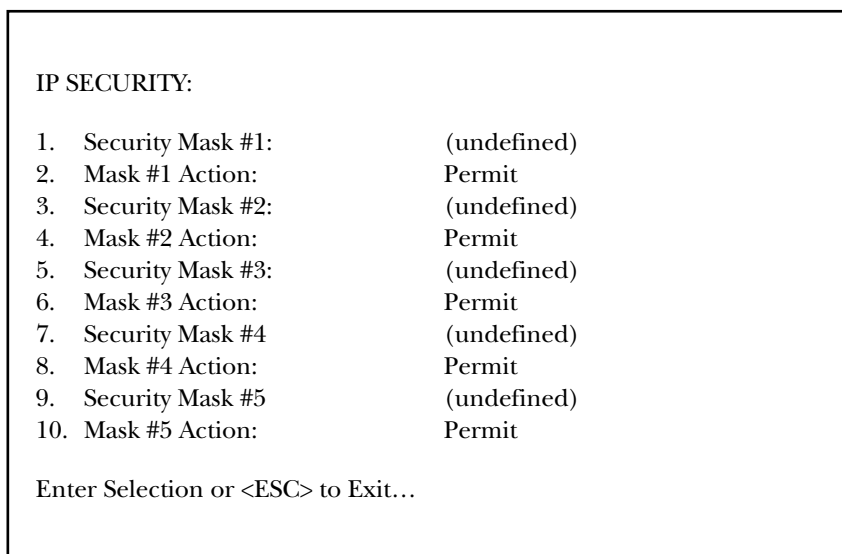


Figure 5-9. IP Security menu (text interface).

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, mask 5 has the highest priority.*
- c) 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 used as a wild card, which means that it blocks all IP addresses.

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 to 192.1.1.5.

NOTES

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 IPS command mode via network. Access is only allowed via a local PC or an external modem connected to the IPS 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.

5.3.4 THE TELNET PARAMETERS MENU

The Telnet Parameters menu enables/disables Telnet access to the IPS command mode and selects the default 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 5-10.

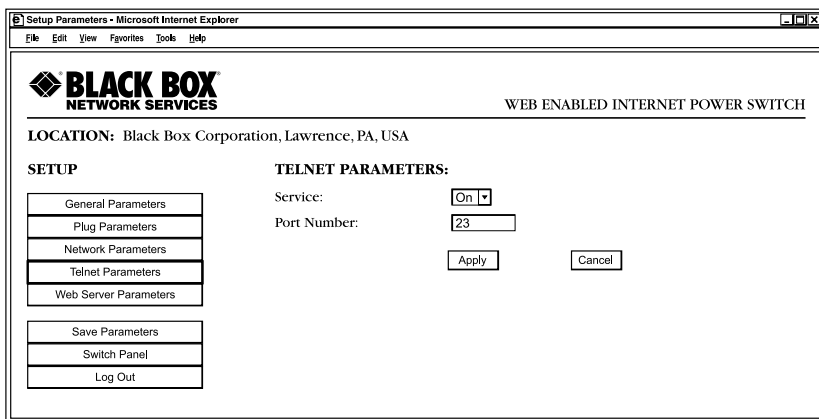


Figure 5-10. Telnet Parameters menu (Web browser interface).

Text interface: Type `/T` and press **Enter**. The Telnet Parameters menu appears (see Figure 5-11).

TELNET PARAMETERS:

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

Enter Selection or <ESC> to Exit...

Figure 5-11. Telnet Parameters menu (text interface).

The Telnet Parameters menu defines the following parameters.

NOTE

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

- Service: Enables/disables Telnet communication with the IPS. When this item is off, you can't contact the IPS via Telnet. (The default value for service is "on".)
- Port number: Selects the port number that's used for Telnet connections. (The default value for port number is 23.)

5.3.5 WEB SERVER PARAMETERS MENU

The Web Server Parameters menu configures the IPS's internal Web server, which lets you operate the IPS via the Web browser interface.

- 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 (see Figure 5-12).

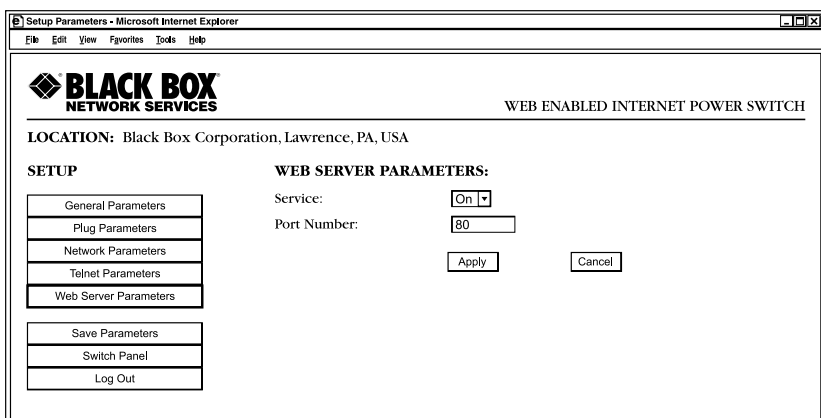


Figure 5-12. Web Server Parameters menu (Web browser interface).

- Text Interface: Type /W and press **Enter**. The Web Server Parameters menu appears (see Figure 5-13).

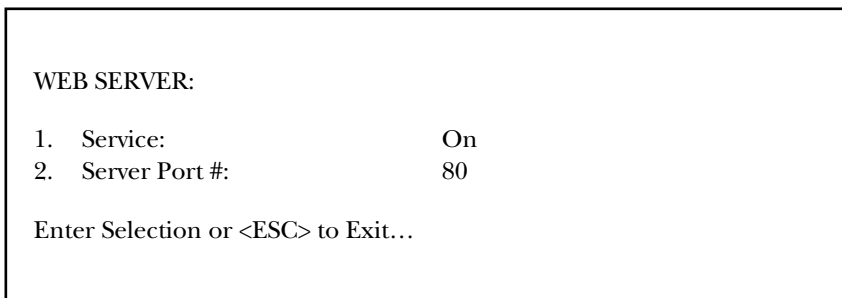


Figure 5-13. Web Server Parameters menu (text interface).

The Web Server Parameters menu defines the following parameters.

NOTE

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

- Service: Enables/disables the IPS's Web server. (The default value for service is "on".)

NOTE

When the Web server is disabled, you can't communicate via the Web browser interface.

- 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 used to communicate with the IPS via Telnet. (The default value for port number is 80.)

5.4 Save Configuration Parameters

The IPS offers two methods for saving parameters: saving to flash memory and saving to an ASCII file.

Saving parameters to flash memory ensures that your user-defined configuration remains intact if power to the IPS master is temporarily interrupted. After you change parameters via the configuration menus, the IPS prompts you to save parameters before exiting from command mode. At this point, the IPS offers the options to save parameters to flash, 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 7**, this provides quick recovery if the IPS is accidentally reset to default parameters, and also allows you to copy parameters to other IPSs when several masters need to be configured with the same parameters.

NOTES

After new parameters are applied, the IPS 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 IPS. At this point, you can save new parameters to flash memory, continue without saving, or revert to previously saved parameters.

If parameters are not saved and power to the master is interrupted, newly defined parameters are lost. When power is restored, the IPS is then configured with the previously saved parameters.

6. Operation

As discussed in **Chapter 5**, the IPS offers two separate command interfaces: the Web browser interface and the text interface.

NOTE

Both interfaces offer essentially the same command options and features. Parameters defined via the Web interface also apply when communicating via the text interface (and vice versa.)

6.1 Plug Numbers and Plug Zones

As described in **Section 4.5**, the IPS master can be connected to up to 16 optional IPS satellites. This allows the IPS master to expand to meet the needs of your power control application when you add additional switching requirements to your installation.

To allow the IPS to direct on/off/boot commands to specific groups of satellites, the switched outlet on each satellite is assigned to one of four possible plug numbers or zones. Zones are determined by the setting of the address selector switch on each individual satellite. For example, all satellites that have their address selector switch set to 2 are defined as plug 2 or zone 2; all satellite units that have their address selector switch set to 3 are defined as plug 3 or zone 3, etc.

Grouping satellites into zones directs switching commands to all satellites that share the same address. If your application does not include optional satellites, always direct switching commands to plug 1 or zone 1 (the switched AC outlet on the IPS master).

NOTE

The IPS will only detect IPS satellites that were connected when the master was last powered on.

Satellite units that were connected after the master is powered on will *not* be detected until the master is powered off and back on again.

6.2 Operation via the Web Browser Interface

When using the Web browser interface, all switching commands are invoked via the Plug Status screen. This screen displays the status of the switched outlet on the IPS master as well as the status of outlets on any connected IPS satellites.

When you log on to the IPS command mode via the Web browser interface, the Plug Status screen (or switch panel) displays. This screen (see Figure 6-1) lists the current status of the IPS's switched outlet(s) and provides a series of buttons that control on/off/boot switching of the outlet(s).

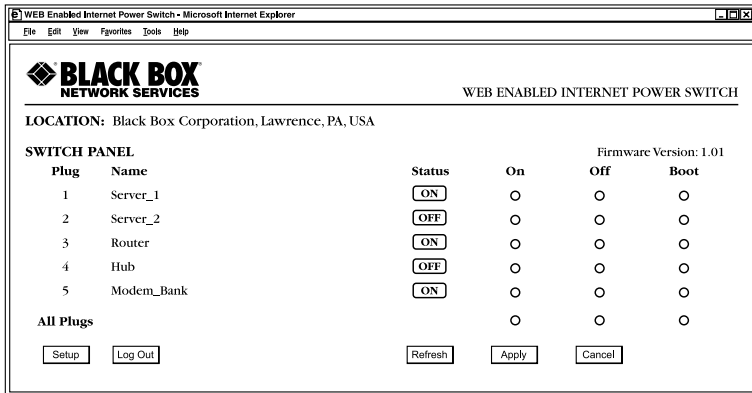


Figure 6-1. Plug Status menu (Web browser interface).

If one or more optional IPS satellites are connected to the IPS master, then the Plug Status screen indicates the on/off status of each plug zone. If your installation includes only the IPS master and no optional satellites, then the Plug Status screen only lists the status for plug 1 (the master's switched AC outlet). The fields where plugs 2 through 5 are normally listed will be dashed out.

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

1. Access the IPS command mode as described in **Section 5.2.1**.
2. When the Plug Status screen (see Figure 6-1) appears, note that the screen includes a status field and on/off/boot controls for every satellite that was connected at the time that the master was powered on.
3. Switching plugs on: To switch one or more plugs on, click the **On** button next to the desired plug(s), and then click on the **Apply** button.
 - a) To switch all plugs on, click the **On** button in the **All Plugs** line, and then click on the **Apply** button.
 - b) The IPS displays a screen that indicates that the switching operation is in progress, then returns to the updated Plug Status screen (which should now show the selected plugs in the On position).

4. Switching plugs off: To switch one or more plugs off, click on the **Off** button next to the desired plug(s), then click on the **Apply** button.
 - a) To switch all plugs off, click on the **Off** button in the **All Plugs** line, and click on the **Apply** button.
 - b) The IPS displays a screen that indicates that the switching operation is in progress, then returns to the updated Plug Status screen (which should now show the selected plugs in the Off position).
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** line, then click on the **Apply** button.
 - b) The IPS displays a screen that indicates that the reboot cycle is in progress, then returns to the Plug Status screen (which should now show the selected plugs in the On position).

NOTE

If different boot delay times are assigned to each selected plug, then the Plug Status screen will not redisplay until the longest defined boot delay time elapses.

6.3 Operation via the Text Interface

When using the text interface, invoke simple ASCII commands to perform all switching functions. ASCII commands also display status screens and log out of command mode. The text interface includes a Help menu, which summarizes all available IPS commands. To display the text interface Help menu (see Figure 6-3), type `/H` and press **Enter**.

6.3.1 THE PLUG STATUS SCREEN

When you log in to the IPS command mode using the text interface, the Plug Status screen displays. This screen (see Figure 6-2) lists the current status of the IPS's switched outlet(s) and displays the firmware version and currently defined site ID message.

Internet Power Switch v1.01		Site ID: Black Box Corporation Demo	
Plug	Name	Status	Boot Delay
1	Server_1	OFF	5 sec
2	Server_2	ON	1 sec
3	Router	ON	1 sec
4	Hub	ON	5 sec
5	Modem_Bank	ON	5 sec

“/H” for help.

Figure 6-2. Plug Status screen (text interface).

Normally, the Plug Status screen redisplay every time that a command successfully executes.

NOTE

If the automated mode is enabled (see Section 6.5), the Plug Status screen will not redisplay after each command executes.

```

Internet Power Switch v1.01      Site ID: Black Box Corporation Demo

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
                                   /W  View/Set Web Server
Control                          /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
                                   /T  Reset Network Interface
                                   /U  Upgrade Firmware

+-----+
| [n] = optional plug name or number |
| <n> = required plug name or number |
| n + n or n n = plug n and plug n  |
| n : n = plug n through plug n     |
| * = all plugs with access         |
| , y = bypass "Sure? (y/n)"       |
+-----+

IPS>

```

Figure 6-3. The IPS Help screen (text interface).

6.3.2 BOOT/ON/OFF COMMANDS

These commands boot or toggle the on/off status of the IPS's switched plug(s). Specify plugs by name or number.

NOTES

Wait for the "IPS>" prompt to appear before entering commands. The prompt does not reappear until the previous command is complete.

Commands are *not* case sensitive. All commands are invoked by pressing the Enter key.

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

To switch plugs or 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 or zone). 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 or zone).

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 a the number or name of the desired plug or zone).

NOTE

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

```
/BOOT 1 or /BO ATMSWITCH
```

4. Suppress command confirmation prompt: To execute a boot/on/off command without displaying the "Sure?" prompt, include the `,Y` option in the command line. The `,Y` option is entered immediately following the command argument. For example:

```
/ON ROUTER, Y or /BOOT 2, Y
```

6.3.3 APPLYING COMMANDS TO SEVERAL PLUGS

As described below, boot/on/off commands apply either to only the switched outlet on the IPS master or to an assortment of plugs on the master and linked satellites.

NOTE

When commands apply to several plugs, the IPS delays for approximately one second between switching actions. For example, when switching plugs 1 and 2 on, the IPS switches plug 1 on, delays one second, then switches plug 2 on.

1. Several plugs: To apply an on/off/boot command to several plugs or zones, 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]
```

2. Series of plugs: To apply a command to a series of IPS plugs or zones, 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]
```

3. All plugs: To apply a command to all plugs (the IPS master plus each connected satellite), enter an asterisk in place of the name or number. For example, to boot the master plug and all plugs on connected satellites, enter the following:

```
/BO* [Enter]
```

6.4 Logging Out of Command Mode

When you are finished communicating with the IPS, 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 IPS has completely exited from command mode and is not waiting for the inactivity timeout period to elapse before allowing additional connections. This ensures that the IPS will be available to other users and they will not have to wait for the timeout period to elapse before accessing the IPS command mode.

6.5 The Automated Mode

The automated mode executes switching and reboot commands without displaying menus or generating response messages. Automated mode allows the IPS to be controlled by a device which can generate commands (for controlling 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 `IPS>` prompt, which displays when the command is complete.

You can enable the automated mode using either the Web browser interface or text interface. However, automated mode is primarily for users who want to send ASCII commands to the IPS without operator intervention, so it doesn't specifically apply to a GUI-style Web browser interface. When the automated mode is enabled, you can still use the Web browser interface to invoke on/off/boot commands.

NOTES

When automated mode is enabled, all IPS password security functions are disabled, and you 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 IPS configuration menus, enable and configure the IP security function as described in **Section 5.3.3**.

To enable/disable the automated mode, access the General Parameters menu (see **Section 5.3.1**) and then set the automated mode option to the On state. When the automated mode is enabled, IPS functions will change as follows:

1. All password security is suppressed: When a user attempts to access the command 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. Status screen is suppressed: The status screens do not automatically display after commands successfully execute.

NOTE

The /S command can still be invoked to display the status screen if needed.

3. "Sure?" prompt is suppressed: All commands execute without prompting for user confirmation.
4. Error messages are suppressed: If you press the **Enter** key without entering a command, the IPS does not respond with the invalid command message.

NOTE

An error message is still generated if commands are invoked using invalid formats or arguments.

All other status display and configuration commands function normally.

6.6 Manual Operation

In addition to the command-driven functions available via the Web browser interface and text interface, the IPS's switched plugs can also be toggled on and off manually. To manually toggle plug(s) on or off, press the manual control button (Plug), and hold it down for approximately one second; the corresponding plug(s) toggle on or off.

If desired, use the button mode parameter (accessed via the General Parameters menu in both the Web browser interface and text interface) to disable the manual power button completely. In addition, the button mode parameter also restricts manual control to the master's switched plug only, or allows the manual control button (Plug) to control switched outlets on the IPS and all connected satellites.

For more information on the button mode parameter, please refer to **Section 5.3.1**.

7. Saving and Restoring Configuration Parameters

After you properly configure the IPS, you can download and save parameters as an ASCII text file on your local or remote PC. Later, if the configuration is accidentally altered, you can upload the file with the saved parameters to automatically reconfigure the IPS without manually assigning each parameter.

Saved parameters can also be uploaded to other IPSs. This allows rapid setup when several IPSs are configured with the same parameters.

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 IPS command mode using the system-level password.
2. When the IPS command prompt appears, type `/DL` and press **Enter**. The IPS 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, `IPS.PAR`).
3. When the communications program is ready to receive the file, return to the IPS command mode, and press **Enter** to proceed.
4. The IPS sends a series of ASCII command lines that specify the currently selected IPS parameters.

7.2 Restoring Saved Parameters

This section describes how to use ProComm to send saved parameters to the IPS.

NOTE

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

1. Start your communications program and access the IPS command mode via the text interface as described in **Section 5.2.2**.
2. If the password prompt displays, 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 IPS 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 IPS via Telnet, the IPS's IP address, subnet mask, and gateway address can't be altered.

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

Appendix A. Interface Descriptions

A.1 Console Port Interface

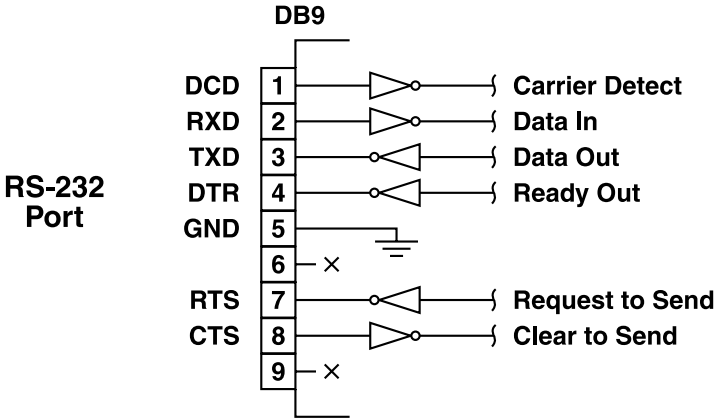


Figure A-1. Console port interface.

A.2 Straight-Wired RJ-11 Cables

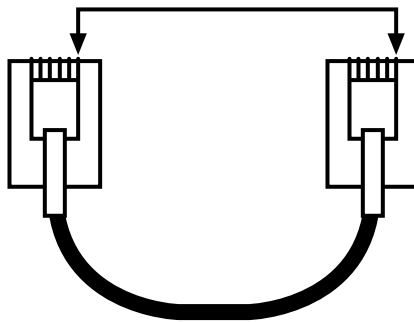


Figure A-2. Straight-wired RJ-11 cables.

Appendix B. Troubleshooting

B.1 Calling Black Box

If you determine that your Web-Enabled Internet Power Switch 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.

B.2 Shipping and Packaging

If you need to transport or ship your Web-Enabled Internet Power Switch:

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



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