

Smart Switched PDU Installation



Models

SPDU-108M
SPDU-116M
SPDU-208M
SPDU-216M

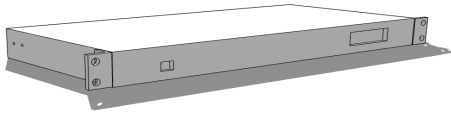
Important Safety Instruction



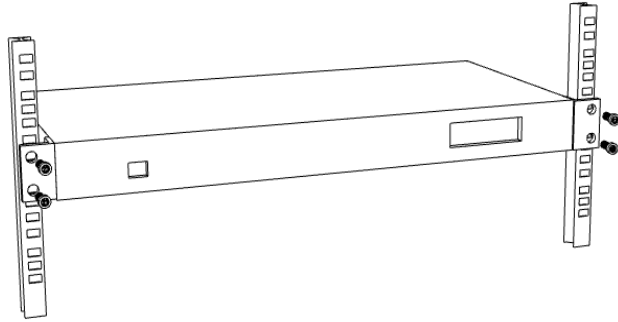
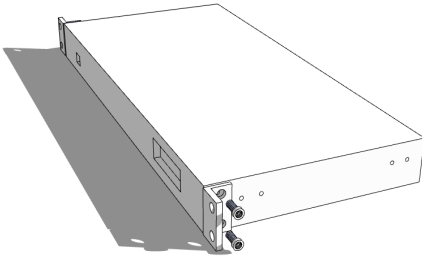
There are no user-serviceable parts inside. Do not attempt to open any part of Power Distribution Unit (PDU). Doing so may expose you to possible shock hazard and voids the product warranty.

- The PDU does not provide short-circuit protection. Therefore, Echola Systems does not recommend plugging the unit directly into any unprotected power source, such as a wall outlet. Always connect to an appropriately rated branch circuit's outlet which provides short-circuit protection using standard Circuit Breakers or Fuses.
- Always maintain reliable earthing of the PDU. Do not connect the PDU to an ungrounded outlet or adapters or extension cords that doesn't have ground connection.
- The power requirement of each equipment connected to the PDU's outlet should not exceed individual outlet's rated maximum capacity (refer to specification of appropriate model for ratings).
- The aggregate power requirements of equipments connected to all outlets at any time should not exceed the maximum input capacity of PDU (refer to specification of appropriate model for ratings).
- Install the PDU where it may be easily disconnected for service.
- The PDU is designed for indoor use only. Avoid exposing to extreme ambient temperatures.

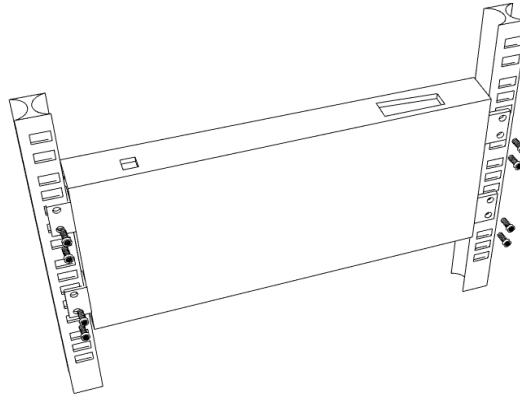
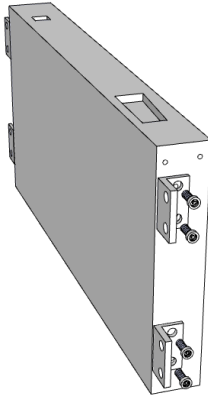
Installing in a Rack



The PDU can be installed in a standard 19" rack or enclosure. It can be mounted horizontally at front of the rack or vertically at the back as shown below.



Rack Horizontal Installation






Vertical Installation at the back of the Rack





Outlet-1

Outlet-8

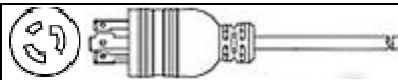


SPDU-108M Specification

Input	
Acceptable Input voltage range	100-120V AC
Input plug type	NEMA L5-20P 
	NEMA 5-20P 
Maximum Input Current	20A (16A Derated)
Input Current Monitoring Accuracy	±5%
Input Frequency	50/60 Hz
Cord Length	8/10 feet
Output	
Output voltage	Same as Input
Output receptacle type	NEMA 5-20R 
Maximum Output current/outlet	16A (Aggregate current of all outlets can't exceed Max. Input current)
Number of Outlets	8
Outlet Current Monitoring Accuracy	±10%
Interfaces	
Network Interface	RJ45, 10Base-T Ethernet
Front Panel display	2x16 Color character LCD with LED backlight
Environmental	
Operating Environment	32-113° F
Operating Relative Humidity	0-95%
Operating Elevation	0-10000 feet
Physical	
Net weight	~10 lbs
Maximum height	1.75 inches (1U)
Maximum width	17.5 inches
Maximum depth	8 inches
Color	Olive Green front panel, Grey chassis

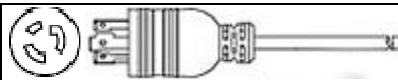


SPDU-116M Specification

Input	
Acceptable Input voltage range	100-120V AC
Input plug type	NEMA L5-30P 
Maximum Input Current	30A (24A Derated)
Input Current Monitoring Accuracy	±5%
Input Frequency	50/60 Hz
Cord Length	8 feet
Output	
Output voltage	Same as Input
Output receptacle type	NEMA 5-20R 
Maximum Output current/outlet	16A (Aggregate current of all outlets can't exceed Max. Input current)
Number of Outlets	16
Outlet Current Monitoring Accuracy	±10%
Interfaces	
Network Interface	RJ45, 10Base-T Ethernet
Front Panel display	2x16 Color character LCD with LED backlight
Environmental	
Operating Environment	32-113° F
Operating Relative Humidity	0-95%
Operating Elevation	0-10000 feet
Physical	
Net weight	~15 lbs
Maximum height	3.5 inches (2U)
Maximum width	17.5 inches
Maximum depth	8 inches
Color	Olive Green front panel, Grey chassis

SPDU-208M Specification

Input	
Acceptable Input voltage range	200-240V AC
Input plug type	NEMA L6-20P 
Maximum Input Current	20A (16A Derated)
Input Current Monitoring Accuracy	±5%
Input Frequency	50/60 Hz
Cord Length	8/10 feet
Output	
Output voltage	Same as Input
Output receptacle type	IEC 320 C13 (7)  IEC 320 C19 (1) 
Maximum Output current/outlet	16A (Aggregate current of all outlets can't exceed Max. Input current)
Number of Outlets	8
Outlet Current Monitoring Accuracy	±10%
Interfaces	
Network Interface	RJ45, 10Base-T Ethernet
Front Panel display	2x16 Color character LCD with LED backlight
Environmental	
Operating Environment	32-113° F
Operating Relative Humidity	0-95%
Operating Elevation	0-10000 feet
Physical	
Net weight	~10 lbs
Maximum height	1.75 inches (1U)
Maximum width	17.5 inches
Maximum depth	8 inches
Color	Olive Green front panel, Grey chassis

SPDU-216M Specification

Input	
Acceptable Input voltage range	200-240V AC
Input plug type	NEMA L6-30P 
Maximum Input Current	30A (24A Derated)
Input Current Monitoring Accuracy	±5%
Input Frequency	50/60 Hz
Cord Length	8/10 feet
Output	
Output voltage	Same as Input
Output receptacle type	IEC 320 C13 (14)  IEC 320 C19 (2) 
Maximum Output current/outlet	16A (Aggregate current of all outlets can't exceed Max. Input current)
Number of Outlets	16
Outlet Current Monitoring Accuracy	±10%
Interfaces	
Network Interface	RJ45, 10Base-T Ethernet
Front Panel display	2x16 Color character LCD with LED backlight
Environmental	
Operating Environment	32-113° F
Operating Relative Humidity	0-95%
Operating Elevation	0-10000 feet
Physical	
Net weight	~15 lbs
Maximum height	3.5 inches (2U)
Maximum width	17.5 inches
Maximum depth	8 inches
Color	Olive Green front panel, Grey chassis

Initial Software Configuration

You may need to change network settings of Echola PDU device before connecting it to your network's switch/router. If your network has a DHCP server then you may want to skip this section and connect PDU Ethernet port to their network's switch/router and the IP address will be assigned automatically by your DHCP server. The assigned IP address will be shown on the LCD panel. Use that IP to login into PDU and manage it.

If you don't have a DHCP server running on your network then you may want to configure Static IP; there are three ways you could do this:

1. Using NBNS (NetBIOS Name Service) of PDU
2. Using built-in DHCP server of PDU
3. Using Static IP configuration of your PC/Laptop

[Using NBNS \(NetBIOS Name Service\)](#)

You would need a Windows based Laptop or a PC to configure PDU using this method for the first time. You may also need a ethernet crossover cable to connect PDU to a PC or a Laptop but most of the modern PC/Laptops would work with either type of cable (straight or crossover). Make sure the PC/Laptop IP option "Obtain IP address automatically" is checked in the Internet Protocol Properties of the ethernet interface. Now launch the internet browser and type <http://echolasys> in the address bar and press Enter key. Now you will be prompted with a PDU's login dialog; If this is first time then use default username and password. After login, you will see the main menu page of the PDU. Now click on the Setup tab of the menu to bring the Network Config menu. From here you can assign static IP, subnet mask and gateway and save your configuration. That's it, now you are set to connect PDU to your network/switch/router and access it from remote.

- **Default Username:** admin
- **Default Password:** admin

[Using built-in DHCP server](#)

The procedure is same as above NBNS except that instead of using hostname 'echolasys' in your browser you will have to use the IP address (like <http://192.168.2.222>) displayed on the LCD panel. This method works for non-windows PC/Laptop as well.

[Using Static IP configuration](#)

Configure your PC/Laptop ethernet port's IP address to match the network portion of default IP address of PDU.

- **Default IP Address of PDU:** 192.168.2.222
- **Default Gateway of PDU:** 192.168.2.222



- **Default Subnet mask of PDU:** 255.255.255.0

For example you can configure your PC/Laptops IP address as 192.168.2.222 and access the main menu of PDU. After configuring the PC/Laptop ethernet address, just use any internet browser to access PDU with new configure IP address. Now you will be prompted with PDU's login dialog; If this is first time then use default username and password. Now the default network settings of IP, subnet mask and gateway can be changed to match your network setting through **Setup** tab.

- **Default Username:** admin
- **Default Password:** admin

User Authentication

Admin user is always the privileged user who can access any web page. You can also create a different user who can access to main Control/Monitor page but is not allowed to access **Setup** page. This user is by default called "guest" but name can be changed using **Setup->User** tab and default password is "guest" as well.

If the authentication fails "Authentication Required" message will be displayed. The authentication can optionally be disabled for Control/Monitor web page (the home page) on the main menu by using **Setup->User** setting so that admin or guest user can access main page without login but the **Setup** web page will still require login.

User Interfaces

Front Panel LCD

LCD moving character display on the front panel displays following important information. This is useful when you are near the device to setup or monitor.

1. Hostname
2. IP Address
3. Outlet Status
4. Total Current Consumption in Amps

The outlet status shows the status of all 8 outlets and it could be one of the following,

- (1) o (Empty circle): means corresponding outlet is switched OFF
- (2) ● (Filled circle): means corresponding outlet is switched ON
- (3) x (Cross): means corresponding outlet has been shut off due to overload (Individual port overload protection feature)

Web Interface

User can configure, monitor and control the PDU through user friendly web interface. The web interface uses AJAX for providing near real-time update on current consumption for each outlets, total current, Temperature and outlet statuses.



The screenshot shows the Echola Systems web interface in Internet Explorer. The browser address bar shows <http://echolasy.com/>. The interface features a navigation menu with tabs: Control/Monitor (selected), Device Info, Setup, Automation, Reports, and Help. The main content area displays the following information:

- Temperature: 71°F
- Refresh Current button
- Table with 4 columns: Outlet Number, Status/Toggle, Current Consumption, and On/Off Control.
- Total Current: 14.3
- Update button
- Switch all OFF button

Outlet Number	Status/Toggle	Current Consumption	On/Off Control
1	●	7.1	---
2	●	1.0	---
3	●	1.0	---
4	●	1.0	---
5	●	1.0	---
6	●	1.0	---
7	●	1.0	---
8	●	1.0	---
Total Current ▶		14.3	Update

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To access GUI from any smart phone/mobile devices, just use letter '/m' after the ipaddress or the hostname, like <http://192.168.2.21/m>

For more details on web interface please refer to User's Manual at <http://www.echola.com/support>.

Automation

You can either use Tcl scripting language (refer to separate document for automation using Tcl) or Perl for automation. Here is an example how to use Perl script which uses api.xml file from the PDU to parse certain outputs. If you are on windows you can use strawberry perl.

```
#####  
#   Command Syntax: perl xmlget.pl http://<ipaddress>           #  
#####  
use LWP::UserAgent;  
use XML::Simple;  
$IPADDR = shift;  
  
# create objects  
$xml = new XML::Simple;  
$ua = LWP::UserAgent->new;  
  
# send request for api.xml  
$REQUEST=$IPADDR . "/api.xml";  
$req = HTTP::Request->new(GET => $REQUEST);  
$req->header('Cookie' => 'test=quest');  
$res = $ua->request($req);  
$data = $xml->XMLin($res->content);  
  
# print them  
print "Outlet1 Power: $data->{pow1}";  
print "Outlet2 Power: $data->{pow2}";  
print "Outlet3 Power: $data->{pow3}";  
print "Outlet4 Power: $data->{pow4}";  
print "Outlet5 Power: $data->{pow5}";  
print "Outlet6 Power: $data->{pow6}";  
print "Outlet7 Power: $data->{pow7}";  
print "Outlet8 Power: $data->{pow8}";  
print "Voltage/Frequency: $data->{volt}";  
print "Temperature: $data->{temp}";
```



Troubleshooting

- If you get **connection lost messages** when you are on any GUI page (telnet or snmp might still work), you will have to make sure you are running latest version of JAVA on the PC where you run the browser to log into the smart PDU. The older versions of java (ver <= 5 or early 6 versions) doesn't work well with the AJAX calls that we use for real time updates. You can check whether you have latest java by clicking on following link <http://java.com/en/download/testjava.jsp> and do an update to avoid this intermittent problem.
- Also check for any malware/anti-virus/firewall software which might block the http connection to PDU.
- We don't support router-behind-router or router hacked to work in bridge-mode configurations. If you have such configuration you may want to connect the PDU to the primary router (router that acts as gateway or dhcp server).

For any technical questions, email to support@echola.com.



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