

# **Switched PDU**

User Manual

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# 1. Introduction

The PDU is an Internet ready device designed and is equipped with an intelligent current-meter (True RMS) that will indicate the total power consumption of a power strip.

The PDU offers an easy set up and user-friendly communication software. This software provides the function that assistant manager to remotely monitor the multiple PDU power consumption to realize the total current power consumption and utilization for the enterprises.

## Features:

- Built-in web server, manager can real time to monitoring the current consumption of the power strip.
- Build-in true RMS current meter.
- Setup easily, meter can read the IP address directly.
- SSL secure access to web.
- Provide audible alarm when the power consumption over the threshold of warning and overload.
- Send the email and traps when the power consumption exceed the trigger value of warning or overload to the PDU.
- Provide utility, it can monitor a large mount of PDU at the same time.
- Support the SNMP and provide MIB for the PDU to be monitored by NMS.
- Provide power protection by the circuit breaker.
- Real time to control outlets of PDU.
- Indicate outlets status with LED.
- Support power on sequence.
- Option accessory can support temperature and humidity detection.

## 2. PDU Package

The standard PDU package contains a Power Distribution Unit with supporting hardware and software. The components of the package are:

- Power Distribution Unit.
- Rack mount Brackets.
- CD-ROM, it contains:
  - User Manual.
  - PDU Software.
  - MIB: Management Information Base for Network. (PDUMIB-24N2.mib)
  - Adobe Acrobat Reader.

## 3. Function

### Interface

#### One circuit

SWH-1511A-08N1  
SWH-2011B-08N1  
SWH-1023J-08N1  
SWH-1623K-08N1  
SWV-2011B-16N1  
SWV-2011B-24N1  
SWV-1623K-16N1  
SWV-1623K-24N1



#### Multiple circuits, included ENV

SWV-3011M-16N2  
SWV-3011M-24N3  
SWV-3020P-16N2  
SWV-3020P-24N3  
SWV-3223C-16N2  
SWV-3223C-24N3  
H2H-1623K-16N2  
PSV-1640C-24N3  
PSV-3240C-24N6



Functions	Description
Ethernet	RJ45 port for network communication port.
Audible Alarm	Warning- 1 beep in 1 second. Overload- 3 beeps in 1 second. Note: The audible alarm will keep beeping until the current gets back to normal and the current is lower than the threshold to 0.5 amps.
Function Button	<ul style="list-style-type: none"> <li>● Press and release to turn off the warning beeping. The overload beeping can not be cancelled.</li> <li>● Press and hold the key after 1 beeping; it can let the meter to show up the current information, temperature and humidity in sequence. (available for PDU in multi-circuits)</li> <li>● Press and hold the key after 2 beeping; it can let the meter to show up the IP address</li> <li>● Press and hold the key after 4 beeping; it can change the way to get IP by DHCP or fixed IP.</li> <li>● Press and hold the key after 6 beeping; it can reset PDU back to default setting.</li> </ul>
Meter	3 digits to display current and IP Address.

ID	The identification of power bank or PDU.
LED Indicator	SSL (yellow): Light on means web access is protected by SSL. DHCP (Green): Light on means PDU gets IP address by DHCP. PDU (Green): Indicate each output power status. Status (Red): Indicate each circuit status. (by model)
ENV	RJ11 for ENV probe attached.
Circuit Breaker	Overload power protection.

## 4. Installation

This section will provide a quick instruction to install the PDU.

**CAUTION:** This unit is intended for indoor use only. Do not install near water or expose this unit to moisture. To prevent heat buildup, do not coil the power cord when in use. Do not use extension cords. Do not attempt to make any internal changes to the power source. Do not attempt to modify any portion or component.

**CAUTION:** Do not use power generator as input power source of PDU.

**CAUTION:** High-voltage surges and spikes can damage this equipment. To protect from such power surges and spikes, this unit must have a good earth ground or good power surge protection.

**CAUTION:** Do not exceed the AC current rating for the selected model.

**CAUTION:** In order to be absolutely removed from the power supply, the power cord must be unplugged from the power source.

### Rack Mount Instructions

A) Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature specified by the manufacturer.

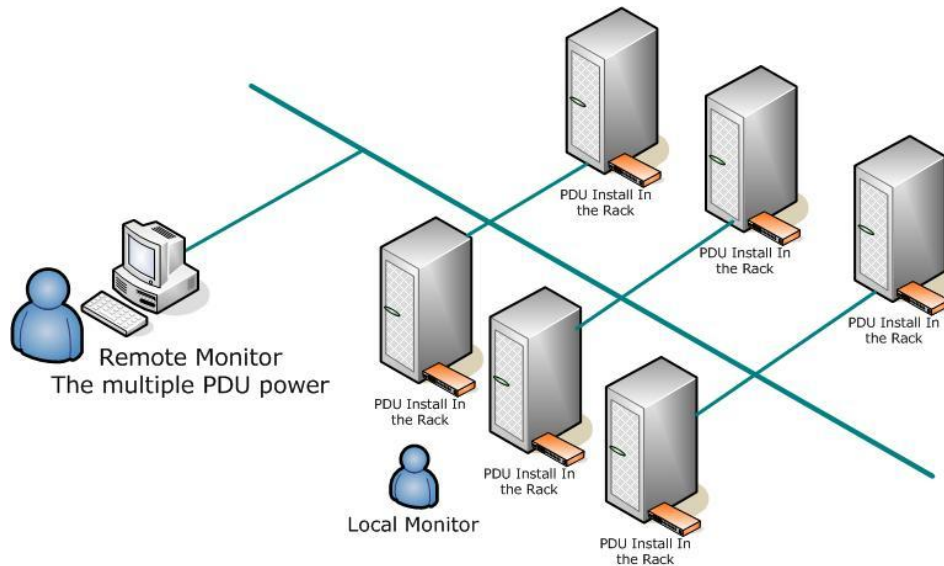
B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

E) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips)."

## Diagram



## Hardware

1. Install mounting brackets.
2. The PDU comes with brackets for mounting in a rack. To mount the PDU into a rack performs the following procedure:
3. Attach the mounting brackets to the unit, using the four retaining screws provided for each of the brackets.
4. Choose a location for the brackets.
5. Align the mounting holes of brackets with the notched hole on the vertical rail and attach with the retaining screws.
6. Connect input and output power.
7. Connect Ethernet cable to the PDU.
8. Switch on the PDU.

### Note 1:

The default setting for the way to get IP address is DHCP. If PDU can not get the IP from DHCP server, the IP address will stay at 192.168.0.216

### Note 2:

TO SETUP THE NETWORK SYSTEM FOR PDU, STRONGLY RECOMMEND TO BUILD UP THE POWER MONITORING NETWORK SYSTEM ISOLATED WITH THE OTHERS, IN ORDER TO KEEP THE STABILITY OF GETTING POWER INFORMATION AND SYSTEM OPERATION.



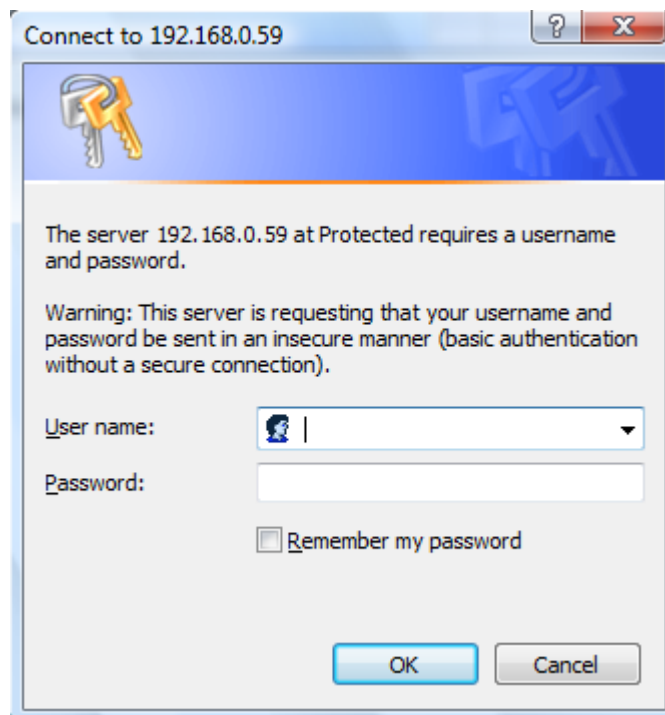
## 5. Web Interface

### Login:

Input the PDU IP address in web browser.

Default ID is snmp.


Password is 1234.



**Information: PDU**


Display total PDU and each outlet power consumption.

When plug the option device - ENV probe, it will display temperature and humidity information.

<div> <b>PDU</b></div>		
Total load: 0.0 A , Status: Normal		
<b>Information</b>	<b>PDU</b>	
PDU	PDU1	0.0 A Normal
<a href="#">System</a>	PDU2	0.0 A Normal
<b>Control</b>	Total Current	0.0 A Normal
<a href="#">Outlet</a>	<b>Option Device</b>	
<a href="#">Group</a>	Temperature	+15.6 C
<a href="#">Schedule</a>	Humidity	62 %
<a href="#">Ping Action</a>		
<b>Configuration</b>		
<a href="#">PDU</a>		
<a href="#">Threshold</a>		
<a href="#">User</a>		
<a href="#">Network</a>		
<a href="#">Mail</a>		
<a href="#">SNMP</a>		
<a href="#">SSL</a>		
<a href="#">Time</a>		

Information: System

Indicate PDU system information.

 **PDU**

Total load: 0.0 A , Status: Normal

Information

[PDU](#)

System

Control

[Outlet](#)

[Group](#)

[Schedule](#)

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Configuration

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Model No.

XXXXXXXXXXXX

Firmware Version

s4.82-090828-8cb8s

MAC Address

00:16:18:77:04:59

System Name

System Contact

Location

## Information: Power (available for PDU with kWh measurement functions)


When PDU supports kWh measurement functions, web interface display "Power" page to indicate all power information, including:

Voltage, Frequency, Power Factor, Active Power, Apparent Power and Main Energy.

Accumulated Energy: Subtotal for energy. User can reset to 0 and restart calculating.

Carbon Emission Data: Reference data.

CO2 Electricity Emission Rate: Users can check this parameter through their power plant.

 PDU		
Total load: 0.0 A , Status: Normal		
<b>Information</b> <a href="#">PDU</a> <a href="#">System</a> <b>Power</b>	Voltage	111.18 V
	Frequency	60.1 Hz
	Power Factor	1
	Active Power	0 W
<b>Control</b> <a href="#">Outlet</a> <a href="#">Group</a> <a href="#">Schedule</a> <a href="#">Ping Action</a>	Apparent Power	0 VA
	Main Energy	12.809 kWh
	Accumulating Energy	0.011 kWh
	Carbon Emission Data	0.007 Kg
<b>Configuration</b> <a href="#">PDU</a> <a href="#">Threshold</a> <a href="#">User</a> <a href="#">Network</a> <a href="#">Mail</a> <a href="#">SNMP</a> <a href="#">SSL</a> <a href="#">Time</a>		<input type="button" value="Reset"/>
	Co2 Electricity Emission Rate	<input type="text" value="0.636"/>
		<input type="button" value="Reset"/>

## Control: Outlet


Indicate PDU outlet on/off status and control outlet. Display the number of outlet by different model.

Select the outlet by checking the box and then click ON or OFF button to control output power for PDU

**ON:** Press the icon to turn on the assigned outlets.

**OFF:** Press the icon to turn off the assigned outlets.

**OFF/ON:** Press the icon to reboot the assigned outlets.

 **PDU**

Total load: 0.0 A , Status: Normal

Information	PDU1	Status		
<a href="#">PDU</a> <a href="#">System</a> <b>Control</b> Outlet <a href="#">Group</a> <a href="#">Schedule</a> <a href="#">Ping Action</a> <b>Configuration</b> <a href="#">PDU</a> <a href="#">Threshold</a> <a href="#">User</a> <a href="#">Network</a> <a href="#">Mail</a> <a href="#">SNMP</a> <a href="#">SSL</a> <a href="#">Time</a>	OutletA	ON	<input type="checkbox"/>	
	OutletB	ON	<input type="checkbox"/>	
	OutletC	ON	<input type="checkbox"/>	
	OutletD	ON	<input type="checkbox"/>	
	OutletE	ON	<input type="checkbox"/>	
	OutletF	ON	<input type="checkbox"/>	
	OutletG	ON	<input type="checkbox"/>	
	OutletH	ON	<input type="checkbox"/>	
	OutletI	ON	<input type="checkbox"/>	
	OutletJ	ON	<input type="checkbox"/>	
	OutletK	ON	<input type="checkbox"/>	
	OutletL	ON	<input type="checkbox"/>	
	<b>PDU2</b>			
	OutletM	ON	<input type="checkbox"/>	
OutletN	ON	<input type="checkbox"/>		
OutletO	ON	<input type="checkbox"/>		
OutletP	ON	<input type="checkbox"/>		
OutletQ	ON	<input type="checkbox"/>		
OutletR	ON	<input type="checkbox"/>		
OutletS	ON	<input type="checkbox"/>		
OutletT	ON	<input type="checkbox"/>		
OutletU	ON	<input type="checkbox"/>		
OutletV	ON	<input type="checkbox"/>		
OutletW	ON	<input type="checkbox"/>		
OutletX	ON	<input type="checkbox"/>		
		<div style="display: flex; justify-content: space-around;"> <div>ON</div> <div>OFF</div> <div>OFF/ON</div> </div>		

## Control: Group (available for PDU in multi-circuits)

Control outlet power for multiple outlets.

**Setting:** Enter to the setting mode.


**Outlet:** Assign the outlet in a group.

**Note:** The outlet number needs to be input by the alphabetical order.

**ON:** Press icon to turn on the assigned group.

**OFF:** press icon to turn off the assigned group.

**Active:** Enable it to be a controllable group.

 **PDU**

Total load: 0.0 A , Status: Normal

Information	Outlet (A,B,C)			Active
<a href="#">PDU</a>	A, <input type="text"/>	<input type="button" value="ON"/>	<input type="button" value="OFF"/>	<input checked="" type="checkbox"/>
<a href="#">System</a>	B, <input type="text"/>	<input type="button" value="ON"/>	<input type="button" value="OFF"/>	<input checked="" type="checkbox"/>
<b>Control</b>	C, <input type="text"/>	<input type="button" value="ON"/>	<input type="button" value="OFF"/>	<input checked="" type="checkbox"/>
<a href="#">Outlet</a>	D, <input type="text"/>	<input type="button" value="ON"/>	<input type="button" value="OFF"/>	<input checked="" type="checkbox"/>
<b>Group</b>	<input type="text"/>	<input type="button" value="ON"/>	<input type="button" value="OFF"/>	<input type="checkbox"/>
<a href="#">Schedule</a>	<input type="text"/>	<input type="button" value="ON"/>	<input type="button" value="OFF"/>	<input type="checkbox"/>
<a href="#">Ping Action</a>	<input type="text"/>	<input type="button" value="ON"/>	<input type="button" value="OFF"/>	<input type="checkbox"/>
<b>Configuration</b>	<input type="text"/>	<input type="button" value="ON"/>	<input type="button" value="OFF"/>	<input type="checkbox"/>
<a href="#">PDU</a>	<input type="text"/>	<input type="button" value="ON"/>	<input type="button" value="OFF"/>	<input type="checkbox"/>
<a href="#">Threshold</a>	<input type="text"/>	<input type="button" value="ON"/>	<input type="button" value="OFF"/>	<input type="checkbox"/>
<a href="#">User</a>				
<a href="#">Network</a>				
<a href="#">Mail</a>				
<a href="#">SNMP</a>				
<a href="#">SSL</a>				
<a href="#">Time</a>				

## Control: Schedule (available for PDU in multi-circuits)

Control the assigned outlet by pre-set schedule.


**Outlet:** Assign the outlet that want to be controlled in this schedule.

**Every:** Set week's day, assigned day or every day.

**Date:** When select "sgl" at column of "Every", need to input the truly date here.

Action:	Begin:	End:
ON	Turn on outlet at this time	None
OFF	Turn off outlet at this time	None
OFF/ON	Turn off outlet at this time	Turn on outlet at this time
ON/OFF	Turn on outlet at this time	Turn off outlet at this time

**Active:** Enable the assigned schedule control.

 **PDU**

Total load: 0.0 A , Status: Normal

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Current Time: 2009/09/30 13:59:21

Outlet (A,B,...)	Every	Date (yy/mm/dd)	Begin (hh:mm)	End (hh:mm)	Action	Active
A,	Mon	09/06/30	07:59	18:30	ON	<input type="checkbox"/>
B,	Mon	09/06/30	07:59	18:30	ON	<input type="checkbox"/>
C,	Mon	09/06/30	07:59	18:30	ON	<input type="checkbox"/>
D,	Mon	09/06/30	07:59	18:30	ON	<input type="checkbox"/>
E,	Mon	09/06/30	07:59	18:30	ON	<input type="checkbox"/>
A,	Mon	06/01/01	00:07	00:07	OFF	<input type="checkbox"/>
A,	Mon	06/01/01	00:07	00:07	OFF	<input type="checkbox"/>
A,	Mon	06/01/01	00:07	00:07	OFF	<input type="checkbox"/>

## Control: Ping Action (available for PDU in multi-circuits)









Automatically reboot the locked device by ping its IP

**Ping IP Address:** Set the device IP that want to be monitored by ping from PDU.

**Response 10 minutes:** PDU will ping the assigned IP address each minute one time, if the equipment has not responded, then number will be increased one time, when the continual 10 minutes have not obtained the response, the number will display 10 and PDU will carry out the assigned action automatically.

**Action:** Select outlet action to "OFF" or "OFF/ON"

**Active:** Enable this function.


 <b>PDU</b>					
Total load: 0.0 A , Status: Normal					
Information	Ping IP Address	Response 10 minutes	Outlet	Action	Active
<a href="#">PDU</a>					
<a href="#">System</a>					
<b>Control</b>					
<a href="#">Outlet</a>	19.168.23.200	0	OutletA	OFF 	<input type="checkbox"/>
<a href="#">Group</a>	19.168.23.201	0	OutletB	OFF 	<input type="checkbox"/>
<a href="#">Schedule</a>	19.168.23.202	0	OutletC	OFF 	<input type="checkbox"/>
Ping Action	19.168.23.203	0	OutletD	OFF 	<input type="checkbox"/>
<b>Configuration</b>					
<a href="#">PDU</a>	19.168.23.204	0	OutletE	OFF 	<input type="checkbox"/>
<a href="#">Threshold</a>	19.168.23.205	0	OutletF	OFF 	<input type="checkbox"/>
<a href="#">User</a>					
<a href="#">Network</a>	19.168.23.206	0	OutletG	OFF 	<input type="checkbox"/>
<a href="#">Mail</a>					



Configuration: PDU

Set the outlet name and delay time.

- Name:** Rename the outlet.
- ON:** Set delay time for power on sequential.
- OFF:** Set delay time for power off sequential.
- Note:** The maximum delay time is 255 seconds.

 **PDU**

Total load: 0.0 A , Status: Normal

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Name	ON Delay (sec)	OFF Delay (sec)
<input type="text" value="OutletA"/>	<input type="text" value="1"/>	<input type="text" value="1"/>
<input type="text" value="OutletB"/>	<input type="text" value="2"/>	<input type="text" value="2"/>
<input type="text" value="OutletC"/>	<input type="text" value="3"/>	<input type="text" value="3"/>
<input type="text" value="OutletD"/>	<input type="text" value="4"/>	<input type="text" value="4"/>
<input type="text" value="OutletE"/>	<input type="text" value="5"/>	<input type="text" value="5"/>
<input type="text" value="OutletF"/>	<input type="text" value="6"/>	<input type="text" value="6"/>
<input type="text" value="OutletG"/>	<input type="text" value="7"/>	<input type="text" value="7"/>
<input type="text" value="OutletH"/>	<input type="text" value="8"/>	<input type="text" value="8"/>

Configuration: Threshold

Set the warning and overload threshold for each circuit.

Set lower and upper threshold for temperature and humidity.

 **PDU**

Total load: 0.0 A , Status: Normal

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Name	Threshold (Amp)	
	Warning	Overload
PDU1	<input type="text" value="12"/>	<input type="text" value="16"/>
PDU2	<input type="text" value="12"/>	<input type="text" value="16"/>
	Lower	Upper
Temperature	<input type="text" value="1"/>	<input type="text" value="99"/>
Humidity	<input type="text" value="1"/>	<input type="text" value="99"/>


Apply

Configuration: User

Change ID and password.

Default ID is snmp and password is 1234.

Note:  
Maximum character number of ID and password is 12.  
ID and password cannot use special characters.

 **PDU**

Total load: 0.0 A , Status: Normal

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**Original**  
ID  
Password


**New**  
ID  
Password  

Apply

Configuration: Network

PDU network information

**Enable DHCP:** Change the way to get IP address for PDU.

 **PDU**

Total load: 0.0 A , Status: Normal

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[Time](#)

IP Address

Host Name

IP Address

Subnet Mask

Gateway

☒ Enable DHCP

DNS Server IP

Primary DNS IP

Secondary DNS IP

Apply

## Configuration: Mail

When event occurs, PDU can send out email message to pre-defined account.

**Email Server:** The Email Server only support to be input domain name, not IP address.

**Sender's Email:** Input the sender email address.

**Email Address:** Input the recipient email address.


The message in the email:

Indicate OutletA~H-XXXXXXX status in order

X=0 : means the power off.

X=1 : means the power on.

Note: Make sure DNS server can resolve the Email Server's domain name.

 **PDU**

Total load: 0.0 A , Status: Normal

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**Email Setting**  
Email Server   
Sender's Email   
**Recipient's Email Address**  
Email Address

**Configuration: SNMP**

When event occurs, PDU can send out trap message to pre-defined IP address.

**Trap Notification:** Set receiver IP for trap.

**Community:** Set SNMP community.  
Read Community is public and fixed.  
Default Write Community is "public" and can be modified by user.

 **PDU**

Total load: 0.0 A , Status: Normal

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**Trap Notification**  
Receiver IP

**Community**  
Read **public**  
Write

**Configuration: SSL**

Enable SSL for web communication.

User must input the correct ID and password to enable SSL function. The ID and password must be the same with the setting in "User".

 **PDU**

Total

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**Enable SSL**  
☐


**Confirmation**  
ID  
  
Password

## Configuration: Time (available for PDU in multi-circuits)

Set the time for schedule control.

**Internet Time Setting:** Get time from the assigned network time server.

**System Time:** Input time manually.

 <b>PDU</b>	
Total load: 0.0 A , Status: Normal	
<b>Information</b>	<b>Internet Time Setting</b>
<a href="#">PDU</a>	Time Between Updates <input type="text" value="10 minutes"/>
<a href="#">System</a>	Primary Time Server <input type="text" value="pool.ntp.org"/>
<b>Control</b>	Secondary Time Server <input type="text" value="asia.pool.ntp.org"/>
<a href="#">Outlet</a>	Time Zone <input type="text" value="GMT+8:00"/>
<a href="#">Group</a>	<input type="button" value="Apply"/>
<a href="#">Schedule</a>	<b>System Time 2009/09/30 14:03:41</b>
<a href="#">Ping Action</a>	System Time (yyyy/mm/dd hh:mm:ss) <input type="text" value="2009/09/30 14:03:37"/>
<b>Configuration</b>	<input type="button" value="Apply"/>
<a href="#">PDU</a>	
<a href="#">Threshold</a>	
<a href="#">User</a>	
<a href="#">Network</a>	
<a href="#">Mail</a>	
<a href="#">SNMP</a>	
<a href="#">SSL</a>	
<b>Time</b>	