BLACK BOX®
NETWORK SERVICES

Network Power Switch

TRADEMARKS USED IN THIS MANUAL

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

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

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

**FEDERAL COMMUNICATIONS COMMISSION
AND
CANADIAN DEPARTMENT OF COMMUNICATIONS
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 J 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.

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 connectado 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 fisica 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 lineas de energia.

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 objectos liquidos 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: Objectos 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.

Contents

1. Specifications

Power Input/Output

AC Inputs —   Dual bus circuits, 15 Amps each

Voltage —   100–140 VAC, 50/60 Hz

Connectors —   IEC-320 inlet, line cords supplied

AC Outputs —   (8) outputs: 1–4 Bus A, 5–8 Bus B (15-Amp rating), NEMA 5-15 outlet

Load —   15 Amps total for each bus

Modem and Console Port Interface

Connector —   DB9M, RS-232C, DTE

Coding —   Serial ASCII, 8 bits, no parity

Speed —   2400 bps, 9600 bps, 19.2 kbps, 38.4 kbps

Physical

LED Indicators —   ON, RDY, RXD, DCD, NET, Outlet ON (1–8)

Venting —   Side vents, dissipates 12 watts max. (do not block vents)

Operating Temperature — 32 to 115°F (0 to 45°C)

Humidity —   10 to 90%, non-condensing

Size —   2.8"H x 17"W x 6.8"D (7.1 x 43.2 x 17.3 cm); 19-inch width with rack mounts

Shipping Weight —   10 lb. (4.5 kg)

2. Introduction

2.1 Description

Network equipment sometimes locks up, requiring a service call just to flip the power switch to perform a simple reboot. The Network Power Switch gives network administrators the ability to perform this function from anywhere on the LAN/WAN, or if the network is down, to simply dial in from a modem for out-of-band power control.

INTELLIGENT POWER CONTROL

The Network Power Switch can communicate over any TCP/IP network using generic Telnet, or out-of-band using an external modem and terminal emulation. Each outlet can be assigned an individual password, device name, reboot delay time, and unique power-up default status.

SECURITY AND CO-LOCATION FEATURES

Address-specific IP security masks prevent unauthorized network access to the Network Power Switch command mode. The Network Power Switch provides two password security levels: System level and User level. The System password allows access to all configuration and command functions. The User password allows access only to assigned plugs. User-level security features are ideal for co-location applications, where multiple users may be allowed plug-specific access to the Network Power Switch.

EASY TO USE, EASY TO CONFIGURE

Reboots and plug switching are controlled by simple ASCII commands sent to the Switch via network, modem, or from a local PC. Set-up and configuration is also simple; easy-to-follow menus lead you through the installation process.

2.2 Features

- Turn on or off any AC-powered device via telnet, modem, or local terminal.

- Eight individual switched outlets.

- Dual 15-Amp circuits.

- Two levels of outlet-specific password security plus network security.

2.3 Physical Description

2.3.1 FRONT PANEL

The LEDs on the front panel are described below.
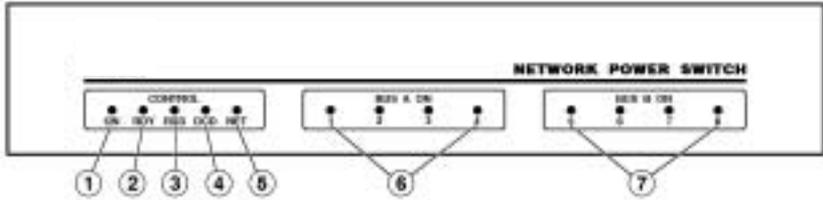
① **ON:** Lights when AC Power is applied to the Network Power Switch.

② **RDY:** Flashes when the Network Power Switch is ready to receive commands.

③ **RXD:** Lights when the Network Power Switch receives commands.

④ **DCD:** Lights when the Modem Port detects the Carrier.

⑤ **NET:** Lights when a Telnet session is in progress.

⑥ **Bus A Indicators (1–4):** Lit when the corresponding Plug is switched On.

⑦ **Bus B Indicators (5–8):** Lit when the corresponding Plug is switched On.

2.3.2 BACK PANEL
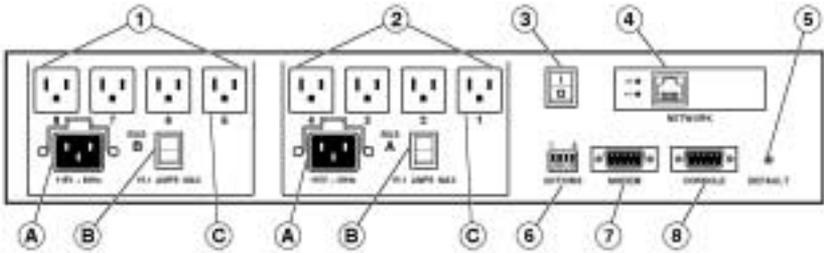
① **Bus B (Plugs 5–8):** Includes the following components:

  A) **Power Inlet with Cable Clamp**

  B) **Circuit Breaker:** 15 Amps

  C) **Switched AC Outlets (5–8):** Each outlet can switch up to 15 Amps. The total for all four outlets must not exceed 15 Amps.

② **Bus A (Plugs 1–4):** Same as item 1 above, except that the Bus A power inlet supplies power to plugs 1 through 4.

③ **Master Power Switch:** This switch must be on for the Network Power Switch to function. This switch is *not* used to set the On/Off status of the switched outlets.

④ **Network Port:** An RJ-45 Ethernet port for connection to your TCP/IP network. To communicate via Network, you must first access the Network Power Switch Command Mode via the Console or Modem port, and specify the IP Address, Subnet Mask, and Gateway Address as described in **Section 4.6**.

⑤ **Default Button:** Bypasses the password prompt as described in **Section 4.2**.

⑥ **Option Switches:** A bank of four DIP switches which select default settings for the baud rate and other features.

⑦ **Modem Port:** A male RS-232, DB9 connector, DTE configuration. For connection to an external modem.

⑧ **Console Port:** A male RS-232, DB9 connector, DTE configuration. For connection to a local PC.

3. Installation

3.1 Option Switches

The Option Switches select default settings for the Baud Rate, Command Echo, Boot Delay, and Disconnect Timeout. Default settings selected via the Option Switches will be used when the unit is reset to default parameters as described in **Section 3.7**.

NOTE
Although the Option Switches select default settings for these features, operating settings can also be defined using the Network Power Switch configuration menus described in Chapter 4.

Option Switch settings are described below.

Baud Rate   The default baud rate for the Console Port and Modem Port. This rate will be selected after a power interruption, and when the unit is reset to default parameters.

Boot Delay   The default Boot Delay setting. When a boot cycle is initiated, the Boot Delay determines the length of time that the switched outlet will remain off until power is restored.

Command Echo   The default setting for the Command Echo for the Console Port, Modem Port, and Network Port. When Command Echo is enabled, commands entered at your keyboard will be sent to the Network Power Switch and echoed back to your display monitor.

Disconnect Timeout The default Disconnect Timeout value. This determines how long the Network Power Switch will wait for additional commands before automatically disconnecting. Note that when the Network Power Switch times out, DTR will drop, and the modem disconnect string and initialize string will be sent.

Switch	Function	Up	Down
1	Default Baud Rate	38.4 kbps	9600 bps (factory setting)
2	Default Boot Delay	10 sec.	5 sec. (factory setting)
3	Default Command Echo	Enable	Disable (factory setting)
4	Default Disconnect Timeout	30 min.	2 min. (factory setting)

3.2 Console Port Connection

The male DB9 connector, which is used for connection to a local PC or control device. The Console port is DTE, like the serial port on a PC. The **Appendix** describes the port interface.

3.3 Connecting an External Modem

When connecting directly to an external modem, use a standard AT-to-modem cable. Make certain the modem is initialized at the same baud rate as the Network Power Switch (Option Switch 1). The modem must be set to Auto-Answer, in one ring. Please refer to the modem user's guide for more information. **Section 4.4** describes the procedure for defining the Network Power Switch modem setup string. The **Appendix** describes the port interface.

3.4 Connecting the Network Cable

The Network port is an RJ-45 Ethernet jack, for connection to a TCP/IP network. Connect your 10BASE-T cable to the Network port, then complete the remainder of the installation procedure. Before attempting to access the Switch via network, please assign the IP Address, Gateway Address, and Subnet Mask as described in **Section 4.6**.

3.5 Power Supply Connection

The Network Power Switch includes two AC inputs. The Bus A input provides power for plugs 1 through 4. The Bus B input provides power for plugs 5 through 8. In order for the Network Power Switch to function, either Bus A or Bus B or both must be connected to the appropriate power supply.

3.6 Connection to Switched Outlets

The main power switch must be on in order for the Network Power Switch to operate. When the Switch is powered on, the eight AC outlets will be switched on or off, as specified by the user-defined Power-Up Default (see **Section 4.5**).

Each outlet can switch up to 15 Amps AC. The total for each Bus cannot exceed 15 Amps.

3.7 Reset Unit to Defaults

If Option Switch settings are changed while the Switch is powered on, new settings will not be applied until the Switch is reset to default settings. There are two ways to reset the Switch to defaults: the default parameters option and the default button (local).

NOTE

When these reset procedures are performed, all user-selected parameters, including passwords and port names, will be lost. We strongly recommend recording all menu-selected parameters before performing either of these procedures.

3.7.1 DEFAULT PARAMETERS OPTION

This method allows default parameters to be set without affecting the On/Off status of the Network Power Switch's eight switched plugs. To reset the Switch to default parameters:

1. Access the Network Power Switch Command Mode (see **Section 4.2** or **5.1**).

2. At the NPS> command prompt, type /G and press **[Enter]**. The General Parameters menu will appear.

3. From the General Parameters menu, type A and press **[Enter]**. The unit will display the "Default Parameters?" prompt. Type Y and press **[Enter]** to proceed with the reset procedure. After a brief pause, parameters will be reset to default values.

3.7.2 DEFAULT BUTTON (LOCAL)

Typically, this method is used when devices have not been connected to the Network Power Switch, and you have immediate access to the installation site.

NOTE
This method will temporarily switch all plugs off.

Set the Master Power Switch to the off position. Press and hold the Default Button on the back panel. Place the Master Power switch in the on position. Wait about 5 seconds, and then release the Default Button.

4. Configuration

4.1 System Mode and User Mode

In order to restrict access to sensitive command functions, the Network Power Switch features two separate operating modes: System Mode and User Mode.

System Mode allows access to all configuration menus, command functions, and status screens. When System Mode is active, Boot/On/Off commands can be directed to *any* of the Network Power Switch's eight switched outlets. The System Status Screen shows On/Off conditions and user passwords for all eight switched outlets, and lists system parameters including network configuration and modem setup. In addition, System Mode also allows access to all system configuration functions.

User Mode allows limited access to command functions and status screens; users are not allowed to access configuration menus. When User Mode is active, Boot/On/Off commands can only be directed to the specific outlets that are "owned" by that individual user. Outlets owned by other users cannot be switched. The User Status Screen only shows conditions at the outlets owned by the user; system parameters are not displayed.

When properly configured, the Network Power Switch will display a password prompt when the Switch is contacted via the Console Port, Modem Port, or Network Port. The password entered at this prompt determines whether the Switch will start up in System Mode or User Mode. If the System Password (defined via the General Parameters menu) is entered, the System Mode will be active. If the User Password (defined via the Plug Configuration Menus) is entered, the User Mode will be active.

Note that if the System Password is not defined, the Network Power Switch will not display the password prompt, and will always start up in System Mode. Once the System Password has been defined, individual users can be granted access to specific outlets by assigning passwords to each plug as described in **Section 4.5**.

4.2 Communicating with the Network Power Switch

In order to configure the Network Power Switch or invoke command functions, you must first connect to the Network Power Switch and access command mode.

1. The Network Power Switch is transparent to parity and will accept 7-bit or 8-bit characters, but will always answer back at 8 bits, no parity. Make certain your communications program (for example, ProComm® or HyperTerminal) is set for the appropriate baud rate, bits, and parity.

    a) **Via Modem:** Start your communications program. Dial the external modem connected to the Network Power Switch. Wait for the Connect message and proceed to step 2.

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

    c) **Via Network:** During initial configuration, the Network Power Switch cannot be accessed via the Network Port. After network parameters (such as the IP Address) have been defined as described (see **Section 4.6**), the unit may then be accessed via network as described in **Section 5.1**.

2. **Password:** If the System Password has been defined, the Switch will display the Password Prompt. Key in either the System Password or User Password, and press **[Enter]**. If the system password has not been defined, the prompt will not be displayed.

NOTE

The Password feature is case-sensitive.

If you forget the System Password, contact the Network Power Switch via the Console Port. When the password prompt appears, press the default button to bypass the password requirement. When the NPS> prompt appears, type /G **and press** [Enter] **to access the General Parameters menu. Use the General Parameters menu to review or change the system password.**

3. If the System Password is entered, the Network Power Switch will display the System Help Screen (Figure 1). If the User Password is entered, the Network Power Switch will display the User Help Screen (Figure 2).

```
Network Power Switch v2.04  Site ID: YOURSITE, INC.

Commands:

Display
/H        Display this Help Screen
/S[P]     Display Plug Status, [P] with Passwords

Configuration
/G        View/Set General Parameters
/P [n]    View/Set Plug Parameters
/N        View/Set Network Parameters
/DL       Download Configuration to File

Control                                    --------------------------------------
/D        Set Plugs to Default Settings    | [n] = Optional Plug Name or Number |
/Boot <n> Boot Plug n                      | <n> = Required Plug Name or Number |
/On <n>   Turn On Plug n                   | n+n = Plug n and Plug n            |
/Off <n>  Turn Off Plug n                  | n:n = Plug n through Plug n        |
/T        Reset Network Interface          | * = All Plugs with Access          |
/R        Relogin as Different User        --------------------------------------
/X        Exit/Disconnect


NPS>
```

Figure 1. System Help Screen.

```
Network Power Switch v2.04  Site ID: YOURSITE, INC.

Commands:

Display
/H        Display this Help Screen
/S        Display Plug Status

Control
/D        Set Plugs to Default Settings
/Boot <n> Boot Plug n
/On <n>   Turn On Plug n
/Off <n>  Turn Off Plug n
/X        Exit/Disconnect


----------------------------------------
| [n] = Optional Plug Name or Number   |
| n+n = Plug n and Plug n              |
| n:n = Plug n through Plug n          |
|  * = All Plugs with Access           |
----------------------------------------


NPS>
```

Figure 2. User Help Screen.

4.3 Network Power Switch Command/Menu Conventions

When invoking Network Power Switch commands and selecting items from configuration menus, note that:

- All Network Power Switch commands can be invoked at the NPS> command prompt, or from the General Parameters Menu, Port Parameters Menus, or Network Parameters Menu.

- Network Power Switch commands are *not* case-sensitive. All Network Power Switch commands are invoked by pressing **[Enter]**.

- To select an item from a Network Power Switch menu, key in the number for the item and press **[Enter]**.

- To exit from a menu, press **[Esc]** at any time. Parameters defined up to that point will be saved.

- To display the Help Screen, type /H and press **[Enter]**.

4.4 Defining General Parameters

When the "NPS>" prompt appears, type /G and press **[Enter]** to display the General Parameters menu (Figure 3). Note that this menu is not available in User Mode. The General Parameters menu offers:

1. **System Password** (up to 16 characters, case-sensitive): When the System Password is defined, the Network Power Switch will display a prompt before allowing access to command mode. If the System Password is entered, the Network Power Switch will start up in System Mode. To define the System Password, type 1 and press **[Enter]**.

NOTE

If the System Password is not defined, the password prompt will not be displayed, and the Network Power Switch will always start up in System Mode.

2. **Site ID:** Defines a text string (up to 32 characters) that denotes the installation site. To define the Site ID, type 2 and press **[Enter]**.

3. **Modem Initialization String:** To define the Modem Initialization String (up to 16 characters), type 3 and press **[Enter]**. For more information on the initialization string, refer to the user's guide for your external modem. Make certain that the modem is set to auto-answer in one ring.

```
GENERAL PARAMETERS:

1.  System Password:          (undefined)
2.  Site ID:                  (undefined)
3.  Modem Init. String:       STE0M0Q1&C16D280=1
4.  Modem Disc. String:       (undefined)
5.  Baud Rate:                9600, N, 8, 1
6.  Command Echo:             Off
7.  Disconnect Timeout:       30 Min
8.  Plug Confirmation:        On

A.  Default Parameters

Enter Selection or <ESC> to Exit...
```

Figure 3. General Parameters Menu (System Mode Only).

4. **Modem Disconnect String:** To define the Modem Disconnect String (up to 16 characters), type 4, press **[Enter]**, and follow the instructions in the submenu. For more information, refer to the user's guide for your external modem.

5. **Baud Rate:** Selects the baud rate for the Modem Port and Console Port. The available baud rates are 2400 bps, 9600 bps, 19.2 kbps, and 38.4 kbps. To select the baud rate, type 5 and press **[Enter]**. Make certain to select a baud rate that is compatible with your external modem and the device connected to the Console Port.

NOTE

When the baud-rate setting is changed, the new baud rate will not be applied until the user exits and then re-enters the Network Power Switch Command Mode.

6. **Command Echo:** Enables/Disables the command echo. When Command Echo is enabled, commands sent to the Network Power Switch will be echoed back to your PC or terminal, allowing keyboard entries to be displayed by your communications program. To enable/disable the Command Echo, type 6, press **[Enter]**, and follow the instructions in the submenu.

7. **Disconnect Timeout:** Selects the Disconnect Timeout period, which determines how long the Network Power Switch will wait for additional

commands. For example, if the Disconnect Timeout is set at 5 minutes, the Network Power Switch will automatically disconnect after 5 minutes of inactivity. Type 7, press **[Enter]**, and follow the instructions in the submenu.

8. **Plug Confirmation:** Enables/Disables the plug confirmation feature. When enabled, the Network Power Switch will display a prompt before performing Boot/On/Off operations, and will also display the System Status screen after these commands are successfully completed. Type 8, press **[Enter]**, and follow the instructions in the submenu.

A. **Default Parameters:** When selected, the Network Power Switch will first display the "Default Parameters?" prompt. If Y is entered, the Switch will then be reset to the default parameters specified by the Options Switches. Note that when this command is invoked, all user-selected parameters, including port names and passwords, will be lost.

B. **Cycle On/Off Test** (for diagnostic purposes only): When this item is selected, the Network Power Switch will display the "Start Cycle Test?" prompt. If Y is entered, the Switch will begin the Cycle On/Off Test; all plugs will first be switched off, and then each plug will be switched On and Off, one at a time. To terminate the test, press **[Esc]**.

After defining the General Parameters, press **[Esc]** to return to the Network Power Switch command prompt.

4.5 Plug Parameters

The Plug Parameters menus are used to assign names and select parameters for each individual switched outlet. There is a separate Plug Parameters menu for each outlet. Note that the Plug Parameters menus are not available in User Mode.

In addition to selecting parameters for each outlet, the Plug Parameters menus also determine which outlets will be controlled or "owned" by each User Password. A separate User Password can be assigned to each plug, or the same password can be assigned to several plugs. When a User Password is entered, you will have access to all plugs owned by that password.

To access the Plug Parameters menus from the NPS> prompt, type /P n and press **[Enter]**. "n" is the number or name of one of the eight switched outlets. The Plug Parameters menu (Figure 4) offers the following options:

```
PLUG #1 PARAMETERS:

1.  Plug Name:                 (undefined)
2.  Password:                  (undefined)
3.  Boot Delay:                5 Sec
4.  Power Up Default:          On

Enter Selection or <ESC> to Exit...
```

Figure 4. Plug Parameters Menu (Plug 1 Shown).

1. **Plug Name:** (Up to 16 Characters) Assigns a name to the plug. Typically the name describes the equipment connected to the outlet. When names are assigned to plugs, Boot/On/Off commands can be invoked using the name or number of the desired plug.

2. **Password:** (Up to 16 Characters) Assigns a User Password to this plug. The selected plug is then "owned" by that User Password. When the password is entered at the password prompt, you'll have access to this plug and all other plugs owned by this password.

NOTE

If the System Password is defined, and the plug's User Password is *not* defined, then the System Password will "own" this plug, and only the System Mode will be able to control the plug.

3. **Boot Delay:** During a Boot operation, power to the plug is first switched off and then switched back on. The Boot Delay is the length of time that elapses between the time when power is switched off and the time when power is restored. The Boot Delay can be 1, 5, 10, 15, 30, or 60 seconds. (Default is 5 or 10 seconds, selected by Option Switch 2.)

4. **Power-Up Default:** Determines how this plug will react when the /D (default) command is invoked, or after a power interruption. Each plug can be automatically switched On or Off as specified by the Power-Up Default.

After Plug Parameters have been defined, press **[Esc]** to return to the NPS> command prompt.

```
NETWORK PARAMETERS:

1. IP Address:          (undefined)
2. Subnet Mask:         (undefined)
3. Gateway Address:     (undefined)
4. IP Security

MAC Address:            00-40-05-5e-f3-90

Enter Selection or <ESC> to Exit…
```

Figure 5. Network Parameters Menu (System Mode Only).

4.6 Network Parameters

In order to communicate with the Network Power Switch via network, the IP Address, Subnet Mask, and Gateway Address must first be defined via the Network Parameters menu. The Network Parameters menu also allows you to implement IP Security features, which can restrict command-mode access based on the user's IP Address.

Settings for network parameters will depend upon the configuration of your individual network. Contact your network administrator for appropriate settings, and then assign parameters as described in this section.

To access the Network Parameters menu, type /N and press **[Enter]**. The screen shown in Figure 5 will be displayed. Note that the Network Parameters menu is not available in User Mode. The Network Parameters menu offers the following options:

1. **IP Address:** Defines the IP Address for the Network Power Switch (Default = undefined). Type 1, press **[Enter]**, and follow the instructions in the submenu.

2. **Subnet Mask:** Defines the Subnet Mask for the Network Power Switch (Default = undefined). Type 2, press **[Enter]**, and follow the instructions in the submenu.

3. **Gateway Address:** Defines the Gateway Address for the Network Power Switch (Default = undefined). Type 3, press **[Enter]**, and follow the instructions in the submenu.

4. **IP Security:** Sets up the IP Security feature as described in **Section 4.6.1**.

5. **Mac Address:** Display's the unit's MAC Address. Note that this item is not used to redefine the MAC Address.

```
IP SECURITY

1.  Security Mask #1:        (none)
2.  Mask #1 Action:          Permit
3.  Security Mask #2:        (none)
4.  Mask #2 Action:          Permit
5.  Security Mask #3:        (none)
6.  Mask #3 Action:          Permit
7.  Security Mask #4:        (none)
8.  Mask #4 Action:          Permit
9.  Security Mask #5:        (none)
10. Mask #5 Action:          Permit

Enter Selection or <ESC> to Exit
```

Figure 6. IP Security Menu.

4.6.1 IMPLEMENTING IP SECURITY

The Network Power Switch can be configured to keep unauthorized IP addresses from getting Telnet access to the Switch. This allows you to grant Telnet access to only a specific group of IP addresses, or block a particular IP address from gaining access. In the default state, the Network Power Switch accepts incoming IP connections from all hosts. To configure the IP Security feature:

1. Access the Network Parameters menu as described in **Section 4.6**. Note that the Network Parameters menu is not available in User Mode.

2. When the Network Parameters menu appears, type 4 and press **[Enter]** to access the IP Security menu.

3. The IP Security menu lists five IP Security "masks" along with the selected permit/deny action for each mask.

   a) Each Security Mask prompt is used to define a specific IP address or range of IP addresses. Each Mask Action prompt is used to define 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 eight-bit numbers. The number 255 is used as a wild card.

Example 1: Deny access to all hosts except 192.1.1.5:

Security Mask #1: 255.255.255.255   Mask #1 Action: Deny
Security Mask #2: 192.1.1.5   Mask #2 Action: Permit

Since 255 is a wild card, Mask #1 blocks all IP Address. 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 address. Mask 2 then grants access to all address 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 address. 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), all IP Addresses will be blocked, and you will not be able to access the Network Power Switch Command Mode via network. Access will only be allowed via the Console Port or Modem Port.

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

4.7 Save Configuration Parameters

After the unit has been completely configured, save the parameters to an ASCII file as described in **Chapter 6**. This allows quick recovery in case the unit is reset to default parameters, or the configuration is accidentally deleted or altered.

5. Operation

Your PC or Control Device must send ASCII characters at the same data rate as the Network Power Switch. The Switch accepts 8 bits with no parity, or 7 bits with even or odd parity, but will always answer back at 8 bits, no parity.

5.1 Access the Network Power Switch Command Mode

In order to invoke commands, you must first access the Network Power Switch Command Mode. Commands can be sent to the Network Power Switch via Network or modem, or from a local PC connected directly to the Console port. To access the Command Mode:

1. **Contact the Network Power Switch:**

   a) **Via Network:** Telnet to the Network Power Switch's IP Address. For example, assuming the IP Address is 192.1.1.1, on a UNIX® system the Telnet command would be invoked as:

   ```
   $ telnet 192.1.1.1 [Enter]
   ```

   ## NOTE

   If the Telnet connection to the Network Power Switch is refused, this probably means that the Switch is busy, or that the IP Security feature has denied the connection.

   b) **Via Modem:** Start your communications program (for example, ProComm or HyperTerminal). Dial the external modem that is connected to the Network Power Switch. Wait for the Connect Message.

   c) **Via Console Port:** Start your communications program (for example, ProComm or Hyper Terminal) and press **[Enter]**. Make certain that you are communicating via the COM port that is connected to the Network Power Switch.

2. **Password:** If the System password has been defined, a prompt will be displayed. Key in your System or User Password, and press **[Enter]**.

3. **Disconnect:** To end the session, type /X and press **[Enter]** (or disconnect using Telnet software).

5.2 Displaying Plug Status

The Status Screens display the On/Off state and user-defined parameters for the switched plugs. There are two Network Power Switch Status Screens: the System Status Screen and the User Status Screen.

The System Status Screen (Figure 6) lists On/Off status and parameters for all eight plugs. Communication settings, modem commands, network parameters, and other functions are also listed. Note that in System Mode, the /S command will also accept an argument that will display the User Password for each plug. To display plug passwords, access the System Mode, then type /SP and press **[Enter]**.

The User Status Screen (Figure 7) only lists the On/Off status and parameters for the plugs owned by the User's password. Communication parameters and other Network Power Switch functions are not listed.

```
Network Power Switch v2.04          Site: YOURSITE, INC.

 Plug   |     Name      |   Status   |  Boot Delay   |  Password   |  Default
--------+---------------+------------+---------------+-------------+-----------
   1    |   ROUTER_A    |     ON     |    15 Sec     |  (defined)  |    ON
   2    |   ROUTER_B    |     OFF    |    15 Sec     |  (defined)  |    OFF
   3    |   DSU/CSU     |     ON     |    10 Sec     |  (defined)  |    ON
   4    |  ATMSWITCH_A  |     ON     |    10 Sec     |  (defined)  |    ON
   5    |  ATMSWITCH_B  |     ON     |    10 Sec     |  (defined)  |    OFF
   6    |   LINUX_1     |     ON     |     5 Sec     |  (defined)  |    ON
   7    |   LINUX_2     |     ON     |    30 Sec     |  (defined)  |    OFF
   8    |   GATEWAY     |     ON     |    30 Sec     | (undefined) |    ON
--------+---------------+------------+---------------+-------------+-----------

Communication Settings:   9600,N,8,1
Modem Init. String:       ATE0M0Q1&C1&D280=1
Modem Disc. String:       +++ATZ
MAC Address:              00-c0-f0-27-a4-a5
Disconnect Timeout:       30 Min
Command Echo:             OFF
Plug Confirmation:        ON

"/H" for Help
```

Figure 6. System Status Screen.

```
Network Power Switch v2.04     Site: YOURSITE, INC.

 Plug   |     Name      |   Status   |  Boot Delay   |  Password   |  Default
--------+---------------+------------+---------------+-------------+-----------
   3    |   DSU/CSU     |     ON     |    10 Sec     |  (defined)  |    ON
   6    |   LINUX_1     |     ON     |     5 Sec     |  (defined)  |    ON
   7    |   LINUX_2     |     ON     |    30 Sec     |  (defined)  |    OFF
--------+---------------+------------+---------------+-------------+-----------

Disconnect Timeout:       30 Min
Command Echo:             OFF
Plug Confirmation:        ON

"/H" for Help
```

Figure 7. User Status Screen.

5.3 Boot/On/Off Commands

These commands are used to Boot or change the On/Off status of the Network Power Switch's eight switched plugs. Commands can be applied to one, several, or all owned plugs. Plugs may be specified by name or number.

NOTE

When User Mode is active, commands will only be applied to plugs owned by the User's password. Commands will not affect plugs owned by other users.

When the System Mode is active, commands can be applied to all eight switched plugs.

Wait for the NPS> prompt before entering commands. The prompt will not reappear until the previous command is complete.

If an invalid command or parameter is entered, the Network Power Switch will respond with the "?" message.

Commands are *not* case-sensitive. All commands are invoked by pressing [Enter].

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

   /ON 1 or /ON ROUTER

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

   /OFF 5 or /OF ROUTER

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

   /BOOT 3 or /BO ATMSWITCH

Note that the Network Power Switch will display a series of periods (dots) while a Boot cycle is in progress.

5.3.1 APPLYING COMMANDS TO SEVERAL PLUGS

Boot/On/Off commands can be applied to one plug, several plugs, a range of plugs, or all plugs as described below:

NOTE

When commands are applied to several plugs, the Network Power Switch will delay for approximately 1 second between plug operations. For example, when switching all plugs On, the Network Power Switch will switch Plug 1 On, delay one second, switch Plug 2 On, delay one second, etc.

1. **Single Plug:** To apply a command to a single plug, enter the number or name for that plug. For example:

   /ON 3 or /ON ROUTER

2. **Several Plugs:** To apply a command to several plugs, enter plug names or numbers with each name/number separated by a plus sign or a space. For example:

   /OFF 1+3+7 or /OF ROUTER DSU/CSU

3. **Range of Plugs:** To apply a command to several plugs in sequence, enter the plug names or numbers with each name/number separated by a colon (:). For example:

   /BOOT 1:4 or /BOOT ROUTER:DSU/CSU

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

   /ON * or /BO *

5. **Plugs with the Same Name:** If you have assigned an identical plug name to several plugs, all such plugs can be addressed with one command. For example, if plugs 3, 4, and 5 have been named "ATMSWITCH", then all three plugs can be switched with the same command as shown below:

   /ON ATMSWITCH or /BOOT ATMSWITCH

5.4 The Default Command

The Default Command (/D) sets all plugs to their default On/Off status. The default status is set using the Plug Parameters menus described in **Section 4.5**. Plugs will be set to these defaults when /D is invoked, or after a power interruption. To set all plugs to defaults, type /D and press **[Enter]**.

NOTE

When User Mode is active, this command will only be applied to plugs owned by the User's password. The command will not be applied to plugs owned by other passwords.

When the System Mode is active, this command will be applied to all eight plugs.

This command will always be applied to all owned plugs. It cannot be applied to only one plug.

5.5 Other Commands

5.5.1 LOG IN AS DIFFERENT USER

The /R command is used to re-log-in using a different password. When invoked, the Network Power Switch will display the password prompt, allowing you to enter a different password in order to access other ports or command functions. The /R command can be used to switch from User Mode to System Mode.

Note that although this command is not listed in the User Help Screen, it is available in both System Mode and User Mode. To log in as a different user, type /R, press **[Enter]**, and then key in a different valid password at the prompt.

5.5.2 RESET NETWORK PORT

The /T command is used to reset the Network Power Switch Network Port. When the /T command is invoked, the Network Power Switch will re-initialize its network card. The /T command is not available in User Mode. To reset the Network Port, type /T and press **[Enter]**.

5.5.3 EXIT/DISCONNECT

To exit from the Network Power Switch Command Mode and discontinue connection to the unit, type /X, and press **[Enter]**. The Network Power Switch will display the "DISCONNECT" message.

5.6 Operating Tips

When connecting the the Network Power Switch via network, modem, or console port, keep in mind:

1. **One Connection at a Time:** Only one port can access the command mode at a time. When a command port is busy, the Network Power Switch will react as follows:

   a. **Network Port Busy:** If a second user attempts to connect via the Modem Port, the Network Power Switch will send a busy message. If a second user attempts to connect via the Console Port, the port will not wake.

   b. **Modem Port Busy:** If a second user attempts to connect via the Network Port, the connection will be refused. If a second user attempts to connect via the Console Port, the port will not wake.

   c. **Console Port Busy:** If a second user attempts to connect via the Network Port, the connection will be refused. If a second user attempts to connect via the Modem Port, the Console Port will disconnect and the Modem Port will be granted access; the Modem Port has priority over the Console Port.

2. **Ping Packet Size:** The Network Power Switch will not accept Ping Packets larger than approximately 1000 bytes.

 If you have any questions about configuring or operating the Network Power Switch, please contact Black Box Technical Support at 724-746-5500.

6. Saving and Restoring Configuration Parameters

After you've properly configured the Network Power Switch, you can download parameters and save them as an ASCII text file. Later, if the configuration is accidentally altered, the file with the saved parameters can be uploaded to automatically reconfigure the unit without manually assigning each parameter.

You can upload saved parameters to other Network Power Switches. This allows rapid setup when you're configuring several units 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.

6.1 Sending Parameters to a File

1. Start your communications program and access the Network Power Switch command mode using the System Level Password.

2. When the Network Power Switch command prompt appears, type `/DL` and press **[Enter]**. The Network Power Switch will prompt you to prepare your communications program. Set up your communications program to receive and ASCII download, and specify a name for the file that will receive the saved parameters (for example, NPS.PAR).

3. When the communications program is ready to receive the file, return to the Network Power Switch command mode, and press **[Enter]** to proceed.

4. The Network Power Switch will send a series of ASCII command lines that specify the currently selected Network Power Switch parameters.

6.2 Restoring Saved Parameters

This section describes how to use ProComm to send saved parameters to the Network Power Switch.

1. Start your communications program and access the Network Power Switch command mode using the System Level Password.

2. Configure your communications program to upload an ASCII text file.

3. Upload the file with the saved parameters. If necessary, key in the file name and directory path.

4. When the upload is complete, make certain to terminate the communications program's upload mode.

NOTE

The current On/Off status of each Network Power Switch plug will not be saved or restored. However, the selected default On/Off setting for each plug will be saved and restored.

When the configuration file is sent to the Network Power Switch via telnet, the unit's IP Address, Subnet Mask, and Gateway Address cannot be altered.

5. Type /SP and press **[Enter]**. The Network Power Switch will display the Status Screen with passwords revealed. Check the Status Screen to make certain that saved parameters have been restored.

Appendix A. Interface Descriptions

Console Port Interface
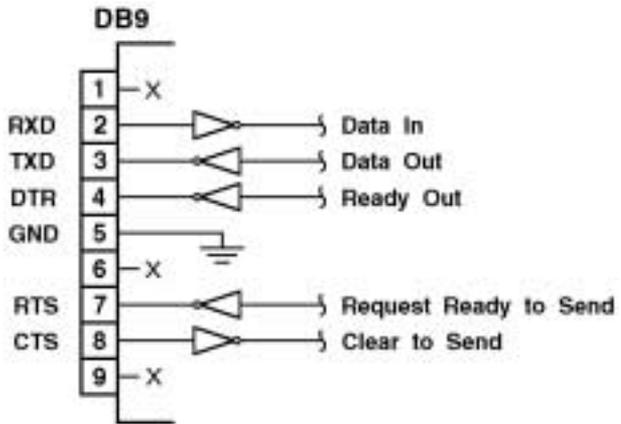
Modem Port Interface
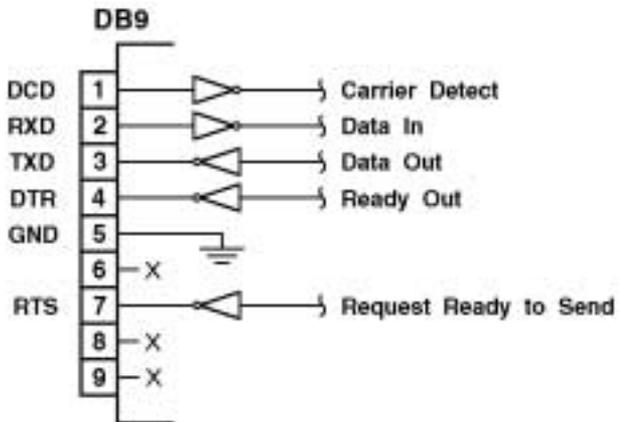
Appendix B. Troubleshooting

B.1 Calling Black Box

If you determine that your Network 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 Network Power Switch:

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

- If you are shipping the Network Power Switch for repair, make sure you include everything that came in the original package. Before you ship, contact Black Box to get a Return Materials Authorization (RMA) number.