

**Power Distribution Unit** User Manual

V 1.0

## CONTENTS

CONTENTS	1
Safety Instruction General Safety Instructions Installation and Operation Safety Instructions Product Labels and Standards	5 5 6
System Overview PDU Controller Connecting the PDU via Ethernet Port Connecting the PDU to a Computer Serial Port	
Web User Interface (Web UI) Configuration. Internet Protocol (IP) Addressing Connecting to the PDU Web Configuration Introduction to the Web GUI	10 
Screen Resize Due to Multiple PDU Configuration	
Resizing a Screen	
Menu Dropdowns	
Introduction to the Dashboard	
Power Summary Pag	
Outlet Monitoring Page	
Environmental Monitoring Page	
Security Monitoring Pag	
Network Settings	
System Management Information	
System Info	
Rack Location	
Power Panel & Core Location	
Setting Time and Date on the PDU	23
Manually Setting Time and Date	
Link to a Network Time Protocol (NTP)	
Setting Daylight Saving Time	
Outlet Power Management	

## EDGE Series PDU

Naming an Outlet	
Setting the Outlet Default State	
Switching an Outlet On or Off	
Setting the Outlet Power On/Off Delay for Enlogic PDUs	
Outlet Power Sequence Setup	
Setting Metering Thresholds	29
Power Threshold	
Energy Threshold	
Phase Current Alarm Threshold	
Phase Voltage Alarm Threshold	
Circuit Breaker Alarm Threshold	
Device Detection Threshold	
Outlet Alarm Threshold	
Email Setup	
Data Log	
Web Interface Access	46
Logging Out	
Access Types	
User Accounts	
Configuring the system with LDAP Server Settings	
Simple Network Management Protocol (SNMP)	51
SNMP Management Configuration	51
Configuring Users for SNMP v1/v2C	
Configuring SNMP Traps	57
Local Display	
Onboard Display and Network Controller	60
Control Buttons	
Status LED	
Network Controller Menu Structure	62
Main Menu Selections	
Setup Menu	63
Network Submenu	
Device Submenu	

## EDGE Series PDU

Screen Submenu	65
Language Submenu	66
USB Submenu	67
Units Submenu	68
Alarms Menu	68
Power Menu	69
Device Submenu	69
Phase Submenu	70
Breaker Submenu	71
Outlet Submenu	72
Sensors Menu	73
Daisy Chain Configuration	74
Daisy-Chain Overview	74
Daisy-Chain Setup	74
RNA (Redundant Network Access) Functionality	
To Configure PNA Mode in the CLI	76
To Conjugure NNA Mode In the CLI	70
Configuring Temperature Scale	
Configuring Environmental Sensors	77
Security	
Firmware Update Procedure	79
USB Method	79
Web Interface Method	79 80
System Perset or Persyand Persyany	01
Use Reset Button on Controller	
Command Line Interface (CLI)	R1
Supported Commands	
Connecting to the CLI through the serial interface	
To connect the PDU to a computer (via Serial Interface):	82
Logging in with HyperTerminal	82
Serial Cable Pinout to Create Your Own Cable	
CLI Commands	84
Help Commands	84

System Commands	84
Network Commands	87
User Commands	88
Device Commands	89
Power Commands	92

### Safety Instruction

### **General Safety Instructions**

- This Power Distribution Unit (PDU) unit is intended to provide power to the ITE equipment only. Do not connect the secondary power units to the outlets of the PDU.
- It is recommended not to operate the system with Internet from a public network, but with an internal network protected externally with firewalls.
- When remote accesses are deployed, select a secure access path, such as VPN (Virtual Private Network) or HTTPS.
- Ensure that the current Enlogic firmware is installed on all Enlogic PDU.
- Restrict access authorisations to networks and systems to only persons that need an authorisation and disable unused user accounts.
- This product generates, uses, and radiates radio frequency energy, that can cause harmful interference to radio communications if not installed and used in accordance with the instruction manual. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense

### **Installation and Operation Safety Instructions**

- Assembly and installation of the PDU may only be performed by experienced, trained, and authorised personal.
- Please observe the valid regulations for electrical installation in the country in which the PDU is installed and operated, and the national regulations for accident prevention. Please also observe any internal company regulations, such as work, operating and safety regulations.
- Operating the system in direct contact with water, aggressive materials or inflammable gases and vapours is prohibited.
- The PDU must not be opened. It does not contain any parts that need servicing.
- Internal parts of the PDU can get extremely hot during operation. Be cautious before handling.

- There is a risk of electrical shock from the ground conductor leakage. If the total leakage current
  exceeds 3.5 mA or if leakage current of the connected load is unknown, connect the
  ground
  terminal of the PDU to a dependable ground/earth connection.
- This equipment must be connected to an electrical supply with protected ground outlets and a branch circuit breaker with the same current rating as the equipment. Test all outlets for proper polarity and grounding. Failure to comply with this requirement can result in serious injury
- Use only original Enlogic accessories or products recommended by Enlogic along with the Enlogic PDU.
- Changes and modifications to this equipment can affect the warranty. Enlogic is not responsible for damage to this product, resulting from accident, disaster, or misuse.

Product Labels and Standards

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the **FCC** Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.



This product is CE compliant and UL tested. An appropriate declaration of conformity has been issued and can be supplied on request.

The Power Cable of this product must be used exclusively for the respective PDU onl



Check the unit for any damage that may have occurred during transport. Any damage and other faults, e.g. incomplete delivery, should be reported immediately, in writing, to the shipping company and to Enlogic Systems LLC.

Use the information provided in the enclosed warranty card to register your product online at www.enLOGIC.com.

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### **System Overview**

### **PDU Controller**

All Enlogic EDGE Intelligent PDUs feature a Rotatable or Hot Swappable PDU Controller. This centralized piece of intelligent hardware receives an IP address, contains a Graphical Web Interface and is addressable over the network.

### **Connecting the PDU via Ethernet Port**

Connecting the PDU to a LAN provides communication through an Internet or Intranet connection enabling monitoring and control over the intelligent power distribution unit.

- 1. Connect an Ethernet cable to the Ethernet port on the PDU (see Figure 1).
- 2. Connect the other end of the cable to the Ethernet port on the router (or another LAN device).



Figure 1: Ethernet Port for Network Connection

From the factory the PDU defaults to DHCP and HTTP**S** connection. If you are connected to a network with a DHCP server, the PDU automatically receives an IP address and will display it on the OLED screen. If there is no DHCP server, the PDU defaults to IP address is 192.168.0.1, which will be displayed on the PDU OLED screen.



### **Connecting the PDU to a Computer Serial Port**

If unable to connect to network, you can change the network setting using the serial interface.

To configure the network setting, perform the following steps:

- 1. Serial connect the PDU to a computer's serial port. Set baud rate for a terminal emulation program.
- 2. Using a CLI command to enable DHCP or set a static IP.
- 3. Verify access to the Web interface. The Ethernet LED on the PDU front panel provides communication status by color and display activity (see Figure 2).



Figure 2: Status LED & Serial In Port Identif



### Web User Interface (Web UI) Configuration

### **Internet Protocol (IP) Addressing**

After the PDU receives an IP address, login to the Web interface to configure the PDU and assign a static IP address (if desired).

### **Connecting to the PDU**

- 1. Ethernet port on the PDU indicates solid green light on the right and a flashing yellow light on the left. This indicates successful connectivity to the network.
- 2. Use the menu buttons to look up the IP address of the device on the OLED display by selecting Setup > Network > IPv4 or IPv6 as applicable.
- 3. In a standard web browser, enter the PDU IP address ("https://IP ADDRESS") and proceed to configure the PDU as shown in the Web Configuration section.

### **Web Configuration**

#### Supported Web Browsers

The supported Web browsers are Google Chrome (mobile and desktop), Mozilla Firefox, Microsoft Internet Explorer Version 11, Microsoft 10 and Apple Safari (mobile and desktop).

#### Changing Your Password

At initial login, you are required to change the default password:

1. Enter the current password and new password twice to confirm. By default, passwords must be between 8 and 32 characters.

## EDGE Series PDU



Figure 3: Changing Your Password

2. Click Change Password to complete the password change. After the initial login,

Change the password by the following steps:

1. Go to User Name and select Change Password.



Figure 4: After Login

2. The Change User Password window opens.

Change
Password
Current Password
New Password
Confirm New Password
Change Password

Figure 5: Change User Password window

- 3. Enter the old password and then new password twice to confirm. By default, passwords must be between 8 and 32 characters.
- 4. Click **Change Password** to complete the password change.

#### Logging in to the Web Interface

- Open a supported web browser and enter the IP address of the PDU (HTTPS)
- If browser displays "refused to connect" please *double check* that you are using the "https://" protocol not "http://
- If username and password have NOT been configured, use the default username: *admin* and password: *12345678*. For security purposes, a change of password is required upon initial login.
- If admin credentials are lost, use the factory reset to reset the PDU.

### EDGE Series PDU

### Introduction to the Web GUI

Login Page Note: https:// must be used (for initial login)

	<b>ENLOGIC</b> Outlet Metered, Outlet Switched PDU
	1.0.7 Username I Password
	Log In

Figure 6: Login Page

### Landing Page/Dashboard

enuosic 🤉 🖷 🕀 🗊 🐵 🛛 Ou	Bet Metered, Out	liet Switch	ed PDU			o ( <b>a. 7</b>	adain
	Power Environm	ental Secu	urity				
	Summary	PDU#1					
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0 % Poliet		,	0	,	8.00	0.00 [2021/03/02 09:03 53	
Circuit Brokers							
PDU#1							
Current, SMS (A) Voltage, RMS (V) Load(%)							
81 0 81 0 81 0 82 0 83 0 82 0							

Figure 7: Landing Page/Dashboard



#### Icons Present in the Web UI

Icon	Description
î	The home icon provides an overview of the PDU with access to the Dashboard, Identification, and Control & Manage.
	The Alarm icon provides details of the active critical alarms and active warning alarms.
$\oplus$	This icon lets you select a Language. There are seven languages available to choose from: English, Chinese, French, Italian, German, Spanish, Korean and Japanese.
	This icon provides the logs of the PDU which can be viewed and downloaded. The Data Log is a log of the Power, Environmental, and Security values.
<b>*</b>	The settings icon allows a user to setup the Network Settings, System Management, SNMP Manager, Email Setup, Event Notifications, Trap Receiver, Thresholds, and Rack Access Control.
Q	The search icon allows you to input key words and search for the related results.
?	Information about the PDU can be found using this icon. You also can also click user guide and license to ask for help.
admin ~	This icon shows who is logged in (user or admin). Account passwords can be changed, and user accounts managed through this page



### Screen Resize Due to Multiple PDU Configuration

#### **Resizing a Screen**

Multiple PDUs can now cause the user to resize the screen to fit the information on the dashboard due to the update.

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	2 8 8 28	1010000000111337308
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1% 8% 8% 8%	4 4 4 14	****
Root Brukers		
10031	POWER	
Connect WHEE DAY MARKAGES MARK AND A Local PCC	Carrows, MMS (d) Malager, MME (A) Acad (h)	
at	41	
10	81	
0 - 3 0 - 3M 0 - 3	41 - 7 11 - 714 11 - 7	
H	84 TE 84 TE 7213 84 TE	
81	H 7 H 700 H 7	
AL	B	
PEAKS	PERM	
Carved, RMI Ma Makaga, MATLAN Careffic	Clarvest, 2005 (d) Malage, 2001 AL Loud/Si	
41	в — т к — 201 в — т	
11	N N N N N	

Figure 8: Resized Dashboard Screen

## **EDGE Series PDU**

### Menu Dropdowns



#### Introduction to the Dashboard

#### **Power Summary Pag**

Summit	Power Environmental Security	DF41 Disate			
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(callaned(%)	PDU Power End	rue:			
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	25	*	α	2.00	2.001202004/17.13.21.33
VIVIVIV			.0	0.00	0.0012923904713 11:39 23
FOUR POUR POUR POUR POUR	*	×	0	0.03	a us boundus ce va ed
PDUR1	PDURZ		221) 5496220		
Carnet, FMS (A) Voltage, FMS (V) Loak(%)	Current, PMIS	(A) Voltage, FBHS (	v) Loat(%)		
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82 V 82 7213 83 V	82		-211.0 80		
83	#3.			10	
54. <u>************************************</u>	84	- 19	-7213.2 B4	10	
85	85.			-**	
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69409	PDUH4				
Current, RMS (A) Veltage, RMS (V) Lovel(%)	Catroni, P895	(A) Vultage, 2845 (	V) Example		
81 01 1214.3 _ 01 10	81		-7214.7 07	10	
N2 TN N2 T2137 N2 TN	82		1210.0		

Figure 9: Power Summary Page

#### **Outlet Monitoring Page**

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	005.877	0.00	2147	1		1.00	0.0	2019/shtml:100.18.30
	OUTLETS	8.00	2347			1.04	0.0	2019/bit/set 01:00:145.202
	0075814	6.00	214.1	4		1.00	0.0	2010/08/21 10:10:30
	COLUMN T	10.01	214+	-	317	4.45	10	2014/03/01102 00:00:00
	(10.011)	1000	224.5			1.00	114	Westmann of he had

Figure 10: Outlet Monitoring Page

#### Environmental Monitoring Page

		Power Environm	vental Security				
External Sensors							
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Hamily	(harveldy)	3	2000	Critt Male	215	0	
Temperature	11		310.047	Call Arite	2015	0	l
Temperature	12	8.	20.491	Cold Aritis	36.9°C	0	l
Tergorative .	70		2641	ColtAlue	3100	0	
Hatiday	herridty		10042	1118-0410e	385	0	
Tenserature	73	. 181	24442	105.5104	STATE.	0	
Temperature	12	¥.	2174C	7116-71100	1175	0	
Temperature	79		10.002	HEE NEWS	0.0%	0	

Figure 11: Environmental Monitoring Page

#### Security Monitoring Page

		Power Environ	mental Security		
Security Sensors					
Sensors 7/pie	Seroor Name	PCU Name	Location	Shatun	
Handle	HD	Post	Cold Arde	Lock Mirchanical Lock	
Dear	door	Past	Cold Arsle	Circled	
Handle	HD	Pour2	Hot Arate	Lock Mechanical Unlock	
Door	door	10.02	HUCATER	Citited	

Figure 12: Security Monitoring Page

#### **Network Settings**

The Network Settings allow management of IP Configuration, Web RESTapi Access Configuration, SSH/FTPs Configuration, Network Time Protocol (NTP), Date/Time Settings and Daylight-Savings Time.

## EDGE Series PDU

#### IP Configuration:

encosic 🕅 🖡		Outlet I	Vetered, Outlet Switched PDU		
Network Settings					
e Configuration		Web/ IESTaai Araws Ci	etiloanetiese of	SUMPLY	Edit
fant Male	Their:	PAR Allows	Netwo	2010	IP Configuration
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Clubal California	10.10.104.1	Carterate	View Certificate	CIPs1	• Slate
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1) INVESTIGATION CONTRACTORS	FEM CANS HIPP PEZZ 2022				255 255 252 0
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Figure 13: IP Configuration

entosic 🕆 🖷	0 8 e	Outlet 3	Network, Outlet Switched PDU	/	
Network Settings					
e Configeration		- WWW: RENTING Accesse Co	eliauztos 🖉	SHOT	Edit
Stand Manak		West Laures	(Mark)	\$500 D	Web/ RESTapi Access Configuration
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Personal Maria	255 255 252 0	RESTREASURE	×	TIPLE	Pittae
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OCT INT OTHER	(UTC) Cyddin, Tollithargh, Unions, Lincolae			- Time O	

Figure 14: Web RESTapi Access Configuration can be used to set HTTP, HTTPS or Disable the onboard Web GUI.

## EDGE Series PDU

		Cutlet	Metered, Outlet Switched PDU		
Network Settings				1.	
U Confestator		Web: RESTant Access C	ethoustus /	3300710	
fixed Mass	3000	WHEN PARAMETERS	Angue .	THE A	Edit
Pot-rates as	30.10.107.04	Ver For	80	2200.00	COLIETDa Configuration
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HTTP GMT Office	(UTC. Dates, Epstergh Univer Living			Taxa-D	

Figure 15: SSH/FTP Configuration



#### **System Management Information**

The system management information is a way to distinguish the PDU system's name and location inside the data center.

To configure the system management information, select **System Management** under the **gear** icon.

System Manage			
System Information		Rack Location	Ø
System Name	FWUPDOWNSCRIPT	Room Name	value
Contact Name	edge	Row Name	edge
Contact Email	edge@enlogic.com	Row Position	enlogic
Contact Phone	123456789	Rack Name	edge123
Contact Location	enlogicrack	Rack ID	1
		Rack Height	3
Power Panel & Core	Location Ø		
Power Panel Name	Primary		
Core Location	Front		
Core U Position	1		

Figure 16:System Management



#### System Info

The system information includes the name of the PDU system and information of the person to contact in case an issue arises. Follow the steps below to set up the system information:

1. Select the pencil icon next to System Management.

stem Management	
System Name FWUPDOWNSCRIPT	
Contact Name edge	
Contact Email edge@enlogic.com	
Contact Phone 123456789	
Crintact Location	
Home	

Figure 17: System Management Configuration

- 2. Enter the **System Name**: The "system" is the main PDU and all daisy-chained PDUs. A system can have 4 PDUs.
- 3. Enter the name of the person who should be contacted if there is a problem with the system into the **Contact Name** section.
- 4. Enter the email of the contact person into the **Contact Email**.
- 5. Enter the phone number of the contact person into **Contact Phone**.
- 6. Enter the location of the contact person into the **Contact Location**.
- 7. Press Save.

Note: If editing 'system management' – all fields are required to be filled to save the information.

#### **Rack Location**

The rack location describes the physical location of the rack or cabinet where the PDU system resides. To setup the system information, follow these steps:



1. Select the pencil icon next to Rack Location.

Edit
Rack Location
Room Name
value
Row Name
edge
Row Position
enlogic
Rack Name
edge123
Rack ID
1
Rack Height
3
Save

Figure 18:Rack Location Configuration

- 2. Enter the room location of the rack or cabinet that contains the PDU system into **Room Name.**
- 3. Enter the name of row where the PDU is located in Row Name.
- 4. Enter the position of the row where the PDU is positioned in **Row Position**.
- 5. Enter the ID of the rack/cabinet where the PDU is located into Rack ID.
- 6. Enter the height of the rack/cabinet where the PDU is located into **Rack Height**.
- 7. Press Save.



#### **Power Panel & Core Location**

The **Power Panel & Core Location** describes the name of each PDU that is part of the PDU system. It also indicates the location of the PDUs inside the rack or cabinet. To configure, follow these steps:

1. Select the **pencil** icon next to **Power Panel & Core Location**.

Figure 19: Power Panel & Core Location

- 2. Enter the name of the PDU in the **Power Panel Name**.
- 3. Select **Front** or **Back** for the **Core Location**. The **Core Location** is the side of the rack/cabinet where the PDUs are installed. For vertical PDUs, they are typically installed in the back.
- 4. Enter the rack unit (RU) location into the **Core U Position**. Vertical PDUs are usually installed in the 0 RU space.
- 5. Press Save.

Note: If editing 'Power Panel & Core Location' – all fields are required to be filled to save the information.

#### Setting Time and Date on the PDU

You can set the internal clock manually or link to a Network Time Protocol (NTP) server and set the date and time:

#### Manually Setting Time and Date

1. Go to Network Settings and select Date/Time Settings



- 2. Enter the date using the YYYY-MM-DD format or use the calendar icon to select a date.
- 3. Enter the time in the three fields provided: the hour in the first field, minutes in the next field, and seconds in the third field. Time is measured in 24-hour format. Enter 13 for 1:00pm, 14 for 2:00pm, etc.
- 4. Press Save.

#### 5.

#### Link to a Network Time Protocol (NTP)

1. Go to Network Settings and select Network Time Protocol (NTP).

Edit					
letwork	Time Protocol(NTP)				
Enable					
$\bigcirc$					
Primary NT	P Server				
0.0.0.0					
Secondary	NTP Server				
0.0.0.0					
NTP GMT C	Offset				
	alin Edinburgh Lisbon London				

Figure 20: NTP Configuration

- 2. Click **Enable** to enable NTP.
- 3. Enter the IP address of the primary NTP server in the Primary NTP Server field.
- 4. Enter the IP address of the primary NTP server in the **Secondary NTP Server** field.
- 5. Select the appropriate time zone from the Time Zone drop-down list.
- 6. Press Save.

Note: NTP Server must be online to test and save the settings.



#### Setting Daylight Saving Time

1. Go to Network Settings and select Daylight Saving Time.

Edit						
Daylight Saving Time						
Enable						
Start Month Select						
Select Select						
0:0:0 End Month						
End Month::Week::Day::Time Select						
Select						
0:0:0 Time Offset						
Select						
Save						

Figure 21: Daylight Saving Time Configuration

- 2. Ensure Enable is selected.
- 3. Select the specifics of the Start Month:
  - Month
  - Week
  - Day
  - Time
- 4. Select the specifics of the End Month:
  - Month
  - Week
  - Day
  - Time
- 5. Set the Time Offse

#### **Outlet Power Management**

#### Naming an Outlet

For Enlogic PDUs with outlet level control or monitoring, you can customize each outlet and view all circuit breaker to outlet associations through the Web GUI.

- 1. In the Control & Manage tab, expand the **Outlet Information** folder by clicking the pencil icon.
- 2. Select the outlet to name. In the data panel, select the value field for the Outlet Name.
- 3. Delete the default name and type the new name.
- 4. Press Enter.

#### Setting the Outlet Default State

Setting the Outlet Default State on Enlogic PDUs with outlet level control allows the user to determine the initial power status of an individual outlet upon PDU power up.

- 1. Expand the Outlet Information folder from the Control & Manage tab.
- In the PDU settings dialog box, choose a selection from the State on Startup dropdown menu:
  - **On**: this will turn an outlet on upon initial startup
  - Off: this will turn an outlet off upon initial startup
  - Last Known: this will restore outlets to the last known power states before the device was shut down

#### Switching an Outlet On or Off

This is only applicable to outlet-switched PDUs.

Outlets on the switched PDU models in the Enlogic PDU are easily switched on, switched off, or power cycled. This action requires the user to have Administrator Privileges.

- 1. Select the Control & Manage folder from the Home icon.
- 2. In the Power Control panel, select the outlet that must be switched on, switched off, or reboot.
- 3. Select the desired Power Control from the dropdown menu.
- 4. Select Apply.



#### Setting the Outlet Power On/Off Delay for Enlogic PDUs

This is only applicable to outlet-switched PDUs. When the PDU is turned ON, outlets will consecutively power on from Outlet 1 to the highest available outlet number.

- 1. Select the **Home Icon** then **Control & Manage** from the drop-down menu in the Web UI.
- 2. Select the outlet(s) for which to set a delay by clicking on the pencil icon.
- 3. Configure the length of the delay and/or length of reboot.
- 4. Select Save.

#### **Outlet Power Sequence Setup**

The outlets can be programmed to have a pre-determined on delay or off delay.

(Eg:- On Delay can be used to implement power on sequencing to avoid surge spikes or circuit breaker overload associated with IT equipment all being turned on at the same time.)

#### 1. From the PDU GUI Home Menu, select Control & Manage.

enLogic	<u>ଲ</u> ା ବ	<b>9</b>	Outlet Metered, Outlet S	witched PDU	Seeth	0, 7, 🚥
Control & Ma	Carrierez Identification					Actions -
Outlet Control E	Control & Manage					
			PDU#1			
			B1 82 🍠			
Outer Name	Pawer Cantrol	On Delay(0-7288a)	Off Delay(2~7200a)	State on Startup	Ration Duration(5-824)	
OUTLET 1	O	4	8	0	6	0
OUTLET 2	O	8	D	C)	S.	0
OUTLET 3	0	1	0	0	6	
OUTLET 4	Ċ	9	0	0	8	1

Figure 22: Control & Manage PDU

EDGE Series PDU

#### 2. Select Outlet Control Enabled.

Control & Mana	ige					Actions +
Outlet Central Enab	int 🜒 🔶	-				
			PDU#1			
			B1 82 🥖			
Outer Name	Power Control	On Della (0-7265s)	Off Delay(0-7200s)	State on Startup	Reboat Duration(5-60s)	
OUTLET 1	0	<b>D</b> .	a	Ċ)	5	
OUTLET 2	O	0	0	U S	5	0
OUTLET 3	0	0	0.5	0	3	1

Figure 23: Outlet Control Enabled

### 3. For each Outlet select the **Edit** pencil.

Control & Man	age					Actions ~
Outet Control Enst	ied					
		P	0U#1 PDU#2 PDU#3 PDU#4	Power Share		
			<b>B1</b> B2 B3 B4 B5 F	16 <i>d</i>		
Out et Name	Power Control	On Delay(0-7200s)	Off Dielay(0-7200s)	State on Startup	Reboot Duration(5-60s)	
OUTCET 1	C	0	0	0	6	
OUTLET 2	С	0	0	Ċ	3	Ø
OUTLET 3	Ċ	<u>0</u>	0	Ċ	3	Ø
OUTLET 4	Ċ	ũ.	0	C		0
OUTLET5	C	0	0	0	26	0

Figure 24: Edit Outlets

4. In the Edit Outlet window enter the **On-Delay** time (0-7200 seconds) then select **Save.** 

enioaic	全主要度	÷.	Outlet Metered, Outlet S	Witched POU	Edit	
Control & M	lanage				Cutlet Information	
Outliet Control	Endand 🌑				Outset Name OUTLET 1	
			PDues		Oe Datay(0-7200s) 0	
			<u>B1</u> 52 /	8	OW Dallay(0-7200s) 0	
Cluthet Name	Pawar Control	Cin Delay In-Family	Off Delay(0-72004)	State on Review	State or Statup	
OUTLET 1	Ó	(a)	8	0	On	
OUTLET 2	0		0	o	Reked Dynation (2–60 s) 5	
OUTLET 3	Ċ		0	Ċ	Save	

Figure 25: One-Delay Time

#### 5. Your Outlet Power Sequence has been set.

Control & Man	age					Actions =
Outer Creek Dive	en 💽					
		PD	UNT POURS POURS POUR	8 Poser Shine		
		-	B1 82 83 84 85	86 8		
Outerhiere	#pass Control	Cit/Simil(0-7200))	C#Ox(a)(2-72000)	Tota in Tortup	Rebot Duratur(5-00s)	
0,000	O	• +	8	O	*	1
0.0272	O	r 🛶	*	0	×	1
domart p	O	-		0	1	1
outuer-4	¢	. +	×	0		1
outual 6	C			O	5	1

Figure 26: Saved Sequence

#### **Setting Metering Thresholds**

#### **Power Threshold**

The ENLOGIC PDU will send alert notifications when a power threshold wattage crosses above or below the settings you specify in the Power Threshold configuration:



- 1. Go to the **Thresholds** > **Input Page**.
- 2. Click the pencil for the Power Threshold to update.

High Critical		
0		
Enable High Critic	al	
0		
High Warning		
0		
Enable High Warr	ing	
0		
Low Warning		
0		
Enable Low Warn	ng	
0		
Low Critical		
0		
Enable Low Critic	1	
0		
Reset Threshold		
0		
Alarm State Chan	je Delay (samples)	
0		

Figure 27: Power Threshold

- 3. Select and enter the appropriate thresholds in amps and click Save.
  - Lower Critical (W)
  - Lower Warning (W)
  - Upper Warning (W)
  - Upper Critical (W)



• Reset Threshold (W)

The Reset threshold is the number of watts the reading needs to fall below the threshold setting for the condition to be cleared.

For example, the current critical threshold for the input phase is set to 19 watts (W). The current draw rises to 20W, triggering a Current Critical alert. The current then continues to fluctuate between 18.1W and 20W. With the reset threshold set to 1W, the PDU continues to indicate that the current on the input phase is above critical. Without a reset threshold (that is, the reset threshold is set to zero), the PDU would de-assert the condition each time the current dropped to 18.9W and re-assert the condition each time the current reached 19W or higher. With the fluctuating current, this could result in repeating event notifications, such as SNMP traps, SMTP alerts or Syslog notifications.

• Alarm State Change Delay (samples)

If enabled, the PDU asserts any warning or critical condition only after a specified number of consecutive samples that cross a threshold are generated. This prevents several threshold alerts from being generated if the measurements return to normal immediately after rising above an upper threshold or dropping below a lower threshold.

4. Repeat steps 1 - 3 for all PDUs.

#### **Energy Threshold**

The ENLOGIC PDU will send alert notifications when an energy threshold kilowattage crosses above or below the settings you specify in the Energy Threshold configuration:

- 1. Go to the **Thresholds** > **Energy Page**.
- 2. Click the pencil for the Energy Threshold to update.

Edit	
DU Ener	gy Threshold (kWh)
High Critical	
2147483	
Enable High C	ritical
$\bigcirc$	
High Warning	
2147483	
Enable High V	Varning
$\bigcirc$	
Reset Thresh	old
0	
Alarm State C	hange Delay (samples)
0	

Figure 28: Energy Threshold

- 3. Select and enter the appropriate thresholds in kilowatts and click **Save**.
  - Upper Critical (kWh)
  - Upper Warning (kWh)
  - Reset Threshold (kWh)
  - Alarm State Change Delay (samples)

If enabled, the PDU asserts any warning or critical condition only after a specified number of consecutive samples that cross a threshold are generated. This prevents several threshold alerts from being generated if the measurements return to normal immediately after rising above an upper threshold or dropping below a lower threshold.

4. Repeat steps 1 - 3 for all PDUs.



#### **Phase Current Alarm Threshold**

The ENLOGIC PDU will send alert notifications when a phase current alarm amp crosses above or below the settings you specify in the Phase Current Alarm configuration:

- 1. Go to the **Thresholds** > **Phase Page**.
- 2. Click the Pencil for the Phase Current Alarm to update.

Edit				
Input phases current alarm setting				
Low Critical (A)				
0				
Enable Low Critical				
$\odot$				
Low Warning (A)				
0				
Enable Low Warning				
$\odot$				
High Warning (A)				
22				
Enable High Warning				
$\bigcirc$				
High Critical (A)				
28				
Enable High Critical				
$\odot$				
Reset Threshold (A)				
1				
Alarm State Change Delay				
0				
Save				

Figure 29: Phase Current Alarm

- 3. Select and enter the appropriate thresholds in amps and click **Save**.
  - Lower Critical (A)

- Lower Warning (A)
- Upper Warning (A)
- Upper Critical (A)
- Reset Threshold (A)
- Alarm State Change Delay (A)

The Reset threshold is the number of amperage the reading needs to fall below the threshold setting for the condition to be cleared.

For example, the current critical threshold for the input phase is set to 19 amps (A). The current draw rises to 20A, triggering a Current Critical alert. The current then continues to fluctuate between 18.1W and 20W. With the reset threshold set to 1A, the PDU continues to indicate that the current on the input phase is above critical. Without a reset threshold (that is, the reset threshold is set to zero), the PDU would de-assert the condition each time the current dropped to 18.9A and re-assert the condition each time the current reached 19A or higher. With the fluctuating current, this could result in repeating event notifications, such as SNMP traps, SMTP alerts or Syslog notifications.

• Alarm State Change Delay (samples)

If enabled, the PDU asserts any warning or critical condition only after a specified number of consecutive samples that cross a threshold are generated. This prevents several threshold alerts from being generated if the measurements return to normal immediately after rising above an upper threshold or dropping below a lower threshold.

4. Repeat steps 1 - 3 for all phases.

#### Phase Voltage Alarm Threshold

The ENLOGIC PDU will send alert notifications when a phase voltage crosses above or below the settings you specify in the Phase Voltage Alarm configuration:

- 1. Go to the **Thresholds** > **Phase Page**.
- 2. Click the pencil for the Phase Voltage to update.

Edit
nput phases voltage alarm setting
Low Critical (V)
180
Enable Low Critical
0
Low Warning (V)
190
Enable Low Warning
0
High Warning (V)
250
Enable High Warning
0
High Critical (V)
260
Enable High Critical
0
Reset Threshold (V)
2
Alarm State Change Delay
0
Save

Figure 30: Phase Voltage Alarm

- 3. Select and enter the appropriate thresholds in voltage and click **Save**.
  - Lower Critical (V)
  - Lower Warning (V)
  - Upper Warning (V)
  - Upper Critical (V)
  - Reset Threshold (V)

The Reset threshold is the number of amps the reading needs to fall below the threshold setting for the condition to be cleared.
For example, the current critical threshold for the input phase is set to 19 voltage (V). The current draw rises to 20V, triggering a Current Critical alert. The current then continues to fluctuate between 18.1V and 20V. With the reset threshold set to 1V, the PDU continues to indicate that the current on the input phase is above critical. Without a reset threshold (that is, the reset threshold is set to zero), the PDU would de-assert the condition each time the current dropped to 18.9V, and re-assert the condition each time the current reached 19A or higher. With the fluctuating current, this could result in repeating event notifications, such as SNMP traps, SMTP alerts or Syslog notifications.

• Alarm State Change Delay (samples)

If enabled, the PDU asserts any warning or critical condition only after a specified number of consecutive samples that cross a threshold are generated. This prevents several threshold alerts from being generated if the measurements return to normal immediately after rising above an upper threshold or dropping below a lower threshold.

4. Repeat steps 1 - 3 for all phases.

### **Circuit Breaker Alarm Threshold**

The ENLOGIC PDU will send alert notifications when a circuit breaker amperage crosses above or below the settings you specify in the Circuit Breaker Alarms configuration:

- 1. Go to the Thresholds > Circuit Breaker Page.
- 2. Click the pencil for the Circuit Break to update.

Edit
Load Segment Breaker
Low Critical (A)
0
Enable Low Critical
0
Low Warning (A)
0
Enable Low Warning
0
High Warning (A)
11
Enable High Warning
$\bigcirc$
High Critical (A)
14
Enable High Critical
$\odot$
Reset Threshold (A)
1
Alarm State Change Delay
0
Save

Figure 31: Load Segment Breaker

- 3. Select and enter the appropriate thresholds in amps and click Save.
  - Lower Critical (A)
  - Lower Warning (A)
  - Upper Warning (A)

- Upper Critical (A)
- Reset Threshold (A)

The Reset threshold is the number of amps the reading needs to fall below the threshold setting for the condition to be cleared.

For example, the current critical threshold for the input phase is set to 19 amps (A). The current draw rises to 20A, triggering a Current Critical alert. The current then continues to fluctuate between 18.1A and 20A. With the reset threshold set to 1A, the PDU continues to indicate that the current on the input phase is above critical. Without a reset threshold (that is, the reset threshold is set to zero), the PDU would de-assert the condition each time the current dropped to 18.9A and re-assert the condition each time the current reached 19A or higher. With the fluctuating current, this could result in repeating event notifications, such as SNMP traps, SMTP alerts or Syslog notifications.

• Alarm State Change Delay (samples)

If enabled, the PDU asserts any warning or critical condition only after a specified number of consecutive samples that cross a threshold are generated. This prevents several threshold alerts from being generated if the measurements return to normal immediately after rising above an upper threshold or dropping below a lower threshold.

Repeat steps 1 - 3 for all circuit breakers.



### **Device Detection Threshold**

The Device Detection Threshold is the minimum threshold before current will be reported. Any detected current below the threshold will be reported as zero. To change this threshold, follow the following steps:

- 1. Go to the **Thresholds** > **Outlet Page**.
- 2. Click the pencil next to **Device Detection Threshold**.

Edit
Device Detection Threshold
Threshold(mA)
150
Save

Figure 32: Device Detection Threshold Information



3. Change the value for the number of milli-amps to set the threshold.

#### **Outlet Alarm Threshold**

enlogic

The ENLOGIC PDU will send alert notifications when an outlet amperage crosses above or below the settings you specify in the Outlet Alarms configuration:

- 1. Go to the **Thresholds** > **Outlet Page**.
- 2. Click the pencil for the Outlet to update.

Ec	lit	
Dutl	outlet Information	
Low	v Critical (W)	
0		
Set	Lower Critical	
0		
Low	v Warning (W)	
0		
Set	Lower Warning	
0		
High	h Warning (W)	
0		
Set	High Warning	
0		
High	h Critical (W)	
0		
Set	High Critical	
0		
Res	et Threshold (W)	
0		
Alar	rm State Change Delay	
0		

Figure 33: Outlet Information

3. Select and enter the appropriate thresholds in amps and then click Save.

- Lower Critical (W)
- Lower Warning (W)
- Upper Warning (W)
- Upper Critical (W)
- Reset Threshold (W)

The Reset threshold is the number of amps the reading needs to fall below the threshold setting for the condition to be cleared.

For example, the current critical threshold for the input phase is set to 19 watts (W). The current draw rises to 20W, triggering a Current Critical alert. The current then continues to fluctuate between 18.1W and 20W. With the reset threshold set to 1A, the PDU continues to indicate that the current on the input phase is above critical. Without a reset threshold (that is, the reset threshold is set to zero), the PDU would de-assert the condition each time the current dropped to 18.9W and re-assert the condition each time the current reached 19W or higher. With the fluctuating current, this could result in repeating event notifications, such as SNMP traps, SMTP alerts or Syslog notifications.

• Alarm State Change Delay (samples)

If enabled, the PDU asserts any warning or critical condition only after a specified number of consecutive samples that cross a threshold are generated. This prevents several threshold alerts from being generated if the measurements return to normal immediately after rising above an upper threshold or dropping below a lower threshold.

Repeat steps 1 - 3 for all outlets.

### **Email Setup**

The Enlogic PDU can be configured to send Emails to specific users when an event occurs. To do this, the information about the SMTP (Simple Mail Transfer Protocol) server needs to be configured.

1. From the top ribbon of the dashboard, go to the gear settings and select **Email Setup**.

# EDGE Series PDU



Figure 34: Email Setup

2. Select the pencil icon next to SMTP Account Settings and begin filling out the **Edit** screen.

Edit
SMTP Account Settings
Email Server Address
Sender Address
Port
Username
Password
Number of Sending Retries
Time Interval Between Sending Retries(in Minutes)
Server Requires Authentication
Save

Figure 35 : SMTP Account Settings

- Set the **Email Server Address**. This is the IP address of the SMTP that is going to accept the messages.
- Set the **Sender Address.** This is the email address that the email is sent from. You could use a unique email address on each PDU or the same email address across all PDUs.
- Configure the **Port** number. The port number is the communication endpoint on the server. The default is 25. Other common SMTP ports are 587 and 465
- If the SMTP server requires authentication, enter the **username** and **password**. These will be determined by the configuration on the SMTP server. If the SMTP does not require authentication, a **username** and **password** will need to be entered, but they will not be used.
- Set Number of Sending Retries. This will be the number of times the

PDU will attempt to resend a message if the message fails. The default setting is 3.

- Set **Time Interval Between Sending Retires (In Minutes).** This is the time, in minutes, the PDU will wait before retrying to send a failed message. The default setting is 6 minutes.
- Choose whether **Server Requires Password Authentication** is needed or not. If the SMTP server requires a username and password, this option needs to be selected.
- 3. Press **Save** when done.

Next, fill out the Email Recipients list.

1. Select the pencil icon to display the Email Recipients screen.

Edit	
Email Recipients	
Email Address	
Enable	
Save	

Figure 36: Email Recipients

- 2. Enter the desired email address and press **Enable**.
- 3. Press Save.

Note: A maximum of 5 users can be entered to receive email alerts.

### **Data Log**

The period visible in the data log at any one time depends on the time between data log entries. The time range of each record can be configured from 1 to 1440 minutes. (As an example, if a data log is in an interval of 10 minutes, the entire data log contains 2000 records with up to 13.89 days of data.) Once the data log reaches the maximum of 2000 records, the oldest entries ae overwritten by the newer entries.

1. Go to Logs and select Data Log.



Figure 37: Data Log

2. Select the Actions drop-down menu and choose Data Log Configuration.



Figure 38: Data Log Configuration

- 3. **Enable** must be selected and enter an interval number in the **Log Interval** field. (Valid range is from 1 to 1440 minutes. The default time is 10 minutes.)
- 4. Select Save.



### Web Interface Access

### Logging Out

Users should logout after each session to prevent unauthorized changes to the system.

- 1. Click the **user name icon** in the top right corner of the screen (see Introduction to the Web Menu).
- 2. Click **Log Out** in the drop-down menu.

### Access Types

There are two levels of access privileges:

- Administrator Privileges
- Read Only

The PDU comes with a standard **Administrator Privileges** profile and a standard **Read Only** profile. The "Admin Role" is typically the system administrator and has the Administrator Privileges with full operating permissions. By default, the User Role is a Read Only profile. All other users must be added by a user with administrator

privileges. Users are defined by their unique login credentials and by their user role. The level of access privilege determines what the user will see and what actions the user can perform. The level of access privilege determines which menu items the user can access, or which fields display on individual setting and configuration dialogs. Before setting up users, determine the Roles that will be required. Each user must be given a Role. These Roles define the permissions granted to the user.

Role	Default Permissions
admin	Full permissions that cannot be modified or deleted.
user	Read-only permissions. Can monitor the system but cannot change any configuration
manager	Full permissions that can be modified and deleted



### **User Accounts**

Add a user with the following steps:

- 1. Go to User Administration and select User Accounts.
- 2. Select Add User to create a new user profile.
- 3. Use the Settings tab to enter the following information:
  - User Name (required)
  - Password (required)
  - Confirm Password (required)

**NOTE:** Set password requirements in the required field. By default, passwords must be 8-32 characters in length, and have at least one numeric character, and at least one special character.

- 4. Use the **Roles** tab to set full or read only privileges.
- 5. Select Add User to save the new user profile.

Modify user profile:

- 1. Go to User Administration and select Users.
- 2. Select the User Name.
- 3. Select Edit. Make changes to the user profile.
- 4. Select Update.

Delete user profile with the following steps:

- 1. Go to User Administration and select Users.
- 2. Select the red **X** next to user name.

## **Configuring the system with LDAP Server Settings**

To setup LDAP to access the Active Directory (AD) and provide authentication when logging into the PDU via the Web Interface:

- 1. Go to User Settings (under the ADMIN Menu) > LDAP Configuration.
- 2. Select the LDAP Enable checkbox.
- 3. Use the drop-down menu to choose the Type of LDAP Server. Choose Microsoft Active Directory.
- 4. Enter an IP Address of the domain controller/Active Directory (AD) Server. *i.e.:* 192.168.1.101 (example)
- Enter a Port.
  Note: For Microsoft, this is typically 389.
- 6. In the Base DN field, enter in the account to be used to access AD. *i.e.* CN=myuser, CN=Users, DC=EMEA, DC=mydomain, DC=com
- 7. Enter the password in the Bind Password and Confirm Password fields.
- In the Search User DN field: DC=subdomain DC=mydomain DC=com 10
- 9. In the Login Name Attribute field, enter **sAMAccountName** (typically).
- 10. In the User Entry Object Class field, enter person.

With these LDAP settings configured, the Bind is complete.

Edit
LDAP Configuration
Enable
LDAP Server
Port 389
Type OpenLDAP
Base DN
Bind Password
Search User DN
Login Name Attribute
User Entry Object Class
Test LDAP Configuration
Test Name
Test Password
Test LDAP Configuration Save

Figure 39: LDAP Configuration

Once LDAP is configured, the PDU must understand for which group authentication occurs. A role must be created on the PDU to reference a group within the Active Directory (AD).

1. Within the Active Directory, create a group for the users that you wish to be PDU administrators. *i.e. admins* 

Note: There are no limits to the amounts of admins that the PDU imposes. However, there may be limits by the LDAP server.

- Within the ENLOGIC PDU Web Interface, go to User Settings (under admin menu) > Roles. Enter the Role Name that was created in AD. *i.e. admins*
- 3. Enable role privileges as needed (pictured below).

Edit
Role
Role Name admin
Description admin operation
Privileges        Image: Administrator Privileges
Save

Figure 40: Enable Role Privileges

- 4. LDAP authentication is ready to use.
- 5. Click save to test and click LDAP Configuration again.
- 6. Type an Active Directory user name/password into the test box.
- 7. Click Test LDAP Configuration.
  - If a box pops up with all green **SUCCEEDED** (no X's), the LDAP is successfully configured.

Fest LDAP Configuration	
Test Name	
Test Password	
Test LDAP Configuration	Save

Figure 41: Test LDAP Configuration

Note: Be sure to log in without a domain name.



# Simple Network Management Protocol (SNMP) SNMP Management Configuration

### Setup SNMP

- 1. Access the Web interface and login.
- 2. Under SNMP Managers, select SNMP General (or type SNMP in the search). The SNMP General page displays.

enlogic 🕼 🔺 🕀 🗄	9 🐵
CNIME Management	Network Settings
SNMP Management	System Management
SNMD Conoral	SNMP Manager
	Email Setup
SNMP Version V1/2c&V3	Event Notifications
	Trap Receiver

Figure 42: SNMP Management

3. The SNMP General includes SNMP Access and Version.

# EDGE Series PDU

SNMP General	^
Ende SNAF Venion V1208V3	
SNAF Version V12cotV3	
SMF Version V12c&V3	
V120KV3	
Sære	

Figure 43: SNMP General

### Setup SNMP Port

- 1. Access the Web interface and log in.
- 2. Under SNMP Managers, select SNMP Port. The SNMP Port page displays.
- 3. Set up SNMP Port and SNMP Trap Port.

	ort		
SNMP Po	rt		
161			
SNMP Tra	ap Port		
162			

Figure 44: Setup SNMP Port and Trap Port

# Configuring Users for SNMP V1/V2c



- 1. Access the Web interface and log in.
- 2. Under SNMP Manager, select SNMP V1/V2c.
- 3. In the SNMP V1/V2c panel, select the SNMP V1/V2c manager to configure. Select the **pencil** icon.

	BNMP V1/2c Manager				
	IP Addese	Read Community	Write Community	Endie	
	0.000	padm:	produ	×	1
	DOBE	public	private	×	1
	0.0.0.0	public	prolite	×	1
	0000	palik	produ	×	1
	0000	public	private	×	1
L					

Figure 45: Define SNMP V1/V2c User

4. The Edit panel pop up displays.

Edit		
SNMP V1/2c Manager		
IP Address		
0.0.0.0		
Read Community		
public		
Write Community		
private		
Enable		
Save		

Figure 46: Edit V1/2c Manager

- 5. Set the following options:
  - IP Address: the IP address of the host for this SNMP V1/V2 manager. Only requests from this address will be acted upon.



**Note**: An IP address configured to 0.0.0.0 will act as a wildcard and all requests will be acted upon.

- Read Community: the read-only community string to allow an SNMP V1/V2c manager to read a SNMMP object.
- Write Community: the write-only community string to allow an SNMP V1/V2c manager to write an SNMMP object.
- 6. Click Enable and Save.

### **Configuring Users for SNMP v3**

- 1. Access the Web interface and log in.
- 2. Under SNMP Managers, select SNMP V3.
- 3. In the SNMP V3 panel, select the **SNMP V3** manager to configure. Select the **pencil** icon in the last column.

NMF VS Manager	
Usemane	
Security Level	
No Auth No Priv	
Authentication Paravised	
Authentication Algorithm	
MD5	
Privacy Key	
Privacy Algorithm	
DES	
Enuidae	

Figure 47: SNMP V3 Manager

- **4.** The Edit panel pop-up displaying the configurable options.
- 5. Configure the SNMP username
- 6. Choose a Security Level from the dropdown menu

# EDGE Series PDU

- NoAuthNoPriv: No authentication and no privacy. This is the default.
- AuthNoPriv: Authentication and no privacy.
- AuthPriv: Authentication and privacy.
- 7. Enter a new unique password to be used for authentication
- 8. Select the desired authentication algorithm.
  - MD5
  - SHA
- 9. Enter a new unique key for privacy algorithm
- 10. Select the desired privacy algorithm
  - AES-128
  - AES-192
  - AES-256
- 11. Click **Enable** and **Save**.



## **Configuring SNMP Traps**

The PDU keeps an internal log of all events. These events can be used to send SNMP traps to a third-party manager. To set up the PDU to send SNMP traps, follow the following procedure:

Configuring SNMP v1 Trap Settings

- 1. Go to Device Configuration > Network Services > SNMP
- 2. Click the Pencil next to SNMPV1 Trap Receiver you want to update.

Edit SNMPV1 Trap Receiver		
Host 10.10.105.95		
Community public		
Enable		
Save		

Figure 48: SNMPv2 Configuration Information

- 3. Enter the Name, Host, and a community name in the fields provided.
  - a. The name is a user assigned name to help distinguish the different receivers.
  - b. The host name is the IP Address to which the traps are sent by the SNMP system agent.
  - c. Community is the password on the SNMP management stations.
- 4. Select Enable to enable the receiver.
- 5. Select **Save** to save and exit.

#### Configuring SNMP v3 Trap Settings

- 1. Go to Device Configuration > Network Services > SNMP
- 2. Click the Pencil next to SNMPV3 Trap Server you want to update.

Edit SNMPv3 Trap Server		
admin		
Host		
10.10.105.95		
Security Level		
Auth Priv		
Authentication Password		
Authentication Algorithm		
SHA		
Privacy Key		
Privacy Algorithm		
DES		
Enable		
Save		

Figure 49: SNMPv3 Trap Server Information.

- 3. Enter the Name, Host, and a community name in the fields provided.
  - a. The name is a user assigned name to help distinguish the different receivers.
  - b. The host name is the IP Address to which the traps are sent by the SNMP system agent.
- 4. Choose a Security Level from the dropdown menu
  - NoAuthNoPriv: No authentication and no privacy. This is the default.
  - AuthNoPriv: Authentication and no privacy.
  - AuthPriv: Authentication and privacy.
- 5. Enter the password from the SNMP Server to be used for authentication.
- 6. Select the desired authentication algorithm.

# EDGE Series PDU

- MD5
- SHA
- 7. Enter the key from the SNMP Server for privacy algorithm
- 8. Select the desired privacy algorithm
  - AES-128
  - AES-192
  - AES-256
- 9. Select **Enable** to enable the receiver.
- 10. Select Save to sav
- 11. e and exit.



# Local Display Onboard Display and Network Controller

The Onboard Display provides information about the PDU and connected devices. The PDU has a three-button, graphical Network Controller panel (see Figure 22). Use the buttons to change the screen display and retrieve specific data.



Figure 50: Network Controller

The Network Controller Display has three modes:

- 1. **Menu mode** (Network Controller Display main menu): When the PDU is powered up or when a button is pushed while in Standby Mode or Power Save mode.
- 2. **Standby mode**: This happens when a PDU is idle (no buttons pushed) for 30 seconds while in Menu mode.
  - In Standby mode, the PDU scrolls through key power values (Frequency, Amps, Volts, Watts, and kVA) and IP addresses (for both IPv4 and IPv6).



3. **Power Save mode**: The PDU enters Power Save mode when it has been in Standby mode for an hour. To exit Power Save mode, press any button on the display.

### **Control Buttons**

The table below summarizes how to use the control buttons on the Network Controller display.

Button	When in Menu Mode	When in Screensaver Mode
Menu	Select from the four main menus.	Returns to the previous display screen before entering the screensaver mode.
Scroll	Scrolls down through the list of menu items. <b>NOTE:</b> A highlighted menu item is ready to be selected.	Returns to the previous display screen before entering the screensaver mode.
Select	Opens the selected menu.	Returns to the previous display screen before entering the screensaver mode.

### **Status LED**

The LED will change colors depending on the state of the PDU.

LED State	Description
Solid Green	Normal Operation
Solid Red	Critical or Warning Alarm
Flashing Orange	No network connection

# **EDGE Series PDU**

## **Network Controller Menu Structure**



### **Main Menu Selections**

The PDU menu selection hierarchy consists of Setup, Alarms, Power, and Sensors. On the main menu, scroll down to highlight Setup. Press **Select**. Scroll down to select a submenu and press **Select** to display the submenu options. Press **Menu** to return to the previous menu.





#### Setup Menu

The Setup menu provides user configuration options including Network, Device, Screen, Language, USB, and Units.



#### **Network Submenu**

The Network submenu allows you to view IP address IPv4 or IPv6. On the Setup menu, scroll down to Network. Press **Select** to enter the Network Submenu. Scroll down to highlight the selected option from the menu. Press **Select** to display the screens that display the IP address. Press **Menu** to return to the previous men



#### **Device Submenu**

The Device submenu provides the SKU number, Serial number, MAC address and Firmware version. On the Setup menu, scroll down to highlight Device submenu. Press **Select** to enter the Device Submenu. Scroll down to the item you wish to display, and press **Select**. Press **Menu** to return to the previous menu



## Screen Submenu

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The Screen submenu allows you to customize settings for Contrast, Rotate, and Always on. In the Setup menu, scroll down to highlight Screen. Press **Select** to select the submenu. Press **Menu** to return to the previous menu.



### Language Submenu

The Language submenu allows you to select the language you need to use. On the Setup menu, scroll down to highlight Lang. Press **Select** to display the screens to select the submenu. After you select the values, press **Select** to set the values as displayed on the screen. Press **Menu** to return to the previous menu.



#### **USB Submenu**

The USB submenu allows you to upload firmware file and download event log or data log. On the Setup menu, scroll down to highlight USB. Press **Select** to enter the USB Submenu. The user will be asked to verify the want to the enter the USB operation and Configuration Mode. After you select Yes, the system will reboot into the USB operation and Configuration Mode.

Note: If a USB drive is not present in the USB slot the PDU will enter normal operation.

**Note**: If you are in USB mode and you want to exit USB mode, you must remove the USB drive before existing USB mode. Otherwise, the PDU will reboot and re-enter USB mode.



### **Units Submenu**

The Units submenu displays the temperature units. On the Setup menu, scroll down to highlight Units. Press **Select** to enter the Units Submenu. After you select the values, press **Select** to set the values as displayed on the screen. Press **Menu** to return to the previous menu.

Note: This can only be done locally at the PDU.



### **Alarms Menu**

The Alarms menu displays active alarms for the PDU. On the Main Menu, scroll down to highlight Alarms. Press **Select** to display the Alarm Screen. When you finish your review, press **Menu** to return to the main menu.



### **Power Menu**

The Power menu manages device, phase, breaker and outlet. On the Main Menu, scroll down to highlight Power. Press **Select**. Scroll down to select a submenu and press **Select** to display the submenu options. Press **Menu** to return to the previous menu.



#### **Device Submenu**

The Device submenu is to display current, voltage and power. On the Power menu, scroll down to highlight Device. Press **Select** to display the power values for the entire PDU. Press **Menu** to return to the previous menu.



#### **Phase Submenu**

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The Phase submenu is to display the status of 3-Phase. On the Power menu, scroll down to highlight Phase. Press **Select** to display the screens to set the values for the submenu. After you select the phase, press **Select** to display the values for that phase on the screen. Press **Menu** to return to the previous menu.





### Breaker Submenu

The Breaker submenu is to display power values for the breakers. Press **Select** to display the values of the first breaker. To go to the next breaker, **Select** next. Press **Menu** to return to the previous menu.


#### **Outlet Submenu**

The Outlet submenu is to display voltage, current and power from outlet number 1 to number n. On the Power menu, scroll down to highlight Outlet. Press **Select** to display values for the first outlet. To go to the next outlet, **Select** next. Press **Menu** to return to the previous menu.



**Note:** Custom outlet names noted in the WebGUI do not make changes to the local display. This is done to make it easier to map to outlet numbers which can locally be seen on the outlets themselves.

#### **Sensors Menu**

The Sensor menu is to display temperature, humidity, door switch, fluid leak etc. On the Main Menu, scroll down to highlight Sensor. Press **Select**. This will display the sensor data for the first sensor. To go to the next sensor, **Select** next. Press **Menu** to return to the previous menu.



NOTE: Maximum of 8 sensors are configured per PD



## Daisy Chain Configuration Daisy-Chain Overview

In daisy chain mode, up to (4) PDUs of the same SKU number can be connected via one IP address. This allows users to gather information and data on all daisy-chained PDUs from the master PDU. The daisy chain functionality reduces network cost for PDUs. For example, a standard network switch used in a data center may contain 24 ports. Without using the daisy chain function, each port would supply network connection to one PDU. However, if using the daisy chain features, a typical network switch with 24 ports can supply network connections for up to 96 PDUs.

#### **Daisy-Chain Setup**

- 1. After the initial PDU is configured (parent), connect an Ethernet cord from the **PDU Out** port on the configured PDU to the **PDU In/Serial port** on the second PDU in the daisy chain line.
- Repeat step 2, connecting PDUs from the PDU Out port to the PDU In/Serial port for up to 4 PDUs.
- 3. Go to the Web interface (or management software) to manage and control the PDUs in the daisy chain.

### **RNA (Redundant Network Access) Functionality**

RNA allows secure access of PDU data and statistics on two separate, private networks. RNA must be used with a redundant power delivery design including two rack PDUs for each IT rack. PDUs used in RNA applications must be the same SKU/Part Number. A maximum of (2) PDU can be used in the RNA convention. See the below figure for a connection diagram when deploying RNA.

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Figure 51: Connection Diagram RNA Daisy Chain

How it works:

- Using RNA, the main and expansion unit maintain two separate private networks that do not overlap.
- RNA works using a redundant power delivery design (two rack PDUs for each IT rack).
- Each PDU is separately connected to the expansion and main unit's private communications network.
- The two PDUs relate to a data communications bus to allow PDUs to share user- defined information.

Each PDU acts like a main PDU to report PDU data to both networks.

#### **RNA Setup**

To set up RNA mode on two PDUs, the user must (1) configure the PDUs for RNA Mode (using CLI) and then (2) connect the LAN Network cords and Ethernet cords between PDUs.



#### To Configure RNA Mode in the CLI

- 1. Log in to the CLI and enter the command 'dev daisy rna.'
- 2. The following message will appear:
  - Reboot Required for change to take effort.
  - System Reboot now, Are you sure? (Y/N).
- 3. Enter **Y** to confirm reboot.
- 4. After reboot, the PDU will be setup to RNA Mode.
- 5. Repeat this process for the second PDU.

#### To Connect the PDUs for RNA Setup

After the PDUs are configured for RNA:

- 1. Connect an Ethernet cable from the Landlord LAN Network to the Ethernet port of the first PDU. This will have limited access/permissions.
- 2. Connect an Ethernet cable from the Tenant LAN Network to the Ethernet port of the second PDU. This will have full access to both PDUs.
- 3. Connect an Ethernet cable from the **PDU In/Serial** port on first PDU to the **PDU Out** port on the second PDU.
- 4. Connect another Ethernet cable from the **PDU Out** port on the first PDU to the **PDU In/Serial** port on the second PDU.
- 5. In RNA mode, the default account username is 'landlord' and password is '12345678'. This account is configured for proper access and control in RNA mode.
- 6. To enable this account, login to the CLI with admin credentials.
- 7. Enter the command 'dev daisy rna init'.
- 8. The following message will appear to confirm the landlord account is enabled: SUCCESS.
- 9. RNA is now configured and enabled.



## **Configuring Temperature Scale**

To configure the temperature scale (Celsius or Fahrenheit) of the temperature sensors:

1. Go to User Accounts.



Figure 52: User Settings

2. The button at the top of the screen can be used to select Celsius or Fahrenheit.



Figure 54: Fahrenheit Setting

#### **Configuring Environmental Sensors**

To configure the sensor location, alarms, notifications, and details, open the WEB Interface:

- 3. Open the Settings.
- 4. View the Threshold section on the Settings page. Select **Threshold** to configure sensors.
- 5. Go to **External Sensors**.
- 6. Select Edit button to configure the desired sensors.
- 7. In the Edit dialog box, type value of up critical, up warning, low warning, and low critical.

Select Save to exit the sensor setup.

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## Security

Security is typically top of mind for IT managers when implementing any networked device. The below section is not meant to be comprehensive but rather informative to the areas of security with regards to the Enlogic EDGE PDU and their associated accessories.

#### Remove Extra Users

The default setting of the PDU has three users on the system, admin, manager and user. It is recommended that the unused manager accounts and the user accounts are deleted.

#### Upload Certificate

Certificates ensure that in a secure connection, the user is authorized to access the device. It is recommended that X.509 SSL certificate is uploaded the to the PDU and that the certificate has a key strength of 2048 RSA. This area can be accessed from **Settings**  $\rightarrow$  **Network settings** 

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Choose File No file chosen	

Figure 55: SSL Certificate Load Screen

#### Use SNMPv3c

The Enlogic EDGE PDU comes with support for both SNMPv2c and SNMPv3. For a higher security deployment, it is recommended to disable SNMPv2c. Another recommendation is to configure all SNMPv3 user and traps receiver with an "Auth Priv" security level, authentication algorithm of SHA and a privacy algorithm of AES256.

#### Disabling unused interfaces

The default setting is to have FTP and SSH enabled. If these interfaces are not in use, it is recommended to disable these interfaces.

#### Review Session management and password policies

The PDU gives the customer the flexibility to change session management settings and password policies. It is recommended to review the password policy setting of the PDU and



update them according to match your corporation's guidelines.

#### Enable notifications

Many of the event notifications on the PDU are disabled by default. It is recommended these events are enabled for the appropriate interfaces.

## **Firmware Update Procedure**

The firmware upgrade procedure verifies the image by validating the signature of the images. If the signature does not match, the firmware upgrade procedure will ignore the image and remain on the current version. Updating the firmware does not affect the configuration or outlet state of the intelligent PDU.

#### **USB Method**

- 1. Save the Firmware file ('\*.FW') to a USB drive.
- 2. Insert the USB drive into the USB port of the Network Controller.
- Enter USB mode on the PDU: Press Select. Go to Setup>USB>Yes. Select Yes to confirm entering USB mode.
- 4. Select **F/W Up>Yes** to upload the new Firmware.
- 5. The OLED will show the Firmware update progress.
- 6. When the update is complete, remove the USB.
- 7. From the USB Menu, select Quit to exit USB mode. Select Yes to confirm exit.
- 8. The PDU will automatically reboot.
- To confirm that the Firmware was uploaded successfully, go to Setup>Device>Firmware.

#### Web Interface Method

- 1. Open the User interface in a web browser by entering the PDU IP address.
- Login to with Administration credentials.
  Go to Settings > System Management > Actions > Update Firmware.
- 3. In the Firmware Update dialog box, browse to (\*.FW) firmware file.

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Figure 56: Upload Firmware

NOTE: the firmware file name must be retained AS IS.

- 4. Select Upload. The system will update the newest firmware to the Intelligent Network Controller.
- 5. When the upload is finished, the system will reboot automatically.

#### **FTPs Method**

To access a PDU using a FTPs program, FTPs must be enabled through the PDU Web Interface or CLI. In the Web Interface, go to Network Settings >SSH/**FTPs Configuration**. Select the check box to enable FTPs Access. In the CLI, login as an administrator and use the command net tcpip FTPs open

- 1. Login to a FTPs program with a role with administration privileges.
- 2. Transfer the updated \*FW file to the root directory. Close the FTPs.
- 3. Connect to the PDU via SSH using a program such as HyperTerm or PuTTY.
- 4. Login using a role with administration privileges.
- 5. Enter the command sys upd all.
- 6. It will show the message: System will enter upgrade mode after reboot, System Reboot now, Are you sure? (Y/N).
- 7. Enter Y.
- 8. When the upload is finished, the system will reboot automatically.



## System Reset or Password Recovery Use Reset Button on Controller

Press and hold the Reset Button for 8 seconds to recover from an Intelligent Network Controller communication failure. This will cause a reset of the iNC controller and the entire configuration will be retained.

Press and hold the Reset Button for at least 20 seconds to reset the PDU to the default factory settings. This will cause a reset of the iNC controller and all configuration to be erased, including the username and passwords. It does not change the Energy (kWh) value and does not affect the outlet state.

## **Command Line Interface (CLI)**

The Command Line Interface (CLI) is an alternate method used to manage and control the PDU status and parameters, as well as basic admin functions. Through the CLI a user can:

- Reset the PDU
- Display PDU and network properties
- Configure the PDU and network settings
- Switch outlets on/off
- View user information

Connecting to the CLI requires a terminal emulation program such as HyperTerminal or PuTTY **Supported Commands** 

The PDU CLI command set for managing and monitoring the PDU includes the following commands:

- ? command: PDU help query
- sys command: PDU system configure and setting
- net command: PDU net application configure and setting
- usr command: PDU user operation
- dev command: PDU device setting



• pwr command: PDU power setting

**NOTE:** Command variables are represented in command input syntax surrounded by angle braces (< >). Optional parameters are represented in command input syntax surrounded by straight brackets ([]). For data of type array, the 'x' character as index of array in command input syntax means all indexes. You must be logged into the PDU before commands can be sent. See Appendix A for a list of all CLI commands.

#### Connecting to the CLI through the serial interface

An option to communicating through the serial interface is to use the specialized YOST Serial Data Cable Enlogic Part Number: MA017. This cable Remaps Enlogic EDGE Serial Interface to a YOST interface.



Figure 57: Connect MA017 to the PDU In/Serial port

### To connect the PDU to a computer (via Serial Interface):

Connect the MA017 YOST Remap cable in between a standard patch cord and the network port of the computer.

## Logging in with HyperTerminal



To login through HyperTerminal, set the COM settings to the following parameters:

- Bits per second: 115200
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

## Serial Cable Pinout to Create Your Own Cable

Optionally if you prefer to make your own RJ45-to-DB9 Serial cable, the connections are wired as shown:



Figure 58: Serial Cable Pinout

#### Logging in with SSH via PuTTY

- 1. Ensure SSH has been enabled: On GUI, go to Device Configuration > Network Service > SSH. Select the **Enable SSH Access** checkbox. Select **OK**.
- 2. Open an SSH client (PuTTY).
- 3. Enter the IP address in the Host Name field. Select the connection type: SSH
  - For SSH, enter 22 in the Port field.
- 4. Select Open.
- 5. Enter your Username. Press Enter.
- 6. Enter your password. Press Enter.
- 7. You are now logged into the SSH. Refer to the CLI Commands table below for available commands.

**NOTE:** SSH connection is not available when serial connection is enabled.

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## **CLI Commands**

#### **Help Commands**

Comm and	Description	Example
enlogic >?	List all available PDU CLI commands.	enlogic>? <b>sys</b> PDU system configure and setting. <b>net</b> PDU net application configure and setting. <b>usr</b> PDU user operation. <b>dev</b> PDU device setting. <b>pwr</b> PDU power setting.

### **System Commands**

Comm and	Description	Example
sys date [year- month-day]	Query or set system's date.	enlogic>sys date 2013-09-19 SUCCESS enlogic>sys date SUCCESS Date: 2013-09-19 Time: 03:49:46
sys time [hour:min:sec]	Query or set system's time.	enlogic>sys time enlogic- >sys time 14:35:34
sys ntp <ip Address&gt;</ip 	Synchronize system date and time, with ntp server you set.	enlogic>sys ntp 69.25.96.13 <b>NOTE:</b> IP Address must be a valid ntp, server address otherwise, executes, failed



Comm and	Description	Example
sys ver	Query system's version information including firmware, bootloader, and Web.	enlogic>sys ver SUCCESS Firmware version: 0.41 Bootloader version: 2.10 LANGUAGE version: 3.01 WEB version: 6.30
sys def	Recover PDU to default configuration.	enlogic>sys def SUCCESS Recover Press any key to cancel
sys rst	Reset system.	enlogic->sys rst Reboot required for change to take effort. System Reboot now, Are you sure? (Y/N):Y
sys upd all	Update system's firmware with existing pdu bin file.	enlogic>sys upd lan SUCCESS system will enter upgrade mode after reboot System Reboot now, Are you sure? (Y/N):Y <b>NOTE 1:</b> There must be a valid file named Enlogic.bin existing under directory/fw. <b>NOTE</b> <b>2:</b> If in daisy chain configuration, master will also upgrade its all slave's firmware



sys upd boot	Update system's bootloader.	enlogic>sys upd boot SUCCESS system will enter upgrade mode after reboot System Reboot now, Are you sure? (Y/N):Y <b>NOTE 1:</b> There must be a valid file named boot.bin existing under directory/fw. <b>NOTE</b> <b>2:</b> If in daisy chain configuration, master will also upgrade its all slave's bootloader.
sys upd conf	Update system's configuration.	enlogic- >sys upd conf SUCCESS system will enter upgrade mode after reboot System Reboot now, Are you sure? (Y/N):Y <b>NOTE:</b> There must be a valid file named conf.ini existing under directory/fw.
sys log del event	Delete event log file.	enlogic>sys log del event, SUCCESS
sys log edit data [on <interval>   off]</interval>	Configure data log collection parameters	enlogic>sys log edit data on 1 SUCCESS ENLOGIC- >sys log edit data off SUCCESS
sys log del data	Delete data log file.	enlogic>sys log del data, SUCCESS



## **Network Commands**

Comm and	Description	Example
net ssh [on/off]	Query or on/off SSH.	enlogic>net ssh SUCCESS, SSH Port: 22 SSH Server is running enlogic>net ssh on SUCCESS enlogic>net ssh off SUCCESS
net ftps [on/off]	Query or on/off FTPs.	Net ftps SUCCESS FTPS Port: 21 Service is running Is Ftps
net http [on/off]	Query or on/off net http.	enlogic>net http SUCCESS, HTTP Port: 80 HTTPS Port: 443 WEB Protocol: HTTP enlogic >net http off E801 WEB protocol is changed, Please reboot to validate System Reboot now, Are you sure? (Y/N):Y
net mac	Query MAC address.	enlogic >net mac SUCCESS MAC Addr: C8-45-44-66- 2B-26



net tcpip	Query network's IP information.	enlogic >net tcpip SUCCESS IPv4 Addr: 192.168.30.39
net tcpip <dhcp></dhcp>	Set network to dhcp mode.	enlogic >net tcpip dhcp SUCCESS Network is reconfigured, Please reboot to validate System Reboot now, Are you sure? (Y/N): Y
net tcpip <static ip, mask, gateway&gt;</static 	Set static IP, mask and gateway.	enlogic >net tcpip static 192.168.30.39 255.255.255.0 192.168.30.1 SUCCESS Network is reconfigured, Please reboot to validate System Reboot now, Are you sure? (Y/N): Y

## **User Commands**

Command	Description	Example
User List	List all users account existing.	enlogic>usr list SUCCESS Usr Role  admin admin user user



User unlock <usernam e&gt;</usernam 	Unlock specified user.	enlogic >usr unlock user SUCCESS
		enlogic- >usr unlock admin SUCCESS
		NOTE: 1. Account would be locked temporarily if login failure excess "Maximum number of failed logins". Use this
		command to unlock it.

## **Device Commands**

Comm and	Description	Example
dev usb [on off]	Query or on/off USB.	enlogic>dev usb enlogic- >dev usb off enlogic- >dev usb on
dev daisy [rna qna]	Query or set daisy chain mode.	enlogic>dev daisy SUCCESS daisy chain unit number: 1 daisy chain address list: 000 Daisy Mode: RNA enlogic- >dev daisy qna SUCCESS System Reboot now, Are you sure? (Y/N): N
dev daisy <rna qna> init</rna qna>	Initialize daisychain.	enlogic>dev daisy qna init SUCESS System Reboot now, Are you sure? (Y/N):N



dev hid <pduid> <hot  <br="">cold&gt; <lock  <br="">unlock&gt;</lock></hot></pduid>	Remote locking and unlocking the cabinet.	enlogic - >dev hid 1 cold unlock SUCCESS
dev outlet <pduid> status</pduid>	Query all outlets' status with specified PDUID.	Enlogic >Dev outlet 1 status SUCCESS Relay Outlet Status Outlet#1: Close Outlet#2: Close Outlet#3: Close Outlet#4: Close Outlet#5: Close Outlet#6: Close Outlet#6: Close Outlet#7: Close Outlet#8: Close Outlet#8: Close Outlet#9: Close Outlet#10: Close Outlet#11: Close Outlet#11: Close Outlet#11: Close Outlet#12: Close <b>NOTE 1:</b> For M pdu, this command is in valid. <b>NOTE 2:</b> PDUID index from 1; if in daisy chain, the master's PDUID is 1, others is ,2,3,
dev outlet <pduid> <outlet index=""> [on off]</outlet></pduid>	Query or set specified PDUID and outlet- index's outlet status.	enlogic> dev outlet 1 1 off SUCCESS <b>NOTE:</b> For Monitored PDUs, this command is invalid.



dev sensor	List all sensors equipped.	enlogic> dev sensor SUCCESS Sensor count 4
		Name Type, SN
		Value T1,TEMP
dev ver <slipaddr></slipaddr>	Query sensor/power/de lay's firmware version.	012345678 27.5 T3,TEMP 012345678 27.2 T2,TEMP 012345678 27.3 RH HUMI 012345678 44 enlogic> dev ver 1 enlogic- > dev ver 15 enlogic- > dev ver 35
		NOTE: relay: start from 1 power: start from 15 sensor: start from 35



## **Power Commands**

Comma nd	Description	Example
pwr unit [idx]	Query device information,	enlogic > pwr unit SKU: ES6325
	Query specified index unit's electric information.	Serial: , , , , , FuncType: PDU Monitored
		Rating :220- 240V, 16A, 3.5- 3.8kVA, 50/60Hz
		Mac :C8:45:44:66:2B: 26
		1000 192:168:30:38 enlogic- >pwr unit
		SUCCESS PDU UNIT 1
		voltage: 0V
		current : 0.0A active power: 0W
		apparent power: 0W
		power factor: 0.00 energy: 0.000kWb
pwr phase <idx></idx>	Query specified phase's electric	enlogic > pwr phase 1
		SUCCESS
		PDU PHASE 1 power Feature
		voltage: 0V
		current : 0.0A active power: 0W
		apparent power: 0W



		power factor: 0.00
		energy: 0.000kWh
pwr cb <idx></idx>	Query specified circuit breaker's Electric information.	enlogic > pwr cb 1 SUCCESS PDU CB 1 power Feature voltage: 0V current : 0.0A active power: 0W apparent power: 0W power factor: 0.00
		energy: 0.000kWh
pwr outlet <idx></idx>	Query specified outlet's electric information.	enlogic > pwr outlet 1 SUCCESS PDU OUTLET 1 power Feature voltage: 0V current : 0.0A active power: 0W apparent power: 0W
		<b>NOTE:</b> For Monitored PDUs, this command is invalid.