

PDU

(Monitored / Switched / kWh / POM)

User Manual

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1. Introduction

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

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

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

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

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

CAUTION: This PDU contains LETHAL VOLTAGES. All repairs and service should be performed by AUTHORIZED SERVICE PERSONNEL ONLY. There are NO USER SERVICEABLE PARTS inside the PDU. The installation of options, routine maintenance, and service of this product must be performed by individuals who are knowledgeable about the procedures, precautions, and hazards associated with AC power products.

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

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

Features:

- Built-in web server, manager can real time to monitoring the current consumption of the power strip.
- Build-in true RMS current meter.
- Setup easily, meter can read the IP address directly.
- Provide audible alarm when the power consumption over the threshold of warning and overload.
- Send the email and traps when the power consumption exceed the trigger value of warning or overload to the PDU.
- Provide utility, it can monitor a large mount of PDU at the same time.
- Support the SNMP and provide MIB for the PDU to be monitored by NMS.
- Provide power protection by the circuit breaker.

- Option accessory can support temperature and humidity detection.

Switched PDU series

- Real time to control outlets of PDU.
- Indicate outlets status with LED.
- Support power on sequence.

2. PDU Package

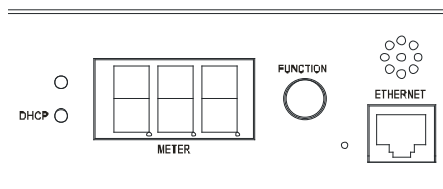
The standard PDU package contains a Power Distribution Unit with supporting hardware and software. The components of the package are:

- Power Distribution Unit.
- Rack mount Brackets.
- CD-ROM, it contains:
 - User Manual.
 - PDU Software.
 - MIB: Management Information Base for Network.

3. Function

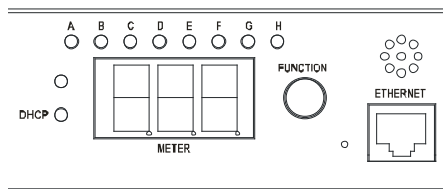
Interface

Monitored PDU



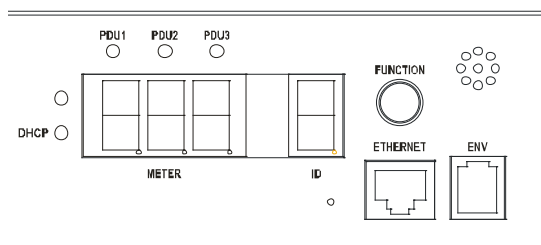
Switched PDU

(Single Circuit)



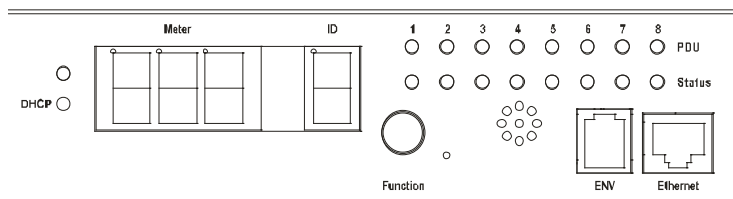
Switched PDU

(Two/Three Circuits)



POM PDU (Per Outlet Monitor)

(Switched PDU series)



Interface	Number	Protocol/Specification
RJ45	1	Ethernet connection. Support ICMP, ARP, IP, TCP, UDP, DHCP, HTTP, SNMPv1
RJ11	1	Option probe. Attached to detect temperature and humidity.
Reset Hole	1	Restart Network System
Button	1	1 beep : Current, Temp./Humidity Display 2 Beeps : IP Display. 4 Beeps : DHCP/Fixed 6 Beeps : Reset to Default
Seven Segments	3 digits	True RMS Meter Range: 0.2A ~ 20 A Precision: +/-2%+/-0.1AMP
	1 Digit	Press Button after 2 Beeps will display PDU IP Address 0: Total Current t: Temperature h: Humidity
Green LED	8/16/24	Outlet Status: Indicate output power status.
Red LED	2/3/8	Circuit Status: Light on means that circuit load is exceeding the pre-set threshold.
Green LED	1	DHCP: Light on means that PDU gets IP address through DHCP.
Circuit Breaker		Overload power protection.

4. Installation

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

Rack Mount Instructions

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

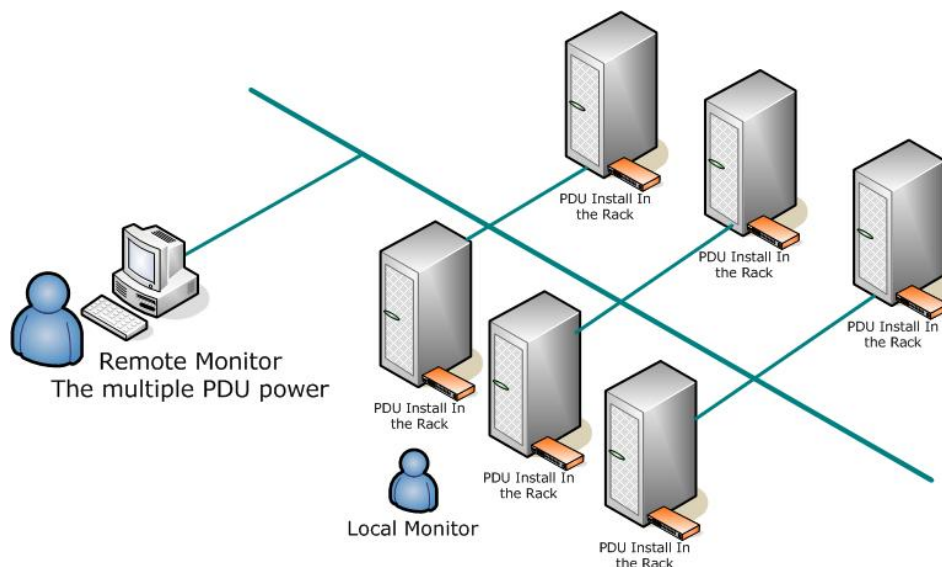
B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

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

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

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

Diagram



Hardware

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

Note 1:

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

Note 2:

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

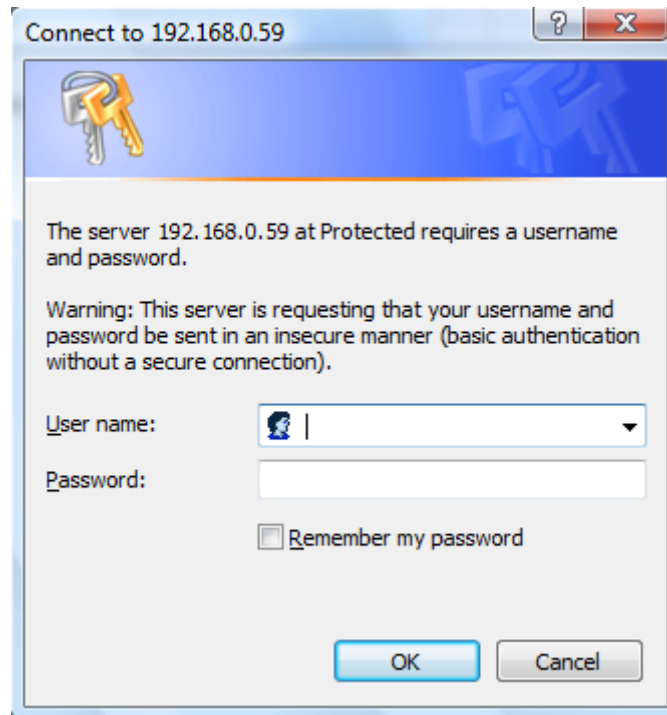
5. Web Interface

Login:

Input the PDU IP address in web browser.

Default ID is snmp.


Password is 1234.



Information: PDU

Display total PDU and each circuit power consumption. PDU has different models with 1, 2, 3 or 8 circuits

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

 PDU		
Total load: 0.0 A , Status: Normal		
Information	PDU	
PDU	PDU1	0.0 A Normal
System	PDU2	0.0 A Normal
Control	Total Current	0.0 A Normal
Outlet	Option Device	
Group	Temperature	+15.6 C
Schedule	Humidity	62 %
Ping Action		
Configuration		
PDU		
Threshold		
User		
Network		
Mail		
SNMP		
Time		

Information: System

Indicate PDU system information.

PDU

Total load: 0.0 A , Status: Normal

Information

[PDU](#)

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Control

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Model No.

XXXXXXXXXXXX

Firmware Version

s4.82-090828-8cb8s

MAC Address

00:16:18:77:04:59

System Name

PDU

System Contact

Admin

Location

Office

Apply

Information: Power (available for PDU with kWh function)


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

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

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

Carbon Emission Data: Reference data.

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

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

Control: Outlet (available for Switched PDU)


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

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

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

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

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

 **PDU**

Total load: 0.0 A , Status: Normal

Information PDU System Control Outlet Group Schedule Ping Action Configuration PDU Threshold User Network Mail SNMP Time	PDU1	Status	<input type="checkbox"/>
	OutletA	ON	<input type="checkbox"/>
	OutletB	ON	<input type="checkbox"/>
	OutletC	ON	<input type="checkbox"/>
	OutletD	ON	<input type="checkbox"/>
	OutletE	ON	<input type="checkbox"/>
	OutletF	ON	<input type="checkbox"/>
	OutletG	ON	<input type="checkbox"/>
	OutletH	ON	<input type="checkbox"/>
	OutletI	ON	<input type="checkbox"/>
	OutletJ	ON	<input type="checkbox"/>
	OutletK	ON	<input type="checkbox"/>
	OutletL	ON	<input type="checkbox"/>
	PDU2		
OutletM	ON	<input type="checkbox"/>	
OutletN	ON	<input type="checkbox"/>	
OutletO	ON	<input type="checkbox"/>	
OutletP	ON	<input type="checkbox"/>	
OutletQ	ON	<input type="checkbox"/>	
OutletR	ON	<input type="checkbox"/>	
OutletS	ON	<input type="checkbox"/>	
OutletT	ON	<input type="checkbox"/>	
OutletU	ON	<input type="checkbox"/>	
OutletV	ON	<input type="checkbox"/>	
OutletW	ON	<input type="checkbox"/>	
OutletX	ON	<input type="checkbox"/>	

ON

OFF

OFF/ON

Control: Group (available for Switched PDU with multi-circuits)

Control outlet power for multiple outlets.

Setting: Enter to the setting mode.


Outlet: Assign the outlet in a group.

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

ON: Press icon to turn on the assigned group.

OFF: press icon to turn off the assigned group.

Active: Enable it to be a controllable group.

 **PDU**

Total load: 0.0 A , Status: Normal

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

Control: Schedule (available for Switched PDU with multi-circuits)

Control the assigned outlet by pre-set schedule.

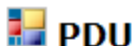
Outlet: Assign the outlet that want to be controlled in this schedule.

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

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

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

Active: Enable the assigned schedule control.



Total load: 0.0 A , Status: Normal

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

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

Control: Ping Action (available for Switched PDU with multi-circuits)









Automatically reboot the locked device by ping its IP

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

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

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

Active: Enable this function.

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

Configuration: PDU (available for Switched PDU)


Set the outlet name and delay time.

Name: Rename the outlet.

ON: Set delay time for power on sequential.

OFF: Set delay time for power off sequential.

Note: The maximum delay time is 255 seconds.

 **PDU**

Total load: 0.0 A , Status: Normal

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Name	ON Delay (sec)	OFF Delay (sec)
OutletA	1	1
OutletB	2	2
OutletC	3	3
OutletD	4	4
OutletE	5	5
OutletF	6	6
OutletG	7	7
OutletH	8	8


Apply

Apply

Apply

Configuration: Threshold

Set the warning and overload threshold for each circuit.
Set lower and upper threshold for temperature and humidity.

 **PDU**

Total load: 0.0 A , Status: Normal

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


Apply

Configuration: User

Change ID and password.

Default ID is snmp and password is 1234.

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

 **PDU**

Total load: 0.0 A , Status: Normal

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Original
ID
Password


New
ID
Password

Apply

Configuration: Network

PDU network information

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

 PDU	
Total load: 0.0 A , Status: Normal	
Information	IP Address
PDU	Host Name <input type="text" value="DIGIBOARD"/>
System	IP Address <input type="text" value="192.168.0.51"/>
Control	Subnet Mask <input type="text" value="255.255.255.0"/>
Outlet	Gateway <input type="text" value="192.168.0.254"/>
Group	<input checked="" type="checkbox"/> Enable DHCP
Schedule	DNS Server IP
Ping Action	Primary DNS IP <input type="text" value="192.168.0.254"/>
Configuration	Secondary DNS IP <input type="text" value="0.0.0.0"/>
PDU	<input type="button" value="Apply"/>
Threshold	
User	
Network	
Mail	
SNMP	
Time	

Configuration: Mail

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

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

Sender's Email: Input the sender email address.

Email Address: Input the recipient email address.

The message in the email:

Indicate OutletA~H-XXXXXXX status in order

X=0 : means the power off.

X=1 : means the power on.

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

PDU	
Total load: 0.0 A , Status: Normal	
Information	Email Setting
PDU	Email Server <input type="text" value="mail.your.com"/>
System	Sender's Email <input type="text" value="sender@yourcom.com"/>
Control	Recipient's Email Address
Outlet	Email Address <input type="text" value="harveyhsieh@hotmail.com"/>
Group	<input type="button" value="Apply"/>
Schedule	
Ping Action	
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User	
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Mail	
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Time	

Configuration: SNMP


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

Trap Notification: Set receiver IP for trap.

Community: Set SNMP community.

Read Community is public and fixed.

Default Write Community is "public" and can be modified by user.

 **PDU**

Total load: 0.0 A , Status: Normal

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Trap Notification
Receiver IP


Community
Read **public**
Write

Configuration: Time (available for PDU with multi-circuits)

Set the time for schedule control.

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

System Time: Input time manually.

 **PDU**

Total load: 0.0 A , Status: Normal

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Internet Time Setting
Time Between Updates
Primary Time Server
Secondary Time Server
Time Zone

System Time 2009/09/30 14:03:41
System Time (yyyy/mm/dd hh:mm:ss)