

# USER'S GUIDE

Version 4.0

# GIGA Board



**Powertek™**

Input L1 :  
4.9 A  
4.90 A Total  
219.2 V  
1074.08 W Total  
0002 kwh  
100%

Reset

Power Share

IP1 10/100/1000

IP2 10/100/1000

USB-A 1&2

EMD Sensor

PDU Cascading

PDU Cascading



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# Preface

## About this Manual

Congratulations on purchasing a POWERTEK PDU. This user manual provides detailed descriptions of the hardware components and how to use the product. Read this manual carefully and follow the instructions before installing.

## Copyright Information

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# Preface

## Safety Instructions

Follow these safety instructions to avoid injury to yourself and damage to the POWERTEK PDU.

- To reduce the risk of fire or electric shock, install the unit in a temperature-controlled indoor area free of conductive contaminants. Do not place the unit near liquids or in an excessively humid environment.
- Do not allow liquids or foreign objects to enter the unit.
- The unit does not contain any user-serviceable parts.
- Do not open the unit.
- Servicing, maintenance, and repair for this equipment must be performed by qualified service personnel. Remove rings, watches and other jewelry before servicing the unit.
- Before maintenance, repair or shipment, the unit must be completely switched off and unplugged and all connections must be removed.
- Before plugging in the power cord of the device, make sure that the power source rating matches the power rated indicated on the product labels.
- Use a harmonized and certified power cord when connecting any device to the outlets.
- The digital output can only connect switches, indicators, or other output devices that are normally open or normally closed.

# Preface

## Safety Notices



**Caution:**

This unit has been provided with a real time clock circuit. There is a danger of explosion if the battery is incorrectly replaced. Replace only with a 3V Lithium cell (CR1220) or equivalent type. Discard used batteries according to the manufacturer's instructions.



**Caution:**

**Rack-Mounted Equipment** – The unit is intended to be rack-mounted, the Installation Instructions shall contain wording to address the following concerns when the unit is mounted in a rack system.

“The equipment is to be installed in an environment with maximum ambient temperature must not exceed 60°C.”

“The openings on the enclosure are for air convection hence protected the equipment from overheating. **DO NOT COVER THE OPENINGS.**”

“Lay this equipment on a reliable surface when installing. A drop or fall could cause injury.”

“The equipment shall be installed according to specification as nameplate. Make sure the voltage of the power source when connecting the equipment to the power outlet. The current of load and output power of loads should not be over the specification.”

“This equipment must be connected to the reliable earth before using.”

# Introduction the POWERTEK

The POWERTEK PDU, is an intelligent power strip designed to power monitor the input and circuit breaker consumption and auto email history report to supervisor for power bill charge. At the same time, provides the useful ability of managing power for any combination of network equipment connected to it. Users can control the power on/off for any device connected to the PDU remotely, using a console or Ethernet connections.

It's also equipped with a console port for connecting upto 8 EMD (Environmental Monitoring Device) in cascade for sensing temperature and humidity along with two alarms that can be activated when either of the sensors shows unusual values.



# Introduction the POWERTEK

## Features

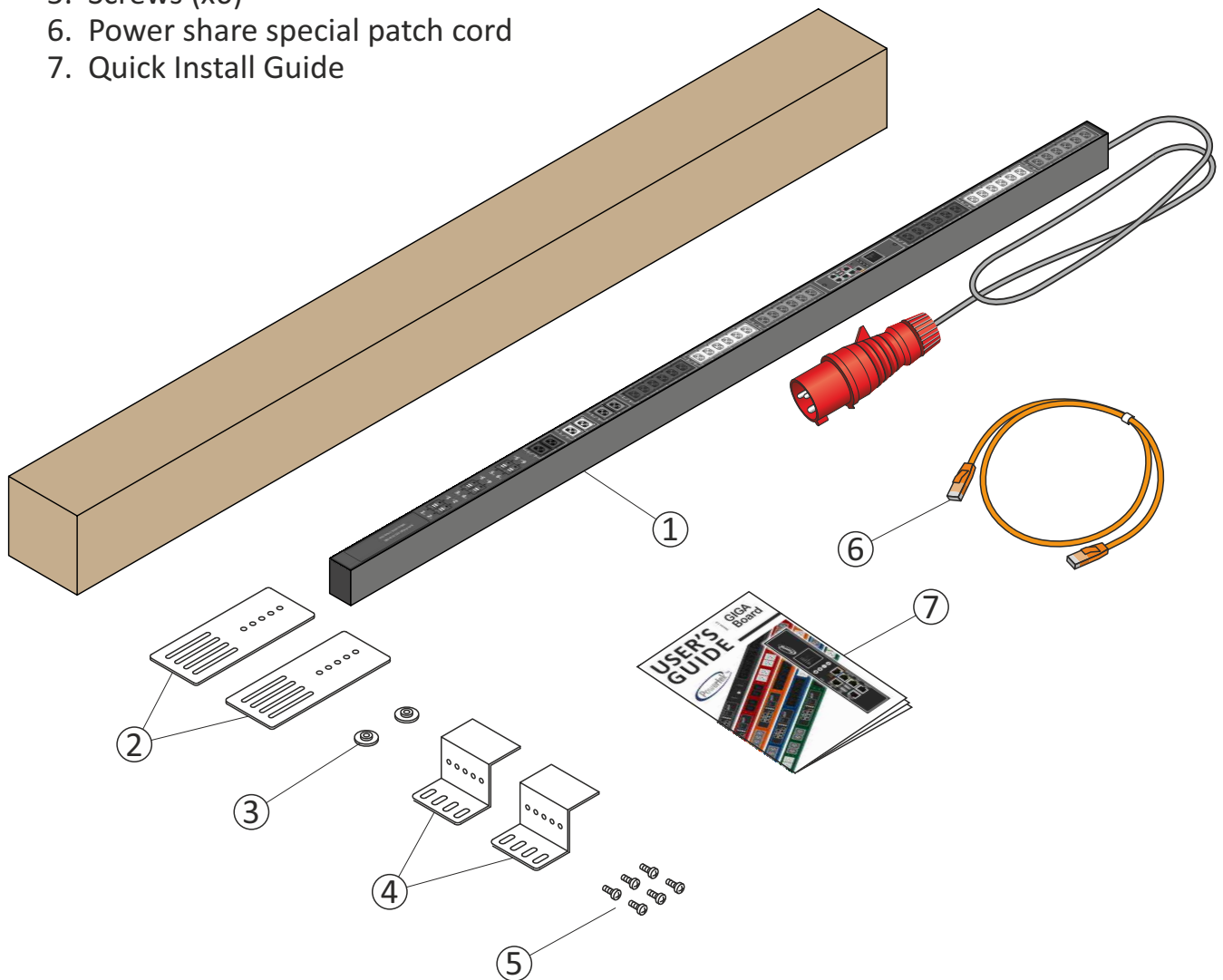
- To calculate the power consumption on hourly basis, and have an accumulation of daily
- Provide detail data-logging for statistical analysis and diagnostic then auto email daily history report
- Daisy-chaining can cascade up 16 power strips
- Sequential power-up on the outlets / Allows users to configure the sequence in which power is turned on or off for each outlet
- Intelligently turn on/off devices based on event occurrence or planned schedule
- Event notification by pop-up/Sending Trap or E-Mail for events notification
- Upto 42 power outlets that can be turned on or off in multiple ways, with easy monitoring of current consumption
- Set over-current watchdog for each outlet (Threshold settings for over-current warnings and alerts)
- Versatile sensors supported through EMD (Environmental Monitoring Device) inputs, 8 sensors can be deployed in cascade
- Comprehensive power management and flexible configuration through web browser, NMS, Telnet, SNMP V1,2,3
- Support Secure Socket Layer V3 and Secure Shell V2 protocols
- Administrator and multiple users with password protection for double-layer security
- Address-specific IP security masks to prevent unauthorized access
- User-friendly interface to display input and output status
- Upgrade utility for easy firmware upgrade
- Models available in 220-250V and 380-415V

# Introduction the POWERTEK

## Package Contents

Make sure the POWERTEK PDU package has the following items. If any of the items are missing or damaged, contact your nearest service center or vendor.

1. POWERTEK PDU
2. IPFIX001 (x2)
3. IPFIX002 (x2)
4. IPFIX003 (x2)
5. Screws (x6)
6. Power share special patch cord
7. Quick Install Guide



# Introduction the POWERTEK

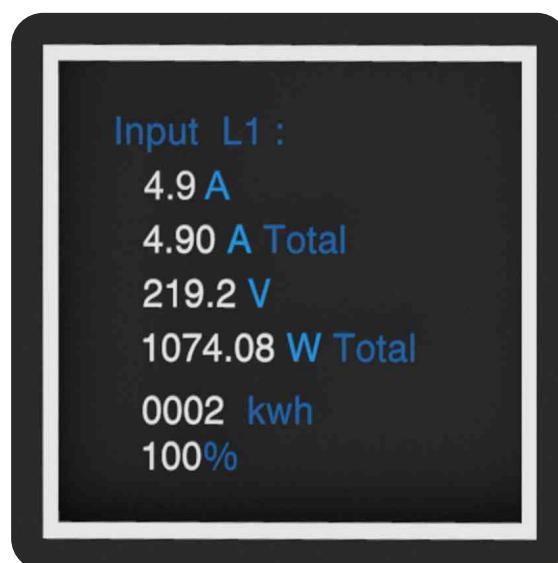
## Hardware Components

The following sections provide descriptions about the front panel components and how to use them.

	Component	Description
1.	Inlet	Power lead to be connected to the Data Centre power source
2.	Breaker	Prevent excessive current flow to protect the system
3.	OLED Display	Display input Power Data
4.	Mounting Options	Different choice of mounting options

## OLED Display

The front panel of the POWERTEK PDU has a colored OLED screen that provides information about the PDU power status.

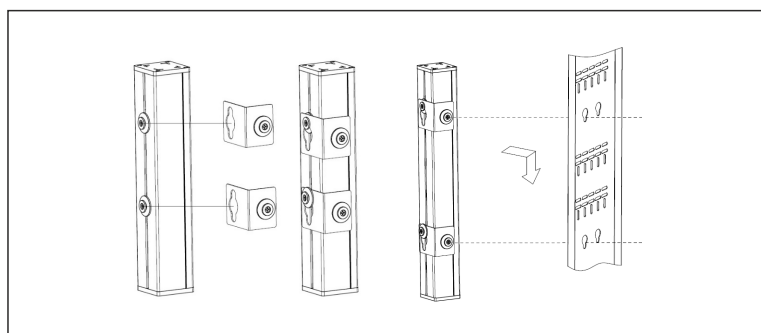
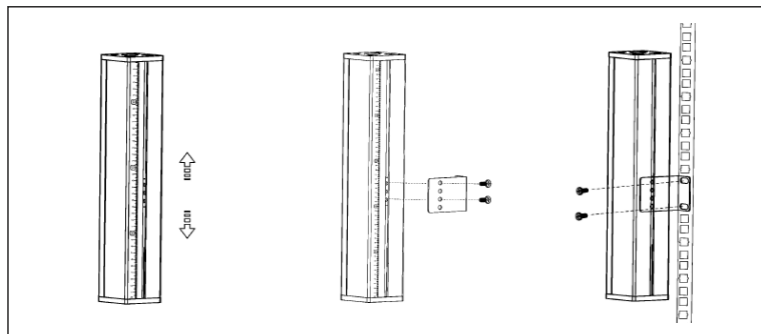
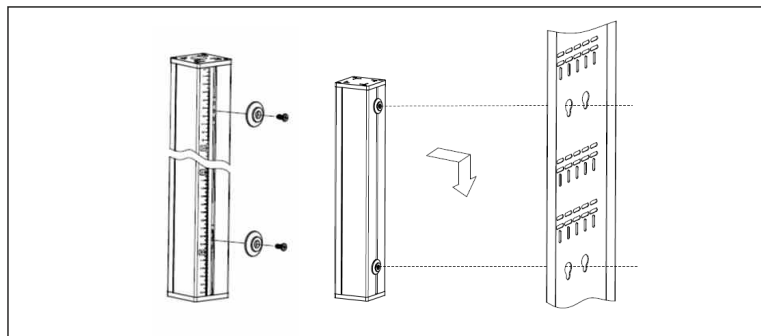
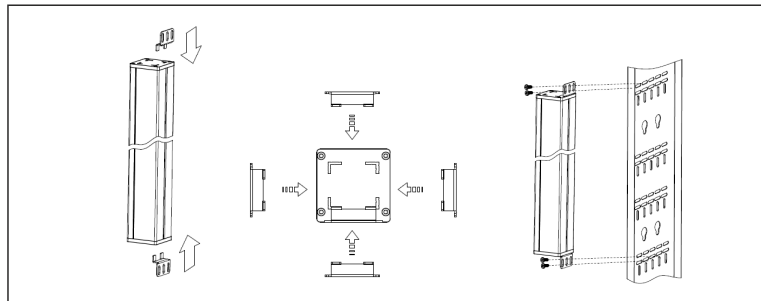


# Getting Started

This section provides information about setting up the PDU, connecting power, and connecting devices to it before users start using it for power management. Read this section carefully to learn how to connect various devices to the PDU.

## Rack Mounting

The PDU can be installed in most standard racks. After attaching the ears to each side of the device, position the device in the rack and align the holes in the ears (mounting brackets) with the hole in the rack.



# Introduction the POWERTEK

## Hotswap replaceable IEX GIGA Controller

The GIGA IEX PDUs provides an easy replacement of its controller.

If the controller is failing, just simply send the controller back to Powertek for repair or replacement.

How to replace a controller:

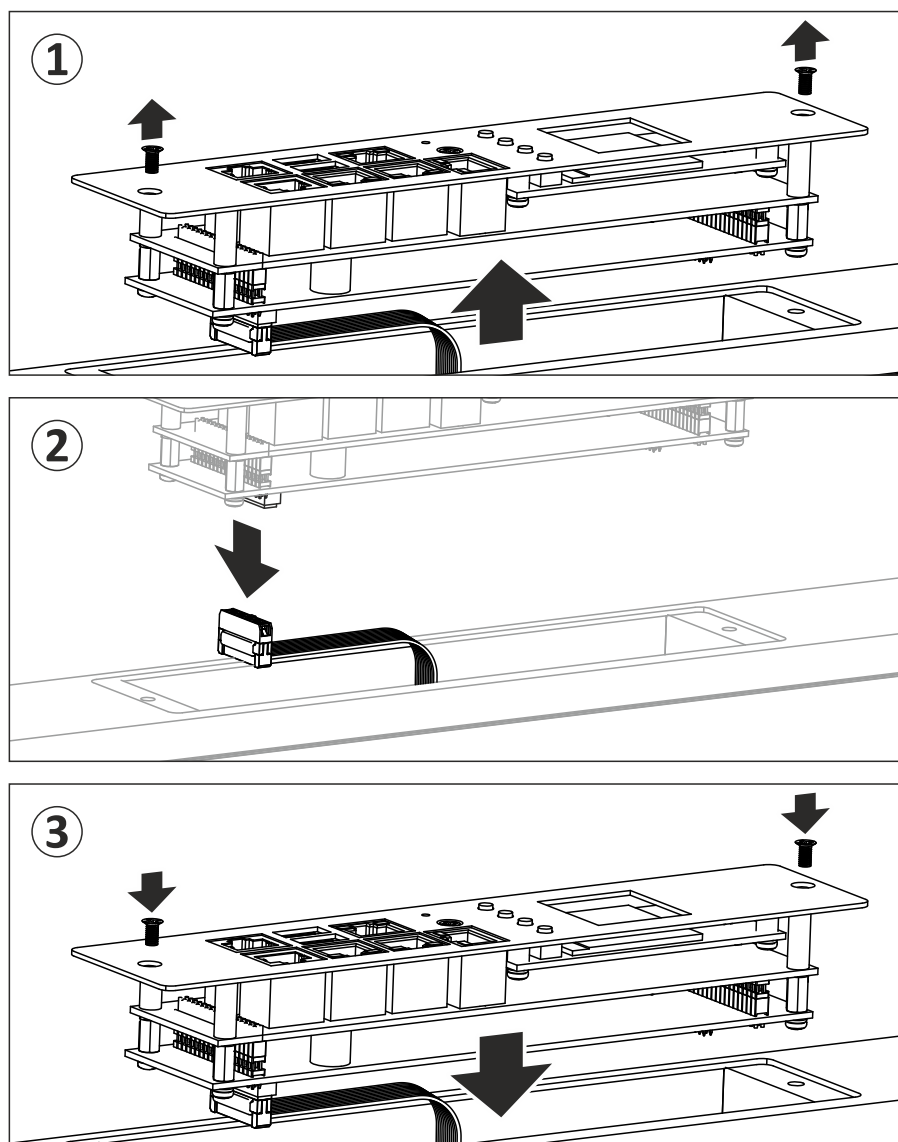
1- PDU is not required to be powered off.

Loosen the screws at two sides of the IEX GIGA controller, and lift it up.

2- Disconnect the PDU's controller cable from the controller.

3- Get a new IEX GIGA controller and install it back into the PDU in the reverse order.

**Note: the limit torque to fix the controller is 0.8N.m—1.0N.m**

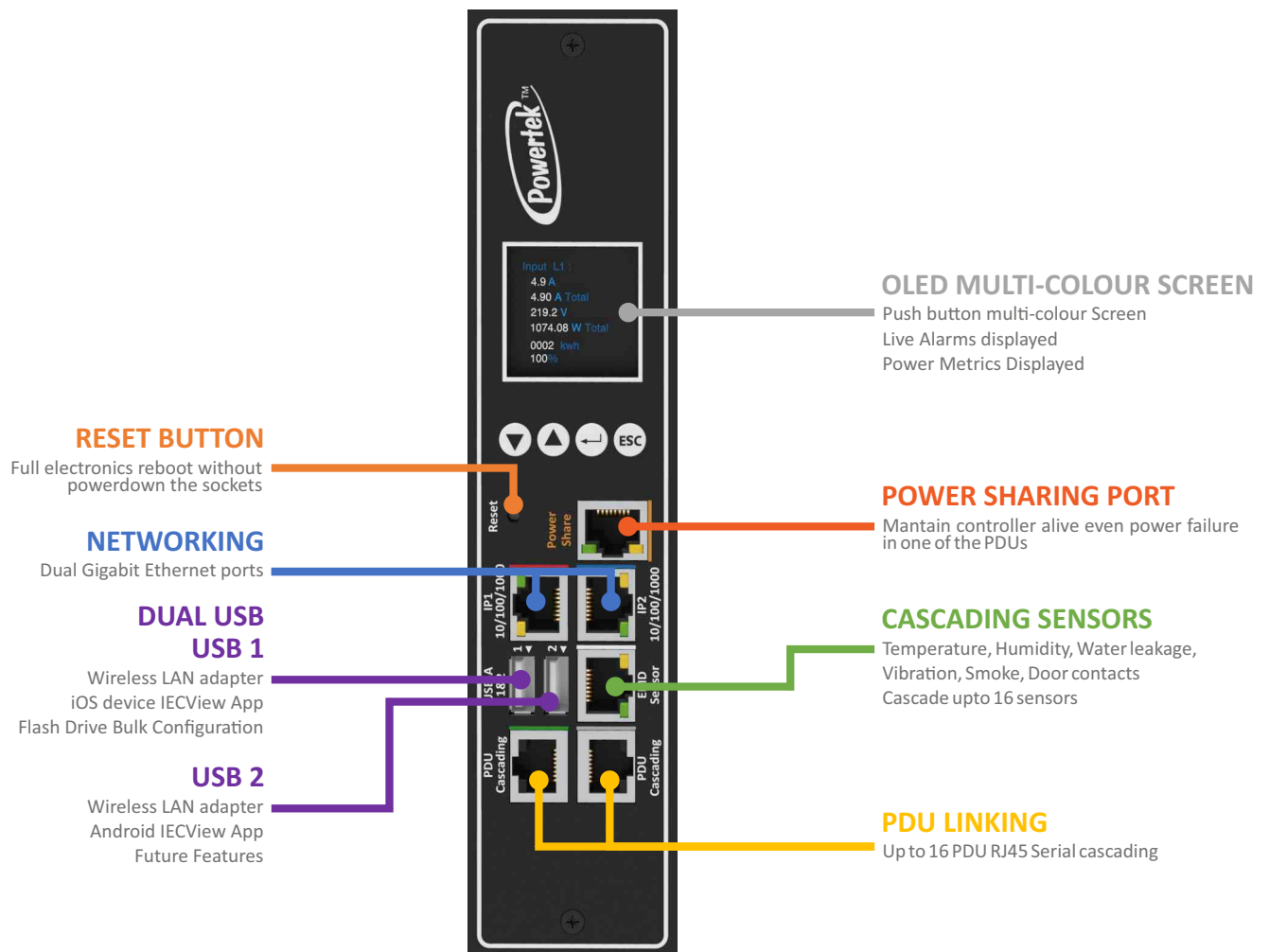


# Getting Started

## Making Connections

The POWERTEK PDU is a versatile product that can be connected to several different types of input and output devices. This makes it a useful tool for connecting devices to it and to monitor the power through its user interface.

IEXv.5 PDU is manufactured with the most advanced hot-swap, field replaceable SNMP IP controller. It is built with dual Gigabit Ethernet ports, an OLED full colour screen, cascading multi-sensor ports, enhanced security, sophisticated alarming and power monitoring across the whole power chain.



# Getting Started

The following procedure describes the basic steps needed to set up the PDU:

1. To set up the hardware, connect power to the power inlet and output devices to the power outlets. Connect devices with normally open or normally close conditions to the digital output ports, and an EMD to the console port.
2. To configure the Power Strip, users can use the console or LAN port. Connect the device to a console and a LAN to enable its configuration through the console or browser menu.
3. After connecting to a console, use a console application such as Telnet or HyperTerminal to access the console menu. Select the TCP/IP submenu under the Network Management to set up the IP address and select the General Setting submenu under the System Management to set up the system date/time. This IP address will be used while accessing the web interface to configure the POWERTEK PDU parameters.
4. After connecting to LAN, open a browser from a PC in the network and use the IP address specified through the console menu to open the web interface for system configuration.

The following sections provide instructions about how to make various connections.

## Connecting Input Power

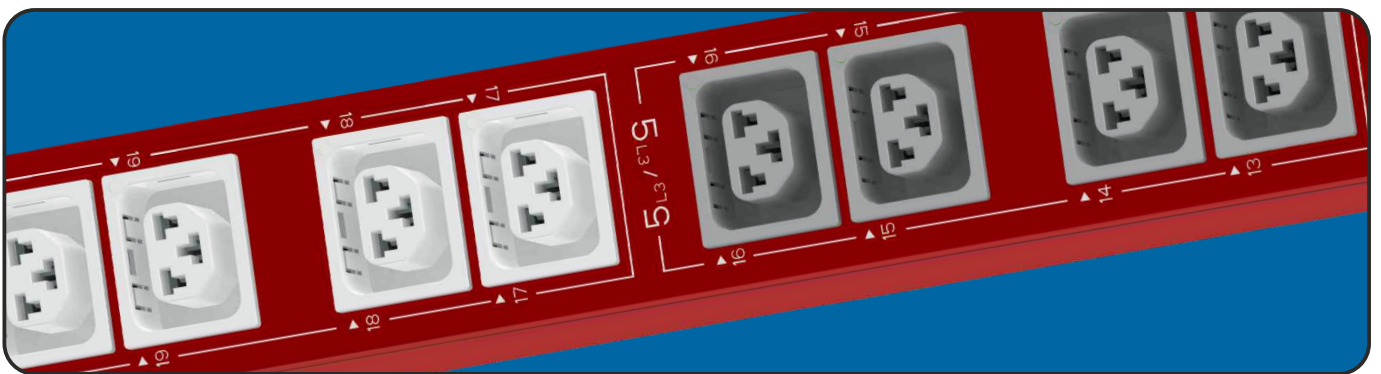
The POWERTEK PDU has different IEC309 power inlets for supplying and managing power for the output devices. For each inlet, connect the power cord to the power inlet and plug the other end into a power outlet as shown:



# Getting Started

## Connecting Output Devices

The Power strips can have a different number of outlets for connecting devices such as workstations, servers, and printers. Connect the power connectors of the devices to each of the power outlets.



The POWERTEK PDUs are available in the following sockets:

220V/16A: IEC C13/C19 combo

220V/10A IEC C13, IEC C13 (Lock), AS/NZS 3112

220V/16A SEV T13, SEV T23, CEE7, IEC C19, IEC C19 (lock), SEV T23

220V/13A: UK BS1363

220V/15A: AS/NZS 3112

120V/15A: NEMA 5-15P

120V/20A: NEMA5-20P



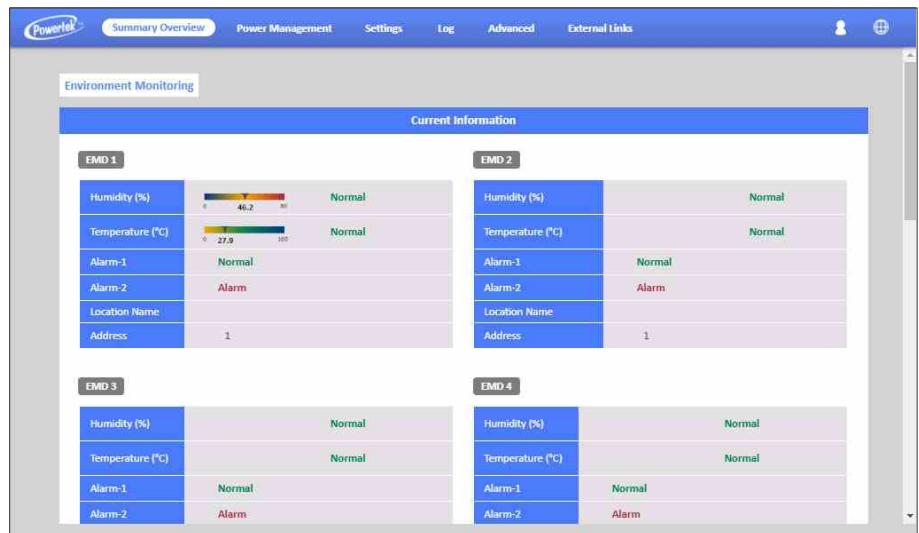
# Getting Started

## Connecting EMD

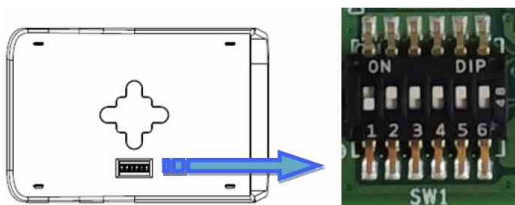
An Environmental Monitoring Device (EMD) that is connected to sensors for detecting temperature, humidity, and two digital inputs can be connected to the POWERTEK PDU with the console port. The EMD can also be connected to alarms or indicators and controlled through the web browser. Up to 8 EMD can be connected in cascade to monitor the temperature and humidity in different parts of the racks.

1. Connect the EMD to the console port as shown:

After connecting the EMD, open a web browser from a PC and enable environmental sensors on the web user interface, then the temperature and humidity status is automatically displayed on the System Overview page.



## Dip-Switch for address setting



Pin	Function	120 Ω enable	120 Ω disable
6	120 Ω enable	On	Off

### Pin 6 function define

Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	MODBU Address	
ON	OFF	OFF	OFF	OFF	1	
OFF	ON	OFF	OFF	OFF	2	
ON	ON	OFF	OFF	OFF	3	
OFF	OFF	ON	OFF	OFF	4	
ON	OFF	ON	OFF	OFF	5	
OFF	ON	ON	OFF	OFF	6	
ON	ON	ON	OFF	OFF	7	
OFF	OFF	OFF	ON	OFF	8	

# Getting Started

## Connecting the Console

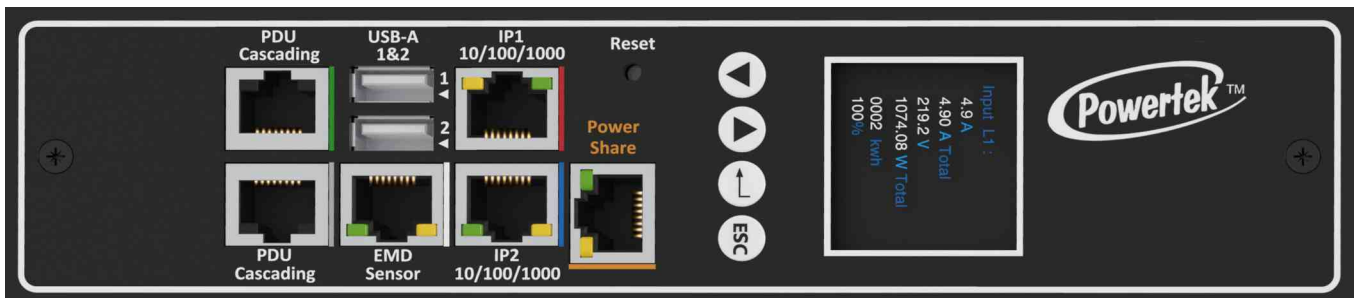
Users can control the output devices and manage the power status through mini USB port with a PC.

Refer to on page 21 to learn how to use the console with a console application such as HyperTerminal or Telnet.

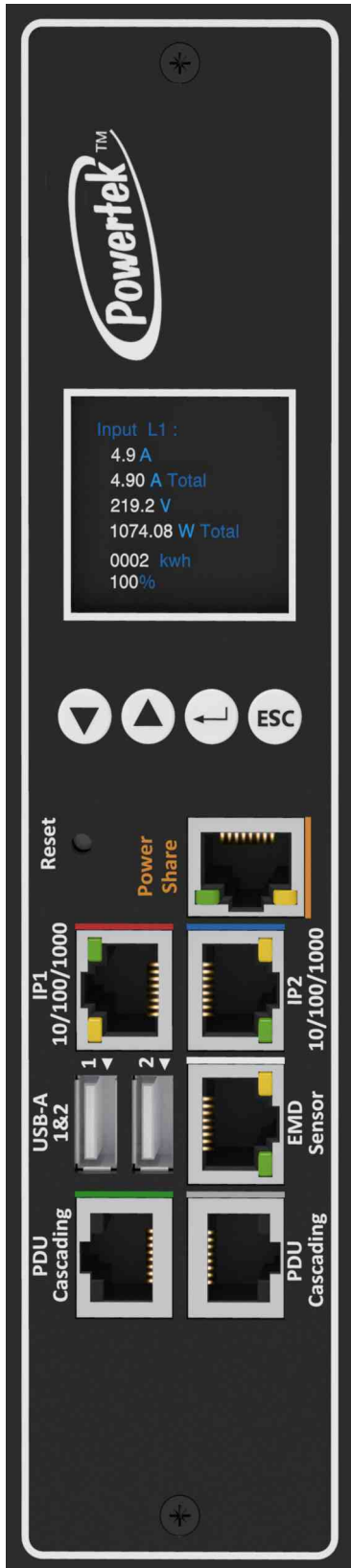
## Connecting to a LAN/WAN

The PDU has two 10/100/1000 RJ-45 network ports that enables users to monitor and manage the power outlets over the network. The PDU has a graphic user interface that allows users to control the device through a web browser.

Connect the device to a free port on the router using an Ethernet cable as shown. Users can control the device from PC, laptop, mobile phone, or PDA which is connected to the router network.



# Getting Started



## Using LCM operational buttons:

The following sections describe the LCM functional operation of the PDU.

The PDU has four buttons to launch particular applications and display the on-screen.

Icon	Button	Description
	<b>Down</b>	Press the <b>Down</b> button to navigate through the menu options.
	<b>Up</b>	Press the <b>Up</b> button to navigate through the menu options.
	<b>Set</b>	Press the <b>Set</b> button to access the menu options and confirm user selection.
	<b>ESC</b>	Press the <b>ESC</b> button to cancel any configuration or leave to up menu.

There are two kinds of LCM operation screen for the single and three phase as shown following.

User can configure the Screen Direction, of this PDU from the buttons. Regarding to turn on/off outlet, if this PDU has support network function, user can set the whole outlet configuration from **Outlet Control** webpage. The **Outlet Control** page displays.

# Getting Started

## Main Menu Screen of Single Phase PDU

IP:  
XXX.XXX.XXX.XXX

Input:  
XXX.XV

## Main Menu Screen of Three Phase PDU

IP:  
XXX.XXX.XXX.XXX

Input:  
L1: XXX.X V

## LCM Direction Screen

LCM Direction  
XX



LCM Direction  
Setting: XX

## Inlet Screen

Inlet:  
XX.XX/XX.XX A  
XXX.X V  
XXXX.X/XXXX.X W



Inlet Info.  
Version:  
Vx.XXX

Type: X-Phase  
XX/XX A

## Total Power Screen

Total Power:  
XXXXX.X W

Total Energy:  
XXXXX.X kwh

# Getting Started

## Clear Inlet Energy Screen

Clear All the  
Inlet Energy:

XXXX.X

Clear All the  
Inlet Energy:

XXXX.X

## Clear Outlet Energy Screen

Clear All the  
Outlet Energy:

XXXX.X

Clear All the  
Outlet Energy:

XXXX.X

## Save Energy

Save Energy:

XX



Save Energy:

XX

## Control All the Outlet Screen

Control All the  
Outlet:

XX



Control All the  
Outlet:

XX

## Outlet ON/OFF Screen

Outlet 01 & 02:  
XX.XX/XX.XX A  
XXX.X V  
XXXX.X/XXXX.X W



Outlet 01 & 02:  
XX.XX/XX.XX A  
XXX.X V  
XXXX.X/XXXX.X W



Relay 01: XX  
Relay 02: XX



Relay 01: XX  
Relay 02: XX

Outlet n & n+1:  
XX.XX/XX.XX A  
XXX.X V  
XXXX.X/XXXX.X W



Outlet n & n+1:  
XX.XX/XX.XX A  
XXX.X V  
XXXX.X/XXXX.X W



Relay n: XX  
Relay n+1: XX



Relay 01: XX  
Relay 02: XX

# Getting Started

## Using the (RCM) Residual Current Monitoring:

When a residual current device is triggered, besides the LCM keep flashing will display the “WARNING” signal as shown.



Users can set the related setting of residual current from the Inlet Configuration webpage as shown.

1. Alarm there holds a setting range for 3mA to 50mA, There holds default setting is 20mA, when residual current greater than or equal to threshold value,an alarm is triggered.
2. When DC residual current is greater than or equal to 5mA,an alarm is triggered.
3. When AC residual current is greater than or equal to 20mA,an alarm is triggered.
4. When the alarm threshold value setting is less than or equal to 5mA, If DC residual current or AC residual are active, an alarm is triggered.
5. When the alarm threshold value setting is less than or equal to 20mA, If AC residual current is active, an alarm is triggered and DC residual current will be ignored.

The screenshot displays the Power Management web interface for PDU A. It is divided into three main sections: Phase Load Management, Configuration, and Status.

**Phase Load Management:** A table showing real-time data for three phases. Phase 1 is Normal, Phase 2 is Warning, and Phase 3 is Critical.

Phase	Current(A) Total(CB1/CB2)	Voltage(V)	Frequency (Hz)	Power Factor(%)	Power(W/VA) Active/Apparent	Reactive Power (var)	Status
1	0.00(0.00/0.00)	112.7	59.92	0.0	0.00	0.0	Normal
2	0.00(0.00/0.00)	113.4	59.90	0.0	0.00	0.0	Warning
3	0.00(0.00/0.00)	113.0	59.90	0.0	0.00	0.0	Critical

**Configuration:** A table for setting alarm thresholds for Over Current, Over Total Current, and Over Voltage. It includes sub-tables for Critical and Warning levels.

	Over Current Alarm (A)		Over Total Current Alarm (A)	Over Voltage Alarm (V)
	CB1	CB2		
Critical	1	16	32	250
	2	16	32	250
	3	16	32	250
Warning	1	16	32	250
	2	16	32	250
	3	16	32	250

**Status:** A summary table showing overall system metrics.

Power	0 W	Normal
Total Energy	0 kWh (from 06/08/2020 11:19:19)	
Phase 1 Energy	0 kWh (from 06/08/2020 11:19:19)	
Phase 2 Energy	0 kWh (from 06/08/2020 11:19:19)	
Phase 3 Energy	0 kWh (from 06/08/2020 11:19:19)	
Load Balance	0%	Normal

# Using the Web Interface

The POWERTEK PDU provides a graphic user interface that can be viewed from a web browser such as Internet Explorer. This enables users to access and control the device outlets and subsequently, its output devices remotely from users' desktop, laptop, PDA, or even users' mobile phones. This section provides instructions about how to use the web interface to configure and control the PDU remotely.

## Summary Overview-System Overview

Start a web browser such as Internet Explorer from the host PC or laptop and enter the IP address of the Power Strip in the address bar. For details about setting the IP address of the system. You will be prompted to enter a Username and Password. Click Go and the main status page of the POWERTEK PDU web interface is displayed.

The default settings are:

DHCP: Enabled

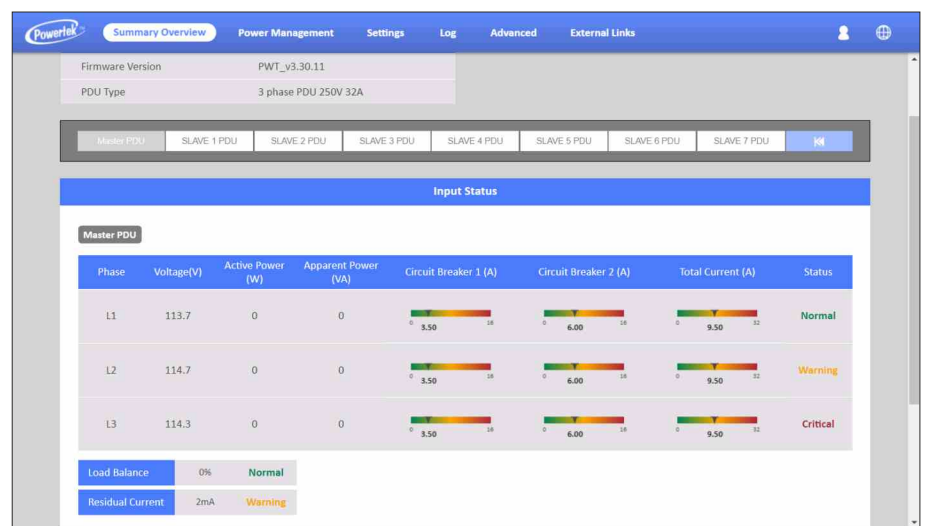
IP Address: 192.168.1.250

Subnet Mask: 255.255.255.0

Gateway: 192.168.1.10

Username: admin

Password: admin



The main page shows a graphic representation of the Power Strip outlets and inputs status as described below:

- The panel shows the various menus and submenus. Click any menu to display the menu options, expand the menu items, and modify the menu options as required.
- The right panel shows the current status of the Power strip.

# Using the Web Interface

## Summary Overview-Alarm List

The “Alarm List” page shows the list of Alarms, which were set by the user. POWERTEK PDU will follow the rules of an alarm to send out notification to the user.

Alarm ID	Alarm Time	Alarm Description
XXX.XX	XXXX/XXX/XXX	XXXXXXXX

## Summary Overview-Network Connection

The Network Connection page shows a list of user's connections.

Source Host Address	Connection Type	Username
172.31.1.91	HTTP	admin

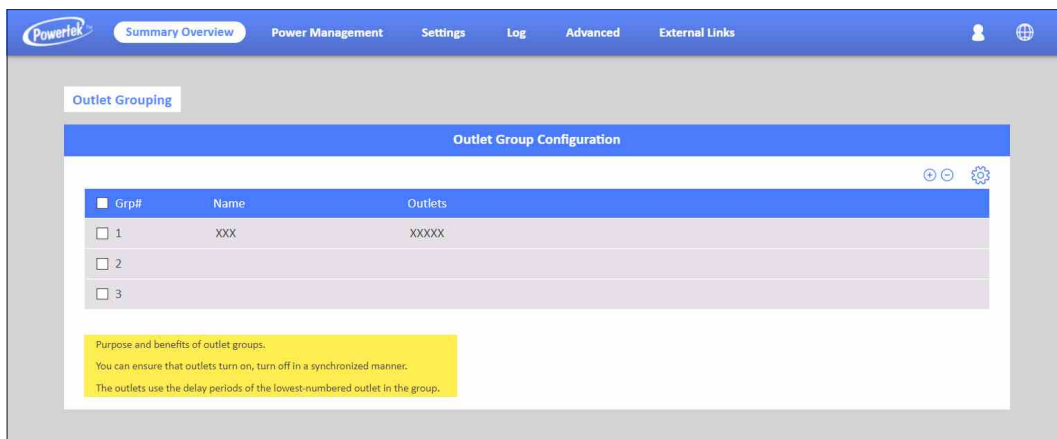


# Using the Web Interface

## Power Management-Outlet Grouping

This page shows the group list and let user enable Outlet Group.

User can add/delete/modify the group list. The group list is up to 8 groups. Take Group\_1 for example, I have set Outlet\_1 of PDU\_A, Outlet\_3 of PDU\_B and Outlet\_4 of PDU\_C into Group\_1. When I set action to Outlet\_3 of PDU\_B and apply, Action will apply to all PDUs of Group1.



# Using the Web Interface

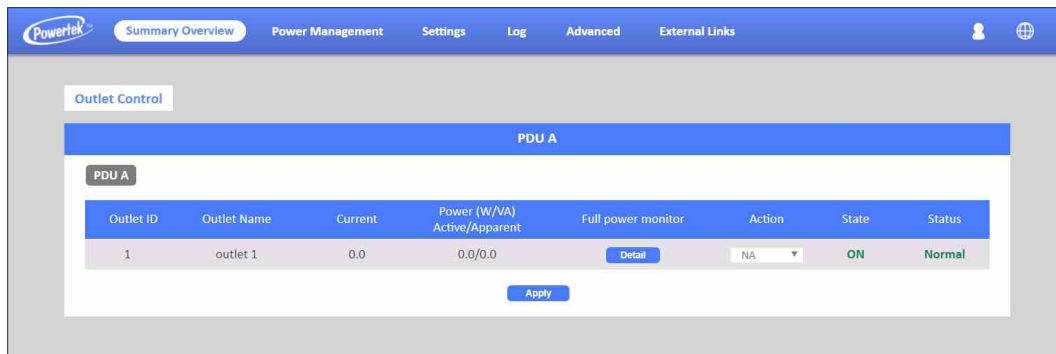
## Power Management-Outlet Control

This page let user trigger action by drop-down list. After you select an action and click "Apply", server will accord to the instruction to complete the task remotely.

Click "See Details" to open the page as shown:

In this page, you can set "How many seconds delay" when Power ON/OFF Delay action are triggered.

You can also set the seconds of "Reboot Duration".



After set, you can click "Apply" to apply to this Outlet or click "Apply to All Outlet" to make this setting apply to all Outlets.



Take Outlet4 for example (Set Power ON/OFF Delay=3 seconds /Reboot Duration=10 seconds), when you select Action "Off Delay" and click Apply. Outlet4 will power off after 3 seconds.

If you select Action "Power Cycle Immediate" and click Apply, Outlet4 will reboot and this procedure will cost 10 seconds.

If you select Action "Power Cycle Delay" and click Apply, Outlet4 will reboot and this procedure will cost 16 seconds.(Include 3 seconds for "Power ON Delay", 3 seconds for "Power Off Delay" and 10 seconds for "Reboot Duration").

# Using the Web Interface

## Power Management-Inlet Configuration

This page lets the user configure Inlet load. You can set the condition of "Critical" and "Warning". (The value of "Critical" must be larger than "Warning").

When Inlet Power is over the condition you set, the light of status will become the corresponding colour.(Red means "Critical", Yellow means "Warning" and Green means "Normal") And you will receive the notification mail if you have set it in Email Notification.

The screenshot displays the Power Management web interface. The top navigation bar includes 'Summary Overview', 'Power Management', 'Settings', 'Log', 'Advanced', and 'External Links'. The main content is divided into two sections: 'Phase Load Management' and 'Configuration'.

**Phase Load Management**

Phase	Current(A) Total(CB1/CB2)	Voltage(V)	Frequency (Hz)	Power Factor(%)	Power(W/VA) Active/Apparent	Reactive Power (var)	Status
1	0.00(0.00/0.00)	112.7	59.92	0.0	0.00	0.0	Normal
2	0.00(0.00/0.00)	113.4	59.90	0.0	0.00	0.0	Warning
3	0.00(0.00/0.00)	113.0	59.90	0.0	0.00	0.0	Critical

**Configuration**

		Over Current Alarm (A)		Over Total Current Alarm (A)	Over Voltage Alarm (V)
		CB1	CB2		
Critical	1	16	16	32	250
	2	16	16	32	250
	3	16	16	32	250
Warning	1	16	16	32	250
	2	16	16	32	250
	3	16	16	32	250

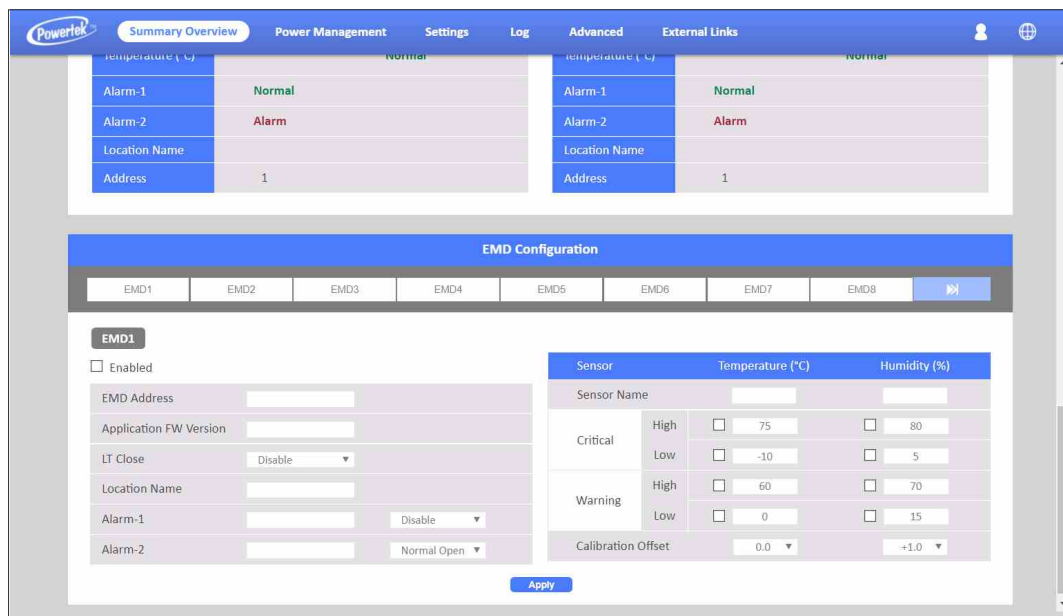
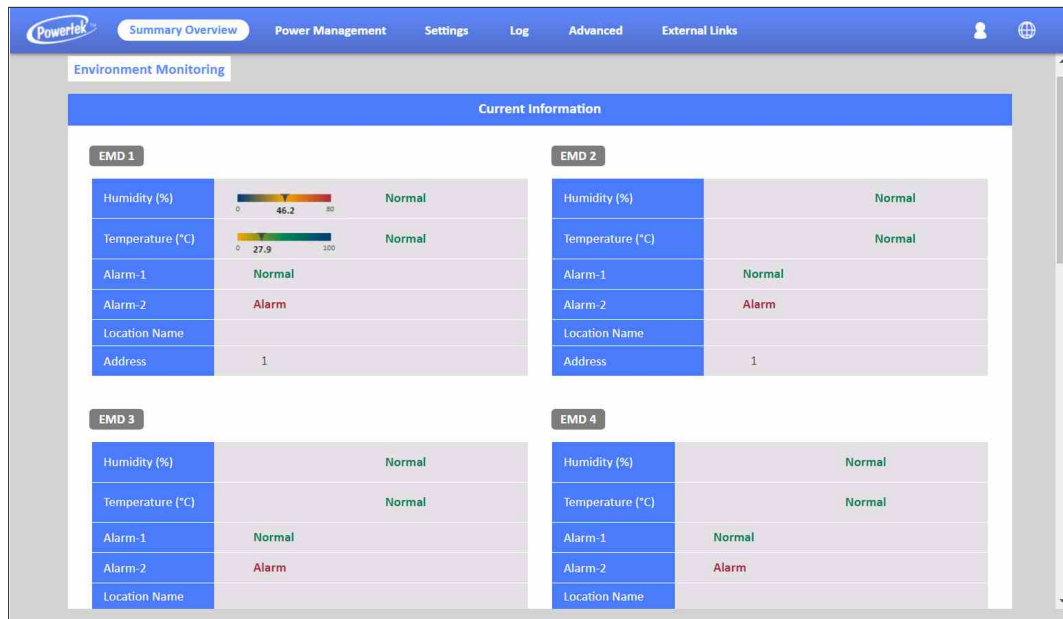
Additional configuration options for PDU A:

	Over Load Alarm(kw)	Load Balance Alarm(%)
Critical	5.8	100
Warning	4.6	50

# Using the Web Interface

## Power Management-Environment Monitoring

This page shows the status of EMD and lets users set the alarm configuration. You can set the "Alarm Condition" of "Critical" and "Warning". (The value of "Critical" must be larger than "Warning") It will follow the Email Notification rule you set to send out mails.

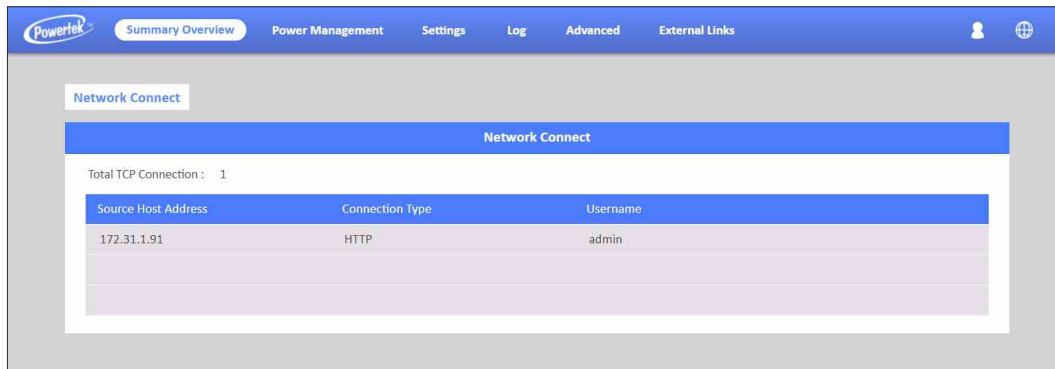


POWERTEK PDU supports 8 EMD sensors in cascade each one with 2 digital inputs of . you can set 2 alarms for each EMD sensor. There are 3 options(Normal Open/Normal Close/Disable) of the EMD sensor. If you set "Normal Open", the EMD sensor will become "Warning"(Yellow light) when closed.

# Using the Web Interface

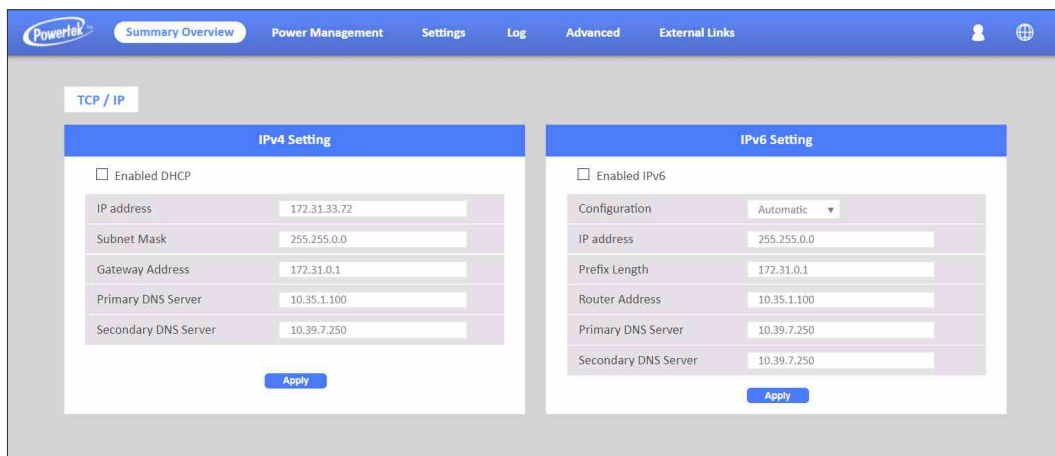
## Network-TCP/IP

This page lets users enable DHCP and set an IP address manually.



## Network Management-Accessible IP Setting

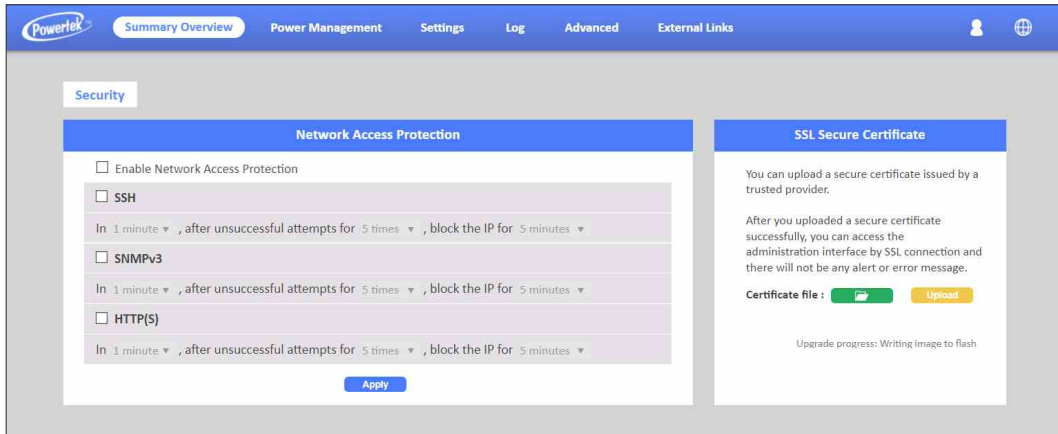
This page lets users add/delete/modify accessible IP list.



# Using the Web Interface

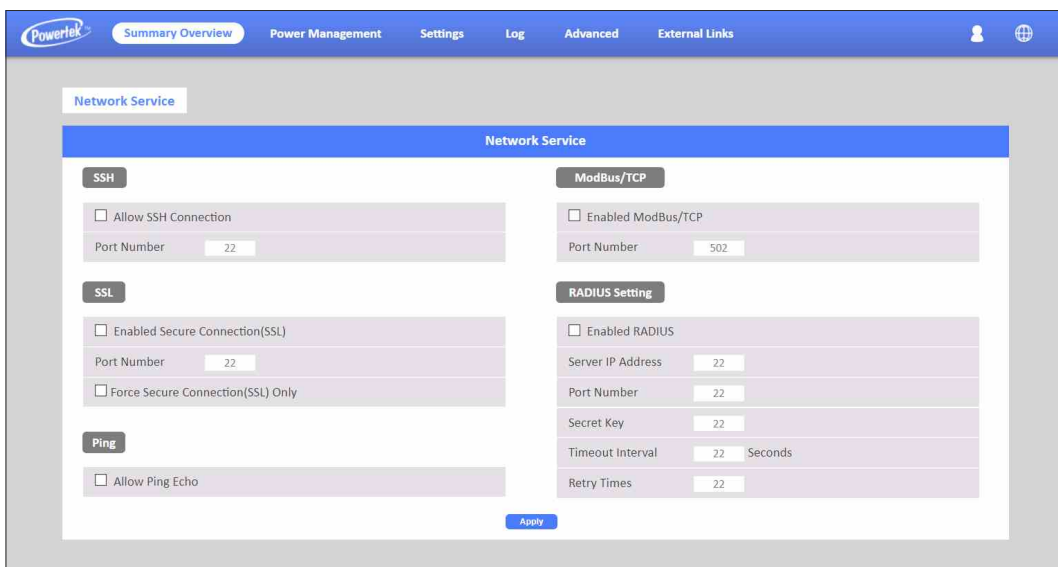
## Network Management-Security

This page lets users enable DHCP and set an IP address manually.



## Network Management-Network Service

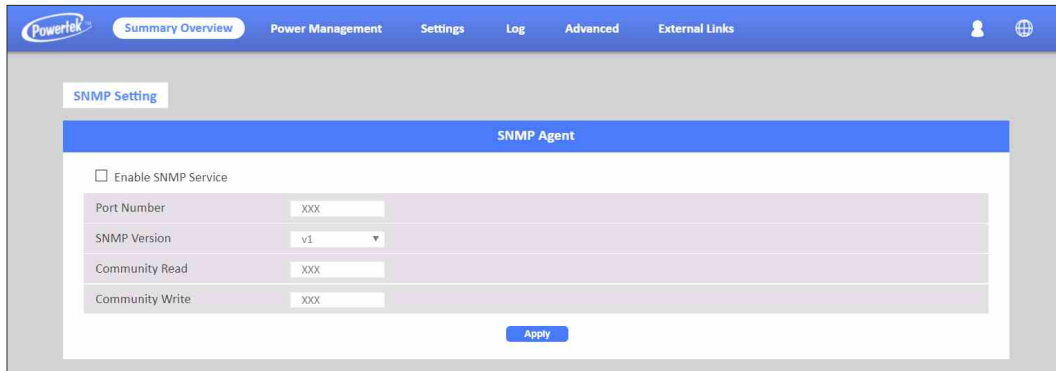
This page lets the user set SSH/SSL/Ping/RADIUS Setting. If a user wants to add Radius User(from Settings menu), they have to "Enable RADIUS" on this page first.



# Using the Web Interface

## Network Management-SNMP Segments

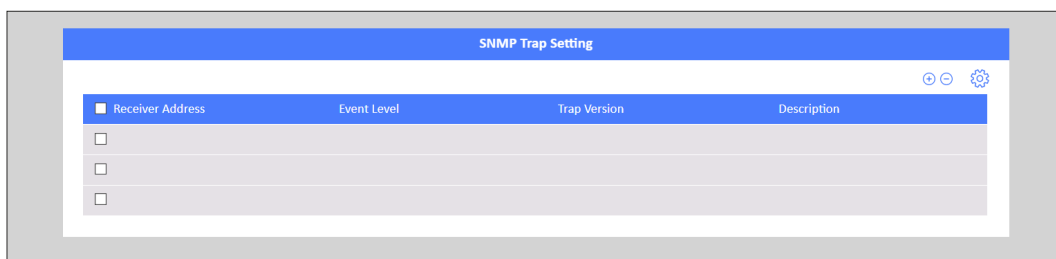
This page lets users set the SNMP Agent.



The screenshot shows the 'SNMP Agent' configuration page. At the top, there is a navigation bar with the Powertek logo and menu items: Summary Overview, Power Management, Settings, Log, Advanced, and External Links. The main content area is titled 'SNMP Setting' and contains a sub-section 'SNMP Agent'. Below this, there is a checkbox for 'Enable SNMP Service'. Underneath, there are four input fields: 'Port Number' (text box with 'xxx'), 'SNMP Version' (dropdown menu with 'v1'), 'Community Read' (text box with 'xxx'), and 'Community Write' (text box with 'xxx'). An 'Apply' button is located at the bottom right of the form.

## Network Management-SNMP Trap Segmenting

This page lets users add/delete/modify SNMP trap settings.



The screenshot shows the 'SNMP Trap Setting' table. The table has a header row with columns: Receiver Address, Event Level, Trap Version, and Description. There are three rows below the header, each with a checkbox in the first column. The table is displayed within a web interface with a blue header bar and a settings icon in the top right corner.

Receiver Address	Event Level	Trap Version	Description
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			

# Using the Web Interface

## SiGns-General Segmenting

This page lets the user set General Settings.

**General Setting**

**System Administration**

System Name	POWERTEK
System Contact	techelp@powertekpds.com
System Location	
Log Interval	60 Seconds
Web Refresh Interval (3 ~ 60)	15 Seconds
Log Per Page	10
Web Timeout Interval (Sec)	15 Seconds

**Data and Time**

Current Date and Time	2020/09/26 09:57:47
Time Zone	[GWT +01:00]Brussels, Copenhagen, Madrid, Paris
Date Format	yyyy/mm/dd
Time Setting	24HR

Apply

## User management

This page lets the user enable new users and passwords.

**User Setting**

**Local User**

Username	Privilege
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

**Radius User**

Username	Privilege
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

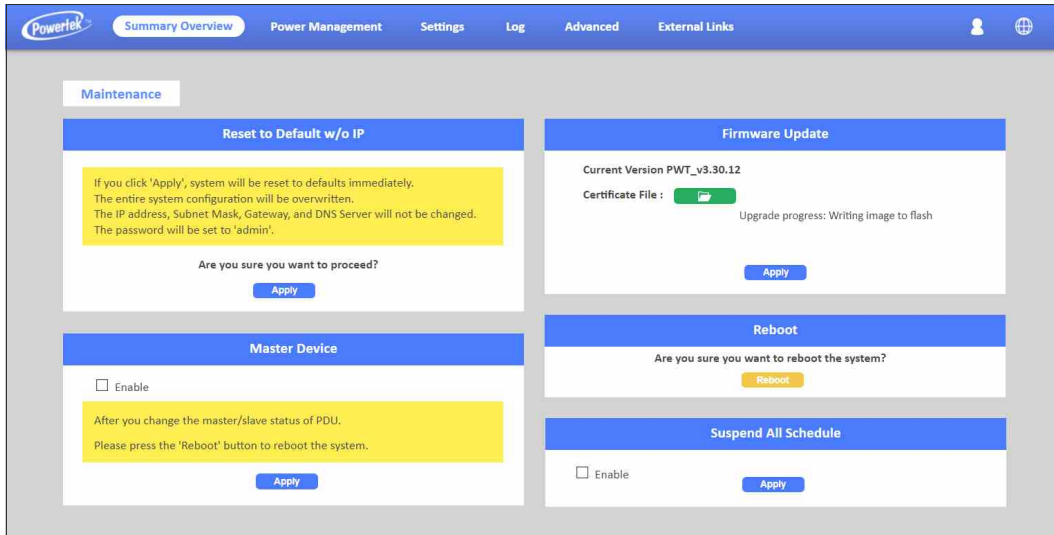
**Authentication Configuration**



# Using the Web Interface

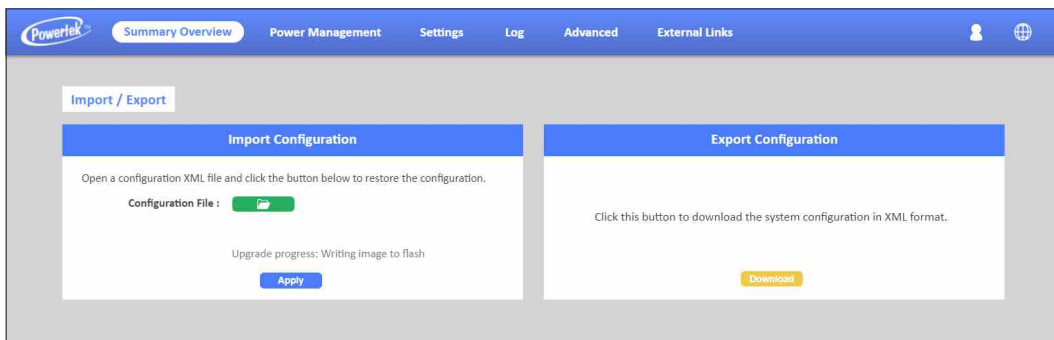
## SiGns-Maintenance

This page lets the user set Reset/Upgrade/Reboot.



## SeGments-Import/export

This page lets users import/export XML file to restore/download the configuration.



# Using the Web Interface

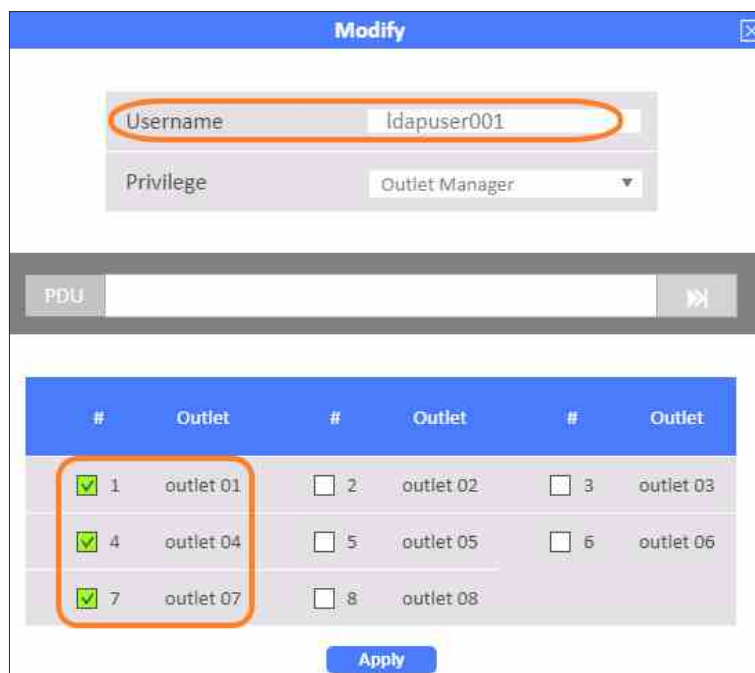
The section provides information about setting up the LDAP step by step.

**Step 1:** To set up the PDU, please configure the related LDAP parameters on the **Setting of Network Service** webpage as shown screen. For example, to enable LDAP, enter Host IP and Port Number...etc.



The screenshot shows the 'LDAP Setting' configuration page. It includes a 'Enabled LDAP' checkbox which is checked. Below it are input fields for 'Host' (172.31.35.186), 'Port Number' (389), 'TLS Connection' (checked), and 'Base DN' (dc=qetest,dc=com).

**Step 2:** Please press “+” icon to add LDAP user then configure the related LDAP parameters on the **Setting of User Setting** webpage as shown screen. For example, set LDAP Username, select Privilege to “Outlet Manager” and select the related outlets.

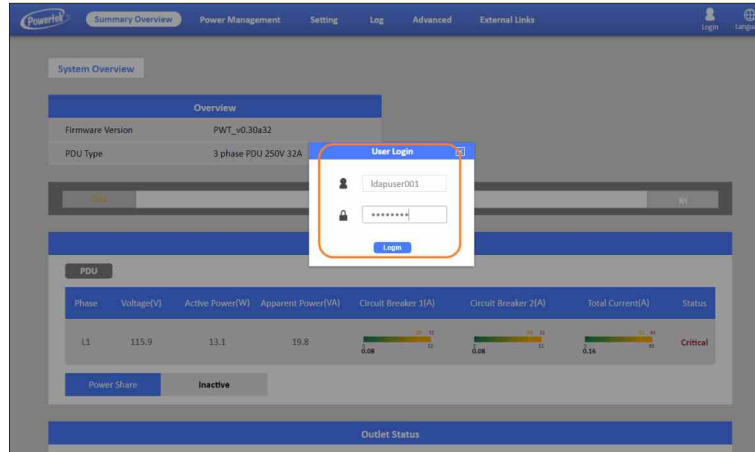


The screenshot shows the 'Modify' user setting page. The 'Username' field is highlighted with an orange circle and contains 'ldapuser001'. The 'Privilege' dropdown is set to 'Outlet Manager'. Below is a table of outlets with checkboxes for selection. The first three rows (1, 4, 7) are highlighted with an orange circle, indicating they are selected.

#	Outlet	#	Outlet	#	Outlet
<input checked="" type="checkbox"/>	1 outlet 01	<input type="checkbox"/>	2 outlet 02	<input type="checkbox"/>	3 outlet 03
<input checked="" type="checkbox"/>	4 outlet 04	<input type="checkbox"/>	5 outlet 05	<input type="checkbox"/>	6 outlet 06
<input checked="" type="checkbox"/>	7 outlet 07	<input type="checkbox"/>	8 outlet 08		

# Using the Web Interface

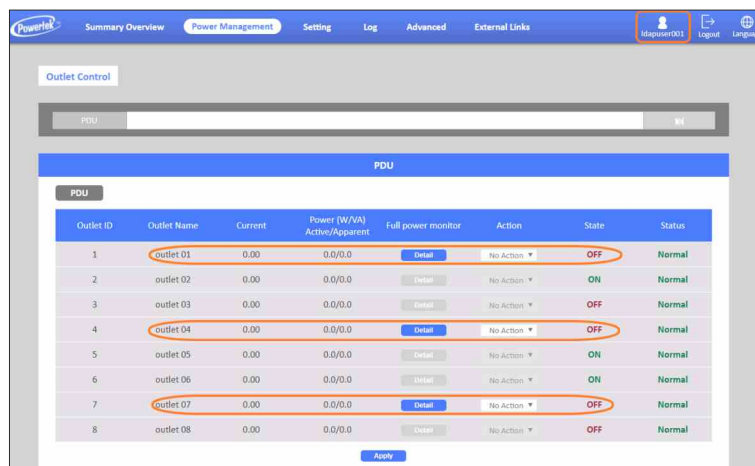
**Step 3:** After configured LDAP parameter, please logout and close web browser. To enter LDAP username and password then login web browser.



**Step 4:** To check the login LDAP username on the **Network Connect** of **Summary Overview** webpage as shown screen.

Network Connect		
Total TCP Connection : 1		
Source Host Address	Connection Type	Username
172.31.34.222	HTTP	ldapuser001

**Step 5:** The LDAP user can control the related outlets on the **Outlet Control** of Power Management webpage.



# Using the Web Interface

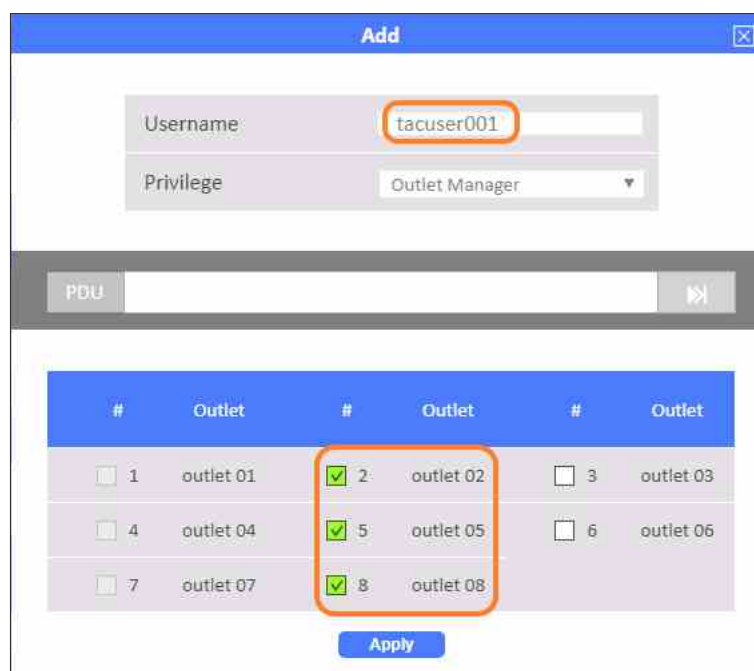
The section provides information about setting up the TACACS+ step by step.

**Step 1:** To set up the PDU, please configure the related TACACS+ parameters on the **Setting** of **Network Service** webpage as shown screen. For example, to enable TACACS+, enter Host IP and Port Number...etc.



The screenshot shows the 'TACACS+ Setting' configuration page. It includes a checkbox for 'Enabled TACACS+' which is checked. Below this are several input fields: 'Host' with the value '172.31.35.184', 'Port Number' with '49', 'Secret Key' with a masked password '\*\*\*\*\*', 'Timeout(Sec)' with '5', and 'Retry Count' with '3'. At the bottom, there is a dropdown menu for 'Authentication Mode' set to 'ASCII'.

**Step 2:** Please press “+” icon to add TACACS+ user then configure the related TACACS+ parameters on the **Setting** of **User Setting** webpage as shown screen. For example, set TACACS+ Username, select Privilege to “Outlet Manager” and select the related outlets.

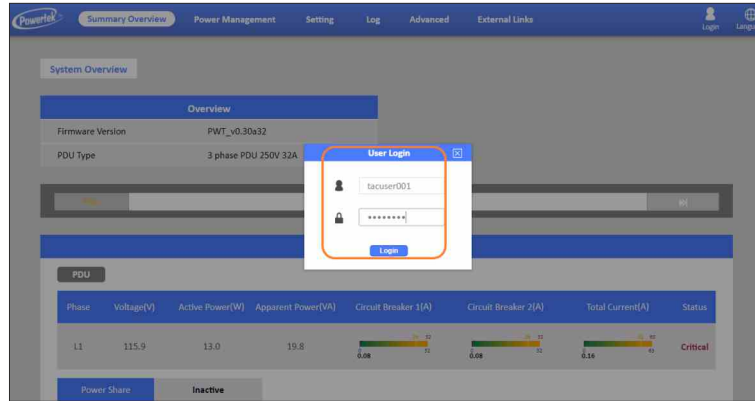


The screenshot shows the 'Add' configuration page for a TACACS+ user. The 'Username' field contains 'tacuser001' and the 'Privilege' dropdown is set to 'Outlet Manager'. Below these fields is a 'PDU' field with a right-pointing arrow. At the bottom, there is a table of outlets with checkboxes for selection. The table has three columns, each with a header '# Outlet'. The first column contains outlets 1 through 7, the second contains 2 through 8, and the third contains 3 through 6. Outlets 2, 5, and 8 in the second column are checked and highlighted with an orange box. An 'Apply' button is located at the bottom of the page.

#	Outlet	#	Outlet	#	Outlet
<input type="checkbox"/>	1 outlet 01	<input checked="" type="checkbox"/>	2 outlet 02	<input type="checkbox"/>	3 outlet 03
<input type="checkbox"/>	4 outlet 04	<input checked="" type="checkbox"/>	5 outlet 05	<input type="checkbox"/>	6 outlet 06
<input type="checkbox"/>	7 outlet 07	<input checked="" type="checkbox"/>	8 outlet 08		

# Using the Web Interface

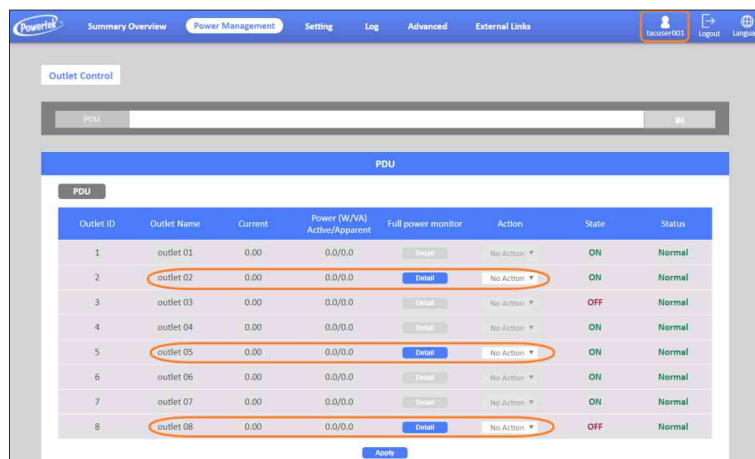
**Step 3:** After configured TACACS+ parameter, please logout and close web browser. To enter TACACS+ username and password then login web browser.



**Step 4:** To check the login TACACS+ username on the **Network Connect** of **Summary Overview** webpage as shown screen.

Network Connect		
Total TCP Connection : 1		
Source Host Address	Connection Type	Username
172.31.34.222	HTTP	tacuser001

**Step 5:** The TACACS+ user can control the related outlets on the **Outlet Control** of **Power Management** webpage.

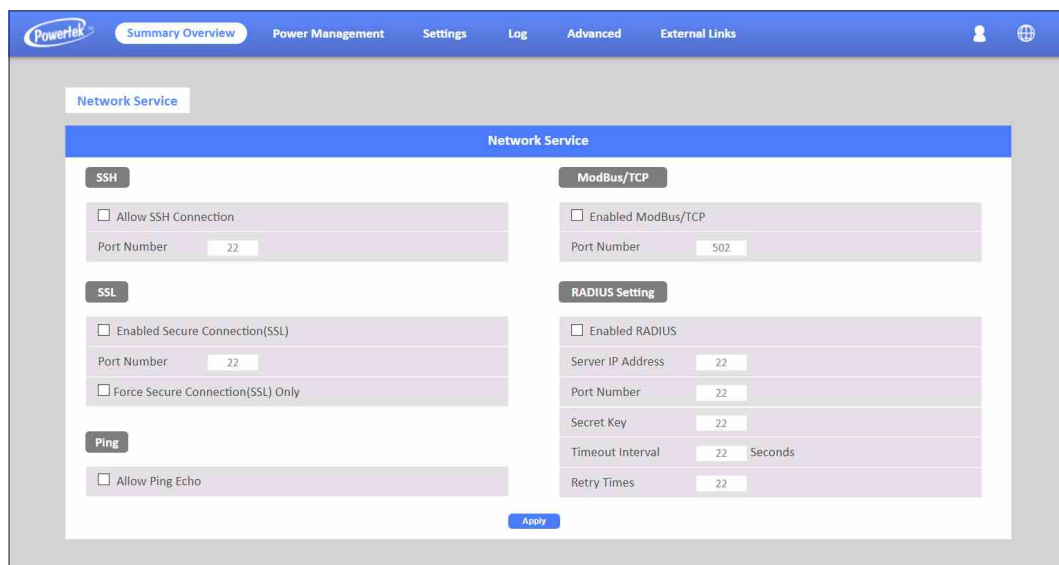


# Using the Web Interface

## SiGns-RADIUS User

This page lets power admin to Add/Delete/Modify Radius users.

You have to Enable RADIUS and set ready in the Network Service. Then you can add a Radius User and set outlet control for this user. The Grouping & Schedule function also supports radius users.



The screenshot displays the 'Network Service' configuration page in the Powertek web interface. The page features a blue header with navigation tabs: Summary Overview, Power Management, Settings, Log, Advanced, and External Links. The main content area is titled 'Network Service' and contains several configuration sections:

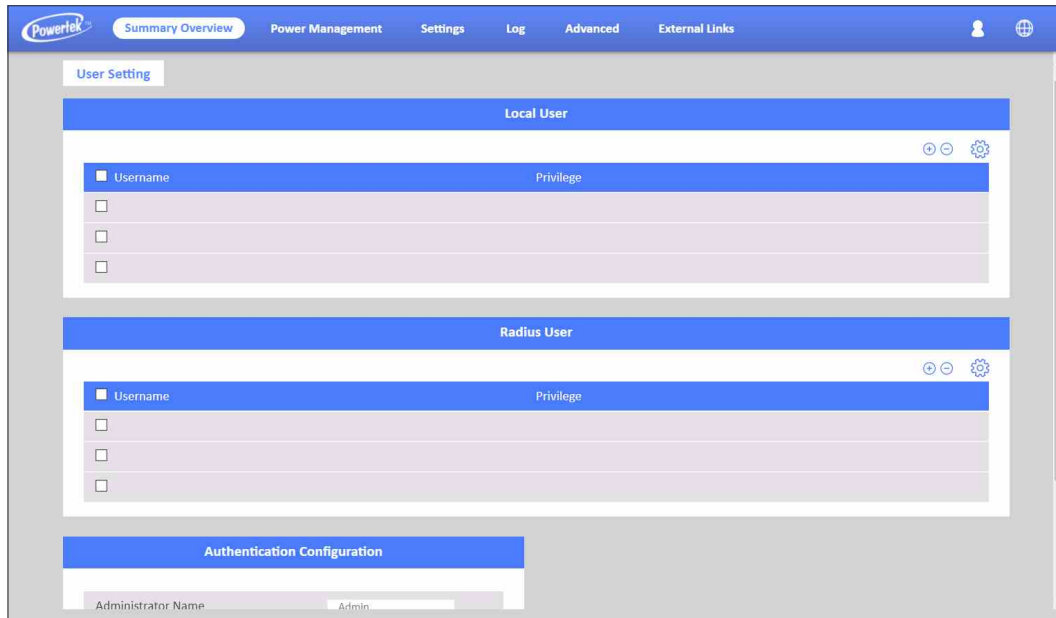
- SSH:** Includes a checkbox for 'Allow SSH Connection' and a 'Port Number' field set to 22.
- SSL:** Includes a checkbox for 'Enabled Secure Connection(SSL)', a 'Port Number' field set to 22, and a checkbox for 'Force Secure Connection(SSL) Only'.
- Ping:** Includes a checkbox for 'Allow Ping Echo'.
- ModBus/TCP:** Includes a checkbox for 'Enabled ModBus/TCP' and a 'Port Number' field set to 502.
- RADIUS Setting:** Includes a checkbox for 'Enabled RADIUS', a 'Server IP Address' field set to 22, a 'Port Number' field set to 22, a 'Secret Key' field set to 22, a 'Timeout Interval' field set to 22 Seconds, and a 'Retry Times' field set to 22.

An 'Apply' button is located at the bottom center of the configuration area.

**NOTE:** If there are 2 users with the same name both existed in Local User & Radius User, Local user will become a priority in POWERTEK PDU.

# Using the Web Interface

## SeGNs-LOCAL User



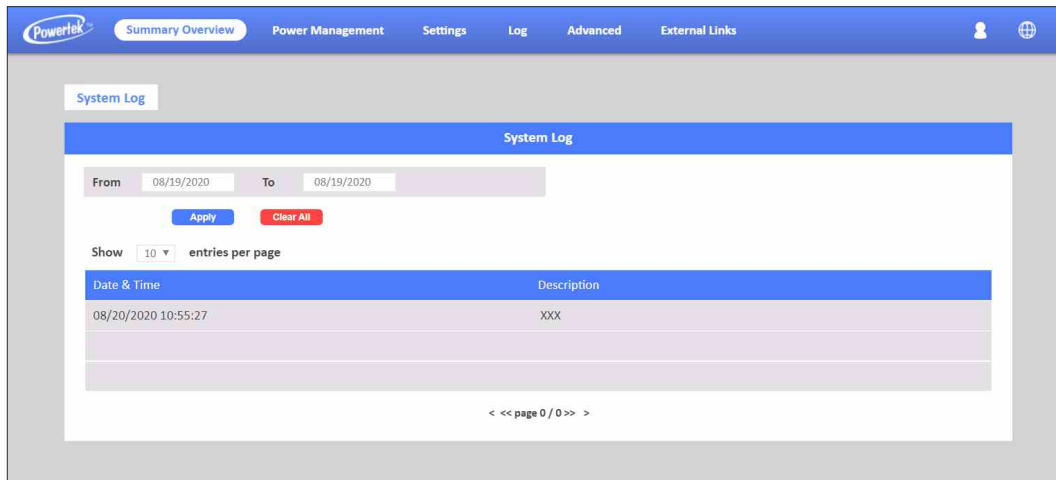
This page shows the user list and admin that can add/delete/modify it. The list can be up to 8 users. There are 4 kinds of privileges for the user account, the definition is as below:

Privilege	Definition
Power Admin	Users can manage all functions.
Admin	Admin users cannot manage [User Management], [Outlet Grouping], [FW Upgrade & Inlet/Outlet Upgrade], [Reset Default] function, and the others can still manage.
Supervision	Supervision users only manage [Power Monitoring] beside [Outlet Grouping], [Inlet/outlet upgrade] function.
User	Cannot manage any function. Read only.

# Using the Web Interface

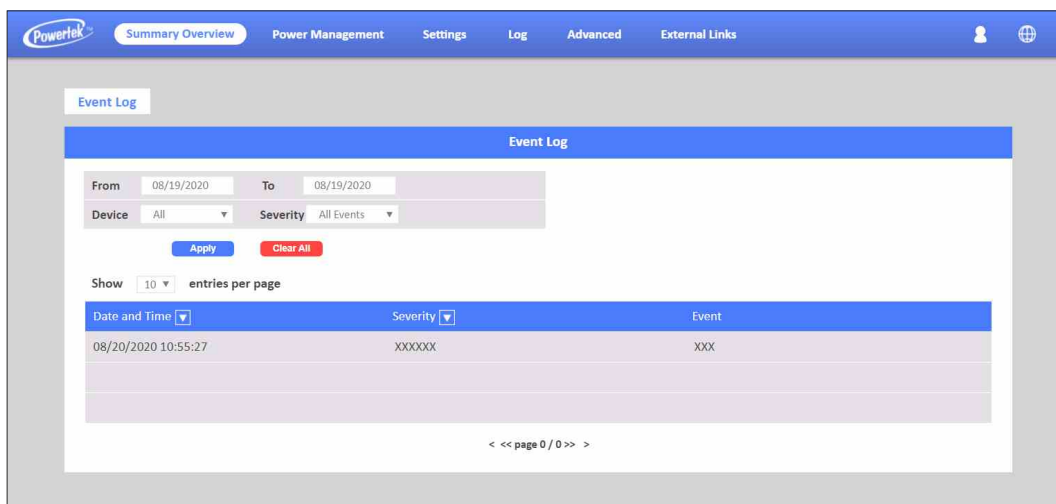
## Log and Notification-System Log

This page shows the system log



## Log and Notification-Event Log

This page shows the warnings and alarms history log.





# Using the Web Interface

## SiGns-Configure SMTP Server

This page let user configure SMTP server.

**SNMP Setting**

**SNMP Agent**

Enable SNMP Service

Port Number: XXX

SNMP Version: v1

Community Read: XXX

Community Write: XXX

Apply

**SNMP Trap Setting**

Receiver Address	Event Level	Trap Version	Description
<input type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>			

## SeGments-Email Notification Settings

This page lets the user set Email notification settings. Click "+" to set a new setting. Input "Receiver Address", select "Email Type"/"Event Level" and "Description", then click "Apply" to save settings. You can send a test mail to confirm the setting is correct or not through clicking "Send Test". After setting well, you will get a notification email when the event has been triggered.

**Email Settings**

**Configure SMTP Server**

SMTP Server: XXXX

Port Number: 25

Sender Email Address: XXXXX@XXX.XXX

Prefix: XXX

Enable SMTP Authentication

UserName: XXX

Password: \*\*\*\*\*

Apply

**Email Notification Setting**

Receiver Address	Email Type	Event Level	Description
<input type="checkbox"/> XXX.XXX.XXX	XXX	XXXX	X
<input type="checkbox"/>			
<input type="checkbox"/>			

# Using the Web Interface

## Log and Notification-Inlet History Log

This page shows the inlet history log. You can set the log interval in General Setting under the System Management.

Date and Time	Device Name	Pwr.W	Pwr.Max.W	Ph1 I.A	Ph2 I.A	Ph3 I.A	Ph1 I Max.A	Ph2 I Max.A	Ph3 I Max.A
08/20/2020 10:55:27	PDU A	0.0	0.0	0.00	0.00	0.00	112.3	99.9	59.81

## Log and Notification-Environment History Log

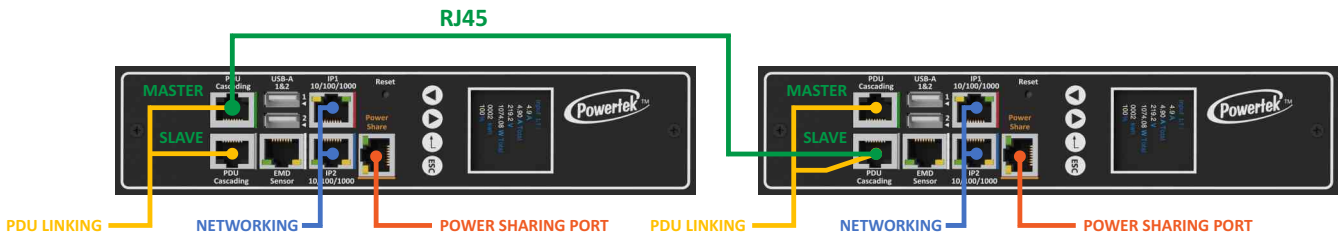
This page shows the environment history log. You can set the log interval in General Setting under System Management.

Date and Time	Device	Temp.C	Hum.%RH
08/20/2020 10:55:27	XXX	XXX	XXX

# Using the Web Interface

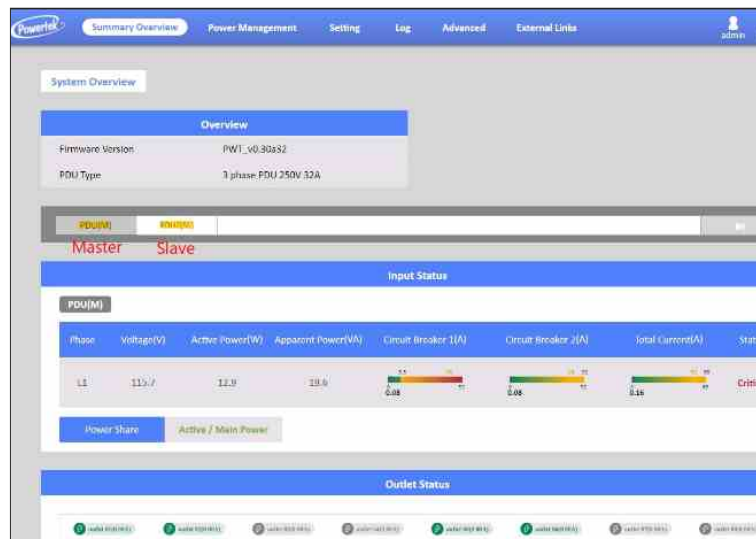
The section provides information about setting up the **Daisy Chain** step by step.

**Step 1:** To set up the PDU, connect RJ45 serial cable from Cascading port of the Master PDU to Cascading port of the Slaver PDU.



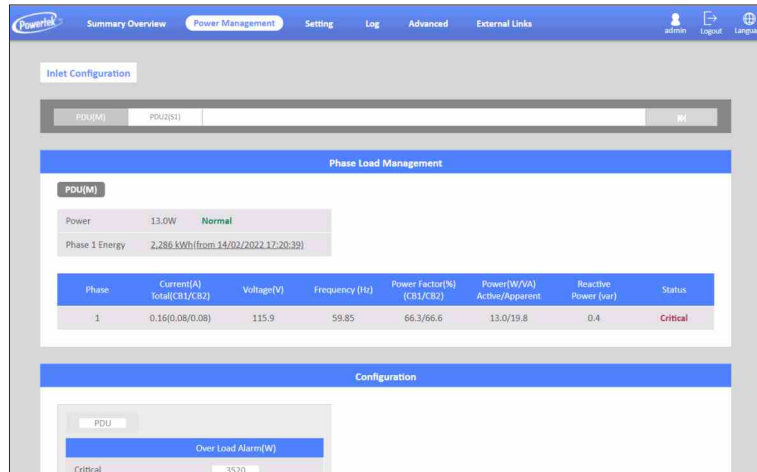
**Step 2:** The related parameters of the Master and Slaver PDU will display in the System Overview, Inlet Configuration, Outlet Control, Environment Monitoring, Outlet Group and Schedule ...etc. For more the details of the Master and Slaver PDU, please check the related webpage as below.

The **System Overview** of **System Overview** webpage as shown screen.

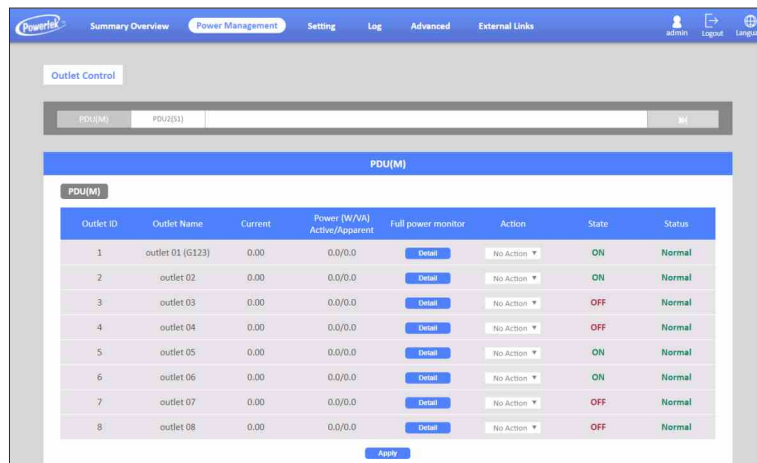


# Using the Web Interface

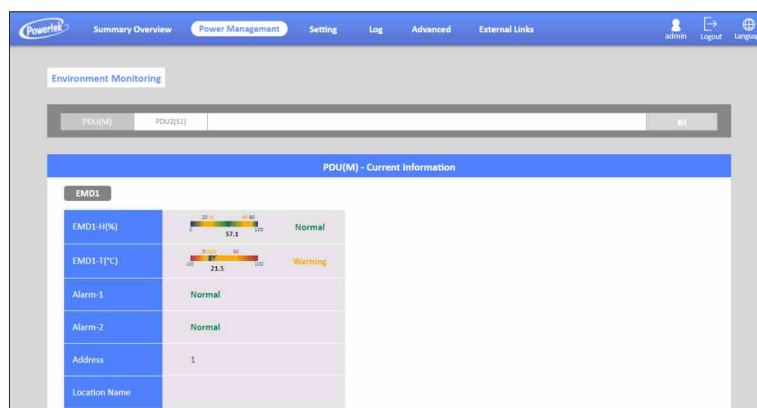
The **Inlet Configuration** of **Power Management** webpage as shown screen.



The **Outlet Control** of **Power Management** webpage as shown screen.

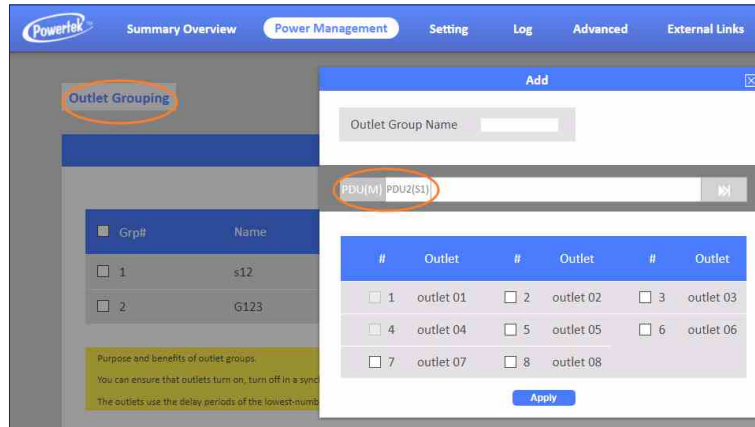


The **Environment Monitoring** of **Power Management** webpage as shown screen.

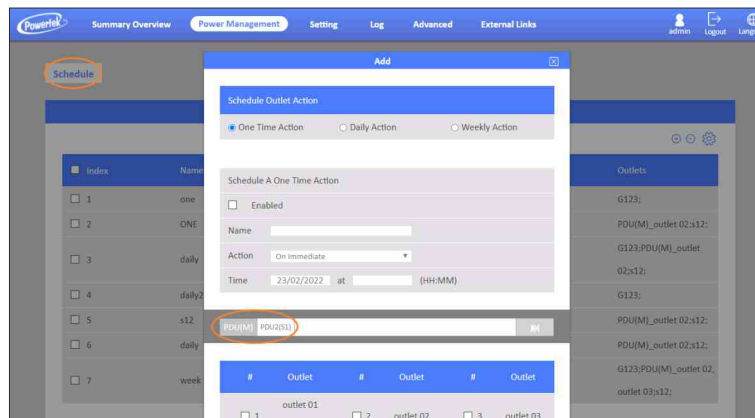


# Using the Web Interface

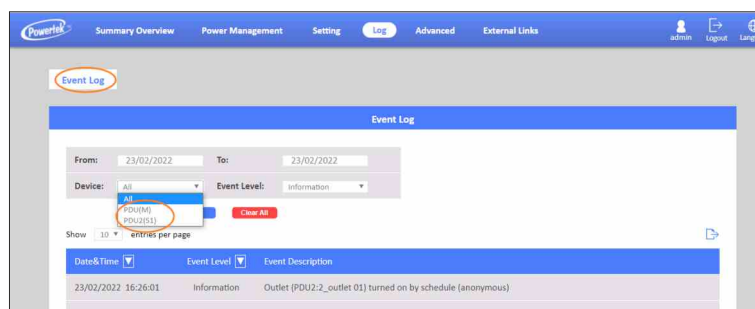
The **Outlet Group** of **Power Management** webpage as shown screen.



The **Schedule** of **Power Management** webpage as shown screen.



The **Event Log** of **Log** webpage as shown screen.



# Using the Web Interface

The **Inlet History Log** of **Log** webpage as shown screen.

Date&Time	Device Name	Pwr.W	Pwr Max.W	Ph1 LA	Ph2 LA	Ph3 LA	Ph1 Max.A	Ph2 Max.A	Ph3 Max.A	Em
23/02/2022 16:38:09	PDU(M)	13	14.2	0.16	--	--	0.18	--	--	--
23/02/2022 16:38:09	PDU(S1)	0	0	0.02	0	0.02	0.02	0	0.02	--
23/02/2022 16:37:08	PDU(M)	12.9	14.2	0.16	--	--	0.18	--	--	--

The **Outlet History Log** of **Log** webpage as shown screen.

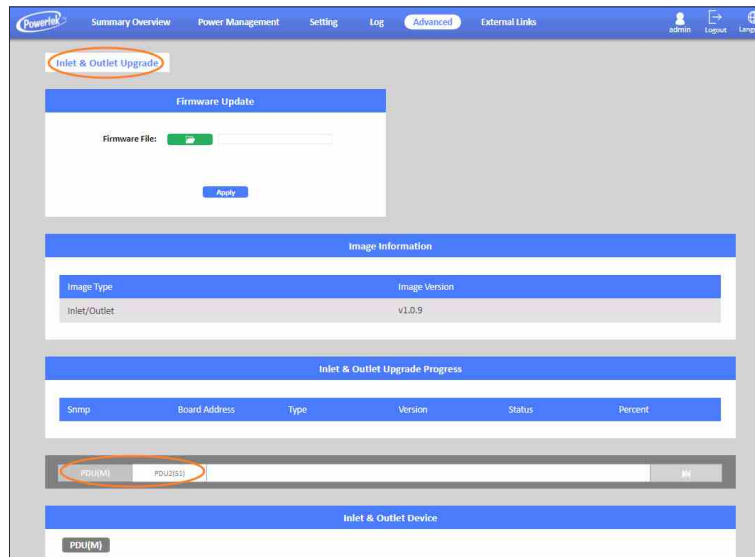
Date&Time	Device Name	Outlet Name	Pwr.W	Pwr Max.W	Energy.kWh	LA	PF.%	Fre.Hz
23/02/2022 16:39:10	PDU(M)	outlet 01	0	0	0	0	99.9	59.87
23/02/2022 16:39:10	PDU(M)	outlet 02	0	0	0	0	99.9	59.87
23/02/2022 16:39:10	PDU(M)	outlet 03	0	0	0	0	99.9	59.89
23/02/2022 16:39:10	PDU(M)	outlet 04	0	0	0	0	99.9	59.89

The **Environment Log** of **Log** webpage as shown screen.

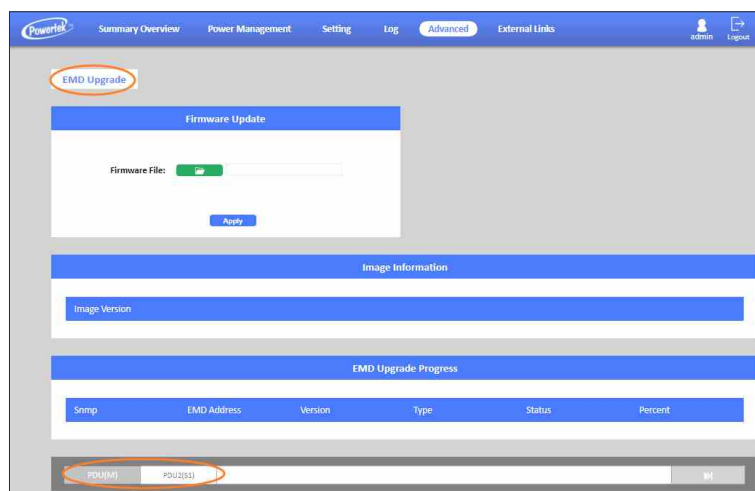
Date&Time	Device Name	EMD Name	Temp.C	Hum.WRH
23/02/2022 16:41:12	PDU(M)	EMD1	21.6	56.9
23/02/2022 16:41:12	PDU(S1)	EMD1	22	54.5
23/02/2022 16:40:11	PDU(M)	EMD1	21.5	57.1

# Using the Web Interface

The **Inlet & Outlet Upgrade** of **Advanced** webpage as shown screen.



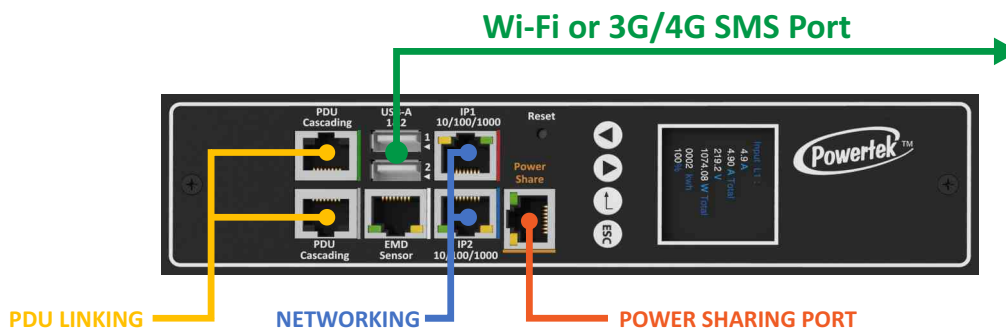
The **EMD Upgrade** of **Advanced** webpage as shown screen.



# Using the Web Interface

The section provides information about setting up the **Wi-Fi step by step**.

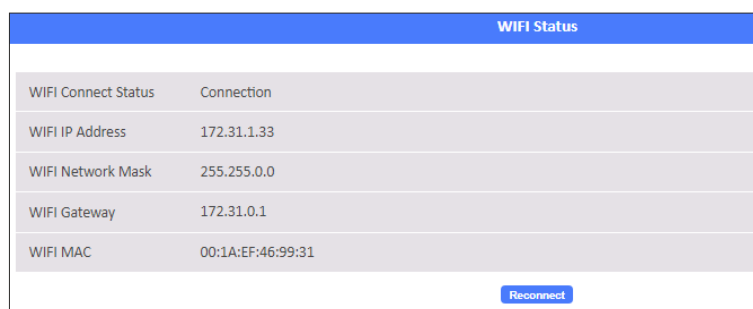
**Step 1:** To set up the PDU, plug the Wi-Fi dongle into USB-A (1 or 2) port.



**Step 2:** To configure the related Wi-Fi parameters on the **Wi-Fi Setting of Advanced** webpage as shown screen. For example, to enable Wi-Fi Control, enter Wi-Fi SSI: TOTOLINK\_A1004...etc



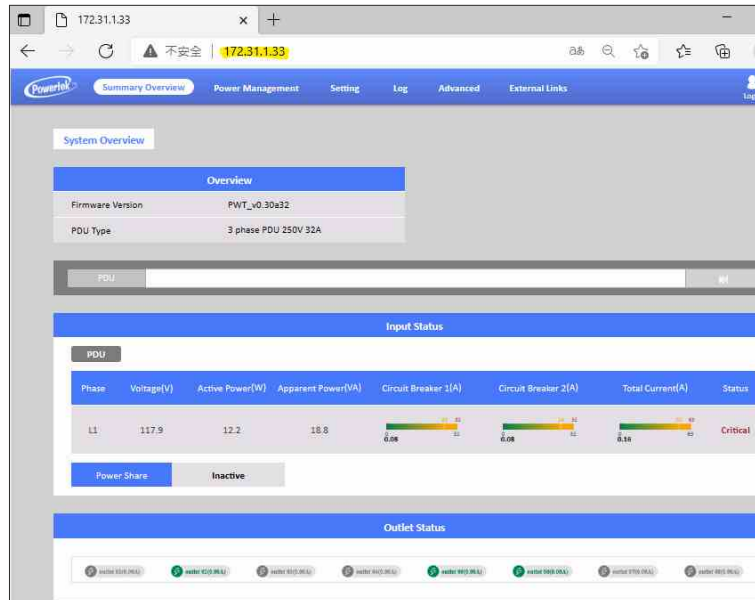
**Step 3:** After configured Wi-Fi parameters, the related Wi-Fi status is automatically displayed on the **Wi-Fi Status**. For example, to enable Wi-Fi Control, enter Wi-Fi SSI: TOTOLINK\_A1004...etc as shown screen





# Using the Web Interface

**Step 4:** Please access the Wi-Fi IP address (example IP: 172.31.1.33) from web browser and make sure the Wi-Fi dongle has workable.



**Step 5:** Please use the ping command to Wi-Fi IP address (example IP: 172.31.1.33) then make sure the Wi-Fi dongle has workable.

```
C:\> 命令提示字元 - ping 172.31.1.33 -t
Microsoft Windows [版本 10.0.19043.928]
(c) Microsoft Corporation. 著作權所有，並保留一切權利。
C:\Users\phoebe.DESKTOP-A42VPII>ping 172.31.1.33 -t
Ping 172.31.1.33 (使用 32 位元組的資料):
回覆自 172.31.1.33: 位元組=32 時間<1ms TTL=64
回覆自 172.31.1.33: 位元組=32 時間<1ms TTL=64
回覆自 172.31.1.33: 位元組=32 時間<1ms TTL=64
回覆自 172.31.1.33: 位元組=32 時間<1ms TTL=64
回覆自 172.31.1.33: 位元組=32 時間<1ms TTL=64
回覆自 172.31.1.33: 位元組=32 時間<1ms TTL=64
```

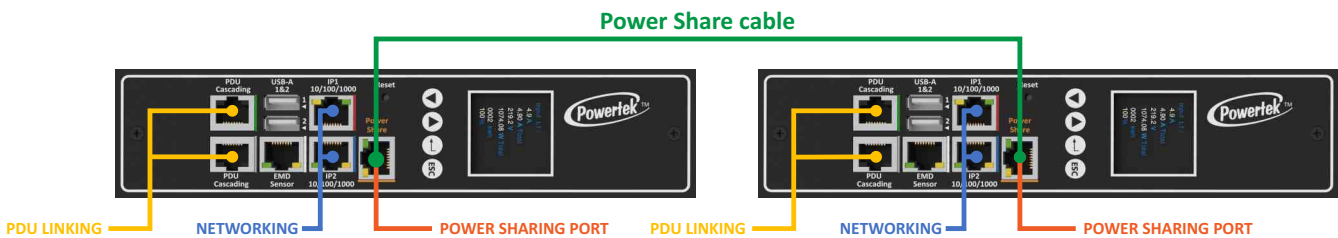
# Using the Web Interface

The section provides information about setting up the Power Share step by step.

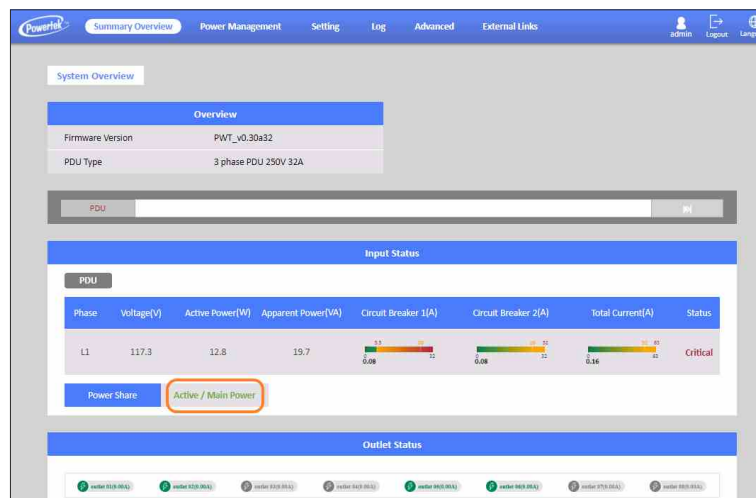


**ONLY USE THE SPECIAL PATCH CABLE SUPPLIED BY THE MANUFACTURER, CONNECT A STANDARD PATCH CABLE WILL DAMAGE THE ELECTRONICS**

**Step 1:** To set up the PDU, connect Power Sharing cable (orange color) from Power Share port of the PDU A to Power Share port of the PDU B.

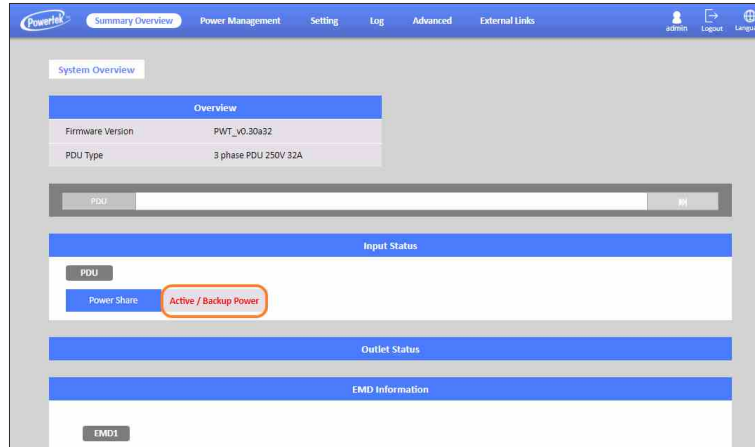


**Step 2:** After connecting power sharing cable, open a web browser from a PC, then the status of the power share is automatically displayed on the **System Overview** webpage. If PDU A is master PDU then the status of power share will display **Active/Main Power** on the **System Overview** webpage.

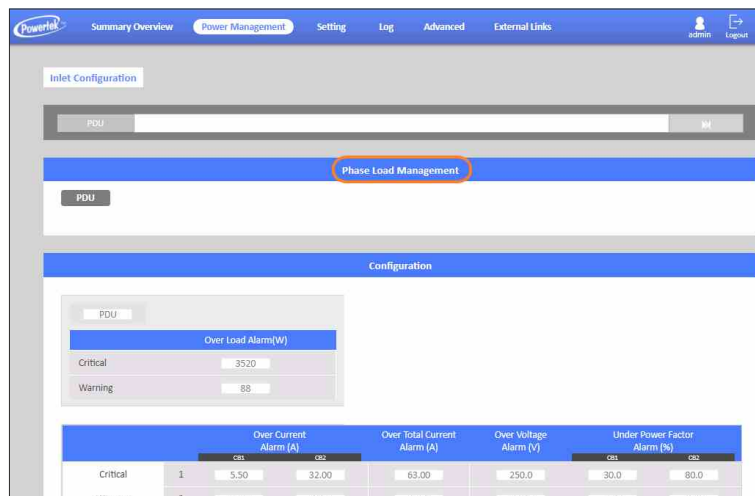


# Using the Web Interface

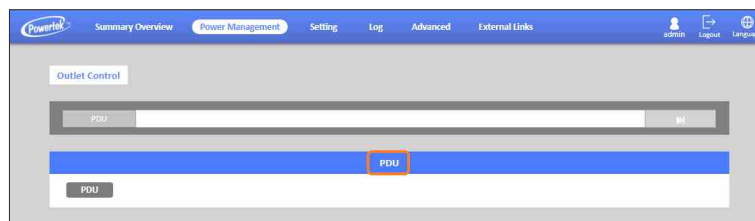
**Step 3:** When PDU A has utility power fail, the status of power share will display **Active/Backup Power** on the **System Overview** webpage.



**Step 4:** At the same, the information of inlet phase load management will not display on the Inlet **Configuration** of the **Power Management** webpage.



**Step 5:** Another, there are some outlets information will not display on the **Outlet Control** of **Power Management** webpage



# Using the Web Interface

**Step 6:** The related alarm will be occurred on the **Alarm List of Summary Overview** webpage. The alarm will be “PDU (PDU:1) power off”.

Alarm List		
Number of Active Alarms : 4		
Alarm ID	Alarm Time	Alarm Description
56	22/02/2022 11:09:14	Inlet (PDU:1) phase1 pf branch2 was lower than warning set point
57	22/02/2022 11:09:14	Inlet (PDU:1) phase1 pf branch2 was lower than critical set point
3	22/02/2022 13:45:26	(PDU:1) EMD1(EMD-1) temperature was higher than high warning set point
62	24/02/2022 10:22:17	<b>PDU (PDU:1) power off</b>

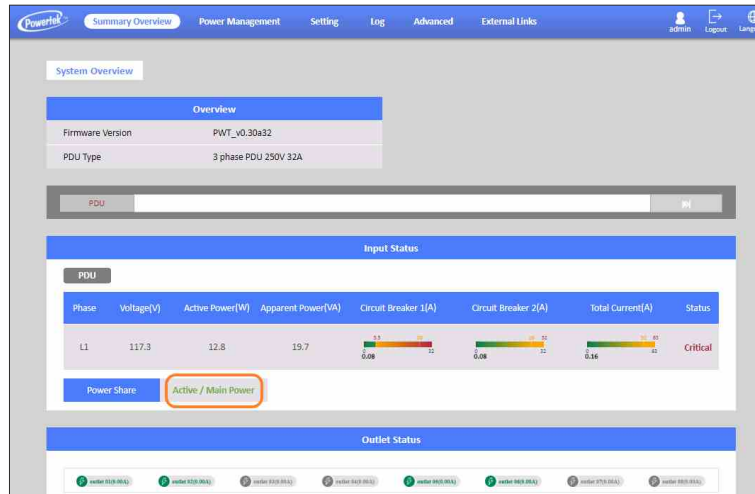
**Step 7:** The related log and trap will be recorded on the **Log of Event Log** webpage and NMS. The log and trap will be “warning: Inlet (PDU:1) Active/Main Power change to Active/Backup Power ”.

Event Log		
From:	24/02/2022	To: 24/02/2022
Device:	All	Event Level: Information
<input type="button" value="Apply"/> <input type="button" value="Clear All"/>		
Show	10	entries per page
Date&Time	Event Level	Event Description
24/02/2022 10:22:18	Information	Inlet (PDU:1) phase1 voltage had returned from warning to normal
24/02/2022 10:22:17	<b>Warning</b>	<b>Inlet (PDU:1) Active/Main Power change to Active/Backup Power</b>
24/02/2022 09:57:29	Warning	Inlet (PDU:1) phase1 voltage was higher than warning set point
24/02/2022 09:57:28	Information	Inlet (PDU:1) Active/Backup Power change to Active/Main Power
24/02/2022 09:45:17	Information	Inlet (PDU:1) phase1 voltage had returned from warning to normal

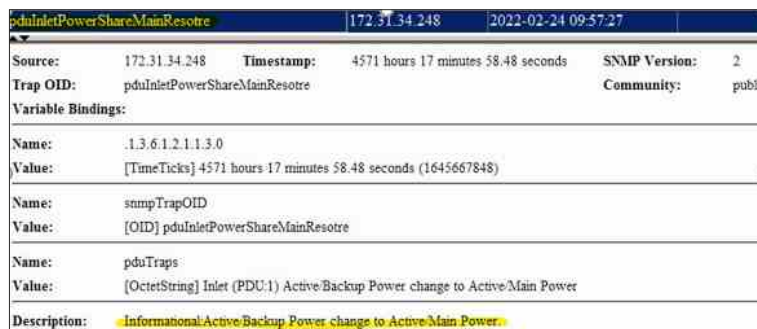
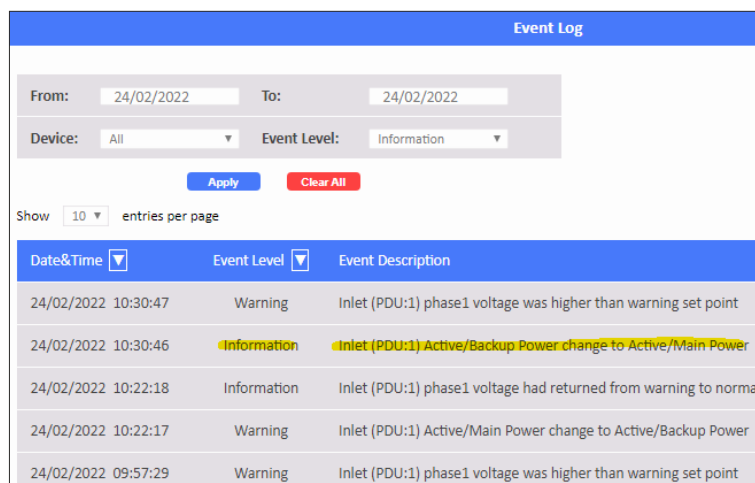
pduInletPowerShareMainLose			
Source:	172.31.34.249	Timestamp:	3703 hours 53 minutes 34.67 seconds
Trap OID:	pduInletPowerShareMainLose	SNMP Version:	2
Variable Bindings:		Community:	public
Name:	.1.3.6.1.2.1.1.3.0		
Value:	[TimeTicks] 3703 hours 53 minutes 34.67 seconds (1333401467)		
Name:	snmpTrapOID		
Value:	[OID] pduInletPowerShareMainLose		
Name:	pduTraps		
Value:	[OctetString] Inlet (PDU:1) Active/Main Power change to Active/Backup Power		
Description:	<b>Warning:Active/Main Power change to Active/Backup Power</b>		

# Using the Web Interface

**Step 8:** When PDU A has utility power restore, the status of power share will display **Active/Main Power** on the **System Overview** webpage.

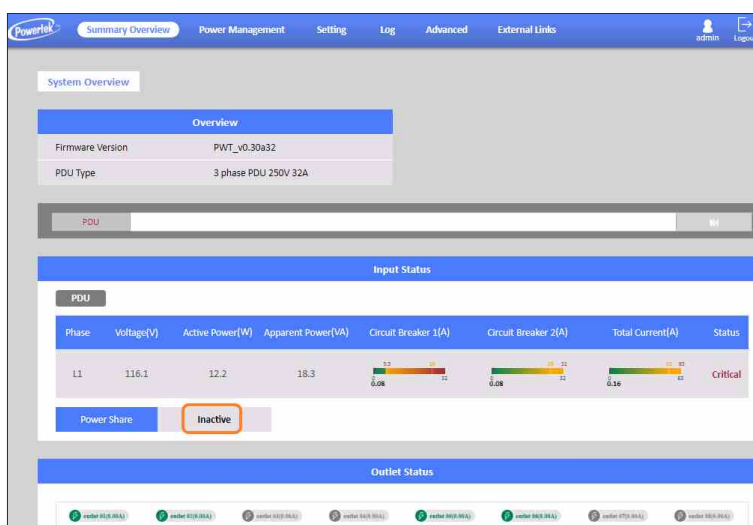
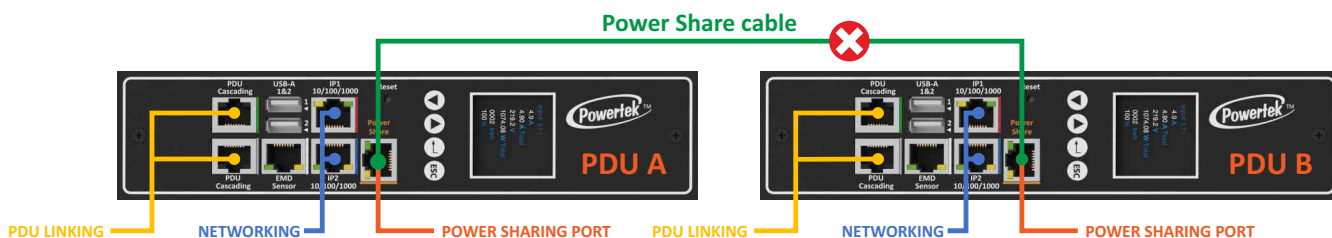


**Step 9:** The related log and trap will be recorded on the **Log of Event Log** webpage and NMS. The log and trap will be “Information: Inlet (PDU:1) Active/Backup Power change to Active/Main Power”.



# Using the Web Interface

**Step 10:** When user remove power sharing cable, the status of power share will display **Inactive** on the **System Overview** webpage.



**Step 11:** The related alarm will be occurred on the **Alarm List** of **Summary Overview** webpage. The alarm will be “PDU Power Share disconnected”.

Alarm List		
Number of Active Alarms : 4		
Alarm ID	Alarm Time	Alarm Description
56	22/02/2022 11:09:14	Inlet (PDU:1) phase1 pf branch2 was lower than warning set point
57	22/02/2022 11:09:14	Inlet (PDU:1) phase1 pf branch2 was lower than critical set point
37	24/02/2022 10:30:48	Inlet (PDU:1) phase1 voltage was higher than warning set point
63	24/02/2022 10:55:45	<b>PDU (PDU:1) Power Share disconnected</b>

# Using the Web Interface

**Step 12:** The related log and trap will be recorded on the **Log of Event Log** webpage and NMS. The log and trap will be “Warning: Inlet (PDU:1) Active/Main Power change to Inactive”.

Event Log		
From:	24/02/2022	To: 24/02/2022
Device:	All	Event Level: Information
<input type="button" value="Apply"/> <input type="button" value="Clear All"/>		
Show	10	entries per page
Date&Time	Event Level	Event Description
24/02/2022 10:55:45	Warning	Inlet(PDU:1) Active/Main Power change to Inactive
24/02/2022 10:55:34	Information	(PDU:1) EMD1(EMD-1) temperature had returned from high warning to normal

<b>pduInletPowerShareBackupLose</b>	172.31.34.248	2022-02-24 10:30:45
<b>Source:</b>	172.31.34.248	<b>Timestamp:</b> 4571 hours 18 minutes 18.46 seconds
<b>Trap OID:</b>	pduInletPowerShareBackupLose	<b>SNMP Version:</b> 3 (EngineID: 0x80001F8880213)
<b>Variable Bindings:</b>		<b>User:</b> test1234
<b>Name:</b>	.1.3.6.1.2.1.1.3.0	
<b>Value:</b>	[TimeTicks] 4571 hours 18 minutes 18.46 seconds (1645669846)	
<b>Name:</b>	snmpTrapOID	
<b>Value:</b>	[OID] pduInletPowerShareBackupLose	
<b>Name:</b>	pduTraps	
<b>Value:</b>	[OctetString] Inlet (PDU:1) Active/Backup Power change to Active/Main Power	
<b>Description:</b>	Warning: Active/Main Power change to Inactive.	

# Using the Web Interface

## Dual Ethernet Mode

POWERTEK GIGA PDU allows system administrators to set up bonding interfaces with different modes. A bonding mode specifies the policy indicating how bonding slaves are used during network transmission. To achieve the maximum throughput and fault toleration, it is important to choose the proper bonding mode and the corresponding options for the setup.

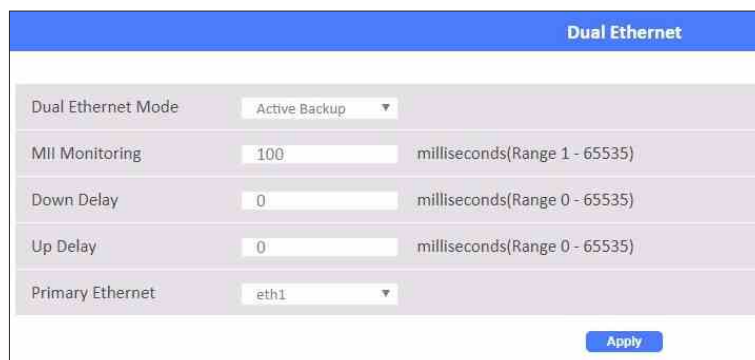
The current version of the bonding module supports the following bonding modes:

### Mode 1 (Active Backup):

Active Backup policy establishes that only one slave in the bond is active. A different slave becomes active if, and only if, the active slave fails.

The bond's MAC address is externally visible on only one port (network adapter) to avoid confusing the switch. This mode provides fault tolerance. The primary option affects the behavior of this mode.

- Use the browser to go to the GIGA PDU address and check the page for the “**Dual Ethernet**” in the “**Advance**” menu list.
- Please select “**Active Backup**” model and verify the related action as flow screen.



The screenshot shows a web interface for configuring Dual Ethernet. The title bar is blue and labeled "Dual Ethernet". Below it, there are five rows of configuration options, each with a label, a value field, and a unit/range:

Dual Ethernet		
Dual Ethernet Mode	Active Backup	
MII Monitoring	100	milliseconds(Range 1 - 65535)
Down Delay	0	milliseconds(Range 0 - 65535)
Up Delay	0	milliseconds(Range 0 - 65535)
Primary Ethernet	eth1	

An "Apply" button is located at the bottom right of the configuration area.



# Using the Web Interface

## Mode 2 (IEEE 802.3ad):

Bonding mode 2 (IEEE 802.3ad), also known as LACP (Link Aggregation Control Protocol) mode, is used for load balancing and fault tolerance. The IEEE 802.3ad specification allows the grouping of Ethernet interfaces at the physical layer to form a single link layer interface. If a bonding interface is set to this mode, it requires that all the slave devices operate at the same speed and are duplex. In this way, the network can benefit from the aggregated bandwidth of all the slaves, and if one of the slaves is down, the whole network will not be affected.

Notes: The switch should be configured to support the mode 802.3ad standard and use the LACP protocol. The 802.3ad mode only works with MII link monitor.

- Use the browser to go to the GIGA PDU address and check the page for the “**Dual Ethernet**” in the “**Advance**” menu list.
- Please select “**IEEE 802.3ad**” model and verify the related action as flow screen.



The screenshot shows a web interface for configuring Dual Ethernet. The title bar is blue and labeled "Dual Ethernet". Below the title bar, there are five rows of configuration options, each with a label, a value field, and a unit/range:

Dual Ethernet		
Dual Ethernet Mode	IEEE 802.3ad	
MII Monitoring	100	milliseconds(Range 1 - 65535)
Down Delay	0	milliseconds(Range 0 - 65535)
Up Delay	0	milliseconds(Range 0 - 65535)
Primary Ethernet	eth1	

An "Apply" button is located at the bottom right of the configuration area.

# Using the Web Interface

## Mode 3 (Balance-ALB):

Adaptive load balancing. Includes balance-transmit load balancing plus receive-load balancing for IPv4 traffic, and does not require any special switch support. The receive-load balancing is achieved by ARP negotiation. The bonding driver intercepts the ARP replies sent by the local system on their way out and overwrites the source hardware address with the unique hardware address of one of the slaves in the bond. Thus, different peers use different hardware addresses for the server.

- Use the browser to go to the GIGA PDU address and check the page for the “**Dual Ethernet**” in the “**Advance**” menu list.
- Please select “**Balance ALB**” model and verify the related action as flow screen.



The screenshot shows a web interface for configuring Dual Ethernet. The title bar is blue and labeled "Dual Ethernet". Below it, there are five configuration rows, each with a label, a value field, and a unit/range description. The "Dual Ethernet Mode" is set to "Balance ALB". "MII Monitoring" is set to "100" milliseconds (Range 1 - 65535). "Down Delay" is set to "0" milliseconds (Range 0 - 65535). "Up Delay" is set to "0" milliseconds (Range 0 - 65535). "Primary Ethernet" is set to "eth1". A blue "Apply" button is located at the bottom right of the form.

Dual Ethernet		
Dual Ethernet Mode	Balance ALB	
MII Monitoring	100	milliseconds(Range 1 - 65535)
Down Delay	0	milliseconds(Range 0 - 65535)
Up Delay	0	milliseconds(Range 0 - 65535)
Primary Ethernet	eth1	

Apply

# Using the Web Interface

## Mode 4 (Bridge):

Bridging the two networks together can be quite helpful, though, if files located on one of the networks need to be accessed from the other network. If you don't have a router but have a PC with two Ethernet cards, you can connect both networks to the PC and bridge your Ethernet cards so both networks can communicate with each other.

- Use the browser to go to the GIGA PDU address and check the page for the “**Dual Ethernet**” in the “**Advance**” menu list.
- Please select “**Bridge**” model and verify the related action as flow screen.

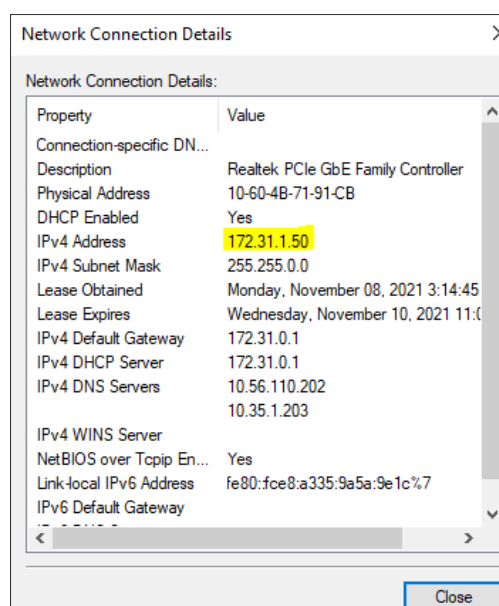


The screenshot shows the 'Dual Ethernet' configuration page. It features a blue header with the title 'Dual Ethernet'. Below the header, there are several configuration fields:

- Dual Ethernet Mode:** A dropdown menu currently set to 'Balance ALB'.
- MII Monitoring:** A text input field with the value '100' and a unit of 'milliseconds(Range 1 - 65535)'.
- Down Delay:** A text input field with the value '0' and a unit of 'milliseconds(Range 0 - 65535)'.
- Up Delay:** A text input field with the value '0' and a unit of 'milliseconds(Range 0 - 65535)'.
- Primary Ethernet:** A dropdown menu currently set to 'eth1'.

An 'Apply' button is located at the bottom right of the configuration area.

- Connect one Ethernet port to DHCP server and another to PC Ethernet port as shown below.
- After connecting, check PC system to get DHCP IP





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