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# Delta InfraSuite Power Management

Rack Power Distribution Unit (rPDU)

ViLink Series, Metered Type

User Manual

[www.deltaww.com](http://www.deltaww.com)



## SAVE THIS MANUAL

This manual contains important instructions and warnings that you should follow during the installation, operation, storage and maintenance of this product. Failure to heed these instructions and warnings will void the warranty.

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# Chapter 1 : Important Safety Instructions

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## 1.1 Safety Precautions

To reduce the risk of personal injury from electric shock, you must observe the following safety precautions when placing, installing, operating, or performing maintenance on the Delta Rack Power Distribution Units (rPDU)

- The product is designed for indoor use only in a controlled environment away from excess moisture, temperature extremes, conductive contaminants, dust or direct sunlight.
- Do not connect the rPDU to an ungrounded outlet or extension cords and adapters that eliminate the connection to ground.
- Do not use the rPDU in the presence of flammable substances.
- The power requirement for each piece of equipment connected to the rPDU must not exceed the load rating of individual output sockets.
- The total power requirement for equipment connected to the rPDU must not exceed the maximum load rating for the rPDU.
- Do not drill into or attempt to open any part of the rPDU housing. There are no user serviceable parts inside.
- Do not modify the rPDU, including the input plugs and power cables.
- Do not use the rPDU if any part of it becomes damaged.
- Do not mount the rPDU to an insecure or unstable surface.
- Never install electrical equipment during a thunderstorm.
- Suitable for installation in Information Technology Rooms.
- The rPDU is not suitable for use in locations where children are likely to be present.

## 1.2 Precautions for Rack Mounting

- **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 (T<sub>ma</sub>) specified by the manufacturer.
- **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.

- **Mechanical Loading:** Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- **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.
- **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 (such as use of power strips).

### 1.3 Precautions for Connecting to a Power Source

- Only a certified electrician can connect the rPDU with a power source.
- Do not remove the cover. There are no internal components that a user can service.
- A certified electrician must install a circuit breaker when connecting the rPDU to a power source. This protects the rPDU against over current.
- A certified electrician must determine the type of circuit breaker required depending on the input voltage.
- Before connecting the power supply, make sure you verify the earth connection.
- The use of a detachable input power cord is prohibited.
- The plug on the power supply cord is intended to serve as the disconnect device. The outlet of power source shall be installed near the equipment and shall be easily accessible.
- The short-circuit protection device is considered to be provided external to the equipment, a circuit breaker with adequate breaking (rupturing) capacity to interrupt the maximum fault current is provided between the equipment and the building installation.

### 1.4 Maintenance with Input Power

Delta strongly recommends that you do not perform maintenance on the rPDU if it is receiving input power. However, if critical maintenance is required on the rPDU connected to input power, please reduce your risk of electric shock by strictly following the precautions below.

To reduce your risk of personal injury by electric shock, you must:

- Be a certified electrician trained in live electrical installation.
- Always work with another qualified person.

- Know how to disconnect electricity to the rPDU and data center in case of emergency.
- Wear the right protective equipment.
- Use double-insulated tools.
- Strictly follow local and site regulations.

## **1.5 Electromagnetic Interference**

This is a Class A product. In a domestic environment, the product may cause radio interference in which case the user may be required to take adequate measures.

## Chapter 2 : Introduction

### 2.1 General Overview

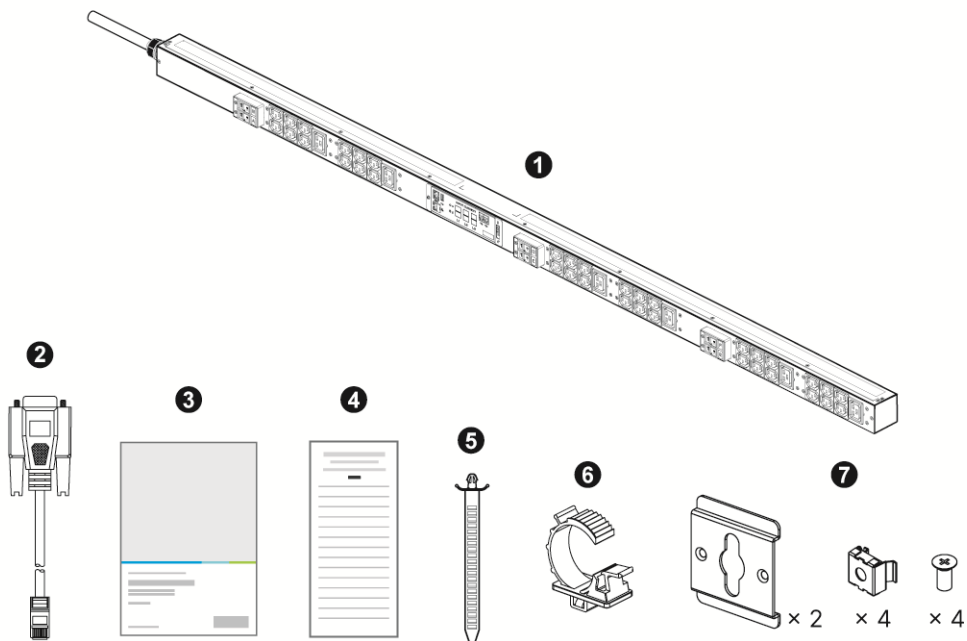
The Delta ViLink Metered Rack Power Distribution Unit (hereinafter referred to as the rPDU) is a product of the Delta intelligent rPDU family. The rPDU distributes power to equipment mounted in racks and enclosures used in data centers as well as IT and telecom installations. The rPDU installs vertically without tools in the rear of a rack and without requiring a unit space. Input to the rPDU can be either single phase or three phase America/ Taiwan or International voltages.

The rPDU features remote access to allow users to monitor its status, including input voltage, branch current, power information and environmental conditions via the Ethernet network.

Regarding detailed specifications, please refer to the individual datasheet of rPDU.

### 2.2 Package Inspection

The rPDU package contains the following items:



| No. | Item                                                                                   | Quantity                                         |
|-----|----------------------------------------------------------------------------------------|--------------------------------------------------|
| ❶   | Power Distribution Unit                                                                | 1 PC                                             |
| ❷   | RJ45 to DB9 Cable                                                                      | 1 PC                                             |
| ❸   | User Manual                                                                            | 1 PC                                             |
| ❹   | Installation & Operation Quick Guide                                                   | 1 PC                                             |
| ❺   | Cable Tie                                                                              | Based on the rPDU's total output socket quantity |
| ❻   | Cable Tie Fixing Holder                                                                |                                                  |
| ❼   | Mounting Bracket Kit (including two mounting brackets, four cage nuts and four screws) | 1 Set                                            |

## 2.3 Features & Functions

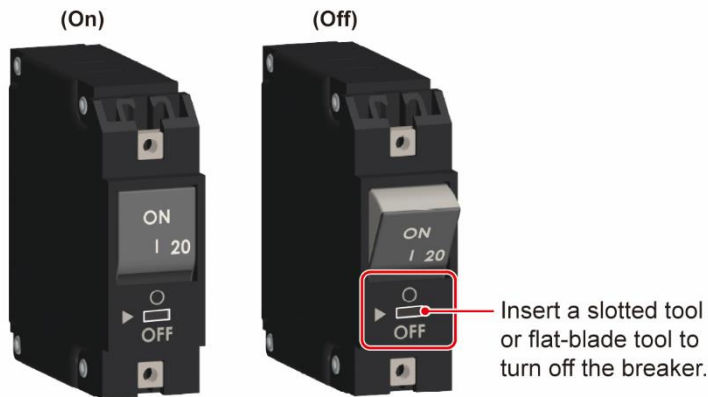
| Feature                                                                                                   | Function                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>ACCESS CONTROL     | <ul style="list-style-type: none"> <li>Supports state-of-the-art authentication (e.g. LDAP(s), RADIUS, TACACS+) to secure rPDU access.</li> </ul>                                                                                            |
| <br>ACCURACY           | <ul style="list-style-type: none"> <li>Independently verified by the IEC 62053-21 standard to meet 1% billing grade accuracy requirement.</li> </ul>                                                                                         |
| <br>CABLE LOCKING      | <ul style="list-style-type: none"> <li>Cable ties and their fixing holders are provided.</li> <li>Plastic flexible retention sleeves are available (optional).</li> <li>Compatible with P-locks and IEC locks (optional).</li> </ul>         |
| <br>CIRCUIT PROTECTION | <ul style="list-style-type: none"> <li>Equipped with the UL489 certificated magnetic-hydraulic circuit breaker for each branch circuit protection, and the UL248 certificated fuse (optional) for each branch circuit protection.</li> </ul> |

| Feature                                                                                                       | Function                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>COLOR GROUPING</p>       | <ul style="list-style-type: none"> <li>• Colour options include red, blue and green.</li> <li>• Associates output sockets on the same phase with related breaker(s) to differentiate phase-breaker-socket groups.</li> </ul> |
|  <p>DAISY CHAIN</p>          | <ul style="list-style-type: none"> <li>• Allows up to 40 rPDUs connected together to be monitored and controlled under one IP address, which reduces IP addresses.</li> </ul>                                                |
|  <p>GIGABIT ETHERNET</p>     | <ul style="list-style-type: none"> <li>• Supports 10/ 100/ 1000 Mbps Ethernet connectivity.</li> <li>• Provides up to 1 Gbps Ethernet connectivity in anticipation of future networking topologies.</li> </ul>               |
|  <p>IPv4 &amp; IPv6</p>      | <ul style="list-style-type: none"> <li>• Supports both IPv4 and IPv6 protocols.</li> </ul>                                                                                                                                   |
|  <p>LOCAL DISPLAY</p>        | <ul style="list-style-type: none"> <li>• Provides local users with real-time information.</li> <li>• Displays input current of individual lines on an auto-flip LED for local installation and maintenance.</li> </ul>       |
|  <p>METERING</p>           | <ul style="list-style-type: none"> <li>• Input metering functions to measure voltage (V), current (A), power (W), energy (Wh), apparent power (VA), PF, THDv (%) and THDi (%).</li> </ul>                                    |
|  <p>NETWORK MONITORING</p> | <ul style="list-style-type: none"> <li>• Provides multiple secured network protocols, including HTTP/HTTP(S), SSH/SSL, SNMP, IPv4, IPv6 and LDAP(S) for the management of rPDUs.</li> </ul>                                  |
|  <p>TOOL - FREE</p>        | <ul style="list-style-type: none"> <li>• An inbuilt hot-swappable and tool-free remote monitoring controller (RMC) allows users to remove, install and maintain easily.</li> </ul>                                           |

## 2.4 Circuit Breaker

- Circuit Breaker with Handle Guard

The handle of circuit breaker should be in the ON position during operation. Once a slotted tool or flat-blade tool is inserted into the OFF slot manually as shown in *Figure 2-1*, the circuit breaker would be turned off.



*(Figure 2-1: Circuit Breaker with Handle Guard)*

- To reset the circuit breaker, its handle should be turned to the ON position.
- If the circuit breaker is tripped due to over current, please set its handle to the OFF position first and then reset back to the ON position.

## 2.5 Output Socket

- The C13 socket is rated 10 Amax / 200 - 240Vac.
- The C19 socket is rated 16Amax / 200 - 240 Vac
- Each branch of rPDU is rated 16 Amax / 200 - 240Vac.

## Chapter 3 : rPDU Installation

You can install the rPDU into a rack using toolless mounting pegs and, if needed, mounting brackets. Once in rack, you can plug devices' power cords into the rPDU's output sockets and secure them to the rPDU's retention slots using the cable ties (provided).



### NOTE:

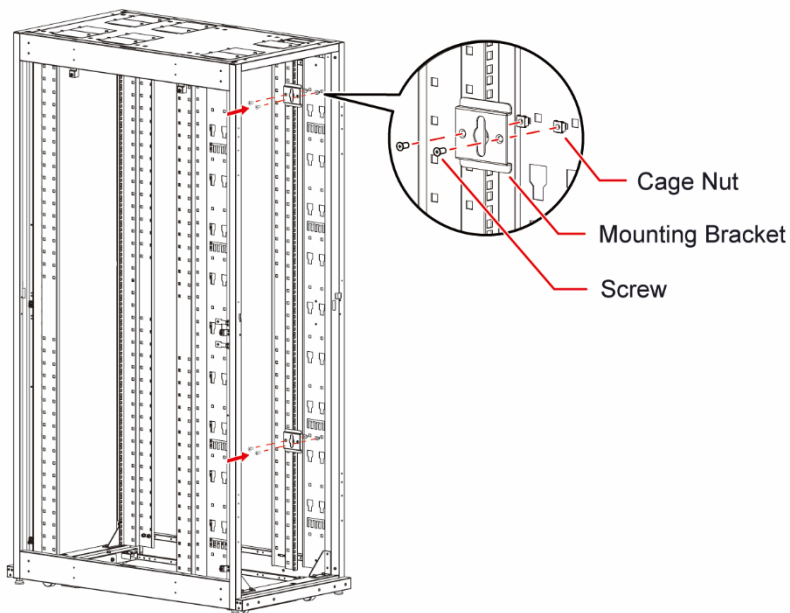
Mounting brackets varies with different racks and situations. For better feasibility, please contact Delta customer service for more information.

### 3.1 Mounting on Delta Standard Rack

The rPDU can be vertically installed at the rear of the rack. Mounting brackets are required for the installation of the rPDU.

#### Step 1

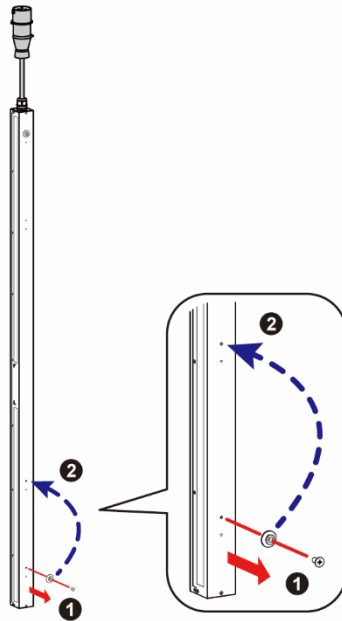
Put cage nuts into the EIA holes between 11U & 12U and 39U & 40U on the Delta Standard Rack. And fasten the mounting brackets to cage nuts with screws. We recommend you use #2 Phillip screwdriver to fasten the screws. See *Figure3-1*.



*(Figure 3-1: Install the Cage Nuts and Mounting Brackets)*

## **Step 2**

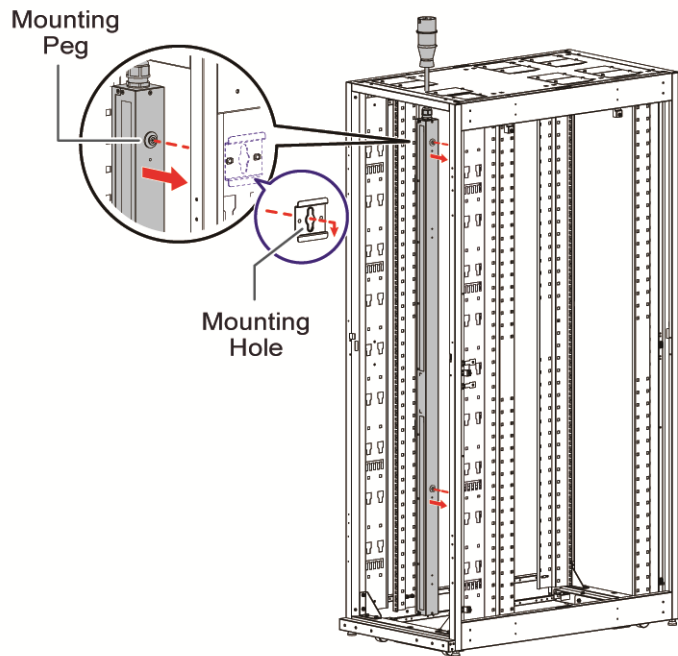
When the power cord goes up, the toolless mounting peg should be adjusted to relative position (from **1** to **2**) following the mounting bracket. We recommend the use of #2 Phillip screwdriver. See **Figure 3-2**.



*(Figure 3-2: Adjust the Toolless Mounting Peg to Relative Position)*

### **Step 3**

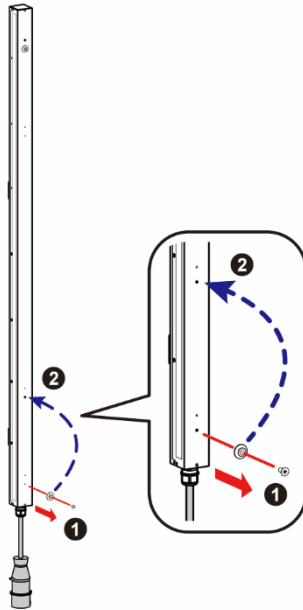
Hold the rPDU vertically and align its toolless mounting pegs with the mounting holes. See *Figure 3-3*.



*(Figure 3-3: Align the Mounting Pegs with the Mounting Holes)*

#### **Step 4**

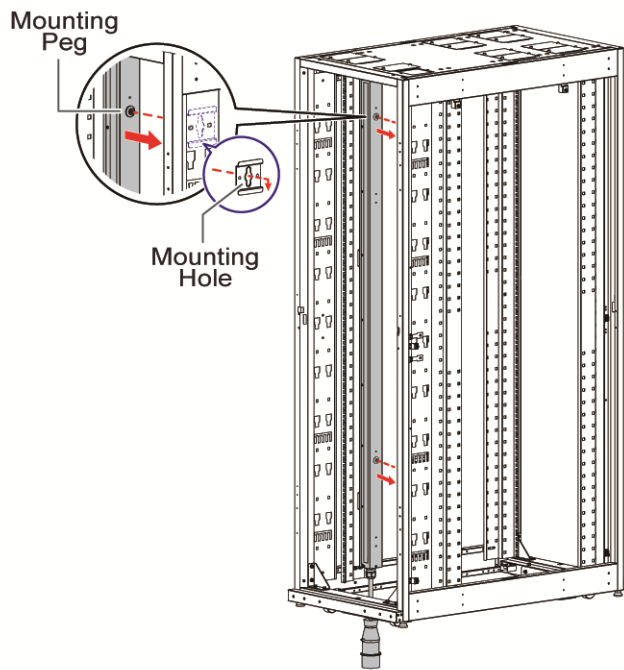
When the power cord goes down, the toolless mounting peg should be adjusted to relative position (from **1** to **2**) following the mounting bracket. We recommend the use of #2 Phillip screwdriver. See **Figure 3-4**.



*(Figure 3-4: Adjust the Toolless Mounting Peg to Relative Position)*

### **Step 5**

Hold the rPDU vertically and align its toolless mounting pegs with the mounting holes. See **Figure 3-5**.



*(Figure 3-5: Align the Toolless Mounting Pegs with the Mounting Holes)*

## 3.2 Mounting on Delta Standard Rack (Side-hung)

Side-hung is also feasible on the Delta Standard Rack. All you need is to choose different mounting brackets.

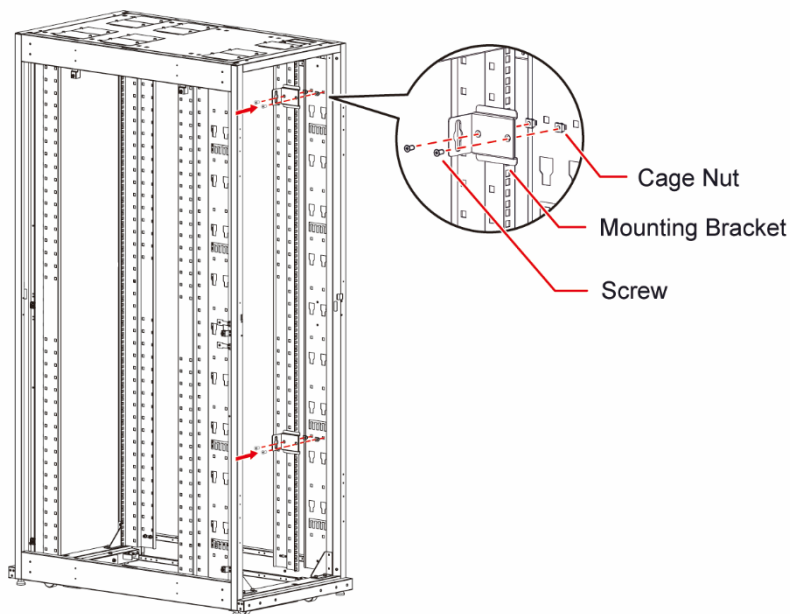


### NOTE:

If you would like to perform side-hung, please contact Delta customer service for more information.

### Step 1

Put cage nuts into the EIA holes between 11U & 12U and 39U & 40U on the Delta Standard Rack. And fasten the mounting brackets to cage nuts with screws. We recommend you use #2 Phillip screwdriver to fasten the screws. See **Figure3-6**.



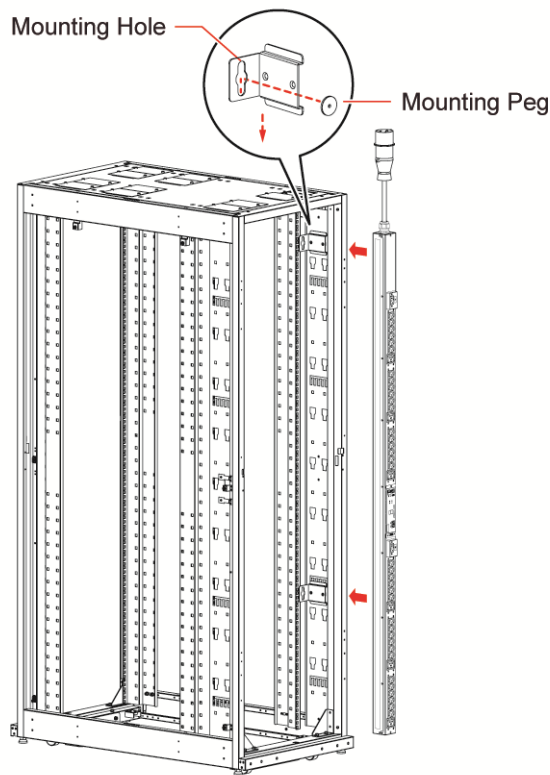
*(Figure 3-6: Install the Cage Nuts and Mounting Brackets)*

### Step 2

Please refer to **Figure 3-2** for the positions of the toolless mounting pegs when the power cord goes up and refer to **Figure 3-4** when the power cord goes down.

### Step 3

Hold the rPDU vertically and align its toolless mounting pegs with the mounting holes. See *Figure 3-7*.



*(Figure 3-7: Align the Toolless Mounting Pegs with the Mounting Holes)*

### 3.3 Mounting on Other Racks

If you choose not to use the Delta Standard Rack, please contact Delta engineers or Delta customer service for further information to find suitable mounting solution for your rack.

## Chapter 4 : rPDU Connection

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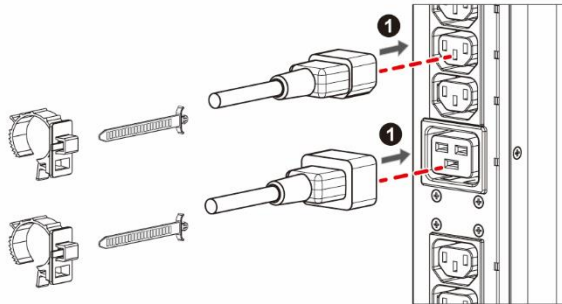
### 4.1 Plug in the rPDU

Plug the rPDU input power cord into a grounded outlet. Make sure the grounded outlet does not share a circuit with a heavy electrical load such as an air conditioner or a refrigerator.

### 4.2 Output Sockets

#### Step 1

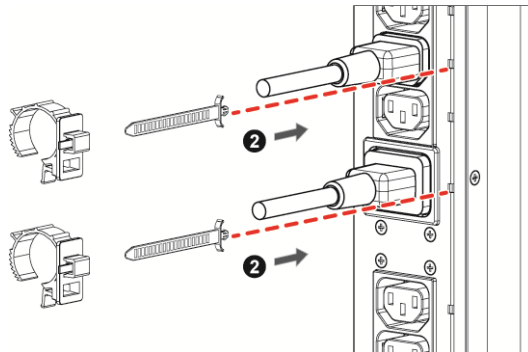
Plug the power cords into rPDU's sockets (❶). Please refer to *Figure 4-1*.



*(Figure 4-1: Plug the Power Cords into rPDU's Output Sockets)*

## **Step 2**

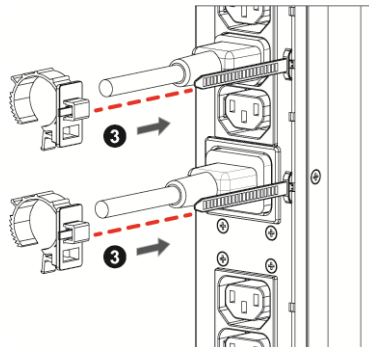
Insert the cable ties into the slots (❷). Please refer to *Figure 4-2*.



*(Figure 4-2: Insert the Cable Ties into the Slots)*

## **Step 3**

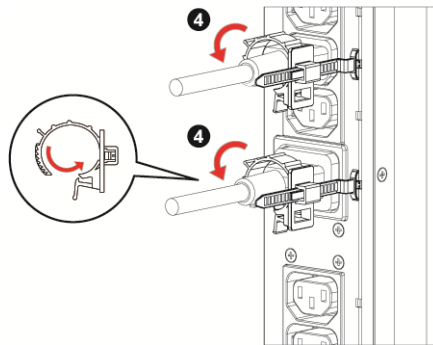
Insert the cable ties into the fixing holders (❸) and push the fixing holders toward the output sockets as close as possible. Please refer to *Figure 4-3*.



*(Figure 4-3: Insert the Cable Ties into the Fixing Holders)*

#### **Step 4**

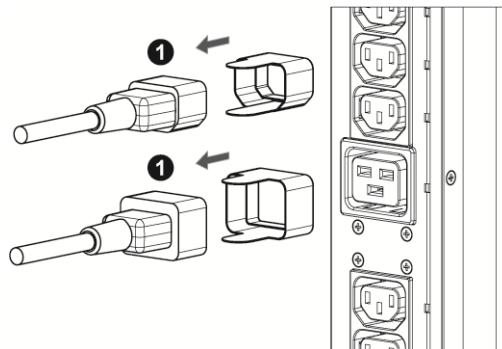
Tighten the fixing holder by pushing the end into the groove (④). Please refer to *Figure 4-4*.



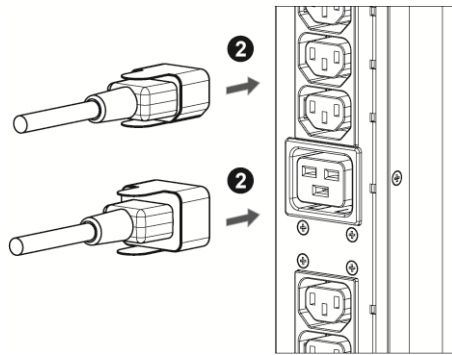
*(Figure 4-4: Tighten the Fixing Holder)*

### **4.3 Retention Sleeves (Optional)**

An alternate solution for connecting the plugs strongly is retention sleeves. First, attach them to the plugs as *Figure 4-5* and then plug them into the output sockets as *Figure 4-6*.



*(Figure 4-5: Attach the Retention Sleeves to the Plugs)*



*(Figure 4-6: Insert the Plugs into the Output Sockets)*



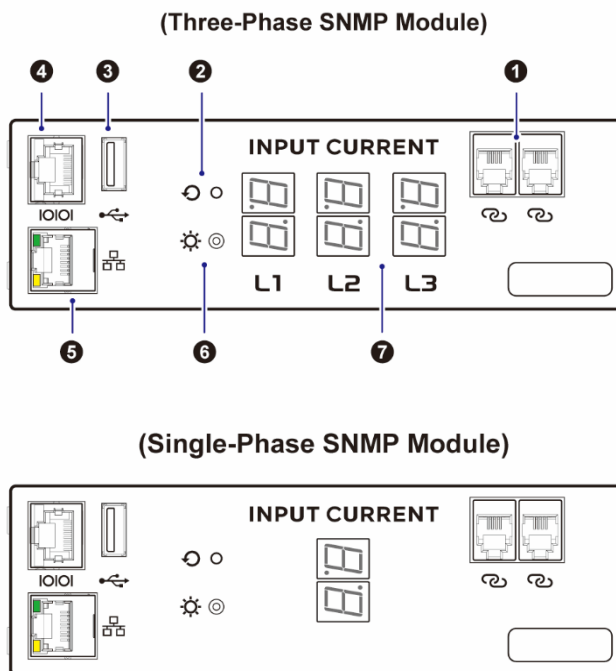
**NOTE:**

If you would like to use the retention sleeves, please contact Delta customer service for more information.

## Chapter 5 : Communication Interfaces

### 5.1 Remote Monitoring Controller

The rPDU features a remote monitoring controller (RMC), which has a built-in SNMP IPv6 communication device, a RJ45 port for the RS232 console and the RS485 EMP communication. Additionally, the RMC has a USB port for downloading event log and data log, two daisy chain ports for daisy chain configuration, an alarm indicator that indicates the condition of the rPDU. Moreover, there are two-digit LED displays that show the current of each line, and a reset button.



| No. | Icon                                                                                                         | Description                                                                                                                                                                                               |
|-----|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | <br>Daisy Chain Port        | For daisy-chain connection. Refer to <i>Chapter 5: Communication Interfaces</i> for details.                                                                                                              |
| ②   | <br>Reset Button            | Reset of RMC, password and DHCP.                                                                                                                                                                          |
| ③   | <br>USB Port                | For download of event log and data log to a USB flash drive.                                                                                                                                              |
| ④   | <br>Serial Port             | For console and environmental probe connection. Refer to <i>Chapter 5: Communication Interfaces</i> for details.                                                                                          |
| ⑤   | <br>Network Port            | It connects to the Ethernet network. This port allows users to access the web user interface and provides network communication service. Refer to <i>Chapter 5: Communication Interfaces</i> for details. |
| ⑥   | <br>System Status Indicator | Green light: The system is normal.<br>Red light: An alarm has occurred.                                                                                                                                   |
| ⑦   | L1/ L2/ L3<br>Auto-flip Display                                                                              | It shows the current value of individual lines.                                                                                                                                                           |

## 5.1.1 RMC General Specification

| Items      | Specification                      |
|------------|------------------------------------|
| Networking | 10/100/1000 Mbps Ethernet          |
|            | IPv4, IPv6                         |
|            | SNMP V1/V2c/V3                     |
|            | HTTP, HTTPs, SSH, SSL              |
| Console    | Local monitoring via RS232 console |
|            | Baud rate: 115200 bps              |

| Items                | Specification                       |                                         |
|----------------------|-------------------------------------|-----------------------------------------|
| Measurement Accuracy | Voltage                             | $\pm 1\%$                               |
|                      | Current                             | $\pm 1\%$                               |
|                      | Power                               | $\pm 2\%$ (2 ~ 45A)<br>$\pm 4\%$ (< 2A) |
| LED Indicator        | Red                                 | Alarm issued                            |
|                      | Green                               | RMC is in operation mode                |
| Maintenance          | Tool-less and hot swappable design. |                                         |

### 5.1.2 Reset the RMC

Press the reset button for 1 second to reset the RMC. This will not affect the operation of the rPDU.

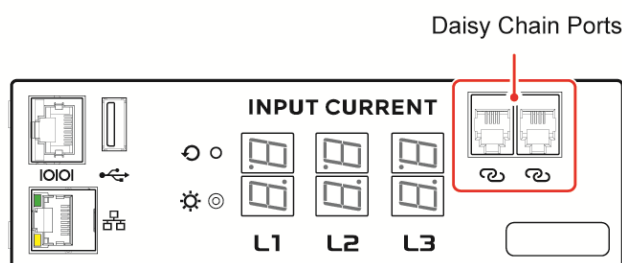


#### NOTE:

When the RMC requires repairs and needs to be replaced, please download the configuration file on the original RMC and transfer it to the new RMC for your use.

## 5.2 Daisy Chain Ports

The two ports shown below are for daisy chain application. The daisy chain function allows up to 40 rPDUs connected together to be monitored and controlled under one IP address, which reduces IP addresses. To connect one rPDU with another, a RJ11-RJ11 cable and two terminal resistors are required. If you need this service, please contact Delta customer service.



## 5.3 LED Indicator and Display

| LED                     | Color                        | Definition                          |        |
|-------------------------|------------------------------|-------------------------------------|--------|
| System Status Indicator | Green/ Red<br>(Bi-color LED) | Green                               | Normal |
|                         |                              | Red                                 | Alarm  |
| 7-segment Display       | Green                        | 2-Digit line current for L1/ L2/ L3 |        |

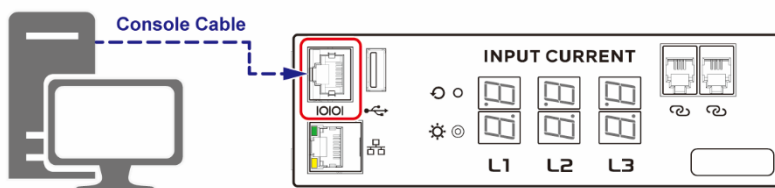
- **Invert the Numerical Display**

If you are mounting the rPDU in the rack with upside-down, the 7-segment display will rotate 180 degrees automatically.

## 5.4 Serial Port

The serial port serves as the RS232 port and RS485 port at the same time. It allows users to connect the serial port to a console or an environmental probe.

- **Connection to a Console**

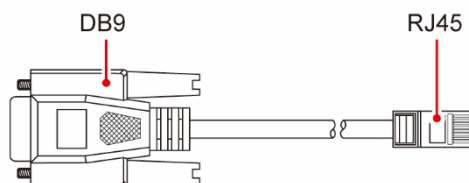


### PC Tera Term Setting

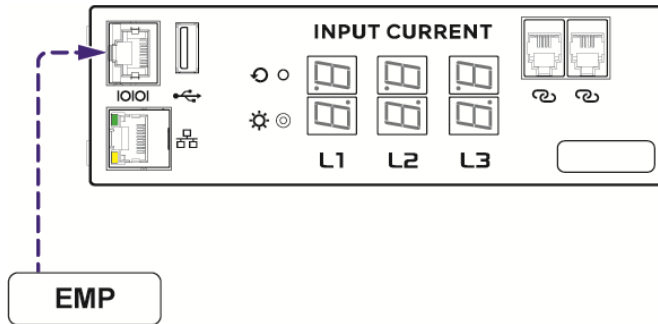
COM Port Number: Please check in your "Device Administrator".  
Baud Rate: 115200 bps

For local management, users can use the console mode to control and monitor the rPDU via the RS232 port.

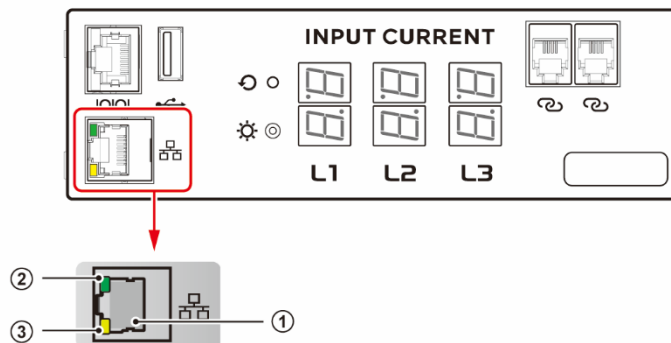
To link user's PC or notebook to the rPDU, the below accessory, a console cable shown in the figure below, is required for the communication.



- Connection to an Optional Environment Monitoring Probe (EMP) Module



## 5.5 Network Port



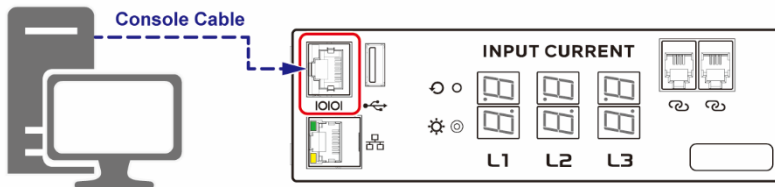
This Network port supports various protocols, e.g. HTTP(s), SSH, SSL, SNMP, IPv4 and IPv6.

| No. | Item                  | Function                                                                                                                                  |
|-----|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | Network Port (RJ45)   | It connects to the Ethernet network.                                                                                                      |
| ②   | Link LED (Green)      | It presents the network connection status.<br>1. ON: Network connection is established.<br>2. OFF: Network connection is not established. |
| ③   | Activity LED (Yellow) | It presents the network activity status.<br>1. OFF: No network activity.<br>2. Flashing: Active network (RX, TX) status.                  |

## Chapter 6 : Web User Interface

To remotely monitor and control the rPDU, web user interface and SNMP are available.

### 6.1 Check IP Address from the Console



#### PC Tera Term Setting

COM Port Number: Please check in your "Device Administrator".

Baud Rate: 115200 bps

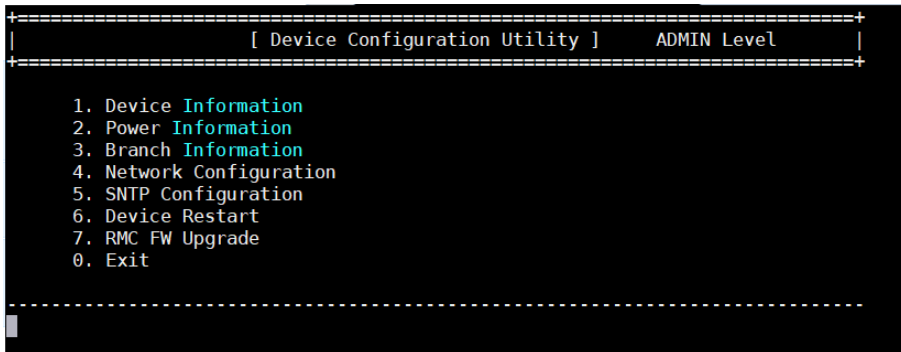
Please follow the steps in *Chapter 5.4 Serial Port* for console connection.

#### Step 1

Key in the information below:

Login account: **Admin**

Password: **00000000** (Default)



#### NOTE:

1. The default password of Admin/ User shall be changed and managed.
2. Pursuant to the California Security Law, it is mandatory that users change the password when first logging in. For the first login, users will not be able to log in with a User level account; therefore, users shall log in as Admin and change the password.

## Step 2

To check the network setting, enter "1" and you will see the IP address information as below.

```
[ Device Information ]

Software Version: S1.00B18
Hardware Version: S0
Model Number: CUD-09B A
Factory Date: 2021/3/17
MAC Address: 00:18:23:0C:FB:46
System Name: DELTA iPDU (PDU A317DSA23500)
System Description: 3-P Wye IP & Branch Metered PDU C13(36)+C19(6)+CB(6)
System Datetime: 2021-05-14 16:36:06

[IPv4]
Address Auto Configure: DHCP
IP Address: 192.168.0.1
Netmask: 255.255.255.0
Gateway Address: 192.168.0.254
DNS Address:

[IPv6]
Address Auto Configure: None
Link Local Address: fe80::218:23ff:fe0c:fb46
Global Address:
Prefix: 0
Gateway Address:
DNS Address:

Hit Enter key to leave...
```



### NOTE:

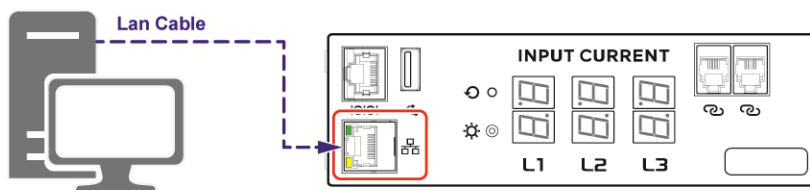
To change the network setting, please enter "4".

## 6.2 Login to the Web Page



### NOTE:

Please use a LAN cable to connect the rPDU with your PC.



#### PC Lan Port Setting

Address : 192.168.0.100  
Netmask : 255.255.255.0

#### PDU Default Network Setting

TCP/ IP Mode : Static IP  
Address : 192.168.0.1  
Gateway : 192.168.0.254  
Netmask : 255.255.255.0

## Step 1

Open the Web browser and enter the IP address **Https://192.168.0.1**, and you will see the login screen as below.



### NOTE:

If you log in for the first time and cannot acquire connection, please ensure that the link (**Https://**) and rPDU's domain are correct. For web browsers, please use Microsoft Edge, Chrome or Firefox 3.0.1.

## Step 2

Key in the information below:

User Name: **Admin**

Password: **00000000** (Default)



### NOTE:

1. Follow the capitalization rule for the user's name.
2. The default password of Admin/ User shall be changed and managed.
3. Pursuant to the California Security Law, it is mandatory that users change their passwords when they first log in. For the first login, users will not be able to log in with a User level account; therefore, users shall log in as Admin and change their passwords.

## 6.3 Web Page

- Power Management



The **Overview** page under **Power Management** shows the rPDU current status, AC input, total power and environment conditions as in the above figure.

| No. | Item                 | Description                                                                                                                                                                                                                                                  |
|-----|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | Control Menu         | The main control bar of the website.                                                                                                                                                                                                                         |
| ②   | System Status        | The system status:<br>System OK<br>Minor Alarm<br>Major Alarm                                                                                                                                                                                                |
| ③   | rPDU Name            | The model name of the rPDU in use. Users can jump to the setting page by clicking the icon.                                                                                                                                                                  |
| ④   | Date & Time          | The current date and time on the Remote Monitoring Controller of the rPDU. Users can jump to the setting page by clicking the icon.                                                                                                                          |
| ⑤   | RMC Version          | The current firmware version of the Remote Monitoring Controller. Users can jump to setting page by clicking the icon.                                                                                                                                       |
| ⑥   | Logout               | Click the icon to logout of the website.                                                                                                                                                                                                                     |
| ⑦   | Power Information    | The power rating of the rPDU. The icon turns red when an overload alarm occurs.                                                                                                                                                                              |
| ⑧   | AC Input Information | The three-phase/ single-phase voltage and current. The icon turns red when an alarm happens.                                                                                                                                                                 |
| ⑨   | EMP Information      | The individual temperature and humidity records. The icon turns red when an alarm happens.                                                                                                                                                                   |
| ⑩   | USB Indicator        | The indicator will show when rPDU detects an USB drive is inserted. For security reasons, users need to manually select 'Mount' before using the USB function. (i.e. download and access the USB drive.)<br><br>Supported USB format: FTA32, NTFS and exFAT. |

The screenshot shows the 'Input' page under 'Power Management'. The left sidebar contains navigation options: POWER MANAGEMENT, Overview, Input, ENVIRONMENT, SYSTEM, ALARM, HISTORY, NETWORK, and MANAGEMENT. The main content area has a tab 'Info' selected, showing 'Daisy Chain' and 'Branch Name'.

**INPUT STATUS 1**

| Line  | Source   | Line Voltage(V) | Phase Voltage(V) | Line Current(A) | Power(W) | Energy(Wh) | Power Factor | Apparent Power(VA) | Voltage THD(%) | Current THD(%) |
|-------|----------|-----------------|------------------|-----------------|----------|------------|--------------|--------------------|----------------|----------------|
| L1    | Source 1 | 358.5           | 206.9            | 0.00            | 0        | 0          | 0.00         | 0                  | 0              | 0              |
| L2    | Source 1 | 357.1           | 206.8            | 0.00            | 0        | 0          | 0.00         | 0                  | 0              | 0              |
| L3    | Source 1 | 356.9           | 205.2            | 0.00            | 0        | 0          | 0.00         | 0                  | 0              | 0              |
| Total |          |                 |                  |                 | 0        | 0          |              |                    |                |                |

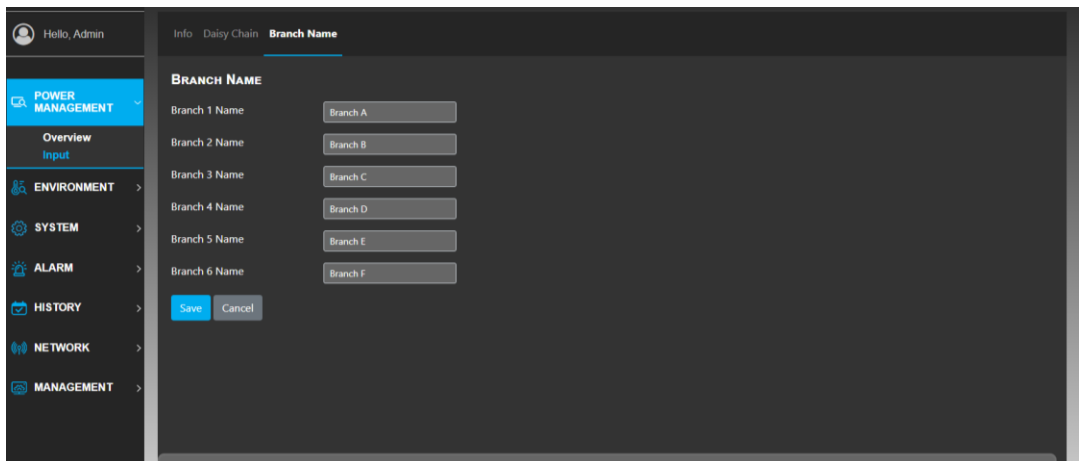
**BRANCH STATUS 2**

| Branch | Name     | Phase | Voltage(V) | Current(A) | Power(W) | Energy(Wh) | Power Factor | Apparent Power(VA) | Voltage THD(%) | Current THD(%) |
|--------|----------|-------|------------|------------|----------|------------|--------------|--------------------|----------------|----------------|
| A      | Branch A | L1-N  | 206.9      | 0.00       | 0        | 0          | 0            | 0                  | 0              | 0              |
| B      | Branch B | L2-N  | 206.8      | 0.00       | 0        | 0          | 0            | 0                  | 0              | 0              |
| C      | Branch C | L3-N  | 205.2      | 0.00       | 0        | 0          | 0            | 0                  | 0              | 0              |
| D      | Branch D | L1-N  | 201.6      | 0.00       | 0        | 0          | 0            | 0                  | 0              | 0              |

Callout 1 points to the 'INPUT STATUS' title. Callout 2 points to the 'BRANCH STATUS' title. Callout 3 points to the reset icon for the total energy record. Callout 4 points to the reset icons for individual branch energy records.

On the **Input** page under **Power Management**, click **Info** to see the detailed AC input and branch status. The total energy records are also shown.

| No. | Item                 | Description                                                                                                                                                                                     |
|-----|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | AC Input Information | Display of the voltage, current, power energy, PF, apparent power, vTHD and iTHD information.                                                                                                   |
| 2   | Branch Information   | Display of the phase, voltage, current, power energy, PF, apparent power, vTHD and iTHD information of individual branches.                                                                     |
| 3   | Reset Total Energy   | Click the icon to reset the total energy record.<br> <b>NOTE:</b><br>The procedure is irreversible.          |
| 4   | Reset Branch Energy  | Click the icon to reset the energy record of each branch.<br> <b>NOTE:</b><br>The procedure is irreversible. |



On the **Input** page under **Power Management**, click **Branch Name** to change the branch name. It will be easier for users to distinguish individual branches.

Hello , Admin

POWER MANAGEMENT

Overview

Input

ENVIRONMENT

SYSTEM

ALARM

HISTORY

NETWORK

MANAGEMENT

Info

Daisy Chain

Branch Name

Daisy Chain Branch Name

INPUT STATUS --- SUMMARY

| System ID | Line | Source   | Line Voltage(V) | Phase Voltage(V) | Line Current(A) | Power(W) | Energy(Wh) | Frequency(Hz) | Power Factor | Apparent Power(VA) | Voltage THD(%) | Current THD(%) |   |   |
|-----------|------|----------|-----------------|------------------|-----------------|----------|------------|---------------|--------------|--------------------|----------------|----------------|---|---|
| 1         | L1   | Source 1 | 370.3           | 214.6            | 0.00            | 0        | 0          | 60.0          | ---          | 0                  | 0.0            | 0.0            | C |   |
| 1         | L2   | Source 1 | 370.3           | 214.5            | 0.00            | 0        | 0          | 60.0          | ---          | 0                  | 0.0            | 0.0            |   |   |
| 1         | L3   | Source 1 | 370.3           | 214.5            | 0.00            | 0        | 7          | 60.0          | ---          | 0                  | 0.0            | 0.0            |   |   |
| Total     |      |          |                 |                  |                 | 0        | 7          |               |              |                    |                |                |   | C |
| 2         | L1   | Source 1 | 381.9           | 221.6            | 0.00            | 0        | 0          | 60.0          | ---          | 0                  | 1.3            | 0.0            | C |   |
| 2         | L2   | Source 1 | 382.0           | 221.7            | 0.00            | 0        | 0          | 60.0          | ---          | 0                  | 0.0            | 0.0            |   |   |
| 2         | L3   | Source 1 | 382.0           | 221.7            | 0.00            | 0        | 14         | 60.0          | ---          | 0                  | 0.0            | 0.0            |   |   |
| Total     |      |          |                 |                  |                 | 0        | 14         |               |              |                    |                |                |   | C |
| 3         | L1   | Source 1 | 0.0             | 0.0              | 0.00            | 0        | 0          | ---           | 0.00         | 0                  | 0.0            | 0.0            | C |   |
| 3         | L2   | Source 1 | 0.0             | 0.0              | 0.00            | 0        | 0          | ---           | 0.00         | 0                  | 0.0            | 0.0            |   |   |
| 3         | L3   | Source 1 | 0.0             | 0.0              | 0.00            | 0        | 0          | ---           | 0.00         | 0                  | 0.0            | 0.0            |   |   |
| Total     |      |          |                 |                  |                 | 0        | 0          |               |              |                    |                |                |   | C |

Hello , Admin

Info **Daisy Chain** Branch Name Daisy Chain Branch Name

**BRANCH STATUS --- SUMMARY**

| System ID | Branch | Name     | Phase | Voltage(V) | Current(A) | Power(W) | Energy(Wh) | Power Factor | Apparent Power(VA) | Voltage THD(%) | Current THD(%) |                   |
|-----------|--------|----------|-------|------------|------------|----------|------------|--------------|--------------------|----------------|----------------|-------------------|
| 1         | A      | Branch A | L1-N  | 214.1      | 0.00       | 0        | 0          | ---          | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 1         | B      | Branch B | L2-N  | 214.4      | 0.00       | 0        | 0          | ---          | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 1         | C      | Branch C | L3-N  | 214.4      | 0.00       | 0        | 0          | ---          | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 1         | D      | Branch D | L1-N  | 214.7      | 0.00       | 0        | 0          | ---          | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 1         | E      | Branch E | L2-N  | 214.7      | 0.00       | 0        | 0          | ---          | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 1         | F      | Branch F | L3-N  | 214.8      | 0.00       | 0        | 7          | ---          | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 2         | A      | Branch A | L1-N  | 220.8      | 0.00       | 0        | 0          | ---          | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 2         | B      | Branch B | L2-N  | 220.8      | 0.00       | 0        | 0          | ---          | 0                  | 1.6            | 0.0            | <a href="#">C</a> |
| 2         | C      | Branch C | L3-N  | 221.1      | 0.00       | 0        | 0          | ---          | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 2         | D      | Branch D | L1-N  | 220.8      | 0.00       | 0        | 0          | ---          | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 2         | E      | Branch E | L2-N  | 220.9      | 0.00       | 0        | 0          | ---          | 0                  | 1.7            | 0.0            | <a href="#">C</a> |
| 2         | F      | Branch F | L3-N  | 221.0      | 0.00       | 0        | 14         | ---          | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 3         | A      | Branch A | L1-N  | 0.0        | 0.00       | 0        | 0          | 0.00         | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 3         | B      | Branch B | L2-N  | 0.0        | 0.00       | 0        | 0          | 0.00         | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 3         | C      | Branch C | L3-N  | 0.0        | 0.00       | 0        | 0          | 0.00         | 0                  | 0.0            | 0.0            | <a href="#">C</a> |
| 3         | D      | Branch D | L1-N  | 0.0        | 0.00       | 0        | 0          | 0.00         | 0                  | 0.0            | 0.0            | <a href="#">C</a> |

On the **Input** page under **Power Management**, click **Daisy Chain** to see all rPDUs' detailed AC input and branch status.

Hello , Admin

Info **Daisy Chain** Branch Name **Daisy Chain Branch Name**

**BRANCH NAME** 1 ▾

Branch 1 Name

Branch 2 Name

Branch 3 Name

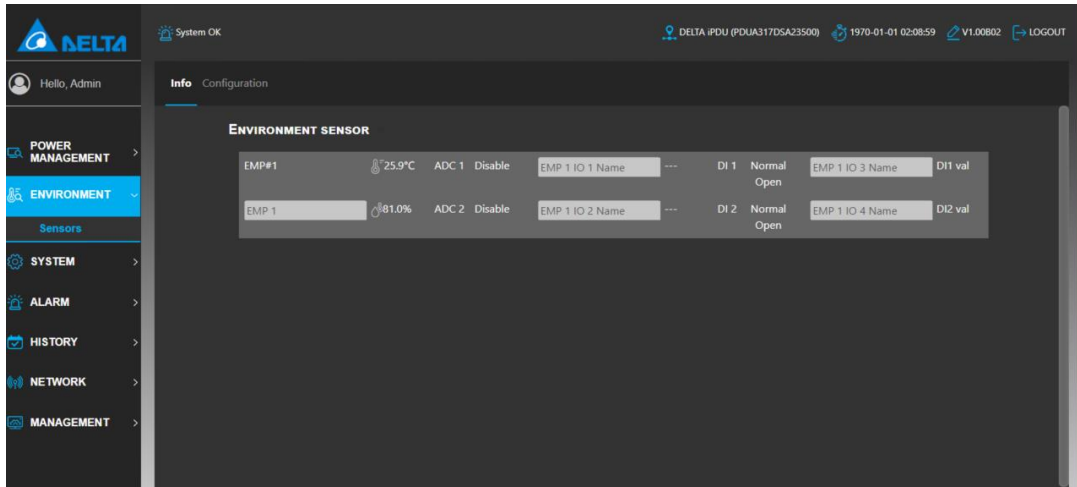
Branch 4 Name

Branch 5 Name

Branch 6 Name

On the **Input** page under **Power Management**, click **Daisy Chain Branch Name** to see every rPDU's branch name. Click the **1 ▾** button to select an rPDU and set its branch name.

- Environment

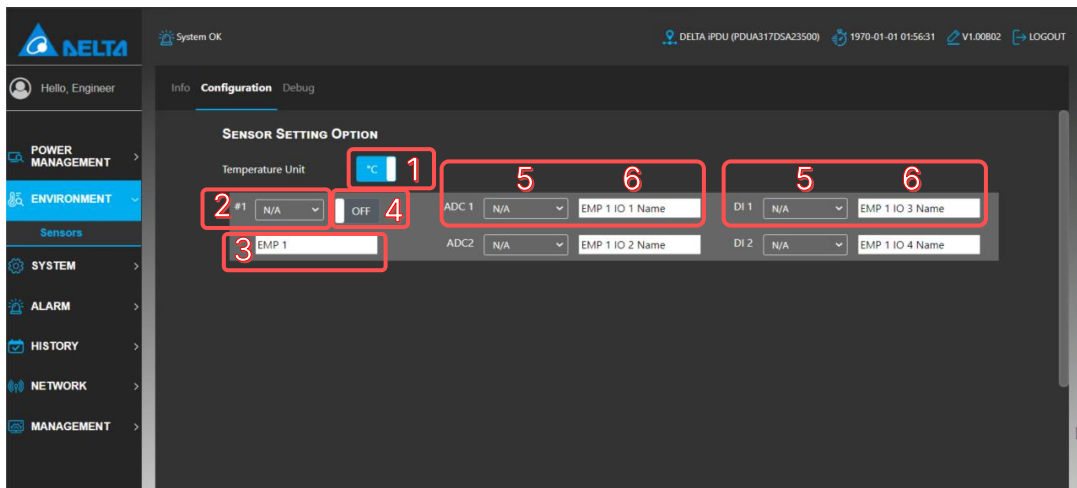


On the **Sensor** page under **Environment**, click **Info** to see the detailed temperature and humidity information in the surroundings. The maximum amount of sensor connected to the rPDU is one.



**NOTE:**

This function is only enabled when users connect the rPDU with the optional EMP. If you need more EMP information or EMP setup service, please contact your local dealer or Delta customer service.



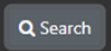
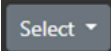
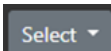
On the **Sensor** page under **Environment**, click **Configuration** to change the temperature unit and the sensor name. Moreover, users can disable the unused sensor on this page.

**NOTE:**

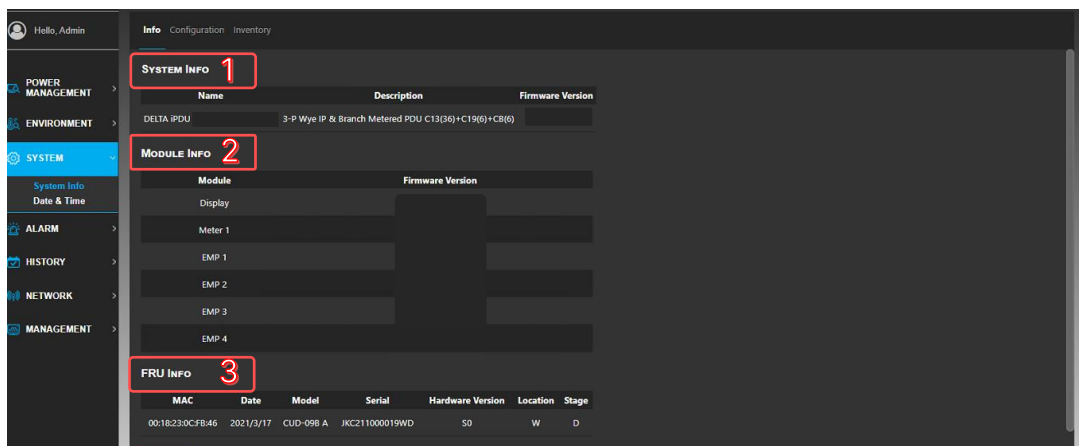
This function is only enabled when users connect the rPDU with the optional EMP. If you need more EMP information or EMP setup service, please contact your local dealer or Delta customer service.

| No. | Item                            | Description                                                                                    |
|-----|---------------------------------|------------------------------------------------------------------------------------------------|
| ①   | Temperature Unit Switch         | The temperature unit can be changed to Celsius or Fahrenheit using this switch.                |
| ②   | Sensor Type                     | Users can change the sensor type (EMP, EMS1000) by selecting the item when unfolding the list. |
| ③   | Sensor Name                     | Users can change the sensor name in the space.                                                 |
| ④   | Sensor ON/OFF Switch            | Users can enable/ disable the sensor connected to the rPDU by using this switch.               |
| ⑤   | Analog Input/Digital Input      | Various kinds of additional sensors can be connected to the EMP through these input ports.     |
| ⑥   | Analog Input/Digital Input Name | Users can change the AI/ DI name in the space.                                                 |

On the **Sensors** page under **Environment**, click **Daisy Chain** to see every rPDU's temperature and humidity information.

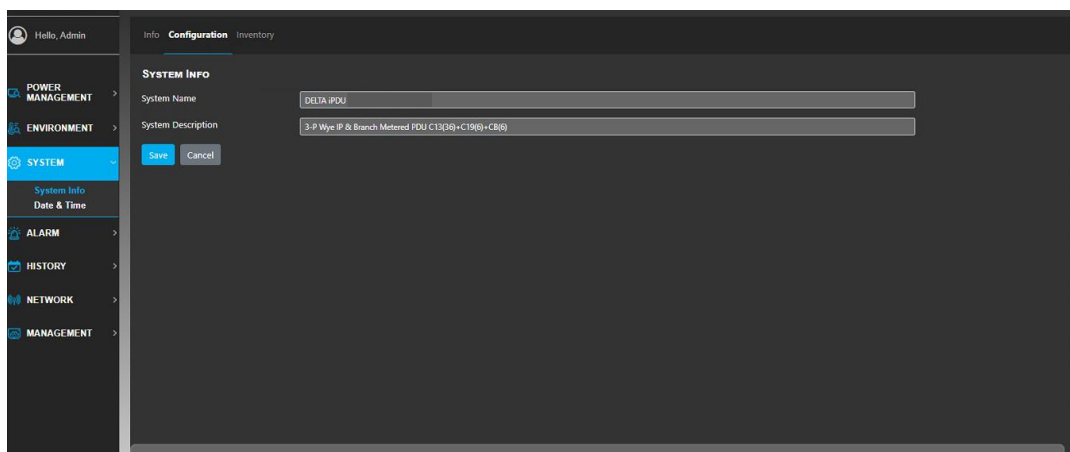
| No. | Item          | Description                                                                                                                                                                                                 |
|-----|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | Search Button | Click the  button to display the  item. |
| ②   | Select Button | Click the  button to choose a specific rPDU or all rPDUs.                                                                  |

- System

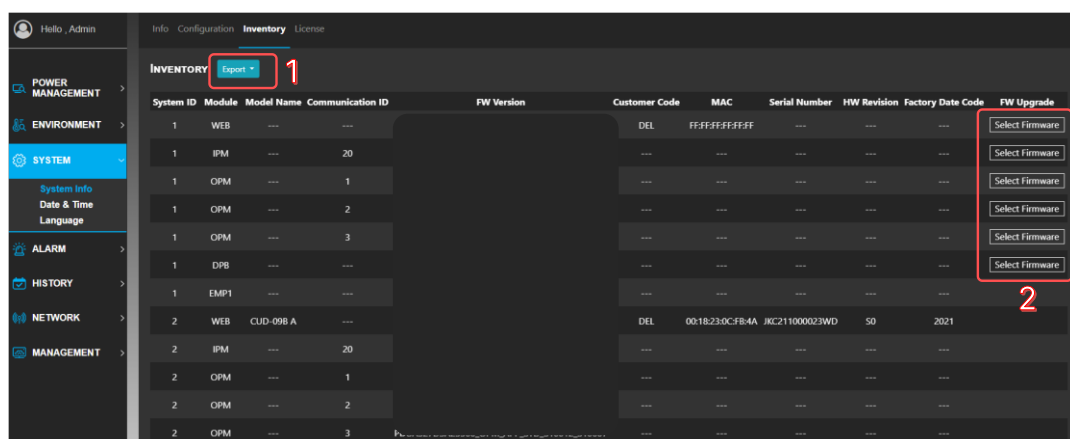


On the **System Info** page under **System**, click **Info** to see the rPDU related information (the firmware version, FRU information and serial number, etc.).

| No. | Item        | Description                                                                                                       |
|-----|-------------|-------------------------------------------------------------------------------------------------------------------|
| ①   | System Info | The name, description and firmware version of the rPDU are shown in System Info.                                  |
| ②   | Module Info | The firmware versions of the modules and accessories that are connected to the rPDU are specified in Module Info. |
| ③   | FRU Info    | The information of the manufacture for the rPDU is specified in FRU Info.                                         |



On the **System Info** page under **System**, click **Configuration** to see the name and description of the rPDU. Users can edit the information on this page.



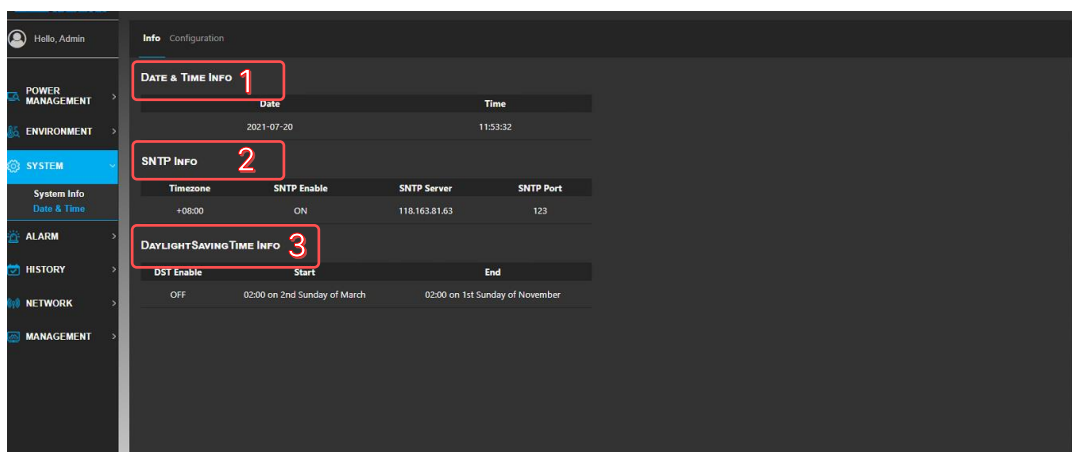
On the **System Info** page under **System**, click **Inventory** to see the inventory log. The inventory log shows detailed information of the modules that are connected to the rPDU. The information includes the firmware version and the information of the manufacturer. Firmware upgrade for each module can be performed by clicking the **Select Firmware** button.

| No. | Item                    | Description                                                                                                                                         |
|-----|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | Export Button           | Users can export the information of the modules that are connected to the rPDU by clicking this button. The file will be exported as an excel file. |
| ②   | Firmware Upgrade Button | Users can upgrade the firmware for each module by clicking this button. During the upgrade, the button will turn into a progress bar.               |



#### NOTE:

On this page, you can see all information of the modules that are connected to the chained rPDUs. If you need to update the firmware of the chained rPDUs, please refer to **Chapter 7.3 Firmware Upgrade for Chained rPDUs**.



On the **Date & Time** page under **System**, click **Info** to see the current date and time, the SNTP information and the DST information. Settings can be changed on the configuration page.

| No. | Item                      | Description                                                                                                             |
|-----|---------------------------|-------------------------------------------------------------------------------------------------------------------------|
| ①   | Date & Time Info          | Display of the current date and time on the rPDU.                                                                       |
| ②   | SNTP Info                 | Display of the SNTP (Simple Network Time Protocol) information. The rPDU can synchronize the time with the SNTP server. |
| ③   | Daylight Saving Time Info | Display of the starting and ending time of DST.                                                                         |

On the **Date & Time** page under **System**, click **Configuration** to set the time for the rPDU. Users can enable the synchronization with the SNTP server and the DST function.

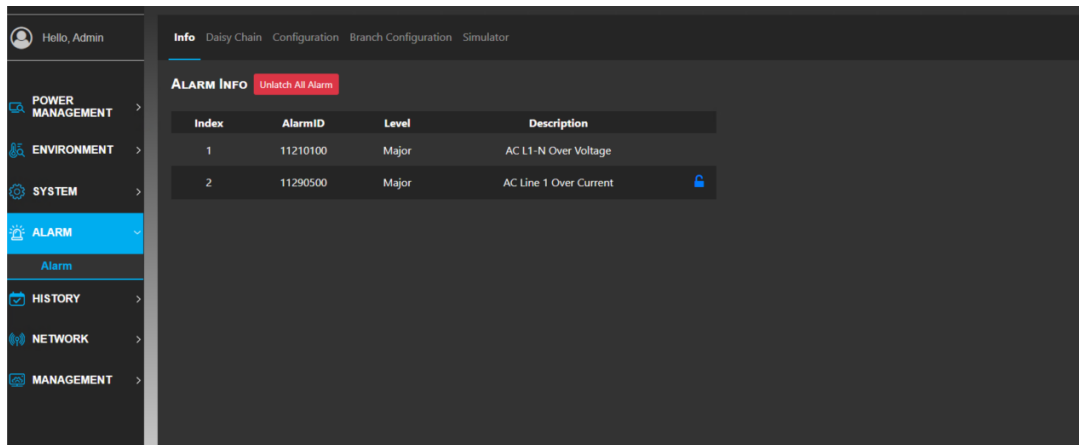
| No. | Item                 | Description                                                                                                                                                                                              |
|-----|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | Manual Time Source   | Users can manually change the time for the rPDU or simply choose to synchronize the rPDU time with the time on the user PC.                                                                              |
| ②   | Sntp Info            | Users can enable/ disable the SNTP function, change the rPDU time zone as well as the SNTP server IP. Once the SNTP function is enabled, the rPDU will always synchronize its time with the SNTP server. |
| ③   | Daylight Saving Time | Users can enable/ disable the DST function and change the starting/ ending time of the DST.                                                                                                              |



#### NOTE:

When the IP address of this rPDU changes, the SNTP function will automatically enable. If this function is not needed, please go to **System**→ **Date & Time**→ **Configuration** and select **Disable** to avoid triggering the **Sntp Sync Fail** alarm.

- Alarm

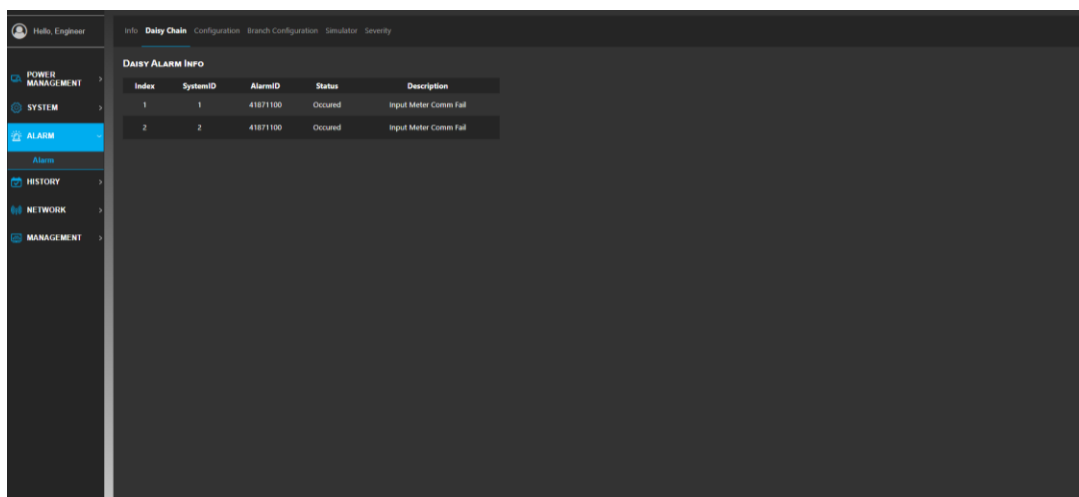


On the **Alarm** page under **Alarm**, click **Info** to see the current rPDU alarm. There are two types of alarm, ordinary alarm and latch type alarm. An ordinary alarm will disappear from the list when the alarm condition no longer exists. However, a latch type alarm will remain on the list even when the alarm condition no longer exists. Users can clear the latch type alarm by clicking  or **Unlatch All Alarm**.

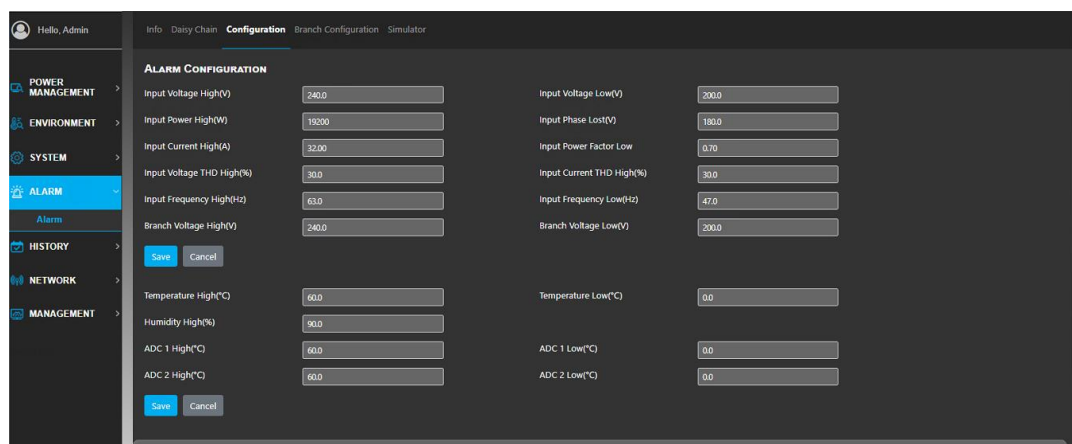


#### NOTE:

When any of the following alarms occurs and continues to exist, please contact Delta customer service: Input Meter Comm Fail, Input Meter IC Fail, Meter EEPROM Fail, Set Config Fail, Meter ID Collision, Daisy Chain ID Collision, Display Comm Fail, EMPx Comm Fail, EMPx Config Error.



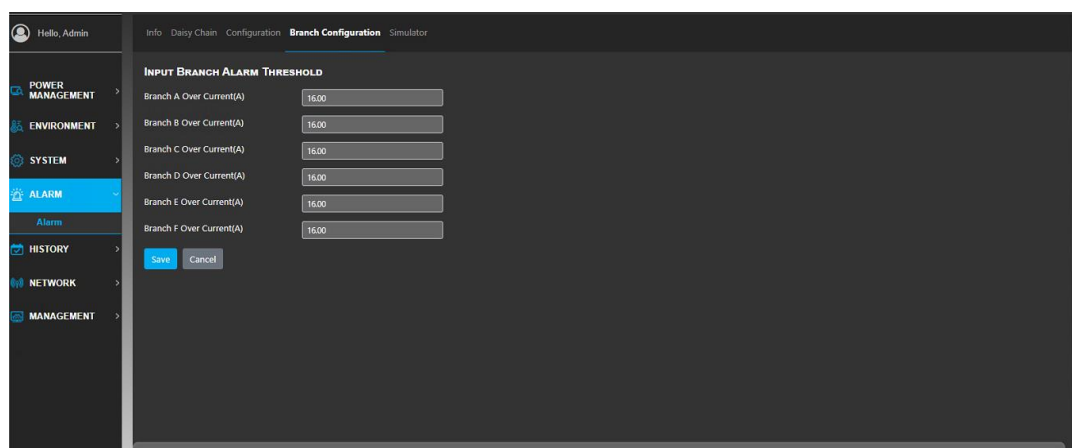
On the **Alarm** page under **Alarm**, click **Daisy Chain** to see the chained rPDU alarm. There are two types of alarm, ordinary alarm and latch type alarm. An ordinary alarm will disappear from the list when the alarm condition no longer exists. However, a latch type alarm will remain on the list even when the alarm condition no longer exists. Users can clear the latch type alarm by clicking  or **Unlatch All Alarm**.



**ALARM CONFIGURATION**

|                           |       |                           |       |
|---------------------------|-------|---------------------------|-------|
| Input Voltage High(V)     | 240.0 | Input Voltage Low(V)      | 200.0 |
| Input Power High(W)       | 19200 | Input Phase Lost(V)       | 180.0 |
| Input Current High(A)     | 32.00 | Input Power Factor Low    | 0.70  |
| Input Voltage THD High(%) | 30.0  | Input Current THD High(%) | 30.0  |
| Input Frequency High(Hz)  | 63.0  | Input Frequency Low(Hz)   | 47.0  |
| Branch Voltage High(V)    | 240.0 | Branch Voltage Low(V)     | 200.0 |
| <b>Save Cancel</b>        |       |                           |       |
| Temperature High(°C)      | 60.0  | Temperature Low(°C)       | 0.0   |
| Humidity High(%)          | 90.0  |                           |       |
| ADC 1 High(°C)            | 60.0  | ADC 1 Low(°C)             | 0.0   |
| ADC 2 High(°C)            | 60.0  | ADC 2 Low(°C)             | 0.0   |
| <b>Save Cancel</b>        |       |                           |       |

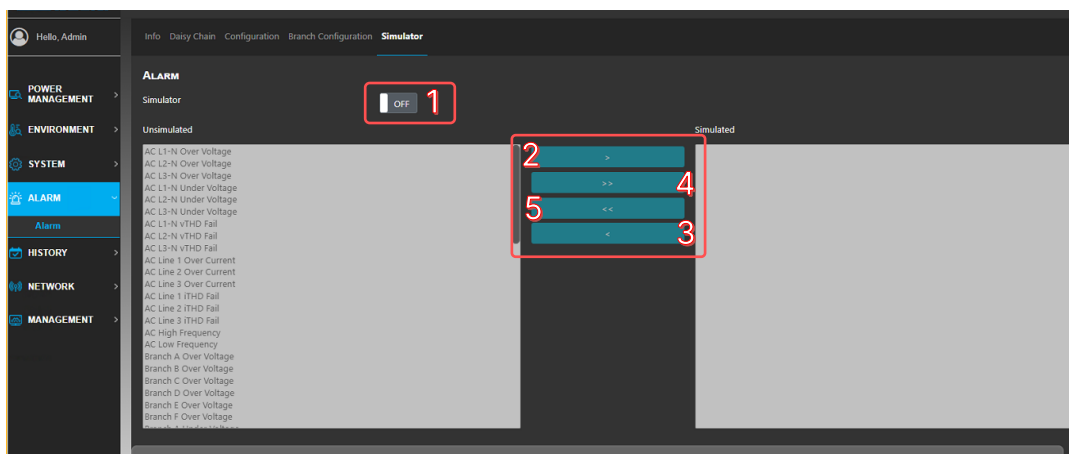
On the **Alarm** page under **Alarm**, click **Configuration** to change the threshold for triggering an alarm. The value entered must be within the range shown on the pop-up message ( **Allow value in 80.0~240.0** ), or the value entered will be ignored.



**INPUT BRANCH ALARM THRESHOLD**

|                          |       |
|--------------------------|-------|
| Branch A Over Current(A) | 16.00 |
| Branch B Over Current(A) | 16.00 |
| Branch C Over Current(A) | 16.00 |
| Branch D Over Current(A) | 16.00 |
| Branch E Over Current(A) | 16.00 |
| Branch F Over Current(A) | 16.00 |
| <b>Save Cancel</b>       |       |

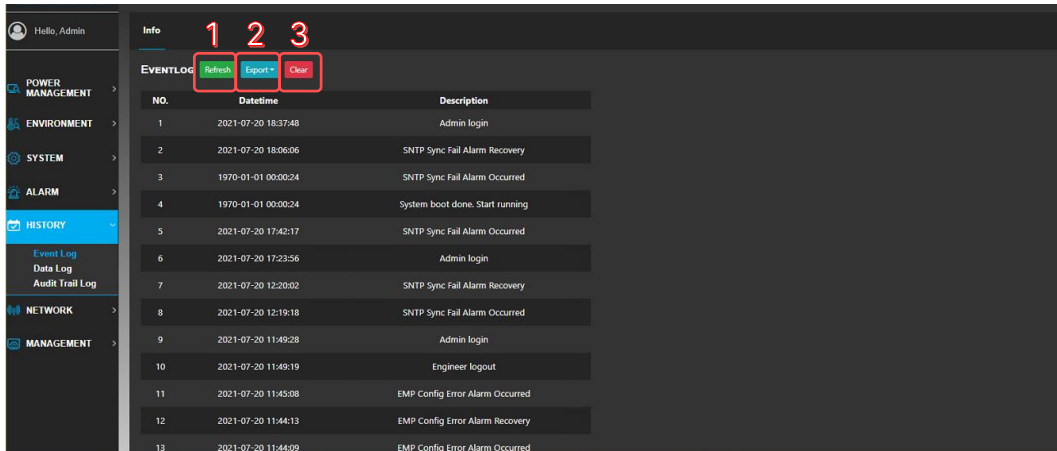
The rPDU has multiple output branches. On the **Alarm** page under **Alarm**, click **Branch Configuration** to set the current alarm threshold for individual branches. Users can set different current thresholds according to different load conditions.



The alarm simulator allows users to trigger alarms without letting actual abnormal conditions occur. Users can use the alarm simulator to choose alarm events and they will show on WEB, SNMP, Trap or SMTP interface. All alarms shown on the **Alarm Info** page and the EMP readings will vanish when the simulator is enabled. The alarms and the readings will show up again when the simulator is disabled.

| No. | Item                           | Description                                                                                         |
|-----|--------------------------------|-----------------------------------------------------------------------------------------------------|
| ①   | Alarm Simulator ON/ OFF Switch | The switch of alarm simulator. The switch must be turned on before using the function on this page. |
| ②   | Alarm Enable Button            | Click the button after selecting alarms on the left to enable the selected alarms.                  |
| ③   | Alarm Disable Button           | Click the button after selecting alarms on the right to disable the selected alarms.                |
| ④   | All Alarms Enable Button       | Click the button to enable all alarms on the left.                                                  |
| ⑤   | All Alarms Disable Button      | Click the button to disable all alarms on the right.                                                |

- History



The **Event Log** page shows events that have happened (login & logout, alarm occurred & eliminated, simulator on & off, etc.). The maximum amount of events recorded is 10000, FIFO is applied after reaching this limit.

| No. | Item           | Description                                                                                                                                             |
|-----|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | Refresh Button | This button allows users to refresh the event log.                                                                                                      |
| ②   | Export Button  | This button allows users to export the current event log. Users can choose where to export the file to (PC or USB).                                     |
| ③   | Clear Button   | <div>  <p><b>NOTE:</b><br/>The procedure is irreversible.</p> </div> |

| NO. | Datetime            | Input 1 ACV1(V) | Input 1 ACV2(V) | Input 1 ACV3(V) | Input 1 Frequency(Hz) | Input 1 AC1(A) | Input 1 AC2(A) | Input 1 AC3(A) | Input 1 TotalCurrent(A) | Branch1 Current(A) | Branch2 Current(A) |
|-----|---------------------|-----------------|-----------------|-----------------|-----------------------|----------------|----------------|----------------|-------------------------|--------------------|--------------------|
| 1   | 2021-07-20 18:43:21 | 213.6           | 214.0           | 213.0           | 60.0                  | 0.00           | 0.00           | 0.00           | ---                     | 0.00               | 0.00               |
| 2   | 2021-07-20 18:42:21 | 214.6           | 215.1           | 212.6           | 60.0                  | 0.00           | 0.00           | 0.00           | ---                     | 0.00               | 0.00               |
| 3   | 2021-07-20 18:41:22 | 214.4           | 214.8           | 212.5           | 60.0                  | 0.00           | 0.00           | 0.00           | ---                     | 0.00               | 0.00               |
| 4   | 2021-07-20 18:40:21 | 213.8           | 214.0           | 211.8           | 60.0                  | 0.00           | 0.00           | 0.00           | ---                     | 0.00               | 0.00               |
| 5   | 2021-07-20 18:39:21 | 214.2           | 214.8           | 212.4           | 60.0                  | 0.00           | 0.00           | 0.00           | ---                     | 0.00               | 0.00               |
| 6   | 2021-07-20 18:38:21 | 213.7           | 213.9           | 212.6           | 60.0                  | 0.00           | 0.00           | 0.00           | ---                     | 0.00               | 0.00               |
| 7   | 2021-07-20 18:37:21 | 214.7           | 215.0           | 212.6           | 60.0                  | 0.00           | 0.00           | 0.00           | ---                     | 0.00               | 0.00               |
| 8   | 2021-07-20 18:36:21 | 214.7           | 214.7           | 212.7           | 60.0                  | 0.00           | 0.00           | 0.00           | ---                     | 0.00               | 0.00               |
| 9   | 2021-07-20 18:35:21 | 213.8           | 213.7           | 211.7           | 60.0                  | 0.00           | 0.00           | 0.00           | ---                     | 0.00               | 0.00               |
| 10  | 2021-07-20 18:34:21 | 215.0           | 214.8           | 212.8           | 60.0                  | 0.00           | 0.00           | 0.00           | ---                     | 0.00               | 0.00               |

The **Data Log** page shows data readings (AC input voltage, current, frequency, etc.). The maximum number of events recorded is 10000. FIFO method will be applied after the limit is reached.

| No. | Item           | Description                                                                                                                                                                                                                      |
|-----|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | Refresh Button | This button allows users to refresh the event log.                                                                                                                                                                               |
| ②   | Export Button  | This button allows users to export the current event log. Users can choose where to export the file to (PC or USB).                                                                                                              |
| ③   | Clear Button   | This button allows users to clear the current event log. <div>  <b>NOTE:</b><br/>             The procedure is irreversible.           </div> |
| ④   | Page Selection | Users can proceed to the next page of log by clicking the button. Moreover, users can click on the page number and enter the page number to be displayed directly.                                                               |

Info Daisy Chain Configuration

DATALOG 2+ Refresh Export Clear

| No. | Date                | 1 ACV1(V) | Input 1 ACV2(V) | Input 1 ACV3(V) | Input 2 ACV1(V) | Input 2 ACV2(V) | Input 2 ACV3(V) | Input 1 Frequency(Hz) | Input 2 Frequency(Hz) | Input 1 AC1(A) | Input 1 AC2(A) | Input 1 AC3(A) | Input 2 AC1(A) | Input 2 AC2(A) | Input 2 AC3(A) |
|-----|---------------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------------|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1   | 1970-01-01 01:51:17 | 0.0       | 0.0             | 0.0             | ---             | ---             | ---             | 0.0                   | ---                   | 0.00           | 0.00           | 0.00           | ---            | ---            | ---            |
| 2   | 1970-01-01 01:54:17 | 0.0       | 0.0             | 0.0             | ---             | ---             | ---             | 0.0                   | ---                   | 0.00           | 0.00           | 0.00           | ---            | ---            | ---            |
| 3   | 1970-01-01 01:53:17 | 0.0       | 0.0             | 0.0             | ---             | ---             | ---             | 0.0                   | ---                   | 0.00           | 0.00           | 0.00           | ---            | ---            | ---            |
| 4   | 1970-01-01 01:52:17 | 0.0       | 0.0             | 0.0             | ---             | ---             | ---             | 0.0                   | ---                   | 0.00           | 0.00           | 0.00           | ---            | ---            | ---            |
| 5   | 1970-01-01 01:51:17 | 0.0       | 0.0             | 0.0             | ---             | ---             | ---             | 0.0                   | ---                   | 0.00           | 0.00           | 0.00           | ---            | ---            | ---            |
| 6   | 1970-01-01 01:50:17 | 0.0       | 0.0             | 0.0             | ---             | ---             | ---             | 0.0                   | ---                   | 0.00           | 0.00           | 0.00           | ---            | ---            | ---            |
| 7   | 1970-01-01 01:49:17 | 0.0       | 0.0             | 0.0             | ---             | ---             | ---             | 0.0                   | ---                   | 0.00           | 0.00           | 0.00           | ---            | ---            | ---            |
| 8   | 1970-01-01 01:48:17 | 0.0       | 0.0             | 0.0             | ---             | ---             | ---             | 0.0                   | ---                   | 0.00           | 0.00           | 0.00           | ---            | ---            | ---            |
| 9   | 1970-01-01 01:47:17 | 0.0       | 0.0             | 0.0             | ---             | ---             | ---             | 0.0                   | ---                   | 0.00           | 0.00           | 0.00           | ---            | ---            | ---            |
| 10  | 1970-01-01 01:46:17 | 0.0       | 0.0             | 0.0             | ---             | ---             | ---             | 0.0                   | ---                   | 0.00           | 0.00           | 0.00           | ---            | ---            | ---            |

<< 1 of 10 >>

The **Data Log** (Daisy Chain) page shows data readings (AC input voltage, current, frequency, etc.) of chained rPDUs.

| No. | Item           | Description                                     |
|-----|----------------|-------------------------------------------------|
| 1   | rPDU Selection | Users can select the rPDU data to be displayed. |

| Number of Chained rPDUs | Maximum Number of Data Log |
|-------------------------|----------------------------|
| 1 ~ 16                  | 10,000                     |
| 17 ~ 32                 | 5,000                      |
| 33 ~ 40                 | 3,000                      |

Info Daisy Chain Configuration

Log Setting OPTION

Enable ☒ ON 1

Interval 1 Min 2

Save Cancel

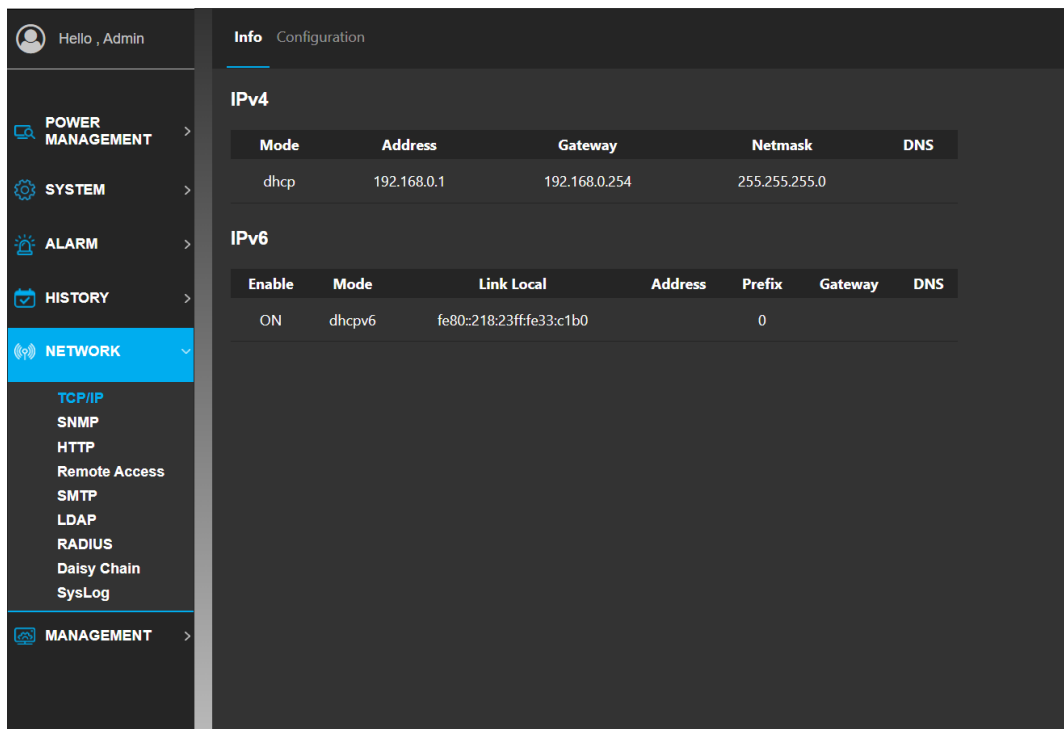
The **Log Setting Option** page under **Data Log** allows users to change the record interval.

| No. | Item            | Description                                                                                            |
|-----|-----------------|--------------------------------------------------------------------------------------------------------|
| ①   | Enable Button   | This button allows users to enable the data log function.                                              |
| ②   | Record Interval | Users can select the record interval of data log by changing this interval (default 1 minute per log). |

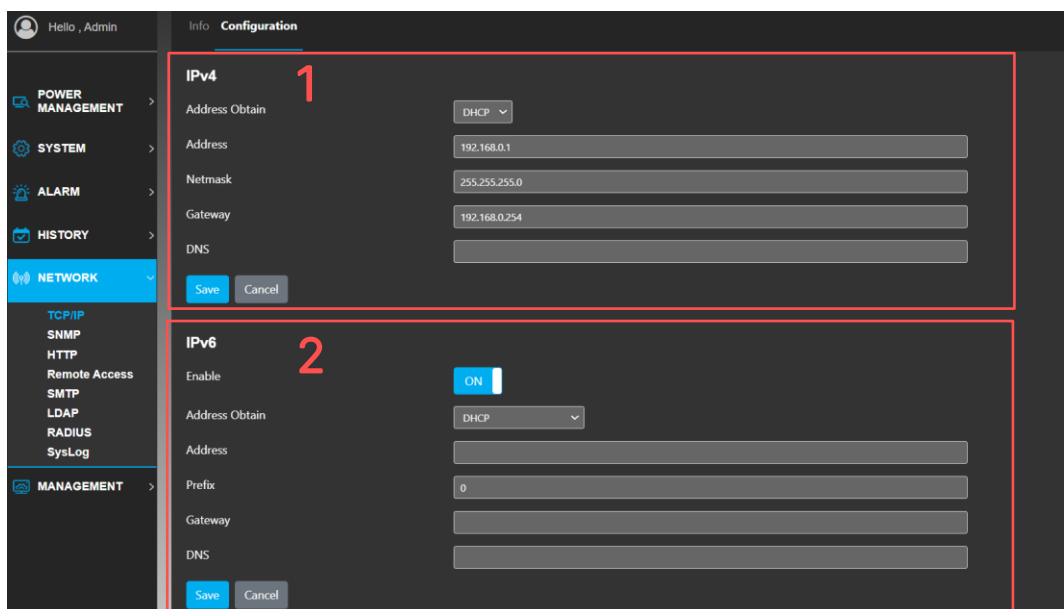
The **Audit Trail Log** page shows the time a user logs in, who logs in and what the user does on the rPDU (user level, IP address, event etc.). The maximum number of events that can be recorded is 1000. The FIFO method will be applied after this limit is reached.

| No. | Item           | Description                                                                                                                                                                                                      |
|-----|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | Refresh Button | This button allows users to refresh the audit trial log.                                                                                                                                                         |
| ②   | Export Button  | This button allows users to export the current audit trial log. Users can choose where to export the file to (PC or USB).                                                                                        |
| ③   | Clear Button   | <p>This button allows users to clear the current audit trial log.</p> <p> <b>NOTE:</b><br/>The procedure is irreversible.</p> |

- Network



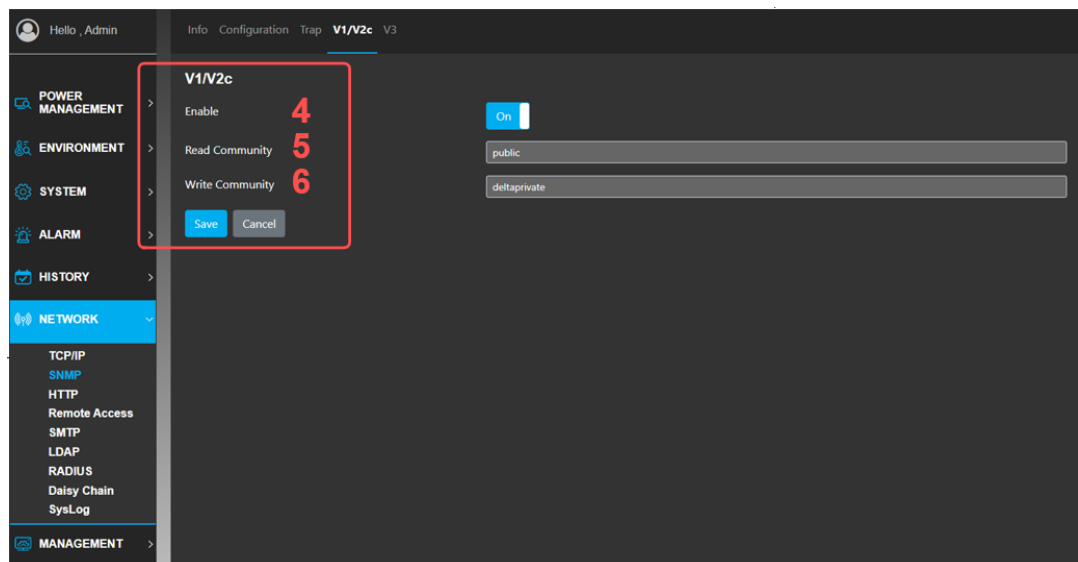
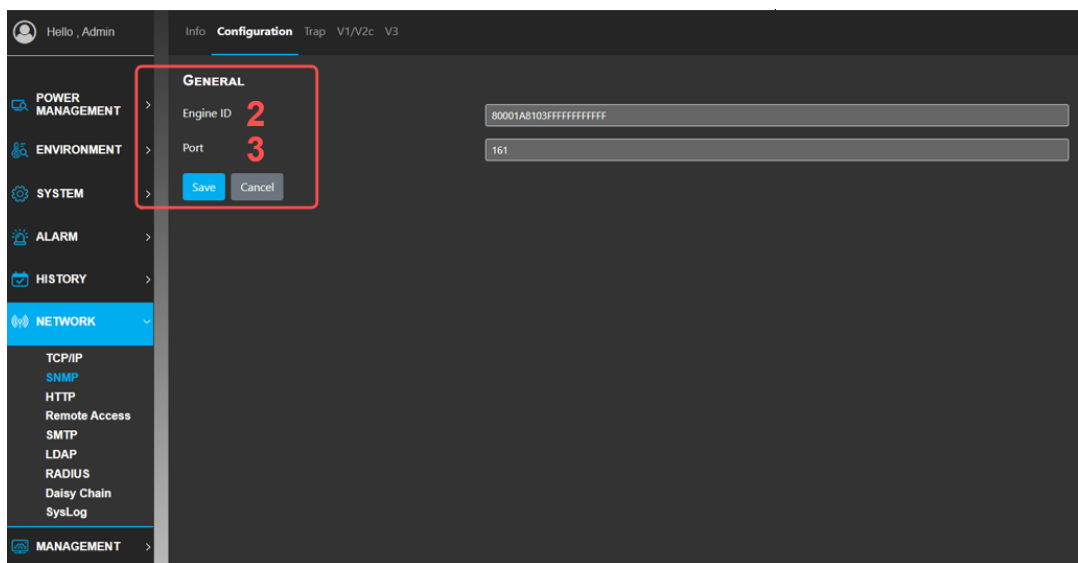
On the **TCP/ IP** page under **Network**, click **Info** to see the current internet connection setting. Information regarding IPv4 and IPv6 is displayed.



The configuration of TCP/IP allows users to change the Internet setting (IP address, netmask, gateway etc.). The default IPv4 address for the rPDU is 192.168.0.1. The function of IPv6 can be enabled by turning on the IPv6 switch.

| No. | Item                       | Description                                                                |
|-----|----------------------------|----------------------------------------------------------------------------|
| ①   | IPv4 Address Obtain Button | Users can select to use DHCP or static mode to obtain the IPv4 IP address. |
| ②   | IPv6 Enable/Disable        | This switch can enable or disable the function of IPv6.                    |

The screenshot shows the configuration interface of the Delta Metered Type rPDU ViLink Series. The left sidebar contains a menu with categories: POWER MANAGEMENT, ENVIRONMENT, SYSTEM, ALARM, HISTORY, NETWORK (selected), and MANAGEMENT. The NETWORK menu is expanded, showing options like TCP/IP, SNMP, HTTP, Remote Access, SMTP, LDAP, RADIUS, Daisy Chain, and SysLog. The main configuration area is titled 'Info Configuration Trap V1/V2c V3'. Under the 'GENERAL' section, there is a table with 'Engine ID' (80001A8103FFFFFFFF) and 'Port' (161). The 'MIB DOWNLOAD' section features a 'Download' button, which is highlighted with a red box and a large red number '1'. Below this, the 'TRAP' section shows a table with 'Read Community' (pdutrap) and 'Port' (162). The 'V1/V2c' section has a table with 'Enable' (ON), 'Read Community' (public), and 'Write Community' (deltaprivate). The 'V3' section shows a table with columns for 'Index', 'User', 'Auth Protocol', 'Priv Protocol', and 'Access'.



The **SNMP** page allows users to download the MIB file. Users then can load the MIB file using their SNMP software. Users who wish to access the rPDU by SNMP v1/v2c can use community strings on this page.

| No. | Item            | Description                                                                                                                      |
|-----|-----------------|----------------------------------------------------------------------------------------------------------------------------------|
| ①   | MIB Download    | Users can download the MIB file by clicking this button.                                                                         |
| ②   | Engine ID       | Users can specify their preferred engine ID according to their network environment. The default engine ID uses RFC3411 format 3. |
| ③   | SNMP Port       | Users can change the SNMP port. Please make sure the configured port is available.                                               |
| ④   | V1/ V2c Enable  | Enable or disable the SNMP v1/ v2c function.                                                                                     |
| ⑤   | Read Community  | Used by SNMP v1/ v2c. Users can specify the read community string.                                                               |
| ⑥   | Write Community | Used by SNMP v1/ v2c. Users can specify the write community string.                                                              |



#### NOTE:

1. If SNMP cannot perform GET: Check the read (GET) community name (SNMPv1) and the user profile configuration (SNMPv3).
2. If SNMP cannot perform SET: Ensure that SNMP is enabled and SNMPv1 & SNMPv3 are enabled. Check the read/ write (SET) community name (SNMPv1) and the user profile configuration (SNMPv3).

The screenshot displays the configuration interface for the Delta Metered Type rPDU ViLink Series. The 'Configuration' tab is selected, showing the 'TRAP' configuration section. A red box highlights the 'Read Community' field (1) and the 'Port' field (2). Below these fields are 'Save' and 'Cancel' buttons. The 'DESTINATION' section below features a green button to 'Add a New Trap Address' (3) and a table with columns 'Index', 'User', and 'Trap Address' (4). The left sidebar shows a menu with categories like POWER MANAGEMENT, ENVIRONMENT, SYSTEM, ALARM, HISTORY, NETWORK (selected), and MANAGEMENT.

The **SNMP Trap** page allows users to set a trap address that allows users to receive trap information when an alarm or event occurs. The following figure shows a trap receiver receiving alarm information via the MIB browser.

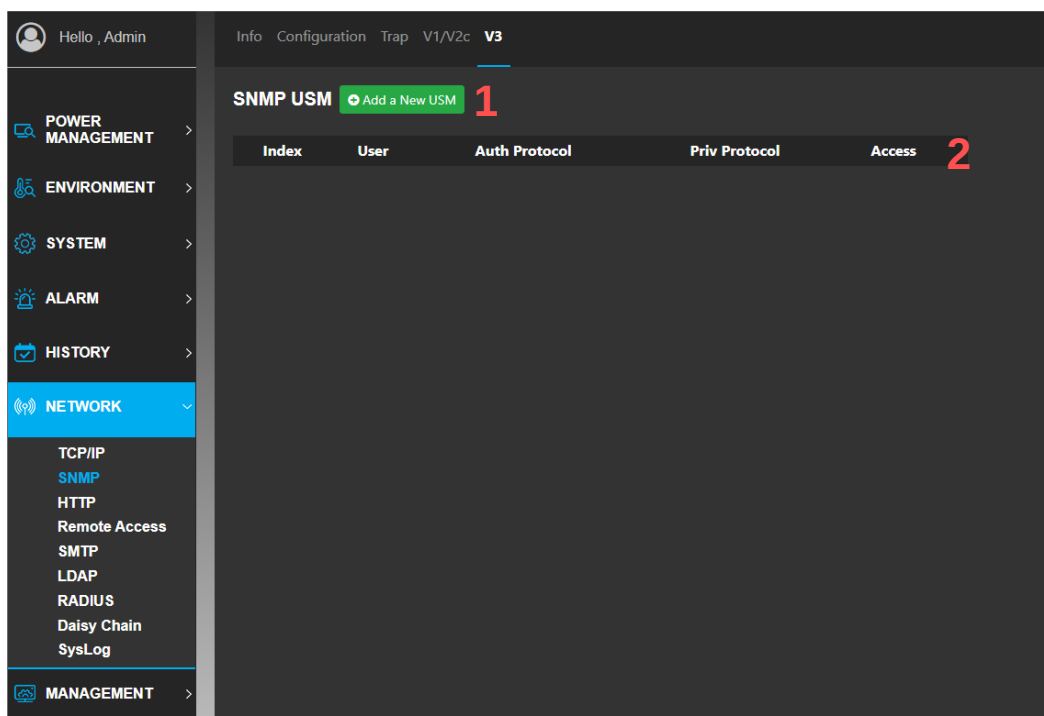
| No. | Item                   | Description                                                                                         |
|-----|------------------------|-----------------------------------------------------------------------------------------------------|
| ①   | Trap Community         | Users can specify the trap community string via SNMP.                                               |
| ②   | Trap Port              | Users can change the trap port. Please make sure the port that needs to be configured is available. |
| ③   | Add a New Trap Address | Add a new address for the trap connection.                                                          |
| ④   | Delete Address         | Delete an existing trap address.                                                                    |

| Result Table                                                                                                                                                                                                                                                                                                                                                                                                              |             |                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------|
| Trap Receiver x                                                                                                                                                                                                                                                                                                                                                                                                           |             |                     |
| Operations Tools                                                                                                                                                                                                                                                                                                                                                                                                          |             |                     |
|      |             |                     |
| Description                                                                                                                                                                                                                                                                                                                                                                                                               | Source      | Time                |
| Input-1-Line-1-Over-Current-Happen                                                                                                                                                                                                                                                                                                                                                                                        | 192.168.0.1 | 2021-05-21 10:08:13 |
| Input-1-L1-N-Under-Voltage-Recovery                                                                                                                                                                                                                                                                                                                                                                                       | 192.168.0.1 | 2021-05-21 10:08:11 |
| Input-1-L1-N-Under-Voltage-Happen                                                                                                                                                                                                                                                                                                                                                                                         | 192.168.0.1 | 2021-05-21 10:08:09 |
| Input-1-L1-N-Over-Voltage-Recovery                                                                                                                                                                                                                                                                                                                                                                                        | 192.168.0.1 | 2021-05-21 10:08:08 |
| Input-1-L1-N-Over-Voltage-Happen                                                                                                                                                                                                                                                                                                                                                                                          | 192.168.0.1 | 2021-05-21 10:08:06 |



#### NOTE:

The trap address can be in IPv4 or IPv6 format.



The **SNMP USM** page allows users to create/ delete SNMPv3 user accounts. The SNMP agent of the rPDU supports the user security level defined in RFC2574.

| No. | Item           | Description                       |
|-----|----------------|-----------------------------------|
| ①   | Add New Users  | Add a user for SNMPv3 connection. |
| ②   | Delete Address | Delete an existing SNMPv3 user.   |

| No. | Item                    | Description                                                                                                |
|-----|-------------------------|------------------------------------------------------------------------------------------------------------|
| ①   | Name                    | Name of the user.                                                                                          |
| ②   | Authentication Protocol | Users can choose which authentication protocol to use. Users can choose MD5, SHA or None.                  |
| ③   | Authentication Password | Password used for authentication. The password can be empty if the authentication protocol is set to None. |
| ④   | Privacy Protocol        | Users can choose which privacy protocol to use. Users can choose DES, AES or None.                         |
| ⑤   | Privacy Password        | Password used for privacy setting. The password can be empty if the privacy protocol is set to None.       |
| ⑥   | Access                  | Set the access privilege for users. The access privilege can be read only or read and write.               |

Hello , Admin

POWER MANAGEMENT >

ENVIRONMENT >

SYSTEM >

ALARM >

HISTORY >

NETWORK >

TCP/IP

SNMP

HTTP

Remote Access

SMTP

LDAP

RADIUS

Daisy Chain

SysLog

MANAGEMENT >

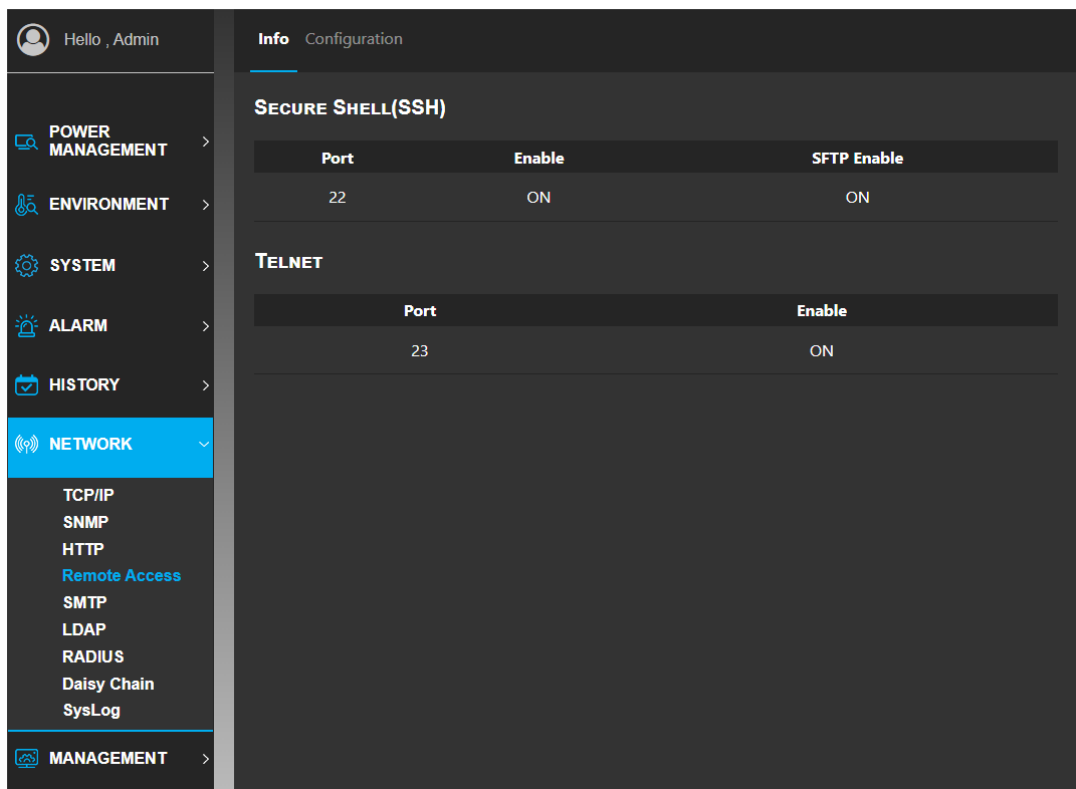
Info Configuration

HTTP

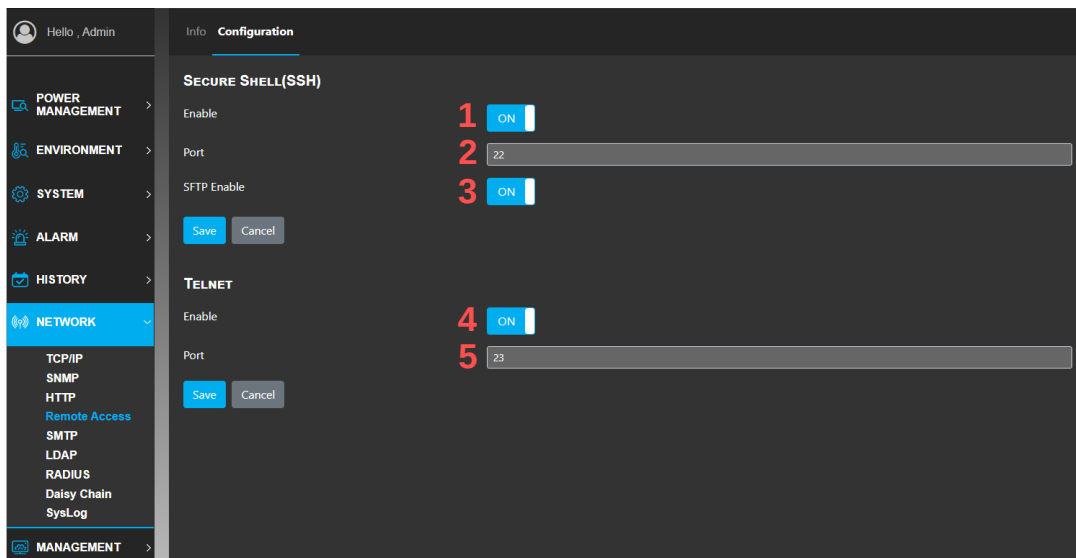
| HTTP Enable | Port | HTTPS Port | Certificate |
|-------------|------|------------|-------------|
| OFF         | 80   | 443        | Default     |

This page allows users to change HTTP security related configurations, including disabling insecure connection, changing default connection ports and uploading users' desired security certificates.

| No. | Item                          | Description                                                                                                                                                                                                                                                                                                                 |
|-----|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | HTTP Enable                   | HTTP is an insecure way of connection. This option allows users to disable HTTP. If HTTP is disabled, user connection via HTTP port will be redirected to a secured connection – the HTTPS port.                                                                                                                            |
| ②   | HTTP Port                     | Users can change the HTTP connection port. Please make sure the configured port is available.                                                                                                                                                                                                                               |
| ③   | HTTPS Port                    | Users can change the HTTPS connection port. Please make sure the configured port is available.                                                                                                                                                                                                                              |
| ④   | Import Customized Certificate | Uploading of users' customized certificate will override rPDU's default certificate. The rPDU supports the X.509 PEM format and the certificate and private key shall be included. After a successful certificate upload, the rPDU will restart the HTTP service. The restart will cause a temporary disconnection.         |
| ⑤   | Delete Customized Certificate | Deletion of users' customized certificate to use the rPDU's default certificate. If the rPDU is using the default certificate already, clicking this button will not lead to any action. After a successful certificate deletion, the rPDU will restart the HTTP service. The restart will cause a temporary disconnection. |



The **Info** page of **Remote Access** under **Network** shows basic information of the secure shell and telnet.



The rPDU provides two routes for remote CLI access. The two routes are Secure Shell and Telnet. It is recommended to always use Secure Shell and turn off Telnet for security reason. The remote access configuration page allows users to turn on/ off remote access routes and change the corresponding communication port number.

| No. | Item                | Description                                                                                                    |
|-----|---------------------|----------------------------------------------------------------------------------------------------------------|
| ①   | Secure Shell Enable | Turn on/ off the secure shell function.                                                                        |
| ②   | Secure Shell Port   | Set the secure shell communication port number. The number should not be the same with the telnet port number. |
| ③   | SFTP Enable         | Turn on/ off the SFTP function.                                                                                |
| ④   | Telnet Enable       | Turn on/ off the telnet function                                                                               |
| ⑤   | Telnet Port         | Set the telnet communication port number. The number should not be the same with the secure shell port number. |

Hello , Admin

POWER MANAGEMENT >

ENVIRONMENT >

SYSTEM >

ALARM >

HISTORY >

NETWORK >

TCP/IP

SNMP

HTTP

Remote Access

SMTP

LDAP

RADIUS

Daisy Chain

SysLog

MANAGEMENT >

Info Configuration

SMTP INFO

1 Enable

2 Address

3 Port

4 Use TLS

5 Login Auth

6 User Name

7 Password

OFF

192.168.0.1

25

OFF

OFF

MAIL INFO

8 Sender Address

9 Recipient Address

10 Subject

11 Content

---

---

SUBJECT

CONTENT

The SMTP function allows users to receive email notification when an alarm or event happens.



**NOTE:**

This function is only enabled when SMTP service is available to users.

| No. | Item                         | Description                                                                                  |
|-----|------------------------------|----------------------------------------------------------------------------------------------|
| ①   | SMTP Service Status          | Status information will be sent to users via mail.                                           |
| ②   | SMTP Sever Address           | Address of the SMTP mail server.                                                             |
| ③   | SMTP Sever Port              | Port used by the mail server.                                                                |
| ④   | Use TLS                      | Display of the status of TLS for encrypting the SMTP connection.                             |
| ⑤   | SMTP Sever Authentication    | When connecting to the SMTP mail server, the login authentication can be performed.          |
| ⑥   | User Name for Authentication | When login authentication is enabled, user name needs to be filled in for the e-mail server. |
| ⑦   | Password for Authentication  | When login authentication is enabled, password needs to be filled in for the e-mail server.  |
| ⑧   | Sender Address               | Display of the e-mail address of senders in the mail.                                        |
| ⑨   | Recipient Address            | The e-mail address to receive the notification.                                              |
| ⑩   | Subject                      | Subject of the e-mail.                                                                       |
| ⑪   | Content                      | Prefix text of the e-mail.                                                                   |

The screenshot shows the 'Configuration' page of the Delta Metered Type rPDU ViLink Series. The left sidebar contains a menu with categories: POWER MANAGEMENT, ENVIRONMENT, SYSTEM, ALARM, HISTORY, NETWORK (selected), and MANAGEMENT. Under NETWORK, sub-items include TCP/IP, SNMP, HTTP, Remote Access, SMTP (selected), LDAP, RADIUS, Daisy Chain, and SysLog. The main content area is divided into two sections: SMTP CONFIGURATION and MAIL CONFIGURATION. Red numbers 1 through 9 are overlaid on the interface to highlight specific elements: 1 points to the 'Enable' checkbox in SMTP; 2 points to the 'Address' text field; 3 points to the 'Port' text field; 4 points to the 'Use TLS' checkbox; 5 points to the 'Login Auth' checkbox; 6 points to the 'User Name' text field; 7 points to the 'Password' text field; 8 points to the 'Save' button in the SMTP section; and 9 points to the 'Cancel' button in the SMTP section.

| No. | Item                 | Description                                                                                                                                               |
|-----|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | Enable               | It allows the rPDU to inform users via e-mail notification.                                                                                               |
| ②   | Address              | IP address of the e-mail server for the connection.                                                                                                       |
| ③   | Port                 | E-mail port for the connection.                                                                                                                           |
| ④   | Use TLS              | Users can turn on/ off the TLS function.                                                                                                                  |
| ⑤   | Login Authentication | The e-mail server may require an authentication login. If login authentication is required, enable this item and fill in the Username and Password below. |
| ⑥   | Username             | Username for authentication login.                                                                                                                        |
| ⑦   | Password             | Password for authentication login.                                                                                                                        |
| ⑧   | Save                 | It saves the current SMTP configuration.                                                                                                                  |
| ⑨   | Cancel               | Cancellation of changes and reloading of the previous configuration.                                                                                      |

The screenshot shows a configuration page with a sidebar on the left containing categories like POWER MANAGEMENT, ENVIRONMENT, SYSTEM, ALARM, HISTORY, NETWORK, and MANAGEMENT. The main area is titled 'Configuration' and contains two sections: 'SMTP CONFIGURATION' and 'MAIL CONFIGURATION'.

**SMTP CONFIGURATION:**

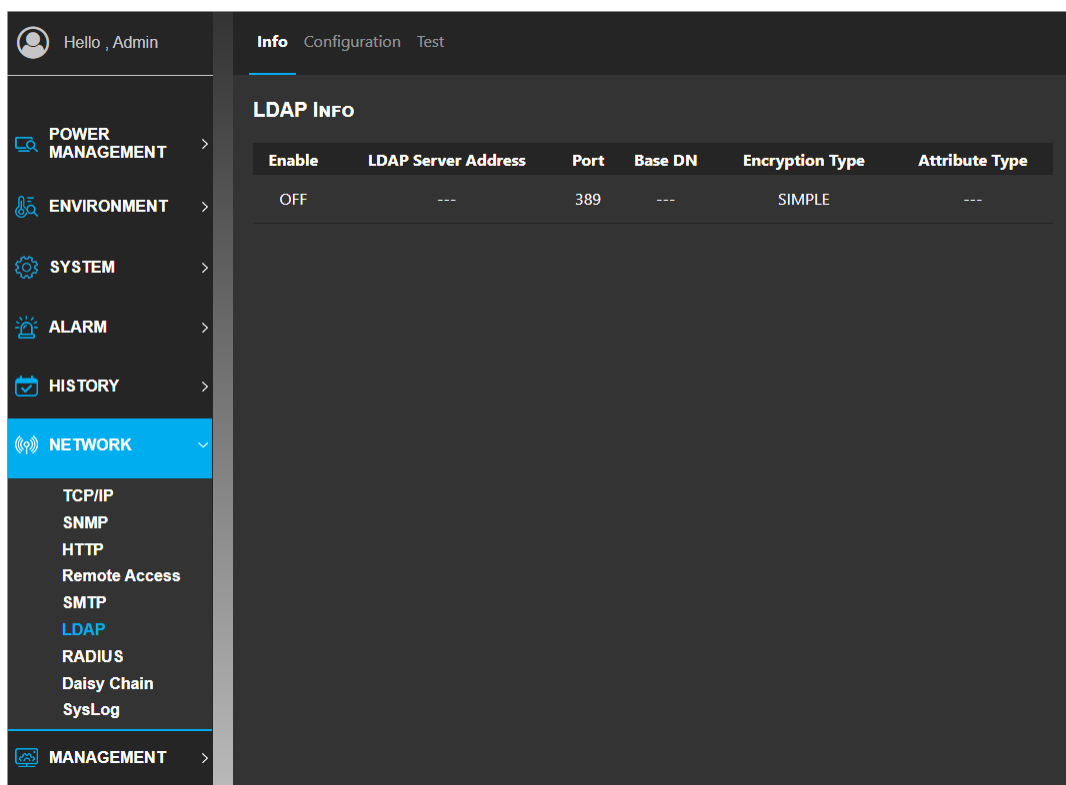
- Enable: ☐ OFF
- Address: 192.168.0.1
- Port: 25
- Use TLS: ☐ OFF
- Login Auth: ☐ OFF
- User Name: [Empty field]
- Password: [Empty field]
- Buttons: Save, Cancel

**MAIL CONFIGURATION:**

- Sender Address: 1
- Recipient 1 Address: 2
- Recipient 2 Address: 3
- Recipient 3 Address: 4
- Recipient 4 Address: 5
- Subject: SUBJECT
- Content: CONTENT
- Buttons: Test, Save, Cancel

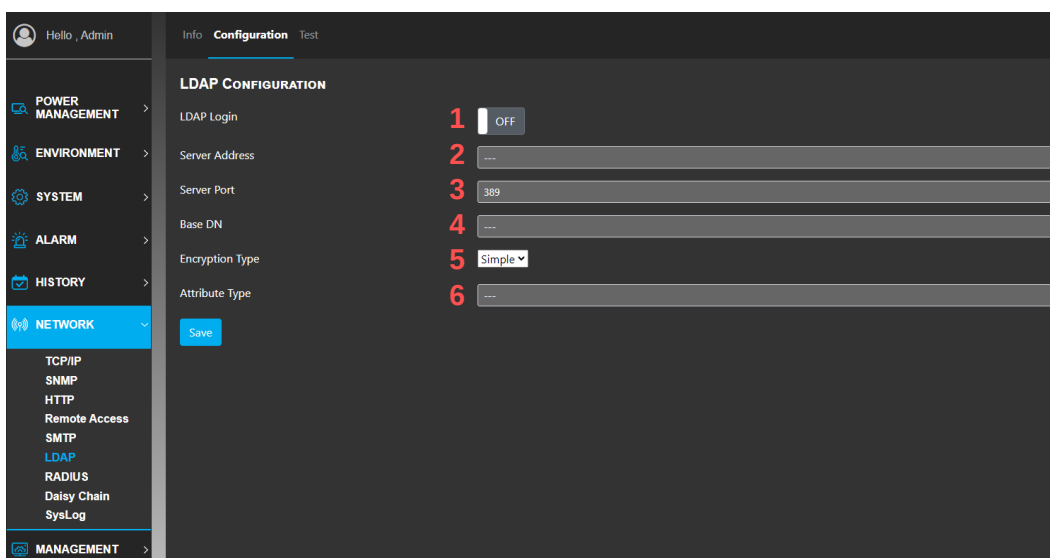
Red numbered callouts (1-7) are placed over the interface elements: 1 points to the Sender Address field, 2 to the Recipient 1 Address field, 3 to the Subject field, 4 to the Content field, 5 to the Test button, 6 to the Save button, and 7 to the Cancel button.

| No. | Item              | Description                                                                                                                                            |
|-----|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | Sender Address    | E-mail address of the sender who sends the e-mail notification.                                                                                        |
| ②   | Recipient Address | Recipient's e-mail address for the mail to be sent. A maximum of 4 recipient addresses can be applied. Please fill in from Recipient 1 to Recipient 4. |
| ③   | Subject           | The subject of the e-mail to be sent.                                                                                                                  |
| ④   | Content           | The contents of the e-mail.                                                                                                                            |
| ⑤   | Test              | Click the button to send a test e-mail with the connection configuration. Please save first.                                                           |
| ⑥   | Save              | Click the button to save the current mail configuration.                                                                                               |
| ⑦   | Cancel            | Click the button to cancel the changes and reloading of the previous configuration.                                                                    |



The **Info** page of **LDAP** under **Network** shows the LDAP server configured information.

- **LDAP server setup**



Three types of LDAP encryption method, simple, TLS and SSL, are described below:

### 1. LDAP encryption type: Simple

| No. | Item            | Description                                                   |
|-----|-----------------|---------------------------------------------------------------|
| ①   | LDAP Login      | Enable or disable LDAP login.                                 |
| ②   | Server Address  | LDAP server address configuration, e.g. 192.168.0.100.        |
| ③   | Server Port     | Server port configuration, e.g. 389.                          |
| ④   | Baseline DN     | LDAP Server Base DN configuration, e.g DC = delta, DC = corp. |
| ⑤   | LDAP Encryption | LDAP transmission encryption type configuration, e.g. Simple. |
| ⑥   | Attribute       | LDAP server attribute configuration, e.g. empty.              |

### 2. LDAP encryption type: TLS

| No. | Item            | Description                                                   |
|-----|-----------------|---------------------------------------------------------------|
| ①   | LDAP Login      | Enable or disable LDAP login.                                 |
| ②   | Server Address  | LDAP server address configuration, e.g. 192.168.0.100.        |
| ③   | Server Port     | Server port configuration, e.g. 389.                          |
| ④   | Baseline DN     | LDAP Server Base DN configuration, e.g DC = delta, DC = corp. |
| ⑤   | LDAP Encryption | LDAP transmission encryption type configuration, e.g. TLS.    |
| ⑥   | Attribute       | LDAP server attribute configuration, e.g. sAMAccountName.     |

### 3. LDAP encryption type: SSL

| No. | Item            | Description                                                   |
|-----|-----------------|---------------------------------------------------------------|
| ①   | LDAP Login      | Enable or disable LDAP login.                                 |
| ②   | Server Address  | LDAP server address configuration, e.g. 192.168.0.100.        |
| ③   | Server Port     | Server port configuration, e.g. 636.                          |
| ④   | Baseline DN     | LDAP Server Base DN configuration, e.g DC = delta, DC = corp. |
| ⑤   | LDAP Encryption | LDAP transmission encryption type configuration, e.g. SSL.    |
| ⑥   | Attribute       | LDAP server attribute configuration, e.g. sAMAccountName.     |

- LDAP server Test

LDAP Test

User Name **1**

Password **2**

**Test**

| No.      | Item     | Description                                                                       |
|----------|----------|-----------------------------------------------------------------------------------|
| <b>1</b> | Username | Valid user account on an LDAP server with domain name, e.g. Delta_PDU@delta.corp. |
| <b>2</b> | Password | Valid user account password.                                                      |

RADIUS **1** **2** **3**

| Enable | Timeout(Sec) | Retry |
|--------|--------------|-------|
| OFF    | 1            | 3     |

SERVER **4** **5**

| Index | Address | Port |
|-------|---------|------|
| 1     | ---     | 1812 |
| 2     | ---     | 1813 |

The RADIUS function allows users to login with an external identity verification.



**NOTE:**

This function is only enabled when RADIUS service is available to users.

| No. | Item    | Description                                                                                                  |
|-----|---------|--------------------------------------------------------------------------------------------------------------|
| ①   | Enable  | RADIUS function enable status.                                                                               |
| ②   | Timeout | The request will be sent again when no response from the RADIUS server is received within the set time.      |
| ③   | Retry   | Maximum number to resend a request to the RADIUS server when no response from the RADIUS server is received. |
| ④   | Address | Address setting of the RADIUS server for the connection.                                                     |
| ⑤   | Port    | Port setting of the RADIUS server for the connection.                                                        |

| No. | Item    | Description                                                                                             |
|-----|---------|---------------------------------------------------------------------------------------------------------|
| ①   | Enable  | RADIUS function enable status.                                                                          |
| ②   | Timeout | The request will be sent again when no response from the RADIUS server is received within the set time. |

| No. | Item             | Description                                                                                                  |
|-----|------------------|--------------------------------------------------------------------------------------------------------------|
| ③   | Retry            | Maximum number to resend a request to the RADIUS server when no response from the RADIUS server is received. |
| ④   | Server 1 Address | Address setting of RADIUS server 1 for the connection.                                                       |
| ⑤   | Server 1 Port    | Port number setting of RADIUS server 1 for the connection.                                                   |
| ⑥   | Server 1 Secret  | Secret key setting of RADIUS server 1 for the connection.                                                    |
| ⑦   | Server 2 Address | Address setting of RADIUS server 2 for the connection.                                                       |
| ⑧   | Server 2 Port    | Port number setting of RADIUS server 2 for the connection.                                                   |
| ⑨   | Server 2 Secret  | Secret key setting of RADIUS server 2 for the connection.                                                    |
| ⑩   | Save             | Click the button to save the current RADIUS configuration.                                                   |
| ⑪   | Cancel           | Click the button to cancel the changes and reloading of the previous configuration.                          |

The screenshot displays the 'RADIUS TEST' configuration page. On the left, a sidebar lists various system settings, with 'NETWORK' expanded and 'RADIUS' selected. The main panel has three tabs: 'Info', 'Configuration', and 'Test'. The 'Test' tab is active, showing input fields for 'User Name' (labeled 1) and 'Password' (labeled 2). A 'Test' button (labeled 3) is positioned below the password field. The interface is dark-themed with red and blue highlights.

| No. | Item     | Description                                   |
|-----|----------|-----------------------------------------------|
| ①   | Username | Account user name for testing the connection. |
| ②   | Password | Account password for testing the connection.  |

| No. | Item | Description                                                                                                                                                                                                                                                                                                                                                       |
|-----|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3   | Test | <p>When the button is clicked, connection with RADIUS configuration starts with inputting the username and password.</p> <p>Connection result is shown at the right button.</p> <p>“Success” will show when with correct server configuration and account information.</p> <p>“Fail” will show when server configuration or account information has an error.</p> |

The screenshot shows the 'Daisy Chain Nodes List' in the 'Network' section. A red box highlights the 'Action' column for the first three nodes. A red line connects this box to two callout windows. Callout 1 points to the 'Rearrange Address' button. Callout 2 points to the 'Send RMC firmware to all nodes' button. Callout 3 points to the 'Send RMC firmware to PDU#2' button. Callout 4 points to the 'Indicate' button. Callout 5 points to the 'Sync all date time from this' button.

| Index | Status  | Address | Preferred | MAC               | Name               | Serial         | FW Version | Date & Time         | Action         |
|-------|---------|---------|-----------|-------------------|--------------------|----------------|------------|---------------------|----------------|
| 1     | ONLINE  | 1       | 1         |                   | This PDU           |                |            |                     | [Action icons] |
| 2     | ONLINE  | 2       | 0         | 00:18:23:0C:FB:73 | DELTA IPDU (PDU#2) | JKC211000006WD | S1.06B02   | 2023-05-06 17:12:53 | [Action icons] |
| 3     | ONLINE  | 3       | 0         | 00:18:23:0C:FB:41 | DELTA IPDU (PDU#3) | JKC211000004WD | S1.06B02   | 2023-05-06 17:12:53 | [Action icons] |
| 4     | ONLINE  | 4       | 0         | 00:18:23:0C:FB:64 | DELTA IPDU (PDU#4) | JKC211000001WD | S1.06B02   | 2023-05-06 17:12:53 | [Action icons] |
| 5     | OFFLINE | ---     | ---       | ---               | ---                | ---            | ---        | ---                 | [Action icons] |
| 6     | OFFLINE | ---     | ---       | ---               | ---                | ---            | ---        | ---                 | [Action icons] |
| 7     | OFFLINE | ---     | ---       | ---               | ---                | ---            | ---        | ---                 | [Action icons] |
| 8     | OFFLINE | ---     | ---       | ---               | ---                | ---            | ---        | ---                 | [Action icons] |
| 9     | OFFLINE | ---     | ---       | ---               | ---                | ---            | ---        | ---                 | [Action icons] |
| 10    | OFFLINE | ---     | ---       | ---               | ---                | ---            | ---        | ---                 | [Action icons] |
| 11    | OFFLINE | ---     | ---       | ---               | ---                | ---            | ---        | ---                 | [Action icons] |
| 12    | OFFLINE | ---     | ---       | ---               | ---                | ---            | ---        | ---                 | [Action icons] |
| 13    | OFFLINE | ---     | ---       | ---               | ---                | ---            | ---        | ---                 | [Action icons] |

The **Daisy Chain Nodes List** in **Network** displays the network information of the chained rPDUs.

| No. | Item                                           | Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | Address Setup Button                           | <p>User can set all rPDUs' addresses.</p> <p> <b>NOTE:</b></p> <ol style="list-style-type: none"> <li>1. When setting a new address, please pay attention whether the address has already been used or not. If yes, you need to set the rPDU that has used the address to other address; otherwise, the set address will not be obtained.</li> <li>2. If you enable the following functions, the rPDU's address will be changed accordingly.</li> </ol> <p><b>Restore to Factory Default</b><br/> <b>Restore to User Default</b><br/> <b>Import Configuration</b></p> |
| ②   | Firmware Sent to All Chained rPDUs For Upgrade | Users can click the button to send this rPDU's RMC, IPM or DPB firmware to all chained rPDUs for upgrade.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ③   | Firmware Sent to A Specific rPDU For Upgrade   | Users can click the button to send this rPDU's RMC, IPM or DPB firmware to a specific rPDU for upgrade.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ④   | Indicator Button                               | When users click the button, the assigned rPDU's system status indicator on the RMC will blink red and green five times.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| ⑤   | Time Synchronization Button                    | <p>Users can click the button to synchronize the time of this rPDU with all chained rPDUs.</p> <p> <b>NOTE:</b></p> <p>When any rPDU connected in the Daisy Chain enables the SNTP function, the rest of other chained rPDUs will also automatically synchronize their time with this rPDU.</p>                                                                                                                                                                                                                                                                     |

| Item | Description                  |
|------|------------------------------|
| RMC  | Remote monitoring controller |
| IPM  | Input meter                  |
| DPB  | Display board                |

- **SysLog**

The screenshot shows a web interface with a dark theme. On the left is a sidebar menu with icons and labels: 'POWER MANAGEMENT', 'ENVIRONMENT', 'SYSTEM', 'ALARM', 'HISTORY', 'NETWORK' (highlighted in blue), and 'MANAGEMENT'. Under 'NETWORK', there is a list of sub-items: 'TCP/IP', 'SNMP', 'HTTP', 'Remote Access', 'SMTP', 'LDAP', 'RADIUS', 'Daisy Chain', and 'SysLog' (highlighted in blue). The main content area has a top bar with 'Info' and 'Configuration' tabs. Below this is the 'SysLog Info' section, which contains a table with three columns: 'Enable', 'Server Address', and 'Port'. The table has one row with the values 'OFF', '192.168.0.1', and '514'.

| Enable | Server Address | Port |
|--------|----------------|------|
| OFF    | 192.168.0.1    | 514  |

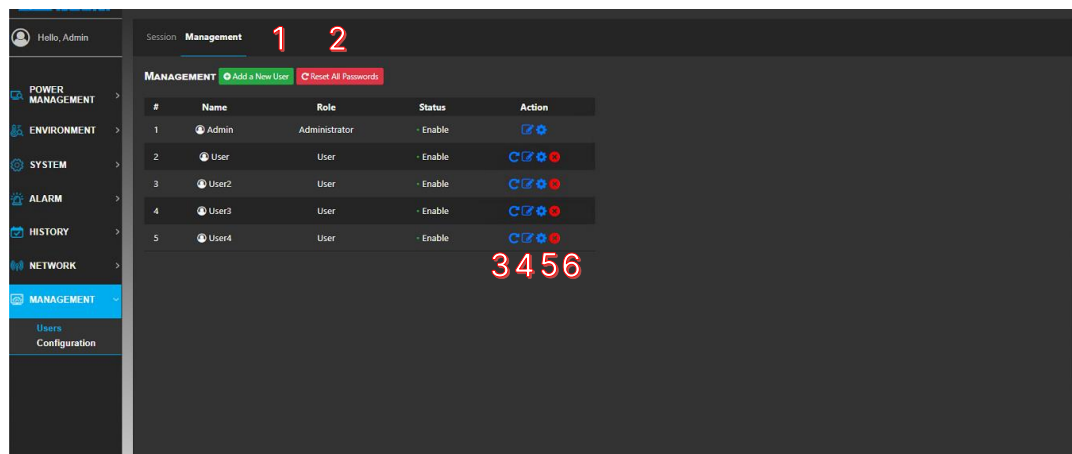
The **SysLog** page shows Syslog server connection settings. Users can obtain the information about event log by connecting to the Syslog server.

| No. | Item           | Function                                                                  |
|-----|----------------|---------------------------------------------------------------------------|
| ①   | Enable         | Enable or disable the Syslog function.                                    |
| ②   | Server Address | Users can set up the Syslog server's IP address.                          |
| ③   | Port           | Users can set up the Syslog server's port.                                |
| ④   | Protocol       | Users can choose either RFC3416 or RFC5424 protocol for message encoding. |

- **Management**

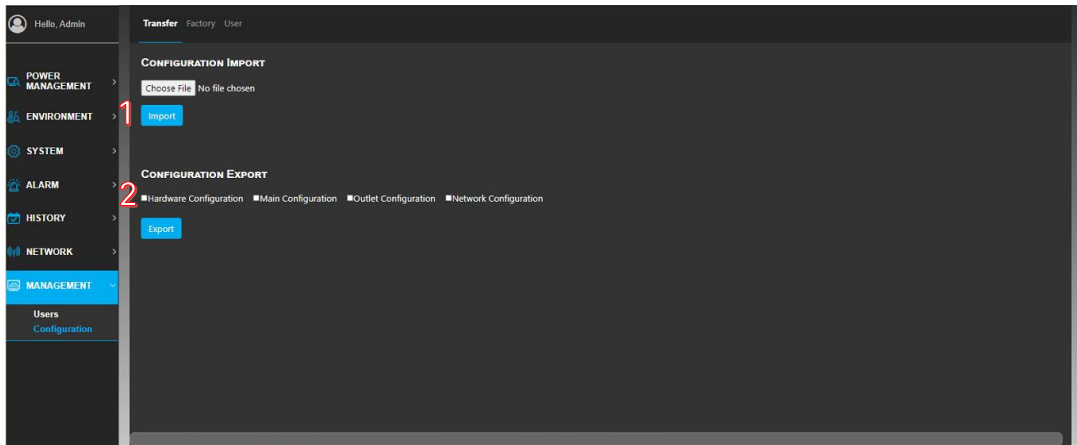
The session list displays the user who logged in and is currently using the rPDU. Users can see their own account and others accounts of other users who have lower account level than them (i.e., if you log in with an Admin account, you can see logged-in Admin and User accounts; if you log in with a User level account, you can only see logged-in User level accounts).

Users with a higher-level account can remove users who login with a lower-level account. Re-login action is needed after the removal.



The **Management** page under **Users** shows all visible accounts with their account level. Admin-level users can perform several actions on these accounts.

| No. | Item                 | Function                                                                                                                        |
|-----|----------------------|---------------------------------------------------------------------------------------------------------------------------------|
| ①   | Add New Users        | Admin-level users can add a new user who is allowed to login to this rPDU by clicking this button.                              |
| ②   | Reset All Passwords  | Admin-level users can reset passwords of all accounts displayed on the screen by clicking this button.                          |
| ③   | Reset Password       | Admin-level users can reset the password of the selected account by clicking this button.                                       |
| ④   | Change Password      | Admin-level users can change the password of the selected account by clicking this button.                                      |
| ⑤   | Multi Setting Option | Admin-level users can change user name and user role as well as enable or disable the selected account by clicking this button. |
| ⑥   | Delete Account       | Admin-level users can delete the selected account by clicking this button.                                                      |



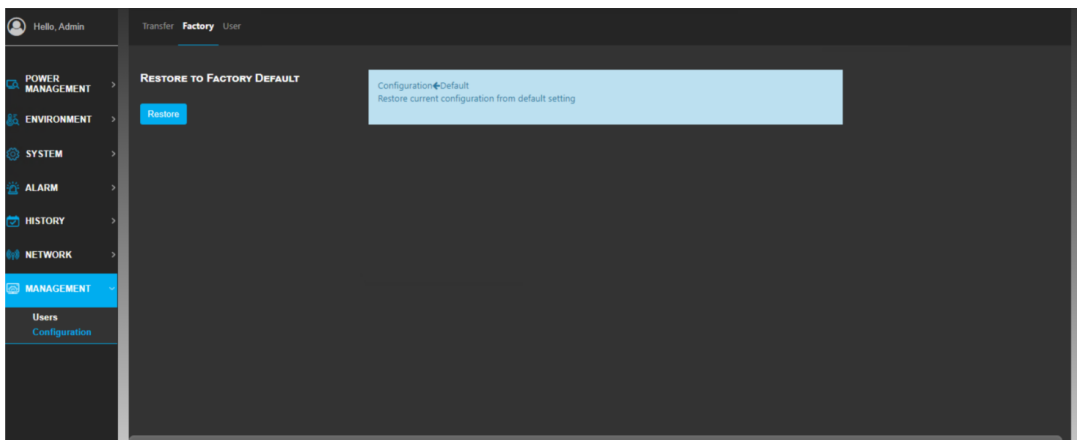
The **Transfer** page under **Configuration** allows users to import the preferred configuration to a new rPDU or export the current configuration to a configuration file. Any other rPDU can apply this configuration simply by importing data on the configuration file.

| No. | Item                 | Function                                                                                                                                                    |
|-----|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | Select Import File   | Users can select the preferred configuration file and upload it to the rPDU by clicking this button.                                                        |
| ②   | Configuration Export | Users can select the configuration that will be packaged into the configuration file. Selection of multi-part of the configuration for the file is allowed. |



#### NOTE:

The original set address of each chained rPDU will be saved in **Network Configuration**. After importing the configuration from other rPDU, please reset this rPDU's address according to the setup procedures mentioned in *Chapter 7.1 Connection of rPDUs in A Daisy Chain*.

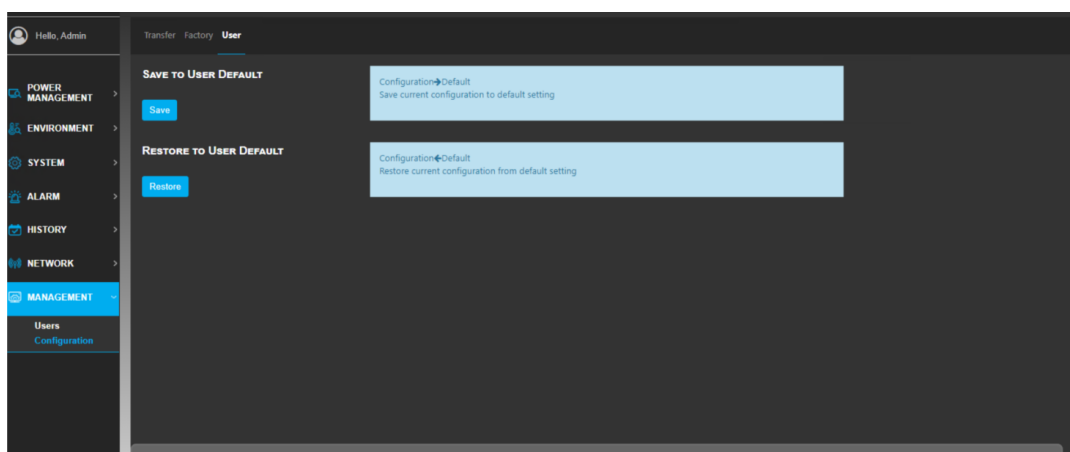


The function of restoration to factory default allows current configuration of the rPDU to go back to the initial factory setting. Be aware that this action will force unsaved configuration (including password and user account information) set by users to be overwritten.



**NOTE:**

1. Please restore to factory default if you don't need to use the rPDU anymore.
2. The default address of each chained rPDU is 1. Please reset this rPDU's address according to the setup procedures mentioned in ***Chapter 7.1 Connection of rPDUs in A Daisy Chain*** after clicking the restore button to **RESTORE TO FACTORY DEFAULT**.



**Save to User Default** lets users save the preferred configuration to rPDU storage. Saving allows the rPDU to restore to the preferred configuration as users click **Restore to User Default**.

**Restore to User Default** allows users to restore all configuration on the rPDU back to the user default setting. Be aware that this action will force unsaved configuration (including password and user account information) set by users to be overwritten.



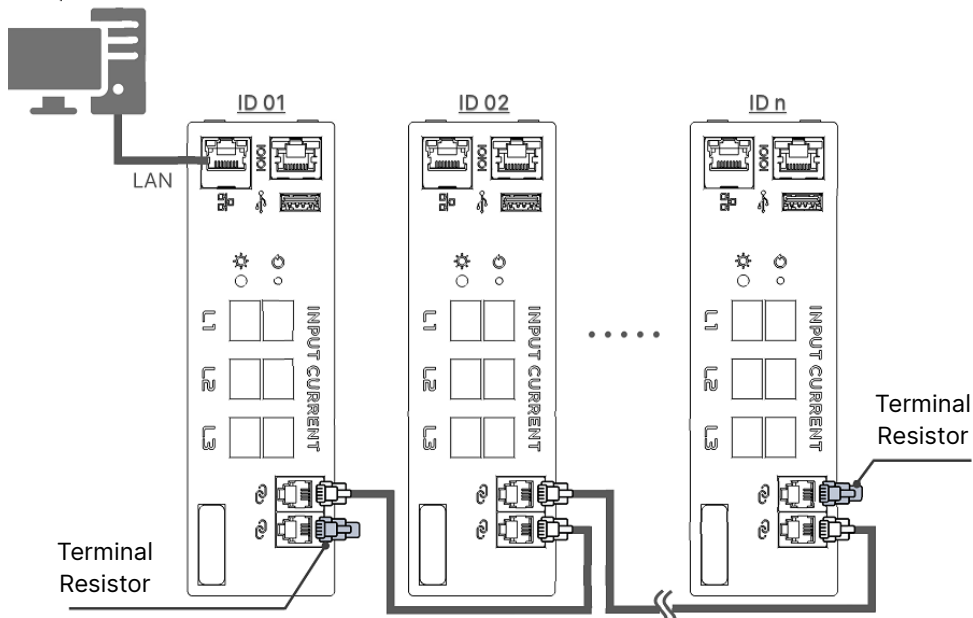
**NOTE:**

The original set address of each chained rPDU will be saved in **USER DEFAULT**. If you are not sure about the address set in **USER DEFAULT**, please reset this rPDU's address according to the setup procedures mentioned in ***Chapter 7.1 Connection of rPDUs in A Daisy Chain*** after clicking the restore button to **RESTORE TO USER DEFAULT**.

## Chapter 7 : Daisy Chain

Users can connect up to 40 rPDUs through the daisy chain ports. With connecting to one rPDU through one IP address, users can monitor all chained rPDUs' information and status and also upgrade all chained rPDUs' firmware.

### 7.1 Connection of rPDUs in A Daisy Chain



*(Figure 7-1: Connection of rPDUs in A Daisy Chain)*

#### **Step 1**

Select one rPDU as the first unit and connect it to a PC via LAN. After that, insert a terminal resistor into one of the rPDU's daisy chain ports.

#### **Step 2**

Use a RJ11-RJ11 cable to connect the first rPDU's the other daisy chain port with the second rPDU's daisy chain port (just choose one). Repeat this step to connect all rPDUs in series.

#### **Step 3**

Insert a terminal resistor into the last rPDU's unconnected daisy chain port to complete the daisy chain hardware setup.



## NOTE:

Up to 40 rPDUs can be connected in a daisy chain, and the total cable length should be within 40 meters (131.23 ft).

## 7.2 Daisy Chain Web Page Initial Setup

| Index | Status | Address | MAC               | Name       | Serial         | FW Version | Date & Time         | Action |
|-------|--------|---------|-------------------|------------|----------------|------------|---------------------|--------|
| 1     | ONLINE | 1       |                   | This PDU   |                |            |                     |        |
| 2     | ONLINE | 2       | 00:18:23:0C:FB:4A | DELTA iPDU | JKC211000023WD |            | 2023-04-27 21:15:36 |        |
| 3     | ONLINE | 3       | 00:18:23:0C:FB:73 | DELTA iPDU | JKC211000006WD |            | 2023-04-27 21:15:35 |        |
| 4     | ONLINE | 4       | 00:18:23:0C:FB:41 | DELTA iPDU | JKC211000004WD |            | 2023-04-27 21:15:35 |        |
| 5     | ONLINE | 5       | 00:18:23:0C:FB:6A | DELTA iPDU | JKC211000037WD |            | 2023-04-27 21:15:36 |        |
| 6     | ONLINE | 6       | 00:18:23:0C:FB:64 | DELTA iPDU | JKC211000041WD |            | 2023-04-27 21:15:38 |        |
| 7     | ONLINE | 7       | 00:18:23:0C:FB:3B | DELTA iPDU | JKC211000011WD |            | 2023-04-27 21:15:35 |        |
| 8     | ONLINE | 8       | 00:18:23:0C:FB:50 | DELTA iPDU | JKC211000030WD |            | 2023-04-27 21:15:38 |        |
| 9     | ONLINE | 9       | 00:18:23:0C:FB:4F | DELTA iPDU | JKC211000025WD |            | 2023-04-27 21:15:38 |        |
| 10    | ONLINE | 10      | 00:18:23:33:AB:8D | DELTA iPDU | JKC224900749W0 |            | 2023-04-27 21:15:36 |        |
| 11    | ONLINE | 11      | 00:18:23:33:AC:47 | DELTA iPDU | JKC224900719W0 |            | 2023-04-27 21:15:36 |        |
| 12    | ONLINE | 12      | 00:18:23:33:AC:39 | DELTA iPDU | JKC224900734W0 |            | 2023-04-27 21:15:38 |        |
| 13    | ONLINE | 13      | 00:18:23:33:AB:8C | DELTA iPDU | JKC224900744W0 |            | 2023-04-27 21:15:38 |        |

### Step 1

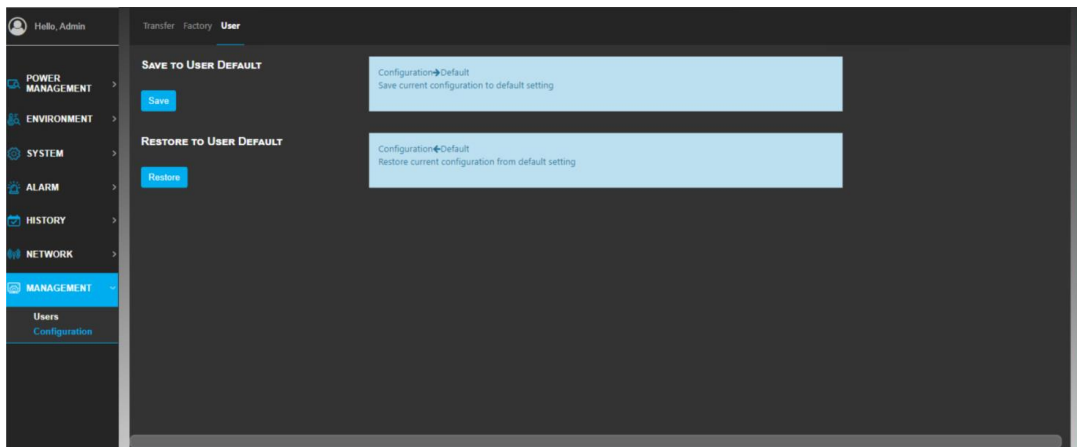
Enter the **Daisy Chain** page under **Network**, and check whether the total number of **ONLINE** units matches the actual number of the connected rPDUs.

### Step 2

Follow the ID sequence of rPDUs connected in series according to *Chapter 7.1 Connection of rPDUs in A Daisy Chain* and click the **Rearrange Address** button to set up each rPDU's address in the address field. You can refer to the MAC on the RMC or click the  button to ensure the actual connection addresses of all chained rPDUs. After that, click the save button to complete the initial setup of daisy chain web page.

### Step 3

Go to the **User** page under **Configuration** shown in the figure below, and click the save button to save this rPDU's address to **USER Default**. For the rest of chained rPDUs, log in to each Web Page and perform the procedures mentioned in **Step 3**.



#### NOTE:

1. The default address of each chained rPDU is 1. When an rPDU is connected online and finds that the set address has already been occupied, it will automatically find the next vacant address to go online. For the first time connection, the address sequence will be based on the online time of each rPDU and may be different from the ID sequence defined in the hardware configuration mentioned in ***Chapter 7.1 Connection of rPDUs in A Daisy Chain.***
2. Please confirm that all addresses are entered before clicking the save button in order to ensure that all chained rPDUs receive the new addresses at the same time.
3. After the daisy chain web page initial setup is completely done, the rPDUs will save users' setting values individually. When the rPDUs are re-connected online, they will give priority to reconnecting with the set addresses.

### 7.3 Firmware Upgrade for Chained rPDUs

Hello , Admin

POWER MANAGEMENT

ENVIRONMENT

SYSTEM

ALARM

HISTORY

List

NOES LIST

Rearrange Address

| Index | Status | Address | MAC               | Name       | Serial         | FW Version | Date & Time         | Action                                                                   |
|-------|--------|---------|-------------------|------------|----------------|------------|---------------------|--------------------------------------------------------------------------|
| 1     | ONLINE | 1       |                   | This PDU   |                |            |                     | <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> |
| 2     | ONLINE | 2       | 00:18:23:0C:FB:4A | DELTA iPDU | JKC211000023WD |            | 2023-05-02 10:18:50 | <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> |
| 3     | ONLINE | 3       | 00:18:23:0C:FB:73 | DELTA iPDU | JKC211000006WD |            | 2023-05-02 10:18:53 | <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> |
| 4     | ONLINE | 4       | 00:18:23:0C:FB:41 | DELTA iPDU | JKC211000004WD |            | 2023-05-02 10:18:50 | <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> |
| 5     | ONLINE | 5       | 00:18:23:0C:FB:6A | DELTA iPDU | JKC211000037WD |            | 2023-05-02 10:18:50 | <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> |

After updating the firmware of the rPDU, users can click the  button to send this rPDU's RMC, IPM or DPB firmware to all chained rPDUs for firmware upgrade, or click the  button to send this rPDU's RMC, IPM or DPB firmware to a specific rPDU for firmware upgrade.

Hello , Admin

POWER MANAGEMENT

ENVIRONMENT

SYSTEM

ALARM

HISTORY

List

NOES LIST

| Index | Status | Address | MAC               | Name       | Serial         | FW Version | Date & Time         | Action                                                                   |
|-------|--------|---------|-------------------|------------|----------------|------------|---------------------|--------------------------------------------------------------------------|
| 1     | 30%    |         |                   |            |                |            |                     | <div> <div></div> <div></div> </div>                                     |
| 2     | ONLINE | 2       | 00:18:23:0C:FB:4A | DELTA iPDU | JKC211000023WD |            | 2023-04-28 15:43:54 | <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> |
| 3     | ONLINE | 3       | 00:18:23:0C:FB:73 | DELTA iPDU | JKC211000006WD |            | 2023-04-28 15:43:53 | <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> |
| 4     | ONLINE | 4       | 00:18:23:0C:FB:41 | DELTA iPDU | JKC211000004WD |            | 2023-04-28 15:43:54 | <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> |
| 5     | ONLINE | 5       | 00:18:23:0C:FB:6A | DELTA iPDU | JKC211000037WD |            | 2023-04-28 15:43:55 | <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> |

When the firmware is being sent to other rPDU(s), the **Action** icon of the original rPDU will change to . When the icon  appears, it means that the firmware is being uploaded. Users can click the  icon to terminate sending the firmware.

As for the rPDU(s) receiving the firmware, the **Action** icon will change to . After the firmware is received or upload is terminated, it will return to the original state.

|    |                     |                             |
|----|---------------------|-----------------------------|
| 9  | 2020-02-01 08:12:42 | File sent to 39/39 PDU(s)   |
| 10 | 2020-02-01 07:44:38 | Firmware distribution Start |

After the firmware is received, users can go to the **Event Log** page under **History** to check how many rPDUs successfully receive the firmware and go to the **Inventory** page under **System** to check whether the firmware version is successfully updated.



**NOTE:**

1. During the process of uploading the firmware to other rPDU(s), if the web page is idle for a long time to cause logout, it will not affect the firmware upload process. Please ensure that the LAN is still connected.
2. The firmware upload process does not affect the operation of all chained rPDUs; users can switch pages to operate each rPDU normally.

## Chapter 8 : Troubleshooting

| Problem                                                                                                           | Solution                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The reset address cannot be saved.                                                                                | <ol style="list-style-type: none"> <li>1. Check if the address is set as 1 ~ 40.</li> <li>2. Check if the same address is set.</li> </ol>                                                                                                                                                                                                                                                 |
| The new set address is invalid.                                                                                   | Please make sure whether the new set address has already been occupied by other rPDU. If yes, please reset the rPDU that occupies the address to another vacant address and reset the rPDU that you originally want to set.                                                                                                                                                               |
| The chained rPDUs suddenly change their addresses.                                                                | Please reset the address according to <i><b>7.2 Daisy Chain Web Page Initial Setup.</b></i>                                                                                                                                                                                                                                                                                               |
| The rPDU cannot connect online.                                                                                   | <ol style="list-style-type: none"> <li>1. Please check whether the first chained rPDU and the last one are connected with the terminal resistors.</li> <li>2. Please replace the RJ11-RJ11 cable with a new one and check if the total cable length exceeds 40 meters (131.23 ft).</li> </ol> <p>If the above-mentioned solution doesn't work, please contact Delta customer service.</p> |
| The <b>Inventory</b> page under <b>System</b> still shows the old version of the firmware after firmware upgrade. | <p>The firmware upload progress bar only indicates the progress of sending the firmware to other rPDU(s). Only after the rPDU(s) completely receive(s) the firmware can the firmware be upgraded.</p> <p>Please wait for a few minutes and go to the <b>Inventory</b> page under <b>System</b> to confirm.</p>                                                                            |
| Unable to send the IPM firmware.                                                                                  | Please make sure that all chained rPDUs have the same input type (e.g. 1p-LN, 3p-WYE, 1p-LL or 3p-DELTA). Different input types of rPDUs will cause failure of sending the IPM firmware.                                                                                                                                                                                                  |
| Firmware upgrade is failed.                                                                                       | If there are continuous failures of sending firmware to other rPDU(s), please unplug the RMC that failed to receive the firmware, re-plug the RMC, wait for the rPDU to go online and try to send the firmware again. If the firmware still cannot be upgraded, please contact Delta customer service.                                                                                    |

## Chapter 9 : Optional Accessories

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| No. | Item               |               | Function                                                             |
|-----|--------------------|---------------|----------------------------------------------------------------------|
| 1   | RJ11-RJ11<br>Cable | 1 m (3.28 ft) | Connection with the daisy chain port<br>for daisy chain application. |
|     |                    | 3 m (9.84 ft) |                                                                      |
|     |                    | 5 m (16.4 ft) |                                                                      |
| 2   | Terminal Resistor  |               | Connection with the daisy chain port<br>for daisy chain application. |
| 3   | Grounding Nut      |               | For grounding use                                                    |
| 4   | Retention Sleeve   |               | For stronger connection with the<br>output socket.                   |

## Appendix 1 : Warranty

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Seller warrants this product, if used in accordance with all applicable instructions, to be free from original defects in material and workmanship within the warranty period. If the product has any failure problem within the warranty period, Seller will repair or replace the product at its sole discretion according to the failure situation.

This warranty does not apply to normal wear or to damage resulting from improper installation, operation, usage, maintenance or irresistible force (i.e. war, fire, natural disaster, etc.), and this warranty also expressly excludes all incidental and consequential damages.

Maintenance service for a fee is provided for any damage out of the warranty period. If any maintenance is required, please directly contact the supplier or Seller.



### **WARNING:**

The individual user should take care to determine prior to use whether the environment and the load characteristic are suitable, adequate or safe for the installation and the usage of this product. The User Manual must be carefully followed. Seller makes no representation or warranty as to the suitability or fitness of this product for any specific application.



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