
Sentry International & Sentry ShutDown

Remote Power Manager



User's Manual

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Product Overview

The Sentry International and Sentry ShutDown Remote Power Managers are modem or RS-232C accessible remote power management systems. Installed at remote equipment sites, the Sentry provides a communication interface that allows power to three or four devices to be individually controlled from remote locations. Using the Sentry, remote equipment can be individually powered on, powered off, or rebooted.

The Sentry International and Sentry ShutDown consist of a modem-size desktop power manager and external power modules. The Sentry International supports four external power modules, while the Sentry ShutDown supports three external power modules, with a shutdown signal for the third power module.

Telco-style signal cables connect from the rear panel of the Sentry power manager to the signal input connectors on the side of the external power modules, or to a shutdown signal adapter that connects to a serial port on a system to be shut down. These can be up to 1000 feet away from the Sentry power manager. The power cords of the equipment to be controlled are plugged into the external power modules.

The external power modules are designed with an "Always-On" fail-safe feature so that a loss of the signal cable connection or the loss of power to the desktop power management unit will not interrupt power to the 'normally-on' device.

With all four of the Sentry International power modules, and with the first two power modules of the Sentry ShutDown, power is controlled by turning on and off the flow of AC through the power module. With the third power module of the Sentry Shutdown, which includes shutdown signaling support, an impending shutdown is signaled at a user-configured time before power is turned off, allowing an operating system to perform any necessary shutdown procedure before power is lost.

The Sentry International and Sentry ShutDown have two serial ports. One serial port is connected to the device that will originate a session with the Sentry, either an external modem or other RS-232C device. The Sentry is accessed through the modem or serial device by any communication program that supports VT100 or ANSI terminal emulation. The other serial port is used for chaining to another Sentry or for passing communication from the originating modem or RS-232C device through the Sentry to another serial device, for example, to the console port of a router. Up to fifteen Sentry units can be chained together, allowing power control of up to 60 power modules without shutdown support (15 Sentry Internationals), or 45 power modules with 15 power modules having shutdown support (15 Sentry ShutDowns). Sentry Internationals and Sentry ShutDowns can be mixed in a single chain.

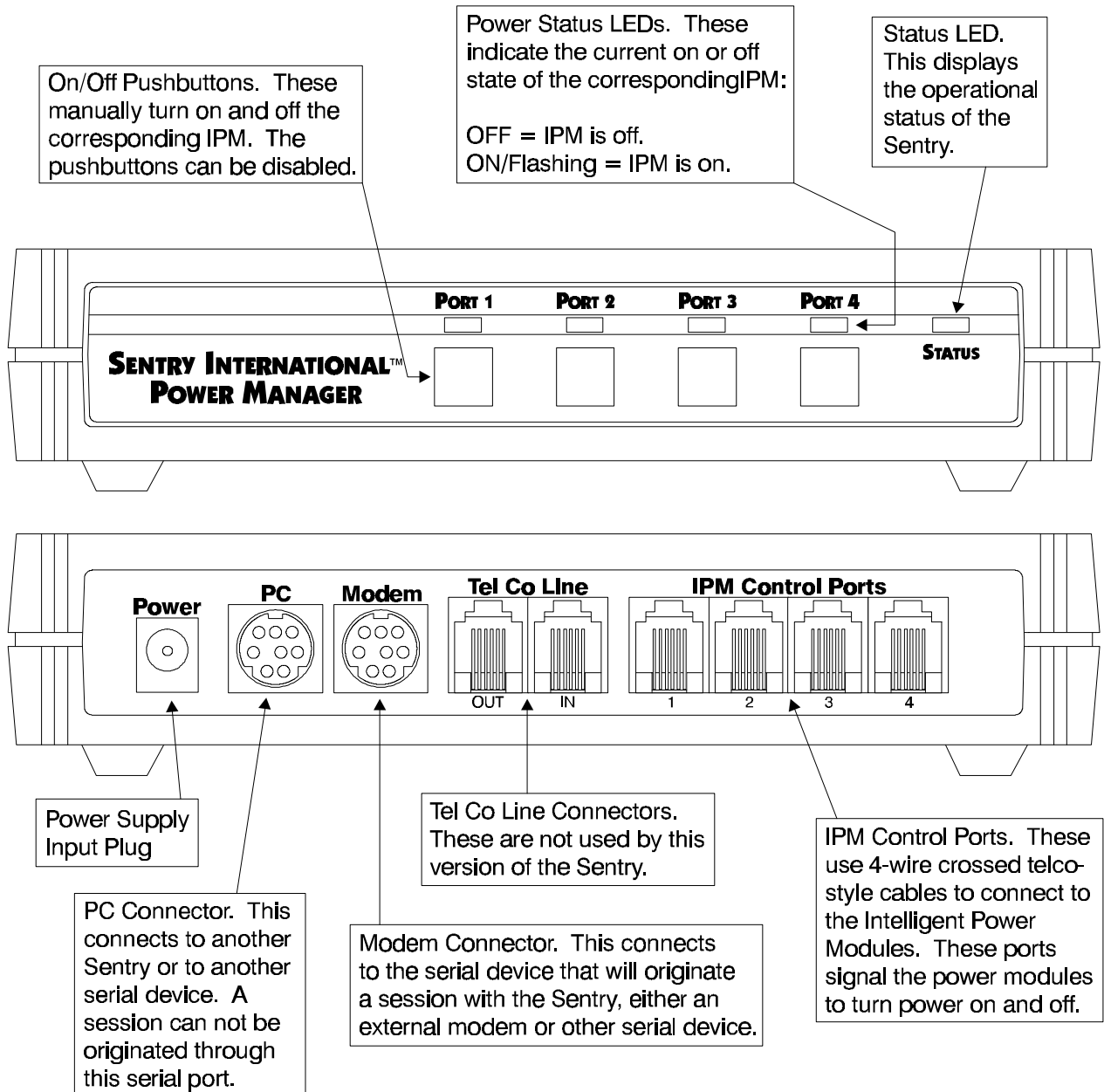
Security is achieved by a two-level password scheme -- one system-administrative level password, and two general-user level passwords. The administrative user has access to all configuration options and all power modules. The general users cannot modify configuration options, and can have their access restricted to specific power modules. When Sentry units are chained together, the three passwords are valid for the entire chain.

The user interface consists of a command prompt interface and an interactive screen interface. The command prompt interface allows for easy scripting of power control actions. The interactive screen interface allows for easy on-screen control. Each power module can be individually controlled, or power modules can be logically grouped together (even across chained units) to allow control of multiple power modules simultaneously.

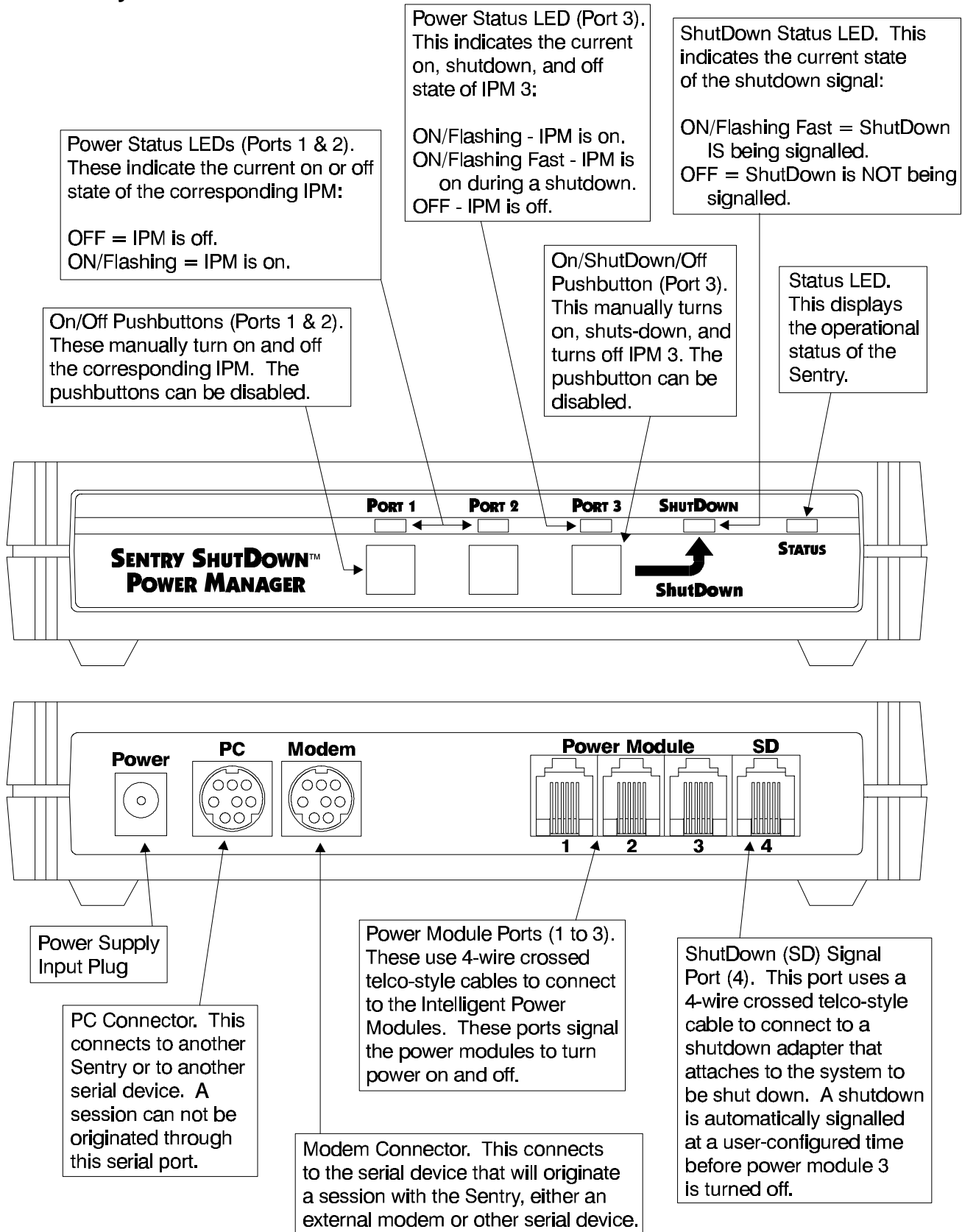
Sentry Power Manager

The Sentry Power Manager is the desktop control unit that provides the remote power management functionality. It initializes the modem, performs password verification to start a session, supplies and handles the user interfaces, stores all user-configurable options, performs all the controlling logic operations, signals the shutdown to an operating system, and signals the power modules to turn on or off.

Sentry International



Sentry ShutDown



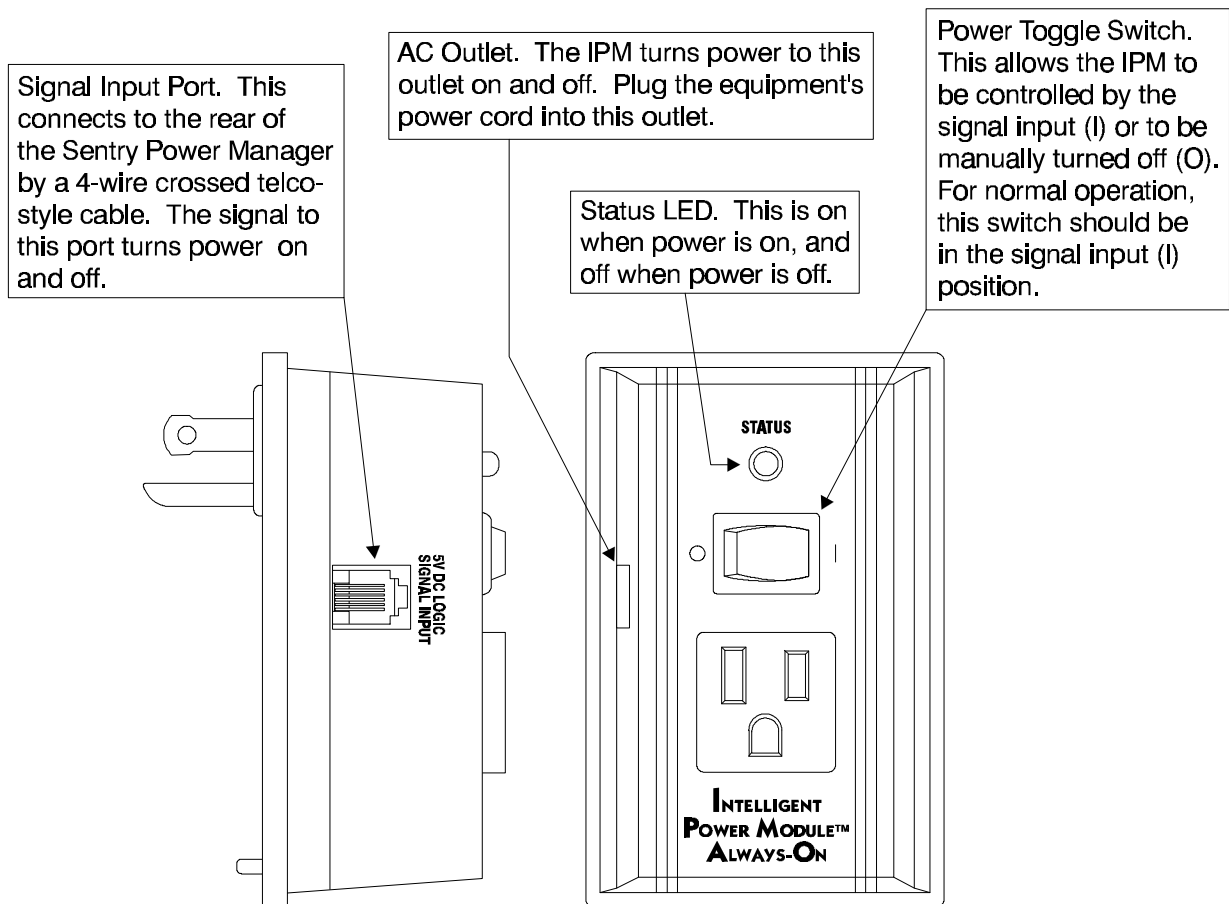
Intelligent Power Modules

The Intelligent Power Modules (IPM) is the device that supplies or does not supply AC power to the controlled equipment. The Sentry International and Sentry ShutDown supports three and four Intelligent Power Modules (IPMs), respectively. The power modules are one of three models: Wall-Mount 115VAC, In-Line 115VAC, or In-Line 230VAC. All IPMs are "Always-On" models.

"Always-On" Fail-Safe Feature

The "Always-On" IPM model is designed so that the default (non-powered) state of the relay provides a power path to the equipment. With this design, the equipment that is plugged into the IPMs will remain on even if the power controller circuit board inside the Sentry enclosure is turned off or fails, or if the signal cables are damaged or unplugged, or if the circuits that drive the IPM's relay are damaged. This fail-safe feature of the Sentry International and Sentry ShutDown avoid a single-point-of-failure.

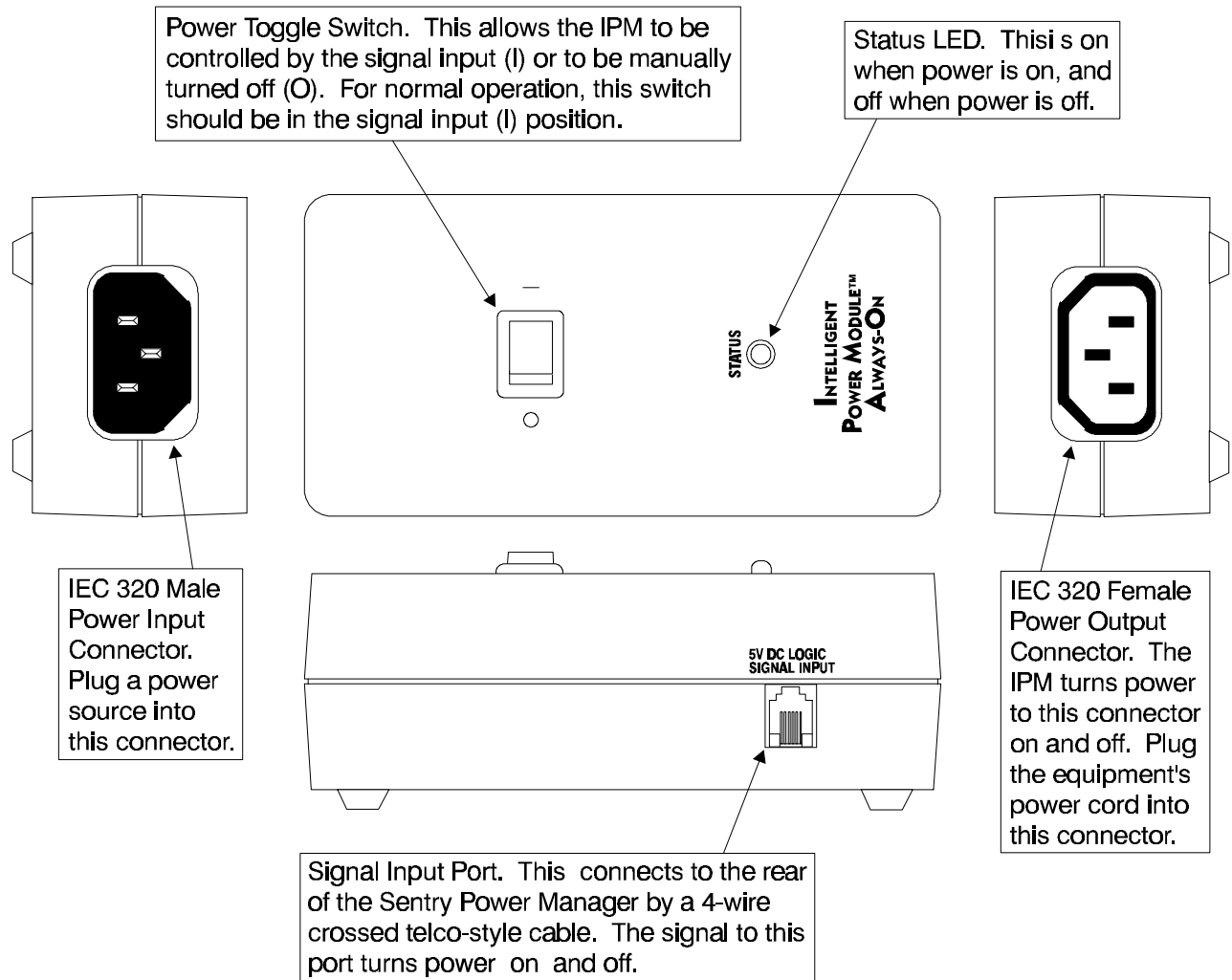
Wall-Mount Model (115VAC Only)



Model IPM 015-002 -- Each 115 VAC IPM has the following specification:

- 115 (+/- 10%) VAC, 50-60Hz
- Load 10A, 1200W
- Standard 3-Prong NEMA 5-15 Outlet
- UL, CSA, and NRTL/C Certified
- Manual Power-Off Toggle switch
- Power Status LED Indicator
- RJ11 Input for On/Off Control Signal
- "Always-On" fail-safe relay design

In-Line Model (115VAC and 230VAC)



Model IPM 025-003 -- Each 115 VAC IPM has the following specification:

- 115 (+/- 10%) VAC, 50-60Hz
- Load 10A, 1200W
- Standard 3-Prong NEMA 5-15 Outlet
- UL, CSA, and NRTL/C Certified
- Manual Power-Off Toggle switch
- Power Status LED Indicator
- RJ11 Input for On/Off Control Signal
- "Always-On" fail-safe relay design

Model IPM 020-002 -- Each 230 VAC IPM has the following specification:

- 220 - 240 VAC, 47-63Hz
- Load 5A, 1100W
- IEC 320 Input/Output Connectors
- TUV Rheinland Approved to EN 60950 Standard
- Manual Power-Off Toggle switch
- Power Status LED Indicator
- RJ11 Input for On/Off Control Signal
- "Always-On" fail-safe relay design

User Interface

The modem / RS-232C interface to the Sentry International and Sentry ShutDown was designed to be accessed by any VT100 or ANSI terminal emulation software. Thus, almost any modem or serial communication program can be used.

Starting a Session

Via a modem, a session is started by a user calling the Sentry and then pressing "Enter" when connected.

Via a direct RS-232C connection, a session is started just by pressing "Enter".

Password

When the Sentry receives a carriage return (the "Enter"), the user is prompted for a password:

```
Enter Password: _
```

A user has three attempts at a valid password. Passwords are up to eight characters and are case sensitive.

The Sentry International and Sentry ShutDown supports a two-level password scheme, with a total of three passwords. There is one system-administrative level password, and two general-user level passwords. A user logged in with the system administrative password can control power and make configuration changes. A user logged in with a general password can only control power. Also, a user logged in with the system administrative password can control power to all IPMs, while a general user password may be restricted to controlling power to a specific IPM or group of IPMs, as configured by the administrator.

Command Prompt

Once a valid password has been entered, the Sentry displays a command prompt:

```
Sentry: _
```

The command prompt interface is used for power control and some configuration options, including changing passwords. From the command prompt, power control actions can be applied to individual IPMs or to a group of IPMs. See the Operations section of this manual for a description of all the command prompt commands.

Power Control Screen

From the command prompt interface, a user can enter a screen-oriented interface by using the SHOW command. The SHOW command causes the Sentry to display an ANSI power control screen that is 80 characters wide with 24 lines.

From the Power Control Screen, the administrative user can control power and configure the Sentry by simply moving around the screen using the arrow keys and pressing the key of an option displayed on the 24th line. A general user can only control power, and may have access restricted to particular IPMs. See the Operations section of this manual for a description of all the Power Control Screen options.

The Sentry International Power Control Screen:

Power Control System (c) Server Technology, Inc.				1 of 1
Port Name:	[]	[]
Control Status:	(x) On () Off	(x) On () Off	(x) On () Off	(x) On () Off
Minimum-On Time:	00:00:00	00:00:00	00:00:00	00:00:00
Minimum-Off Time:	00:00:00	00:00:00	00:00:00	00:00:00
Wake-Up State:	On	On	On	On
Group:	[]	[]
Access:	All	All	All	All
Location:	[]		
Page:	[]		
Press: C)mnd, E)dit, Q)uit, Space-Bar to Select				

The Sentry ShutDown Power Control Screen:

Power Control System (c) Server Technology, Inc.				1 of 1
Port Name:	[]	[]
Control Status:	(x) On () Off	(x) On () Off	(x) On () Shtdwn	
Minimum-On Time:	00:00:00	00:00:00	00:00:00	
Minimum-Off Time:	00:00:00	00:00:00	00:00:00	
Shutdown Delay:			2:30	
Wake-Up State:	On	On	On	
Group:	[]	[]
Access:	All	All	All	
Location:	[]		
Page:	[]		
Press: C)mnd, E)dit, Q)uit, Space-Bar to Select				

Each Sentry supports three or four power modules, which are the columns shown on the Power Control Screens above. When Sentry units are chained together, there is a Power Control Screen for each Sentry International or Sentry ShutDown. Each screen is considered a different page. The page currently being viewed is displayed in the upper right corner of the screen, along with the total number of pages.

Installation

Sentry International & Sentry ShutDown

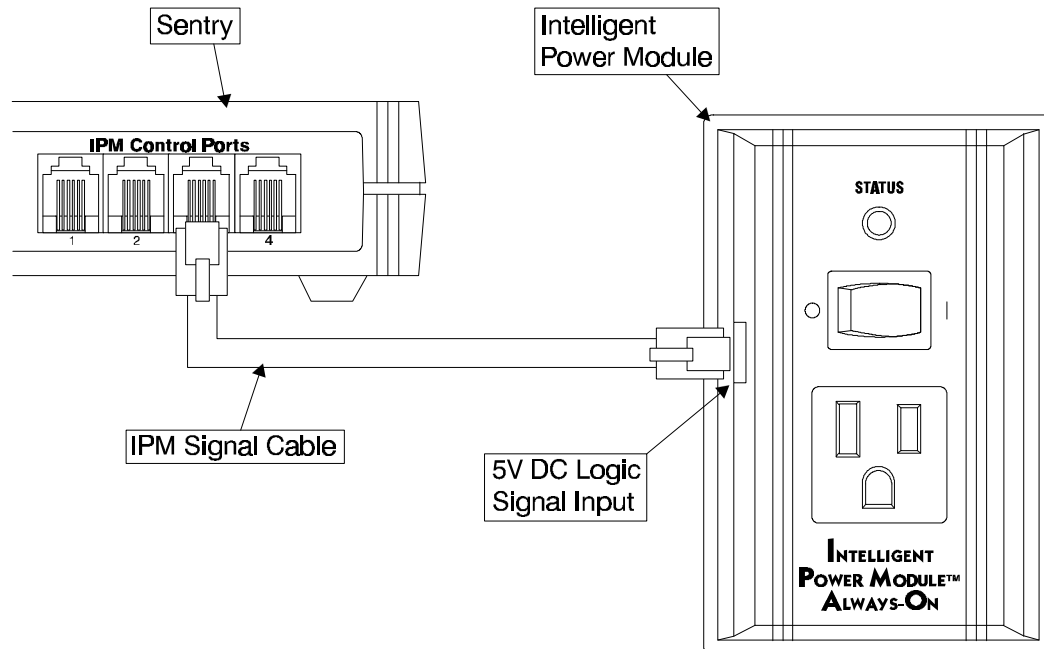
Sentry Power Manager

The desktop Sentry Power Manager enclosure is 6 1/2 inches wide, by 7 1/2 inches deep, by 1 1/2 inches tall. It can be placed up to 1000 feet from the Intelligent Power Modules, but must be near a live outlet (one that will not be controlled by an IPM). Place the Sentry Power Manager in a suitable location and plug the power supply into the nearby live outlet. Then plug the power cable into the Power connector on the rear of the Sentry unit. The status LED should begin to flash, on for 1/2 second and then off for 1/2 second. This is the only non-error flash rate for the status LED.

During the power-up sequence, the on/off LEDs above each pushbutton (and the ShutDown LED on a Sentry ShutDown) should be on without flashing. When the power-up sequence is finished (about five to ten seconds), each LEDs will indicate the Wake-Up state of the IPM. For 'OFF', the LED will be off. For 'ON' (the default), the LED will flash on for 1/2 second and then off for 1/2 second, the same as the status LED. This flash rate, which is twice the speed of the normal 'ON' flash rate, indicates the port has not changed states since the Sentry was turned on. The ShutDown port LED will be off.

Intelligent Power Modules

Each Intelligent Power Module has an RJ11 modular connector for a 5V DC Logic Signal Input. This connector uses an RJ11 4-wire crossed telephone-type cable to connect into one of the modular ports on the rear panel of the Sentry: "IPM Control Ports" 1 to 4 on the Sentry International, or "Power Module" ports 1 to 3 on the Sentry ShutDown. This connection allows the Sentry to signal the IPM to be turned on or turned off. Connect each IPM to the Sentry as shown here:



To test the IPMs, do the following for each, one at a time:

- Press the front panel pushbutton until the on/off LED above the pushbutton is off. The power should be off to the corresponding IPM, as indicated by the green status LED on the IPM not being illuminated.
- Press the front panel pushbutton again. The on/off LED above the pushbutton should turn on, flashing at a rate of on for 1 1/2 seconds and then off for 1/2 second. Power should turn on to the corresponding IPM, as indicated by the green status LED on the IPM being illuminated.

Use the following steps to plug the power cords of the devices to be controlled into the power modules:

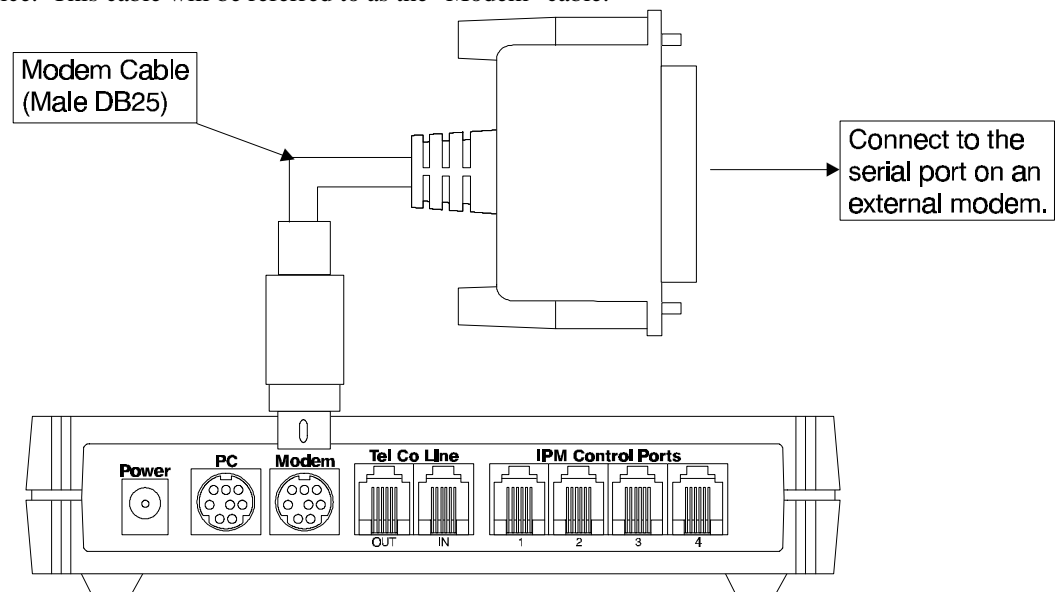
- Place the IPM's toggle switch in the "1" position.
- Press the corresponding Sentry front panel pushbutton until the on/off LED above the pushbutton is off. The power module should be off.
- Shutdown, if necessary, and turn off the device.
- Unplug the device's power cord from the outlet that it is currently plugged into and plug the cord into the IPM's outlet.
- Plug the IPM into the outlet where the device was plugged into. For in-line power modules, this requires a power cable
- Place the device's power switch into the ON position.

After these steps, the device will be turned on and off when the IPM is turned on and off. This should be tested by pressing the corresponding Sentry Power Manager front panel pushbutton.

Input and Output Devices

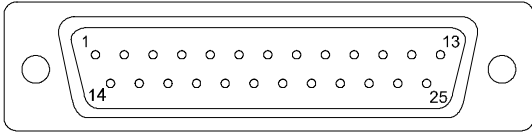
Modem Connection (Modem)

The Sentry Power Manager has an 8-pin mini-DIN RS-232C DTE serial port to connect to the device that will originate a session with the Sentry. This port is labeled as "Modem". This port is typically used to connect to an external modem, but may also be used to connect to any RS-232C device. An 8-pin mini-DIN to 25-pin male cable is included for connecting the Modem port to an external modem, or to any DCE device. This cable will be referred to as the "Modem" cable.



Note: Before connecting an external modem to the Sentry, the modem may need to be configured with appropriate initialization strings. Also, if a modem is not being connected, then modem initializations should be disabled. Please see the Modem Configuration section in this manual.

When the Modem cable is connected to the Modem port, the 25-pin male end of the cable provides the following standard RS-232C DTE serial port signals:

<p>Modem</p> <p>DB25 Male</p>  <p>RS-232C(DTE)</p>	<table border="0"> <thead> <tr> <th style="text-align: left;"><u>Pin</u></th> <th style="text-align: left;"><u>Signal Name</u></th> <th style="text-align: left;"><u>I/O</u></th> </tr> </thead> <tbody> <tr> <td>2</td> <td>Transmit Data (TD)</td> <td>O</td> </tr> <tr> <td>3</td> <td>Receive Data (RD)</td> <td>I</td> </tr> <tr> <td>4</td> <td>Request To Send (RTS)</td> <td>O</td> </tr> <tr> <td>5</td> <td>Clear To Send (CTS)</td> <td>I</td> </tr> <tr> <td>6</td> <td>Data Set Ready (DSR)</td> <td>I</td> </tr> <tr> <td>7</td> <td>Signal Ground</td> <td>N/A</td> </tr> <tr> <td>8</td> <td>Data Carrier Detect (DCD)</td> <td>I</td> </tr> <tr> <td>20</td> <td>Data Terminal Ready (DTR)</td> <td>O</td> </tr> </tbody> </table>	<u>Pin</u>	<u>Signal Name</u>	<u>I/O</u>	2	Transmit Data (TD)	O	3	Receive Data (RD)	I	4	Request To Send (RTS)	O	5	Clear To Send (CTS)	I	6	Data Set Ready (DSR)	I	7	Signal Ground	N/A	8	Data Carrier Detect (DCD)	I	20	Data Terminal Ready (DTR)	O
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These are equivalent to the signals of a 25-pin serial port on the back of a PC.

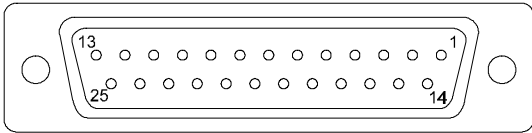
Pass-through Connection (PC)

The Sentry Power Manager also has an 8-pin mini-DIN RS-232C DCE serial port to connect to another serial device. This port is labeled as "PC". This port is used either for chaining to another Sentry or for passing communication from the originating modem or RS-232C device through the Sentry to another serial device, for example, to the console port of a router. A session with the Sentry can not be originated through this port. An 8-pin mini-DIN to 25-pin female cable is included for connecting the PC port to a PC's serial port, or to any DTE device. This cable will be referred to as the "PC" cable.

Pass-Through Communication

The PC port of a single Sentry Power Manager, or the last PC port in a chain of Sentry Power Managers, can be used to connect to a serial device. With this option, you can communicate to a serial device through the Sentry Power Manager by using the CONNECT command at the Sentry command prompt (see the Operations section of this manual). A connection through this port supports full handshaking.

When the PC cable is connected to the PC port, the 25-pin female end of the cable provides the following standard RS-232C DCE serial port signals:

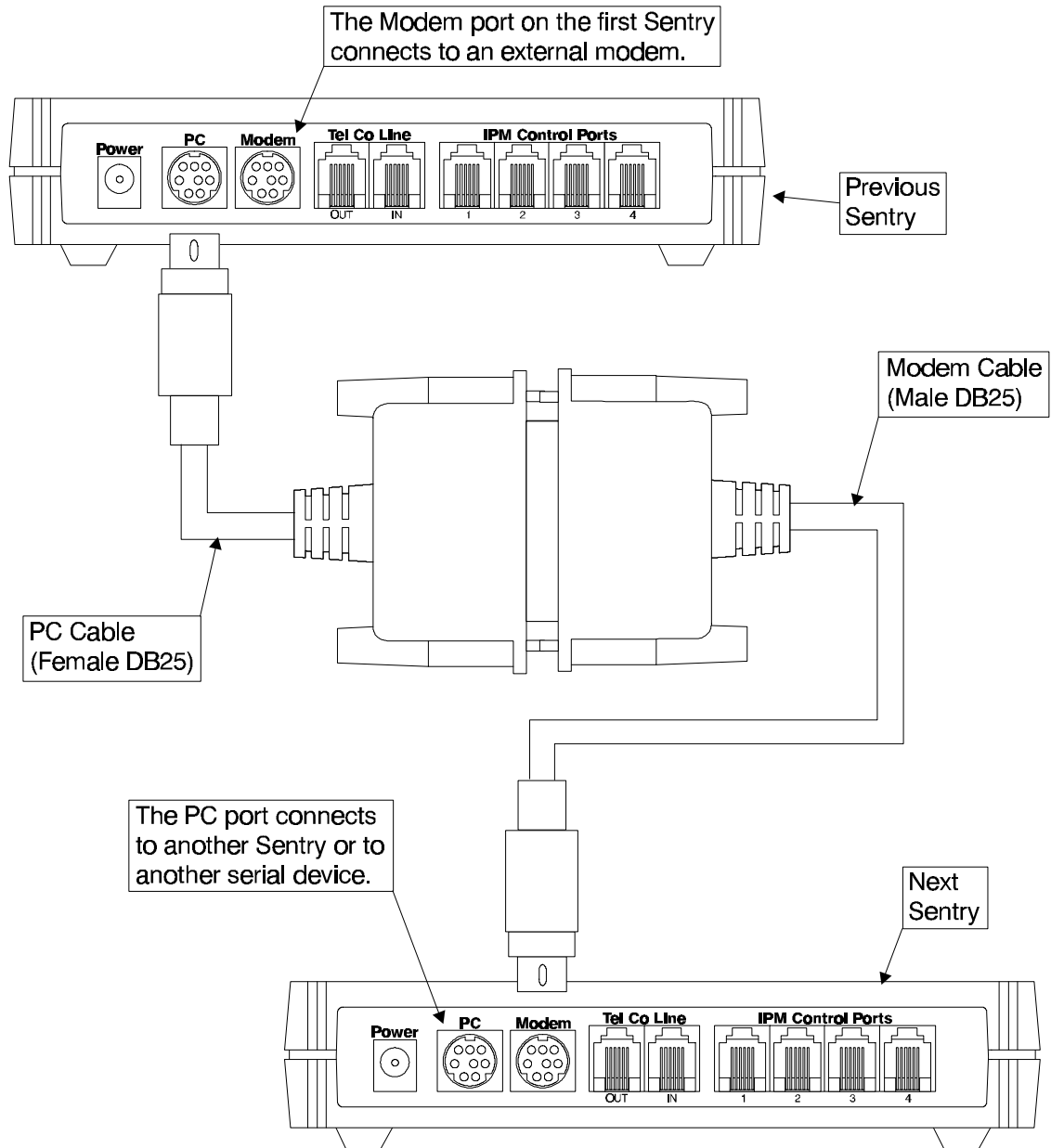
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These are equivalent to the signals of a 25-pin serial port on the back of a Modem.

Chaining Sentry Power Managers

Multiple Sentry Power Managers can be chained together, up to 15, allowing power control of up to 60 power modules without shutdown support (15 Sentry Internationals), or 45 power modules with shutdown support for 15 of the power modules (15 Sentry ShutDowns). Sentry Internationals and Sentry ShutDowns can be mixed together in a single chain.

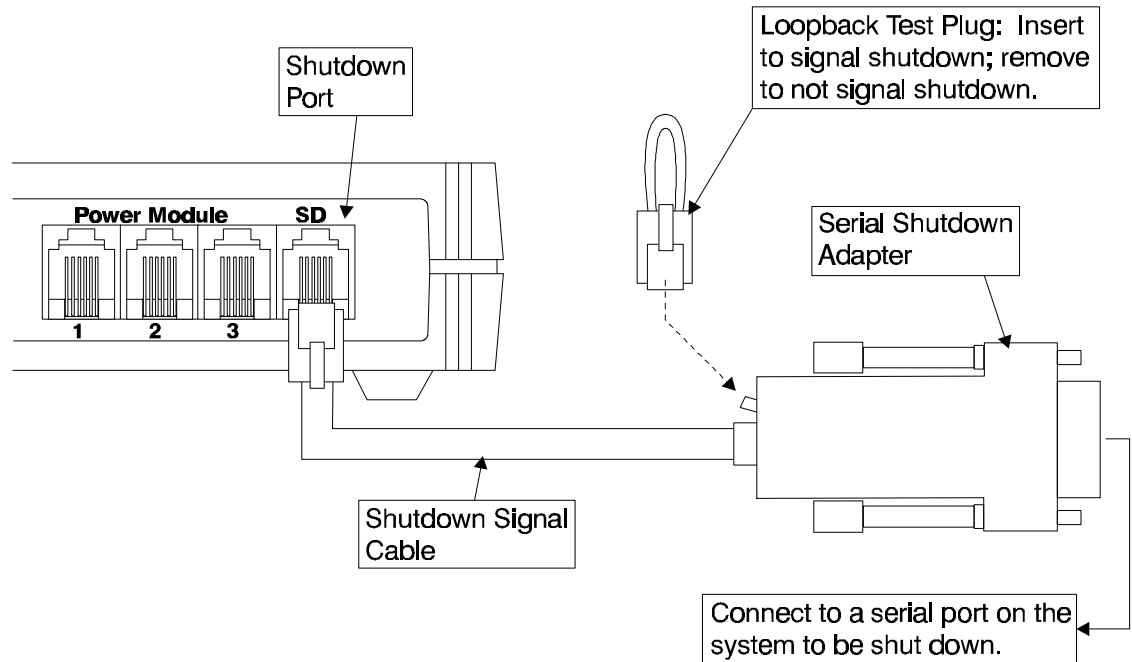
Sentry Power Managers chain together by connecting the PC port of the previous unit to the Modem port of the next unit. This connection can be made with the included PC and Modem cables by connecting the PC cable to the PC port of the previous unit, then connecting the Modem cable to the Modem port of the next unit, and then connecting the 25-pin ends of both the PC and Modem cables together:



Alternatively, a shorter 12-inch 8-pin mini-DIN to 8-pin mini-DIN link cable can be used. Contact Server Technology to obtain this link cable.

ShutDown Signal Connection (SD)

The Sentry ShutDown supports operating system shutdown signaling for the third IPM. The ShutDown signal port (SD) is an RJ11 modular connector on the rear of the Sentry ShutDown. This connector uses an RJ11 4-wire crossed telephone-type cable to connect into a modular adapter that connects to a serial port on the system to be shutdown. This connection allows the Sentry to signal the operating system to shutdown. Connect the ShutDown adapter and cable as shown here:



The ShutDown signal port is functionally paired with IPM #3. At a user-configured time before turning off IPM #3, the paired ShutDown (SD) signal port automatically signals an impending shutdown to the operating system, allowing the operating system to perform any necessary shutdown procedure before power is turned off.

The ShutDown port operates exactly like the "Normally Open Line Fail Signal" and/or the "Normally Open Low Battery Signal" on many popular UPSs (Uninterruptible Power Supplies). Pins 2 and 5 are the only pins used on a ShutDown port. Pin 2 is an open collector output of a transistor, and pin 5 is a common ground. Pins 2 and 5 are effectively in an open state when not signaling a shutdown, and in a closed state when signaling a shutdown.

This design allows the ShutDown port to be used with a variety of operating systems and UPS monitoring software. Also, the "Normally Open" state of the ShutDown port allows for the pins to be logically ORed together with the "Normally Open" pins from a UPS, allowing either the UPS or the Sentry ShutDown to signal a shutdown to a single serial port on a system.

Unless otherwise ordered or indicated, the Sentry ShutDown includes a crossed telco cable and 9-pin serial port adapter to support the shutdown of a Windows NT system using the UPS Service that is built into the operating system. A single loopback test plug is also included for testing. These are connected as shown above. Instructions for configuring the Windows NT UPS Service appear later in the Configuration section of this manual.

Contact Server Technology for adapters and software to support shutdown on other operating systems.

Configuration

Modem Configuration

The Sentry International and Sentry ShutDown have some simple requirements of a modem attached to the Modem port. They are:

- That the modem does not echo data sent to it.
- That the modem does not send result codes.
- That the modem automatically answer an incoming call.
- That the modem communicate to the Sentry at one of the data rates supported by the Sentry. They are **38400**, **19200**, **9600**, **4800**, **2400**, **1200**, and **300** baud.

To help a modem meet these requirements, the Sentry supports limited modem initialization. The Sentry initializes the modem when the Sentry is first turned on, whenever the modem is turned on or connected, and after every session with the Sentry.

The initialization takes place at a fixed data rate that is selectable by the user. The data rates supported are 300, 1200, 2400, 4800, 9600, 19200, and 38400 baud. The default data rate is 1200 baud. See the Operation section of this manual for the Sentry commands to change the data rate or to turn off any or all of the modem initialization strings below.

There are four fixed modem initialization strings in the Sentry firmware:

Initialization String 1:	AT<CR>
Initialization String 2:	AT E0 Q1 S0=1 S2=64 S12=50 &C1 &D2<CR>
Attention String:	@@@
Hangup String:	ATH<CR>

Initialization String 2 completely addresses the first three requirements above: The "E0" turns off the echoing of data, the "Q1" turns off result codes, and the "S0=1" sets the modem to automatically answer an incoming call on the first ring.

For most modems, Initialization String 2 being sent by the Sentry to the modem at one of the supported Sentry data rates is all that is needed for the modem to meet the last requirement above. This is because most modems will communicate to the attached serial device (in this case, the Sentry) at the data rate of the last AT command that was sent to it. A modem that operates in this manner is said to be operating in *fixed data rate mode*. Since the Sentry sends the last AT command at one of its supported data rates, the modem will talk back to the Sentry at that same data rate when it is on-line with another modem.

Some high-speed modems, however, may be configured to operate in *variable data rate mode*. This is one important configuration issue that the above initialization strings do not address. It may be necessary to configure your modem for *fixed data rate mode* for it to operate with the Sentry.

Fixed Vs. Variable Data Rate Mode

The DTE (Data Terminal Equipment) data rate is the speed at which the modem communicates with the connected serial device. With high-speed modems, automatic speed buffering allows this data rate to be different than the DCE (Data Communications Equipment) data rate, which is the speed that the two connected modems communicate at with each other.

With high-speed modems, the DTE speed can be *fixed* at the data rate of the last AT command sent to the modem by the connected serial device, OR, the DTE speed can be *variable*, automatically adjusting to a rate that is best for the actual DCE connect speed.

Since the Sentry requires communicating at either 300, 1200, 2400, 4800, 9600, 19200, or 38400, it is best to configure a high-speed modem to operate in *fixed data rate mode*. With the modem *fixed* to communicate at the speed of the last AT command, AND, the Sentry initializing the modem with AT commands at one of the supported data rates, it is guaranteed that a connection will be established at one of the supported data rates.

With a modem set to operate in *variable data rate mode*, however, when the modems connect, the modem may change from the speed of the last AT command to a different DTE data rate. If the DTE data rate changes to one of the supported data rates, then the Sentry will be able to communicate. But, if the data rate changes to a non-supported data rate, such as 14400, 28800, or faster than 38400, the Sentry will not be able to communicate.

Thus, it is best that the modem be configured to operate in *fixed data rate mode*, NOT *variable data rate mode*.

Configuring the modem to operate in *fixed data rate mode* is not addressed by the modem initialization built into the Sentry because the command that sets the modem to use *fixed data rate mode* varies with different modem manufacturers. For example, Hayes and Practical Peripheral modems use AT&Q6 while US Robotics modems use &B1. MultiTech and Intel modems use even less common AT commands that begin with "\$" and "\".

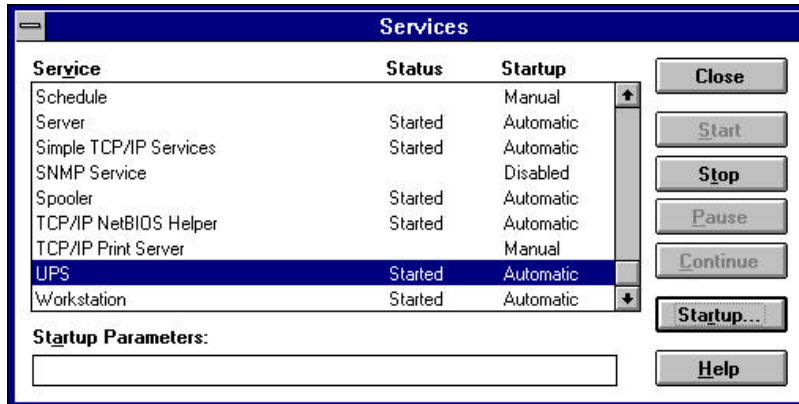
If your modems are able to connect with each other, but you are not able to communicate with the Sentry, the modem attached to the Sentry is probably in *variable data rate mode* and has switched to an unsupported speed. In this case, you will need to lookup the appropriate AT command for your modem to operate in *fixed data rate mode*, attach the modem to a PC with a terminal program, send the command to the modem, followed by an &W to write the new setting to the modem's memory and make it the default, and then re-attach the modem to the Sentry.

Windows NT UPS Service Configuration

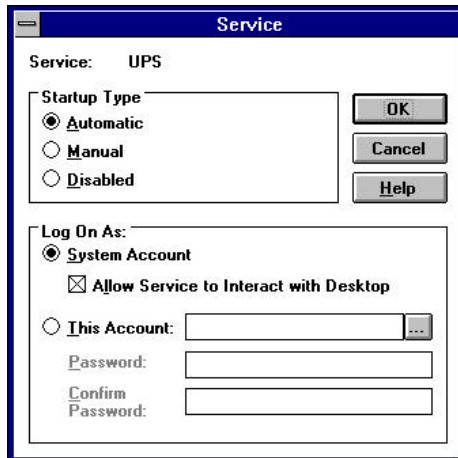
When connecting the ShutDown port of Sentry ShutDown to a Windows NT system, the Windows NT UPS Service is used to monitor a serial port for the shutdown signal, and to provide the operating system shutdown when the signal is detected.

There are two parts to configuring the Windows NT UPS Service for use with Sentry ShutDown -- 1) configuring the service to automatically startup when Windows NT loads, and 2) configuring the service for the proper COM port and operating parameters of the Sentry ShutDown. Both parts of the configuration are done through the "Services" and "UPS" icons in the Control Panel of Windows NT. The following screen shots show the required setting. See the on-line help for more information about each item on the screens.

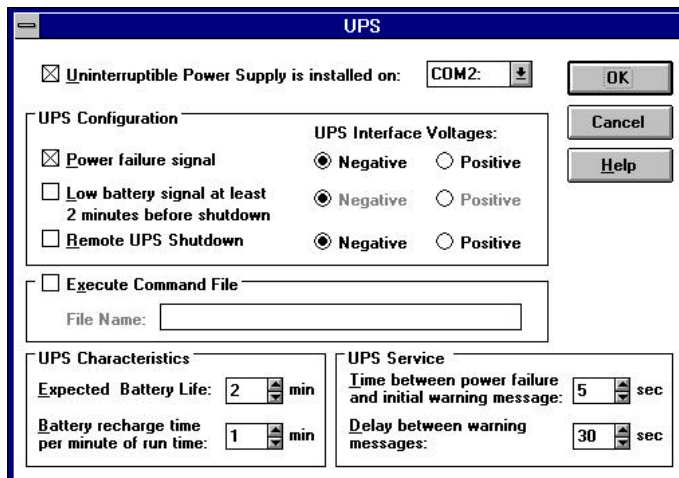
To configure the UPS service to automatically startup when Windows NT loads, select "Services" from the Control Panel. The Services window will be displayed:



Click on "UPS" and then the "Startup" button. The UPS Service startup parameters will be displayed:



Choose the options shown above, then click OK. To configure the UPS Service for the proper COM port and operating parameters of the Sentry ShutDown, select "UPS" from the Control Panel. The UPS window will be displayed:



Selected the appropriate COM port and choose the other options as shown above, then click OK.

The value for the "Expected Battery Life" shown in the previous screen shot is 2 minutes. This is the default setting in Windows NT and is 30 seconds shorter than the default Shutdown Delay of the Sentry ShutDown. This is also the minimum setting that Windows NT allows.

IMPORTANT: The "Expected Battery Life" must be less than the "Shutdown Delay" time configured on the Sentry Power Control Screen (see the Operations section of this manual), otherwise, power may be turned off before the Windows NT system has completed the shutdown.

When set for two minutes, the Windows NT system will start to shut down immediately when the Sentry ShutDown signals it to -- there is no "grace" time or initial warning messages, just a final shutdown message and then the actual shutdown. For this reason, you may want to increase the "Expected Battery Life" on the Windows NT UPS configuration screen and the "Shutdown Delay" on the Sentry Power Control Screen. Every minute above 2 minutes will be time that Windows NT will broadcast and display warning messages about the impending shutdown, before starting the final shutdown. This gives users time to finish and save their working before the shutdown occurs.

Windows NT Shutdown Test

After configuring and starting the NT UPS service, a shutdown test should be done. On the front of the Sentry ShutDown, press the Port 3 button. This will cycle Port 3 from the ON state to the ShutDown state, which will be indicated by both the Port 3 and ShutDown LEDs flashing fast. After the "Time between power failure and initial warning message" from the UPS Service configuration (the previous screenshot), a shutdown should start. Within two minutes, the NT system should be safe to turn off, which will be displayed on the screen. Two and a half minutes after pressing the button (the default Sentry Shutdown Delay time), power should turn off.

If the shutdown does not occur as just described, then a second test should be done. Remove the telco cable from the shutdown adapter, but leave the shutdown adapter attached to the serial port. Reboot the NT system. The UPS Service should automatically load, without any error messages. This should be verified by checking that the status is "Started" for the UPS Service in the Services window from the Control Panel. Next, insert the Loopback Test Plug (see page 12). A shutdown should begin shortly.

Windows NT Automatic Logon

When Windows NT boots, a user is expected to press <Ctrl><Alt> to bring up the logon dialog box from which the user will login with their user name and password. This can pose a problem for remote booting and logon since the user is not at the system to press the keys.

Fortunately, Windows NT supports an Automatic Logon feature to allow the system to automatically logon with a default user name, default password, and default domain name. Instructions for enabling this Automatic Logon feature can be obtained from Microsoft's Knowledge Base section of their WWW pages:

```
http://www.microsoft.com/kb/articles/q97/5/97.htm
Article ID #: Q97597
Title: "How to Enable Automatic Logon in Windows NT"
```

Operation

Front-Panel Pushbuttons

The front-panel pushbuttons on the Sentry International and Sentry ShutDown can be used to manually turn on and off the corresponding device. This includes first shutting down the device for Port 3 of the Sentry ShutDown. The pushbutton cycles and LED indicators are described in the Product Overview section of this manual, on pages 2 and 3. Front-panel pushbutton actions are immediate. The changes are displayed on the Power Control Screen, if it is being viewed at the time.

As a security feature, the front-panel pushbuttons can be disabled by the SET PANEL NONE command at the Sentry command prompt (see the "SET Commands" section that follows).

Starting a Session

A session is started with the Sentry International or Sentry ShutDown by sending a carriage return to the Sentry:

- For Modem access, the user first uses any communication program that supports VT100 or ANSI terminal emulation to dial the phone number of the external modem attached to the Sentry. When the modems connect, the user should see a "CONNECT" message.

NOTE: When setting up the Sentry for the first time, the first modem call made to the Sentry should be made with the dialing modem set to 1200 baud, which is the factory default modem initialization data rate for the Sentry. This should guarantee that the first connection will succeed, after which the Sentry's modem initialization data rate can be increased.

- For direct RS-232C access, the user starts any serial communications program that supports VT100 or ANSI terminal emulation. The program should be set to one of the supported data rates (38400, 19200, 9600, 4800, 2400, 1200, and 300 baud), and must assert its Device Ready signal (DTR or DSR).

At this point, the user should press the Enter key, which sends a carriage return. The Sentry will automatically detect the data rate of the carriage return and send a password prompt back to the user.

Password

At the start of a session, the user is prompted for a password.

Enter Password: _

Passwords are up to eight characters and are case sensitive. When entering a password, asterisks are displayed instead of the actual password characters. A user has three attempts at a valid password, after which the session is automatically ended.

The Sentry International and Sentry ShutDown support a two-level password scheme, with a total of three passwords. There is one system administrative level password (ADMN), and two general user level passwords (GEN1 and GEN2).

A user logged in with the system administrative password can control power and make configuration changes. A user logged in with a general password can only control power. Also, while a user logged in with the system administrative password can control power to all IPMs, a general user password may be restricted to controlling power to a specific IPM or group of IPMs, as configured by the administrator.

Default Passwords

The default passwords are:

Administrative password:	adm
General User #1 password:	gen1
General User #2 password:	gen2

When logging in for the first time, the system administrator should use the "adm" password. This will allow the system administrator to configure all the options, as well as to change the default passwords. Changing the passwords is done using the SET PASSWORD command from the command prompt, as described in the next section, "Command Prompt". Configuring the Sentry is done from the Power Control Screens, as described in the following section, "Power Control Screen".

Command Prompt

The command prompt interface is used for both power control and configuration of some options, including changing passwords. From the command prompt, power control actions can be applied to individual IPMs or to a group of IPMs.

All configuration changes made at the command prompt are saved to non-volatile RAM and are effective immediately.

Once a valid password has been entered, the Sentry displays a command prompt:

```
Sentry: _
```

To get a display of available commands, just press enter at the Sentry prompt, which will show:

```
Sentry commands are:
```

```
CONNECT LOGIN OFF ON QUIT REBOOT RESYNC SET SHOW STATUS VERS
```

Command Syntax Rules

- CAPS** Keywords that are entered exactly as shown appear in all uppercase letters. Upper or lowercase can be used when the command is entered.
- Words** Parameters that are replaced with data appear in words that are a combination of uppercase and lowercase letters. The word indicates the type of parameter required. Upper or lowercase can be used when the command is entered, except when entering passwords, which are case sensitive.
- { }** Required parameters appear within curly brackets. Do not include the brackets when the command is entered.
- []** Optional parameters appear within square brackets. Do not include the brackets when the command is entered.
- |** A broken vertical bar indicates the OR function. Enter only one of the options or parameters shown. Do not include the broken vertical bar when the command is entered.
- *** An asterisk indicates that an entry may be repeated as many times as needed. The entry that may be repeated appears within the preceding curly or square brackets. Do not include the asterisk when the command is entered.

General Commands

NOTE: The port name and group parameters in the following OFF, ON, REBOOT, and STATUS commands are the user-defined names from the Power Control Screens. Multiple IPMs or groups can be specified, each separated by a space, up to 50 characters. See the following Power Control Screen section for descriptions of these fields.

```
OFF {Port Name|Group|ALL} [{Port Name|Group}]*]
```

Turns off an individual IPM, a predefined group of IPMs, or all IPMs for which access is allowed by the current password level. For an IPM with shutdown support, a shutdown precedes turning off the power. The shutdown signal is asserted for the Shutdown Delay time before power is turned off.

The OFF command returns information in the form:

```
n port(s) turned off
m port(s) locked
```

n indicates the number of referenced IPMs that turned off.

m indicates the number of referenced IPMs that are locked in their current state either by the front panel pushbuttons or because the current password level does not have access rights to that IPM.

(n + m) is the total number of IPMs that were referenced by the parameters.

ON {Port Name|Group|ALL} [{Port Name|Group}*]

Turns on an individual IPM, a predefined group of IPMs, or all IPMs for which access is allowed by the current password level.

The ON command returns information in the form:

```
n port(s) turned on
m port(s) locked
```

n indicates the number of referenced IPMs that turned on.

m indicates the number of referenced IPMs that are locked in their current state either by the front panel pushbuttons or because the current password level does not have access rights to that IPM.

(n + m) is the total number of IPMs that were referenced by the parameters.

REBOOT {Port Name|Group|ALL} [{Port Name|Group}*]

Turns off, pauses, and turns back on, an individual IPM, a predefined group of IPMs, or all IPMs for which access is allowed by the current password level. For an IPM with shutdown support, a shutdown precedes turning off the power. The shutdown signal is asserted for the Shutdown Delay time before power is turned off. The delay before turning back on is either 15 seconds, or the Minimum-Off Time from the Power Control Screen, whichever is greater.

The REBOOT command returns information in the form:

```
n port(s) rebooted
m port(s) locked
```

n indicates the number of referenced IPMs that were rebooted.

m indicates the number of referenced IPMs that are locked in their current state either by the front panel pushbuttons or because the current password level does not have access rights to that IPM.

(n + m) is the total number of IPMs that were referenced by the parameters.

STATUS {Port Name|Group|ALL} [{Port Name|Group}*]

Returns the status of an individual IPM, a predefined group of IPMs, or all IPMs. This command can report the status for an IPM for which power control access is not allowed by the current password level. For an IPM with shutdown support, during the Shutdown Delay time, a STATUS command will report that the port is on.

The STATUS command returns information in the form:

```
n port(s) on
m port(s) off
```

n indicates the number of referenced IPMs that are off.

m indicates the number of referenced IPMs that are on.

(n + m) is the total number of IPMs that were referenced by the parameters.

SHOW [Page|MODEM]

With no parameter or a page name, this command puts the Sentry into the screen oriented interface mode. With no parameter specified, display starts at the Power Control Screen of the first four power modules. If a page name is specified, display starts at the Power Control Screen with that page name. See the Power Control Screen section that follows for setting the name of each page.

With the MODEM parameter, a page is displayed that shows the current modem data rate and the current status of the four modem initialization strings (NONE or DEFAULT).

CONNECT

This command attempts to make a connection through the Sentry (or Sentry chain) to a serial device attached to pass-through connection port (PC). Full-handshaking is supported. The Sentry defaults to requiring that the attached device assert both Data Set Ready (DSR) and Clear To Send (CTS), in order to successfully connect. These requirements can be individually enabled and disabled with the SET CONNECT command. When a connection is successful, the message "Connection complete" will be displayed, at which point communication to the attached device will be transparent through the Sentry.

When finished communicating to the serial device, type "! *password<CR>" (where *password* is one of the valid administrative or general passwords) to return to the Sentry command prompt. A connection will also break when the modem is hung-up or the communication software is exited.

LOGIN

Brings up the "Enter password:" prompt to allow a user to re-login under a different password level. No parameters.

RESYNC

Ends the session and resynchronizes the Sentry chain. This command should be issued after adding or removing a Sentry from the chain if all of the chain is not accessible.

VERS

Displays the firmware version of the first Sentry in the chain. No parameters.

QUIT

Ends the session. No parameters.

SET Commands

NOTE: Set commands are only available when logged in with the administrative password.

To get a display of available SET commands, just enter "SET" at the Sentry prompt, which will show:

SET commands are:

CONNECT LOCATION MODEM PANEL PASSWORD

SET CONNECT {DSRCHECK|NODSRCHECK|CTSCHECK|NOCTSCHECK}

Turns on or off active signal requirements to successfully connect to the pass-through connection (PC) when using the CONNECT command. DSRCHECK requires that DSR be active from the attached device to connect. NODSRCHECK ignores that state of DSR. CTSCHECK requires that CTS be active from the attached device to connect. NOCTSCHECK ignores that state of CTS. The defaults are DSRCHECK and CTSCHECK.

SET LOCATION {Location}

Sets the location description field of the Power Control Screen for the entire Sentry chain. This is an alternative to entering the location description on each Power Control Screen, which allows each Power Control Screen to have a unique name. With this command, spaces can be entered in the description, whereas editing the location description from the Power Control Screen does not. The location field of the first Power Control Screen is displayed as part of a "Welcome to..." message when a session is started. Up to 16 characters, including spaces, can be entered. Extra characters will be truncated from the location field.

SET MODEM {RATE {NONE|300|1200|2400|4800|9600|19200|38400}}
SET MODEM {{INIT1|INIT2|ATTENTION|HANGUP} {DEFAULT|NONE}}

SET MODEM RATE either sets that initialization data rate for the modem attached to the Sentry to the specified data rate (300, 1200, 2400, 4800, 9600, 19200, or 38400), or disables all modem initialization string support (NONE). The default is 1200.

SET MODEM INIT1, INIT2, ATTENTION, or HANGUP allows an individual modem initialization string to be enabled (DEFAULT) or disabled (NONE). All default to enabled (DEFAULT).

See Modem Configuration in the Configuration section of this manual for a list of the modem initialization strings.

SET PANEL {DEFAULT|NONE}

Changes the operational behavior of the front panel pushbuttons. DEFAULT configures the pushbuttons to cycle through two or three states: On/Off for non-shutdown ports, and On/ShutDown/Off for shutdown ports. NONE disabled the pushbuttons.

SET PASSWORD {ADMN|GEN1|GEN2}

Changes the administrative password (ADMN), the general user #1 password (GEN1), or the general user #2 password (GEN2). For the administrative password only, the user is first prompted to enter the current administrative password. For a general password, or after entering the current administrative password, the user is prompted to enter a new password, and then prompted to verify the new password by entering it again. Asterisks are displayed while entering the passwords. Passwords are up to eight characters long and are case sensitive.

Power Control Screen

From the Power Control Screen, a user can control power and configure the Sentry by simply moving around the screen using the arrow keys and pressing an action key. All configuration changes made in the Power Control Screen are saved to non-volatile RAM and are effective immediately.

The Power Control Screen is accessed by the SHOW command from the command prompt:

```
Sentry: SHOW
```

The Sentry displays an ANSI power control screen (80 characters wide by 24 lines):

```
Power Control System (c) Server Technology, Inc.      1 of 1
Port Name:      [          ] [          ] [          ] [          ]
Control Status:  (x) On      (x) On      (x) On      (x) On
                 ( ) Off      ( ) Off      ( ) Off      ( ) Off
Minimum-On Time: 00:00:00    00:00:00    00:00:00    00:00:00
Minimum-Off Time: 00:00:00    00:00:00    00:00:00    00:00:00

Wake-Up State:   On          On          On          On
Group:           [          ] [          ] [          ] [          ]
Access:          All         All         All         All
Location:        [          ]

Page: [          ]
Press: C)mnd, E)dit, Q)uit, Space-Bar to Select
```

A ShutDown port does not have a column, and the previous port contains a "Shutdown Delay" field:

```
Power Control System (c) Server Technology, Inc.      1 of 1
Port Name:      [          ] [          ] [          ]
Control Status:  (x) On      (x) On      (x) On
                 ( ) Off      ( ) Off      ( ) Shtdwn
Minimum-On Time: 00:00:00    00:00:00    00:00:00
Minimum-Off Time: 00:00:00    00:00:00    00:00:00
Shutdown Delay:                2:30
Wake-Up State:   On          On          On
Group:           [          ] [          ] [          ]
Access:          All         All         All
Location:        [          ]

Page: [          ]
Press: C)mnd, E)dit, Q)uit, Space-Bar to Select
```

Each Sentry supports three or four power modules, which are the columns shown on the Power Control Screens above. When Sentry units are chained together, there is a Power Control Screen for each Sentry International or Sentry ShutDown. Each screen is considered a different page. The page currently being viewed is displayed in the upper right corner of the screen, along with the total number of pages. The page currently being viewed is also displayed by name in the "Page" field.

- Port Name:

This is an eight character descriptive field for the device plugged into the IPM. This field is used both as a description and as a parameter to the ON, OFF, REBOOT, and STATUS commands at the Sentry command prompt.

- Control Status:

For an IPM without shutdown support:

The current status of the IPM is shown by a character in the On or Off field. An "x" is displayed if the port is accessible remotely. An asterisk is displayed if either the IPM is locked on by the front panel pushbutton, or if the IPM is not accessible by the current password level.

To change the power state of an IPM, move the cursor to the desired state (on or off), and press the space bar. The "x" will move to the new state, indicating the power changed to that state.

Press "R" when in the on or off field to reboot the port. If the port is already off, it will turn on immediately. If it is on, it will turn off, delay, then turn on. The delay before turning back on is either 15 seconds, or the Minimum-Off Time (see below), whichever is greater. During the reboot delay, "r" is displayed in the Off field, indicating the port is going to reboot.

For an IPM with shutdown support:

When the "Shutdown Delay" is not set to "Disabled", the bottom of the two status fields has a dynamic label -- either "Shtdwn" or "Off".

The current status of the IPM is shown by a character in the On or Off/Shtdwn field. An "x" is displayed if the port is accessible remotely. An asterisk is displayed if either the IPM is locked on by the front panel pushbutton, or if the IPM is not accessible by the current password level.

When "Shtdwn" is displayed, moving the cursor to this field and pressing the spacebar will signal the shutdown and the "x" in the "On" field will become an "s" to indicate that a shutdown is occurring. Also, the "Shtdwn" field changes to "Off".

With no other user action, the control status will remain this way for the time selected in the "Shutdown Delay" field.

If a user presses the spacebar again in the "Off" field, the power will turn off immediately, not waiting for the "Shutdown Delay" time.

After the "Shutdown Delay" time, or if the user presses the spacebar in the "Off" field, the power will turn off, and an "x" will be displayed in the "Off" field.

Press "R" when in the on or off field to reboot the port. If the port is already off, it will turn on immediately. If it is on, it will shutdown, turn off, delay, then turn on. The delay before turning back on is either 15 seconds, or the Minimum-Off Time (see below), whichever is greater. During the reboot delay, "r" is displayed in the Off field, indicating the port is going to reboot.

When power is turned back on, either by a reboot or by the user at a later time, the "x" will move to the "On" field and the "Off" label will change back to "Shtdwn".

- **Minimum-On Time:**

This is the minimum amount of time that an IPM will stay on before it can be turned off by actions at the Sentry command prompt. Manual actions, by either the front panel pushbuttons or the Power Control Screen status fields, are immediate. The default is 0.

- **Minimum-Off Time:**

This is the minimum amount of time that an IPM will stay off before it can be turned on by actions at the Sentry command prompt. Manual actions, by either the front panel pushbuttons or the Power Control Screen status fields, are immediate. This field also determines the off delay time of a reboot, if greater than 15 seconds. The default is 0.

- **Shutdown Delay:**

This value (minutes:seconds) selects the amount of time that the Sentry will signal a shutdown before turning off power to the IPM. Press the space bar to toggle through the predefined values. The "Disabled" selection turns off the shutdown support. The default is two and one-half minutes.

IMPORTANT: The value selected for Shutdown Delay must be equal to or greater than the "Expected Battery Life" in the Windows NT UPS Service configuration. The default of two and one-half minutes is slightly longer than the two-minute default of the "Expected Battery Life" in the Windows NT UPS Service configuration.

- **Wake-Up State:**

This is the state that the IPM will be in when power is turned on or when power is restored after a power outage. The options are ON and OFF. The default is ON.

- **Group:**

The Group field takes an eight character group identifier. All IPMs with the same group name can be acted upon simultaneously by command line actions (ON, OFF, and REBOOT). The group field can be left blank so that an IPM is not part of a group.

- **Access:**

The Access field determines which password level is needed for access to this port. There are four choices: Admn Psw, Gen1 Psw, Gen2 Psw, and All. Admn Psw requires being logged in with the administrative password. Gen1 Psw requires being logged in with either the administrative password or the general user #1 password. Gen2 Psw requires being logged in with either the administrative password or the general user #2 password. All allows any of the passwords to have access. The default is All.

- Location:

This is a 16-character description field for the location of the Sentry. It has no purpose other than descriptive. The location field of the first Power Control Screen is displayed as part of a "Welcome to..." message when a session is started.

- Page:

The Page field is an eight character identifier to describe the current screen page, as a more descriptive alternative to the page numbering in the upper-right-hand corner of the screen. This entry is used as a parameter to the SHOW command to display the Power Control Screen of a specific set of four IPMs. If entered, each page MUST have a unique page name.

The Help line at the bottom indicates what keypresses are available for specific functions:

C)mnd puts the Sentry back into Command Prompt mode at the "Sentry:" prompt.

E)dit is used to edit fields enclosed by square brackets. When E is pressed, the cursor moves to the end of the current entry. The backspace key erases one character. Press Enter or Tab when done editing the field.

N)ext displays the next Power Control Screen page.

P)revious displays the previous Power Control Screen page.

Q)uit ends the current session.

Space-Bar to Select indicates that the space bar is used on non-editable fields to toggle between the predetermined settings. The space bar is also used on the status line to change the power state of a port to the state of the current cursor location (either On, Off, or Shtdwn).

Ending a Session

Ending a session can be done from either the command prompt or the Power Control Screen:

- From the command prompt, type QUIT and press Enter.
- From the Power Control Screen, press "Q".

Both of the methods will terminate the session. Also, a session will automatically be terminated after 5 minutes of inactivity. With a modem connection, the modem will automatically be hung-up by the Sentry lowering DTR to the modem, as well as sending the attention and Hangup strings to the modem.

NOTE: There is a period of about 15 seconds after a session is ended before another session can be started. This is due to the Sentry reinitializing the modem after a session is ended.

Resetting to Factory Defaults

The non-volatile RAM that stores all the configurable Sentry options, including the passwords, can be reset to factory defaults. This clears all the user-editable fields on the Power Control Screens and resets all the command-line options to defaults. This may be necessary if, for example, the passwords are forgotten.

Resetting to factory defaults can be done in two ways – either by a power-up button-press at the unit, or by an administrative-level Sentry command.

The power-up button-press reset process is performed by pressing and holding down pushbutton 3 and/or 4 while powering on the Sentry, and then releasing two seconds later. A complete reset requires this be done with pushbutton 3 and/or 4 for each Sentry in a chain.

An administrative-level command reset is performed with the command:

```
SET CNFG {ALL|Page} FACTORY
```

The 'ALL' parameter will reset all the Sentry units in a chain. If a page name is instead specified, only the Sentry unit with that page name will be reset.

After a reset of some, but not all, of the Sentry units in a chain, the administrator should reassign all three of the passwords for the chain using the SET PASSWORD command. Otherwise, some units in the chain will have different passwords than other units.

Examples

The examples in this section assume the following configuration of the Power Control Screen:

Power Control System (c) Server Technology, Inc.					1 of 1
Port Name:	[Server1]	[Server2]	[Router1]	[Router2]	
Control Status:	() On (x) Off	() On (x) Off	() On (x) Off	() On (x) Off	
Minimum-On Time:	00:00:00	00:00:00	00:00:00	00:00:00	
Minimum-Off Time:	00:00:00	00:00:00	00:00:00	00:00:00	
Wake-Up State:	On	On	On	On	
Group:	[Servers]	[Servers]	[Routers]	[Routers]	
Access:	Admn Psw	Gen1 Psw	All	All	
Location:	[Sunnyvale, CA]				
Page: [Page 1]					
Press: C)mnd, E)dit, N)ext, Q)uit, Space-Bar to Select					

If logged in with the administrative password, a user can control power to all devices, for example:

- From the Sentry command prompt, to turn on just the device Server1 (IPM 1), a user would type:

```
ON Server1
```

- From the Sentry command prompt, to turn off the device Server1 (IPM 1) and the device Router1 (IPM 3), a user would type:

```
OFF Server1 Router1
```

- From the Sentry command prompt, to turn on all the Routers (IPMs 3 and 4), a user would type:

```
ON Routers
```

- From the Sentry command prompt, to reboot both of the Servers (IPMs 1 and 2), a user would type:

```
REBOOT Servers
```

- From the Sentry command prompt, to turn off all the devices (IPMs 1-4), a user would type:

```
OFF ALL
```

If logged in with the general user #1 password, a user can control power to only IPMs 2, 3, and 4. For example:

- From the Sentry command prompt, to turn on all the Routers (IPMs 3 and 4), a user would type:

```
ON Routers
```

- From the Sentry command prompt, to turn off the device Server2 (IPM 2), a user would type:

```
OFF Server2
```

If logged in with the general user #2 password, a user can control power to only IPMs 3 and 4. For example:

- From the Sentry command prompt, to reboot the device Router1 (IPM 3), a user would type:

```
REBOOT Router1
```

- From the Sentry command prompt, to turn on all the routers (IPMs 3 and 4), a user would type:

```
ON Routers
```

Appendix - Support and Warranty

Support

Server Technology, Inc. provides free product support between 9:00AM and 4:30 PM Pacific Time, Monday-Friday at the following California, USA phone number:

(408) 745-0300

Server Technology, Inc. also has an e-mail address for support issues:

support@servertech.com

Warranty

Server Technology, Inc. extends a one-year limited warranty, from the date of purchase.

This warranty covers defects in material and workmanship for the Sentry International and Sentry ShutDown Remote Power Managers under normal use and service, and any failure to perform substantially in accordance with this User's Manual.

This warranty does not cover any failure which results from accident, abuse, misapplication or alternation. Incidental and consequential damages are not covered by this warranty and are not the responsibility of Server Technology, Inc.

For warranty issues, contact the Product Support Department at the number listed above. All repair and return shipments must be approved by Server Technology and must be accompanied by an RMA (return merchandise authorization) number and dated proof of purchase.

Notes

Server Technology, Inc.

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