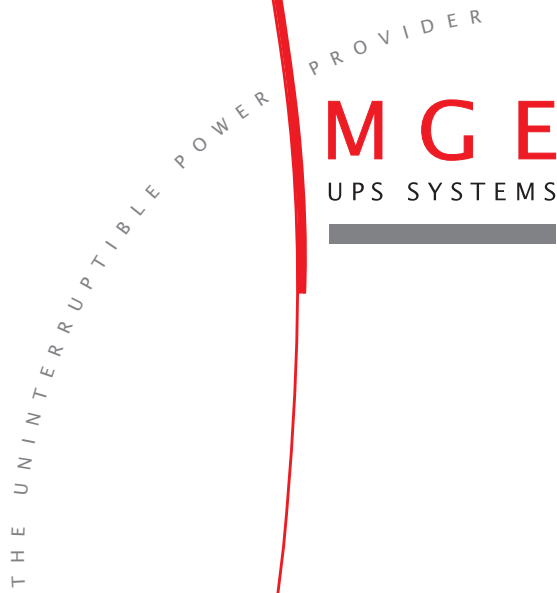


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MGE UPS SYSTEMS

Switched PDU

Installation and user manual



**Instructions**

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**Dangerous Voltage**

This symbol is intended to alert the user to the presence of un-insulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

**Protective Grounding Terminal**

This symbol indicates a terminal that must be connected to earth ground prior to making any other connections to the equipment.

Life-Support Policy

As a general policy, MGE UPS SYSTEMS does not recommend the use of any of its products in the following situations:

- life-support applications where failure or malfunction of the MGE UPS SYSTEMS product can be reasonably expected to cause failure of the life-support device or to significantly affect its safety or effectiveness.
- direct patient care.

MGE UPS SYSTEMS will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to MGE UPS SYSTEMS that:

- the risks of injury or damage have been minimized,
- the customer assumes all such risks, and
- the liability of MGE UPS SYSTEMS is adequately protected under the circumstances.

The term life-support device includes but is not limited to neonatal oxygen analyzers, nerve stimulators (whether used for anesthesia, pain relief or other purposes), auto-transfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators (for adults or infants), anesthesia ventilators, infusion pumps, and any other devices designated as "critical" by the U.S. FDA.

Compliance

Units have been safety tested/certified to the following standards: USA and Canada to UL 60950-1:2003 and CAN/CSA 22.2 No. 60950-1-03, European Union to EN60950-1:2001

USA Notification

Warning: Changes or modifications to these units not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment under FCC rules.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian Notification

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Japanese Notification

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。



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1. Getting Started

Quick Start Guide

The following instructions will help you quickly install and configure your Switched PDU for use on your network. For detailed information on each step, go to the page number listed to the right.

For your network security, MGE UPS SYSTEMS strongly recommends the removal of the predefined user account prior to attachment to your network.

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6. Connect the Switched PDU to the network	



2. Installation

Before installation, refer to the following lists to ensure that you have all the items shipped with the unit as well as all other required items.

Standard Accessories

- Mounting bracket hardware
Vertical – two removable flanges with four M4 screws and two mounting L-brackets with two nut plates and four sets of screws and washers
Horizontal/Rack – two mounting L-brackets and four screws
- RJ45 to RJ45 crossover cable
- DB9F to DB25M modem cable
- RJ45 to DB9F serial port adapter (for connection to standard DB9M DTE serial port)
- Outlet retention clips, one per outlet (208-240V units only)
- Separate power input cord
- Power input retention bracket hardware
Two removable T-brackets with two 40mm screws.

Additional Required Items

- Phillip screwdriver
- Screws, washers and nuts to attach the unit to your rack

2. Installation

Equipment Overview

A number is printed above each outlet. The outlets are labeled 1 through 16. These numbers may be used in commands that require an outlet name. See *Outlet Naming and Grouping* in Chapter 3: Outlet Naming and Grouping for more information. The power inlet connects to the electrical power source.

- ① Power Input
- ② Input Current LED
- ③ Ethernet / RS232 Ports
- ④ Temperature / Humidity Ports

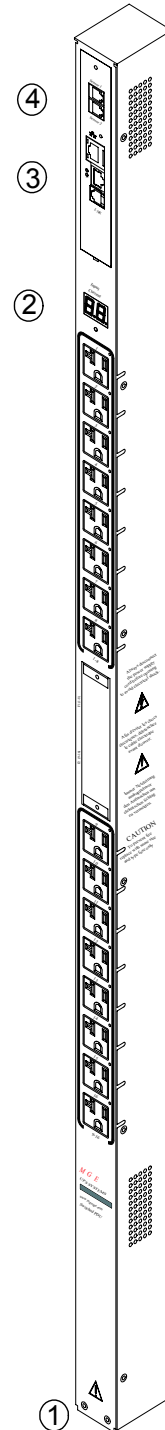
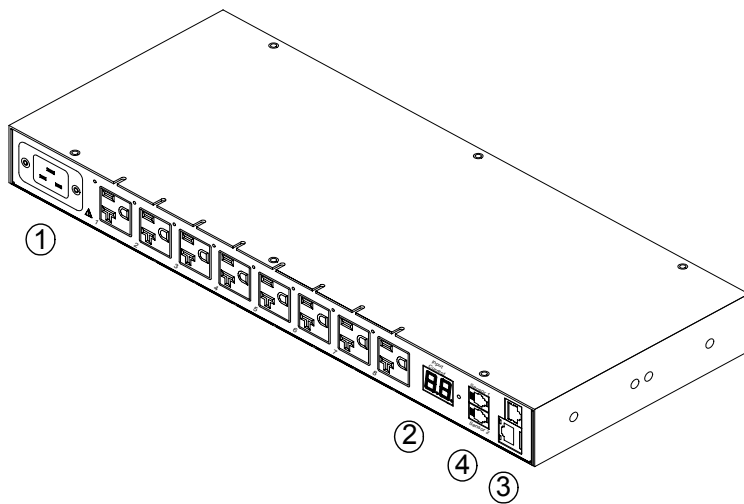





Figure 1. Unit Views

2. Installation

Safety Precautions

This section contains important safety and regulatory information that should be reviewed before installation and use. For input and output current ratings, see *Power Ratings* in Technical Specifications.

	Only for installation and use in a Service Access Location in accordance with the following installation and use instructions.	<i>Destiné à l'installation et l'utilisation dans le cadre de Service Access Location selon les instructions d'installation et d'utilisation.</i>	Nur für Installation und Gebrauch an Anschlusszugriffspunkten gemäß der folgenden Installations- und Gebrauchsanweisungen.
	This equipment is designed to be installed on a dedicated circuit.	<i>Cet équipement est conçu à être installé sur un circuit spécialisé.</i>	Diese Ausrüstung ist zur Installation in einem festen Stromkreis vorgesehen.
	Dedicated circuit must have circuit breaker or fuse protection. Switched PDUs have been designed without a master circuit breaker or fuse to avoid becoming a single point of failure. It is the customer's responsibility to provide adequate protection for the dedicated power circuit. Protection of capacity equal to the current rating of the Switched PDU must be provided and must meet all applicable codes and regulations. In North American, protection must have a 10,000A interrupt capacity.	<i>Le circuit spécialisé doit avoir un disjoncteur ou une protection de fusible. Des Switched PDUs ont été conçus sans disjoncteur général ni fusible pour éviter que cela devienne un seul endroit de panne. C'est la responsabilité du client de fournir une protection adéquate pour le circuit-alimentation spécialisé. Protection de capacité équivalant à la puissance de l'équipement, et respectant tous les codes et normes applicables. Les disjoncteurs ou fusibles destinés à l'installation en Amérique du Nord doivent avoir une capacité d'interruption de 10.000 A.</i>	Der feste Stromkreis muss mit einem Schutzschalter oder einem Sicherungsschutz versehen sein. Ein Switched PDU verfügt über keinen Hauptschutzschalter bzw. über keine Sicherung, damit kein einzelner Fehlerpunkt entstehen kann. Der Kunde ist dafür verantwortlich, den Stromkreis sachgemäß zu schützen. Der Kapazitätsschutz entspricht der aktuellen Stromstärke der Geräte und muss alle relevanten Codes und Bestimmungen erfüllen. Für Installation in Nordamerika müssen Ausschalter bzw. Sicherung über 10.000 A Unterbrechungskapazität verfügen.
	The plug on the power supply cord shall be installed near the equipment and shall be easily accessible.	<i>La prise sur le cordon d'alimentation sera installée près de l'équipement et sera facilement disponible.</i>	Der Stecker des Netzkabels muss in der Nähe der Ausrüstung installiert werden und leicht zugänglich sein.
	Installation Orientation: RSxx-Txxx-x units are design to be installed in vertical orientation.	<i>Installation Orientation : Les unités RSxx-Txxx-x sont conçues pour être installées dans une orientation verticale.</i>	Installationsausrichtung: RSxx-Txxx-x Einheiten sind zur vertikalen Installation vorgesehen.
	Always disconnect the power supply cord before opening to avoid electrical shock.	<i>Toujours déconnecter le cordon d'alimentation avant d'ouvrir pour éviter un choc électrique.</i>	Ziehen Sie vor dem Öffnen immer das Netzkabel heraus, um die Gefahr eines elektrischen Schlags zu vermeiden.
	WARNING! High leakage current! Earth connection is essential before connecting supply!	ATTENTION ! <i>Haut fuite très possible ! Une connection de masse est essentielle avant de connecter l'alimentation !</i>	ACHTUNG! Hoher Verluststrom! Ein Erdungsanschluss ist vor dem Einschalten der Stromzufuhr erforderlich!

Installing the Power Input Retention Bracket

For Switched PDUs with a total maximum output <30A, it may be necessary to install the power input retention bracket prior to mounting the Switched PDU within the rack.

To install the power input retention bracket:

1. Remove the two screws attaching the IEC 60320 C19 inlet to the enclosure.
2. Assemble and attach the retention bracket to the enclosure as shown.

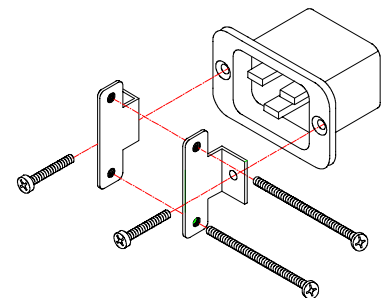


Figure 2. Retention Bracket assembly

2. Installation

Mounting

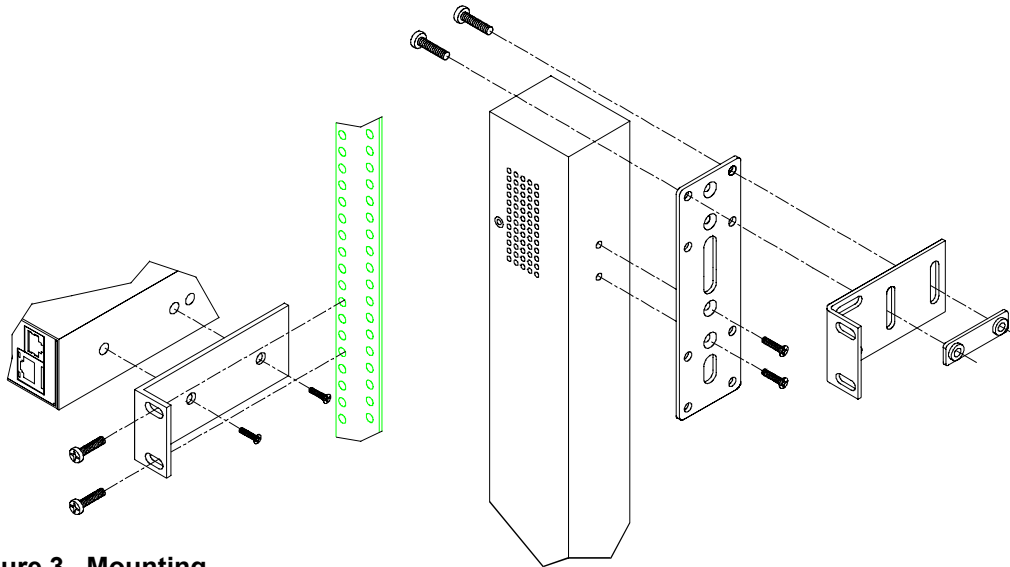


Figure 3. Mounting

Horizontal/Rack

1. Select the appropriate bracket mounting points for proper mounting depth within the rack.
2. Attach the brackets to these mounting points with two screws for each bracket.
3. Install the enclosure into your rack, using the slots in each bracket. The slots allow about $\frac{1}{4}$ inch of horizontal adaptability to align with the mounting holes of your rack.

Vertical

1. Attach the removable flanges to the mount points on the rear of the enclosure using M4 screws.
2. Attach the mounting L-brackets to the flanges with the supplied screws, washers and nut plates. The slots allow about $1\frac{1}{2}$ inches of vertical adaptability.
3. Attach the top and bottom brackets to your rack.

Attaching the Expansion Module

Connect the Switched PDU Expansion Module with the provided RJ12 crossover cable at the at the Link port on the Switched PDU.

NOTE: The overall length of the cable should not exceed 10 feet.

Connecting to the Power Source

Each outlet powers up sequentially, with a two-second delay between each outlet, eliminating a potential blown primary fuse or circuit breaker from excessive in-rush current.

To attach a power cord to the unit:

1. Plug the female end of the power cord firmly into its connector at the base.
2. Use a screwdriver to tighten the two screws on the retention bracket.

To connect to the power source:

Plug the male end of the power cord into the AC power source.

2. Installation

Connecting Devices

To avoid the possibility of noise due to arcing:

1. Keep the device's on/off switch in the off position until after it is plugged into the outlet, or log into the user interface and turn the outlets off before connecting the devices to the unit(s). After connecting the devices, turn them on from the user interface.
2. Connect devices to the outlets.
On 230V units, install a retention clip for each outlet; Pull the prongs out slightly and insert them into holes on the sides, then insert the device's power cord and snap the clip over the cord.

NOTE:

1. MGE UPS SYSTEMS recommends even distribution of attached devices across the all available outlets to avoid exceeding the outlet, quad or octet ratings limitations. See *Power Ratings* Technical Specifications more information.
2. The outlet retention clips provided with 230V units are designed for use with MGE UPS SYSTEMS's IEC 60320/C13 to IEC 60320/C14 cable and may not properly fit 3rd party cables.



Always disconnect the power supply cord before opening to avoid electrical shock.
Afin d'éviter les chocs électriques, débranchez le câble électrique avant d'ouvrir.
Immer Netzleitung auskuppeln vor den Aufmachen um elektrischen Schlag zu vermeiden.

Connecting the Sensors

The Switched PDU is equipped with two mini RJ11 T/H ports for attachment of the included Temperature/Humidity sensor. Attach the mini RJ11 plug of the sensor(s) to the appropriate T/H port.

Connecting to the Unit

Serial (RS232) port

Switched PDU models are equipped with an RJ45 Serial RS-232 port for attachment to a PC or networked terminal server using the supplied RJ45 to RJ45 crossover cable and RJ45 to DB9F serial port adapter as required. See *Data Connections* in Technical Specifications for more information on the Serial RS-232 port.

Ethernet port

Switched PDU models are equipped with an RJ45 10/100Base-T Ethernet port for attachment to an existing network. This connection allows access via Telnet, Secure Shell (SSH) or a common web browser.

The unit configured with the following network defaults to allow unit configuration out-of-the-box through either Telnet/SSH or via a web browser:

- IP address: 192.168.1.254
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.1.1

The local PC network connection must be configured as noted below:

NOTE: Contact your system administrator for instructions in reconfiguring the network connection. Reconfiguration of your network connection may require a restart to take effect.

- IP address: 192.168.1.x (where x is 2-253)
- Subnet Mask: 255.255.255.0

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3. Operations

Interfaces

The Switched PDU has two interfaces: the HTML interface accessed via the HTTP enabled Ethernet connections and the command line for serial and Telnet connections.

Outlet Naming and Grouping

For commands requiring an outlet name, you may specify it in one of two ways: a predefined absolute name or a descriptive name assigned by an administrator.

Absolute names are specified by a period (.) followed by a tower letter and outlet number. The tower letter for the PDXL is A and the tower letter for the optional Expansion Module is B.

Outlets may also be included in one or more named groups of outlets, enabling you to issue a command that affects all outlets in a named group.

Usernames and Passwords

The Switched PDU has one predefined administrative user account (username/password: admn/admn) and supports a maximum of 128 defined user accounts

NOTE: For security, MGE UPS SYSTEMS recommends removal of the predefined administrative user account after a new account with administrative rights has been created.

Only an administrative-level user may perform operations such as creating/removing user accounts and command privileges, changing passwords and displaying outlet and user information. An administrator may also view the status of and control power to all outlets.

The administrator may create additional user accounts and then grant these users the right to view the status of and control power to specific outlets, groups and ports.

Usernames may contain from 1 to 24 characters and are not case sensitive; spaces are not allowed. Passwords may contain up to 16 characters, and are case sensitive.

3. Operations

HTML Interface

The HTML interface is constructed of three major components: the System Location bar, the User/Navigation bar and the Control Screen. The System Location bar displays the Switched PDU's location and IP address as well as the current Control Screen title. The User/Navigation bar displays the current user and privilege level and provides access to all HTML pages. And the Control Screen is used to display current data and allow changes to outlet states or system configuration.

The following sections describe each interface section/page and their use.

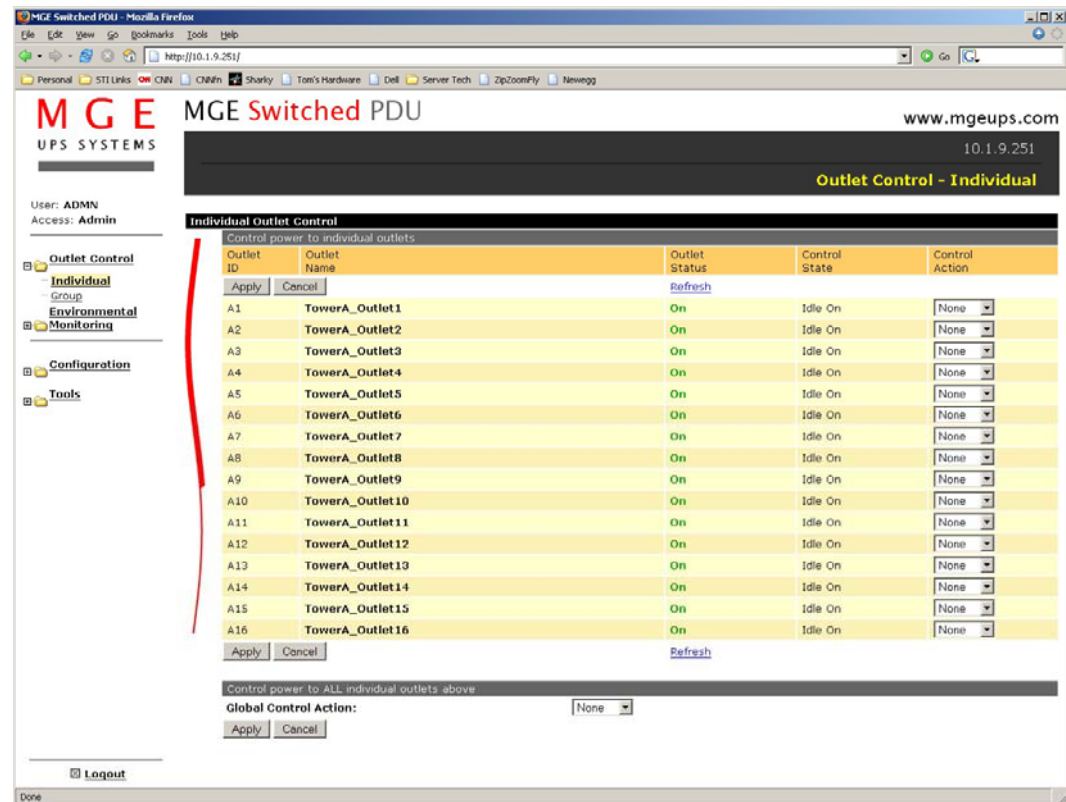


Figure 4. Example HTML page

Logging In

Logging in through HTML via a web browser requires directing a web client to the configured IP address of the unit.

To log in by HTML:

1. In the login window, enter a valid username and password and press **OK**.

If you enter an invalid username or password, you will be prompted again.

You are given three attempts to enter a valid username and password combination. If all three fail, the session ends and a protected page will be displayed.

3. Operations

Outlet Control

The Outlet Control section offers access to the Individual and Group outlet control pages. From the Individual and Group pages, the user can review and manipulate power control functions for all outlets and groups assigned to the current user. Both pages include the outlets absolute and descriptive names, the Outlet Status reported to the Switched PDU by the outlet, the current Control State being applied by the Switched PDU and the outlet load in amperes.

Available outlet and group power states may be set to on, off or reboot; the reboot operation turns the outlet(s) off, delays for a period of 15 seconds and then turns the outlet(s) on.

Individual

The Individual outlet control page displays all outlets assigned to the current user. The user may apply on, off or reboot actions to individual, multiple or all accessible outlets.

To apply actions to individual or multiple outlets:

In the Individual Outlet Control section, select the desired action from the Control Action drop-down menu for each individual outlet to be changed and press **Apply**.

To apply an action to all outlets:

In the Global Control section, select the desired action from the Control Action drop-down menu and press **Apply**.

Group

The Group outlet control page displays all groups assigned to the current user as well as the outlets for each group.

To select a group:

Select the group name from the drop-down menu and press **Select**. The page will refresh to display all outlets associated to the selected group name.

To apply an action to a group:

Select the desired action from the drop-down menu and press **Apply**.

Outlet State/Control State Field Values

Outlet State	Control State	Description
On	On	Outlet is on
Off	Off	Outlet is off
Off	Pend On	Outlet is off and about to turn on in response to a sequence timer
Off	Reboot	Outlet is off and a Reboot action has been initiated
On	Idle On	A restart has occurred – Last Control State has been maintained
Off	Idle Off	A restart has occurred – Last Control State has been maintained
On	Wake On	A power-loss has occurred – Wakeup State has been applied
Off	Wake Off	A power-loss has occurred – Wakeup State has been applied
On/Wait	Off	Outlet state in transition – Requery of outlet status required
Off/Wait	On	Outlet state in transition – Requery of outlet status required
On/Error	varies	Error State – Outlet should be off but current is sensed at the outlet
Off/Error	varies	Error State – Outlet should be on but no current is sensed at the outlet
No Comm	varies	Communication to the outlet has been lost*

* Control State will be applied when communication is re-established



3. Operations

Environmental Monitoring

The Environmental Monitoring section offers access to the Input Load page. This section is available to administrative level users and users with Environmental Monitoring view rights.

Input Load

The Input Load page displays the Switched PDU (s) absolute and descriptive name and the cumulative input load in amperes of all devices attached to the Switched PDU at the time the page was loaded. This page will refresh automatically every 10 seconds.

Sensors

The Sensors page displays:

- Temperature/humidity sensor's absolute and descriptive names
- Temperature/humidity sensor readings in degrees Celsius and percent relative humidity

Configuration

The Configuration section offers access to all unit configuration options including Network, Telnet/HTTP, Serial Ports, Outlets, Groups, Users, FTP, Proxy/SNTP and SNMP. This section is available to administrative level users only.

System

The System configuration page is used for reference of system information such as Ethernet NIC Serial Number, Ethernet MAC address and system firmware and hardware revisions as well as assignment and maintenance of the system location and tower descriptive names.

For description names, up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal – spaces and colon characters are not allowed) are allowed.

NOTE: Spaces may be used for the location description only.

Creating a descriptive system location name:

Enter a descriptive name and press **Apply**.

Creating a descriptive unit name:

Click on the **Tower Names** link.

On the subsequent Tower Names page, enter a descriptive name and press **Apply**.

Creating a descriptive input feed name:

Click on the **Input Feed Names** link.

On the subsequent Input Feed Names page, enter a descriptive name and press **Apply**.

Creating a descriptive outlet name:

Click on the **Outlet Names** link which will open the Outlets configuration page. See Outlets on page 18 for additional information on creating descriptive outlet names.

Creating a descriptive Serial port name:

Click on the **Serial Port Names** link which will open the Serial Ports configuration page. See Creating a descriptive serial port name: on page 17 for additional information on creating descriptive Serial port names.

Creating a descriptive Environmental Monitor name:

Click on the **Environmental Monitor Names** link.

On the subsequent Environmental Monitor Names page, enter a descriptive name and press **Apply**.

Creating descriptive sensor names:

Click on the **Sensor Names** link.

On the subsequent Sensor Names page, enter a descriptive name and press **Apply**.

3. Operations

Network

The Network configuration page is used for maintenance of the network interface. From this page an administrator may configure the IP address, subnet mask and gateway address as well as view the link status, speed and duplex value.

The Switched PDU is configured with the following network defaults to allow unit configuration out-of-the-box through either Telnet or HTML:

- IP address: 192.168.1.254
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.1.1

The initial local PC network connection must be configured as noted below:

NOTE: Contact your system administrator for instructions in reconfiguring the network connection. Reconfiguration of your network connection may require a restart to take effect.

- IP address: 192.168.1.x (where x is 2-253)
- Subnet Mask: 255.255.255.0

NOTE: The unit must be restarted after network configuration changes. See *Performing a warm boot*: on page 21.

Setting the IP address, subnet mask or gateway:

In the appropriate field, enter the IP address, subnet mask or gateway address and press **Apply**.

Telnet/SSH

The Telnet/SSH configuration page used to enable or disable Telnet and SSH support and configure the port number that the Telnet or SSH server watches. For more information on SSH see page 46.

Enabling or disabling Telnet or SSH support:

Select **Enabled** or **Disabled** from the appropriate Server drop-down menu and press **Apply**.

Changing the Telnet or SSH server port number:

In the appropriate Port field, enter the port number and press **Apply**.

HTTP/SSL

The HTTP/SSL configuration page used to enable or disable HTTP and SSL support, configure the port number that the HTTP server watches and responds to, selection of the method of authentication used and SSL access level. For more information on SSL see page 45.

Enabling or disabling HTTP or SSL support:

Select **Enabled** or **Disabled** from the appropriate Server drop-down menu and press **Apply**.

Changing the HTTP server port number:

In the HTTP Port field, enter the port number and press **Apply**.

3. Operations

Setting the HTTP authentication method:

The Switched PDU HTTP server supports two authentication methods for security and validation of the username-password – Basic and MD5 digest.

The Basic method utilizes Base64 encoding to encode and deliver the username-password over the network to the HTTP server for decoding and authentication. This basic method is supported by all web browsers and offers a minimum level of security.

NOTE: The Base64 algorithm is widely-known and susceptible to packet-sniffer attack for acquisition of the encoded username-password string.

The MD5 digest method provides stronger protection utilizing one-way encoded hash numbers, never placing the username-password on the network. Instead, the sending browser creates a challenge code based on the hash algorithm, provided username-password and unique items such as the device IP address and timestamp, which is compared against the HTTP server internal user database of valid challenge codes. The MD5 digest method offers a higher level of security than the Basic method but at present is not supported by all browsers.

NOTE: MD5 is known to be fully supported by Internet Explorer 5.0+, Navigator 7.0+ and Firefox 1.0+.

Select **Basic** or **MD5** from the Authentication drop-down menu and press **Apply**.

Setting SSL access level

Switched PDU SSL supports configuration of SSL connections as being either optional or required. The default access level is set to optional.

- Optional –Both non-secure (HTTP) and SSL encrypted connections (HTTPS) are allowed access.
- Required – ONLY SSL encrypted connections (HTTPS) are allowed access.

Select **Optional** or **Required** from the Secure Access drop-down menu and press **Apply**.

Serial Ports

The Serial Ports configuration page is used for maintenance of the serial ports.

NOTE: Pass through connections may only be initiated from the command line interface via a Telnet/SSH session.

Setting the data-rate for the serial ports:

Select the serial port data-rate from the drop-down menu and press **Apply**.

Creating a descriptive serial port name:

Click on the **Edit** link in the Action column next to the port to be configured.

On the subsequent Serial Port Edit page, enter the descriptive name. Up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal, spaces and colon characters are not allowed) are allowed. Press **Apply**.

Enabling or disabling serial port active signal checking:

Click on the **Edit** link in the Action column next to the port to be configured.

On the subsequent Serial Port Edit page, select **On** or **Off** from the DSR Check drop-down menu and press **Apply**.



3. Operations

Outlets

The Outlets configuration page is used for assignment and/or editing of outlet descriptive names and wakeup states.

Editing the outlet descriptive name:

Click on the **Edit** link in the Action column next to the outlet to be configured.

On the subsequent Outlet Edit page, enter the descriptive name. Up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal, spaces and colon characters are not allowed) are allowed. Press **Apply**.

Changing the outlet wakeup state:

Click on the **Edit** link in the Action column next to the outlet to be configured.

On the subsequent Outlet Edit page, select **On**, **Off** or **Last** from the Wakeup State drop-down menu and press **Apply**.

Groups

The Groups configuration page is used for creation and deletion of group and assignment of outlets to groups.

Creating a group:

Enter a descriptive group name in the Group Name field. Up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal, spaces and colon characters are not allowed) are allowed. Press **Apply**.

Removing a group:

Click on the **Remove** link in the Action column for the group to be removed and press **Yes** on the subsequent confirmation window.

Adding and Deleting outlets from a group:

Press the **Edit** link in the Action column for the associated group.

On the subsequent Group Edit page, select or deselect outlets to be included in that group. Press **Apply**.

Users

The Users configuration page is used for creation and removal of usernames, assignment of accessible outlets and group, assignment of privilege levels and the changing of user passwords.

Creating a new user:

Enter a user name in the Username field. Up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal, spaces and colon characters are not allowed) are allowed.

Enter a password for the new user and verify in the Password and Verify Password fields. For security, password characters are not displayed. Press **Apply**.

Removing a user:

Click on the **Remove** link in the Action column for the user to be removed and press **Yes** on the subsequent confirmation window.

Changing a user password:

Click on the **Edit** link in the Action column for the associated user.

On the subsequent User Edit page, enter a password and verify the new password for the new user in the Password and Verify Password fields. For security, password characters are not displayed. Press **Apply**.

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Changing a user's access privilege level:

The Switched PDU has four defined access privilege levels; Admin, User, On-Only and View-Only:

- Admin: Full-access for all configuration, control (On, Off, Reboot), status and pass through.
- User: Partial-access for control (On, Off, Reboot), status and pass through of assigned outlets, groups and serial ports.
- On-Only: Partial-access for control (On), status and pass through of assigned outlets, groups and serial ports.
- View-Only: Partial-access for status and pass through of assigned outlets, groups and serial ports.

The administrator may also grant administrative privileges to other user accounts allowing the Switched PDU to have more than one administrative-level user.

NOTE: You cannot remove administrative privileges from the Admin user unless another user has already been given administrative access level privileges created.

Click on the **Edit** link in the Action column for the associated user.

On the subsequent User Edit page, select **Admin, User, On-only** or **View-only** from the Access Level drop-down menu and press **Apply**.

Granting or removing Environmental Monitoring viewing privileges:

Click on the **Edit** link in the Action column for the associated user.

On the subsequent User Edit page, select **Yes** or **No** from the Environmental Monitoring drop-down menu and press **Apply**.

Adding and Deleting outlet access:

Click on the **Outlets** link in the Access column for the associated user.

On the subsequent User Outlets page, select or deselect outlets to be accessed by the user and press **Apply**.

Adding and Deleting group access:

Click on the **Groups** link in the Access column for the associated user.

On the subsequent User Groups page, select or deselect group to be accessed by the user and press **Apply**.

Adding and Deleting serial port access:

Click on the **Ports** link in the Access column for the associated user.

On the subsequent User Ports page, select or deselect ports to be accessed by the user and press **Apply**.

FTP

The FTP configuration page is used for setup and maintenance of all settings required to perform an FTP firmware upload. See page 57, Uploading Firmware for more information on uploading firmware.

Setting the FTP Host IP Address:

Enter the IP address in the Host IP Address field and press **Apply**.

Setting the FTP username:

Enter the FTP server username in the Username field, and press **Apply**.

Setting the FTP password:

Enter the FTP server password in the Password field, and press **Apply**.

Setting the filepath:

Enter the path of the file to be uploaded in the Directory field, and press **Apply**.

3. Operations

Setting the filename for upload:

Enter the filename of the file to be uploaded in the Filename field, and press **Apply**.

Testing the FTP upload configuration:

This test validates that the unit is able to contact and log onto the specified FTP server, download the firmware file and verify that the firmware file is valid for this unit.

Press **Test**.

SNTP

The SNTP configuration page is used for setup and maintenance of SNTP support.

Setting the SNTP Server Address:

Enter the IP address in the primary and/or secondary address field and press **Apply**.

SNMP

The SNMP configuration page is used for setup and maintenance of all settings required to enable SNMP support as well as access to the trap configuration pages. For additional information on SNMP support and detailed descriptions of available traps, see on page 47.

NOTE: Traps are generated according to a hierarchical architecture; i.e. if a Tower Status enters a trap condition, only the Tower Status trap is generated. Infeed and Outlet Status traps are suppressed until the Tower Status returns to Normal.

Enabling or disabling SNMP support:

Select **Enabled** or **Disabled** from the drop-down menu and press **Apply**.

Setting the community strings:

Enter the community string in the appropriate field and press **Apply**.
Community strings may be 1 to 24 characters

Setting the trap timer:

Enter a trap timer value in the Error Trap Repeat Time field and press **Apply**.
The Error Trap Repeat Time value may be 1 to 65535 (in seconds).

Setting trap destinations:

Enter an IP address in the appropriate Trap Destination field and press **Apply**.

Enabling or disabling tower traps:

Click on the **Tower Traps** link.

On the subsequent Tower Traps page, select or deselect the desired traps and press **Apply**.

Configuring input feed traps:

Click on the **Input Feed Traps** link.

On the subsequent Input Feed Traps page, select or deselect the desired traps and press **Apply**.

For Load traps, enter a maximum load value for the infeed in the High Load Threshold field and press **Apply**.
The High Load Threshold value may be 0 to 255 (in amperes).

Configuring outlet traps:

Click on the **Outlet Traps** link.

On the subsequent Outlet Traps page, select or deselect the desired traps and press **Apply**.

3. Operations

Tools

The Tools section contains access to rebooting the unit, uploading new firmware as well as resetting the unit to factory defaults. This section is available to administrative level users only.

Restart

Performing a warm boot:

Select the **Restart** from the Action drop-down menu and press **Apply**.

Note: System user/outlet/group configuration or outlet states are NOT changed or reset with this command.

Resetting to factory defaults:

See To reset to factory defaults from the HTML interface on page 57 for more information on resetting a Switched PDU to factory defaults from the HTML interface.

Uploading new firmware:

See Uploading Firmware on page 57 for more information on uploading new firmware from the HTML interface.

Command Line Interface

Logging In

Logging in through Telnet requires directing the Telnet client to the configured IP address of the unit.

Logging in through the Console (RS232) port requires the use of a terminal or terminal emulation software configured to support ANSI or VT100 and a supported data rate (300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200 BPS) - 8 data bits-no parity-one stop bit and Device Ready output signal (DTR or DSR).

To log in by RS-232 or Telnet:

1. Press **Enter**. The following appears, where **x.xx** is the firmware version:
Switched PDU Version x.xx
Username:

NOTE: Logging in by Telnet will automatically open a session. It is not necessary to press Enter.

2. At the Username: and Password: prompts, enter a valid username and password. And press **Enter**.
You are given three attempts to enter a valid username and password combination. If all three fail, the session ends.

When you enter a valid username and password, the command prompt (Switched PDU:) appears. If a location identifier was defined, it will be displayed before the Switched PDU: prompt. See *Creating a location description* on page 37 for more information.

You may enter commands in any combination of uppercase and lowercase. You must enter all command characters correctly; there are no command abbreviations. There are two types of commands: operations and administration. A user must have administrative privileges to use the administration commands. The following tables list and briefly describe each command.

3. Operations

Operations Command Summary

Command	Description
On	Turns one or more outlets on
Off	Turns one or more outlets off
Reboot	Reboots one or more outlets
Status	Displays the on/off status of one or more outlets
ILoad	Displays the total cumulative input load
Istat	Displays the status of the infeeds
Connect	Connects to a serial port
Login	Ends the current session and brings up the Username: prompt
Logout	Ends a session
Quit	Ends a session
List Outlets	Lists all accessible outlets for the current user
List Ports	Lists all accessible serial ports for the current user
List Group	Lists all assigned outlets for a group name
List Groups	Lists all accessible groups for the current user

Administrative Command Summary

Add Grouptouser	Grants a user access to one or more groups
Add Outlettogroup	Adds an outlet to a group name
Add Outlettouser	Grants a user access to one or all outlets
Add Porttouser	Grants a user access to one or all serial ports
Create Group	Adds a group name
Create User	Adds a user account
Delete Groupfromuser	Removes access to one or more groups for a user
Delete Outletfromgroup	Deletes an outlet from a group name
Delete Outletfromuser	Removes access to one or all outlets for a user
Delete Portfromuser	Removes access to one or all serial ports
List User	Displays all accessible outlets/groups/ports for a user
List Users	Displays privilege levels for all users
Remove Group	Deletes a group name
Remove User	Deletes a user account
Restart	Performs a warm boot
Set Envmon Name	Specifies a descriptive field for the integrated Environmental Monitor
Set Envmon THS Name	Specifies a descriptive field for a temperature-humidity sensor

3. Operations

Administrative Command Summary (continued)

Set FTP Filename	Specifies the file to be uploaded via FTP
Set FTP Filepath	Specifies the filepath for the file to be uploaded
Set FTP Host	Sets the FTP Host IP address
Set FTP Password	Sets the password for the FTP Host
Set FTP Username	Sets the username for the FTP Host
Set Gateway	Sets the Gateway
Set Infeed Name	Specifies a descriptive field for the infeed
Set Ippaddress	Sets the IP address
Set Location	Specifies a descriptive field for the HTML control screen and login banner
Set Outlet Name	Specifies a descriptive field for a device attached to an outlet
Set Outlet Wakeup	Sets the wakeup state for an outlet
Set Subnet Mask	Sets the Subnet Mask
Set Telnet Port	Sets the Telnet server port number
Set Telnet	Enables or disables Telnet access
Set Tower Name	Specifies a descriptive field for the Switched PDU
Set User Access	Sets the access level for a user
Set User Envmon	Grants or removes privileges to view input and environmental monitoring status
Set User Password	Changes the password for a user
Set Port Name	Specifies a descriptive field for a serial port
Set Port Dsrchk	Sets the DSR active signal checking for a serial port
Set Port Speed	Set the connection speed for all serial ports
Show FTP	Displays FTP configuration information
Show Infeeds	Displays infeed configuration information
Show Network	Display network configuration information
Show Outlets	Displays configuration information for all outlets
Show Ports	Displays serial port configuration information
Show System	Displays system configuration information
Show Towers	Displays tower configuration information
Version	Displays the Switched PDU firmware version

To display the names of commands that you may execute:

At the command prompt, press **Enter**. A list of valid commands for the current user appears.

3. Operations

Operations Commands

Operations commands manage outlet states, provide information about the Switched PDU environment and control session operations.

NOTE: Users must be granted access to affect any change in outlet state.

Turning outlets on

The On command turns on an outlet or group. When the command completes, a display indicating all outlets affected and their current states will be displayed.

To turn outlets on:

At the Switched PDU: prompt, type **on**, followed an outlet, and press **Enter**, or

Type **on**, followed by a group name, and press **Enter**, or

Type **on all** and press **Enter**.

Examples

The following command turns the second outlet on, using the outlet 's absolute name:

```
Switched PDU: on .a2<Enter>
```

The following command turns on all the outlets in the group named ServerGroup_1:

```
Switched PDU: on ServerGroup_1<Enter>
```

Turning outlets off

The Off command turns an outlet or group. When the command completes, a display indicating all outlets affected and their current states will be displayed.

To turn outlets off:

At the Switched PDU: prompt, type **off**, followed an outlet, and press **Enter**, or

Type **off**, followed by a group name, and press **Enter**, or

Type **off all** and press **Enter**

Examples

The following command turns off the outlet named FileServer_1:

```
Switched PDU: off FileServer_1<Enter>
```

The following command turns off all outlets:

```
Switched PDU: off all<Enter>
```

Rebooting outlets

The Reboot command reboots an outlet or group. This operation turns the outlet(s) off, delays for a period of 15 seconds and then turns the outlet(s) on. When the command completes, a display indicating all outlets affected and their current states will be displayed.

NOTE: It is necessary to reissue the Status command to verify that the outlets have rebooted after 15 seconds. See [Displaying outlet status](#) for more information.

To reboot one or more outlets:

At the Switched PDU: prompt, type **reboot**, followed by an outlet, and press **Enter**, or

Type **reboot**, followed by a group name, and press **Enter**, or

Type **reboot all** and press **Enter**.

Example

The following command reboots all the outlets in the group named ServerGroup_1:

```
Switched PDU: reboot ServerGroup_1<Enter>
```


3. Operations

Displaying outlet status

The Status command displays the on/off status of one or more outlets. The command displays the status of only those outlets for which the current username has power control access.

This display includes the outlet absolute and descriptive names, the Outlet State reported to the Switched PDU by the outlet and the current Control State being applied by the Switched PDU. If you do not specify any parameter with this command, the status of all accessible outlets is displayed.

NOTE: If the user has access to more than 16 total outlets, the Status command will display the first 16 outlets with a prompt to view the remaining outlets.

For more information on outlet and control state values, see *Outlet Control* on page 14.

To display on/off status of one or more outlets:

At the Switched PDU: prompt, type **status**, followed by an outlet name, and press **Enter**, or

Type **status**, followed by a group name, and press **Enter**, or

Type **status** and press **Enter**.

Examples

The following command displays the on/off status of the outlet named FileServer_1:

```
Switched PDU: status FileServer_1<Enter>
  Outlet  Outlet          Outlet  Control
  ID      Name             State   State
  .A3     FileServer_1    On      On
```

The following command displays the on/off status of all accessible outlets:

```
Switched PDU: status<Enter>
  Outlet  Outlet          Outlet  Control
  ID      Name             State   State
  .A1     DataServer_1     On      On
  .A2     WebServer_1      On      On
  .A3     FileServer_1    On      On
  .A4             On      On
  .A5             On      On
  .A6             On      On
  .A7             On      On
  .A8             On      On
  .A9             On      On
  .A10            On      On
  .A11            On      On
  .A12            On      On
  .A13            On      On
  .A14            On      On
  .A15            On      On
  .A16            On      On
```

More (Y/es N/o):

The following command displays the on/off status for outlets in the group ServerGroup_1:

```
Switched PDU: status ServerGroup_1<Enter>
Group: ServerGroup_1
  Outlet  Outlet          Outlet  Control
  ID      Name             State   State
  .A1     DataServer_1     On      On
  .A2     WebServer_1      On      On
  .A3     FileServer_1    On      On
```

3. Operations

Displaying accessible outlets

The List Outlets command displays accessible outlets for the current user. The display includes the absolute and descriptive name of all outlets assigned to the current user.

To display accessible outlets:

At the Switched PDU: prompt, type **list outlets** and press **Enter**.

Example

The follow command displays all accessible outlets for the current user:

```
Switched PDU: list outlets<Enter>
Outlet      Outlet
ID          Name
.A1        DataServer_1
.A2        WebServer_1
```

Displaying accessible groups

The List Groups command displays accessible groups for the current user.

To display accessible groups:

At the Switched PDU: prompt, type **list groups** and press **Enter**.

Example

The follow command displays all accessible groups for the current user:

```
Switched PDU: list groups<Enter>
Groups:
  ServerGroup_1
  RouterGroup_1
```

Displaying outlets assigned to a group

The List Group command displays outlets assigned to the specified group name.

To display outlets assigned to a group:

At the Switched PDU: prompt, type **list group**, followed by the group name and press **Enter**.

Example

The follow command displays the outlets assigned to the group ServerGroup_1:

```
Switched PDU: list group ServerGroup_1<Enter>
Group: ServerGroup_1
Outlet      Outlet
ID          Name
.A1        DataServer_1
.A2        WebServer_1
.A3        FileServer_1
```

3. Operations

Displaying accessible serial ports

The List Ports command displays accessible serial ports for the current user.

To display accessible serial ports:

At the Switched PDU: prompt, type **list ports** and press **Enter**.

Example

The follow command displays all accessible serial ports for the current user:

```
Switched PDU: list ports<Enter>
      Port      Port
      ID        Name
      Console   Console
```

Displaying infeed status

The Istat or Iload command displays the status of one or more infeed.

This display includes the infeed absolute and descriptive names and the Input Status and current Load reported to the Switched PDU by the infeed.

To display status of one or more infeeds:

Type **istat** and press **Enter**, or

Type **iload** and press **Enter**.

Examples

The following command displays the infeed status:

```
Switched PDU: istat
      Input      Input      Input      Input
      Feed ID    Feed Name    Status     Load
      .AA        HQ_1_Infeed_A    On         10.5 Amps
```

Connecting to a serial device

The Connect command allows pass through serial connection to devices attached to the standard serial port (Console).

To connect to a serial device:

At the Switched PDU: prompt, type **connect console** and press **Enter**.

To disconnect from a serial device:

Type **!*break** and press **Enter**.

3. Operations

Displaying the status of the Environmental Monitor

The Envmon command displays the status of the integrated Environmental Monitor.

By default, only administrative user accounts are allowed access to the Envmon command. An administrator may use the Set User Envmon command to enable and disable access for other user accounts.

To display the status of the Environmental Monitor:

At the Switched PDU: prompt, type **envmon** and press **Enter**.

Example

The following command displays the status of the Environmental Monitor.

```
Switched PDU: envmon<Enter>
Environmental Monitor .A
  Name: Florida_HQ_1           Status: Normal
  Temperature/Humidity Sensors
    ID   Name                    Temperature  Humidity
    .A1  Temp_Humid_Sensor_A1    Not Found   Not Found
    .A2  T/H2_Florida_HQ_1      23.5 Deg. C 22 % RH
```

Starting a new session

The Login command activates the Username: prompt. The current session ends, allowing a user to log in and start a new session under a different username.

To start a new session:

At the Switched PDU: prompt, type **login** and press **Enter**. The Username: prompt appears.

Ending a session

The Quit or Logout commands ends a session. A session ends automatically when no activity is detected for five minutes, or upon loss of connection.

To end a session:

At the Switched PDU: prompt, type **quit** and press **Enter**, or

Type **logout** and press **Enter**.



3. Operations

Administration Commands

Administration commands may only be issued by a user with administrative privileges, such as the predefined Admn user or another user who has been granted administrative privileges with the Set User Admnpriv command.

User Administration

Creating a user account

The Create User command creates a user account with the specified username and password. See *Usernames and Passwords* in this chapter for more information.

To create a user account:

At the Switched PDU: prompt, type **create user**, optionally followed by a 1-16 character username (Spaces are not allowed, and usernames are not case sensitive). Press **Enter**.

At the Password: prompt, type a password of up to 16 alphanumeric and other typeable characters (ASCII 32 to 126 decimal). Passwords are case sensitive. Press **Enter**. To specify no password, press **Enter** at the prompt.

At the Verify Password: prompt, retype the password. Press **Enter**. To verify no password, press **Enter** at the prompt.

Example

The following command creates the user account JaneDoe:

```
Switched PDU: create user JaneDoe<Enter>
Password: <Enter>
Verify New Password: <Enter>
```

For security, password characters are not displayed.

Removing a user account

The Remove User command removes a user account.

NOTE: You may remove the predefined user account Admn only if another user account has been granted administrative privileges using the Set User Admnpriv command.

To remove a user account:

At the Switched PDU: prompt, type **remove user**, optionally followed by a username. Press **Enter**.

3. Operations

Changing a password

The Set User Password command changes a user's password. For security, when you type a password, the characters are not displayed on the screen. See *Usenames and Passwords* for more information.

To change a password:

At the Switched PDU: prompt, type **set user password**, followed by a username and press **Enter**.

At the Password: prompt, type the new password and press **Enter**. Passwords may contain up to 16 characters, and spaces are not allowed. To specify no password, press **Enter** at the prompt.

At the Verify Password: prompt, retype the new password and press Enter. To verify no password, press **Enter** at the prompt.

Examples

The following command changes the password for the user JohnDoe:

```
Switched PDU: set user password johndoe<Enter>
Password: <Enter>
Verify Password: <Enter>
```

The following command blanks the password for the user JaneDoe:

```
Switched PDU: set user password<Enter>
Username: janedoe<Enter>
Password: <Enter>
Verify Password: <Enter>
```

Setting user access level privileges

The Set User Access command sets the access level privileges for a user. The Switched PDU has four defined access privilege levels; Admin, User, On-Only and View-Only. For more information on user access levels, see *Changing a user's access privilege level*: on page 19.

The administrator may also grant administrative privileges to other user accounts allowing the Switched PDU to have more than one administrative-level user.

NOTE: You cannot remove administrative privileges from the Admn user unless another user has already been given administrative access level privileges created.

To set the access level privilege for a user:

At the Switched PDU: prompt, type **set user access**, followed by **admin**, **user**, **ononly** or **viewonly**, optionally followed by a username and press **Enter**.

Examples

The following command sets the user access level for JohnDoe to Admin:

```
Switched PDU: set user access admin johndoe<Enter>
```

The following command sets the user access level for JaneDoe to User:

```
Switched PDU: set user access user janedoe<Enter>
```

3. Operations

Granting and removing input status viewing privileges

The Set User Envmon command grants or removes input status viewing privileges to/from a user.

NOTE: This command also grants or removes viewing privileges for the status of the optional Equipment Cabinet Environmental Manager and attached sensors. See the Equipment Cabinet Environmental Manager Installation and Operations manual for more information.

To grant or remove input status viewing privileges for a user:

At the Switched PDU: prompt, type **set user envmon** followed by **on** or **off**, optionally followed by a username and press **Enter**.

Example

The following command grants input status viewing privileges to the user JohnDoe:

```
Switched PDU: set user envmon on johndoe<Enter>
```

Displaying the access privilege levels

The List Users command displays all defined users with their access privilege level.

To display user access privilege levels:

At the Switched PDU: prompt, type **list users** and press **Enter**.

Example

The following command displays all users with their access privilege level:

```
Switched PDU: list users<Enter>
User          Privilege   Environmental
Name          Level       Monitoring
JOHNDOE       Admin       Allowed
JANEDOE       User        Allowed
JOSEYDOE      On-Only     Not Allowed
JOEDOE        View-Only   Not Allowed
```

Adding outlet access to a user

The Add OutletToUser command grants a user access to one or all outlets. To grant access for more than one outlet, but not all outlets, you must use multiple Add OutletToUser commands.

To grant outlet access to a user:

At the Switched PDU: prompt, type **add outlettouser**, optionally followed by an outlet name and a username. Press **Enter**, or

Type **add outlettouser all**, followed by a username and press **Enter**.

Examples

The following commands grant the user JaneDoe access to outlets A1 and Webserver_1:

```
Switched PDU:add outlettouser .a1 janedoe<Enter>
Switched PDU:add outlettouser WebServer_1 janedoe<Enter>
```



3. Operations

Deleting outlet access for a user

The Delete OutletFromUser command removes a user's access to one or all outlets. You cannot remove access to any outlet for an administrative level user.

To delete outlet access for a user:

At the Switched PDU: prompt, type **delete outletfromuser**, optionally followed by an outlet name and a username. Press **Enter**, or

Type **delete outletfromuser all**, followed by a username and press **Enter**.

Adding group access to a user

The Add GroupToUser command grants a user access to a group. To grant access for more than one group, you must use multiple Add GroupToUser commands.

To grant group access to a user:

At the Switched PDU: prompt, type **add grouptouser**, optionally followed by a group name and a username. Press **Enter**.

Examples

The following commands grants to user JaneDoe access to the groups ServerGroup_1 and ServerGroup_2:

```
Switched PDU:add GroupToUser ServerGroup_1 janedoe<Enter>
Switched PDU:add GroupToUser ServerGroup_2 janedoe<Enter>
```

Deleting group access for a user

The Delete GroupFromUser command removes a user's access to a group. You cannot remove access to any group for an administrative level user.

To delete group access for a user:

At the Switched PDU: prompt, type **delete GroupFromUser**, optionally followed by a group name and a username. Press **Enter**.

Adding serial port access to a user

The Add PortToUser command grants a user access to the serial port.

To grant serial port access to a user:

At the Switched PDU: prompt, type **add porttouser console** and a username. Press **Enter**.

Deleting serial port access for a user

The Delete PortFromUser command removes a user's access to the serial port. You cannot remove access to the serial port for an administrative level user.

To delete serial port access for a user:

At the Switched PDU: prompt, type **delete portfromuser console** and a username. Press **Enter**.

3. Operations

Displaying user outlet, group and serial port access

The List User command displays all accessible outlets, groups and serial ports for a user.

To display user outlet, group and serial port access:

At the Switched PDU: prompt, type **list user**, optionally followed by a username. Press **Enter**.

Example

The following command displays information about the user JaneDoe:

```
Switched PDU: list user janedoe<Enter>
Username: JANEDOE
  Outlet  Outlet
  ID      Name
  .A1     DataServer_1
  .A2     WebServer_1
Groups:
  ServerGroup_1
  ServerGroup_2
More (Y/es N/o): Y
Ports:
  Port    Port
  ID      Name
  Console Console
```

JaneDoe may access the following outlets, groups and serial ports: outlet A1 which has a descriptive name of DataServer_1, outlet A2 which has a descriptive name of WebServer_1, group ServerGroup_1 group ServerGroup_2 and Console serial port.

Group Administration

Creating a group name

The Create Group command creates a new group name.

To create a group name:

At the Switched PDU: prompt, type **create group**, optionally followed by a descriptive name of up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal - spaces are not allowed. Group names are not case sensitive). Press **Enter**.

Example

The following command creates group name ServerGroup_1:

```
Switched PDU: create group ServerGroup_1<Enter>
```

Removing a group name

The Remove Group command removes a group name.

To remove a group name:

At the Switched PDU: prompt, type **remove group**, optionally followed by a username. Press **Enter**.

Example

The following command removes group name ServerGroup_1:

```
Switched PDU: remove group ServerGroup_1<Enter>
```

3. Operations

Adding an outlet to a group

The Add OutletToGroup command adds an outlet to a group. To add more than one outlet, but not all outlets, you must use multiple Add OutletToGroup commands.

To add an outlet to a group:

At the Switched PDU: prompt, type **add outlettogroup**, optionally followed by an outlet name and group name. Press **Enter**, or

Type **add OutletToGroup**, followed by **all** and the group name. Press **Enter**.

Examples

The following commands use absolute outlet names to add outlets A1 and A2 to group name ServerGroup_1:

```
Switched PDU:add OutletToGroup .a1 ServerGroup_1<Enter>
Switched PDU:add OutletToGroup .a2 ServerGroup_1<Enter>
```

The following commands use the outlets' descriptive names to add outlets DataServer_1 and WebServer_1 to group name ServerGroup_1:

```
Switched PDU:add OutletToGroup DataServer_1 ServerGroup_1<Enter>
Switched PDU:add OutletToGroup WebServer_1 ServerGroup_1<Enter>
```

The following command add all outlets to group name ServerGroup_1:

```
Switched PDU: add OutletToGroup<Enter>
Outletname: all<Enter>
Groupname: ServerGroup_1<Enter>
```

Deleting an outlet from a group

The Delete OutletFromGroup command deletes an outlet from a group. To delete more than one outlet, but not all outlets, you must use multiple Delete OutletToGroup commands.

To delete an outlet from a group:

At the Switched PDU: prompt, type **delete outletfromgroup**, optionally followed by an outlet name and a group name. Press **Enter**, or

Type **delete outletfromgroup**, followed by **all** then the group name. Press **Enter**.

Outlet Administration

Creating a descriptive outlet name

The Set Outlet Name command assigns a descriptive name to an outlet. You may use this name in commands that require an outlet name as an alternative to using the outlet's absolute name.

To create an outlet name:

At the Switched PDU: prompt, type **set outlet name**, followed by the absolute outlet name and a descriptive name of up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal - spaces are not allowed). Outlet names are not case sensitive. Press **Enter**.

Example

The following command adds the descriptive name DataServer_1 to outlet .a1:

```
Switched PDU: set outlet name .a1 DataServer_1<Enter>
```

3. Operations

Setting the outlet wakeup state

The Set Outlet Wakeup command set the default wakeup state for that outlet. In the event of a system-wide power loss, this state will be applied to the outlet when power is restored.

The wakeup state may be set to On or Off. Upon restoration of system power; If set to On, the Switched PDU will apply power to that outlet. If set to Off, the Switched PDU will not apply power to that outlet.

To set the wakeup state:

At the Switched PDU: prompt, type **set outlet wakeup**, followed by **on** or **off** and the outlet name. Press **Enter**.

Example

The following command sets the wakeup state for outlet .a1 to off:

```
Switched PDU: set outlet wakeup off .a1<Enter>
```

Displaying outlet information

The Show Outlets command displays information about all outlets. This information includes:

- Descriptive outlet name, if applicable
- Outlet wakeup state setting

To display outlet information:

At the Switched PDU: prompt, type **show outlets** and press **Enter**.

Example

The following command displays all outlet information:

```
Switched PDU: show outlets<Enter>
Outlet      Outlet      Wakeup
ID          Name        State
.A1        DataServer_1  off
.A2        WebServer_1  on
.A3        FileServer_1  last
.A4                on
.A5                on
.A6                on
.A7                on
.A8                on
.A9                on
.A10               on
.A11               on
.A12               on
.A13               on
.A14               on
.A15               on
.A16               on
More (Y/es N/o):
```

3. Operations

Serial Port Administration

Creating a descriptive serial port name

The Set Port Name command assigns a descriptive name to a serial port. You may use this name in commands that require a port name as an alternative to using the port's absolute name.

To create a port name:

At the Switched PDU: prompt, type **set port name**, followed by the absolute outlet name and a descriptive name of up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal - spaces are not allowed). Port names are not case sensitive. Press **Enter**.

Example

The following command adds the descriptive name Rack1 to Console port:

```
Switched PDU: set port name console Rack1<Enter>
```

Setting the serial ports data-rate

The Set Port Speed command sets the default data-rate for the serial port. Valid data-rates are 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200.

To set the serial port data-rate:

At the Switched PDU: prompt, type **set port speed**, follow by the data-rate and press **Enter**.

Example

The following command sets the serial ports data-rate to 38400 BPS:

```
Switched PDU: set port speed 38400<Enter>
```

Enabling or disabling active signal checking for serial connections

The Set Port Dsrchk command enables or disables active signal checking for serial connections to devices attached to any of the available serial ports.

To enable or disable active signal checking for serial connections:

At the Switched PDU: prompt, type **set port dsrchk console, on** or **off**, and press **Enter**.

Displaying serial port information

The Show Ports command displays information about all serial ports. This information includes:

- Serial port data rate
- Descriptive port name, if applicable
- DSR signal checking settings

To display serial port information:

At the Switched PDU: prompt, type **show ports** and press **Enter**.

Example

The following command displays all serial port information:

```
Switched PDU: show ports<Enter>
Serial Port Configuration
  ALL Ports:
    Baud Rate: 38400
  Console Port:
    DSR Check: ON
```

3. Operations

System Administration

Creating a location description

The Set Location command specifies text that appears in the HTML control screen's Location field. The text is also appended to a Welcome to banner that appears when a user successfully logs in serially or through a Telnet session.

If you do not issue this command, or if you issue this command without specifying any text, the control screen's Location field will be blank and no Welcome to banner will be displayed.

To create a location description:

At the Switched PDU: prompt, type **set location**, followed by a descriptive name of up to 24 alphanumeric and other typeable characters (ASCII 32 to 126 decimal - spaces are allowed). Press **Enter**.

Omitting any characters after typing 'set location' deletes any previously specified text.

Examples

The following command specifies Florida HQ as the descriptive location for the control screen and the login banner:

```
Switched PDU: set location Florida HQ<Enter>
```

The following command deletes any previously specified location description:

```
Switched PDU: set location<Enter>
```

In this case, the control screen's Location field will be blank, and no welcome banner will be displayed after a successful login.

Displaying system configuration information

The Show System command displays all system configuration information.

- Firmware version
- NIC module serial number and MAC address
- Hardware revision code and Flash size
- Uptime since last system restart
- System location description

To display system configuration information:

At the Switched PDU: prompt, type **show system** and press **Enter**.

Example

```
System Information
  F/W Version:   Switched PDU Version 5.3a
  NIC S/N:      1600001
  MAC Address:  00-0a-9c-10-00-01
  H/W Rev Code: 0
  Flash Size:   1 MB
  Uptime:       0 days 6 hours 14 minutes 1 second
  Location:     Florida HQ
```

3. Operations

Creating a descriptive tower name

The Set Tower Name command assigns a descriptive name to a tower. This descriptive name is displayed when the Show Traps command is issued. See SNMP Traps on page 49 for more information on the Show Traps command.

To create a tower name:

At the Switched PDU: prompt, type **set tower name**, followed by the absolute tower name, then the descriptive name of up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal - spaces are not allowed). Press **Enter**.

Examples

The following command adds the descriptive name Florida_HQ_1 to tower .a:

```
Switched PDU: set tower name .a Florida_HQ_1<Enter>
```

Displaying tower information

The Show Towers command displays information about the Switched PDU. This information includes the absolute and descriptive Switched PDU names.

To display tower information:

At the Switched PDU: prompt, type **show towers** and press **Enter**.

Example

```
Switched PDU: show towers<Enter>
Tower      Tower
ID         Name
.A         Florida_HQ_1
```

Creating a descriptive infeed name

The Set Infeed Name command assigns a descriptive name to an infeed. This descriptive name is displayed when the Show Traps command is issued.

To create a infeed name:

At the Switched PDU: prompt, type **set infeed name**, followed by the absolute infeed name, then the descriptive name of up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal - spaces are not allowed). Press **Enter**.

Example

The following command adds the descriptive name HQ_1_Infeed_A to the infeed on the Switched PDU:

```
Switched PDU: set infeed name .aa HQ_1_Infeed_A<Enter>
```

Displaying Infeed information

The Show Infeeds command displays information about all infeeds. This information includes the absolute and descriptive infeed names.

To display tower information:

At the Switched PDU: prompt, type **show infeeds** and press **Enter**.

Example

```
Switched PDU: show infeeds<Enter>
Input      Input
Feed ID    Feed Name
.AA        HQ_1_Infeed_A
.AB        HQ_1_Infeed_B
.BA        HQ_2_Infeed_A
.BB        HQ_2_Infeed_B
```



3. Operations

Displaying the firmware version

The Version command displays the firmware version.

To display the firmware version:

At the Switched PDU: prompt, type **version** and press **Enter**.

Performing a warm boot

The Restart command performs a warm boot of the Switched PDU.

NOTE: System user/outlet/group/port configuration or outlet states are NOT changed or reset with this command.

To perform a warm boot:

At the Switched PDU: prompt, type **restart** and press **Enter**.

TCP/IP Administration

NOTE: A restart of the Switched PDU is required after setting or changing ANY TCP/IP configurations. See *Performing a warm boot* for more information.

Setting the IP address

The Set Ippaddress command sets the TCP/IP address of the network interface controller.

To set the IP address:

At the Switched PDU: prompt, type **set ipaddress**, followed by the IP address and press **Enter**.

Example

The following command sets the IP address to 12.34.56.78:

```
Switched PDU: set ipaddress 12.34.56.78<Enter>
```

Setting the subnet mask

The Set Subnet command sets the subnet mask for the network the PT40 will be attached to.

To set the subnet mask:

At the Switched PDU: prompt, type **set subnet**, followed by the subnet mask and press **Enter**.

Example

The following command sets the subnet mask to 255.0.0.0

```
Switched PDU: set subnet 255.0.0.0<Enter>
```

Setting the gateway

The Set Gateway command sets the IP address of the default gateway the Switched PDU uses to access external networks.

To set the gateway IP address:

At the Switched PDU: prompt, type **set gateway**, followed by the gateway IP address and press **Enter**.

Example

The following command set the gateway IP address to 12.34.56.1:

```
Switched PDU: set gateway 12.34.56.1<Enter>
```

3. Operations

Displaying network configuration information

The Show Network command displays TCP/IP, Telnet, SSH, Web, SSL and SNMP configuration information.

- IP address, subnet mask and gateway
- Enabled-disabled status of Telnet, SSH, HTTP,SSL and SNMP support
- Telnet, SSH, and HTTP port numbers
- HTTP authentication method and SSL access setting
- Network status

See page 47 for more information on SNMP.

To display network configuration information:

At the Switched PDU: prompt, type **show network** and press **Enter**.

Example

The following command displays the network configuration information:

```
Switched PDU: show network<Enter>
Network Configuration
  IP Address:      12.34.56.78
  Subnet Mask:    255.0.0.0
  Gateway:        12.34.56.1
  Telnet:         Enabled      Port:    23
  SSH:            Enabled      Port:    65535
  HTTP:           Enabled      Port:    80      Security: BASIC
  SSL:            Enabled
  SNMP:           Enabled      Access:   Required
Network Status
  Link:           Up
  Speed:          100 Mbps
  Duplex:         Full
  Negotiation:   Auto
```

HTTP Administration

NOTE: A restart is required after setting or changing ANY Telnet/Web configurations. See *Performing a warm boot* on page 39 for more information.

Enabling and disabling HTTP support

The Set HTTP command is used to enable or disable HTTP support.

To enable or disable HTTP support:

At the Switched PDU: prompt, type **set http**, followed by **enabled** or **disabled** and press **Enter**.

Changing the HTTP server port

With HTTP support enabled, the HTTP server watches and responds to requests on the default HTTP port number 80. This port number may be changed using the Set HTTP Port command.

To change the HTTP port:

At the Switched PDU: prompt, type **set http port**, followed by the port number and press **Enter**.

Example

The following changes the HTTP port number to 2048:

```
Switched PDU: set HTTP port 2048<Enter>
```


3. Operations

Setting the HTTP authentication method

The Set HTTP Security command is used to set the method of authentication. The Switched PDU HTTP server supports two authentication methods for security and validation of the username-password – Basic and MD5 digest.

For more information on authentication methods, see *Setting the HTTP authentication method*: on page 17.

To set the HTTP authentication method:

At the Switched PDU: prompt, type **set http security**, followed by **basic** or **md5** and press **Enter**.

Telnet Administration

NOTE: A restart of the Switched PDU is required after setting or changing ANY Telnet/Web configurations. See *Performing a warm boot* on page 39 for more information.

Enabling and disabling Telnet support

The Set Telnet command is used to enable or disable Telnet support.

To enable or disable Telnet support:

At the Switched PDU: prompt, type **set telnet**, followed by **enabled** or **disabled** and press **Enter**.

Changing the Telnet port

With Telnet support enabled, the Telnet server watches and responds to requests on the default Telnet port number 23. This port number may be changed using the Set Telnet Port command.

To change the Telnet socket:

At the Switched PDU: prompt, type **set telnet port**, followed by the port number and press **Enter**.

Example

The following changes the Telnet port number to 7001:

```
Switched PDU: set telnet port 7001<Enter>
```

FTP Administration

You may upload new versions of firmware into the Switched PDU using File Transfer Protocol (FTP). This allows access to new firmware releases for firmware improvements and new features additions. The following commands are used to configure the Switched PDU for an FTP firmware upload. See *Uploading Firmware* for more information on initiating a FTP firmware upload.

Setting the FTP Host IP address

The Set FTP Host command sets the FTP host IP address allowing for firmware file uploads.

To set the FTP Host IP address:

At the Switched PDU: prompt, type **set ftp host**, followed by the Host IP address and press **Enter**.

Example

The following command sets the FTP Host IP address to 12.34.56.99:

```
Switched PDU: set ftp host 12.34.56.99<Enter>
```

Setting the FTP username

The FTP Username command sets the username as required by the FTP Host.

To set the FTP username:

At the Switched PDU: prompt, type **set ftp username**, followed by the FTP username and press **Enter**.

Example

The following command sets the FTP username to Guest:

```
Switched PDU: set ftp username guest<Enter>
```

3. Operations

Setting the FTP Password

The FTP Password command sets the password as required by the FTP Host.

To set the FTP password:

At the Switched PDU: prompt, type **set ftp password**, followed by the FTP password and press **Enter**.

Example

The following command sets the FTP password to OpenSesame:

```
Switched PDU: set ftp password OpenSesame<Enter>
```

Setting the filename to be uploaded

The FTP Filename command sets the filename of the firmware file to be uploaded.

To set the FTP filename:

At the Switched PDU: prompt, type **set ftp filename**, followed by the firmware filename and press **Enter**.

Example

The following command sets the FTP filename to snb_s53a.bin:

```
Switched PDU: set ftp filename snb_s53a.bin<Enter>
```

Setting the filepath for the file to be uploaded

The FTP Filepath command sets the filepath for the firmware file to be uploaded.

To set the FTP filepath:

At the Switched PDU: prompt, type **set ftp filepath**, followed by the filepath and press **Enter**.

Example

The following command sets the FTP filepath to ftp://Switched PDU:

```
Switched PDU: set ftp filepath ftp://Switched PDU<Enter>
```

Displaying FTP configuration information

The Show FTP command displays all FTP configuration information.

- FTP Host IP address
- FTP Host username and password
- Firmware filepath and filename

To display FTP configuration information:

At the Switched PDU: prompt, type **show ftp** and press **Enter**.

Example

The following command displays the FTP configuration information:

```
Switched PDU: show ftp<Enter>
FTP Configuration
Host IP Address: 12.34.56.99
Username:       guest
Password:      OpenSesame
Directory:     ftp://Switched PDU
Filename:      snb_s53a.bin
```



3. Operations

SNTP Administration

Switched PDU supports the use of a network time service to provide a synchronized time reference.

Setting the SNTP server address

The Set SNTP command is used to set the primary and secondary SNTP server addresses.

To set the SNTP server address:

At the Switched PDU: prompt, type **set sntp**, followed by **primary** or **secondary**, and the SNTP server IP address. Press **Enter**.

Example

The following command set the primary SNTP server address to 204.152.184.72:

```
Switched PDU: set sntp primary 204.152.184.72<Enter>
```

Displaying SNTP configuration information

The Show SNTP command displays all SNTP configuration information.

To display SNTP configuration information

At the Switched PDU: prompt, type **show sntp** and press **Enter**.

Example

The following command displays the SNTP configuration information:

```
Switched PDU: show sntp <Enter>
SNTP Date/Time (GMT): 2003-02-21 21:32:48
SNTP Primary IP Address: 204.152.184.72
SNTP Secondary IP Address: 0.0.0.0
```



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4. Advanced Operations

SSL

Secure Socket Layers (SSL) version 3 enables secure HTML sessions between a Switched PDU Remote Power Manager and a remote user. SSL provides two chief features designed to make TCP/IP (Internet) transmitted data more secure:

- Authentication – The connecting client is assured of the identity of the server.
- Encryption – All data transmitted between the client and the server is encrypted rendering any intercepted data unintelligible to any third party.

SSL uses the public-and-private key encryption system by RSA, which also requires the use of digital certificates. An SSL Certificate is an electronic file uniquely identifying individuals or websites and enables encrypted communication; SSL Certificates serve as a kind of digital passport or credential. The Switched PDU product's SSL Certificate enables the client to verify the Switched PDU's authenticity and to communicate with the Switched PDU securely via an encrypted session, protecting confidential information from interception and hacking.

SSL Command Summary

Command	Description
Set SSL	Enables/disables SSL support
Set SSL access	Sets SSL access as optional or required

Enabling and Setting up SSL Support

NOTE: A restart of the Switched PDU is required after setting or changing ANY SSL configurations. See [Performing a warm boot on page 39](#) for more information.

Enabling or disabling SSL support

The Set SSL command is used to enable or disable SSL support.

To enable or disable SSL support:

At the Switched PDU: prompt, type **set ssl**, followed by **enabled** or **disabled** and press **Enter**.

Setting SSL access level

The Set SSL Access command is used to assign use of SSL as optional or required. The default access level is set to optional.

To change the access level:

At the Switched PDU: prompt, type **set ssl access**, followed **optional** or **required**, and press **Enter**.

Example

The following changes the access level to required:

```
Switched PDU: set ssl access required<Enter>
```

SSL Technical Specifications

Secure Socket Layer (SSL) version 3

Transport Layer Security (TLS) version 1 (RFC 2246)

SSL/TLS-enabled HTTPS server (RFC 2818)

Self-Signed X.509 Certificate version 3 (RFC 2459)

Asymmetric Cryptography:

1024-bit RSA Key Exchange

Symmetric Cryptography Ciphers:

TLS_RSA_WITH_AES_256_CBC_SHA

TLS_RSA_WITH_AES_128_CBC_SHA

TLS_RSA_WITH_3DES_EDE_CBC_SHA

TLS_RSA_WITH_DES_CBC_SHA

4. Advanced Operations

SSH

Secure Shell (SSH) version 2 enables secure network terminal sessions between a Switched PDU Remote Power Manager and a remote user over insecure network. SSH provides an encrypted terminal sessions with strong authentication of both the server and client, using public-key cryptography and is typically used as a replacement for unencrypted Telnet. In addition to enabling secure network terminal sessions to the Switched PDU for configuration and power management, the SSH session may be used for secure pass through connections to attached devices.

SSH requires the configuration and use of a client agent on the client PC. There are many freeware, shareware or for-purchase SSH clients available. Two examples are the freeware client PuTTY and the for-purchase client SecureCRT® by VanDyke® Software. For configuration and use of these clients, please refer to the applicable software documentation.

SSH Command Summary

Command	Description
Set SSH	Enables/disables SSH support
Set SSH port	Sets the SSH server port number

Enabling and Setting up SSH Support

NOTE: A restart of the Switched PDU is required after setting or changing ANY SSH configurations. See [Performing a warm boot on page 39](#) for more information.

Enabling or disabling SSH support

The Set SSH command is used to enable or disable SSH support.

To enable or disable SSH support:

At the Switched PDU: prompt, type **set ssh**, followed by **enabled** or **disabled** and press **Enter**.

Changing the SSH server port

With SSH support enabled, the SSH server watches and responds to requests on the default SSH port number 22. This port number may be changed using the Set SSH Port command.

To change the SSH port:

At the Switched PDU: prompt, type **set ssh port**, followed by the port number and press **Enter**.

Example

The following changes the SSH port number to 65535:

```
Switched PDU: set ssh port 65535<Enter>
```

SSH Technical Specifications

Secure Shell (SSH) version 2

Asymmetric Cryptography:

Diffie-Hellman DSA/DSS 512-1024 (random) bits per NIST specification

Symmetric Cryptography:

AES256-CBC	RIJNDAEL256-CBC	3DES-192-CBC
AES192-CBC	RIJNDAEL192-CBC	BLOWFISH-128-CBC
AES128-CBC	RIJNDAEL128-CBC	ARCFOUR-128

Message Integrity:

HMAC-SHA1-160	HMAC-SHA1-96
HMAC-MD5-128	HMAC-MD5-96

Authentication:

Username/Password

Session Channel Break Extension (for RS232 Break)

4. Advanced Operations

SNMP

The Switched PDU family of products supports the Simple Network Management Protocol (SNMP). This allows network management systems to use SNMP requests to retrieve information and control power for the individual outlets.

The Switched PDU includes an SNMP v1 agent supporting standard MIB I and MIB II objects. A private enterprise MIB extension is also supported to provide remote power control.

NOTE: For security, SNMP support is disabled by default.

SNMP Command Summary

Command	Description
Set snmp	Enables or disables SNMP support
Set snmp getcomm	Sets the 'get' community string
Set snmp setcomm	Sets the 'set' community string
Set snmp trapdest1	Sets a destination IP addresses for traps
Set snmp trapdest2	Sets a destination IP addresses for traps
Set snmp traptime	Sets the delay for steady state condition traps
Show snmp	Displays all SNMP configuration information

Enabling and Setting up SNMP Support

Switched PDU SNMP support must be enabled and configured for access to Switched PDU3 MIB objects and generation of all Switched PDU3 traps.

Enabling/disabling SNMP support

The Switched PDU SNMP command is used to enable or disable SNMP support.

To enable SNMP support:

At the Switched PDU: prompt, type **set snmp**, followed by **enabled** or **disabled** and press **Enter**.

NOTE: A restart of the Switched PDU is required after enabling or disabling SNMP support. See *Performing a warm boot* on page 39 for more information.

4. Advanced Operations

Setting trap destinations

The Set SNMP Trapdest1 and Trapdest2 commands are used to set the IP addresses of SNMP management stations receiving all traps. Switched PDU supports a maximum of two trap destinations; one must be defined to enable trap generation.

To set the trap destination:

At the Switched PDU: prompt, type **set snmp, trapdest1** or **trapdest2**, the laddress and press **Enter**.

Example

The following sets the trap destination 1 to 64.42.31.208:

```
Switched PDU: set snmp trapdest1 64.42.31.208<Enter>
```

To reset the trap destination:

At the Switched PDU: prompt, type **set snmp, trapdest1** or **trapdest2, 0.0.0.0** and press **Enter**.

Setting the trap timer

The Set Traptime command sets the timer period between repeated error-condition traps. The valid range for the timer period is 1 to 65535 (in seconds). The default value for the timer period is 60 seconds.

To set the trap timer:

At the Switched PDU: prompt, type **set traptime**, followed by the timer period and press **Enter**.

Example

The following sets the timer period to 180 seconds:

```
Switched PDU: set traptime 180<Enter>
```

Setting the Get/Set community strings

Switched PDU supports two SNMP community strings that provide varying levels of access to objects defined in the Switched PDU3 MIB.

Community strings may be 1 to 24 characters.

Setcomm

The Setcomm string provides read-write access to Switched PDU3 MIB objects. The default Setcomm string is "private".

To set the Setcomm community string:

At the Switched PDU: prompt, type **set snmp setcomm**, followed by the string and press **Enter**.

Getcomm

The Getcomm string provides read-only access to Switched PDU3 MIB objects. The default Getcomm string is "public".

To set the Getcomm community string:

At the Switched PDU: prompt, type **set snmp getcomm**, followed by the string and press **Enter**.

Setting the Trap community string

The Set SNMP Trapcomm command is used to set the community string that is included with all generated traps. This string must be defined to enable trap generation.

The trap community string may be 1 to 24 characters. The default Trapcomm string is "trap".

To set the Trapcomm community string:

At the Switched PDU: prompt, type **set snmp trapcomm**, followed by the string and press **Enter**.

4. Advanced Operations

Displaying SNMP configuration information

The Show SNMP command displays all SNMP configuration information.

- SNMP support status
- SNMP community strings
- Trap timer value
- Trap destinations

To display SNMP configuration information:

At the Switched PDU: prompt, type **show snmp** and press **Enter**.

Example

The following command displays the SNMP configuration information:

```
Switched PDU: show snmp<Enter>
SNMP Configuration
SNMP:                               Enabled
SET Community String:                private
GET Community String:                 public
TRAP Community String:                trap
Error Trap Repeat Time (seconds):    180
Trap Destination 1:                   64.42.31.208
Trap Destination 2:                   (undefined)
```

SNMP Traps

The Switched PDU supports three types of SNMP traps. Traps are enabled at the tower (T), infeed (I) or outlet (O) level.

Trap Summary

Name	Level(s)	Description
Status	T, I, O	Operational status change
Change	O	Control status change
Load	I	Input load out of limit

All traps include the Location of the Switched PDU as defined with the Set Location command. See *Creating a location description* on page 37 for more information.

Status trap

A Status trap is generated when an error condition occurs on a tower, infeed or outlet. Status traps include the reported Status, the Location of the Switched PDU, and identifier and name of the affected tower, infeed or outlet.

Any Trap Status generates a Status trap and triggers the trap timer. A new trap is generated at the end of every timer period until the Status returns to a non-error status.

Tower Status traps

Status	Error	Description
Normal		Tower is working correctly
NoComm	x	Communication to the tower has been lost

Infeed Status traps

Status	Error	Description
On		Infeed is on
OffError	x	Infeed should be on but no current is sensed at the infeed
NoComm	x	Communication to the infeed has been lost

4. Advanced Operations

Outlet Status traps

Status	Error	Description
On		Outlet is on
Off		Outlet is off
OnWait		Outlet Status in transition
OffWait		Outlet Status in transition
OnError	x	Outlet should be off but current is sensed at the outlet
OffError	x	Outlet should be on but no current is sensed at the outlet
NoComm	x	Communication to the outlet has been lost
OffFuse	x	Outlet should be on but a blown fuse has been detected

Environmental Monitor Status traps

Status	Error	Description
Normal		The Environmental Monitor is working correctly
NoComm	x	Communication to the Environmental Monitor has been lost

Temperature/Humidity Sensor Status traps

Status	Error	Description
Found		The sensor has been detected
NotFound		No sensor has been detected
Lost	x	Sensor initially detected but communication to the sensor has been lost
NoComm	x	Communication to the sensor has been lost

NOTE: Traps are generated according to a hierarchical architecture; i.e. if a Tower Status enters a trap condition, only the Tower Status trap is generated. Infeed and Outlet Status traps are suppressed until the Tower Status returns to Normal.

Change trap

The Change trap is generated for all outlet status changes between any on/off conditions. Change traps include the outlet status, Location of the Switched PDU, and identifier and name of the affected outlet. For descriptions of the outlet status types, please refer to the prior table.

Load Trap

The Load trap is generated whenever the total input load on an infeed exceeds a preset threshold. Load traps include the reported input load, load status, Location of the Switched PDU, and identifier and name of the affected infeed.

Any error state generates a Load trap and triggers the trap timer. A new trap is generated at the end of every timer period until the Load returns to a non-error status.

Load traps

Status	Error	Description
Normal		Infeed is on and within preset thresholds
NotOn		Infeed is off
Reading		Non-error state – Load status currently being read
LoadHigh	x	Infeed current load exceeds preset threshold
OverLoad	x	Infeed current load exceeds the measurable range for the infeed
ReadError	x	Unable to read Load status
NoComm	x	Communication to the infeed has been lost

4. Advanced Operations

Temp Trap

The Temp trap is generated whenever the temperature on a temperature/humidity sensor is beyond preset thresholds. Temp traps include the reported temperature, temp status, Location of the Switched PDU, and identifier and name of the affected sensor.

Any error state generates a Temp trap and triggers the trap timer. A new trap is generated at the end of every timer period until the Temp returns to a non-error status.

Temp traps

Status	Error	Description
Normal		The sensor is working correctly and the temperature is within preset thresholds
NotFound		No sensor has been detected
Reading		Temp status currently being read
TempLow	x	Temperature at the sensor below preset low threshold
TempHigh	x	Temperature at the sensor exceeds preset high threshold
ReadError	x	Unable to read Temp status
Lost	x	Sensor initially detected but communication to the sensor has been lost
NoComm	x	Communication to the sensor has been lost

Humidity Trap

The Humidity trap is generated whenever the umidity on a temperature/humidity sensor is beyond preset thresholds. Humidity traps include the reported relative humidity, humidity status, Location of the Switched PDU, and identifier and name of the affected sensor.

Any error state generates a Humidity trap and triggers the trap timer. A new trap is generated at the end of every timer period until the Humidity returns to a non-error status.

Humidity traps

Status	Error	Description
Normal		The sensor is working correctly and the relative humidity is within preset thresholds
NotFound		No sensor has been detected
Reading		Humidity status currently being read
HumidLow	x	Relative humidity at the sensor below preset low threshold
HumidHigh	x	Relative humidity at the sensor exceeds preset high threshold
ReadError	x	Unable to read Humidity status
Lost	x	Sensor initially detected but communication to the sensor has been lost
NoComm	x	Communication to the sensor has been lost

4. Advanced Operations

Configuring Traps

SNMP Trap Command Summary

Command	Description
Set Trap EM Status	Enables or disables the Environmental Monitor Status trap
Set Trap THS Status	Enables or disables a temperature/humidity sensor Status trap
Set Trap THS Temp	Enables or disables a temperature/humidity sensor Temp trap
Set Trap THS Temphigh	Sets a temperature/humidity sensor Temp trap high limit
Set Trap THS Templo	Sets a temperature/humidity sensor Temp trap low limit
Set Trap THS Humid	Enables or disables a temperature/humidity sensor Humid trap
Set Trap THS Humidhigh	Sets a temperature/humidity sensor Humid trap high limit
Set Trap Tower Status	Enables or disables the Tower Status trap
Set Trap Infeed Status	Enables or disables the Infeed Status trap off
Set Trap Infeed Load	Enables or disables the Infeed Load trap
Set Trap Infeed HighThresh	Sets the Infeed Load trap high limit
Set Trap Outlet Change	Enables or disables the Outlet Change trap
Set Trap Outlet Status	Enables or disables the Outlet Status trap
Show Traps	Displays trap configurations

Enabling or Disabling a Status trap

The Set Trap ... Status command is used to enable or disable Status traps for a Tower, Infeed, Outlet, Environmental Monitor or Sensor.

To Enable or Disable a Status trap:

At the Switched PDU: prompt, type **set trap (tower, infeed, outlet, em or ths) status**, followed by the tower, infeed, outlet, Environmental Monitor or sensor name, and **on** or **off**. Press **Enter**, or

Type **set trap (tower, infeed, outlet, em or ths) status all**, followed by **on** or **off** and press **Enter**.

Examples

The following command enables the Status trap for the first tower, using the tower's absolute name:

```
Switched PDU: set trap tower status .a on<Enter>
```

The following command enables the Status trap for the tower named Florida_HQ_1:

```
Switched PDU: set trap tower status Florida_HQ_1 on<Enter>
```

NOTE: Enabling lower hierarchical traps automatically enables traps of higher hierarchical value: i.e. enabling an Outlet Status trap automatically enables the Infeed and Tower Status traps for that outlet. Conversely, if a Tower Status trap is disabled, all associated Infeed Status & Load and Outlet Status traps will be disabled.

4. Advanced Operations

Enabling or Disabling a Load trap

The Set Trap Infeed Load command is used to enable or disable an Infeed Load trap.

To Enable or Disable a Load trap:

At the Switched PDU: prompt, type **set trap infeed load**, followed by the infeed name, and **on** or **off**. Press **Enter**, or

Type **set trap infeed load all**, followed by **on** or **off** and press **Enter**.

Examples

The following command enables the Load trap for second infeed on the first tower, using the infeed's absolute name:

```
Switched PDU: set trap infeed load .AB on<Enter>
```

The following command disables the Load trap for all infeeds:

```
Switched PDU: set trap infeed load all off<Enter>
```

NOTE: Enabling lower hierarchical traps automatically enables traps of higher hierarchical value: i.e. enabling an Infeed Load trap automatically enables the Infeed and Tower Status traps for that infeed.

Setting the Infeed Load limit

The Set Trap Infeed Loadhigh command is used to set the upper load limits for an input feed.

To set the infeed load limit:

At the Switched PDU: prompt, type **set trap infeed loadhigh**, followed by the infeed name, and a value from 0 to 255 in amperes. Press **Enter**.

Example

The following command sets the infeed load limit for the second infeed on the first tower to 25 amperes, using the infeed's absolute name:

```
Switched PDU: set trap infeed loadhigh .ab 25<Enter>
```

Enabling or Disabling a Change trap

The Set Trap Outlet Change command is used to enable or disable an Outlet Change trap.

To Enable or Disable a Change trap:

At the Switched PDU: prompt, type **set trap outlet change**, followed by the outlet name and **on** or **off**. Press **Enter**, or

Type **set trap outlet change all**, followed by **on** or **off** and press **Enter**.

Example

The following command enables the Change trap for the third outlet on the first infeed of the second tower, using the outlet's absolute name:

```
Switched PDU: set trap outlet change .ba3 on<Enter>
```

Enabling or Disabling the Temp trap

The Set Trap THS Temp command is used to enable or disable the Temp trap.

To Enable or Disable the Temp trap:

At the Switched PDU: prompt, type **set trap ths temp**, followed by the sensor name and **on** or **off**. Press **Enter**.

Example

The following command enables the Temp trap for the first temperature-humidity sensor:

```
Switched PDU: set trap ths temp .a1 on<Enter>
```

4. Advanced Operations

Setting the Temperature sensor threshold limits

The Set Trap THS Templo and Set Trap THS Temphigh commands are used to set the lower and upper threshold limits for the Temperature sensor.

To set the Temperature threshold limits:

At the Switched PDU: prompt, type **set trap ths, templo** or **temphigh**, followed by the sensor name and a value from 0 to 127 in degrees Celsius. Press **Enter**.

Example

The following command sets the second temperature high threshold limit to 95:

```
Switched PDU: set trap ths temphigh .a2 95<Enter>
```

Enabling or Disabling the Humid trap

The Set Trap THS Humid command is used to enable or disable the Humid trap.

To Enable or Disable the Humid trap:

At the Switched PDU: prompt, type **set trap ths humid**, followed by the sensor name and **on** or **off**. Press **Enter**.

Example

The following command enables the Humid trap for the first temperature-humidity sensor:

```
Switched PDU: set traps ths humid .a1 on<Enter>
```

Setting the Humidity sensor threshold limits

The Set Trap THS Humidlow and Set Trap THS Humidhigh commands are used to set the lower and upper threshold limits for the Humidity sensor.

To set the Humidity threshold limits:

At the Switched PDU: prompt, type **set trap ths, humidlow** or **humidhigh**, followed by the sensor name and a value from 0 to 100 in percent relative humidity. Press **Enter**.

Example

The following command sets the first humidity sensor low threshold limit to 5:

```
Switched PDU: set trap ths humidlow .a1 5<Enter>
```

4. Advanced Operations

Displaying trap configuration information

The Show Traps command displays information about all traps.

To display trap information:

At the Switched PDU: prompt, type **show traps** and press **Enter**.

Example

The following command requests trap configuration information:

```
Switched PDU: show traps <Enter>
Tower trap configuration:
  Tower      Tower      Status
  ID         Name         Trap
  .A         Florida_HQ_1  ON
  .B         Florida_HQ_2  ON
More (Y/es N/o): y
Input feed trap configuration:
  Input      Input      Status   Load   High
  Feed ID    Feed Name   Trap     Trap   Thresh
  .AA        HQ_1_Infeed_A  ON       ON     255 A
  .BA        HQ_2_Infeed_A  ON       ON     255 A
More (Y/es N/o): y
Outlet trap configuration:
  Outlet      Outlet      Change   Status
  ID          Name        Trap     Trap
  .AA1        DataServer_1  OFF      ON
  .AA2        WebServer_1  OFF      ON
  .AA3        FileServer_1  OFF      ON
  .AA4                OFF      ON
  .AA5                OFF      ON
  .AA6                OFF      ON
  .AA7                OFF      ON
  .AA8                OFF      ON
  .AB1                OFF      ON
  .AB2                OFF      ON
  .AB3                OFF      ON
  .AB4                OFF      ON
  .AB5                OFF      ON
  .AB6                OFF      ON
  .AB7                OFF      ON
  .AB8                OFF      ON
More (Y/es N/o): y
Environmental Monitor .A trap configuration:
Name: Florida_HQ_1
Status Trap: ON
Temperature/Humidity Sensor .A1      Temperature/Humidity Sensor .A2
Name: Temp_Humid_Sensor_A1           Name: T/H2_Florida_HQ_1
Status Trap: ON                       Status Trap: ON
Temp Trap: ON                          Temp Trap: ON
  Low: 0 Deg.C                         Low: 0 Deg.C
  High: 127 Deg.C                       High: 95 Deg.C
Humid Trap: ON                          Humid Trap: ON
  Low: 5 % RH                            Low: 0 % RH
  High: 100 % RH                         High: 100 % RH
```



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5. Appendices

Resetting to Factory Defaults

You may reset the non-volatile RAM that stores all configurable options. This clears all administrator-editable fields and resets all command line configurable options to their default values, including all user accounts.

You may reset the unit to factory defaults from the command line or the HTML interface, or by pressing the reset button. You must have administrator-level privileges to issue the command. Using the reset button may be necessary when a forgotten password prevents administrator login. Each of the methods updates the current working configuration to the factory defaults.

NOTE: Resetting the unit resets all TCP/IP and Telnet/Web configurations. Reconfiguring the TCP/IP and Telnet/web settings will be required.

To reset to factory defaults from the HTML interface

On the Restart page in the Tools section of the HTML interface, select **Restart and reset to factory defaults** from the drop-down menu and press **Apply**.

To reset to factory defaults from the command line

At the Switched PDU: prompt, type **restart factory** and press **Enter**.

To reset to factory defaults using the reset button

Locate the recessed reset button directly beside the Serial & Ethernet ports. You will need a non-conductive, non-metallic tool that fits inside the recess.

Insert the tool in the recess, then depress and hold the reset button for at least ten seconds.

NOTE: If the reset button is depressed and held for more than 15 seconds, the reset will abort.

Uploading Firmware

You may upload new versions of firmware using File Transfer Protocol (FTP). This allows access to new firmware releases for firmware improvements and new features additions.

NOTE: To begin an FTP upload session, you must first configure the FTP Host address, username/password, filename and filepath. For information on configuring the FTP settings required for firmware upload see *FTP Administration* on page 41.

You may initiate an FTP upload session by issuing a command or from the HTML interface. You must have administrator-level privileges to initiate an upload.

To initiate an FTP upload session from the HTML interface

On the Restart page in the Tools section of the HTML interface, select **Restart and upload firmware via FTP** from the drop-down menu and press **Apply**.

Upon issuing this command the unit will restart and upload the firmware file specified with the FTP Filename command from the previously configured FTP Host. See *FTP Administration* on page 41 for more information.

To initiate an FTP upload session from the command line

The Restart FTPLoad command initiates an upload of firmware. Upon issuing this command the unit will restart and upload the firmware file specified with the FTP Filename command from the previously configured FTP Host. See *FTP Administration* on page 41 for more information.

To initiate an FTP firmware upload session:

At the Switched PDU: prompt, type **restart ftpload** and press **Enter**.

5. Appendices

Technical Specifications

Models

Europe/Asia

Model	Voltage	Inlet	Cordset (10')	Outlets
RSNM-R8-E02	230V, 60Hz	IEC 60320/C20	*	8 IEC 60320/C13
RSMS-R8-E02	230V, 60Hz	IEC 60320/C20	*	8 IEC 60320/C13
RSNM-T16-E02	230V, 60Hz	IEC 60320/C20	*	16 IEC 60320/C13
RSMS-T16-E02	230V, 60Hz	IEC 60320/C20	*	16 IEC 60320/C13

Americas

Model	Voltage	Inlet	Cordset	Outlets
RSNM-R8-102	100-120V, 50/60Hz	IEC 60320/C20	*	8 NEMA 5-20R
RSMS-R8-102	100-120V, 50/60Hz	IEC 60320/C20	*	8 NEMA 5-20R
RSNM-R8-202	208-240V, 50/60Hz	IEC 60320/C20	*	8 IEC 60320/C13
RSMS-R8-202	208-240V, 50/60Hz	IEC 60320/C20	*	8 IEC 60320/C13
RSNM-T16-102	100-120V, 50/60Hz	IEC 60320/C20	*	16 NEMA 5-20R
RSMS-T16-102	100-120V, 50/60Hz	IEC 60320/C20	*	16 NEMA 5-20R
RSNM-T16-202	208-240V, 50/60Hz	IEC 60320/C20	*	16 IEC 60320/C13
RSMS-T16-202	208-240V, 50/60Hz	IEC 60320/C20	*	16 IEC 60320/C13

* Input cordset selected at time of purchase.

Power Ratings

Model Modele Modell	Input Current Ratings, <i>L'indice du courant d'entrée</i> Eingangsstromstärke		Output Current Ratings <i>L'indice du courant de sortie</i> Ausgangsstromstärke		
	Voltage <i>Tension</i> Spannung	Current <i>Courant</i> Strom	Outlet <i>Prise</i> Anschlussstelle	Branch ²	Total <i>Total</i> Insgesamt
RSNx-R8-102 RSNx-T16-102	100-120V 50/60Hz	16	16	16	16
RSNx-R8-202 RSNx-T16-202	208-240V 60Hz	16	12	16	16
RSNx-R8-E02 RSNx-T16-E02	230V 50/60Hz	20	10	20	20

¹ All current ratings are in amperes. *Tous les indices de courant sont en ampères.* Alle Angaben der Stromstärke erfolgen in Ampere.

² 1-8, 9-16

Physical Specifications

	Operating	Storage
Temperature	32° to 122° F (0° to 50° C)	-40° to 185° F (-40° to 85° C)
Elevation (above MSL)	0 to 10,000 ft (0 to 3000m)	0 to 50,000 ft (0 to 15000m)
Relative Humidity	10 to 90%, non-condensing	10 to 90%, non-condensing
	Dimensions (H x W x D)	Weight
RSNx-T16	45.5 x 1.75 x 2.25 in. (1156 x 44 x 57 mm)	7.5 lbs (16.5 kg)
RSNx-R8	1.75 x 17.0 x 7.0 in. (44 x 437 x 177 mm)	6.75 lbs (14.9 kg)

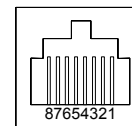
5. Appendices

Data Connections

RS-232 port

The Switched PDU is equipped standard with an RJ45 DTE RS-232c serial port. This connector may be used for direct local access or from other serial devices such as a terminal server. An RJ45 crossover cable is provided for connection to an RJ45 DCE serial port.

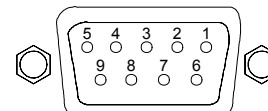
Pin	DTE Signal Name		Input/Output
1	Request to Send	RTS	Output
2	Data Terminal Ready	DTR	Output
3	Transmit Data	TD	Output
4	Signal Ground		
5	Signal Ground		
6	Receive Data	RD	Input
7	Data Set Ready	DSR	Input
8	Clear to Send	CTS	Input



RJ45 to DB9F serial port adapter

An RJ45 to DB9F serial port adapter is provided for use in conjunction with the RJ45 crossover cable to connect to a PC DB9M DCE serial port. The adapter pinouts below reflect use of the adapter with the provided RJ45 crossover cable.

Pin	DCE Signal Name		Input/Output
1			
2	Receive Data	RD	Output
3	Transmit Data	TD	Input
4	Data Terminal Ready	DTR	Input
5	Signal Ground		
6	Data Set Ready	DSR	Output
7	Request to Send	RTS	Input
8	Clear to Send	CTS	Output



LED Indicators

Units are equipped with a status LED for each power receptacle. A lit/on LED indicates that power is being supplied at the port and a darkened/off LED indicates that there is no power at the port.

Branch Circuit Protection



Always disconnect the power supply cord before opening to avoid electrical shock.

Afin d'éviter les chocs électriques, débranchez le câble électrique avant d'ouvrir.

Immer Netzleitung auskuppeln vor den Aufmachen um elektrischen Schlag zu vermeiden.

Cabinet Distribution Units feature Branch Circuit protection on all outlets in the form of internal fuses. These fuses meet the strict safety requirements of UL/CSA 60950-1 for Branch Circuit Protection.

Time-Delay Fuses – Class G

Amperes	Bussman Part Number
20	SC-20

CooperBussman product data-sheet #1024

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