Rack Ears
3 Mounting Options
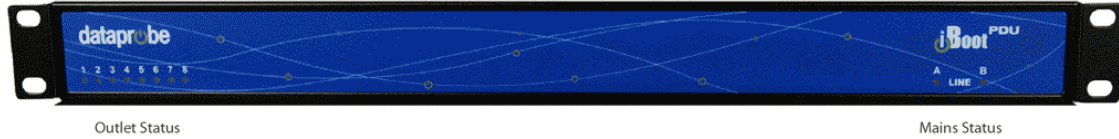
Outlet Status

Mains Status

## iBoot-PDU8S-C10

Circuit Breaker(s)

4 x USB-A Expansion
Environmental Sensors
External Modems

CEE-7
Linecord
Supplied

IEC-320 C14
Power Inlet
10 Amps

8 x IEC-320 C13
Receptacles 10 Amps

USB-B
Serial Port
Battery Backup

2 x 1G Ethernet
- Web - Telnet
- SNMP - AutoPing

## iBoot-PDU8-N15

Circuit Breaker(s)

4 x USB-A Expansion
Environmental Sensors
External Modems

Line Cord
NEMA 5-15P

8 x NEMA 5-15R Receptacles

USB-B
Serial Port
Battery Backup

Network
- Web - Telnet
- SNMP - AutoPing

## iBoot-PDU4S-N15

4 x USB-A Expansion
Environmental Sensors
External Modems

Line Cord
NEMA 5-15P

Circuit Breaker

4 x NEMA 5-15R Recepticals

USB-B
Serial Port
Battery Backup

2 x 1G Ethernet
- Web - Telnet
- SNMP - AutoPing

iBoot-PDU is a series of intelligent, switched and metered power distribution units (PDUs). iBoot-PDUs feature a clear easy to use web browser interface that make it easy to manage A/C power from any location. There are a host of automation and reporting features that make the iBoot-PDU an outstanding choice for any applicatrion.

This manual covers all models of the iBoot-PDU product family. See Appendix A for a complete list of models, SKUs and feature sets for each model.

iBoot-PDU_v230829w

# Table of Contents

# 1. Important Safety Information

When using this product, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons, including the following:

**Disconnect all power cords before servicing!**

1. Read and understand all instructions.
2. Follow all warnings in the manual and marked on the product.
3. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this product in an outdoor environment or near water, for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
5. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
6. Slots and openings in this product and the back or bottom are provided for ventilation to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on the bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your dealer or local power company.
8. This product is equipped with a three wire grounding type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug. Do not use a 3-to-2 prong adapter at the receptacle; use of this type adapter may result in risk of electrical shock and/or damage to this product.
9. Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
10. Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.
11. Never push objects of any kind into this product through slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock. Never spill liquid of any kind on the product.
12. To reduce the risk of electrical shock, do not disassemble this product, but take it to a qualified serviceman when some service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect re-assembly can cause electric shock when the appliance is subsequently used.
13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
    a) When the power supply cord or plug is damaged or frayed.
    b) If liquid has been spilled into the product.
    c) If the product has been exposed to rain or water.
    d) If the product does not operate normally by following the operating instructions. Adjust only those controls, that are covered by the operating instructions because improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
    e) If the product has been dropped or has been damaged.
    f) If the product exhibits a distinct change in performance.
14. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
15. Do not use the telephone to report a gas leak in the vicinity of the leak.
16. Do not exceed the maximum output rating of the auxiliary power receptacle.

| | |
|---|---|
| **Independently controllable outlets** | The iBoot-PDU series is designed to provide power distribution and remote power control.  Each iBoot-PDU allows four or eight outlets to be independently switched on and off for reboot, energy management and security.  The iBoot-PDU has many features to make the management of power distribution simple and cost effective. |
| **Dual power inputs for redundant power feeds (some models)** | Models with dual inputs (-2N15, -2N20, -2C10, -2C20) have two A/C Lines (mains).  Each line powers four outlets Line A supports outlets 1-4 and Line B feeds 5-8.  Dual power inlet models can be used to support higher current devices, as each inlet can carry its rated load, doubling the amperage of a single inlet device.  Dual Inlet models can also be used to source power from two redundant sources, with each source feeding a power supply of a single device.  Either Line can support the electronics of the iBoot-PDU, adding additional reliability in case of a single line failure. |
| **Support for dual redundant powered devices** | In addition to two power sources, pairs of outlets can be grouped together to allow simultaneous control.  This allows a single command to power down devices with dual redundant power supplies. |
| **Web Browser Control** | Simple web browser interface is easy to use and provides complete status information and control of the outlets, and setup. |
| **Free Cloud Service Included** | All your PDUs and other iBoot power systems can be monitored and controlled from a single web interface.  Find, select and control one or hundreds of locations with a single sign on. |
| **Built-in 1G Ethernet Switch** | Put iBoot-PDU on existing router ports and eliminate the need for additional cabling and installation costs. |
| **Telnet/Serial CLI control** | Telnet and serial access use the same Command Line Interface (CLI) structure and syntax to completely control and configure the iBoot-PDU. |
| **Additional Control APIs** | The PDU supports Dataprobe's proprietary DxP protocol, making it easy to integrate with other power and GPIO devices.  A RESTful API also allows easy integration into existing management systems. |
| **Multiple users with assigned rights and simultaneous control** | Multiple users can be assigned administrator or user only rights, plus access to specific outlets and groups.  Users only see the outlets and groups they are assigned to. |
| **Grouping of outlets for simultaneous management** | Multiple outlets, across multiple iBoot-PDUs can be linked together in named groups and managed together.  This allows for example, power cycling all devices of a certain type together. |
| **Multiple iBoot-PDU Cluster Configuration** | Additional iBoot-PDUs can be managed from a single unit.    One master iBoot-PDU provides the communication to the users and continuously receives status information from the rest of the iBoot-PDUs in the cluster.  Groups can be created across multiple PDUs and controlled simultaneously. |

| | |
|---|---|
| **Environmental Monitoring and Automation** | The iBoot-PDU can monitor voltage, current and temperature to provide automatic response to the physical environment. Program complex sequences of outlet actions and notifications to respond instantly to out of normal situations. Temperature monitoring requires add-on probes. |
| **AutoPing for automatic reboot of crashed systems** | Monitor and react to failed equipment and networks by testing responses to multiple IP addresses and auto-reboot failed systems. |
| **Real-Time event control** | Set automatic power actions based on your schedule. Restart systems every day to reduce memory bloat. Power up resources only when needed for energy management, lifecycle extension or security. |
| **Landline Modem Option** | The add-on landline modem supports data calls from terminal devices using the CLI, and direct dial from a tone telephone for simple on/off control when more sophisticated means are not available. |
| **SNMP manageable** | iBoot-PDU Supports SNMP up to V3. The iBoot-PDU MIB is downloadable from the website. |
| **Syslog reporting** | All activity can be reported to a syslog compatible server. |

# 3. Quick Start

## 3.1. Front Panel

### 3.1.1. 8 Outlet Models
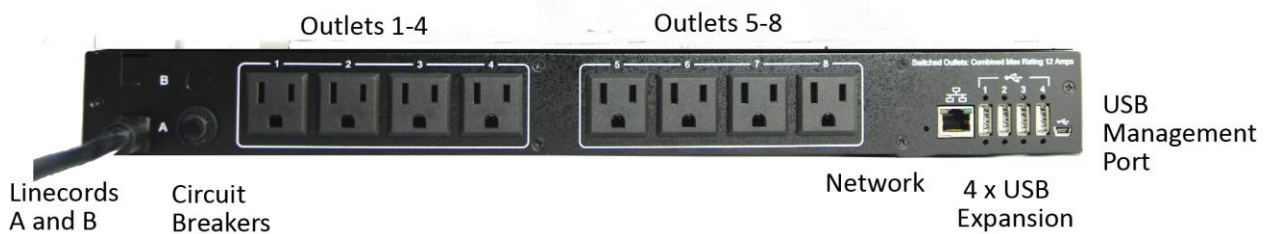


Outlet
LEDs 1-8

Line LEDs

### 3.1.2. 4 Outlet Models



Outlet
LEDs 1-4

Line LED

## 3.2. Rear Panel – NEMA Versions

### 3.2.1. 8 Outlet Models



Outlets 1-4
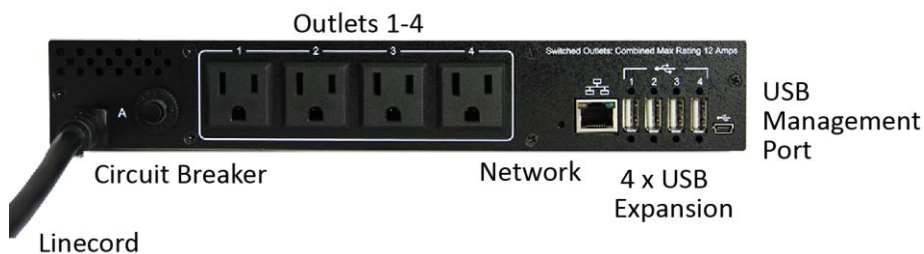
Outlets 5-8

USB
Management
Port

Linecords
A and B

Circuit
Breakers

Network

4 x USB
Expansion

### 3.2.2. 4 Outlet Models



Outlets 1-4

USB
Management
Port

Circuit Breaker

Network

4 x USB
Expansion

Linecord

### 3.3. Rear Panel – IEC Versions

#### 3.3.1. 8 Outlet Models



#### 3.3.2. 4 Outlet Models



### 3.4. Quick Start Defaults

**IP address**            DHCP Assigned or 192.168.1.254
**User Credentials**
Version 1.38 and below..... Username:  admin ..... Password:  admin

Version 1.39 and above .... Username:  admin ..... Password:  admin<last 3 Mac segments>
    ( If Mac address is **01:02:03:04:ab:06** then default Password is **admin04ab06 )**
     **ALL passwords are case sensitive**

Command Line Quick Start:
To view outlet status            iBoot-PDU> get outlets
To turn on off outlet 1          iBoot-PDU> set outlet 1 off
To reboot outlet 2             iBoot-PDU> set outlet 2 cycle

### 3.5. Changing the IP Address

The iBoot-PDU is factory default to obtain an IP address from a DHCP server, if one is found at startup.  If a DHCP server is not found, the unit will default to IP address 192.168.1.254. There are several ways to set the IP Address.

### 3.5.1. Device Management Utility

 Obtain the Device Management Utility (DMU) from Dataprobe's website at:
 **http://dataprobe.com/support-iboot-pdu/**
Open the DMU on a PC on the same physical network as the iBoot-PDU and select **Device > Discover** to display the current IP Address of the iBoot-PDU. Select **Set > Network Settings** to change the network settings.  The IP settings can only be set with the DMU within the first two minutes of powering up the iBoot-PDU.  The DMU will only work with iBoots on the same physical subnets as the PC

Complete instructions for the DMU are available online **http://dataprobe.com/support-dmu/**
Link also located within the DMU under Help -> Online Help

### 3.5.2. Web Page Setup

From the home page (Dashboard), click on Device -> IP Addresses.  Enter the new IP Address, Subnet Mask, Gateway and DNS, then click Save.  Reboot the iBoot-PDU to restart with the new settings.  To lock the settings, select IP Mode = Static.  If IP Mode remains or is programmed to DHCP, the iBoot-PDU will obtain an address from a DHCP Server as soon as it finds one. (Device->Information->Reboot)
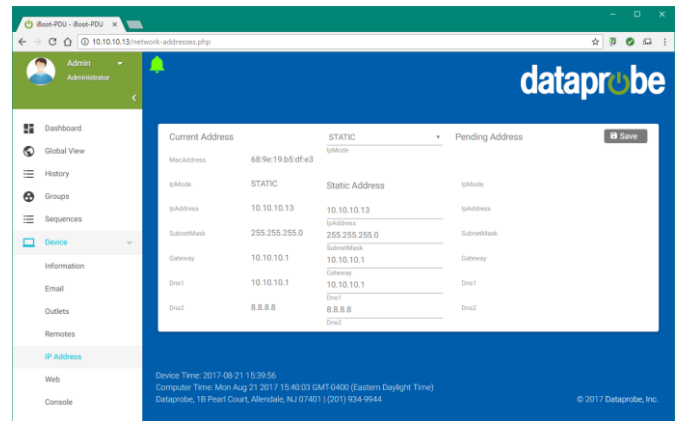
### 3.5.3. Telnet

See Section 9 for telnet commands to set the IP address and related settings.

## 3.6. Web Browser Control

The iBoot-PDU web interface provides the easiest means of operating the outlets and monitoring the current status of the units.  One or more outlets can be simultaneously controlled with a few mouse clicks.

To Control any of the outlets, From the Dashboard screen, highlight the outlet(s) to be controlled with a mouse click, then click on the desired Action Buttons ON – OFF - CYCLE

When Cycle is selected, the outlet(s) will cycle for the amount of time set (default 10 Seconds).  When more than one outlet is controlled to turn on, there will be a delay between outlets turning on, as set by the delay setting (default 1 second).
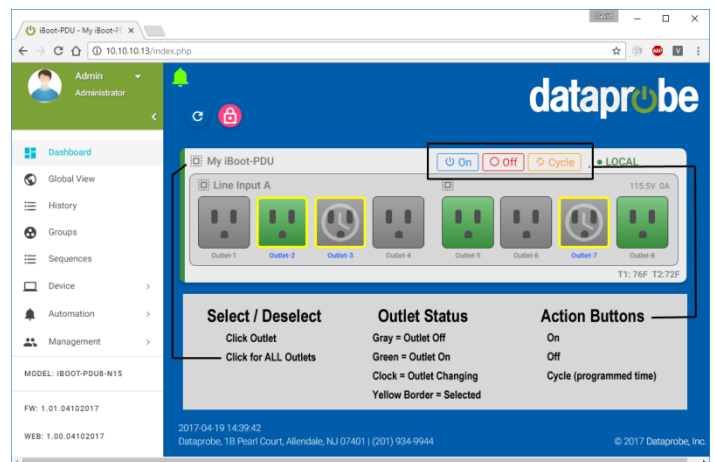
# 4. Installation

## 4.1.    Rack Mounting

The iBoot-PDU is designed for mounting in a standard 19" equipment cabinet.

There are two L-shape brackets marked as "L" and "R", install the "L" bracket on the left side of the iBoot-PDU chassis then the "R" bracket on its right side.



**Installed L bracket:**                                                    **Installed R bracket:**

Install the iBoot-PDU to the standard 19-inch rack.

## 4.2.    Ethernet

The iBoot-PDU has a 10/100 Ethernet port.   The default address is 192.168.1.254 or as set by a DHCP Server on initial power up.

Models with an **S** designation have dual 1G Ethernet ports.  Either port can be used for uplink or downlink functions.  See Appendix A for a complete list of models and configurations.
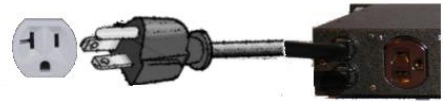
## 4.3.    Power Source

The **iBoot-PDU4-N15 and iBoot-PDU8-N15** provide a linecord for connection to a 15 Amp 115VAC service. The total maximum current load for all outlets on these models  cannot exceed 15 Amps, 12 Amps sustained load
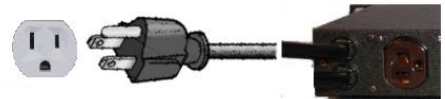


The **iBoot-PDU8-2N15 provides** two linecords for connection to 15 Amp 115VAC services. The total maximum current load for outlets on any linecord cannot exceed 15 Amps, 12 Amps sustained load. Each linecord distributes power to four outlets.
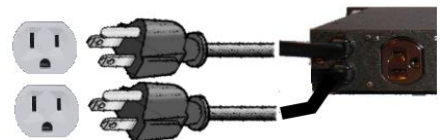
The **iBoot-PDU4-N20 and iBoot-PDU8-N20** provide a linecord for connection to a 20 Amp 115VAC service. The total maximum current load for all outlets on these models cannot exceed 20 Amps, 16 Amps sustained load.

The **iBoot-PDU8-2N20** provides two linecords for connection to 20 Amp 115VAC services. The total maximum current load for outlets on any linecord cannot exceed 16 Amps. Each linecord distributes power to four outlets.
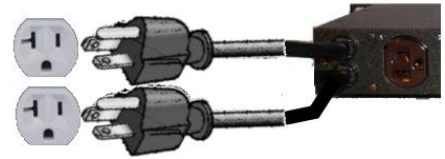
The **iBoot-PDU4-C10 and iBoot-PDU8-C10** are for international applications and can be used on 100V to 240VAC. These models provide an IEC 320 style universal inlet for connecting a detachable power cord. A standard IEC to CEE7 European cord set is supplied with the unit for use on 10 Amp 240VAC service*. The total maximum current load for all outlets cannot exceed 12 Amps at 115VAC or 10 Amps when used at 240VAC.

The **iBoot-PDU8-2C10** is for international applications and can be used on 100V to 240VAC. The iBoot-PDU8-2C10 provides two IEC 320 style universal inlets for connecting a detachable power cord. Two standard IEC to CEE7 European cord sets are supplied with the unit for use on 10 Amp 240VAC service*. The total maximum current load for outlets on any linecord cannot exceed 12 Amps at 115VAC or 10 Amps when used at 240VAC. Each linecord distributes power to four outlets.

The **iBoot-PDU4-C20 and iBoot-PDU8-C20** is for international applications and can be used on 100V to 240VAC. The iBB-C20 provides an IEC 320 C20 style universal inlet for connecting a detachable power cord. A standard IEC to CEE7 European cord set is supplied with the unit for use on 20 Amp 240VAC service*. The total maximum current load for all outlets cannot exceed 16 Amps.

The **iBoot-PDU8-2C20** is for international applications and can be used on 100V to 240VAC. The iBoot-PDU8-2C20 provides two IEC 320 C20 style universal inlets for connecting a detachable power cord. Two standard IEC to CEE7 European cord sets are supplied with the unit for use on 16 Amp 240VAC service*. The total maximum current load for outlets on any linecord cannot exceed 16 Amps. Each linecord distributes power to four outlets.

* Power cords for other countries are available from your local source. If a power cord with a different terminating plug is required, be sure it is properly rated and meets all the required local electrical standards.
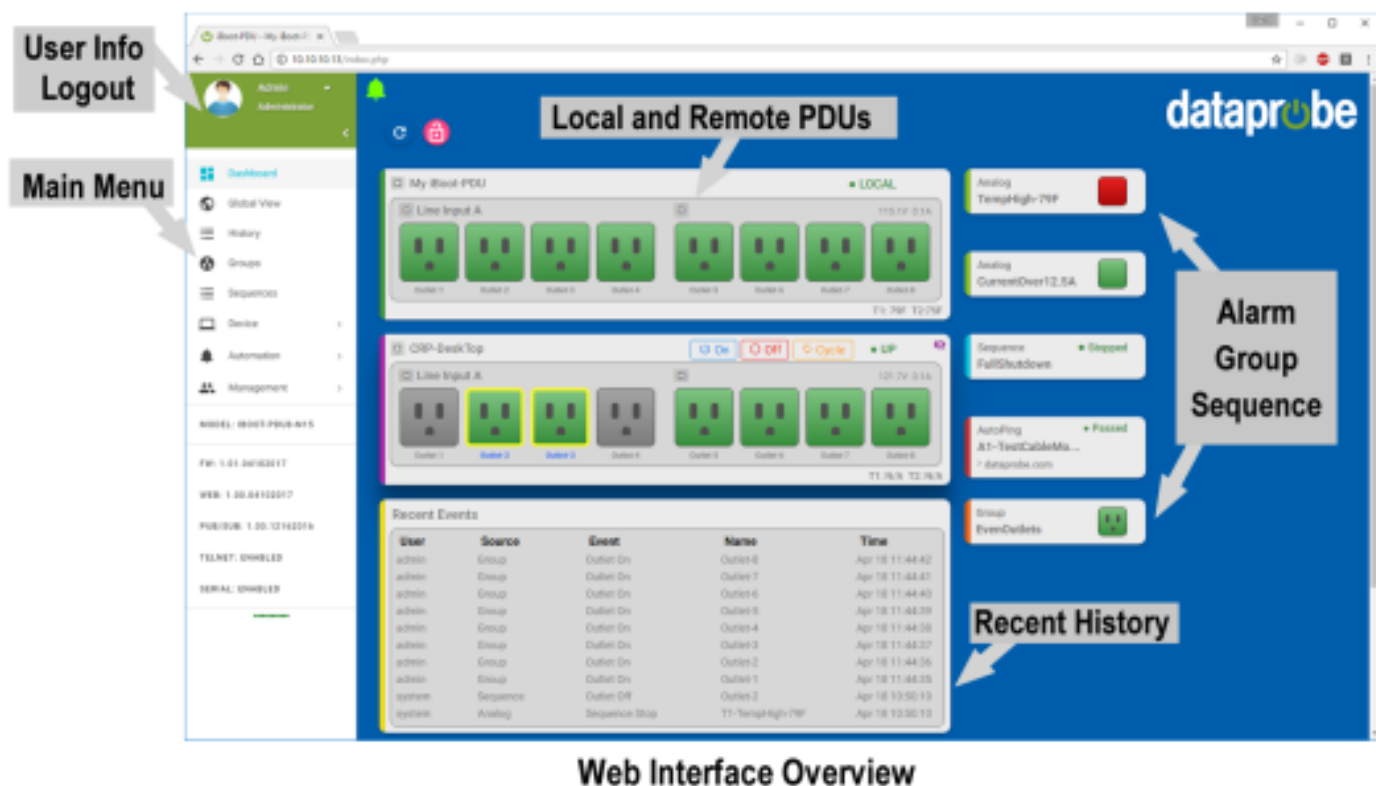
Web Interface Overview

## 5.1. Main Menu

The Main Menu, on the left column is the principal navigation for the web interface.

### 5.1.1. Dashboard

The dashboard provides a quick and easy way to view and manage the outlets, or defined groups of outlets, start and stop any defined sequences, view alarm triggers and view the most recent events. See Section 5.3

### 5.1.2. Global View

The Global view provides a concise view of the outlets and groups. This is especially useful when remote PDUs are being managed. See Section 0

### 5.1.3. History

The History Log details the history of the activities of the PDU. Logs can be sorted, downloaded and deleted. See Section 5.5

### 5.1.4. Groups

The Group page allows the setup and control of groups of outlets, either on one, or across multiple PDUs. See Section 5.6

### 5.1.5. Sequences

The Sequence page allows the setup of sequences of events. Sequences can either be manually controlled or triggered automatically when user defined conditions are met. See Section 5.7

### 5.1.6. Device

The device selection provides access to all the setup of the PDU.  See Section 6.   This selection is only available to users with administrator rights.

### 5.1.7. Automation

The Automation section allows setup of the Analog, AutoPing, and Time based alarm triggering.  See Section 7.  This selection is only available to users with administrator rights.

### 5.1.8. Management

The Management section provides configuration of Users, Cloud Services and additional network management functions.  Firmware updates are also managed in this section.  See Section 8

### 5.1.9. Information Panel

Below the menu is information on the Model, Cloud Active icon, Version, and Status of the Serial and Telnet access methods (enabled or disabled).

## 5.2.   User Info / Logout

The user name and status, Administrator or User is displayed above the Main Menu.  To Logout, click on the down-arrow, then Logout.

## 5.3.   Dashboard

The Dashboard view is the principal means of providing status and control of the iBoot-PDU.  The dashboard is comprised of a series of cards that detail specific aspects of the iBoot-PDU configuration and current status.

Cards can be rearranged to suit the needs of the user and specific cards can be hidden from the dashboard to allow only important information to be presented as the user wishes. Expanded cards have a hide icon in the upper right corner if you would like to hide the card from the dashboard.
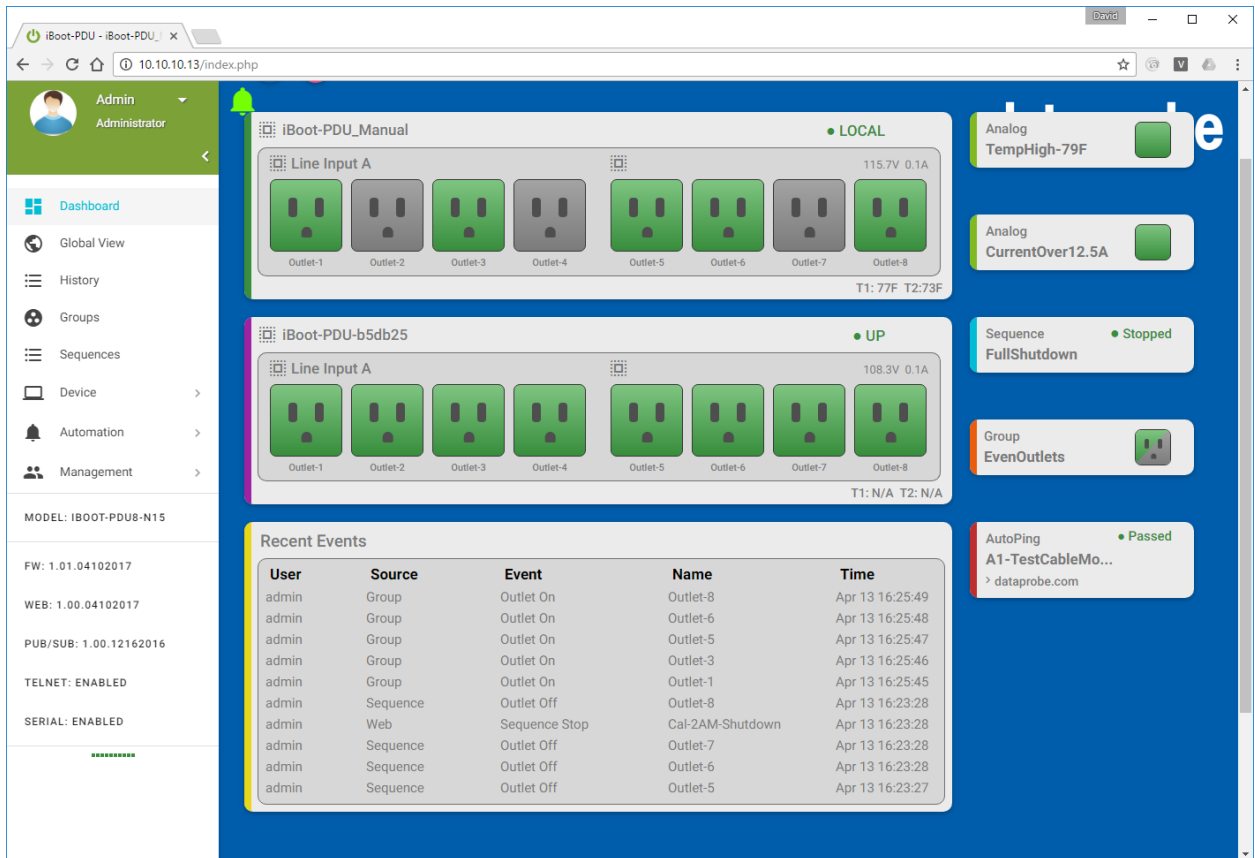
Once the desired layout is achieved, you can lock the repositioning of the cards with the Lock icon. Locked will prevent the cards from inadvertent rearrangement.
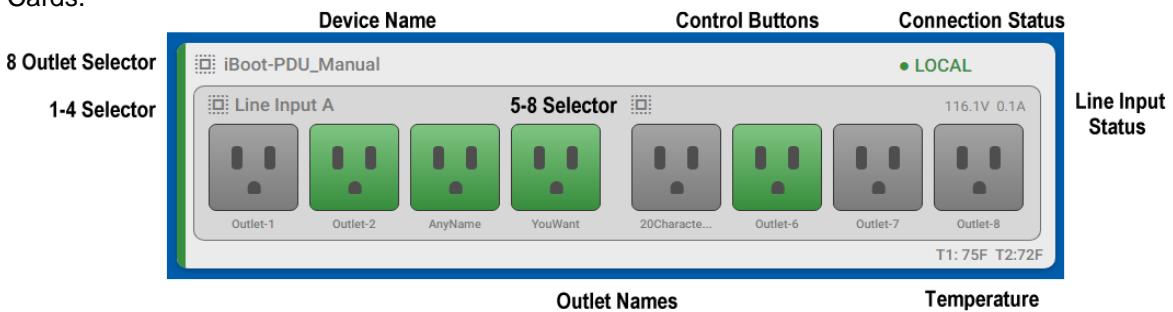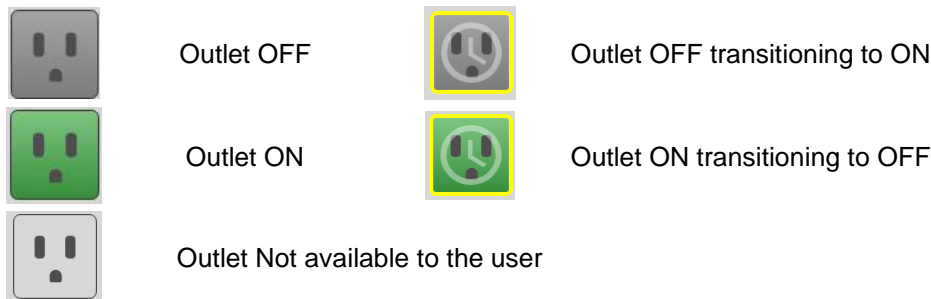
Unlocked          Locked

### 5.3.1. Device Cards:

This card represents the iBoot-PDU outlets, Mains and any temperature sensors that are connected to it.  If additional remote units are associated with this iBoot-PDU, they will be represented by their own Device Cards.



The device card shows each outlet current status of each outlet

  Outlet OFF            Outlet OFF transitioning to ON

  Outlet ON             Outlet ON transitioning to OFF

  Outlet Not available to the user

The voltage and current are displayed on each device card in the upper right hand corner.  PDUs with dual inputs will display the voltage and current for each input in their respective 4 outlet segments

If the optional temperature sensor is installed, the temperature of one or both of the probes of the sensor in the lower right hand corner.  See Section 12.1

### 5.3.2. Selecting and Controlling Outlets

Click on any outlet to select it. The outlet is highlighted when selected. More than one outlet can be selected before power operations are commanded.

⚠️  Make sure only the desired outlets are selected prior to making any power control operation.

Outlets can also be selected by using the ALL/NONE icon located in the upper left hand corner of the Device Card. There are also ALL/NONE icons for outlets 1-4 and 5-8.

Once one or more outlets are selected, the control buttons are available. Select On, Off or Cycle as desired to begin the power control sequence for one or more outlets.

If multiple outlets are selected and the On button is pressed, there will be a delay between each outlet. This delay is user programmable. See Section 6.1.1. Off actions are simultaneous for all outlets selected.

If the same multiple outlets are repeatedly controlled together, it may be advantageous to create a Group of outlets and control them using the group capabilities. See Section 5.6
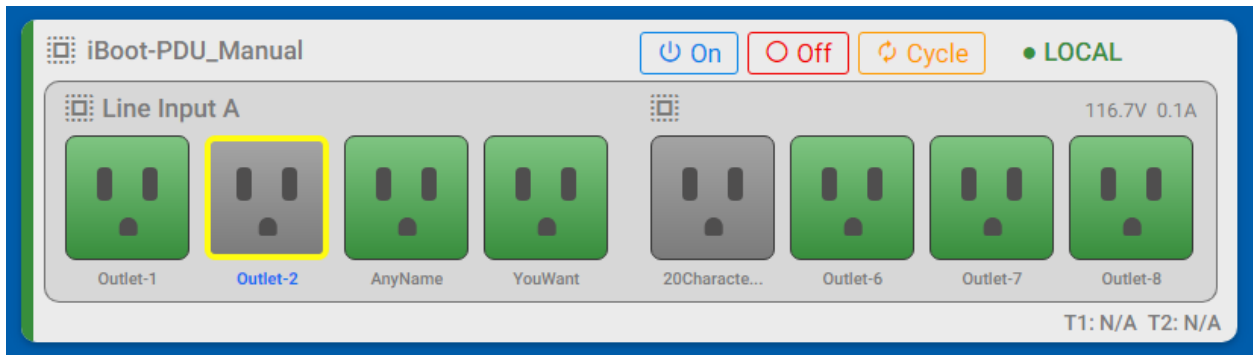


### 5.3.3. Recent Events Card

The Recent Events Card shows the last 10 events of the iBoot-PDU. To view a more complete history, or download and manage history events, select History Log from the Menu.

**Recent Events**

| User | Source | Event | Name | Time |
|------|--------|-------|------|------|
| admin | Group | Outlet Off | Outlet-8 | Apr 11 18:09:57 |
| admin | Group | Outlet Cycle | Outlet-8 | Apr 11 18:09:29 |
| admin | Group | Outlet On | AnyName | Apr 11 18:09:24 |
| admin | Group(EvenOutlets) | Outlet On | Outlet-8 | Apr 11 18:09:07 |
| admin | Group(EvenOutlets) | Outlet On | Outlet-6 | Apr 11 18:09:06 |
| admin | Group(EvenOutlets) | Outlet On | YouWant | Apr 11 18:09:05 |
| admin | Group(EvenOutlets) | Outlet On | Outlet-2 | Apr 11 18:09:04 |
| admin | Web | Group On | EvenOutlets | Apr 11 18:09:03 |
| admin | Group(OddOutlets) | Outlet Off | Outlet-7 | Apr 11 18:09:00 |
| admin | Group(OddOutlets) | Outlet Off | Outlet-7 | Apr 11 18:09:00 |

### 5.3.4. Group Card

The Group card represents a pre-established group of outlets on this device; any configured remote device(s) or a combination of both local and remote devices. The group status is displayed by an outlet icon. In addition to the standard statuses as per any outlet, the group status can also be Mixed with an icon of both gray and green, indicating that the outlets within the group have dissimilar status.

To control a group from the Dashboard, select it by clicking on the card. This will expand the group and present the control buttons:
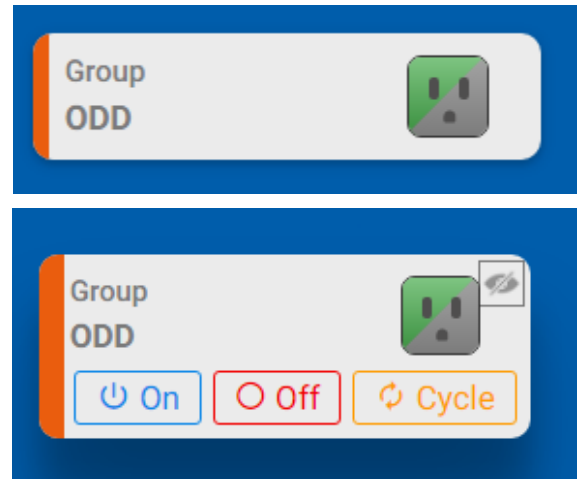
Click on On, Off or Cycle to perform the desired operation. As with multiple selected outlets, the On function will be subject to the Delay time between turning on each of the outlets in the group.

See Section 5.6   for Group Configuration

### 5.3.5. Sequence Card

Sequences are pre-programmed action steps that can be initiated on command, or linked to an Automation Trigger.

The Sequence Card displays the name of the sequence and the current status Stopped or Running.

To control a Sequence, click on the card to expand it and display the RUN or STOP button as appropriate.

See Section 5.7 for more about Sequences
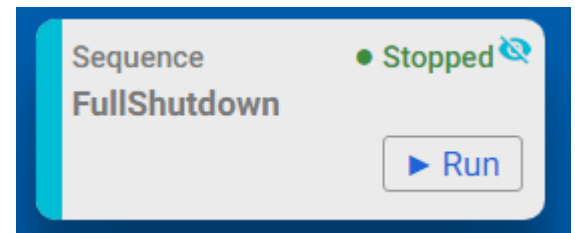
### 5.3.6. Analog Trigger Card

Triggers define the automation settings of the iBoot-PDU. Each trigger represents an aspect of the iBoot-PDU that is continuously monitored, and the condition that sets off one or more actions when that condition is met.

Triggers have three states that are represented on their card that appears on the dashboard.
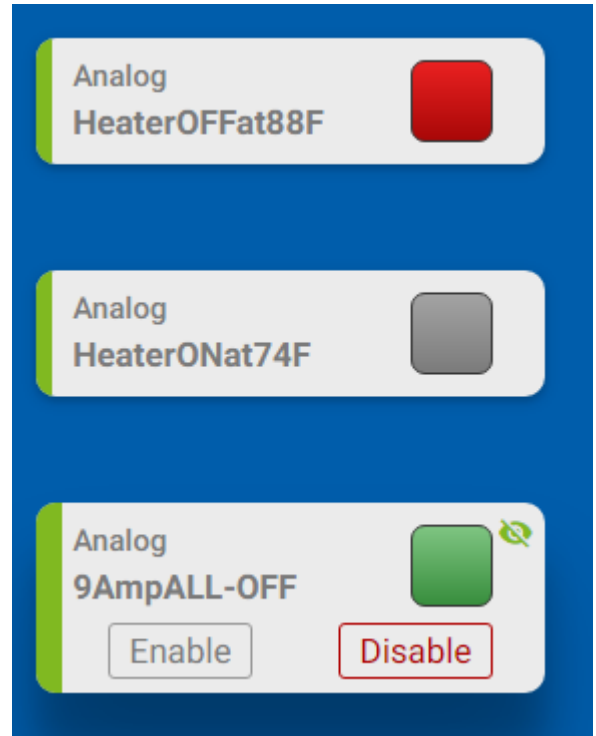
Gray : Trigger disabled

Green: Trigger condition has not been met

Red: Trigger condition has been met

Triggers can be enabled and disabled from the card, as well as hidden from the dashboard. Click on the trigger card to expand it for these functions.

See Section 7 for more about Triggers and Automation

### 5.3.7. AutoPing Trigger Cards

The AutoPing trigger card shows the name and current status: Passed or Failed. A drop down allows viewing of all the metrics regarding AutoPing
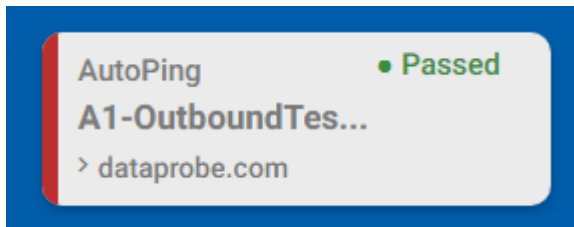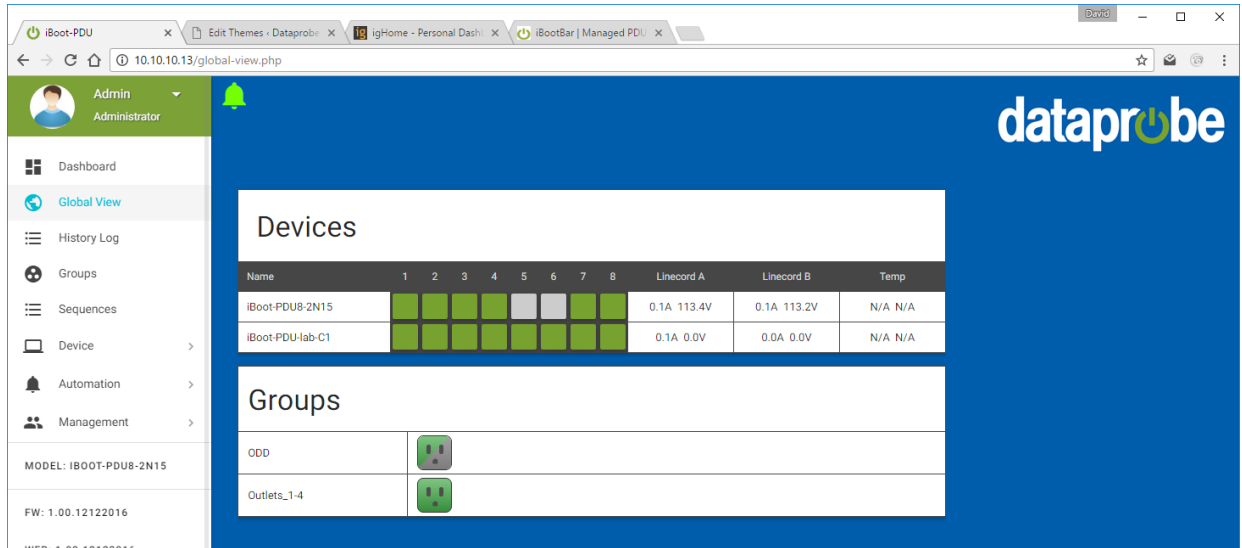
See Section 7 for more about AutoPing triggers
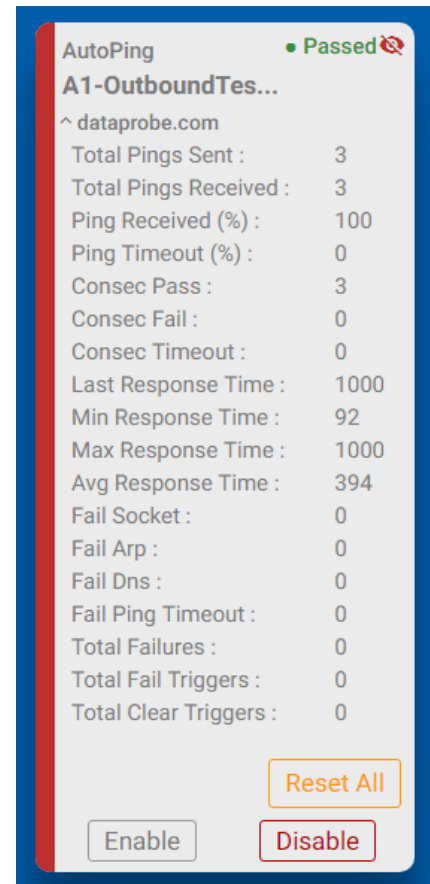
## 5.4. Global View

The Global view provides a convenient way to view and control a large number of Devices, Remotes and Groups from a single screen.  It allows view of all outlets in a single page, and allows immediate control of any outlet or group in the configuration.  See Section 5.6 for Group setup.



### 5.4.1. Outlet Control

To operate one or more outlets, click on the outlet to select.  When one or more outlets are selected, the power control buttons will be displayed.  Click on the desired power control button.
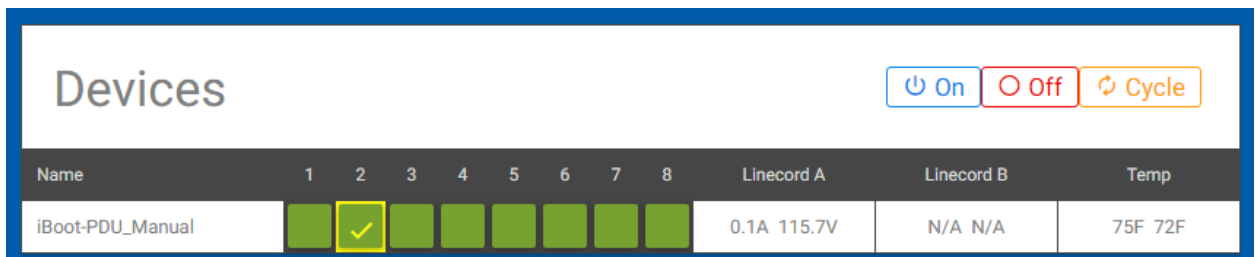


### 5.4.2. Group Control

As with outlets, click on any group to select it and display the power control buttons.  Only one group can be selected at any time.

## 5.5. History

The history page displays the last 100 events.  The history log can be filtered using the drop down selectors for User Source Event and Name.

The complete history can be downloaded in .csv format for additional analysis and storage.  It is advised to download and clear the history periodically to maintain a complete record.

## 5.6.    Groups

Groups  allow the user to organize outlets for simultaneous action.  Groups can be used to control devices with dual redundant power supplies.  Groups can be used to power cycle all devices at a given time of day. Groups can be organized within one PDU or across multiple PDUs.  With multiple PDUs in a group it is possible to power up systems in multiple locations with a single command.

### 5.6.1. Add Group

Click on Add Group to create a group:

Enter the name of the group. Names do not allow spaces.
Click on Local Outlets to select which outlets will form members
of the group. If remote PDUs are defined, they can also be
added to the group. Click Save when done.



**Instructional Video**

Once the group is formed, It can be controlled from this screen,
from the dashboard, or used in any automation action.

The status of the group, ON, OFF or MIXED is displayed by an icon
at the top. The status of each individual outlet in the group is displayed by expanding the device area:

### 5.6.2. Groups and User Rights

Groups can only be built from outlets the user has rights to. Administrators can build groups and assign
them to users even if the user has no rights to the specific outlet(s) within that group. Therefore a user can
control a group without having the ability to alter a specific outlet within that group. This can be used to
insure that all outlets within a group maintain the same status.

Groups will be displayed on the dashboard. If this is not necessary, uncheck Show on Dashboard.

## 5.7. Sequences

Sequences are a set of actions that can be initiated with a single command.  Sequences can contain outlet, group and messaging actions.  Sequences can also include delays and looping to build sophisticated sets of instructions.
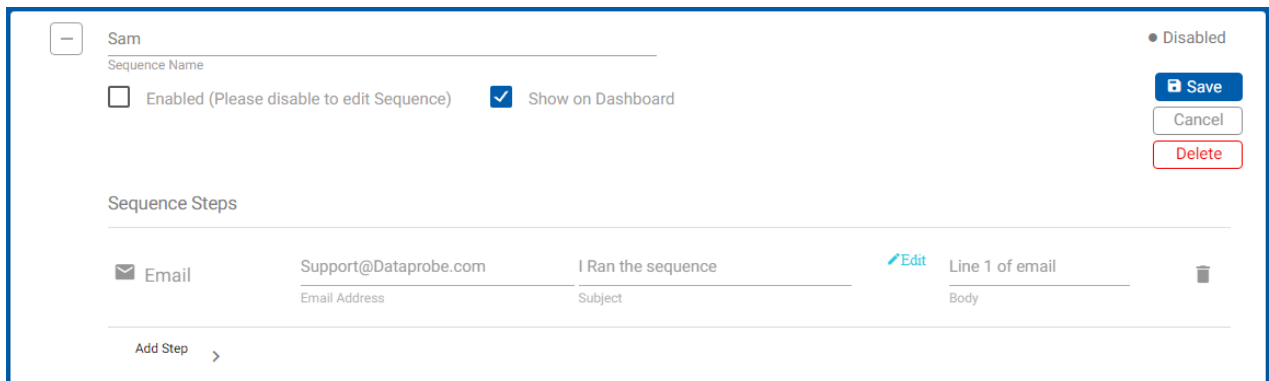

**Instructional Video**

### 5.7.1.  Add Sequences

Click on Add Sequence to begin the setup process.



Enter the name of the sequence then click Save.



The status of the sequence is displayed on the top right of the card.  Statuses are:

Disabled          The sequence is disabled for editing or to prevent execution
Stopped          The sequence is enabled, but execution has been halted  A Run button will be presented
                       to initiate the sequence
Running          The sequence is currently running.   A Stop button will be presented to halt the sequence.

Enable Checkbox determines if the sequence is available to be executed
Show on Dashboard determines if the sequence card will be displayed on the Dashboard
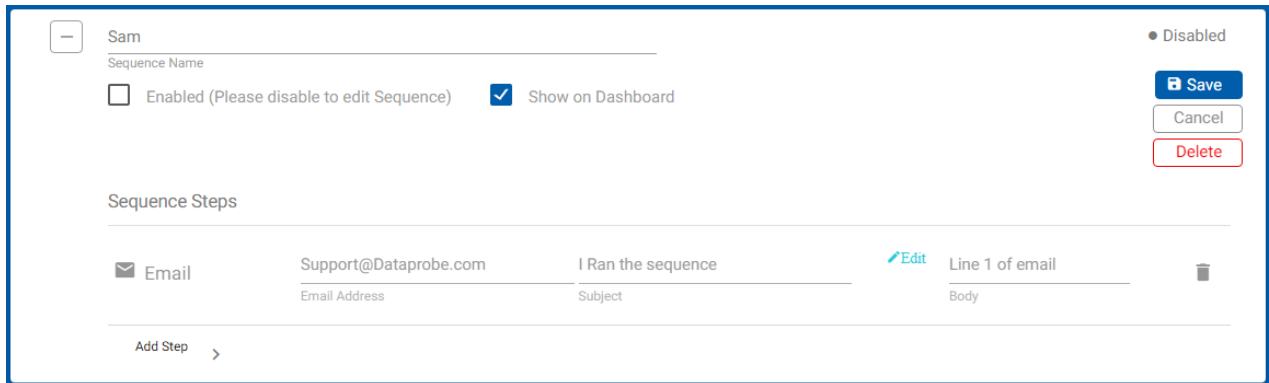
Click on the + sign to expand the sequence and build the steps of the sequence.

Click Add Step and select the step to be added.  Available steps are

Delay            Wait before proceeding to the next step
                         Select the length of time in seconds
Outlet           Control an outlet
                         Select the device (if remotes are present
                         Select the outlet number
                         Select the action On – Off - Cycle
Loop             Repeat one or more steps
                         Select the starting step to repeat from
                         Select the number of times to repeat the loop
Log              Write a message into the history log
                         Enter the Title of the Log
                         Enter the Text of the Log
Email            Send an email message
                         Enter the destination email address
                         Enter the subject of the email
                         Enter the body of the email.  Click on the Edit button to open an edit window.

                         Email requires setup prior to use.  See Section 6.2
Group            Control a group
                         Select the group name
                         Select the action On – Off - Cycle

Steps can be reordered with drag and drop actions to build the sequence as desired.

The sequence is not ready to be initiated until it is Enabled with the Enable Checkbox.  Sequences must be disabled to be edited.

Sequences will be displayed on the dashboard.  If this is not necessary, uncheck Show on Dashboard.

### 5.7.2. Email Variables

The body of the email can contain variables that can provide status information.  Add these to the email message as needed.

| | |
|---|---|
| <?dp _deviceName > | User Programmed Device Name |
| <?dp _deviceFamily > | iBoot-PDU |
| <?dp _deviceModelName > | Model of the Device |
| <?dp _deviceConnector > | NEMA or IEC depending on model |
| <?dp _deviceNumLinecords > | 1 or 2 depending on model |
| <?dp _deviceNumOutlets > | 4 or 8 depending on model |
| <?dp _deviceFirmwareVersion > | Current firmware of the device |
| <?dp _datetime > | Date and Time the email was generated |
| <?dp _analogLV1 > | Voltage level of Line 1 |
| <?dp _analogLC1 > | Current level of Line 1 |
| <?dp _analogLV2 > | Voltage level of Line 2 (When model supports 2 Lines. Returns ERROR if single line unit) |
| <?dp _analogLC2 > | Current level of Line 2 (When model supports 2 Lines. Returns ERROR if single line unit) |
| <?dp _analogTemp1 > | Temperature of Sensor 1 (When installed. Returns ERROR if single line unit) |
| <?dp _analogTemp2 > | Temperature of Sensor 2 (When installed. Returns ERROR if single line unit) |
| <?dp _outletName[n] > | Name of outlet n.  n = 1-8 in eight outlet models and 1-4 in four outlet models. |
| <?dp _outletActualStatus[n] > | Current status of outlet n. |

Notes:          A space is required after the <?dp    as well as before the closing >
                      The outlet name syntax includes the brackets. Ex:  <?dp _outletActualStatus[3] >


Example of status report that can be sent out periodically.

Header:
Status of <?dp _deviceModelName > at <?dp _deviceName >  as of <?dp _datetime >

Body:
Line 1 : <?dp _analogLV1 >V  <?dp _analogLC1 >A  Temp: <?dp _analogTemp1 >F T1 <?dp _analogTemp2 >F T2
<?dp _outletName[1] > <?dp _outletActualStatus[1] > <?dp _outletName[2] > <?dp _outletActualStatus[2] >
<?dp _outletName[3] > <?dp _outletActualStatus[3] > <?dp _outletName[4] > <?dp _outletActualStatus[4] >
<?dp _outletName[5] > <?dp _outletActualStatus[5] > <?dp _outletName[6] > <?dp _outletActualStatus[6] >
<?dp _outletName[7] > <?dp _outletActualStatus[7] > <?dp _outletName[8] > <?dp _outletActualStatus[8] >

# 6. Device Setup

## 6.1. Information

Set basic information about the iBoot-PDU



### 6.1.1. Device Information Fields

| | |
|---|---|
| Device Name | Set the Name of the Device displayed.  20 alphanumeric characters, no spaces<br>Device Name is also used for SNMP Management, mib-2,  sysLocation.<br>( OID 1.3.6.1.2.1.1.6 ) |
| Outlet Delay Time | Sets the time, in seconds between powering each outlet when multiple outlets are being turned on.  Minimizes inrush current issues. |
| Unit of Temperature | Celsius or Fahrenheit |
| Country Code | Select Country Code from the dropdown list. |
| Allow Simple Passwords | Simple Passwords are any characters, 20 maximum |

Allow Simple Passwords — If unchecked (default), passwords must be a minimum of 8 characters, up to 20 characters and contain at least one each of

> Upper Case Character
>
> Lower Case Character
>
> Number
>
> Special Character    See section  9.2 for a list of allowed characters.

### 6.1.2. Device Reboot

The Reboot button will reboot the iBoot-PDU system.  A confirmation box will appear.  Select OK to initiate the Reboot.

## 6.2. Email

Sets the outgoing email parameters



### 6.2.1. Email Fields

| | |
|---|---|
| Email Enabled | Enable or disable the email client with this checkbox |
| Email Encryption | Set the client for encrypted or unencrypted email |
| Email Server | Set the IP Address or FQDN name of the email server |
| Email Port | Set the port for the email server |
| Email User | Set the email username to log on to the SMTP Server |
| Email Password | Set the password to log on to the SMTP Server |
| Email Address | Set the From and Return-to address |
| Email Retries | Set the number of retries for email sending |
| Save | Click Save to store all the settings |

**Note**:  Ports 8888, 8889, 8890, 8891, 8892, 8893, 8894, 8895, 8896, 8897, 9090, 8898 and 8899 are reserved for internal use by the iBoot-PDU.  Do not use these ports for any other setting.
.

## 6.3. Outlets

Set the parameters for each outlet, and control the outlet status   The color of the outlet icon will indicate the current status of the outlet.

 Outlet OFF      Outlet OFF transitioning to ON

 Outlet ON      Outlet ON transitioning to OFF

Only outlets the user has rights to will be shown.

### 6.3.1. Control Outlets

Click on the On, Off or Cycle buttons to control the outlet.  The selected action will take place immediately.

### 6.3.2. Outlet Settings

| | |
|---|---|
| Outlet Name | Set the name for each outlet. 20 alphanumeric characters, no spaces |
| Cycle | Set the Cycle time in seconds.  This is the length of time the outlet will be off during reboot, or on when pulsing the power on. |
| Initial Status | Sets the state of the outlet when the iBoot-PDU is powered on.  Options are On, Off or Last.  Last is the last state of the unit before the iBoot-PDU was powered down. |
| Save | Click Save to store the settings. |

## 6.4. Remotes

The iBoot-PDU can manage additional iBoot-PDU devices. Add those additional units here.
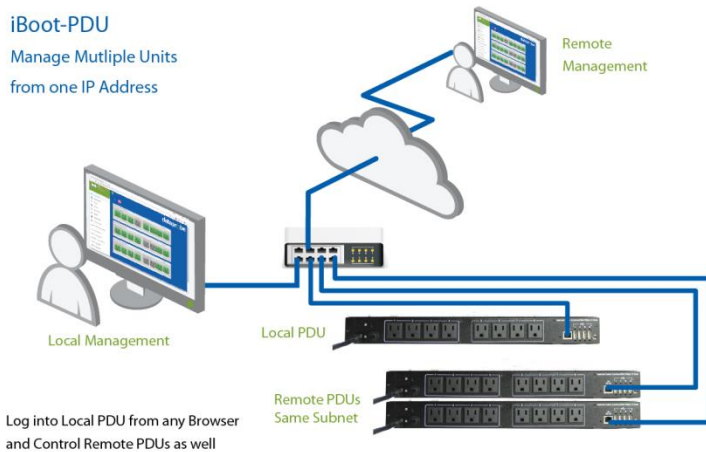




**Instructional Video**

Remotes are additional iBoot-PDUs that are on the same Ethernet subnet as the Local unit they are managed from.  Adding a PDU as a remote does not limit its own access by Web or other means.

In addition to the benefit of managing multiple iBoot-PDUs from one web browser log on, remote iBoot-PDUs can be used to build groups and sequences that enhance the automation capabilities.

### 6.4.1. To Add a remote unit

Click on the Add Remote Devices button at the top of the page.

| | |
|---|---|
| **Add Remote Device** | **🖫 Save** |
| Undefined | |
| IP Address | |
| Undefined | |
| Username | |
| Undefined | 1 |
| Password | Delay |

### 6.4.2. Remote Settings

IP Address    Set the IP Address in format XXX.XXX.XXX.XXX

Username    Set the username for the remote unit. The username used must have administrative rights.  Only outlets to which the username used has rights to will be managed by this iBoot-PDU.

Password    Set the password associated with the username above.

Delay    Sets the Delay Time for the remote unit. Sets the time, in seconds between local and remote status updates.

Click Save to complete the setup and initiate communication with the remote.

### 6.4.3. Remote Administration

The iBoot-PDU will connect with the remote unit and present Up, Down or Pending status in the upper right corner of the remote unit's card.  This same status appears on the device card on the dashboard, if the Show on Dashboard selector is checked.
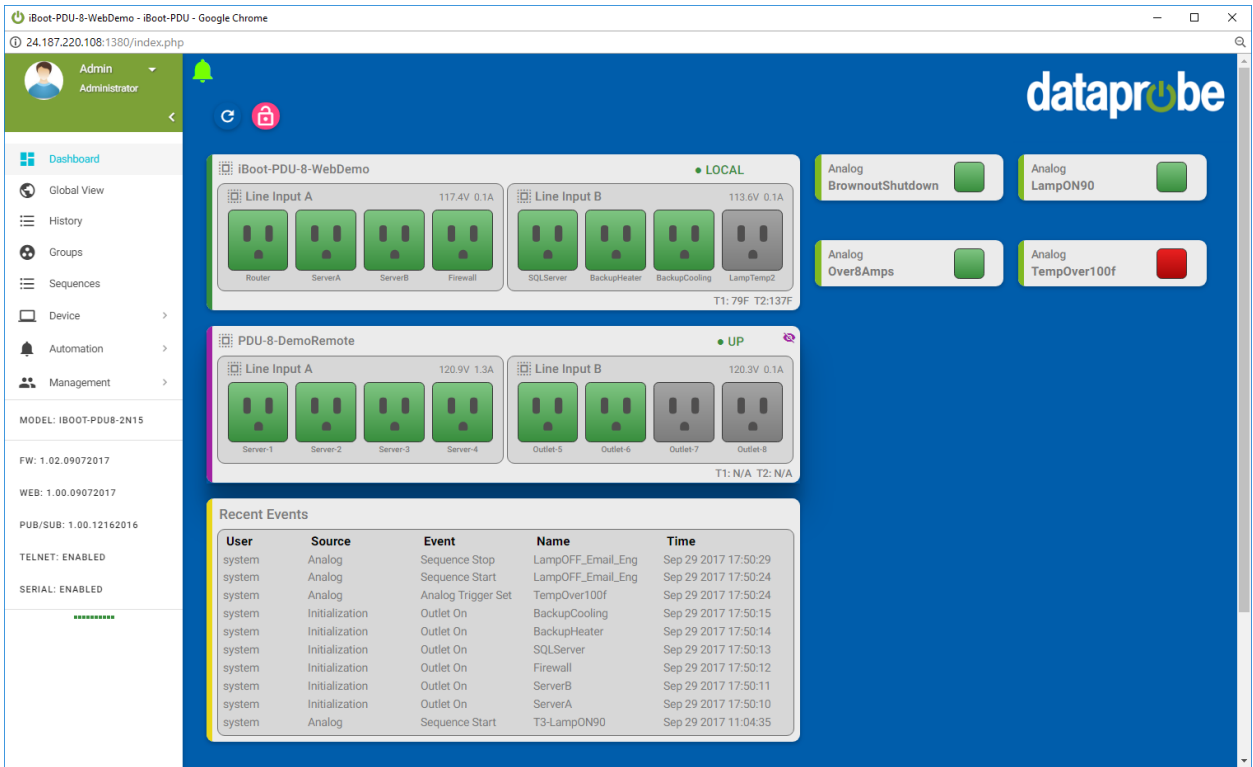
*Dashboard showing Local and Remote iBoot-PDUs*

## 6.5. IP Address

The IP Address card shows the current IP Address setup and allows changing of theses parameters. The iBoot-PDU allows for these setting to be manually entered or assigned from a DHCP server. Check with your network administrator for the proper configuration and settings.



**Instructional Video**

### 6.5.1. IP Address Settings

IP Mode             Sets the mode that will select the IP Address settings:

DHCP:  The iBoot-PDU will get these settings from a DHCP Server

STATIC: The iBoot-PDU will used the settings as manually set below:

IP Address          Enter the IP Address [XXX.XXX.XXX.XXX]

Subnet Mask        Enter the Subnet Mask [XXX.XXX.XXX.XXX]

Gateway            Enter the Gateway [XXX.XXX.XXX.XXX]

DNS 1 and 2        Enter two DNS server entries [XXX.XXX.XXX.XXX] (enter the same address for both if you only have one DNS available)

Click Save to store the settings as entered.   Once saved, they are held as Pending.  To complete the process, Reboot the iBoot-PDU.  When the iBoot-PDU is ready for reboot, a notification will appear at the top left of the information panel.  Click on notifications, then reboot.

## 6.6. Web

Sets the features regarding the internal web server of the iBoot-PDU



### 6.6.1. Web Server Settings

Web Enabled       Enables [True] or disables [False] the web server

Web Port            Sets the IP Port the web server will use.

SSL Enabled        Enables [True] or disables [False] Secure Sockets Layer.  When true, web clients must use https:// to connect to the iBoot-PDU

SSL Port            Sets the IP Port the web server will use for SSL

**Note**:  Ports 8888, 8889, 8890, 8891, 8892, 8893, 8894, 8895, 8896, 8897, 9090, 8898 and 8899 are reserved for internal use by the iBoot-PDU.  Do not use these ports for any other setting.

## 6.7. DxP

The iBoot-PDU supports Dataprobe's proprietary Device Management Protocol (DxP). The DxP allows interoperability between multiple Dataprobe products.

The iBoot-PDU will respond to DxP commands from products such the IPIO series, iBoot-G2 series, the DxP Command Utility or your own software supporting DxP.  The DxP protocol and supporting documents can be found at

http://dataprobe.com/support/shared/dxp_proto_1.2_v101118e.pdf

Enable or Disable the ability to receive DxP messages.  DxP is disabled by default.
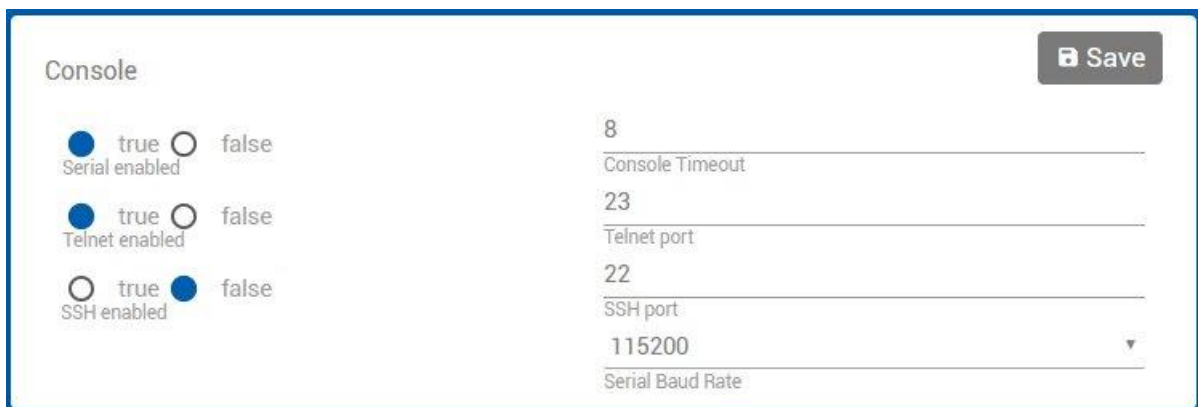


Set the DxP port.  The default is 9100
Set the use of AES encryption and the AES passphrase when AES is enabled.

Click Save when done.

## 6.8.    Console

Sets the features regarding the CLI for both Serial Port control via the USB ports and Telnet.



### 6.8.1.  Console Settings

| | |
|---|---|
| Serial Enabled | Enables [True] or disables [False] the serial port for console management |
| Console Timeout | Sets the time in minutes for automatic logout of the console session. |
| Telnet Enabled | Enables [True] or disables [False] the telnet server |
| Telnet Port | Sets the IP Port the telnet server will use |
| SSH Enabled | SSH will be available in a future release. Please check for firmware updates and release notice. |
| SSH Port | Sets the IP port used for SSH connections. |
| Serial Baud Rate | Sets the Baud Rate for the Serial port. Available options are 9600, 19200, 38400, 57600 and 115200. |

**Note**:  Ports 8888, 8889, 8890, 8891, 8892, 8893, 8894, 8895, 8896, 8897, 9090, 8898 and 8899 are reserved for internal use by the iBoot-PDU.  Do not use these ports for any other setting.

## 6.9. Time Settings



System time can be manually set or acquired from one or more time servers.  Up to five time servers can be assigned by name or IP address.  The time zone can be set from the drop-down selector, or with the map.

| | |
|---|---|
| Use Time Server | Uncheck this box to a manually set date and time |
| Date | Enter the Date in MM/DD/YYYY format, or use the drop down calendar |
| Time | Enter the Time in HH:MM format using 24 hour time, or use the drop down selector. |
| Timezone | Use the dropdown list or select on the map. |
| Time Servers 1-5 | Enter the IP address or name of up to 5 time servers.  Default time servers are:<br>0.pool.ntp.org, 1.pool.ntp.org, 2.pool.ntp.org, 3.pool.ntp.org,  time.nist.gov |

## 6.10. Device Log

The device log is intended for deep inspection of the processes of the iBoot-PDU.  It is intended to assist Dataprobe Support Services in assisting you in managing the device.  Contact Dataprobe Support Services for additional details.

# 7. Automation

## 7.1.  General Description

The iBoot-PDU can be programmed to monitor a variety of conditions and take automatic action whenever necessary.  There are two aspects to the automation that need to be programmed to achieve the desired effect: Triggers and Sequences.  Triggers define what is being monitored and the conditions that prompt action.  Sequences control what actions take place when triggers are activated.

When programming triggers, it is suggested to first define the sequences, then the triggers.  See Section 5.7 on building sequences.

## 7.2.  Analog Triggers

Analog triggers monitor voltage, current and temperature. Temperature triggers require use of item # 1940213 TEMPer2, sold separately



**Instructional Video**

### 7.2.1. To program a trigger:

1. Select Automation > Analog from the main menu.
2. Click on Add Analogs at the top of the page.



Enable Checkbox determines if the trigger is available to be active
Show on Dashboard determines if the trigger card will be displayed on the Dashboard

### 7.2.2. Analog Trigger Settings

Name — Enter a Name for the trigger.   Up to 20 Alphanumeric characters, no spaces

Type — Select from Voltage, Current or Temperature.  The temperature probe must be installed prior to setting temperature triggers.

Source Instance — If Voltage or Current, select Line A or Line B if the iBoot-PDU is a dual input model.  If Temperature,  Select between  Main and External Sensor

Condition — Set if the condition triggers when the above or below the Trigger Point.  Options are

        <       Less Than

        <=     Less Than or Equal To

        >       Greater Than

        >=     Greater Than or Equal To

Trigger Point — Set the level at which the trigger will activate.

Hysteresis — Set the amount by which the trigger will change from Fail to Clear.  For Example with a current setting of  >= 11 Amps and a hysteresis of 2, the trigger will go to fail at 11 Amps and will return to clear at 9 Amps.

Qualify Time — Sets the time, in seconds which the triggering condition has to persist to create a Fail status.  The same time is used to set the Clear Status

Repeat — Triggers can be repeated either forever, for one time only, or for a set number of times.  Once a trigger has reached its set number of repeats it will stop functioning.  Disable and re-Enable the trigger to reset the counter and begin anew.

Count — When the Repeat is set to Counter, set the number of times to repeat the trigger.

Remaining — When the Counter is used.  This field displays the number of counts remaining.  It is for informational purposes only and cannot be set.

Outlet / Action — Set the outlet that this trigger will act upon.  This setting allows quick definition of a single outlet sequence.  When more complex sequences are required, select Use Advanced Settings button.

Action — Set the action on the single outlet, or all outlets:

| | |
|---|---|
| On | Turn the outlet On, make no change when Clear |
| Off | Turn the outlet Off, make no change when Clear |
| On-Follow | Turn the outlet On when Fail and Off when Clear |
| Off- Follow | Turn the outlet Off when Fail and On when Clear |
| Cycle | Cycle the outlet for the programmed length of time. Cycle can be in either direction (On-OFF-ON or Off-On-Off depending on the current state of the outlet.  For a more determinate cycle, use a sequence with two or more steps |

Advanced Settings — The Advanced Settings allows a Fail and Clear Sequence to be defined.  Select one of the previously defined sequences from the drop down list.  If None is selected for both, the trigger will be informational only and no action will be taken

Enable — Check Enable to make the sequence active.  The sequence must be disabled to make any edits.  Click Save to complete the setup process.

Show on Dashboard — Determines if the Trigger will present a card on the Dashboard.

## 7.3. AutoPing Triggers

The AutoPing feature allows iBoot-PDU to automatically detect failed equipment and perform a timed reboot or other power control function (like turning on an indicator or siren). You set one or two IP addresses to be periodically pinged. When iBoot-PDU no longer detects a response from these addresses, the programmed power control function is actuated. The two addresses can be AND or OR linked so that both (AND) or either (OR) need to fail in order to take the selected action.


**Instructional Video**

Examples:

Use Auto-Ping as service monitor: iBoot-PDU is installed with the device to be rebooted, but pings a remote host to test the communication channel. Ideal for: DSL & Cable Modem Verification.
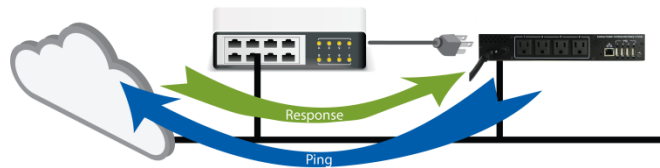
Use AutoPing as server monitor: iBoot-PDU is installed with the device it monitors and automatically reboots if there is no response. Ideal for: datacenters and digital signage
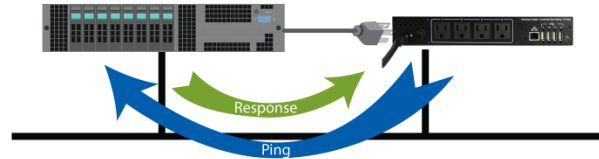
iBoot-PDU monitors network device and powers up alarm or redundant system when there is no response Ideal for: Hot Standby Servers, Environmental Control, Alert for any Network Failure.

### 7.3.1. To program an AutoPing

1. Select Automation > AutoPing from the main menu.
2. Click on Add AutoPing at the top of the page.



### 7.3.2. AutoPing Settings

| Name | Enter a Name for the trigger.   Up to 20 Alphanumeric characters, no spaces |
|------|------|
| Enable | Check Enable to make the AutoPing active.  The AutoPing must be disabled to make any edits. |
| Show on Dashboard | Determines if the trigger card will display on the dashboard.  If unchecked, it will continue to function without status display on the dashboard, if enabled |
| Mode | Set if one (A) or two (A / B) IP addresses will be used for the test  If two, then select if AND (both must fail to trigger an action, clear if either is good), or OR, (triggers action if either fail, clears when both are good). |

| | |
|---|---|
| Restart Delay | Sets the length of time in seconds, to delay after initiating an action before beginning to restart the pinging tests. Allows time for rebooted equipment to initialize. 0 – 999 seconds is valid. |
| Address | Set the IP address or Fully Qualified Domain Name (FQDN) (i.e. example.com) of the target of the pinging. |
| Period | Set the frequency of the pinging, in seconds. 1 – 999 is valid. |
| Fail Count | Set the number of times the ping test must fail consecutively, in order to trigger the action. |
| Timeout | Sets the length of time iBoot-PDU will wait for each ping response. The default 2 seconds should only be changed in applications where the normal response time is expected to be extended, such as in satellite communications. |
| Outlet / Action | Set the outlet that this trigger will act upon. This setting allows quick definition of a single outlet sequence. All Outlets is also available. When more complex sequences are required, select Use Advanced Settings button. |
| Action | Set the action on the single outlet, or all outlets: |

| | | |
|---|---|---|
| | On | Turn the outlet On, make no change when Clear |
| | Off | Turn the outlet Off, make no change when Clear |
| | On-Follow | Turn the outlet On when Fail and Off when Clear |
| | Off- Follow | Turn the outlet Off when Fail and On when Clear |
| | Cycle | Cycle the outlet for the programmed length of time. Cycle can be in either direction (On-OFF-ON or Off-On-Off depending on the current state of the outlet. For a more determinate cycle, use a sequence with two or more steps |

| | |
|---|---|
| Cycle / Forever | When Cycle is selected, sets the maximum times the outlet(s) will cycle (1-60). If an unlimited number of cycles is preferred, use the Forever checkbox. |
| Advanced Settings | The Advanced Settings allows a Fail and Clear Sequence to be defined. Select one of the previously defined sequences from the drop down list. If None is selected for both, the trigger will be informational only and no action will be taken. The sequence can be repeated using the cycle count setting (1-60). The Clear sequence will only run one time. |
| Save | Click Save to complete the setup process. |

### 7.3.3. AutoPing Statistics

The AutoPing system provides a host of counters that assist in troubleshooting network and device problems. Click on the down arrow next to Stats A or Stats B to expand the statistics.



The Reset button will clear all statistics for the selected AutoPing.

### 7.3.4. CLI Setup Autoping Triggers

When the Command Line Interface is used to initiate AutoPing triggers, not all the features of the web setup are available. In this case, the form for the AutoPing will be different.

Webpage card for CLI created autoping

## 7.4. Scheduling Triggers

Time of day events can be used to trigger actions. Set the starting time and date, and if the event is repeating.

### 7.4.1. To program an Schedule

3. Select Automation > Scheduling from the main menu.
4. Click on Add Schedules at the top of the page.



**Instructional Video**

## 7.4.2. Schedule Fields

| Name | Enter a Name for the trigger.   Up to 20 Alphanumeric characters, no spaces |
|---|---|
| Start Date | Set the date of the first occurrence.  A drop down calendar assists entry |
| Start Time | Enter the Start Time (HH:MM) in 24 hour format.  A drop-down assist entry. |
| Repeat | Set whether the event will repeat.  Set Never, Daily, Hourly or Weekly |
|  | Select the days of the week using the checkboxes to set which days of the week the trigger is to occur. |
| Outlet | Select which outlet the trigger is to act on.  All outlets is also an option.  To run pre-programmed sequences, click on Use Advanced. |
| Action | Set the action on the single outlet, or all outlets: |

On                     Turn the outlet On

Off                    Turn the outlet Off

Cycle                 Cycle the outlet for the programmed length of time. Cycle can be in either direction (On-OFF-ON or Off-On-Off depending on the current state of the outlet.  For a more determinate cycle, use a sequence with two or more steps

| Advanced Settings | The Advanced Settings allows a sequence to be defined.  Select one of the previously defined sequences from the drop down list. |
|---|---|
| Enable | Check Enable to make the schedule active.  The schedule must be disabled to make any edits. |
| Save | Click Save to complete the setup process. |

# 8. Management

## 8.1. Users

Multiple users can be programmed and each user can have unique rights to outlets, groups, etc. In addition, users can be assigned administrator rights, which allow access to all setup functions.



### 8.1.1. <u>To Add a User</u>

1. Select Management > Users from the Main Menu
2. Click on Add Users at the top of the page.

| | |
|---|---|
| User Name | Enter a unique name for the user [1 to 20 Alphanumeric characters, no spaces] |
| Password | Enter a password for the user. Allowable passwords are determined by the Simple Password Enable/Disable feature. See Section 6.1.1 |
| Email | Enter a valid email address. Used for password recovery. (not required) The admin user email will be used as the Management, mib-2, sysContact (OID 1.3.6.1.2.1.1.4)l |
| Password Expires | Enter a number of days, after which the password must be changed. Enter a value of 0 to have the password never expire |
| SNMP v3 Password | Enter a password for SNMP v3 use if using SNMP v3. |
| Modem PIN | Enter a 5 digit PIN number for the Modem to use for DTMF dial in control |
| Administrator Rights | The checkbox assigns administrative rights to the user. This allows access to all setup functions. |
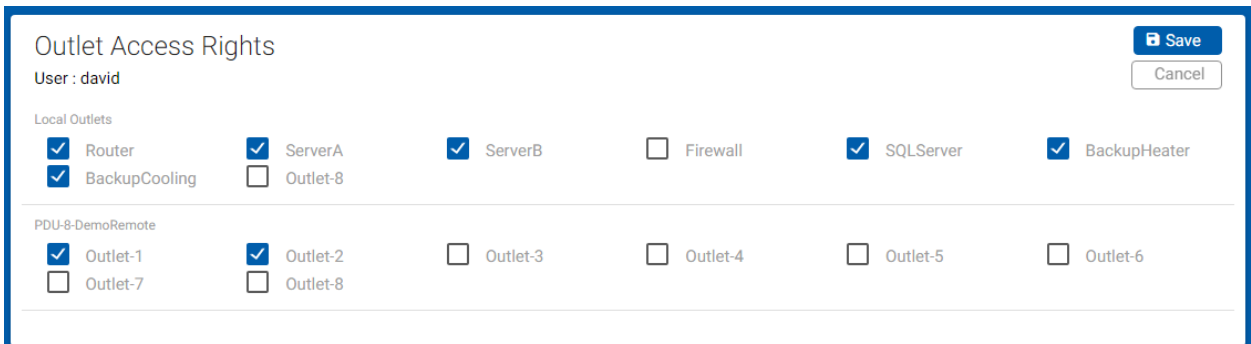
Click Save to complete the setup.

### 8.1.2. Assigning Outlets, Groups and Sequences

Once the user is saved, expand the user card to display the assignment buttons for Outlets, Groups and Sequences.



Click on the desired button to display a list of elements (Outlets, Groups, and Sequences) that can be assigned or unassigned.



Use the checkboxes to select or de-select the rights for this user.  When complete:

Click Save - save the new selections and return to the user options. Click Delete to Delete the User

Click Cancel - cancel selection changes and return to the user options.

### 8.1.3.  Administrator user

The user named **admin** cannot be deleted from the system.  The user named **admin** can also not be unassigned administrator rights.   By default user **admin** automatically obtains rights to any outlets, groups and sequences programmed into the system.
Rights to these elements can be unassigned to the user named administrator.

## 8.2.  Cloud Service

This feature enables or disables the provisioning of the iBoot-PDU to be managed using the iBoot Cloud Service.

### 8.2.1.  Cloud Service Overview

iBoot Cloud Service (iBCS) allows customers with iBoot products to access and control all their devices from multiple locations  with  a single portal with a single sign-on.
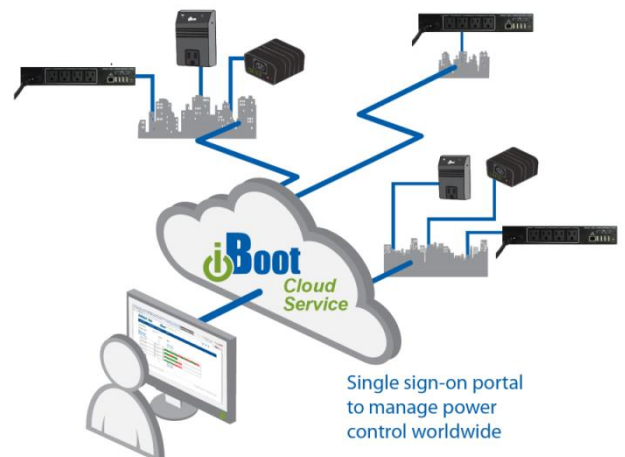
iBCS will not only make using iBoots easier, by consolidating all units into one sign-on and interface, it will also enhance the number of situations where iBoot can be deployed.

- Customers with Dynamic IP addressing to always be able to access their iBoot from any location.
- Service providers manage multiple customer accounts with diverse security configurations
- Customers that are not allow in-bound connections to access their iBoots.

Follow These Steps to get your iBoot-PDU on the Cloud
1. Establish an iBoot Cloud Account (FREE)
2. Enable the iBoot-PDU for Cloud Services
3. Visit the iBoot Cloud Service to Control Power

### 8.2.2. Establish a iBoot Cloud Services Account

1. Go to:  iboot.co
2. Click on Register
3. Complete the Registration Information
4. Click on the link provided in the confirming email

### 8.2.3. Enable iBoot-PDU for Cloud Services

Once the Cloud Service account is set-up, complete this form to link the iBoot-PDU to the account



| Enabled | Enable or disable Cloud Service provisioning |
| --- | --- |
| Server Address | Leave the default setting of iboot.co, unless instructed to do so by Dataprobe Support, or your network administrator |
| Cloud Username | Enter the Cloud Username for the existing cloud account |
| Cloud Password | Enter the Cloud Password for the existing cloud account |
| Cloud Location | Enter the Cloud Location name within the cloud account. If the location does not exist it will be created. If this field is blank, the unit will be assigned to the Unassigned location |

If all the parameters are correct, and Enable is checked, Click Save, and the PDU will connect with the cloud, obtain a UUID and Activation code, and assign the device to the account in the location provided.

### 8.2.4. Manage Power from the Cloud

Navigate your browser to  https://iboot.co  and log on with Cloud Username and Password.

The cloud interface is similar to the global view for viewing the status and allowing control of any outlet.
The Manage button allows full web access from the cloud.
  Use the search bar to find any location or device name, or MAC address in your account.

Get full instructions on the iBoot Cloud Service at http://dataprobe.com/iboot-cloud-service

### 8.3. Fail2ban

Fail2ban sets the maximum number of failed log on attempts allowed with a particular timeframe.
When the Maximum is exceeded, the ipaddress of the location attempting to log on is banned for access for a length of time.
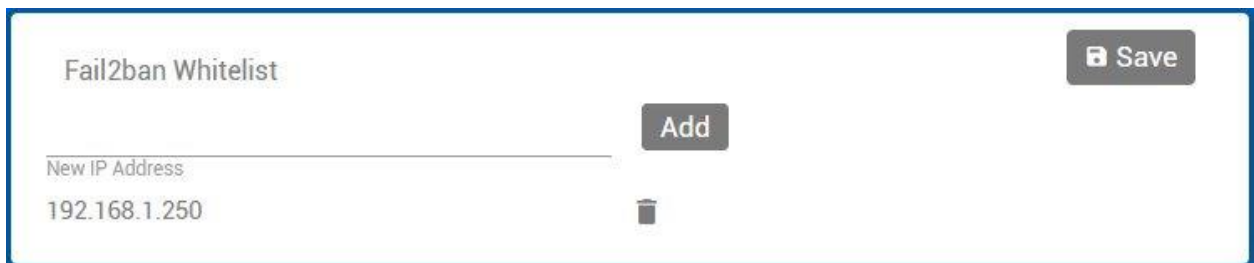


#### 8.3.1. Fal2ban Settings

Fail2ban Enabled      Enables [True] or disables [False] the Fail2ban function

Find Time             Sets the time in seconds to allow failing log on attempts.

Ban Time              Sets the time in seconds to ban an ipaddress from access after exceeding the maximum number of allowed attempts.

Max Retry             Sets the Maximum number of allowed attempts. ( within the Find Time setting)

### 8.4. Whitelist

Whitelist is a list of ipaddresses that are allowed to bypass the Fal2ban settings.
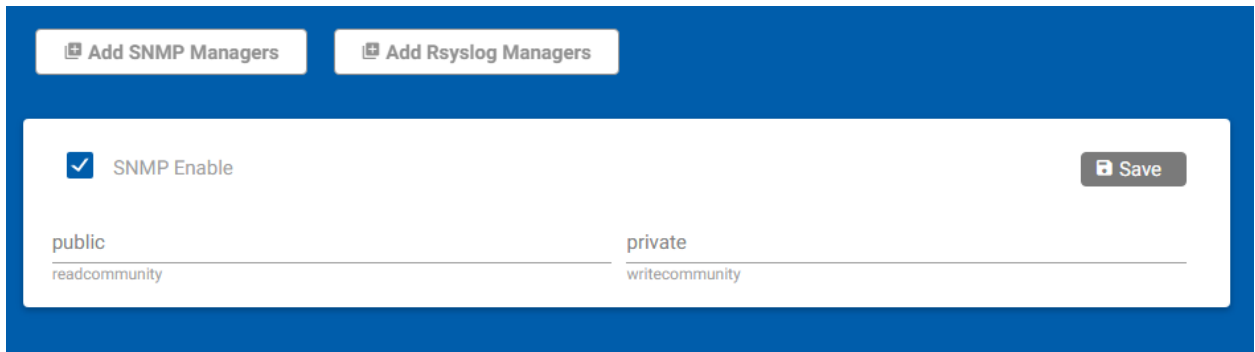


#### 8.4.1. Whitelist IP Address Modify

Add IP Address        Enter the ipaddress you want to add to the New IP Address field and click save

Delete IP Address     Click the  trash can next to the IP Address you wish to remove/

## 8.5. NMS
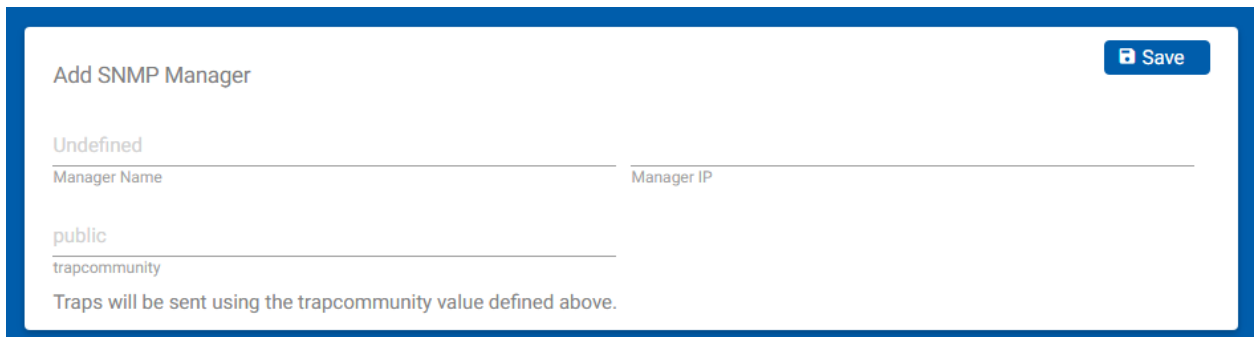
Network Management Systems. Setup the iBoot-PDU for use with SNMP and Syslog servers.

### 8.5.1. SNMP Setup



Enable SNMP by checking **SNMP Enable**

Set the read- and write- community passwords if necessary and click save.
To add SNMP Managers to receive traps, click on **Add SNMP Managers**



| | |
|---|---|
| Manager Name | Enter a name for the SNMP manager |
| Manager IP Address | Enter the IP Address or FQDN name of the manager |
| trapcommunity | Set trapcommunity string to be used for traps and informs only (default public) |

Click the Save Button to store the settings

The iBoot-PDU supports SNMP v2c and v3.  Download the mib at http://dataprobe.com/support-iboot-pdu

**\*note:**   The Device | Location  Name will be used as the Management, mib-2, sysLocation (OID 1.3.6.1.2.1.1.6)
The administrator user email will be used as the Management, mib-2, sysContact (OID 1.3.6.1.2.1.1.4)

### 8.5.2. Rsyslog Setup

Click on Add Rsyslog button to open the Add Rsyslog Manager setup card.



| | |
|---|---|
| Manager Name | Enter a name for the Remote Syslog manager |
| Manager IP Address | Enter the IP Address of the manager |
| TCP/UDP | Select either TCP or UDP protocol |
| Port | Set the port for the Syslog manager  [default:  514 ] |
| Enable | Select Enable or Disable for the Syslog reporting |

Click Save to store the settings

**Note**:  Ports 8888, 8889, 8890, 8891, 8892, 8893, 8894, 8895, 8896, 8897, 9090, 8898 and 8899 are reserved for internal use by the iBoot-PDU.  Do not use these ports for any other setting.

## 8.6.   Update

The iBoot-PDU firmware can be updated and custom firmware can be installed.  Upon selection, the iBoot-PDU checks for new and available version of the firmware.  Connection to the Internet is required for this function.   Firmware can also be added from a file, provided by Dataprobe.

There is a CLI method to upgrade as well described in section 9.3.18

### 8.6.1.  Install new firmware

Click on the desired version and then Install New Software.  If Local firmware is selected navigate to the desired file, or use drag and drop to load the file.  Click on INSTALL NEW SOFTWARE to begin the installation process.

Do not navigate away from the Update page until the process is complete.
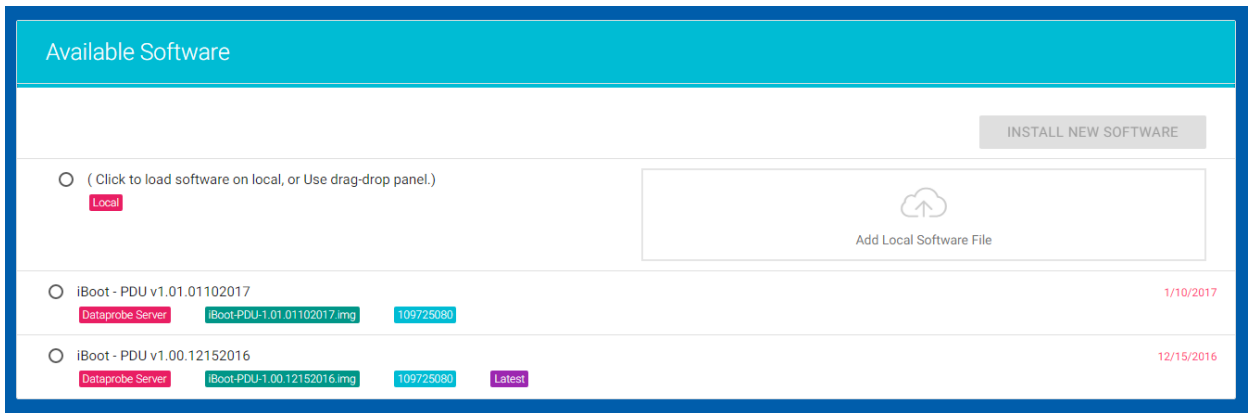
The Status box will confirm that the new firmware is Downloading, then Installing, then Done.

Activation of new firmware requires a reboot of the iBoot-PDU. Click on the REBOOT NOW button to complete
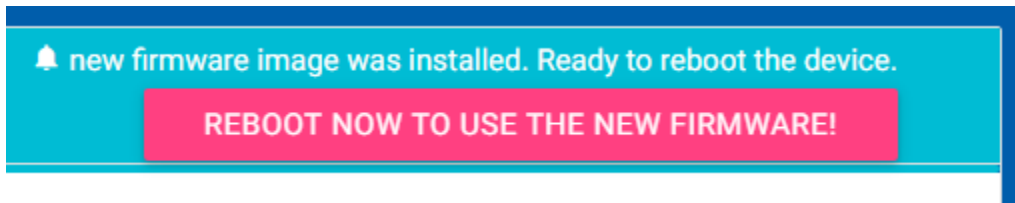


Firmware Upgrade Video



**Instructional Video**

## 8.7. Import / Export

The configuration for the iBoot-PDU can be exported to a file for storage and importing into the same or another iBoot-PDU of the same model.

### 8.7.1. Export

Select Export radio button, then run. The exported file will be in the downloads directory. The name is "<mmddyyyy>.pdudat" Rename as desired, with extension **.pdudat**

### 8.7.2. Import

Select Import radio button. You will be prompted for a file location of the configuration file. Once the file is selected, click run. After the file is uploaded, reboot the PDU to have the configuration file take effect.
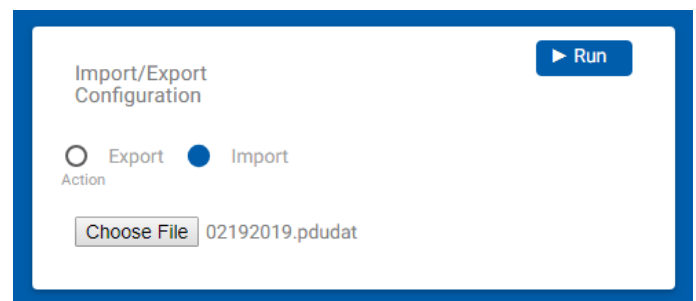
# 9. Command Line Interface

The Command Line Interface provides complete setup of all function of the iBoot-PDU. Access the CLI either via the network interface using Telnet, or via the modem or serial port using a terminal emulation program. Some commands of the CLI require administrative rights. These are indicated in the table below. See section 12.3 on serial port driver installation and setup.

## 9.1. Telnet Setup

Using a telnet client (for example putty.exe ) connect to the IP Address of the iBoot-PDU. Once connected the iBoot-PDU will request the user name and password. Once these credentials are properly entered, the iBoot-PDU will indicate ready with the iBoot-PDU> prompt:

```
iBoot-PDU
Connected to Telnet Session 3

User> admin
Password> *****

iBoot-PDU>
```

## 9.2. CLI Commands Syntax

The CLI uses a standard SET and GET command structure to save and retrieve setup parameters.

The CLI syntax is as follows:

- Angle brackets designate required parameters: <required>
- Square brackets designate optional parameters: [optional]
- Vertical bars for choice of items: <option1 | option2 | option3>
- Hyphen indicates a range of numbers <0-99>
- Special Characters not allowed for user name  **& | ; $ > < ` \ !**
- Special Characters not allowed for user snmppassword  **& | ; $ > < ` \ !**
- Special Characters not allowed for user email address  **& | ; $ > < ` \ !**
- Special Characters not allowed for password  **` or '**
- Special Characters allowed for outlet name:  **! @ # $ % ^ & * ( ) - _ = + [ { ] } \ | ; : , < . > / ?**
    - The space character can be used but the entire name must be in double quotes "my name"
    - Special characters in outlet names may cause display issues on webpage.
- Commands that are highlighted in gray indicate that they are accessible to all users. All other commands require administrator credentials
- All names are case sensitive

## 9.3. CLI Command Listing

| Command | Default Values | Notes |
|---|---|---|
| | | |
| **9.3.1. Device** | | |
| `get device` | Displays basic details about the iBoot-PDU: Model, Device Name, Firmware Version and additional details.<br><br>`iBoot-PDU> get device`<br>`Device Information:`<br>`Firmware Version:    v1.12.01292019`<br>`Device Model:        iBoot-PDU8-N15`<br>`Device Name:         My iBoot-PDU`<br>`Temperature Unit:    Fahrenheit`<br>`Country Code:        181`<br>`Timezone:            America/New_York`<br>`Use Simple Passwords: true`<br><br>`Ok`<br><br>`iBoot-PDU>` | |
| `set device name <name>` | iBoot-PDU-XXXXXX<br><br>XXXXXX is the last six characters of mac address | Sets current Device Name string - accepts double quoted strings 20 Characters  This will be also be used as snmp mib2, sysLocation (OID 1.3.6.1.2.1.1.6) |
| `reboot` | | Reboots the iBoot-PDU |
| `set device countrycode <code>` | 181 | For use with external modem.  See country code list supplied with land line modem. |
| `set device temperature <C \| F>` | F | F = Fahrenheit C = Celsius |
| `set device simplepassword <true \| false>` | FALSE | When false, password requires a uppercase letter, lowercase letter, symbol and number<br><br>When true, any password will work |

| | | |
|---|---|---|
| `get time` | Displays all time server settings.<br><br>`iBoot-PDU> get time`<br><br>`Time Config:`<br><br>`Current Time:  Tue 08/22/2017 17:20:54`<br>`EDT`<br>`Timezone:      America/New_York`<br>`NTP Enabled:   true`<br>`NTP Servers:`<br><br>`1: 0.pool.ntp.org`<br>`2: 1.pool.ntp.org`<br>`3: 2.pool.ntp.org`<br>`4: 3.pool.ntp.org`<br>`5: time.nist.gov`<br><br>`Ok`<br><br>`iBoot-PDU>` | |
| `set time localtime <"MM/DD/YY HH:MM:SS">` | | Sets the local time when using manually. (note the double quotes around the date time) |
| `set time server enabled <true/false>` | true | Set to false to disable time server for manual setting. |
| `set time server <1-5> address <IP/FQDN>` | 1 is 0.pool.ntp.org<br>2 is 1.pool.ntp.org<br>3 is 2.pool.ntp.org<br>4 is 3.pool.ntp.org<br>5 is time.nist.gov | Set the 5 time servers used to collect the time automatically. use ipaddress or Fully Qualified Domain Name. (FQDN) |
| `Set time timezone <timezonename>` | | Sets the time zone by name. see Appendix B page 92 for a complete list of valid time zone names.<br><br>ex. **Pacific/Honolulu** , **America/New_York** |
| `Set factory defaults <true | false>` | | Sets the Set Factory Defaults on next reboot flag.  To set factory defaults, enter this command <true> then enter the reboot command.<br><br>CLI prompt changes to:<br><br>`*** SETTING FACTORY DEFAULTS ON REBOOT ***`<br><br>`iBoot-PDU (Reboot Required)>`<br><br>To avoid resetting to factory defaults on next reboot: set this flag to <false> |

## 9.3.2. Network

```
get network


Displays all network settings

    iBoot-PDU> get network

    Network IP Settings:

    MAC Address:  68:9e:19:b5:d9:9b
    IP Mode:      static
    IP Address:   10.10.10.13
    Subnet:       255.255.255.0
    Gateway:      10.10.10.7
    DNS 1:        10.10.10.1
    DNS 2:        8.8.8.8

    Ok

    iBoot-PDU>
```

| | | |
|---|---|---|
| `set ipmode <static \| dhcp>` | DHCP | Sets if the IP Address will be set via DHCP server or manually set. |
| `set ipaddress <xxx.xxx.xxx.xxx>` | As set by DHCP or 192.168.1.254 | IP Address in dotted decimal format |
| `set subnet <xxx.xxx.xxx.xxx>` | As set by DHCP or 255.255.255.0 | IP Address in dotted decimal format |
| `set gateway <xxx.xxx.xxx.xxx>` | As set by DHCP or 192.168.1.1 | IP Address in dotted decimal format |
| `set dns1 <xxx.xxx.xxx.xxx>` | As set by DHCP or 4.4.4.4 | IP Address in dotted decimal format |
| `set dns2 <xxx.xxx.xxx.xxx>` | As set by DHCP or 8.8.8.8 | IP Address in dotted decimal format |

```
get web


Displays the settings for the internal web server

    iBoot-PDU> get web

    Web Settings:

    Web Enabled:  true
    Web Port:     80
    SSL Enabled:  false
    SSL Port:     443

    Ok

    iBoot-PDU>
```

| | | |
|---|---|---|
| `set web enabled <true \| false>` | TRUE | |
| `set web port <1-65535>` | 80 | `Ports 8888, 8889, 8890, 8891, 8892, 8893, 8894, 8895, 8896, 8897, 8898, 8899 and 9090 are reserved for internal use` |
| `set ssl enabled <true \| false>` | FALSE | |
| `set ssl port <1-65535>` | 443 | |

`get console`

Displays Console port settings. (Telnet and Serial)

```
   iBoot-PDU>get console

   Console Settings:

   Serial Enabled:   true
   Serial Baud:      115200
   Console Timeout:  8 minutes
   Telnet Enabled:   true
   Telnet Port:      23
   SSH Enabled:      false
   SSH Port:         22


   Ok
```

| | | |
|---|---|---|
| `set console serial enabled <true \| false>` | TRUE | |
| `set console serial baud`<br>`     <9600 \| 19200 \| 38400 \| 57600 \| 115200>` | 115200 | |
| `set console timeout <0-60>` | 2 | In Minutes |
| `set telnet enabled <true \| false>` | TRUE | |
| `set telnet port <1-65535>` | 23 | `Ports 8888, 8889, 8890, 8891, 8892, 8893, 8894, 8895, 8896, 8897, 8898, 8899 and 9090 are reserved for internal use` |
| `set ssh enabled <true \| false>` | FALSE | |

| | | |
|---|---|---|
| `set ssh port <1-65535>` | 22 | `Ports 8888, 8889, 8890, 8891, 8892, 8893, 8894, 8895, 8896, 8897, 8898, 8899 and 9090 are reserved for internal use` |

### 9.3.3. Users

```
get users
```

Displays all users

```
iBoot-PDU> get users

Users:

ID  Role      Username           E-mail
--  --------  --------           ------
 1  Admin     admin
 2  User      david        dweiss@dataprobe.com
 3  User      sam          support@dataprobe.com

Ok

iBoot-PDU>
```

| | |
|---|---|
| `get user <name>` | Displays the properties of the user<br><br>`iBoot-PDU> get user david`<br><br>`User:`<br><br>`ID:            ef37ef0f`<br>`Name:          david`<br>`Role:          User`<br>`E-mail:        dweiss@dataprobe.com`<br>`Password:      <password>`<br>`SNMP Password: <password>`<br>`PIN:`<br><br>`Ok`<br><br>`iBoot-PDU>` |
| `get user <self>` | Displays settings for current logged in user <self> is the current logged in user username |
| `add user <name>` | Maximum 20 - following special characters not allowed: **& \| ; $ > < ` \ !** |
| `del user <name>` | Deletes the user |
| `set user <name> role <admin \| user>` | Sets the users Administrator rights as admin or user |

| Command | Example | Notes |
|---|---|---|
| `set user <oldname> name <newname>` | | Maximum  20 – following special characters not allowed: **& \| ; $ > < ` \ !** |
| `set user <name> password <password>` | password | Depends on Simple Password Setting:<br><br>If Simple Passwords = True then<br><br>    Maximum  20 - following special characters not allowed: **`** or **'**<br><br>If Simple Passwords = False Then<br>    Minimum 8 characters<br>    Maximum 20 characters<br>    Must contain a minimum of one character of each:<br>        Upper Case<br>        Lower Case<br>        Numeric<br>        Special - not allowed **`** or **'** |
| `set user <name> snmppassword <snmp-password>` | password   for added users<br>adminadmin   for admin user | Minimum 8 Characters, Maximum 20 characters & special characters for SNMPv3 use – not allowed  **& \| ; $ > < ` \ !** |
| `set user <name> email <email>` | | 128 characters Maximum.  Properly formed email address. The administrator email will be also be used as snmp mib2, sysContact (OID 1.3.6.1.2.1.1.4) special characters not allowed: **& \| ; $ > < ` \ !** |
| `set user <name> pin <pin>` | 12345 | 5 characters & special characters |
| | | |

### 9.3.4.  Access Rights

| Command | Notes |
|---|---|
| `set user <name> device <local \| remote name> outlet <all \| 1-x> <yes \| no>` | x = number of outlets in the device 4 or 8 |
| `set user <name> group <name> <yes \| no>` | gives right to use for the named group, or removes rights |
| `set user <name> sequence <name> <yes \| no>` | gives right to use for the named group, or removes rights |

| get user <name> rights | Displays the rights of the named user.<br><br>```<br>iBoot-PDU> get user admin rights<br>Outlet Rights:<br>                              Outlets 1  2  3  4  5  6  7  8<br> 1. Local                             N  N  N  N  F  F  F  F<br>Groups:<br>Name                          Rights<br>----                          ------<br> 1. even                      True<br>Sequences:<br>ID  Name                      Rights<br>--  ----                      ------<br> 1. emailTest                 True<br>Ok<br>iBoot-PDU><br>``` | |
|---|---|---|

### 9.3.5. Fail2ban

| get fail2ban | Displays the Fail2ban settings<br><br>```<br>iBoot-PDU> get fail2ban<br>Fail2ban Settings:<br><br>Fail2ban Enabled:        true<br>Fail2ban Bantime:        300 Seconds<br>Fail2ban Findtime:       300 Seconds<br>Fail2ban Maxretry:       3<br>Ok<br>``` | |
|---|---|---|
| set fail2ban enabled <true \| false> | TRUE | See Section 8 for details |
| set fail2ban bantime <1-86400> | 300 | Seconds |
| set fail2ban findtime <1-86400> | 300 | Seconds |
| set fail2ban maxretry <1-99> | 3 | Allowed Failed attempts |
| get whitelist | Displays whitelist ipaddresses (if any are defined)<br><br>```<br>iBoot-PDU> get whitelist<br>No whitelisted IP Addresses defined<br>Ok<br>``` | |
| add whitelist <ipaddress> | | add an ipaddress to whitelist |
| del whitelist <ipaddress> | | delete an ipaddress from the whitelist |

## 9.3.6. Outlets

```
get outlets


Returns the status of each outlet  and additional status information:


    iBoot-PDU> get outlets
    Current time is Tue 2017-05-02 11:01:01 EDT


    Current firmware version is v1.01.04202017



    Line Input A: Voltage = 115.7 V, Current = 0.1 A
    Line Input B: Voltage = 111.6 V, Current = 0.1 A
    Temperature: T0 = 77.3 F, T1 = 76.9 F


    Outlets:


    Outlet Delay Time: 1


                            Current    Initial  Cycle
    ID  Name                State      State    Time
    --  ----                -------    -------  -----
     1  Outlet-1            On         Last     10
     2  Outlet-2            On         Last     10
     3  Router              On         Last     10
     4  Outlet-4            On         Last     10
     5  Outlet-5            On         Last     10
     6  Outlet-6            On         Last     10
     7  Outlet-7            On         Last     10
     8  Outlet-8            Off        Last     10


    Ok


    iBoot-PDU>
```

| | |
|---|---|
| `set outlet <1-x> <on \| off \| cycle>` | Controls the outlet.  x=the number of outlets in the device 4 or 8. |

| | | |
|---|---|---|
| `set outlet <remote name> <1-x> <on | off | cycle>` | | Allows control of outlets on local or remote devices |
| `set outlet <1-x> name <name>` | Outlet-1 - Outlet-8, default names for outlets | 30 characters & special characters |
| `set outlet <1-x> initialstate <on | off | last>` | Last | |
| `set outlet <1-x> cycletime <1-99>` | 10 | |
| `set outlet delaytime <0-99>` | 1 | In seconds |
| | | |

### 9.3.7. Groups

```
get groups

    Display the currently programmed groups:iBoot-PDU> get groups
    get groups

    Groups:

    Group ID  Name                          Status
    --------  ----                          ------
    497288cc  EvenGroup                     Mixed
    4be0cf06  OddGroup                      On


    Ok

    iBoot-PDU>
```

| | |
|---|---|
| `add group <name>` | 30 characters & special characters |
| `del group <name>` | Deletes the group |
| `set group <oldname> name <newname>` | 30 characters & special characters |
| `set group <name> <on | off | cycle>` | Controls the group (On, Off or Cycle) |
| `set group <name> outlet <all | 1-x> <yes | no>` | adds and removes outlet rights to this device |
| `set group <name> device <local | remotename> outlet <all | 1-x> <yes | no>` | adds and removes outlet rights for group on local | remote device |

```
get group <name>


Returns all group outlets.

Status:  N = ON   F= OFF  R = Rebooting   C=Cycling


  iBoot-PDU> get group EvenGroup

                                Outlets 1  2  3  4  5  6  7  8
   1. Local                             F     N     N     F
   2. WEB-Remote                        N     N     N     N

  Ok

  iBoot-PDU>
```

## 9.3.8. <u>Sequences</u>

```
get sequences


Returns all the sequences currently programmed


  iBoot-PDU> get sequences


  Sequences:
                                         Max    Last
  ID   Sequence ID   Name       Enabled  Count  Trig
  --   -----------   ----       -------  -----  ------
   1   ff60024c      FullShutdown         true    100
   2   e0e8c83d      Cal-2AM-Shutdown     true    100    Thu 2017-04-20 02:00:00 EDT
   3   f4c8c6d9      1-TestCableModem     true    100    Tue 2017-04-18 07:28:03 EDT
   4   f694b0fe      T0-CurrentOver12.5A  true    100
   5   fdb660ce      T1-TempHigh-79F      true    100    Tue 2017-04-18 10:50:10 EDT

  Ok

  iBoot-PDU>
```

```
get sequence <name>
Returns the details of the sequence

  iBoot-PDU> get sequence Delayed-Power-DOWN

  Sequence Config:

  ID:        de638eb6
  Name:      Delayed-Power-DOWN
  Enabled:   true
  Max Count: 100
  Last Trig: Fri 2017-04-28 17:07:14 EDT

  There are 15 actions for this sequence

  Position  Action ID  Action Type  Param1     Param2    Param3    Param4    Param5    Param6    Param7    Param8
  --------  ---------  -----------  ------     ------    ------    ------    ------    ------    ------    ------
     1      edf53b79   outlet       localhost  1         OFF
     2      edf7cff3   delay        3
     3      edfa7bb7   outlet       localhost  2         OFF
     4      edfcede7   delay        3
     5      ee00d1f2   outlet       localhost  3         OFF
     6      ee0399df   delay        3
     7      ee062410   outlet       localhost  4         OFF
     8      ee0954a4   delay        3
     9      ee0ca273   outlet       localhost  5         OFF
    10      ee0f3f79   delay        3
    11      ee12fcda   outlet       localhost  6         OFF
    12      ee15a7ed   delay        3
    13      ee1887ef   outlet       localhost  7         OFF
    14      ee1b986f   delay        3
    15      ee1f25ad   outlet       localhost  8         OFF


  Ok


  iBoot-PDU>
```

add sequence <name>                                        20 characters & special characters

| | | |
|---|---|---|
| `del sequence <name>` | | |
| `set sequence <name> <run | stop>` | | |
| `set sequence <oldname> name <newname>` | | 20 characters & special characters |
| `set sequence <name> enabled <true | false>` | FALSE | |
| `set sequence <name> maxcount <1-100>` | 100 | Set the maximum number of steps allows for sequence execution.  Prevents sequences from excessive looping |
| `del sequence <name> action <1-n | all>` | | n is the last number of sequence steps.  When a number is deleted, all remaining steps are renumbered automatically. |
| | | |

### 9.3.9.  Sequence Actions

| | |
|---|---|
| `add sequence <name> action` | |
| `del sequence <name> action <1-n>` | |
| `set sequence <name> action <1-n> type <none | delay | outlet | group | sequence | log | loop>` | Sets the type of action.  See Section 5.7 for type descriptions. |
| `set sequence <name> action <old#> position <new#>` | Reorders an action step.  All subsequent steps are moved down by one and prior steps are renumbered. |

Each type of sequence action has a set of parameters.  The following table details the nature of the parameters 1-8 for each action:

| Action Type | Param1 | Param2 | Param3 | Param4 – Param8 |
|---|---|---|---|---|
| Outlet | Device ID or Remote Name local and remotes | Outlet Number | Action "ON", "OFF", "CYCLE" | |
| Group | Group ID or NAME local groups only | Action "ON", "OFF", "CYCLE" | | |
| Delay | Number of Seconds | | | |
| Sequence | Device ID or NAME local and remotes | Sequence ID or NAME (Not "SAME" sequence) | Action "RUN", "STOP" | |
| Email | Destination Email Address | Subject Line: 80 Char String | Body Line 1: 80 Char String | Additional 80 Character Strings for Body of Email |
| Log | Header Text Ascii string 30 char | Log Text 80 Char Message | | |
| Loop | Target Action Number | Loop Count Integer 1-100 | | |

```
set sequence <name> action <1-n> param1 <value>
```

```
set sequence <name> action <1-n> param2 <value>
```

```
set sequence <name> action <1-n> param3 <value>
```

```
set sequence <name> action <1-n> param4 <value>
```

```
set sequence <name> action <1-n> param5 <value>
```

```
set sequence <name> action <1-n> param6 <value>
```

```
set sequence <name> action <1-n> param7 <value>
```

```
set sequence <name> action <1-n> param8 <value>
```

## 9.3.10. Remotes

| | |
|---|---|
| `add remote <IP \| FQDN>` | IP Address in dotted decimal format - OR – Fully Qualified Domain Dame (FQDN) 128 Characters max. |
| `del remote <name>` | |
| `set remote <name> name <name>` | NOT needed - name is from device |
| `set remote <name> address <IP \| FQDN>` | IP Address or FQDN |
| `set remote <name> username <username >`     admin | 30 characters & special characters |
| `set remote <name> password <password >`     admin | 30 characters & special characters |
| `set remote <name> delay <1-99>`     1 | In Seconds |
| `get remote <name>` | |

```
get remotes


Returns a  list of remote PDUs managed by this device
iBoot-PDU> get remotes

   Remotes:

       Remote ID  Status  Name           Address        Username   Password
       ---------  ------  ---------      -------        --------   -------
    1  3c3a8851   Up      My1stRemote    192.168.1.66    admin      admin
    2  3c3a9275   Up      AnotherRemote  192.168.1.77    admin      admin


   Ok

   iBoot-PDU>
```

## 9.3.11. Analog Triggers

```
get triggers
```

Returns a list of Analog Triggers

```
    iBoot-PDU> get triggers
    get triggers

    Analog Triggers:


                                                                      Trigger      Clear
        Trigger ID  Name                         Enabled  Type        Source   Condition  Sequence ID  Sequence ID
        ----------  ----                         -------  ----        ------   ---------  -----------  -----------
     1  713c1409    T2-Over90                    true     Temperature  T1       >=         72678d3e     None
     2  7c5c65ab    T2-Under80                   False    Temperature  T1       <=         9b520f94     None

    Ok

    iBoot-PDU>
```

| `add trigger <analog \| discrete> <name>` | Add a new trigger of a specific type with a name 30 characters & special characters |
|---|---|

```
get trigger <name>


Returns all information for individual trigger


    iBoot-PDU> get trigger T2-Over90

    Analog Trigger:


    ID:                        713c1409
    Name:                      T1-Over90
    Enabled:                   true
    Type:                      Temperature
    Condition:                 >=
    Trigger Point:             90.000000
    Hysteresis:                2.000000
    Repeat:                    Forever
    Source Instance:           T1
    Target IP:                 127.0.0.1
    Target Trigger Sequence ID: T1-T2-Over90 (72678d3e)
    Target Clear Sequence ID:   None
    Status:                    Clear
    Count:                     0
    Remaining:                 0
    Qualify Time:              2


    Ok


    iBoot-PDU>
```

| | | |
|---|---|---|
| `set trigger <name> name <new name>` | | rename an existing trigger 30 characters & special characters |
| `set trigger <name> enabled <true | false>` | FALSE | enable/disable an existing trigger Triggers need to be disabled before parameter changes? |
| `set trigger <name> type <voltage | current | temperature>` | Voltage | Will be others |
| `set trigger <name> condition < < | <= | > | >= >` | < | Compare condition |
| `set trigger <name> triggerpoint < # >` | 95 | |

| | | |
|---|---|---|
| `set trigger <name> hysteresis < # >` | 5 | |
| `set trigger <name> repeat <once | counter | forever>` | Forever | |
| `set trigger <name> sourceip <xxx.xxx.xxx.xxx | localhost | remote name>` | 127.0.0.1 (localhost) | 128 characters & special characters |
| `set trigger <name> sourceinstance <LV1 | LV2 | LC1 | LC2 | T0 | T1>` | LV1 / LC1 / T0 | This setting changes the Line Cord or Temperature Sensor that is being monitored for Analog Triggers.  It defaults to Line 1 or T0 (main sensor) depending on the trigger type.  This only needs to be changed to select LV2, LC2 or T1. |
| `set trigger <name> targettriggersequence <sequence name>` | None | Name of Sequence to run on Trigger |
| `set trigger <name> targetclearsequence <sequence name>` | None | Name of Sequence to run on Clear Trigger |
| `set trigger <name> count <count>` | 10 | |
| `set trigger <name> qulifytime <qualifytime>` | 10 | In seconds |
| `del trigger <name>` | | |
| | | |

## 9.3.12. Schedule Triggers

```
get events


Returns all Schedule Events


    iBoot-PDU> get events
    get events

    Events:
                                            Trigger
        Event ID  Name            Enabled  Repeat  Start Date  Start Time  Sequence ID
        --------  ----            -------  ------  ----------  ----------  -----------
      1 78d1bd16  Reboot2AM       true     daily   04/14/2017  02:00       78d1c63a
      2 78d1b282  PWR-UP-ALL      true     daily   05/02/2017  06:00       78d1a124


    Ok
    iBoot-PDU>
```

```
get event <name>


Returns the details of the event


    iBoot-PDU> get event Reboot2AM


    Event:


    ID:                     78d1bd16
    Name:                   Reboot2AM
    Enabled:                true
    Start Date:             05/04/2017
    Start Time:             02:00
    Repeat:                 daily
    Target Sequence:        Cal-Reboot2AM (78d1c63a)
    Run on Mondays:         true
    Run on Tuesdays:        true
    Run on Wednesdays:      true
    Run on Thursdays:       true
    Run on Fridays:         true
    Run on Saturdays:       true
    Run on Sundays:         true


    Ok
    iBoot-PDU>
```

| | | |
|---|---|---|
| `add event <name>` | | 30 characters & special characters |
| `del event <name>` | | |
| `set event <name> name <newname>` | | 30 characters & special characters |
| `set event <name> enabled <true | false>` | FALSE | |
| `set event <name> startdate <MM/ DD/YYYY>` | MM/DD/YYYY | 10 characters & special characters |
| `set event <name> starttime <HH:MM>` | HH:MM | 5 characters & special characters |
| `set event <name> repeat <hourly | daily | weekly>` | Daily | |
| `set event <name> targetsequence <sequencename>` | None | |

| set event \<name\> \<dayofweek\> \<True \| False\> | True for all days | Sunday \| Monday \|Tuesday \|Wednesday \|Thursday \| Friday \|Saturday |
|---|---|---|
| | | |

### 9.3.13. AutoPing Triggers

```
get autopings
retrieves all AutoPing status


  iBoot-PDU> get autopings

  Auto-Ping Triggers:
                                                        Ping              Trigger      Clear
     AutoPing ID  Name                  Enabled Status  Address           Sequence ID  Sequence ID      Period
  Count
     -----------  ----                  ------- ------  -------           -----------  -----------      ------  --
  ---
   1  8a4daf9d    A1-RouterTest         true    Fail    dataprobe.com     None         None             60       3
   2  4469d511    A2-DualTest           true    Fail    10.10.10.7        None         None             10      10
   3  447056ab    B2-DualTest           true    Fail    10.10.10.1        None         None             10      10


  Ok
  iBoot-PDU>
```

```
get autoping <name>


Returns the configuration of any AutpPing


    iBoot-PDU> get autoping A1-RouterTest


    Auto-Ping Trigger:


    ID:                     8a4daf9d
    Name:                   A1-RouterTest
    Enabled:                true
    Status:                 Clear
    Address:                dataprobe.com
    Target Device:          127.0.0.1
    Trigger Sequence ID:    None
    Clear Sequence ID:      None
    Period:                 60 second(s)
    Fail Count:             3
    Timeout:                30 second(s)
    Restart Delay:          10 second(s)
    Metric Name:            None
    Metric Condition:       <
    Metric Value:           1
    Metric Sequence Trigger ID: None


    Ok
    iBoot-PDU>
```

| | | |
|---|---|---|
| `add autoping <name>` | | 20 characers &special characters |
| `del autoping <name>` | | |
| `set autoping <name> name <newname>` | | 20 characters & special characters |
| `set autoping <name> enabled <true | false>` | FALSE | |
| `set autoping <name> address <IP | FQDN>` | 0.0.0.0 | IP or 128 characters for FQDN |
| `set autoping <name> count <1-99>` | 3 | |
| `set autoping <name> period <1-999>` | 10 seconds | NOTE: will be avilable in firmware following version 06242016 |

| | |
|---|---|
| `set autoping <name> timeout <1-999>` | 3 seconds |
| `set autoping <name> failtriggersequence`<br>`<sequence name \| none>` | None |
| `set autoping <name> cleartriggersequence`<br>`<sequence name \| none>` | None |
| `set autoping <name> restartdelay <0-999>` | 0 seconds |
| `set autoping <name> group <name> <yes \| no>` | |
| `add autoping group <name>` | 20 characters & special characters |

```
get autoping groups
Returns a summary of the AutoPings  Where any with A and B tests are combined to 1 record


  iBoot-PDU> get autoping groups


  Auto-Ping Groups:

                                                      Fail Trigger  Clear Trigger  Cycle
      AP Group ID  Name                Enabled  Status  Mode  Sequence ID   Sequence ID    Count
      -----------  ----                -------  ------  ----  ------------  -------------  -----
   1  8a52b244     1-RouterTest        true     Clear   OR    8af12b33      None               5
   2  4475ca53     2-DualTest          true     Clear   OR    45684243      None               5


  Ok
  iBoot-PDU>
```

| | |
|---|---|
| `set autoping group <name> name <new name>` | 20 characters & special characters |
| `set autoping group <name> enabled <true \| false>` | FALSE |
| `set autoping group <name> mode <and \| or>` | And |
| `set autoping group <name> failtriggersequence`<br>`<sequence name>` | None |
| `set autoping group <name> cleartriggersequence`<br>`<sequence name>` | None |
| `set autoping group <name> cyclecount <0-999>` | 0 |
| | |

## 9.3.14. EMAIL

```
get email
```

Displays the Email Parameters:

```
iBoot-PDU> get email

E-mail Settings:

Enabled:   true
Server:    smtp.gmail.com
Port:      587
Encrypted: true
Username:  YourEmailAccount@gmail.com
Password:  yourpassword
Address:   fromemailaddress@gmail.com
Retries:   3


Ok
iBoot-PDU>
```

| | | |
|---|---|---|
| `set email enabled <true \| false>` | FALSE | |
| `set email server <IP \| FQDN>` | 0.0.0.0 | IP Address xxx.xxx.xxx.xxx or 128 characters maximum for FQDN |
| `set email port <1-65535>` | 25 | `Ports 8888, 8889, 8890, 8891, 8892, 8893, 8894, 8895, 8896, 8897, 8898, 8899 and 9090 are reserved for internal use` |
| `set email encryption <true \| false>` | FALSE | |
| `set email username <username>` | Username | 30 characters & special characters |
| `set email password <password>` | Password | 30 characters & special characters |
| `set email retries <0-10>` | 3 | |
| | | |

### 9.3.15. Cloud Services

```
get cloud


Returns the Status of the Cloud Service settings


    iBoot-PDU> get cloud
    Cloud Enabled:        false
    Cloud Address:        iboot.co
    Cloud Activation Code: <none>
    Cloud Activation UUID: <none>
    Cloud Username:       Demo
    Cloud Password:       myPassword
    Cloud Location:       1b-LAB
    Cloud Status:


    OK
```

Cloud Activation Code and Cloud Activation UUID will be assigned by the cloud server and then displayed, after Cloud enabled is set true, and the unit is in the cloud account.

When cloud enabled is true, no settings can be changed other than to set cloud enabled.as false.

Cloud Status will indicate any errors that occurred during activation and will display as "Active" when unit is in an account.

| `set cloud enabled <true \| false>` | FALSE | Set as true as the last step to enable the cloud service. (**after setting parameters**). |
| `set cloud address <IP \| FQDN>` | iboot.co | This should remain **iboot.co** unless change requested by Dataprobe support. |
| `set cloud username <cloud username>` | | Cloud Account Username |
| `set cloud password <cloud password>` | | Cloud Account Password |
| `set cloud location <cloud location>` | | This is an optional setting<br><br>If location is not specified, the device is added to the unassigned location.<br><br>if location exists, the device is added to the location.<br><br>if location does not exist, the location is created, and the device is added to the location. |

## 9.3.16. SNMP

```
get snmp


Returns the SNMP manager information


    iBoot-PDU> get snmp
    get snmp


    SNMP Settings:


    Enabled:  true


    SNMP Managers:


    ID  Name                 IP Address       Read Community       Write Community
    --  ----                 ----------       --------------       ---------------
     1  Corporate            10.10.10.7         Public               Private
     2  SNMP Manager         0.0.0.0            public               private
     3  SNMP Manager         0.0.0.0            public               private
     4  SNMP Manager         0.0.0.0            public               private


    Ok
    iBoot-PDU>
```

| | | |
|---|---|---|
| `set snmp enabled <true | false>` | FALSE | |
| `set snmp manager <1-4> name <name>` | SNMP Manager for all four managers | 30 characters & special characters |
| `set snmp manager <1-4> ip <xxx.xxx.xxx.xxx>` | 0.0.0.0 | |
| `set snmp manager <1-4> readcommunity <readcommunity>` | Public | |
| `set snmp manager <1-4> writecommunity <writecommunity>` | Private | |

### 9.3.17. Syslog

```
get rsyslogs
 Returns the Rsyslog settings


   iBoot-PDU> get rsyslogs

   Rsyslog Servers:

      Rsyslog ID  Name                    Enabled  Server IP        Protocol  Port
      ----------  ----                    -------  ---------        --------  ----
    1  286d2712    DataCenter              true     10.10.10.8       tcp       514


   Ok
iBoot-PDU>
```

| | |
|---|---|
| `add rsyslog <name>` | 30 characters & special characters |
| `del rsyslog <name>` | |
| `set rsyslog <name> name <newname>` | 30 characters & special characters |

| | | |
|---|---|---|
| `set rsyslog <name> enabled <true | false>` | FALSE | |
| `set rsyslog <name> serverip <IP | FQDN>` | 0.0.0.0 | IP or 128 characters for FQDN |
| `set rsyslog <name> protocol <tcp | udp>` | UDP | |
| `set rsyslog <name> port <1-65535>` | 514 | `Ports 8888, 8889, 8890, 8891, 8892, 8893, 8894, 8895, 8896, 8897, 8898, 8899 and 9090 are reserved for internal use` |

### 9.3.18. Firmware Upgrade

Upgrade by CLI sequence overview – details for commands follow the overview
1. get firmware list – gets the current list of available firmware.
2. set firmware image <image ID> – to download the image to the iBoot-PDU
   this is usually "set firmware image LATEST"
3. get firmware status – check on the status of the download until download is installed (repeat multiple times or wait)
   reports **downloading** while downloading, **installing** while installing and **installed** when complete
4. set firmware image apply – sets iBoot-PDU to use the installed code on reboot
5. reboot – reboot the iBoot-PDU to reboot and apply the newly downloaded and installed code

```
get firmware list


Gets the current list of available firmware from
http://dataprobe.com/upgrade/iboot-pdu/


iBoot-PDU> get firmware list
Firmware Server: http://dataprobe.com/upgrade/iboot-pdu/

Available Firmware Images (3):

    Image ID  Version        Release Date  Filename                         Size        Description              Latest Release
    --------  -------        ------------  --------                         ----        -----------              --------------

  1 LATEST    1.12.01292019  01/29/2019    iBoot-PDU-1.12.01292019.img      143605760   iBoot - PDU v1.12.01292019   true
  2 09192018  1.06.09192018  09/19/2018    iBoot-PDU-1.06.09192018.img      143605760   iBoot - PDU v1.06.09192018   false
  3 09112018  1.04.09112018  09/11/2018    iBoot-PDU-1.04.09112018.img      143605760   iBoot - PDU v1.04.09112018   false

Ok

iBoot-PDU>
```

| `get firmware status` | Shows the firmware stored in the device and ready to be installed |
| --- | --- |
| | ```<br>iBoot-PDU> get firmware status<br><br>Firmware Server: http://Dataprobe.com/upgrade/iBoot-pdu/<br>Upgrade Status:<br>Active Image:    1.12.01292019<br>Inactive Image:  Empty<br><br>OK<br>iBoot-PDU><br>``` |
| `set firmware image <image ID>` | Selects and begins to download version to unit. |
| `set firmware image apply` | Select which image to use on next reboot. |

# 10. RESTful API

This section details the specifications and usage of the RESTful API for the iBoot-PDU family of power distribution units. It allows users to get outlet status and control outlets using HTTP and HTTPS.

The system relies on an authentication token to provide additional security.

## 10.1. Authorization Token

An authorization token is required prior to any further communication. The token is valid until there is 5 minutes of inactivity between the client and the iBoot-PDU. Each time the RESTful API is accessed using the token this 5 minute timeout will reset.

### 10.1.1. Acquire the token from the iBoot-PDU at

https://<ipaddress>/services/auth/ or
http://<ipaddress>/services/auth/
where <ipaddress> is the IP Address of the iBoot-PDU

The authorization request requires a username and password that is valid for the iBoot-PDU being accessed. The authorization request uses the following JSON structure:

```
{
        "username":"<username>",                //PDU Username
        "password":"<password>"                 //PDU Password
}
```

Upon receiving an authorization request, the iBoot-PDU will issue a response with the following JSON structure:

```
{
        "success":"<true|false>",               //Result code true or false
        "message":"<message>",                  //Error Message from the server. Specific for error
        "token":"####-####-####-####"           //64 bit randomly generated token
}
```

**success** returns true or false based on the successful receipt of the authorization request
**message** is an error message to assist in debugging when success is false
**token** is the 64-bit code to allow further communication with the iBoot-PDU

```
Example – using CURL    Authorization Request:

curl --data '{"username":"Jeff", "password":"jeffpass"}' -X POST http://10.10.10.30/services/auth/
```

Authorization Response:

```
{"success":"true","message":"","token":"7594-235E-E439-69D3"}
```

## 10.2.  Retrieve Status

Get the status of one or more outlets, or any predefined group of outlets at

https://<ipaddress>/services/retrieve/    or
http://<ipaddress>/services/retrieve/
where <ipaddress> is the IP Address of the iBoot-PDU

### 10.2.1. The JSON structure for Retrieve is

```
{
        "token":"####-####-####-####",           //token received from authorization request
        "outlets":[<array>],                      //array of outlets to retrieve
        "groups":[<array>]                        //array of groups to retrieve
}
```

**token** is a 64-bit value retrieved from https://<ipaddress>/services/auth/.
**outlets** is a JSON array of the outlets to be retrieved.
**outlets** accepts outlet numbers, outlet names, or a combination of both.
**groups** is a JSON array of the groups to be retrieved.
**groups** accepts one or more groups to retrieve.

The API will return the following JSON structure upon receipt of a retrieve request.

```
{
        "success":"[true|false]",                 //Result code
        "message":"[errormessage]"                //Message from the server, if status false
        "outlets":{                               //      message specific for the error
                "<outletid1>":"[on|off]",         //the status of the first requested outlet
                "<outletid2>":"[on|off]",         //the status of the second requested outlet
                "<outletidn>":"[on|off]"          //the status of the last requested outlet
        }
        "groups":{
                "<groupid1>":"[on|off|mixed]",    //the status of the first requested group
                "<groupid2>":"[on|off|mixed]",    //the status of the second requested group
                "<groupidn>":"[on|off|mixed]"     //the status of the last requested group
        }
}
```

**success** is true if the command was executed correctly.
**success** is false if the command could not be executed.
**message** is a string containing an error message when **success** is false.
**outlets** is a substructure containing JSON variable value pairs where the variable is the outlet name and the value is the outlet status.
**groups** is a substructure containing JSON variable value pairs where the variable is the group name and the value is the group status.

### 10.2.2. Example – using CURL   Retrieve:

```
curl--data'{"token":"7594-235E-E439-
69D3","outlets":["1","2","5"],"groups":["Group1","Group2","group3"]}'-X POST
http://10.10.10.30/services/retrieve/
```

### 10.2.3. Retrieve Response:

```
{"success":"true","message":"","outlets":{"1":"Off","2":"Off","5":"On"},"groups":{"Group1":"Mixed",
"Group2":"Mixed","group3":"Mixed"}}
```

## 10.3. Control

Control any outlet, group, or sequence at

https://<ipaddress>/services/control/   or
http://<ipaddress>/services/control/
where <ipaddress> is the IP Address of the iBoot-PDU to be controlled

### 10.3.1. The JSON Structure for Control is

```
{

        "token":"####-####-####-####",              //token received from auth
        "control":"[outlet|group|sequence]",         //object to be controlled
        "command":"[on|off|cycle|run|stop]",         //command to be executed
        "outlets":[<array>],                         //array of outlets to control
        "sequence":"<sequencename>",                 //name of the sequence
        "group","<groupname>"                        //name of the group to be controlled
}
```

**token** is a 64-bit value retrieved from https://pdu ip address/services/auth.
**control** the object to be controlled.
**control** will accept outlet, group or sequence.
**command** will accept on, off, or cycle when control is outlet or group.
**command** will accept run or stop when control is sequence.
**outlets** will only be required when command is outlet.
**outlets** is ignored when command is group or sequence.
**outlets** is a JSON array of the outlets to be controlled.
**outlets** will accept outlet numbers, outlet names, or a combination of both.
**sequence** is only be required when command is sequence.
**sequence** accepts sequence names only.
**group** only requires when command is group.
**group** only accepts group names only.

### 10.3.2. Example 1 – using CURL   Control:

```
curl --data '{"token":"CFB0-4354-3008-
386C","control":"sequence","command":"run","sequence":"Jeff1"}' -X
POST http://10.10.10.30/services/control/
```

Response:

```
{"success":"true","message":""}
```

### 10.3.3. Example 2 – using CURL   Control:

```
curl --data '{"token":"C773-A44D-6A91-D08E","control":"group","command":"off","group":"Group2"}' -X
POST http://10.10.10.30/services/control/
```

Response:
```
{"success":"true","message":""}
```

### 10.3.4. Example 3 – using CURL   Control:

```
curl --data '{"token":"3638-A8FC-CE55-
01AC","control":"outlet","command":"off","outlets":["0","1","5"]}' -X
POST http://10.10.10.30/services/control/
```

Response:
```
{"success":"true","message":""}
```

# 11.  DMP Protocol

A Direct Messaging Protocol (DMP) has been added to the Command Line Interface (CLI), in an effort to improve the iBoot-PDU's Machine to Machine communications.

The DMP can be used with network or serial (USB) communications.

Establish a connection and instead of pressing a key to obtain a User log on prompt, press the <ESC> key to issue DMP protocol commands.

## 11.1.  Format

The DMP protocol uses a combination of the original iPAL and RPS protocols

> <**ESC**><Username><**ESC**><Password><**ESC**><Command><**CR**>

Syntax Definitions

| | |
|---|---|
| <**ESC**> | ASCII Escape Character (0x1B) |
| <Username> | The username of the account to be used |
| <Password> | Password of the account to be used |
| <Command> | Command to be issued |
| <**CR**> | ASCII Carriage Return (0x0D) or ASCII Line Feed (0x10) |

**Bold** text enclosed between the <> brackets are fixed ASCII Characters. Normal text between <> brackets are replaced with the appropriate string to complete the command.

## 11.2.  Commands and Responses

| Command | Function | Response |
|---|---|---|
| `outlet <1-8> on` | Turns on the specified outlet | `OK-Outlet <1-8>=On`<br>`Error-Outlet <1-8> On Failed` |
| `outlet <1-8> off` | Turns off the specified outlet | `OK Outlet <1-8>=Off`<br>`Error-Outlet <1-8> Off Failed` |
| `outlet <1-8> cycle` | Cycles power on specified outlet.<br>Off-On-Off  -  or  -  On-Off-On | `OK-Outlet <1-8>=Cycle`<br>`Error-Outlet <1-8> Cycle Failed` |
| `outlet <1-8> status` | Displays status for specified outlet | `OK-Outlet Status <1-8>=On`<br>`OK-Outlet Status <1-8>=Off` |
| `outlet status` | Displays all outlet status<br> (4 for PDU4 and 8 for PDU8) | `OK-Outlet Status 1=Off`<br>`OK-Outlet Status 2=On`<br>`OK-Outlet Status 3=On`<br>`OK-Outlet Status 4=On`<br>`OK-Outlet Status 5=On`<br>`OK-Outlet Status 6=On`<br>`OK-Outlet Status 7=On`<br>`OK-Outlet Status 8=On` |
| `outlet <1-8> name` | Displays name for specified outlet | `OK-Outlet Name 1=Outlet-1` |
| `outlet name` | Displays all outlet names<br> (4 for PDU4 and 8 for PDU8) | `OK-Outlet Name 1=Outlet-1`<br>`OK-Outlet Name 2=Outlet-2`<br>`OK-Outlet Name 3=Outlet-3`<br>`OK-Outlet Name 4=Outlet-4`<br>`OK-Outlet Name 5=Outlet-5`<br>`OK-Outlet Name 6=Outlet-6`<br>`OK-Outlet Name 7=Outlet-7`<br>`OK-Outlet Name 8=Outlet-8` |

| voltage ? | Display the voltage of input line (2 for 2 input models) | OK-1-Voltage=120.2<br>OK-2-Voltage=119.4 |
|---|---|---|
| current ? | Display the current for input line (2 for 2 input models) | OK-1-Current=5.1<br>OK-2-Current=8.2 |
| temperature ? | Display Temperature probe readings (when probe is present) | OK-1-Temp=75.0 F<br>OK-2-Temp=72.2 F<br>Error-Temperature ? Failed No probe connected |
| logout | Exit DMP and terminate connection | |

## 11.3. Error Messages

These are some error messages that may appear to help when sending incorrect commands.
(errors below use user admin with password admin)
```
<ESC>admin<ESC>badpass<ESC>outlet 1 on<CR>
Error-Invalid Username or Password

<ESC>admin<ESC>admin<ESC>outtt 1 off<CR>
Error-Invalid Command

<ESC>admin<ESC>admin<ESC>outlet 19 on<CR>
Error-Outlet 19 Failed-Invalid Outlet

<ESC>admin<ESC>admin<ESC>outlet 1 fff<CR>
Error-Invalid Command Outlet fff
```

## 11.4. Examples:

(examples below use user admin with password admin)
```
<ESC>admin<ESC>admin<ESC>outlet 1 off<CR>
OK-Outlet 1=Off

<ESC>admin<ESC>admin<ESC>outlet 2 on<CR>
OK-Outlet 2=On

<ESC>admin<ESC>admin<ESC>outlet 3 cycle<CR>
OK-Outlet 3=Cycle

<ESC>admin<ESC>admin<ESC>outlet 4 status<CR>
OK-Outlet Status 4=On

<ESC>admin<ESC>admin<ESC>outlet 5 name<CR>
OK-Outlet Name 5=DVR

<ESC>admin<ESC>admin<ESC>outlet name<CR>
OK-Outlet Name 1=Modem
OK-Outlet Name 2=Router
OK-Outlet Name 3=Switch
OK-Outlet Name 4=PC
OK-Outlet Name 5=DVR
OK-Outlet Name 6=Screen
OK-Outlet Name 7=Monitor
OK-Outlet Name 8=Unused

<ESC>admin<ESC>admin<ESC>Temperature ?<CR>
OK-1-Temp=74.9 F
OK-2-Temp=72.9 F
<ESC>admin<ESC>admin<ESC>Voltage ?<CR>
OK-1-Voltage=118.4

<ESC>admin<ESC>admin<ESC>Current ?<CR>
OK-1-Current=7.0
```

# 12.     USB Interfaces

The USB ports are used to integrate peripheral devices to the iBoot-PDU.  There are four USB A ports that allow attachment of peripherals and one USB B mini port that allows attachment of a computer or battery.

## 12.1.  Temperature Monitor

The temperature monitor Item 1940213 provides two independent probes.  One is internal to the USB module and the other is on a 3' cable that attaches to the module.  The use of the cable probe is optional.

### 12.1.1. Temperature Probe Installation

If the cable probe is to be used, connect it to the module before inserting the module in the USB port of the PDU.



Connect the module to any of the USB ports on the PDU.  The PDU will recognize the module and display the temperature on the dashboard in the lower right hand corner of the device card.

If the external probe is not installed, the temperature for T2 will read 200 Degrees C.
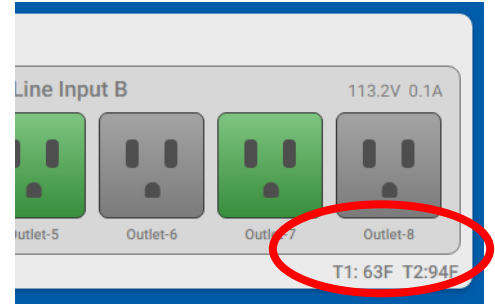
### 12.1.2. Temperature Probe Specifications

 Range of measuring: -40~+125 C; -40~+257F;
 Resolution rate: 0.06C
 Precision: + 2C;

## 12.2.  Landline Modem

The iBoot-PDU supports model MODEM-PDU-1 for data and voice control.

### 12.2.1. Installation

Install the modem in any USB port on the iBoot-PDU.   Connect a landline to the RJ11 jack marked LINE on the modem.  The iBoot-PDU will recognize the modem and it will be ready to use immediately.

### 12.2.2. Data Calls

Using any terminal emulation software, place a call to the landline number.  The modem supports V.90 56K data rates.

Use the CLI commands in Section 9 for complete instruction set.

### 12.2.3. Voice Calls

The iBoot-PDU allows voice calls to control the local outlets with dialing tones.  It uses a voice response to guide the user and provide status information.

Use of tone control requires a unique PIN number set for each user.  This PIN is set using the command line interface and must be 4 to 10 digits long. Program a PIN code of 0 to disable a users ability to use DTMF control.

12.2.4. <u>DTMF Call Sequence:</u>

1. Dial the phone number connected to the iBoot-PDU.  Upon connection a prompt tone will be heard.

2. Enter the PIN followed by the # key.  Upon successful entry, a ready tone will be heard.  If no PIN or incorrect PIN is received, an error tone and new prompt tone will be issued.  After three unsuccessful attempts, the iBoot-PDU will hang up.

3. At the ready tone, enter an outlet number 1-8.  The current status of that outlet will be stated in English:  i.e. "one on" or "six off".

4. The # key is used to change the state of the outlet.  The * key is used to reboot (or power cycle) the outlet for the time configured with the CLI command cycle time.  The new status of the outlet is stated.  If the * key is used, the iBoot-PDU will also state 'begin' to indicate the reboot or cycle has begun.

5. A new prompt tone will indicate that new commands can be entered.  While a reboot is in progress, additional outlets can be addressed and commanded.

6. The caller can hang up at any time to disconnect the call.  Any reboots in progress will finish their cycle time as programmed.

    **NOTE:** Not issuing a command for 5 seconds will cause the iBoot-PDU to hang up.


   Notes:

1. The only outlets that a caller has access to are determined by the CLI command set user outlet.

2. While prompts and voice responses are being played, the iBoot-PDU will not process DTMF tones.  Wait for the status and prompts to complete before issuing new commands

3. Address an outlet with a number command before entering a control command (# or *) if unsure which outlet is being addressed, send the outlet number again.

4. Factory Default user admin has default PIN12345.  Change to desired PIN if maintaining this account.  Resetting to factory defaults will restore this user and PIN.


## 12.3.  Serial Port

The USB B port on the iBoot-PDU can be used for serial communication.  The Command Line Interface through the serial connection allows programming of all parameters of the unit, and control of all functions.

To use the USB port, connect to a Windows PC, and the installation should be automatic.  If you driver does not install, or you need drivers for other operating systems, please contact Dataprobe Technical Support.

The default settings for the serial connection is 115,200 -8 data - No parity - 1 Stop- (8-N-1)

The USB port can now be used with a standard Terminal Client (like HyperTerminal) to communicate directly with the iBoot-PDU.  Dataprobe also provides a simple terminal program (EZ Term) at http://dataprobe.com/support-iboot-pdu/

## 12.4.  Battery Backup

An external USB battery can be used to maintain uptime for the manageability of the iBoot-PDU during power outages.  Using a battery, in conjunction with a voltage alarm and email sequence provides a 'Call-For-Help' function that alerts personnel when there is a power failure at the facility.
To properly size the battery, the following guidance is provided

Power draw on USB-B port when the iBoot-PDU is not on battery:  7mA max.  Estimate 9.5 days on a 1600mAh battery that is not being recharged.

Power draw on USB-B port when the iBoot-PDU is on battery: 250mA max.  Estimate 6.4 hours on 1600mAh battery.

**Please Note.**  When the iBoot-PDU goes onto battery power, the USB-A ports will be disabled to prevent excessive draining of the battery.  Resumption of A/C power requires a manual restart of the USB ports to resume their operation.  Select the Reboot function on the iBoot-PDU to restart the USB-A ports if they are being used.
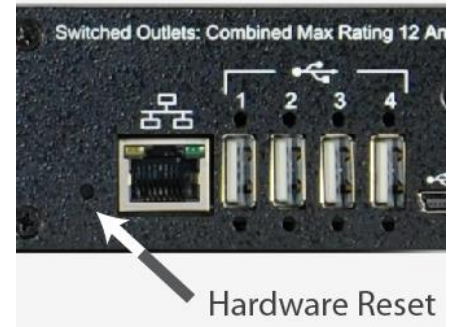
# 13. Troubleshooting

## 13.1. Hardware Reset

The hardware reset is located adjacent to the network jack on the rear panel.   Use a non-conductive pin to actuate the reset if necessary.

Momentarily depress the reset button to perform a hardware reset.

Note that outlets will reset to the status as determined by their Last State Setting.



## 13.2. Reset admin password

The password for user **admin** can only be set within the first two minutes of powering up the iBoot-PDU.

The DMU utility has the ability to reset the admin password back to factory default:
        Version 1.38 and below..............Password:  admin
        Version 1.39 and above .............Password:  admin<last 3 Mac segments>
            ( If Mac address is **01:02:03:04:ab:06** then default Password is **admin04ab06 )**
                **ALL Passwords are case sensitive**
                Please see section 3.5.1 for details.

## 13.3. Reset Factory Defaults

Holding the hardware reset for more than 5 seconds will reset the device to its factory defaults.

While resetting all the power LEDs will flash for 5 seconds.

Note that this will also reset the IP Address settings to DHCP or 192.168.1.254 if no DHCP server is found.

# 14.  Specifications

## 14.1.  Physical:

| | |
|---|---|
| Height: | 1U  1.75 in (4.5 cm) |
| Width: | 19.0 in (48.25 cm)  (8 Port Versions) |
| | 11.0 in (27.94 cm)  (4 Port Versions) |
| Depth: | 6.00 in (15.25 cm) |
| Weight: | 7 lbs (3.25 Kg) |

## 14.2.  Environmental:

Temperature

| | |
|---|---|
| Operating: | 0 to $55^o$ C IEC Versions |
| | $60^o$ C NEMA Versions |
| Storage: | -10 to $85^o$ C |
| Altitude | 2000m Operating |
| Relative Humidity | 0 to 95% |
| | Non-Condensing |

## 14.3. Power Inputs and Outputs

| Input Required | Model with designation | Input | Output |
|---|---|---|---|
| | -N15 | N15 | 4 x N15<br>8 x N15 |
| | -2N15 | 2 x N15 | 8 x N15 |
| | -N20 | N20 | 4 x N15<br>8 x N15 |
| | -2N20 | 2 x N20 | 8 x N15 |
| | -C10 | C14 | 4 x C13<br>8 x C13 |
| | -2C10 | 2 x C14 | 8 x C13 |
| | -C20 | C20 | 4 x C13<br>8 x C13 |
| | -2C20 | 2 x C20 | 8 x C13 |

Key:

Input:
- N15    NEMA 5-15 Linecord 115VAC 15 Amps combined total switched
- N20    NEMA 5-20 Linecord 115VAC 20 Amps combined total switched
- C14    IEC320 C14 Receptacle 100-240VAC 10 Amps total at 240VAC Max
- C20    IEC320 C20 Receptacle 100-240VAC 20 Amps total at 240VAC Max

Outlet:
- N15    NEMA 5-15 Receptacle 115VAC 12 Amps Max
- C13    IEC 320 C13 Receptacle 100-240VAC 10 Amps Max

## 14.4. Safety

- Comply with UL62368-1, 2nd Edition 2014-12-01 (US)
- Comply with IEC62368-1:2014
- Comply with EN62368-1:2014 + A11:2017
- Comply with CAN/CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12-01 (Canada)

## 14.5. Emissions

- ANSI C63.4:2014 & 47 CFR Part 15, Subpart B, Class B
- ICES-003:2016 Issue 6, Class B

EN 55032 : 2012+AC:2013

EN 61000-3-2 : 2014, EN 61000-3-3 : 2013

EN 55024 : 2010+A1:2015, IEC 61000-4-2 : 2008

IEC 61000-4-3 : 2006+A1:2007+A2:2010

IEC 61000-4-4 : 2012, IEC 61000-4-5 : 2014

IEC 61000-4-6 : 2013, IEC 61000-4-8 : 2009, IEC 61000-4-11 : 2004

## 14.6. Environmental

- RoHS3 Directive (EU) 2015/863 Compliant
- Rated Pollution Degree 2 (PD 2) for use in business/laboratory environments with only Non-Conductive pollution present

# 15. Compliance Statements

## 15.1. FCC Part 15 Regulation

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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Plug the equipment into an outlet on a circuit that is different from the one used by the receiver.
• Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC rules. Operation of this device is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference that may cause undesired operation. **WARNING:** Changes or modifications to this unit not expressly approved by the  party responsible for compliance could void the user's authority to operate the equipment

## 15.2. EMC, Safety, and R&TTE Directive Compliance

The CE mark is affixed to this product to confirm compliance with the following European Community Directives:

- Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of Member States relating to electromagnetic compatibility.

- Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

- Council Directive 1999/5/EC of 9 March on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

## 15.3. Industry Canada

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe AB respecte toutes les exigences du Reglement Canadien sur le matériel brouilleur.

This product meets the applicable Industry Canada technical specifications

# 16.    Technical Support and Warranty

Dataprobe Technical Support is available 8:30AM to 5:30PM ET to assist you in the installation and operation of this product.  To obtain Technical Support call 201- 934-5111, or Email us at tech@dataprobe.com.  Please have the following information available when you call:

•        Model of Product
•        Lot and Version Numbers
•        Data of Purchase
•        Name of Seller (if other than Dataprobe)

**If you purchased this product through an Authorized Dataprobe Reseller, you should contact them first, as they may have information about the application that can more quickly answer your questions.**

## 16.1.  WARRANTY

Seller warrants this product, if used in accordance with all applicable instructions, to be free from original defects in material and workmanship for a period of **Three Years** from the date of initial purchase.  If the product should prove defective within that period, Seller will repair or replace the product, at its sole discretion.  Repairs may be made with new or refurbished components and replacements may be new or refurbished at the Sellers sole discretion. Repaired or replaced units shall be warrantied for the balance of the original warranty, or 90 days, whichever is greater.

**If Purchased from Dataprobe Inc.;** Service under this Warranty is obtained by shipping the product (with all charges prepaid) to the address below.  Seller will pay return shipping charges within the United States.  Call Dataprobe Technical Service to receive a Return Materials Authorization (RMA) Number prior to sending any equipment back for repair.  Include all cables, power supplies, accessories and proof of purchase with shipment.

**If purchased from an Authorized Dataprobe Reseller;** Service under this Warranty is obtained by contacting your Authorized Dataprobe Reseller.

**THIS WARRANTY DOES NOT APPLY TO NORMAL WEAR OR TO DAMAGE RESULTING FROM ACCIDENT, MISUSE, ABUSE OR NEGLECT.  SELLER MAKES NO EXPRESS WARRANTIES OTHER THAN THE WARRANTY EXPRESSLY SET FORTH HEREIN.  EXCEPT TO THE EXTENT PROHIBITED BY LAW, ALL IMPLIED WARRANTIES, INCLUDING ALL WARRANTIES OF MERCHANT ABILITY OR FITNESS FOR ANY PURPOSE ARE LIMITED TO THE WARRANTY PERIOD SET FORTH ABOVE; AND THIS WARRANTY EXPRESSLY EXCLUDES ALL INCIDENTAL AND CONSEQUENTIAL DAMAGES.**

Some states do not allow limitations on how long an implied warranty lasts, and some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.  This warranty gives you specific legal rights, and you may have other rights which vary from jurisdictions to jurisdiction.

**WARNING:** The individual user should take care to determine prior to use whether this device is suitable, adequate or safe for the use intended.  Since individual applications are subject to great variation, the manufacturer makes no representation or warranty as to the suitability of fitness for any specific application.

**Dataprobe Inc.**
**Technical Support:  201-934-5111**
**support@dataprobe.com**
**dataprobe.com/support-iboot-pdu/**

Dataprobe Inc
60E Commerce Way
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www.dataprobe.com/support      201-934-9944

# Appendix A: Models and Configuration

## Models Covered in this Document

| SKU | Model | Power Inlet | Power Outlets | Dual Network | Rev A Hardware[1] |
|---|---|---|---|---|---|
| 1530041 | iBoot-PDU4-N15 | 1 x NEMA 5-15P   2 Meter Linecord | 4 x NEMA 5-15R | | |
| 1530141 | iBoot-PDU4A-N15 | | | | Yes |
| 1530042 | iBoot-PDU4S-N15 | | | Yes | |
| 1530142 | iBoot-PDU4SA-N15 | | | Yes | Yes |
| 1530043 | iBoot-PDU4-N20 | 1 x NEMA 5-20P  2 Meter Linecord | 4 x NEMA 5-15R | | |
| 1530143 | iBoot-PDU4A-N20 | | | | Yes |
| 1530044 | iBoot-PDU4S-N20 | | | Yes | |
| 1530144 | iBoot-PDU4SA-N20 | | | Yes | Yes |
| 1530045 | iBoot-PDU4-C10 | 1 x IEC320 C14 Detached Linecord IEC C13 to CEE7 2 Meters | 4 x IEC C13 | | |
| 1530145 | iBoot-PDU4A-C10 | | | | Yes |
| 1530046 | iBoot-PDU4S-C10 | | | Yes | |
| 1530146 | iBoot-PDU4SA-C10 | | | Yes | Yes |
| 1530047 | iBoot-PDU4-C20 | 1 x IEC320 C20 Detached Linecord IEC C19  to CEE7 2 Meters | 4 x IEC C13 | | |
| 1530147 | iBoot-PDU4A-C20 | | | | Yes |
| 1530048 | iBoot-PDU4S-C20 | | | Yes | |
| 1530148 | iBoot-PDU4SA-C20 | | | Yes | Yes |
| 1530081 | iBoot-PDU8-N15 | 1 x NEMA 5-15P  2 Meter Linecord | 8 x NEMA 5-15R | | |
| 1530181 | iBoot-PDU8A-N15 | | | | Yes |
| 1530082 | iBoot-PDU8S-N15 | | | Yes | |
| 1530182 | iBoot-PDU8SA-N15 | | | Yes | Yes |
| 1530083 | iBoot-PDU8-2N15 | 2 x NEMA 5-15P  2 Meter Linecord | 8 x NEMA 5-15R | | |
| 1530183 | iBoot-PDU8A-2N15 | | | | Yes |
| 1530084 | iBoot-PDU8S-2N15 | | | Yes | |
| 1530184 | iBoot-PDU8SA-2N15 | | | Yes | Yes |

| SKU | Model | Power Inlet | Power Outlets | Dual Network | Rev A Hardware[1] |
|------|-------|-------------|---------------|--------------|-------------------|
| 1530085 | iBoot-PDU8-N20 | 1 x NEMA 5-20P 2 Meter Linecord | 8 x NEMA 5-15R | | |
| 1530185 | iBoot-PDU8A-N20 | | | | Yes |
| 1530086 | iBoot-PDU8S-N20 | | | Yes | |
| 1530186 | iBoot-PDU8SA-N20 | | | Yes | Yes |
| 1530087 | iBoot-PDU8-2N20 | 2 x NEMA 5-20P  2 Meter Linecord | 8 x NEMA 5-15R | | |
| 1530188 | iBoot-PDU8A-2N20 | | | | Yes |
| 1530087 | iBoot-PDU8S-2N20 | | | Yes | |
| 1530188 | iBoot-PDU8SA-2N20 | | | Yes | Yes |
| 1530089 | iBoot-PDU8-C10 | 1 x IEC320 C14 Detached Linecord IEC C13 to CEE7 2 Meters | 8 x IEC C13 | | |
| 1530189 | iBoot-PDU8A-C10 | | | | Yes |
| 1530090 | iBoot-PDU8S-C10 | | | Yes | |
| 1530190 | iBoot-PDU8SA-C10 | | | Yes | Yes |
| 1530091 | iBoot-PDU8-2C10 | 2 x IEC320 C14 Detached Linecord IEC C13 to CEE7 2 Meters | 8 x IEC C13 | | |
| 1530192 | iBoot-PDU8A-2C10 | | | | Yes |
| 1530091 | iBoot-PDU8S-2C10 | | | Yes | |
| 1530192 | iBoot-PDU8SA-2C10 | | | Yes | Yes |
| 1530093 | iBoot-PDU8-C20 | 1 x IEC320 C20 Detached Linecord IEC C19  to CEE7 2 Meters | 8 x IEC C13 | | |
| 1530193 | iBoot-PDU8A-C20 | | | | Yes |
| 1530094 | iBoot-PDU8S-C20 | | | Yes | |
| 1530194 | iBoot-PDU8SA-C20 | | | Yes | Yes |
| 1530095 | iBoot-PDU8-2C20 | 2 x IEC320 C20 Detached Linecord IEC C19  to CEE7 2 Meters | 8 x IEC C13 | | |
| 1530195 | iBoot-PDU8A-2C20 | | | | Yes |
| 1530096 | iBoot-PDU8S-2C20 | | | Yes | |
| 1530196 | iBoot-PDU8SA-2C20 | | | Yes | Yes |

[1] Rev A Hardware does not include a fan to meet the specification ratings.

# Appendix B: Time Zone Codes

The following are valid time zone names to be used with the set time timezone <timezonename> command:

| | | |
|---|---|---|
| Africa/Abidjan | America/Adak | America/Godthab |
| Africa/Accra | America/Anchorage | America/Goose_Bay |
| Africa/Addis_Ababa | America/Anguilla | America/Grand_Turk |
| Africa/Algiers | America/Antigua | America/Grenada |
| Africa/Asmara | America/Araguaina | America/Guadeloupe |
| Africa/Bamako | America/Argentina/Buenos_Aires | America/Guatemala |
| Africa/Bangui | America/Argentina/Catamarca | America/Guayaquil |
| Africa/Banjul | America/Argentina/Cordoba | America/Guyana |
| Africa/Bissau | America/Argentina/Jujuy | America/Halifax |
| Africa/Blantyre | America/Argentina/La_Rioja | America/Havana |
| Africa/Brazzaville | America/Argentina/Mendoza | America/Hermosillo |
| Africa/Bujumbura | America/Argentina/Rio_Gallegos | America/Indiana/Indianapolis |
| Africa/Cairo | America/Argentina/Salta | America/Indiana/Knox |
| Africa/Casablanca | America/Argentina/San_Juan | America/Indiana/Marengo |
| Africa/Ceuta | America/Argentina/San_Luis | America/Indiana/Petersburg |
| Africa/Conakry | America/Argentina/Tucuman | America/Indiana/Tell_City |
| Africa/Dakar | America/Argentina/Ushuaia | America/Indiana/Vevay |
| Africa/Dar_es_Salaam | America/Aruba | America/Indiana/Vincennes |
| Africa/Djibouti | America/Asuncion | America/Indiana/Winamac |
| Africa/Douala | America/Atikokan | America/Inuvik |
| Africa/El_Aaiun | America/Bahia_Banderas | America/Iqaluit |
| Africa/Freetown | America/Bahia | America/Jamaica |
| Africa/Gaborone | America/Barbados | America/Juneau |
| Africa/Harare | America/Belem | America/Kentucky/Louisville |
| Africa/Johannesburg | America/Belize | America/Kentucky/Monticello |
| Africa/Kampala | America/Blanc-Sablon | America/La_Paz |
| Africa/Khartoum | America/Boa_Vista | America/Lima |
| Africa/Kigali | America/Bogota | **America/Los_Angeles** |
| Africa/Kinshasa | America/Boise | America/Maceio |
| Africa/Lagos | America/Cambridge_Bay | America/Managua |
| Africa/Libreville | America/Campo_Grande | America/Manaus |
| Africa/Lome | America/Cancun | America/Marigot |
| Africa/Luanda | America/Caracas | America/Martinique |
| Africa/Lubumbashi | America/Cayenne | America/Matamoros |
| Africa/Lusaka | America/Cayman | America/Mazatlan |
| Africa/Malabo | **America/Chicago** | America/Menominee |
| Africa/Maputo | America/Chihuahua | America/Merida |
| Africa/Maseru | America/Costa_Rica | America/Metlakatla |
| Africa/Mbabane | America/Cuiaba | America/Mexico_City |
| Africa/Mogadishu | America/Curacao | America/Miquelon |
| Africa/Monrovia | America/Danmarkshavn | America/Moncton |
| Africa/Nairobi | America/Dawson_Creek | America/Monterrey |
| Africa/Ndjamena | America/Dawson | America/Montevideo |
| Africa/Niamey | **America/Denver** | America/Montserrat |
| Africa/Nouakchott | America/Detroit | America/Nassau |
| Africa/Ouagadougou | America/Dominica | **America/New_York** |
| Africa/Porto-Novo | America/Edmonton | America/Nipigon |
| Africa/Sao_Tome | America/Eirunepe | America/Nome |
| Africa/Tripoli | America/El_Salvador | America/Noronha |
| Africa/Tunis | America/Fortaleza | America/North_Dakota/Beulah |
| Africa/Windhoek | America/Glace_Bay | America/North_Dakota/Center |

| | | |
|---|---|---|
| America/North_Dakota/New_Salem | Asia/Damascus | Atlantic/Cape_Verde |
| America/Ojinaga | Asia/Dhaka | Atlantic/Faroe |
| America/Panama | Asia/Dili | Atlantic/Madeira |
| America/Pangnirtung | Asia/Dubai | Atlantic/Reykjavik |
| America/Paramaribo | Asia/Dushanbe | Atlantic/South_Georgia |
| America/Phoenix | Asia/Gaza | Atlantic/St_Helena |
| America/Port_of_Spain | Asia/Ho_Chi_Minh | Atlantic/Stanley |
| America/Port-au-Prince | Asia/Hong_Kong | Australia/Adelaide |
| America/Porto_Velho | Asia/Hovd | Australia/Brisbane |
| America/Puerto_Rico | Asia/Irkutsk | Australia/Broken_Hill |
| America/Rainy_River | Asia/Jakarta | Australia/Currie |
| America/Rankin_Inlet | Asia/Jayapura | Australia/Darwin |
| America/Recife | Asia/Jerusalem | Australia/Eucla |
| America/Regina | Asia/Kabul | Australia/Hobart |
| America/Resolute | Asia/Kamchatka | Australia/Lindeman |
| America/Rio_Branco | Asia/Karachi | Australia/Lord_Howe |
| America/Santa_Isabel | Asia/Kathmandu | Australia/Melbourne |
| America/Santarem | Asia/Kolkata | Australia/Perth |
| America/Santiago | Asia/Krasnoyarsk | Australia/Sydney |
| America/Santo_Domingo | Asia/Kuala_Lumpur | Europe/Amsterdam |
| America/Sao_Paulo | Asia/Kuching | Europe/Andorra |
| America/Scoresbysund | Asia/Kuwait | Europe/Athens |
| America/Shiprock | Asia/Macau | Europe/Belgrade |
| America/Sitka | Asia/Magadan | Europe/Berlin |
| America/St_Barthelemy | Asia/Makassar | Europe/Bratislava |
| America/St_Johns | Asia/Manila | Europe/Brussels |
| America/St_Kitts | Asia/Muscat | Europe/Bucharest |
| America/St_Lucia | Asia/Nicosia | Europe/Budapest |
| America/St_Thomas | Asia/Novokuznetsk | Europe/Chisinau |
| America/St_Vincent | Asia/Novosibirsk | Europe/Copenhagen |
| America/Swift_Current | Asia/Omsk | Europe/Dublin |
| America/Tegucigalpa | Asia/Oral | Europe/Gibraltar |
| America/Thule | Asia/Phnom_Penh | Europe/Guernsey |
| America/Thunder_Bay | Asia/Pontianak | Europe/Helsinki |
| America/Tijuana | Asia/Pyongyang | Europe/Isle_of_Man |
| America/Toronto | Asia/Qatar | Europe/Istanbul |
| America/Tortola | Asia/Qyzylorda | Europe/Jersey |
| America/Vancouver | Asia/Rangoon | Europe/Kaliningrad |
| America/Whitehorse | Asia/Riyadh | Europe/Kiev |
| America/Winnipeg | Asia/Sakhalin | Europe/Lisbon |
| America/Yakutat | Asia/Samarkand | Europe/Ljubljana |
| America/Yellowknife | Asia/Seoul | Europe/London |
| Antarctica/Macquarie | Asia/Shanghai | Europe/Luxembourg |
| Arctic/Longyearbyen | Asia/Singapore | Europe/Madrid |
| Asia/Aden | Asia/Taipei | Europe/Malta |
| Asia/Almaty | Asia/Tashkent | Europe/Mariehamn |
| Asia/Amman | Asia/Tbilisi | Europe/Minsk |
| Asia/Anadyr | Asia/Tehran | Europe/Monaco |
| Asia/Aqtau | Asia/Thimphu | Europe/Moscow |
| Asia/Aqtobe | Asia/Tokyo | Europe/Oslo |
| Asia/Ashgabat | Asia/Ulaanbaatar | Europe/Paris |
| Asia/Baghdad | Asia/Urumqi | Europe/Podgorica |
| Asia/Bahrain | Asia/Vientiane | Europe/Prague |
| Asia/Baku | Asia/Vladivostok | Europe/Riga |
| Asia/Bangkok | Asia/Yakutsk | Europe/Rome |
| Asia/Beirut | Asia/Yekaterinburg | Europe/Samara |
| Asia/Bishkek | Asia/Yerevan | Europe/San_Marino |
| Asia/Brunei | Atlantic/Azores | Europe/Sarajevo |
| Asia/Choibalsan | Atlantic/Bermuda | Europe/Simferopol |
| Asia/Colombo | Atlantic/Canary | Europe/Skopje |

Europe/Sofia
Europe/Stockholm
Europe/Tallinn
Europe/Tirane
Europe/Uzhgorod
Europe/Vaduz
Europe/Vatican
Europe/Vienna
Europe/Vilnius
Europe/Volgograd
Europe/Warsaw
Europe/Zagreb
Europe/Zaporozhye
Europe/Zurich
Indian/Antananarivo
Indian/Chagos
Indian/Christmas
Indian/Cocos
Indian/Comoro
Indian/Kerguelen
Indian/Mahe
Indian/Maldives

Indian/Mauritius
Indian/Mayotte
Indian/Reunion
Pacific/Apia
Pacific/Auckland
Pacific/Chatham
Pacific/Chuuk
Pacific/Easter
Pacific/Efate
Pacific/Enderbury
Pacific/Fakaofo
Pacific/Fiji
Pacific/Funafuti
Pacific/Galapagos
Pacific/Gambier
Pacific/Guadalcanal
Pacific/Guam
**Pacific/Honolulu**
Pacific/Johnston
Pacific/Kiritimati
Pacific/Kosrae
Pacific/Kwajalein

Pacific/Majuro
Pacific/Marquesas
Pacific/Midway
Pacific/Nauru
Pacific/Niue
Pacific/Norfolk
Pacific/Noumea
Pacific/Pago_Pago
Pacific/Palau
Pacific/Pitcairn
Pacific/Pohnpei
Pacific/Port_Moresby
Pacific/Rarotonga
Pacific/Saipan
Pacific/Tahiti
Pacific/Tarawa
Pacific/Tongatapu
Pacific/Wake
Pacific/Wallis
GMT