pakedge®

PowerPak

Power Distribution Unit

User Guide

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Introduction

The Pakedge PowerPak power distribution unit gives you unprecedented convenience and control, including on/off sequencing to power on and shut down sensitive equipment in a configurable order. The PDU has full monitoring capabilities including input voltage, frequency, individual outlet current and temperature (sensor sold separately). The user-defined alerts can trigger actions based on these measurements, sound an audible buzzer and notify interested parties.

This device has been tested to the specifications of UL1449 for protection against both current and voltage surges. Remote management of the PDU is easily accomplished with a BakPak Network Patroller which provides a tunnel to the PDU through the Internet and monitors all your network devices. See "Add the PowerPak to a BakPak Cloud account" on page 23 for more information on setting up the BakPak integration.

Key features:

- Configurable power-up and shutdown: Configure the PowerPak to power on/off connected devices in any order for device-dependent hardware and to protect sensitive equipment against power flooding.
- Secure network control: The PowerPak is fully IP addressable using the built-in, secure Web interface.
- Web-based monitoring: Monitor the real-time and historical current and power usage of each PDU outlet, along with the input voltage and frequency.
- Configurable alerts: Define visual, audible, and email alarms with full logging.
- Surge protection: Provides up to 6kV surge protection to your devices.
- BakPak Lite built in: Manageable by Pakedge's BakPak and BakPak Lite network management agents from any location.

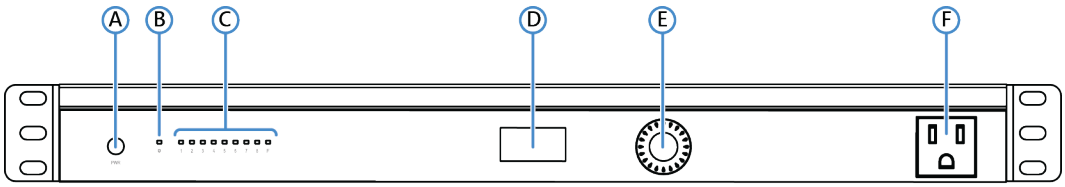
Overview

PowerPak 9

The PowerPak 9 power distribution unit comes with nine NEMA 5-15 outlets.

- Input: 100-120VAC, 50~60 Hz
- Output: 100-120VAC, 12A, 50~60 Hz, 1440W (total)

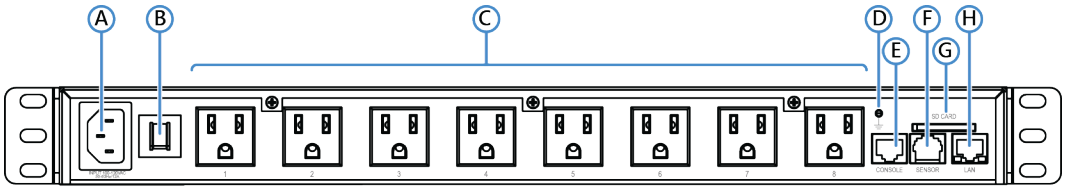
Front panel



Front panel

A. Power switch
B. Surge protection indicator light
C. Power outlet 1~8, F indicator light
D. OLED display
E. Circular selector switch
F. Power outlet F

Back panel



Back panel

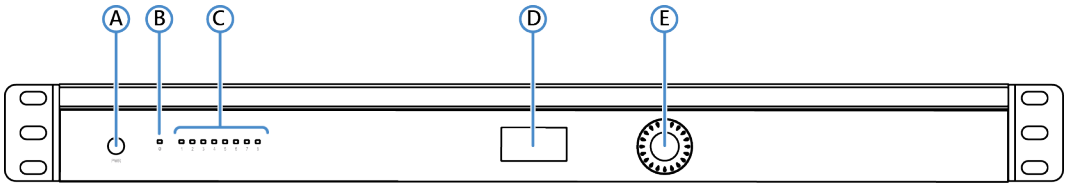
A. Power inlet
B. Circuit breaker
C. Power outlet 1~8
D. Ground lug
E. Console port
F. RJ11 port to connect the temperature sensor
G. SD card slot
H. Ethernet port for a network connection

PowerPak 8I

The PowerPak 8I power distribution unit comes with eight IEC C14-type outlets.

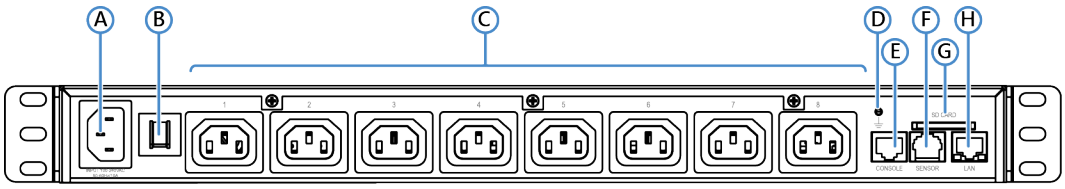
- Input: 100-240VAC, 50~60 Hz
- Output: 100-240VAC, 10A, 50~60 Hz, 2400W (total)

Front panel



A. Power switch
B. Surge protection indicator light
C. Power outlet 1~8 indicator light
D. OLED display
E. Circular selector switch

Back panel



A. Power inlet
B. Circuit breaker
C. Power outlet 1~8
D. Ground
E. Console port
F. RJ11 port to connect the temperature sensor
G. SD card slot
H. Ethernet port for Internet connection

Display

The front panel of the PDU has an OLED display, which helps you quickly review information and control outlets while working at the rack without needing to log in to the web interface.

From the home screen, rotate the scroll wheel and press the center button to select from the menu options:

- **Local Reboot:** Press and hold the center button for two seconds to power cycle the outlets that have this feature enabled.
- **Measurements:** Display the voltage, current, or power consumption for the entire PDU or individual outlets.
- **Outlet Control:** Turn the selected outlet on/off.
- **Settings:**
- Display the IP address, MAC address, or serial number of the PDU.
- Turn off the OLED display or adjust the contrast.
- Dim the LEDs or turn them on/off.
- Display the date and time.
- **Messages:** When a user-defined alert condition occurs, a message displays showing the type of alert (options below), and the LED of the outlet will blink (all LEDs will blink for global alerts).
- Voltage
- Current
- Power
- Temperature

Note: If the buzzer feature is enabled, press the center button to turn the buzzer off.

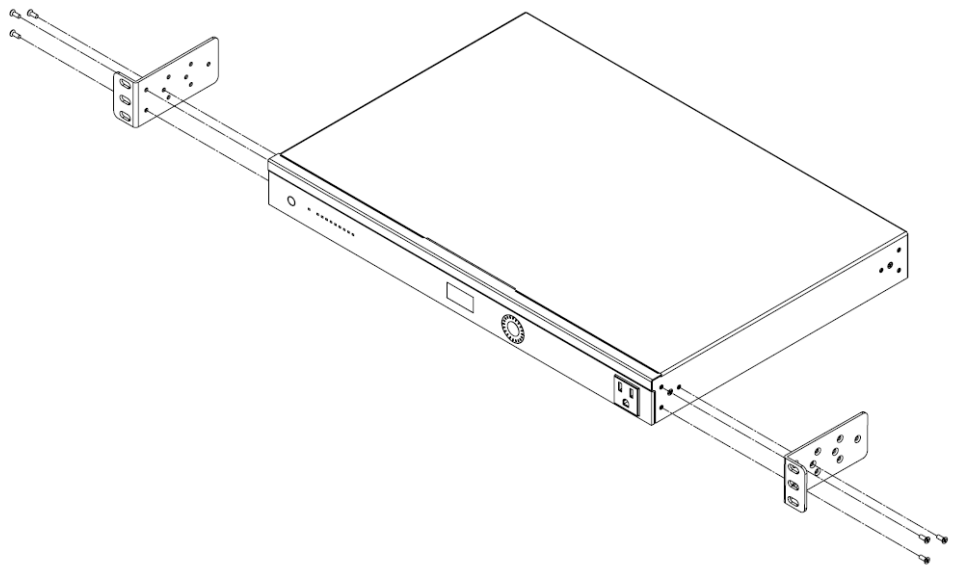
PowerPak Installation

Tools required:

- Phillips screwdriver (if using rack-mount brackets).
- Computer with an Ethernet interface and a web browser (an integrated DB-9 port or USB-to-Serial adapter may be necessary if you would like to use the console interface).
- Ethernet cable.

To install the PowerPak:

1. Open the box and remove the unit.
2. If mounting the PowerPak in a standard 19" AV rack, attach the rack-mounting brackets to the sides. If not rack-mounting, ensure that the PowerPak is mounted near power and network connections (i.e, a backbone switch or a firewall/router). The PowerPak must also be connected to a reliable ground connection.



3. To ensure the unit is properly grounded and remains safe, connect a ground wire (12 gauge minimum) from the back of the PowerPak's ground terminal to a reliable ground (such as metal on the rack or a floor ground lug).
4. Connect power to the device. The power outlet indicator light will light up.
5. Connect an Ethernet cable from your computer to the LAN port on the PowerPak. You are now ready to configure the PowerPak to an IP address that matches your network.

Warnings

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

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

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

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

Reliable Earthing—Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, via the use of power strips).

Using the hardware controls

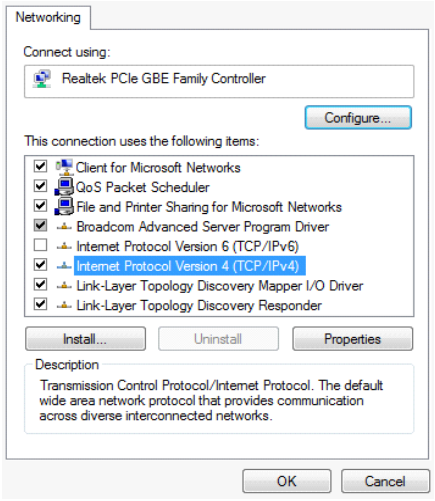
Task	Action	Result
Reset to factory defaults	Press and hold power button for 10 seconds.	Outlet LEDs blink during reset, but outlets remain enabled. User interface is reset to defaults.
Enter Sleep mode	Press and hold power button for two seconds.	Outlets turn off, based on user-defined power off delay times.
Wake from Sleep mode	Press and release power button.	Outlets turn on according to user-defined power-on delay times.
OLED menu options	Rotate scroll wheel and press center button	Toggles menu options and selects an action.

PowerPak startup

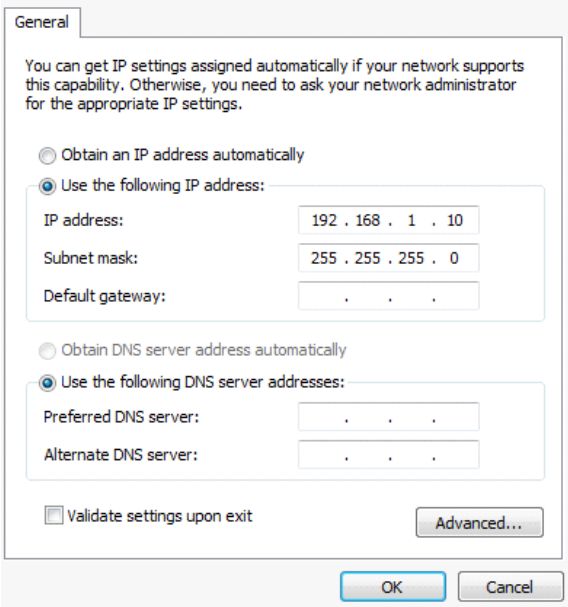
To log in to the PowerPak, you must first configure the TCP/IP settings of your computer.

To configure TCP/IP settings:

1. Under **Control Panel**, double-click **Network Connections** and double-click the connection of your Network Interface Card (NIC). The *Local Area Connection Properties* dialog appears:



2. Select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**. The Internet Protocol (TCP/IP) dialog appears where you can configure the TCP/IP settings of your PC.

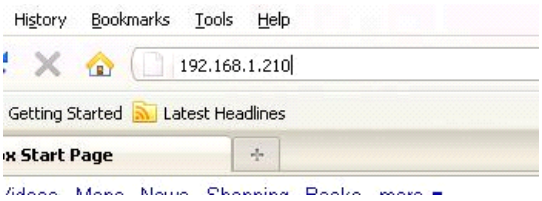


3. Select **Use the following IP Address** and type the IP address and subnet mask, as in the example below. Be sure the IP address and subnet mask are on the same subnet as the PowerPak. If the PowerPak has been connected directly to a network with an active router, then it will be assigned an IP address from the DHCP server instead of using the default 192.168.1.210 address. **Note:** Make sure the PowerPak and your computer are configured on the same subnet.

PowerPak IP address:	192.168.1.210
PC IP address:	192.168.1.10
PC subnet mask:	55.255.255.0

4. To configure the PowerPak through a web browser, type the IP address of the PowerPak (default **192.168.1.210**) and press **Enter**.

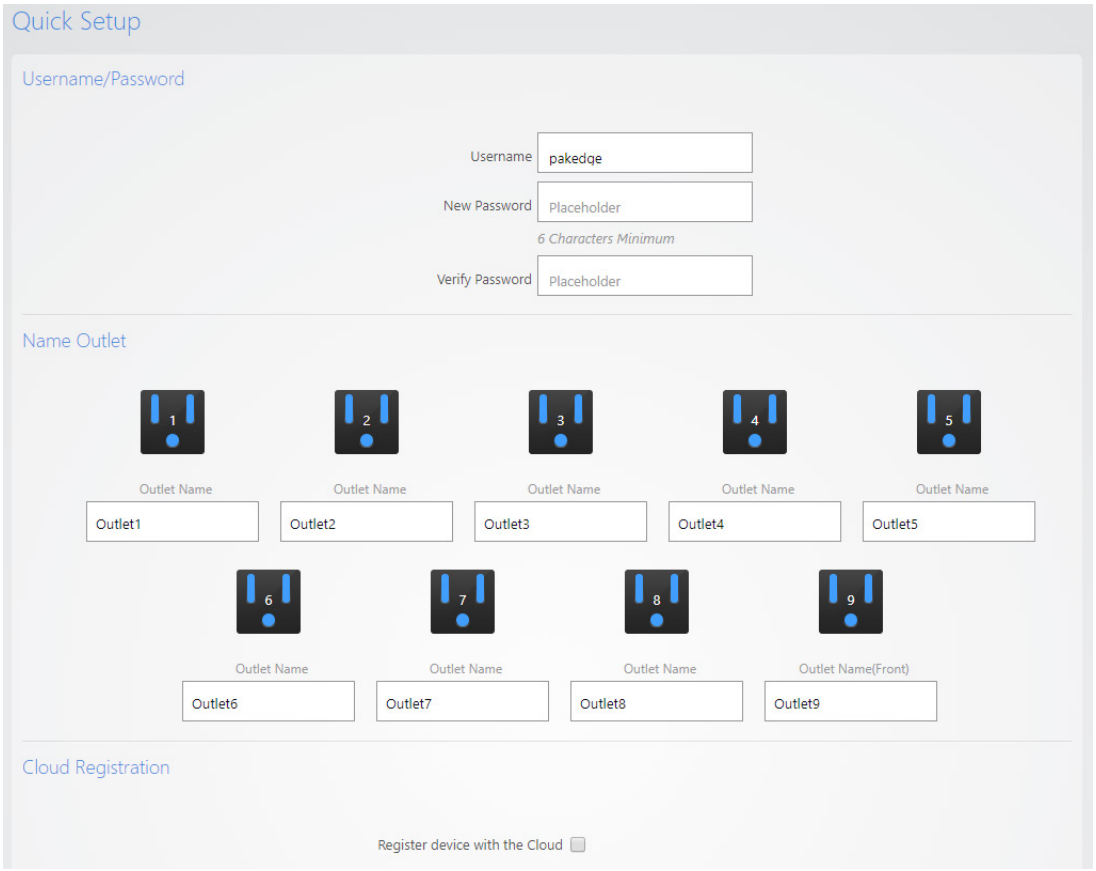
   Default settings: The IP address will be automatically assigned by a router if a DHCP server is detected. Otherwise, the default IP address will be automatically set to **192.168.1.210**.



To log in:

1. For *Username,* type **pakedge**. For *Password*, type **pakedgep**, then click **Log in**.

The *Quick Setup* page opens.

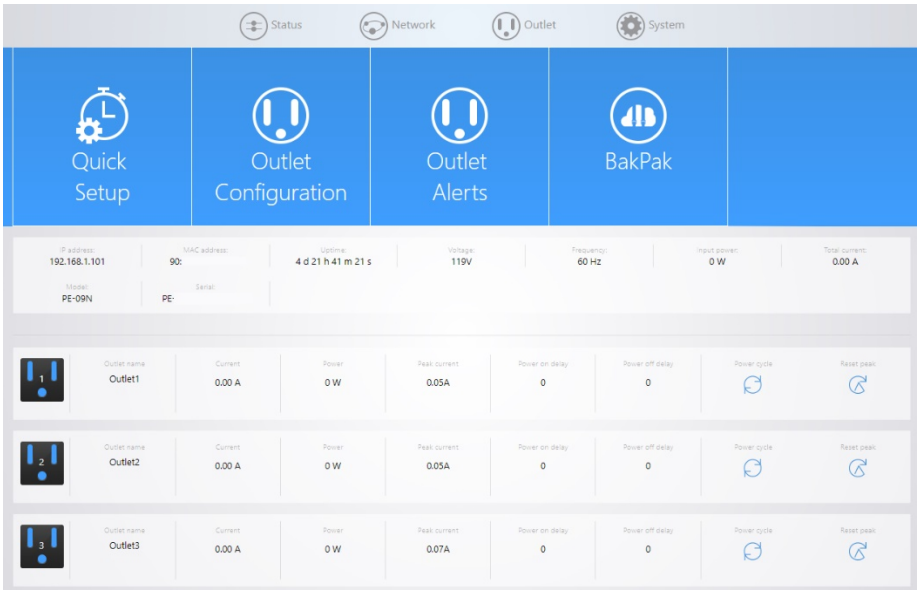


Use this page to quickly set up your PDU's basic configuration. You can set:

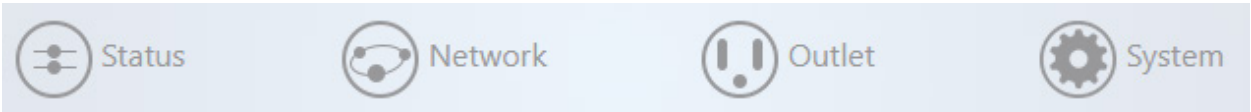
- Username
- Password
- Outlet names
- Whether to register the PDU in the cloud

2. Click **Apply** to apply your changes to the PDU. The *Quick Setup* page closes, and you are brought to the Dashboard. **Note:** You can return to the *Quick Setup* page at any time by clicking the *Quick Setup* tile in the Dashboard.

The PowerPak's Dashboard (main menu) appears. The Dashboard displays the status of PowerPak and general information such as IP address, MAC addresses, voltage, and frequency. The outlet section displays the current, power consumption, power on delay, etc.

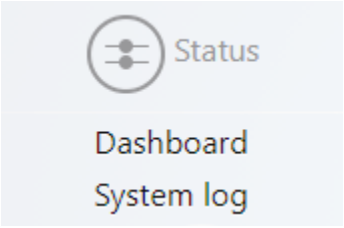


Menu options



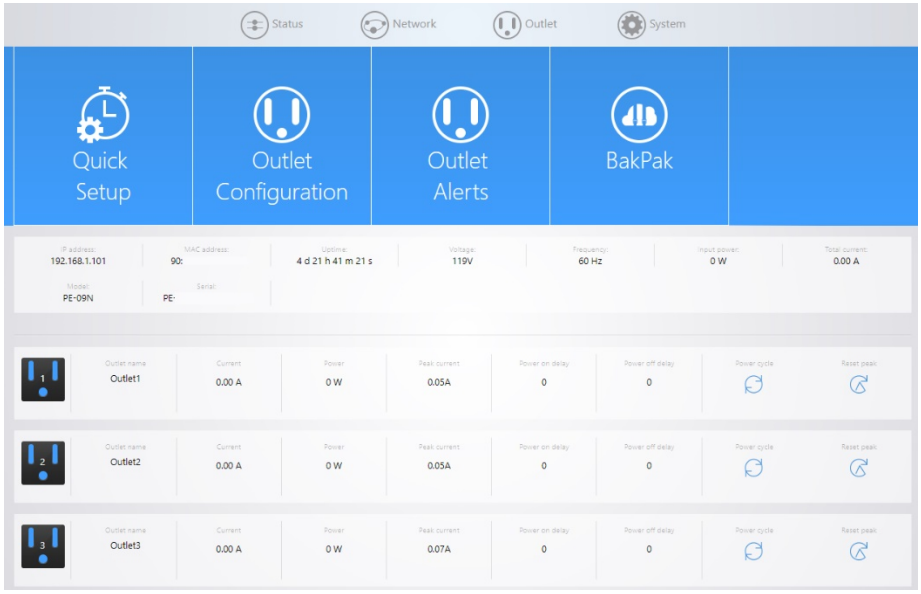
Status

This section contains system-level menus like LAN and Display settings

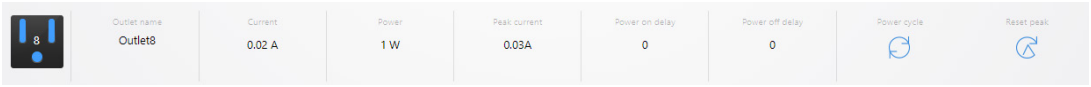


Dashboard

The Dashboard is the default landing page of the PDU. You can also access this page by hovering over the **Status** icon and clicking **Dashboard**, or by clicking the **PowerPak** circle in the upper-left corner. This page displays the MAC and IP addresses, current voltage/frequency/current, outlet status, and temperature/humidity with the temperature sensor.



Dashboard for an individual outlet:



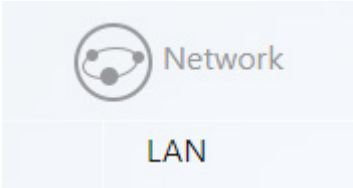
- The information fields display the outlet name, current, power, peak current measured since the last reset, and power on/off delay times. A red border will be displayed around the outlet when it is in an alert condition.
- **Power cycle** Click to reboot (power off/on) the outlet.
- **Reset peak** Click to reset the measured peak current to 0.

System Log

Click to view the System Log. The log displays a list of power events that have occurred since last reset.

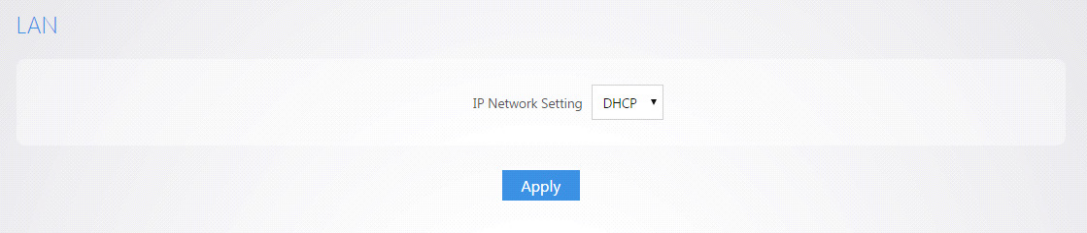
Network

This section contains settings for the PowerPak's network settings.



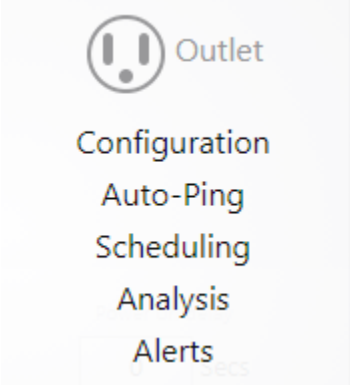
LAN

IP network setting configures the IP network setting of your PowerPak (DHCP or static IP). The default setting is **DHCP**.



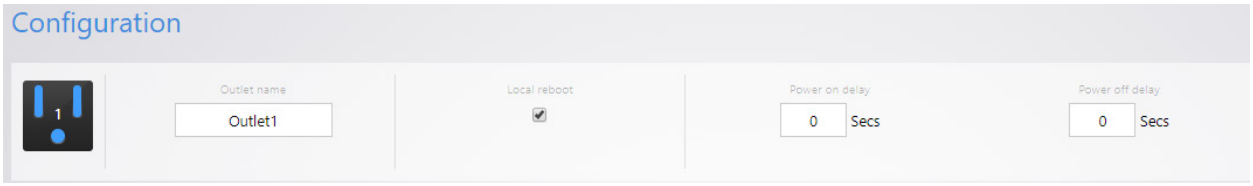
Outlet

This section contains outlet configuration and management menus, including schedules and alerts.



Configuration

Configure the name, local reboot, auto ping reboot, power on/off delay for each individual outlet.



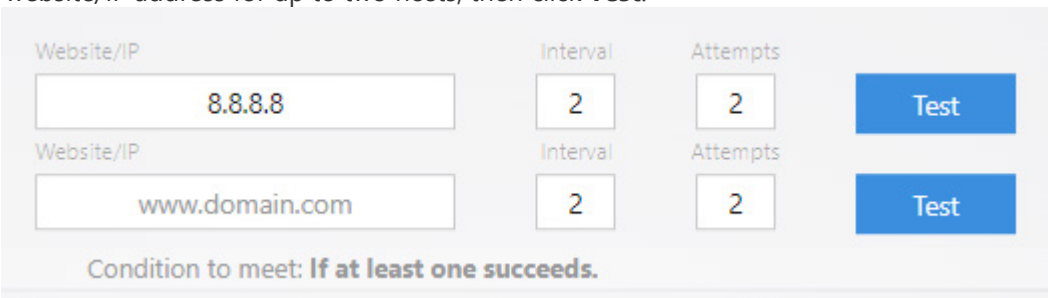
- **Outlet name**: Specify an outlet name. For example, if you connect a 24-Port switch to Outlet1, you can rename Outlet1 to "24-Port-Switch".
- **Local reboot:** Enable/disable local reboot. When enabled, pressing the center button on the front of the PDU for 2 seconds will reboot this outlet.
- **Power on delay:** The time, in seconds, that the outlet will wait before powering on in order to ensure that not all the devices connected to the PowerPak will power on at once.
- **Power off delay:** The time, in seconds, that the outlet will wait before powering off.

Auto-Ping

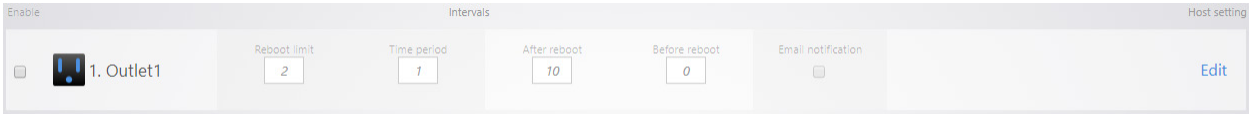
Configure the default host settings and the auto-ping and reboot settings for each outlet.

Default host settings

Enter the website/IP address for up to two hosts, then click **Test**.



Outlets



- **Enable** (auto-ping and reboot): Enable/Disable auto ping and reboot. If this feature is enabled, the PowerPak will ping the destination every 1 second. If the ping fails the specified number of attempts, the outlet will be rebooted.
- **Reboot limit:** Maximum number of times the outlet will be power cycled within the specified time period.
- **Time Period:** Specify the time, in hours, for the *Reboot limit* above.
- **After reboot:** Number of minutes to wait after rebooting the outlet before allowing another reboot.
- **Before reboot:** Number of minutes to wait before rebooting when a reboot is triggered.

- **Email notification:** Select to automatically send an email whenever the outlet is power cycled as a result of failed auto-pings.
- **Edit:** If auto-ping is enabled for the outlet, click **Edit** to define host settings for the outlet.

Scheduling

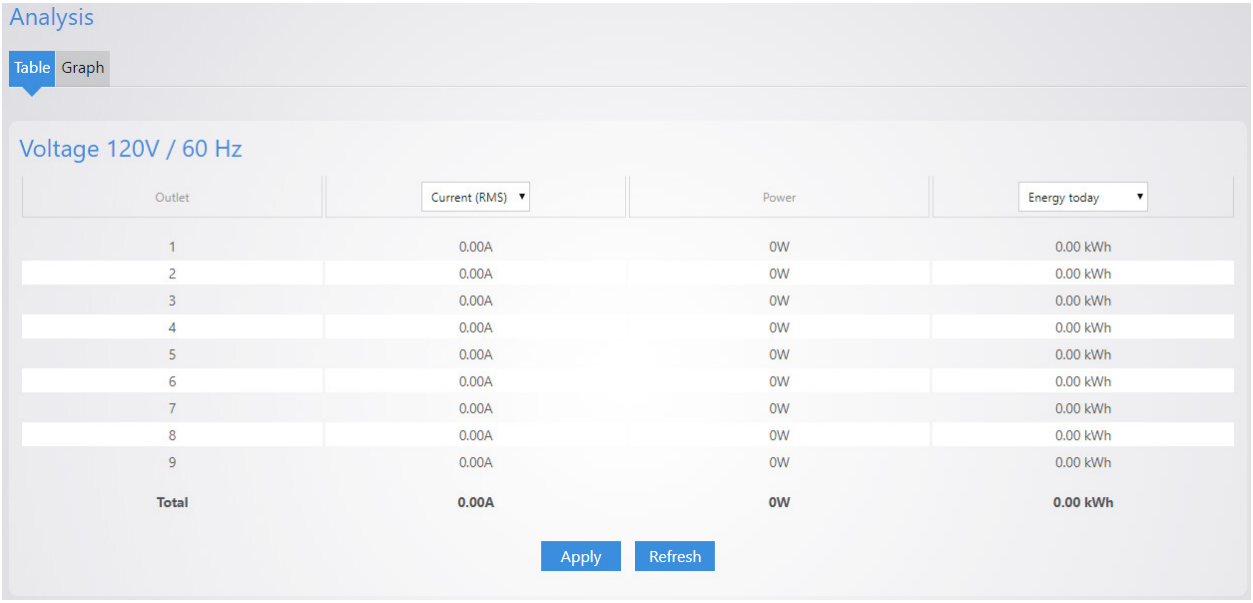
Configure the Power on/Power off/Power cycle schedule for each outlet.

- **Enable:** Select to enable scheduling for the outlet.
- **Action:** Select the action you want to schedule for this outlet. The options include Power off, Power on, and Power cycle.
- **Days:** Select the days to perform this action.
- **At:** Set the time to perform this action.
- (Add)**:** Click the button to add more schedules. Up to four schedules are allowed per outlet.

Analysis

Analyze the current and power consumption for each outlet.

Table view



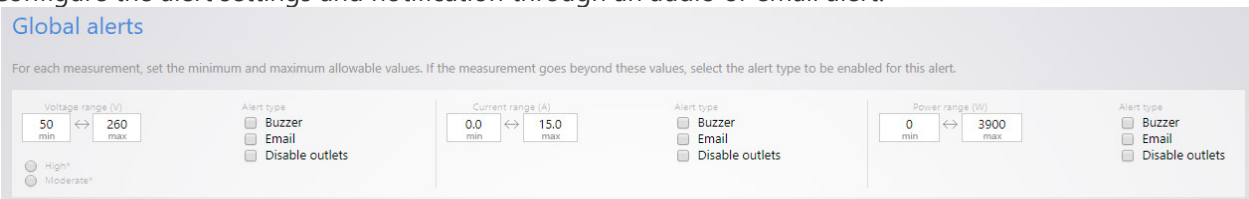
- **Current:** Click to display either current (RMS) or current (peak).
- **Power:** Displays the power consumption.
- **Energy:** Select the time duration in the drop-down menu to display the energy sourced by that outlet.

Graph view

- **Outlet:** Select the outlet (or **All**) to display data for.
- **Time:** Select the time range (**Now**, **Day**, or **Week**) to display data for.
- **Measurement**: Select the measurement unit (**Current** or **Power**).
- **Apply**: After changing any of the above settings, click **Apply** to recompute the graph.

Global alerts

Configure the alert settings and notification through an audio or email alert.

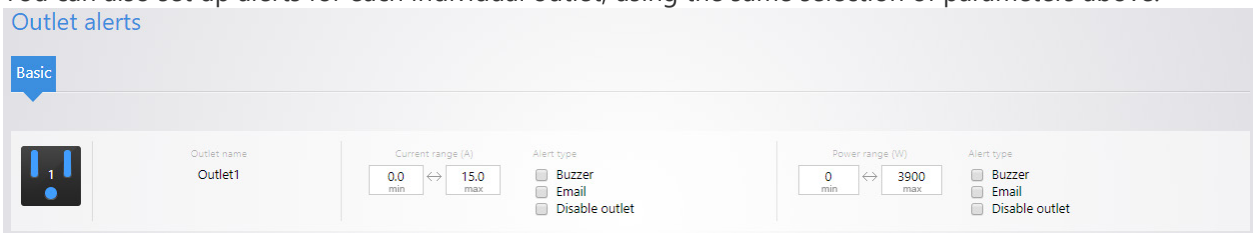


For each measurement, set the minimum and maximum allowable values. If the measurement goes beyond these values, an alarm buzzer can be enabled and/or an email can be sent for this alert. You also have the option to disable all outlets if the alert condition occurs.

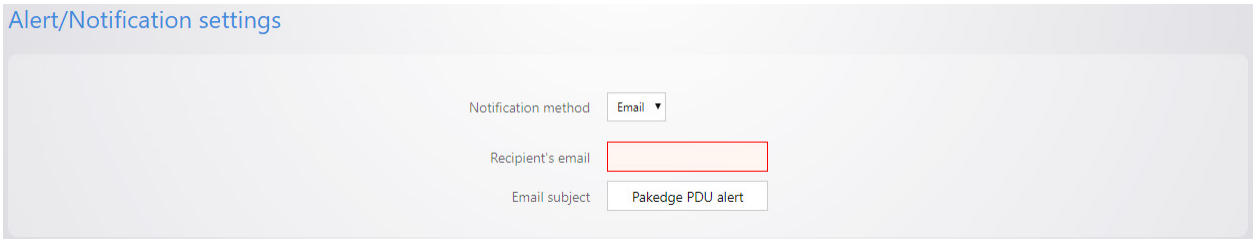
- **Voltage range (V):** Configure the minimum and maximum allowable input voltages.
- **Alert type:** Select the alert type to use. You can select multiple types.
- **Current range (A):** Configure the minimum and maximum allowable input currents.
- **Power range (W):** Configure the minimum and maximum allowable power consumption.
- **Temp range (C):** Configure the minimum and maximum allowable temperatures. **Note:** Available only when a temperature sensor is used.

Outlet alerts

You can also set up alerts for each individual outlet, using the same selection of parameters above.



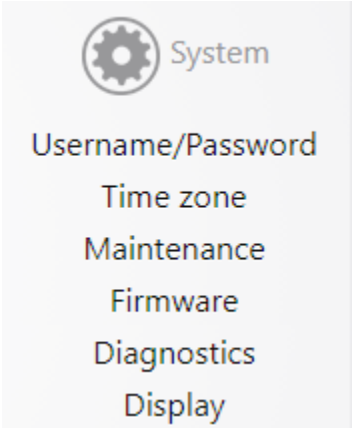
Alert/Notification settings



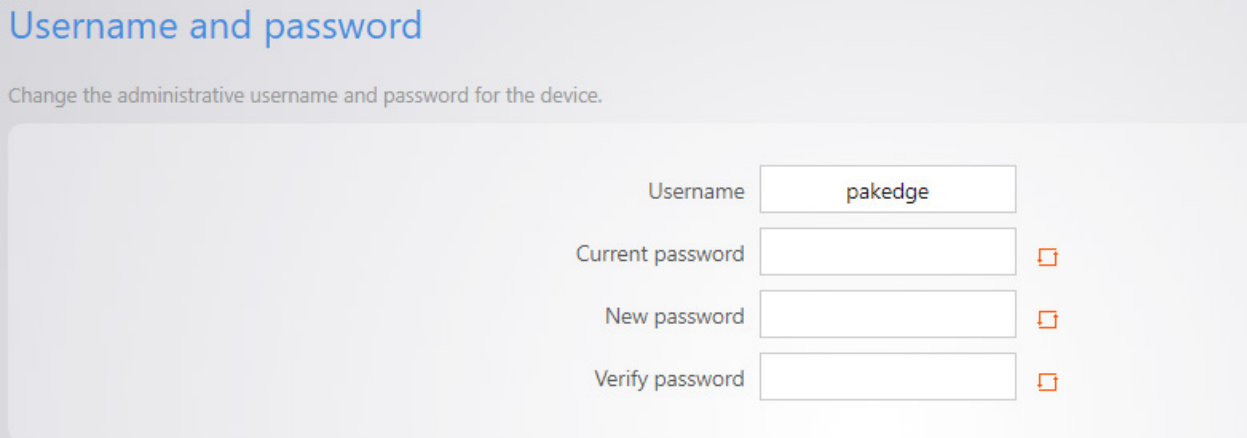
- **Notification method:** Select method of alert to use.
- **Recipient's email:** Enter the recipient's email address.
- **Email subject:** Type the text you want to appear in the message's *Subject:* field.

System

This section contains menus to modify your personal account settings and update your firmware.

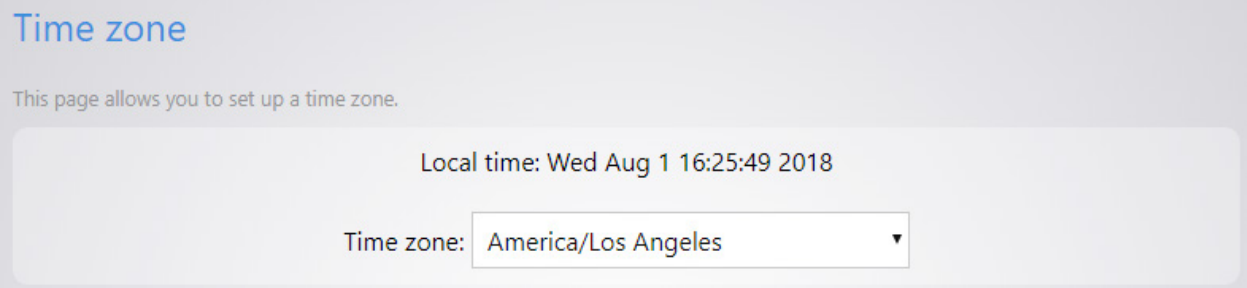


Username/Password



- **Username:** Enter a username up to 15 characters.
- **Current password:** Enter the current password.
- **New password:** Enter the new password.
- **Verify password:** Enter the new password again.

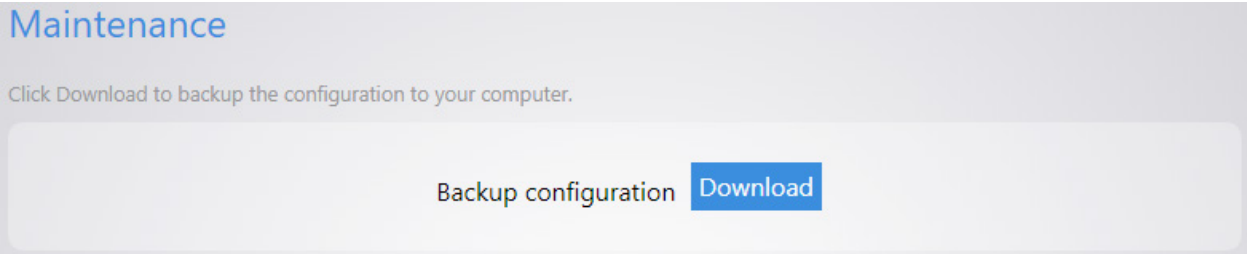
Time zone



- **Time zone:** Select the time zone to use for system reporting and logging.

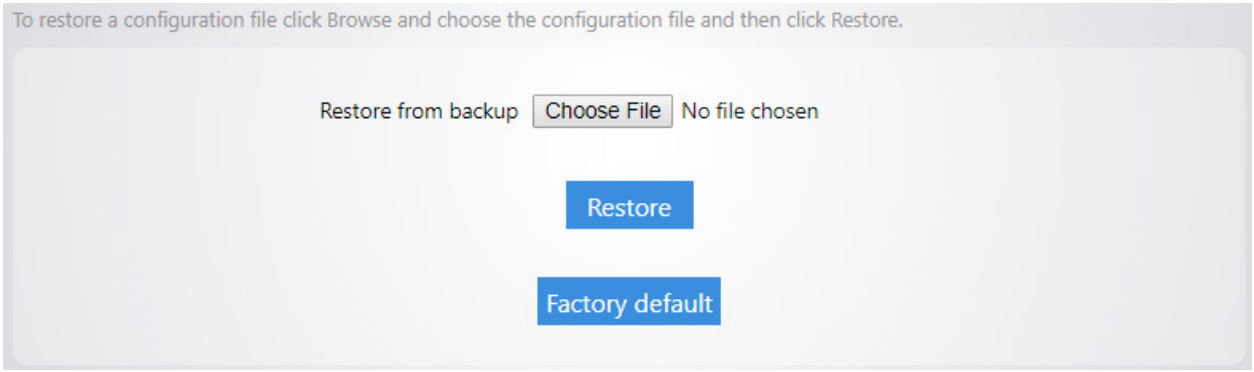
Maintenance

Back up the configuration



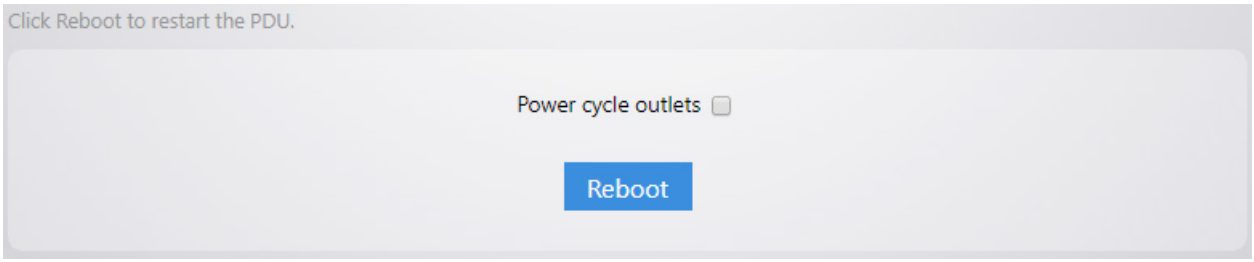
- **Back up configuration:** Click **Download** to back up the PowerPak's configuration file to your computer.

Restore the configuration



- **Restore from backup:** Click **Choose File** to select the appropriate configuration to restore.
- **Restore:** Click to restore the PowerPak configuration using the selected file.
- **Factory default:** Click to restore the PowerPak's default factory settings. All changes made to the system will be lost.

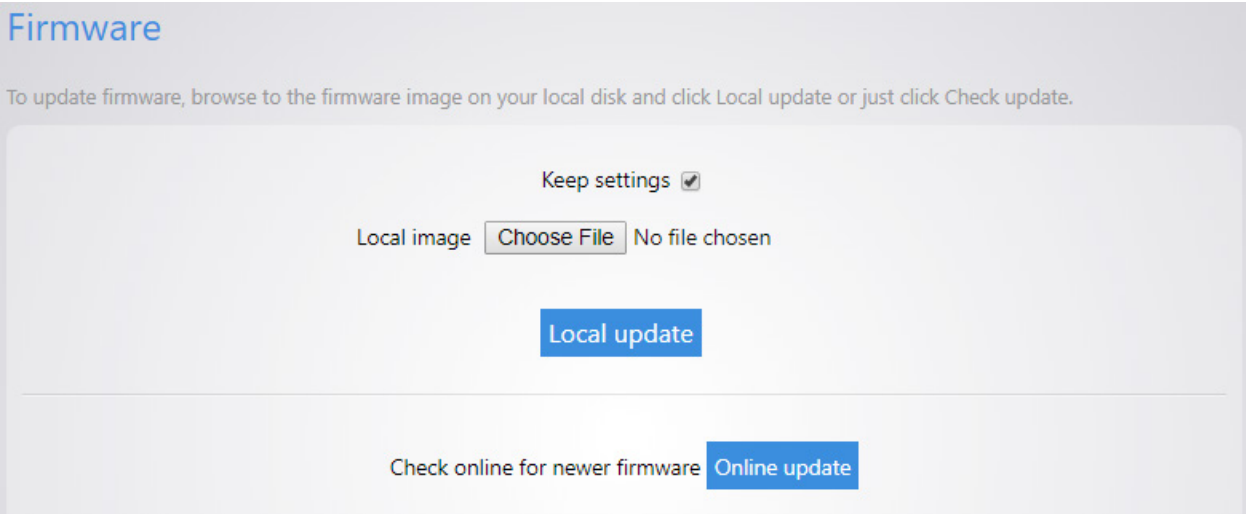
Manually reboot the PowerPak



- **Power cycle outlets:** Select to power cycle the outlets while the PDU reboots. If this is *not* selected, PDU outlets will still be powered during the PDU reboot.
- **Reboot:** Click to reboot the PDU.

Firmware

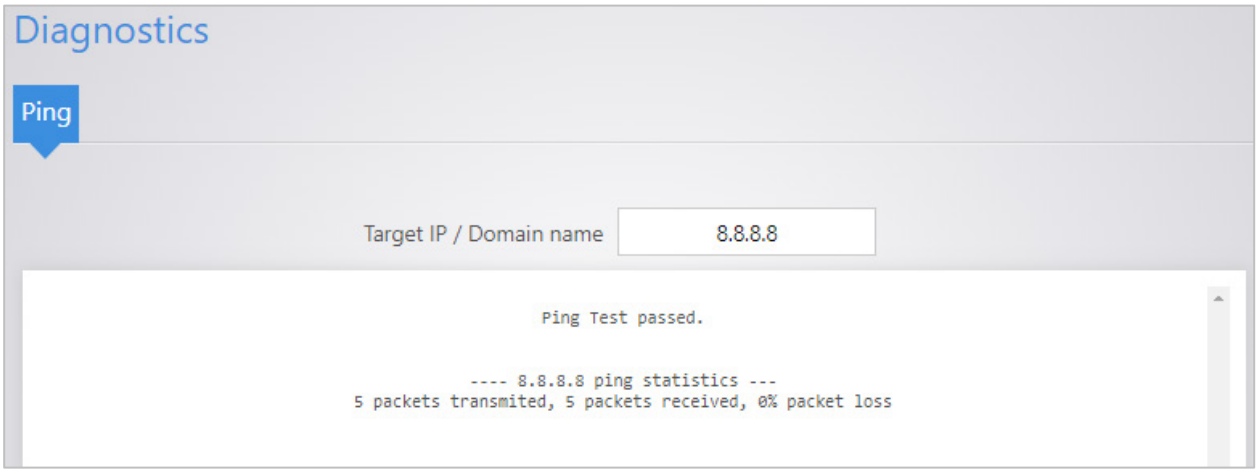
Allows you to update the PDU firmware.



- **Keep settings:** Select to preserve your current configurations after the firmware update. **Note:** If this is not selected, the personalized settings will be lost.
- **Local image:** Click Choose File to select the firmware update file.
- **Local update:** When the firmware file is selected, click to update the firmware.
- **Online update:** Click to check online for an update and automatically install the new firmware. This feature works only if the PDU is connected to the internet.

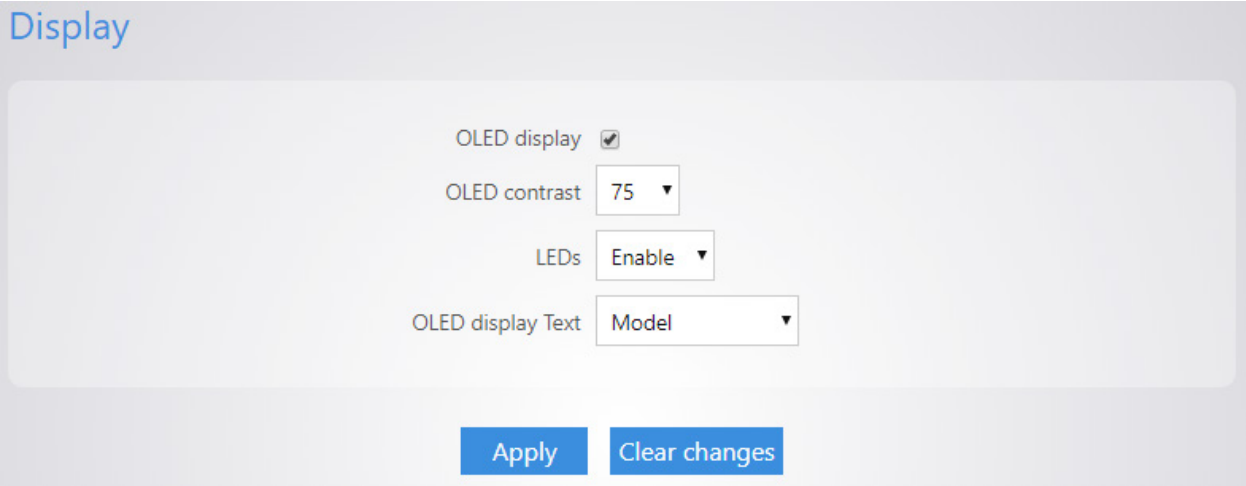
Note that you may also upgrade the firmware via telnet from the SD Card if it is present. The firmware file must be saved to the root directory of the SD Card.

Diagnostics



- **Target IP / Domain name:** Enter the IP or domain name to use for the ping test.
- **Start:** Click to start the text.

Display



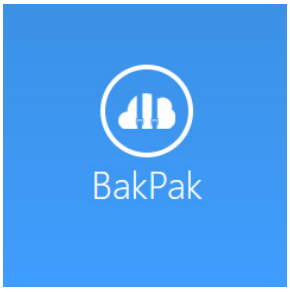
- **OLED display**: Select to enable the OLED display .
- **OLED contrast**: Set the OLED contrast to **25**, **50**, **75**, or **100**.
- **LED**: Set the LEDs to on (**Enable**), off (**Disable**), or **Dim**.
- **OLED display text:** Select the type of information you want displayed on the PDU's OLED.

Add PowerPak to a BakPak account

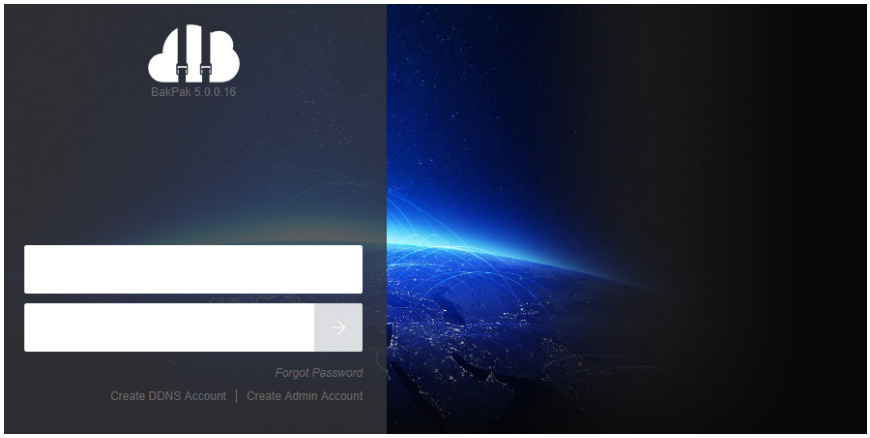
Your PowerPak has BakPak Lite built in. BakPak Lite enables you to manage the PDU remotely. (If the network site also has a full-BakPak-enabled device, you will be able to manage the entire network remotely.)

To add the PDU to a BakPak account:

1. In the PDU's Dashboard, click the **BakPak** tile.



The BakPak cloud login page opens.



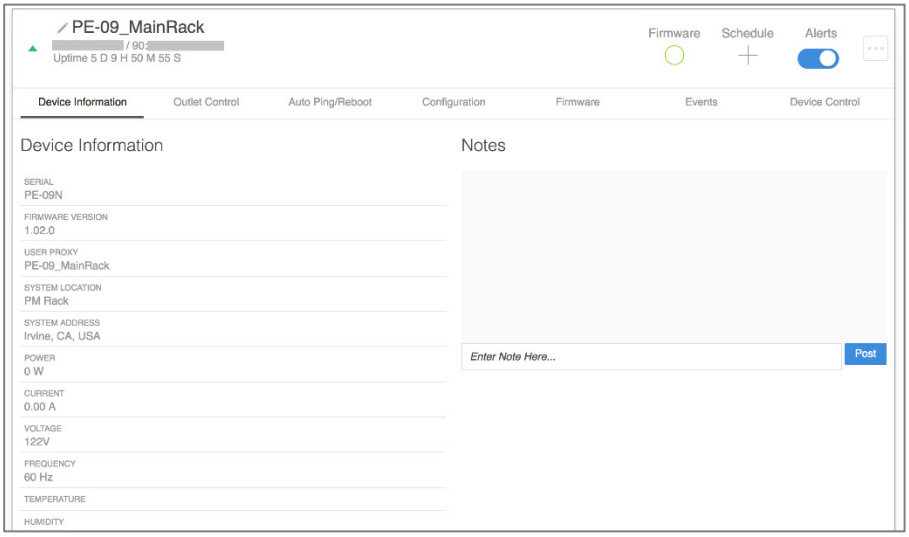
2. If you already have a BakPak account, enter your credentials here, then click the arrow to log in. If you do *not* have a BakPak account, click **Create Admin Account** and follow the on-screen instructions to set up your account.
   After scanning for devices, BakPak will find the PDU and add it to the list of manageable devices. Your PDU will look like this:

Manage the PowerPak from a BakPak account

After you log in to your BakPak account, you can manage your PowerPak remotely.

To manage your PowerPak through BakPak:

1. Log in to BakPak and select the site that contains the PowerPak.
2. Click to select the PowerPak. Several tabs open below the device name.



3. Here you can change the following settings:

- Alerts on/off
- Schedule (per outlet): Enable, action, days, time
- Device information: Serial number, firmware version, location & address, power draw, current, voltage, frequency, temperature, humidity
- Outlet Control: Turn off, power cycle, rename port
- Auto Ping/Reboot: Website/IP, time interval, attempts, enable, reboot limit, time periods, email notifications
- Configuration: Save configuration, restore (apply) a saved configuration, delete
- Firmware: Current version, update available
- Events: Event log “From” and “To” date select, refresh
- **Device Control:** Reboot device, reboot outlets

For more information on using BakPak, see the *Bakpak User Guide*.

Troubleshooting

Symptom	Possible causes	Solution
PowerPak has no power.	PowerPak is not turned on.	Press power button on front of the PowerPak. If the PowerPak is connected to wall outlet controlled by a light switch, make sure the light switch is on.
	An incompatible power supply is being used.	Use the power supply that came with the PowerPak.
Connected device not receiving power.	The device is connected to an outlet that may be turned off via the UI configuration.	Check status of the outlet from the UI Dashboard and click the outlet to turn it on if showing off. Verify the outlet is configured from the *Scheduling* page. Press the PowerPak's power button to make sure it is not in Sleep mode.
Not receiving email notifications for outlets.	'Email Notification' check box from Auto Ping page is not selected.	If using auto ping, navigate to the *Auto-Ping* page and select **Email Notification**, then enter your email credentials on the *Alerts* page.
	"Email" check box is not selected from Alerts page.	If using an Alerts configuration, navigate to the *Alerts* page and verify that **Email** has been selected and that email credentials have been entered.
When plugging in the PowerPak, "Polarity" error message is displayed on the OLED	Inlet power cord has been connected with reverse polarity Line and neutral polarities are reversed in the wall outlet	Connect the inlet power cord with the correct polarity by rotating the plug 180 degrees. Polarity error message should not be displayed

Specifications

PowerPak specifications	
Input voltage/current	PowerPak 9: Input: **100-120VAC, 50~60Hz, 12A** PowerPak 8I: Input: **100-240VAC, 50~60Hz, 10A**
Output voltage/current	PowerPak 9: Output: **100-120VAC, 12A total and per outlet, 50~60Hz, 1440W (total)** PowerPak 8I: Output: **100-240VAC, 10A total and per outlet, 50~60Hz, 2400W (total)**
Inlet type	IEC60320 C14
Outlet type	PowerPak 9: NEMA 5-15R PowerPak 8I: IEC60320 C13
Circuit breaker	PowerPak 9: 15A PowerPak 8I: 12A
Dimensions	17.15 x 11.48 x 1.75 W x L x H
Console port specs	Baud Rate: 115200, 8 Data bits, No parity, 1 stop bit, no flow control
SD Card reader	SD card must be formatted to FAT32
Network protocols	ICMP, IP, TCP/UDP, DHCP, Telnet, DNS, SMTP, HTTP
Network management	BakPak Lite built in
Display	OLED display, surge protection LED, outlet LED
Operating temperature	32°F to 122°F (0°C to 50°C)
Storage temperature	-13°F to 140°F (-25°C to 60°C)
Humidity	10-90% RH

Package contents

- PowerPak Power Distribution Unit
- Power cord
- Rack mount brackets and screws
- Quick Start Guide
- Ethernet cable
- Console cable
- Rubber feet

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U.S.A

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