

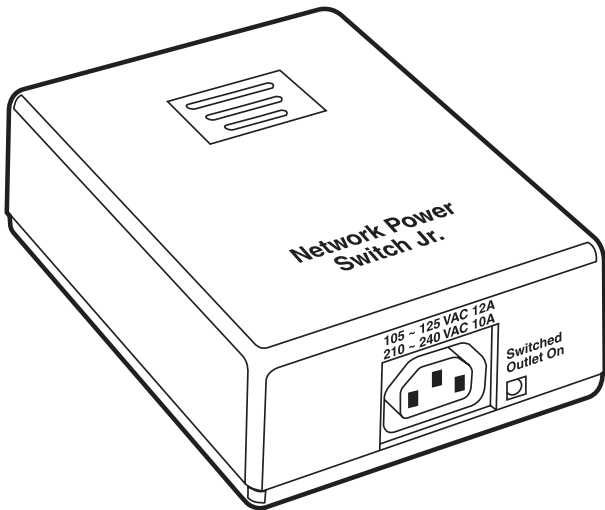


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Network Power Switch Jr.



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RADIO FREQUENCY INTERFERENCE STATEMENTS**

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication.

It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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

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

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de 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 líneas 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 objetos 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: 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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IMPORTANT SAFETY INFORMATION

When using this product, follow these basic safety precautions to reduce the risk of fire, electric shock, and injury.

1. Read and understand all instructions.
2. Follow all warnings marked on the product.
3. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this product in an outdoor environment or near water (for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool).
5. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage.
6. Slots and openings are provided for ventilation to protect the product from overheating. These openings should not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar

surface. This product should never be placed in a built-in installation unless proper ventilation is provided.

7. This product should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supply to your home, consult your local power company.
8. This product is equipped with a three-wire grounding-type plug (a plug that has a third [grounding] pin). This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety features of the grounding-type plug by using a 3-to-2 prong adapter at the receptacle. Using this type of adapter may result in electrical shock and/or damage to this product.
9. Do not allow anything to rest on the power cord. Do not put this product where the cord will be abused by persons walking on it.
10. Do not overload wall outlets and extension cords as this can result in electric shock.

IMPORTANT SAFETY INFORMATION

11. Never push objects of any kind into this product through slots, as they may touch dangerous voltage points or short out parts that could result in fire or electrical shock. Never spill liquid on the product.
12. To reduce the risk of electrical shock, do not disassemble this product; instead, take it to a qualified service person when service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect re-assembly can cause electric shock when the appliance is subsequently used.
13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a. When the power supply cord or plug is damaged or frayed.
 - b. If liquid has been spilled into the product.
 - c. If the product has been exposed to rain or water.

- d. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions. Improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
 - e. If the product has been dropped or has been damaged.
 - f. If the product exhibits a distinct change in performance.
14. Avoid using a telephone (other than a cordless type) during a electrical storm. There may be a remote risk of electric shock from lightning.
 15. Do not use the telephone to report a gas leak in the vicinity of the leak.
 16. Do not exceed the maximum output rating of the auxiliary power receptacle.

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NOTE

The Network Power Switch Jr. is referred to as iBoot in the software that you received. These names are shown in some of the illustrations in this manual.

1. Specifications

Software Requirements: Netscape Navigator® 3.0 or higher; Internet Explorer 3.0 or higher

Input Cord: 16 AWG x 3C 10A 250, UL®/CSA/VDE rated

Connectors: Power In: (1) IEC-320 male plug;
Power Out: (1) IEC-320 receptacle;
Network: (2) RJ-45 10/100BASE-T Ethernet

Indicators: LEDs: (2) Link, (1) Power

Power: Voltage Range: 105–240 VAC, autosensing;
50/60 Hz;
Maximum Capacity: 12 amps @ 105–125 VAC;
10 amps @ 210–240 VAC

Size: 2.3"H x 4.5"W x 6"D (5.8 x 11.4 x 15.2 cm)

Weight: 1.3 lb. (0.6 kg)

2. Introduction

2.1 Overview

The Network Power Switch Jr. is a network-attached, IP-addressed, Web-controlled AC power switch. Anyone with a Web browser can access the switch for power on, off, or power cycle (reboot or power burst). The switch is password-protected for security. It also uses international standard IEC-320 connections and has an autosensing power supply (105–240 VAC). The switch handles circuits up to 12 amps (10 amps at 210–240 VAC).

2.2 Applications

Uses for the Network Power Switch Jr. include:

- Remotely reboot any device, such as routers, servers, kiosks, etc. The device to be rebooted need not be attached to the network.
- Secure sensitive devices by keeping them powered off when not in use. This prevents hackers from seeing them at all times.
- Power down equipment when not needed for power savings and to save on wear and tear.

NETWORK POWER SWITCH JR.

- Power up alert devices such as sirens, lamps, messages, or control environmental systems such as heaters, coolers, pumps, etc.

Figure 2-1 shows the Network Power Switch Jr. in a typical application.

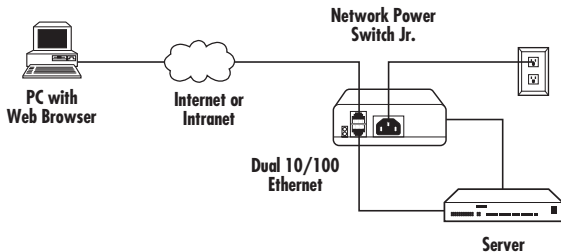


Figure 2-1. Power your Ethernet devices remotely via the Network Power Switch Jr.

2.3 Multiple Control Functions

In addition to the Web control capabilities, the switch features several other ways to operate automatically (auto-ping, heartbeat monitor) or under computer control (remote control program, direct TCP/IP/Telnet™ control). For details about auto-ping,

see **Sections 2.3.1** and **6.1**. For more information about heartbeat monitor, see **Sections 2.3.2** and **6.2**. For details about the switch's remote control program or TCP/IP/Telnet control, see **Sections 2.3.3** and **2.3.4**.

2.3.1 AUTO-PING

Simply put, during auto-ping, the switch pings the network device.

Auto-ping allows the switch to automatically detect failed equipment and perform a timed reboot or other power control function (like turning on an indicator or siren). Three options are available: local ping, remote ping, and remote alarm. Figure 2-2 shows the local ping option, Figure 2-3 shows the remote ping option, and Figure 2-4 shows the remote ping with alarm option.

Local Ping

Set any IP address to be periodically pinged. When the switch no longer detects a response from the address, the programmed power control function is activated. See Figure 2-2.

NETWORK POWER SWITCH JR.

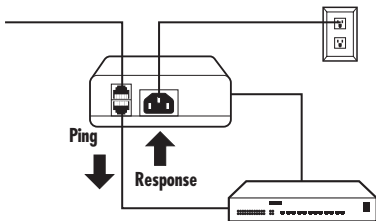


Figure 2-2. Local ping: The Network Power Switch Jr. monitors the local device and automatically reboots it if there is no response.

Remote Ping Options

Put the Network Power Switch Jr. at a central facility to monitor a remote system (see Figure 2-3) and power up an alert (see Figure 2-4) when the remote device no longer responds.

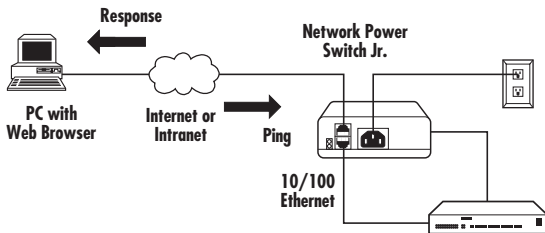


Figure 2-3. Remote ping: The Network Power Switch Jr. monitors the network connection and reboots when there is no response.

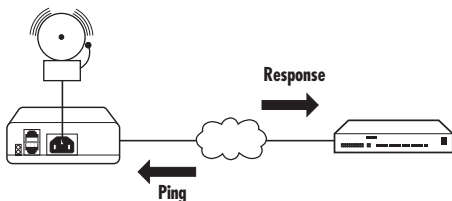


Figure 2-4. Remote ping: The Network Power Switch Jr. monitors the remote device and powers up an alarm when there is no response.

2.3.2 HEARTBEAT MONITOR

Like the auto-ping in reverse, heartbeat monitor enables an Ethernet device to send a message (ping) to the switch. (The device pings the switch in heartbeat monitor, as opposed to the switch pinging the device, as in auto-ping.) If the switch does not receive the message (ping), it will perform the programmed power control function.

2.3.3 SWITCH CONTROL PROGRAMS

Two applications simplify switch operation. The control program operates one switch from a command line or application. The control center allows control of

multiple switches from one application, eliminating the need for multiple web pages. This also allows for simultaneous control of multiple switches and automation using time of day features. Call Technical Support at 724-746-5500 for details.

2.3.4 DIRECT TCP CONTROL

The switch can be controlled directly by messages sent via TCP. This feature allows programmers to add power control directly to their application and build automated scripts in any language to operate the switch. Call Technical Support at 724-746-5500 for details.

3. Hardware Installation

3.1 Power Connectors and Switches

Figures 3-1 and 3-2 show the power connectors and switches on the Network Power Switch Jr.

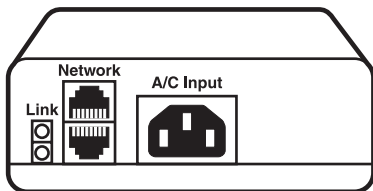


Figure 3-1. The power input and network connectors are located on the back of the switch.

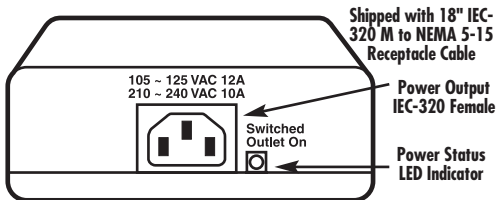


Figure 3-2. The power output connector is located on the front of the switch.

CAUTION

Disconnect the Network Power Switch Jr. from the AC power source before making any control connections.

3.2 Ethernet Connections

The Network Power Switch Jr. supports 10/100 Ethernet using CAT5 unshielded twisted-pair cabling. A two-port built-in hub is included, with two network jacks for access. They are autosensing for 10/100 and uplink/downlink.

NOTE

A Link LED next to each connector indicates when the connection to the network is properly established.

The built-in hub allows one cable from the wiring closet to be used for both the switch and the device it is powering (or any other device). This greatly simplifies installation. Using both network jacks is optional. See Figure 3-3.

IMPORTANT!

The switch supports DHCP. If your network uses a DHCP server, it will automatically assign an IP address when the switch is first powered up on the network. If you do not use DHCP, there are several other methods of assigning an IP address. See **Chapter 4** for details.

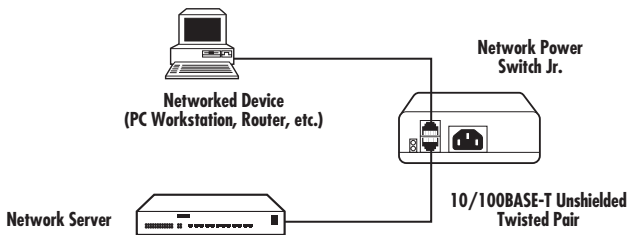


Figure 3-3. Connect a PC to an Ethernet device via the switch.

3.3 AC Power Connections

1. Connect the device to be powered ON and OFF to the IEC receptacle marked “Switched Outlet,” which is located on the front of the switch. See Figure 3-4. A short IEC-320 to North American (NEMA 5-15) power cord is included for connecting the switch outlet to the device to be power controlled.

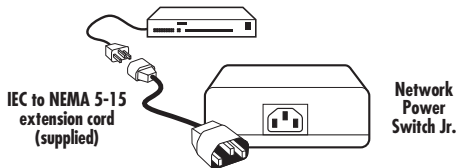


Figure 3-4. Use the included power cord (or one for your country) to connect to the power output.

NETWORK POWER SWITCH JR.

2. If a cord with a different terminating receptacle is required, be sure it is properly rated and meets all the local electrical standards. If the device to be powered uses an IEC-320 receptacle and a detachable power cord, you can use an IEC to IEC extension cord.
3. Connect the supplied power cord to the connector labeled “AC Input” (on the back of the switch), and connect the other end to your AC source. See Figure 3-5. If a power cord with a different terminating plug is required, be sure it is properly rated and meets all required local electrical standards.

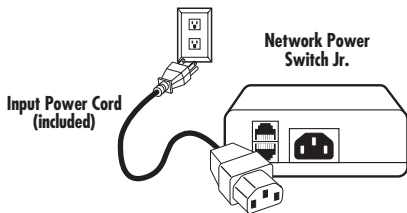


Figure 3-5. Connect the switch to the input power source.

NOTE

You can connect the switch to a power strip to allow simultaneous control of multiple devices.

CAUTION

Make sure that the combined load of all controlled devices does not exceed 10 amps for 210–240 VAC or 12 amps for 105–125 VAC.

4. Configuration

When configuring the Network Power Switch, Jr., fill in its user settings (MAC address, IP address, subnet mask, and gateway) in **Chapter 7**.

IP Address

The Network Power Switch Jr. comes with a factory-installed IP address of 192.168.1.254. In most cases, you will need to change this.

Consult your network administrator to determine the appropriate IP address. You can set the IP address automatically from a DHCP server, via ARP/ping, or by the Web browser via the setup page. Record the IP address in the chart in **Chapter 7**.

SETTING THE IP ADDRESS FROM A DHCP SERVER

A DHCP server will automatically assign an IP address (dynamic address) as well as subnet mask and gateway to the Network Power Switch Jr. If you power up the switch without a fixed (static) IP address, the DHCP server will be able to assign an IP address. This is the factory-default setting for the switch. Once an IP address is assigned,

you must check the DHCP server to see what address is assigned to the switch.

If you set the IP address using another method, the address becomes static. To return the switch to dynamic addressing using DHCP, change the IP address (using the Web browser) to 0.0.0.0.

SETTING THE IP ADDRESS USING ARP/PING

The ARP technique uses a PC running a command line to set the IP address. To set the IP address using ARP, connect the switch to your local network and apply power.

The computer used to set the IP address must be on the same local network segment as the Network Power Switch Jr. ARP does not work across routed or switched networks.

To set the IP address using ARP, you must know the hardware (MAC) address. The address is printed on the bottom of the switch. The syntax for the MAC address is:
nn-nn-nn-nn-nn-nn.

Windows® (98 and Later)

1. Open a DOS window. (Run Command.)
2. Type the following command, then press **<Enter>**:

```
arp -s <IP Address><MAC Address>
```

where *<IP Address>* is the desired IP address (in dotted decimal notation) for the Network Power Switch Jr. and *<MAC Address>* is the MAC address of the switch. The MAC address of the switch is printed on the bottom of the unit. Record the MAC address in the chart in **Chapter 7**.

For example, type:

```
arp -s 63.211.86.165 00-50-c2-05-01-c1  
and press <Enter>.
```

3. Ping the switch to program the IP address into the switch. Type `ping <IP Address>` and then press **<Enter>**. If the ping command returns “host not responding” four times, then the address has not been programmed properly, or the IP or MAC address is incorrect. In either case, repeat step 2. If the problem persists, contact Technical Support at 724-746-5500.

4. Delete the entry from the ARP cache by typing `arp -d <IP Address>` and pressing **<Enter>**.
5. Ping the switch to confirm that it has been programmed. If the switch fails to respond, repeat steps 2–4. If the problem persists, contact Technical Support.

UNIX®, Linux®, Mac®, and Others

Consult your system administrator for information on setting an IP address using ARP. You should ping the unit after you set the IP address to confirm proper operation.

SETTING THE IP ADDRESS USING A WEB BROWSER

To set the IP address using a Web browser, connect the 10/100BASE-T connection to your local Ethernet network and apply power to the Network Power Switch Jr.

Open your browser and access the switch by entering the default (192.168.1.254) or current IP address into your browser's address window. Enter the password (the factory default is PASS).

NOTE

The password is case-sensitive; make sure you enter it in all capital letters.

Click on **Setup** and enter the IP address, subnet mask, and gateway address for your network. (Record these parameters in the chart in **Chapter 7**.) Click **Apply**. Disconnect the power input to the switch. When you reconnect power, the new IP address will be installed. See the Web browser operation in **Chapter 5** for more details and screen shots.

Changes to the subnet mask and gateway occur as soon as you press the **Apply** button. You don't have to power-cycle the switch.

5. Web Browser Operation

5.1 Password Protection

To access the Network Power Switch Jr., open your browser and enter the default (192.168.1.254) or current IP address into your browser's address window. After connecting to the switch, you'll need to enter the password. You do not need a username.

The Network Power Switch Jr. uses two passwords, one for normal power control use and one that also provides access to the setup functions. As described earlier in this manual, both default passwords are PASS (all capital letters). You can change this from the Setup screen (see Figure 5-1). Write down your password and keep it in a secure place in case you forget it.

If you forgot your password...

Call Black Box Technical Support at 724-746-5500.

NOTE

The Network Power Switch Jr. is referred to as iBoot in the software that you received. These names are used interchangeably in this manual.

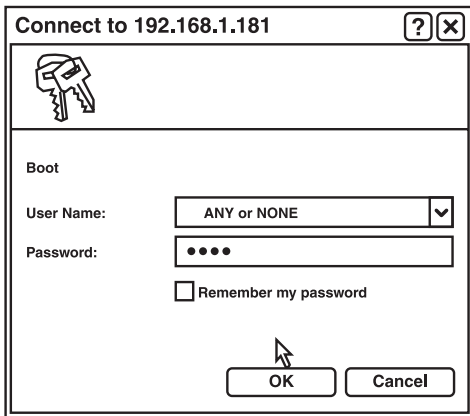


Figure 5-1. Enter the password in the Setup screen.

The Network Power Switch Jr. also uses an inactivity timer for security. When there is no activity for two minutes, the connection is closed and you will need to enter the password again for access.

5.2 Control and Status Page

Once you enter the password, the Control and Status page (shown in Figure 5-2) appears. Note that only one person can be connected to the Network Power Switch Jr. at a time.

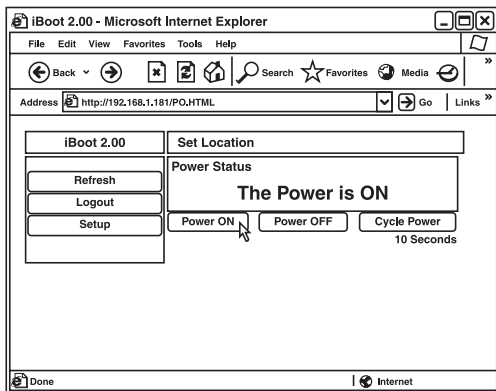


Figure 5-2. Access the various switch parameters via the Control and Status page.

To control the power, click on the appropriate button (Power On, Power Off, or Cycle Power) in the Control and Status page. During power cycling, the power status bar will indicate the status by showing a blue background. Once the cycle is complete, the status bar will revert to its original condition. To abort a power cycle, click on either the power on or power off button. The Network Power Switch Jr. will immediately assume the status selected.

If the auto-ping or heartbeat features are in use, the page will also display the current status (OK or triggered) for each. A counter of how many times auto-ping or heartbeat was triggered also appears on this page. If connecting with the setup password (refer to **Section 5.1**), a reset button for the counter is provided. These features are described in greater detail in **Chapter 6**.

Use the refresh link—*not* the refresh button—(type in the IP address in your browser) to obtain the Network Power Switch Jr.'s latest status. Using your browser's refresh button can lead to inadvertent power switching.

To access the setup page, the setup password must be used for the initial login. As mentioned before, the

factory default for the setup password (as well as the operation password) is PASS. Both passwords can be changed as described in **Section 5.1**.

When you are finished with the Setup page, click on **Logout**. A confirmation page will appear. See Figure 5-3. If you close your browser window without first clicking on the **Logout** button, there will be a two-minute delay before you can re-access the switch.



Figure 5-3. Exit via the Logout screen.

The Network Power Switch Jr. uses an inactivity timer for security. When there is no activity for two minutes, the user is logged out and the password will need to be entered again for access.

5.3 Setup Pages

The setup pages consist of several sections. Each time you change a setting, click on **Apply** to save the changes for that section. If you change the IP address via the TCP/IP settings page (Figure 5-5), you must reboot the switch to install the new address. To do this, remove the power cord on the switch from its power source; *don't just click on OFF from the main screen.*

5.3.1 DEVICE SETTINGS

Set a 20-character device name to be displayed on the top of the Device Settings page (see Figure 5-4). This assists in identifying which Network Power Switch Jr. is being accessed.

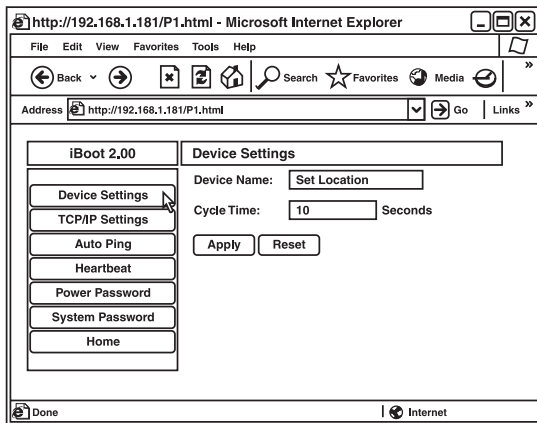


Figure 5-4. Set Device settings.

Set a power cycle time (0 to 999 seconds). This is the length of time the power will be off during a reboot or during a power burst.

Click on **Apply**. Once you finish setting the device settings, you are ready to set the TCP/IP settings.

5.3.2 TCP/IP SETTINGS

Enter either a new IP address, or enter address 0.0.0.0 to enable automatic IP addressing via DHCP. Enter the subnet mask and gateway. Record these settings in the chart in **Chapter 7**. Set the HTTP port. Click on **Apply** after entering all the parameters in the TCP/IP Settings screen. See Figure 5-5.

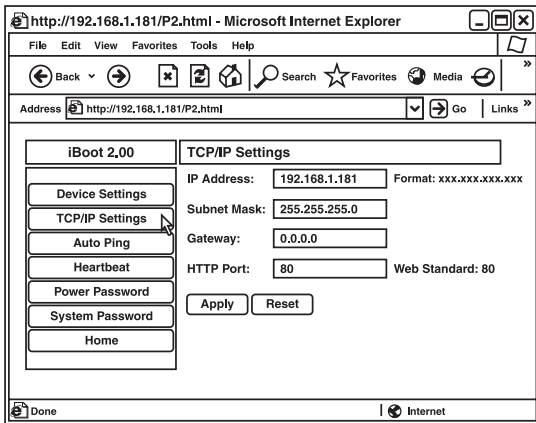


Figure 5-5. Enter TCP/IP settings.

Once you click on **Apply**, then click on the **Reboot** button that will appear at the top of the page. (See Figure 5-6.) The new IP address will not take effect until the switch is rebooted.

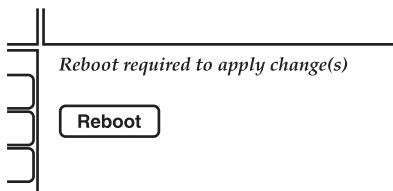


Figure 5-6. The system prompts you to reboot the switch.

Upon clicking **Reboot**, a page indicating the new URL for the device appears. Use this new URL to access the Network Power Switch Jr. See Figure 5-7.

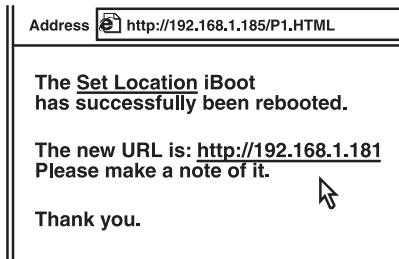


Figure 5-7. The new URL is shown on the Set Location screen.

Change the subnet mask if required. To do this, go to the TCP/IP Settings screen shown in Figure 5-5 and enter the appropriate subnet mask. Record this setting in the chart in **Chapter 7**. The subnet mask will be automatically set if using DHCP.

Change the gateway if required. To do this, go to the TCP/IP Settings screen shown in Figure 5-5 and enter the appropriate gateway. Record this setting in the chart in **Chapter 7**. The gateway will be automatically set if using DHCP.

The HTTP port setting is used to allow access to the switch on a port other than the Web standard port 80. If the port is changed, you will need to identify the port number when you enter the switch's IP address into your browser. For example, if the new port is 9100, then enter the address `http://192/168.254.9100` to access the switch.

CallerIP filters IP addresses to ensure that only authorized personnel can access the Network Power Switch Jr. You can set two IP addresses or subnets that are authorized to access the switch. If CallerIP 1 is set to 0.0.0.0 or blank, the switch will not filter any addresses. To authorize an entire subdomain, set the CallerIP to

xxx.xxx.xxx.255 (where *xxx.xxx.xxx* is the subdomain you want to authorize).

After changing the port, a reboot is necessary. Consult your network administrator for available port assignments. Click on the **Reboot** button at the top of the page to install the new port.

5.3.3 AUTO-PING SETUP

See **Chapter 6** for details about auto-ping setup.

5.3.4 HEARTBEAT SETUP

See **Chapter 6** for details about heartbeat setup.

5.3.5 POWER PASSWORD

See **Section 5.1** for instructions on changing the power password.

5.3.6 SYSTEM PASSWORD

See **Section 5.1** for details on changing the system password.

5.3.7 HOME

To return to the Home page, click on the **Home** button in the Device Settings screen (see Figure 5-4).

6. Advanced Operation

6.1 Auto-Ping

The auto-ping feature allows the Network Power Switch Jr. to automatically detect failed equipment and perform a timed reboot or other power control function (such as turning on an indicator or siren). Set any IP address to be periodically pinged. When the switch no longer detects a response from the address, the programmed power control function is activated. See Figure 6-1 on the next page.

To use auto-ping locally, put the switch next to the device to be monitored; it will reboot automatically when it no longer responds.

To use auto-ping remotely, put the switch at a central facility to monitor a remote system. The switch will power up an alert when the remote device no longer responds.

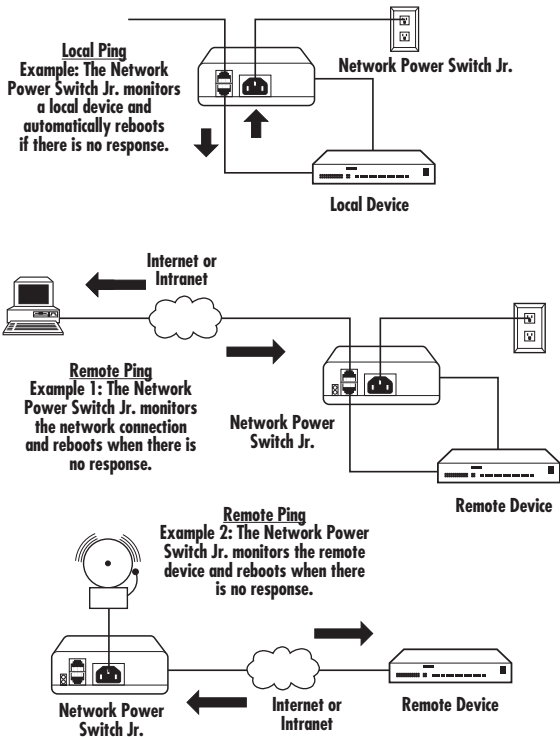


Figure 6-1. Auto-ping locally or remotely.

6.1.1 AUTO-PING SETUP PAGE

When auto-ping is enabled, the Network Power Switch Jr. pings the attached Ethernet device. If it gets no response from the device, the switch automatically powers off, powers on, or reboots the device. Figure 6-2 shows how to set up the auto-ping.

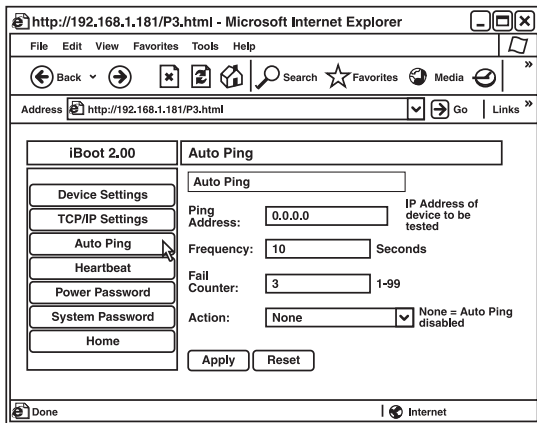


Figure 6-2. The auto-ping setup page.

Enter the ping address, ping frequency, fail counter, and desired action in the auto-ping setup page.

Ping Address: Enter the IP address of the device to be pinged.

Ping Frequency: Enter 1 to 999 seconds. The ping will go out to the selected device this often.

Fail Counter: Enter how many times (1 to 99) the ping needs to fail consecutively before the selected action is taken.

Action: Via the drop-down menu next to “Action” in Figure 6-2, select one of the following options:

- **None:** Auto-ping is not used.
- **Power-On—Latch:** Upon loss of ping response, the Network Power Switch Jr. will power on and remain on until changed.
- **Power-On—Follow:** Upon loss of ping response, the switch will power on. When the ping response returns, the switch will power off.
- **Power Off—Latch:** Upon loss of ping response, the switch will power off and remain off until changed via the Web or direct messaging.

- **Power Off—Follow:** Upon loss of ping response, the switch will power off. When the ping response returns, the switch will power on.
- **Power Cycle:** Upon loss of ping response, the switch will cycle the power. The switch will wait as long as the ping frequency. If the response does not return, the power will be recycled again. This will continue until the ping response returns or auto-ping is turned off. Make sure your auto-ping frequency is longer than the time required to reboot your device.
- **Power Cycle Once:** Upon loss of ping response, the switch will cycle power one time. It will not cycle again automatically until the ping response returns and is lost again.

Once you select the Ping Address, Ping Frequency, Fail Counter, and Action, click on the **Apply** button.

6.1.2 USING AUTO-PING

With auto-ping operational, the screen shown in Figure 6-2 will display the current Action status (enabled or disabled) to the right of the Action drop-down menu box. If the switch is enabled, it means that the switch is receiving responses to the ping or that the fail counter has not yet been exceeded.

If the fail count has been exceeded, the fail count status will change to disabled. The trigger counter indicates the number of times the auto-ping feature has been triggered. A counter reset button is provided when logging in with the system password.

6.2 Heartbeat Monitor

Like auto-ping, the heartbeat monitor allows the switch to monitor one or more devices and take action when these devices fail. With the heartbeat monitor enabled, the attached device pings the Network Power Switch Jr. The switch will expect a network message on a regular interval. When it misses a user-defined number of intervals, it will perform its programmed action.

Use the heartbeat to ensure that your server is running. When it crashes, it will be automatically rebooted.

Figure 6-3 shows a typical application with heartbeat enabled.

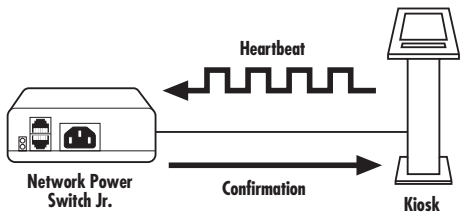


Figure 6-3. A kiosk generates heartbeat at a regular interval. When the kiosk crashes, the heartbeat stops, and the switch automatically reboots the kiosk.

The heartbeat can be generated in any of several ways:

- A Windows executable program will run as a tray applet; it transmits continuous heartbeats to a Network Power Switch Jr.
- A Windows .dll file is also available for use by Windows applications.

- A Windows executable program (.exe) that will run as a tray application and monitor a specific process. If the monitored process stops responding, the application will stop transmitting the heartbeat to the switch.
- The heartbeat protocol allows developers to embed this capability directly into their software products.

NOTE

For heartbeat tools, contact Black Box Technical Support at 724-746-5500.

6.2.1 HEARTBEAT SETUP PAGE

When heartbeat is enabled, the attached Ethernet device pings the Network Power Switch. If the switch gets no signal from the device, the switch automatically powers off, powers on, or reboots the device. Figure 6-4 shows how to set up the heartbeat.

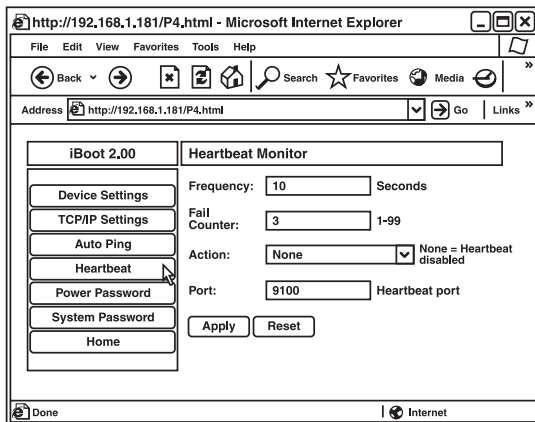


Figure 6-4. Set up the heartbeat via the Heartbeat Monitor page.

Enter the ping frequency, fail counter, and desired action in the Heartbeat Monitor page.

Frequency: Enter 1 to 999 seconds. If the heartbeat is not received within this time, the counter will reset.

Fail Counter: Enter how many times (1 to 99) the heartbeat needs to fail before the selected action is taken.

Action: Via the drop-down menu next to “Action” in Figure 6-4, select one of the following options:

- **Power On—Latch:** Upon loss of heartbeat, the switch will power on and remain on until changed.
- **Power On—Follow:** Upon loss of heartbeat, the switch will power off until changed.
- **Power Off—Latch:** Upon loss of heartbeat, the switch will power off and remain off until changed.
- **Power Off—Follow:** Upon loss of heartbeat, the switch will power off. When the heartbeat returns, the switch will power on.
- **Power Cycle:** Upon loss of heartbeat, the switch will cycle the power. The switch will wait the frequency time; if the heartbeat does not return, the power will be recycled again. This will continue until the heartbeat returns or the heartbeat monitor is turned off. Make sure your frequency is longer than the time required to reboot your device.

- **Power Cycle Once:** Upon loss of heartbeat, the switch will cycle power one time. It will not cycle again automatically until the heartbeat returns and is lost again.

Port: Enter the port number on the Ethernet device from which the heartbeat will be received by the switch.

6.2.2 USING HEARTBEAT MONITOR

With the heartbeat operational, the Heartbeat Monitor page (shown in Figure 6-4) will display the current status—either disabled or enabled. When enabled, the switch is receiving heartbeats or the fail counter has not yet been exceeded.

If the fail count has been exceeded, the status will change to triggered. The trigger counter indicates the number of times the heartbeat feature has been triggered. A counter reset button is provided when logging in with the system password.

6.2.3 USING THE HEARTBEAT PROGRAM

For details on how to use the heartbeat program, contact Black Box Technical Support at 724-746-5500.

6.3 Control Programs

A remote control program allows you to control the Network Power Switch Jr. directly. For details, contact Tech Support.

6.4 Direct TCP/Telnet Control

For application developers, the Network Power Switch Jr. also supports control via direct TCP communications. To control the switch in this manner requires opening a socket to the Network Power Switch Jr. and sending specific commands. For more information, call Black Box Technical Support at 724-746-5500.

7. User Settings

Record your Network Power Switch Jr.'s settings here.

MAC Address _____

IP Address _____

Subnet Mask _____

Gateway _____

Notes:

8. Troubleshooting

8.1 Calling Black Box

If you determine that your Network Power Switch Jr. 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.

8.2 Shipping and Packaging

If you need to transport or ship your Network Power Switch Jr.:

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