



# CPI PowerScope User's Manual

Version 1.0  
8/2009



**CHATSWORTH  
PRODUCTS, INC.**

**800-834-4969**  
**techsupport@chatsworth.com**  
**www.chatsworth.com**

©2009 Chatsworth Products, Inc. All rights reserved. CPI, CPI Passive Cooling, Saf-T-Grip, Seismic Frame, Slim-Frame and MegaFrame are federally registered trademarks of Chatsworth Products, Inc. Cube-iT Plus, Evolution, OnTrac, QuadraRack, Simply Efficient and TeraFrame are trademarks of Chatsworth Products, Inc. All other trademarks belong to their respective companies. MKT-60020-462 08/09

Chatsworth Products, Inc.  
9353 Winnetka Avenue  
Chatsworth, CA 91311  
800-834-4969

### **PowerScope User's Manual**

© 2009 Chatsworth Products, Inc. All rights reserved.

The information contained in this guide is subject to change without notice. Chatsworth Products, Inc. shall not be liable for technical or editorial errors or omissions contained herein; nor is it liable for incidental or consequential damages resulting from the furnishing, performance, or use of this material. Product names mentioned herein may be trademarks and/or registered trademarks of their respective companies.

### **Warranty**

Chatsworth Products, Inc. (CPI) guarantees manufactured products and each part or component thereof against all defects in material and/or workmanship. Chatsworth Products, Inc. agrees to remedy any manufacturing defect either through replacement or repair at no charge provided that the defective unit is returned, transportation prepaid, to the Chatsworth Products, Inc. factory. The warranty extends for a period of one year from the date of installation or initial use, provided that this period shall not exceed 18 months from the original date of shipment from the factory.

Any product that has been repaired or replaced shall be similarly warranted on its repair or replacement for the remaining product warranty period or 90 days from the date of repair or replacement, whichever expires last.

This warranty does not extend to products that have been subjected to neglect, accident or improper use, nor to units that have been altered by non-Chatsworth Products, Inc. personnel.

No warranties other than those set forth in this section are given or implied with respect to the products furnished. Chatsworth Products, Inc. shall, in no event, be liable for consequential damages, for loss, damage or expense directly or indirectly arising from the use of the products, for any inability to use materials or from any other cause.

## Table of Contents

<b>INTRODUCTION</b> .....	<b>2</b>
<b>HOW TO USE THIS MANUAL</b> .....	<b>3</b>
GRAPHIC CONVENTIONS .....	3
NOMENCLATURES .....	3
PRODUCT FEATURES .....	4
<b>INSTALLATION CHECKLIST</b> .....	<b>5</b>
SAFETY WARNINGS AND CAUTIONS .....	5
HARDWARE.....	6
SOFTWARE .....	7
<b>INSTALLATION GUIDE</b> .....	<b>8</b>
HARDWARE.....	8
SOFTWARE .....	9
<b>TROUBLESHOOTING GUIDE</b> .....	<b>16</b>
NO DISPLAY: .....	16
DISPLAY SHOWS -1.8.8.8: .....	16
NO SERIAL CONNECTION: .....	16
NO ETHERNET CONNECTION: .....	16
NO SEMA CONNECTION: .....	17
<b>APPENDICES</b> .....	<b>18</b>
ONE YEAR WARRANTY .....	18
FACTORY DEFAULT SETTING .....	19
REGULATORY INFORMATION .....	20
SPECIFICATIONS .....	20

## **INTRODUCTION**

---

This document is the User's Manual for the PowerScope In-Line Meter by Chatsworth Products, Inc.

PowerScope is an in-line ammeter that provides current monitoring over the network using SEMA software. Select models include a local meter with a digital display.

PowerScope is used to upgrade basic and metered PDUs for use with CPI's SEMA software, CenterLine, CenterBridge and monitored and controlled SEMA-compatible PDUs to provide enterprise-wide, web-based KVM switch access to devices (computer, data storage and network switch equipment), asset management and power monitoring – part of CPI's total infrastructure management solution.

## HOW TO USE THIS MANUAL

---

### Graphic Conventions



Warning symbol.

### Nomenclatures

ENET: Ethernet Port

SERIAL: RS232 Serial Port

ENV: Environmental Port

PDU: Power Distribution Unit

SEMA: Scalable Enterprise Management Application.

SNMP: Simple Network Management Protocol

MIB: Management Information Base

## Product Features

- Footprint: 19"W rack-mount, 1 RMU high
- Dimensions: 17"W x1.75"H x 9"D
- Voltage: 110 – 250 Volts,
- Power Input cable: 1 or 2 cables of 3ft length, available in different receptacle types
- Power Output cable: 1 or 2 cables of 3ft length, available in different connector types
- Input circuits: 1 or 2 inputs
- Local Display (select models only): 0, 1, 2, 4 or 6 displays
- Communication ports:
  - Ethernet:
    - 1) SNMP accessible via customer's SNMP applications or standard MIB browser:
      - a) Show the current drawn.
      - b) Receive current logs and alarms via traps.
      - c) Change configuration
      - d) Change Log and Alarm trigger
    - 2) Ethernet accessible via SEMA GUI with options to:
      - a) Display the current drawn.
      - b) Log current usage and alarms.
      - c) Change Log and Alarm trigger

\*\*SEMA: EPI licensed software
  - Serial:
    - 1) Serial accessible via Serial cable to the computer that has the CPI supplied monitoring tool:
      - a) Display the current drawn.
      - b) Change network configuration.
      - c) Change Log and Alarm trigger
  - Environmental:
    - 1) Environmental Probe:
      - a) Temperature in Fahrenheit and Celsius notations and Humidity can be sampled and displayed using SEMA GUI or the PDU Serial application or SNMP applications.

## INSTALLATION CHECKLIST

---

### Safety Warnings and Cautions



**WARNING!**

**DO NOT open the top cover. Hazardous Voltages Present.**

When mounting heating issues must be taken into account.

DO NOT OPEN ANY PART OF THE INLINE POWERSCOPE. There are no user serviceable parts inside of the PowerScope. Opening or removing covers may expose you to dangerous shock hazards or other risks. Refer all servicing to qualified service personnel.

- Do not spill any liquids into the chassis.
- Do not insert objects of any kind into the PowerScope openings, as they may touch dangerous voltage points, which can be harmful or fatal or may cause electric shock, fire or equipment failure.
- Do not place any heavy objects on the power cord. Damage to the cord may cause shock or fire.

## Hardware



Picture 1: Front View of a Dual-Input PowerScope



Picture 2: Side View of a Dual-Input PowerScope with bracket installed



Picture 3: Rear View of a Dual-Input PowerScope



Picture 4: Communication Ports

**Ethernet Port:** to be used with Standard CAT-5/6 Ethernet cable: male RJ-45 both ends. (Order separately. Cable not provided.)

**SERIAL Port:** to be used with CPI Serial cable: male RJ-45 on the Scope end and female DB-9 on the host end. (Order separately, CPI P/N 35941-131)

**Environmental Port:** to be used with the CPI Temperature and Humidity Sensor: male RJ-11 on the Scope end and the Temperature and Humidity Probe at the other end. (Order separately, CPI P/N 35941-132)

## Software

Internal software has been pre-installed.

Software to set up and monitor the PowerScope via the SERIAL Port is in the enclosed CD.

## INSTALLATION GUIDE

---

Preparation:

- Prepare a list of Power Distribution Units to be connected to the PowerScope.
- Keep the sticker that has the PowerScope's Ethernet Hardware Address (MAC address) and fill in the Inline PowerScope's name.

### Hardware

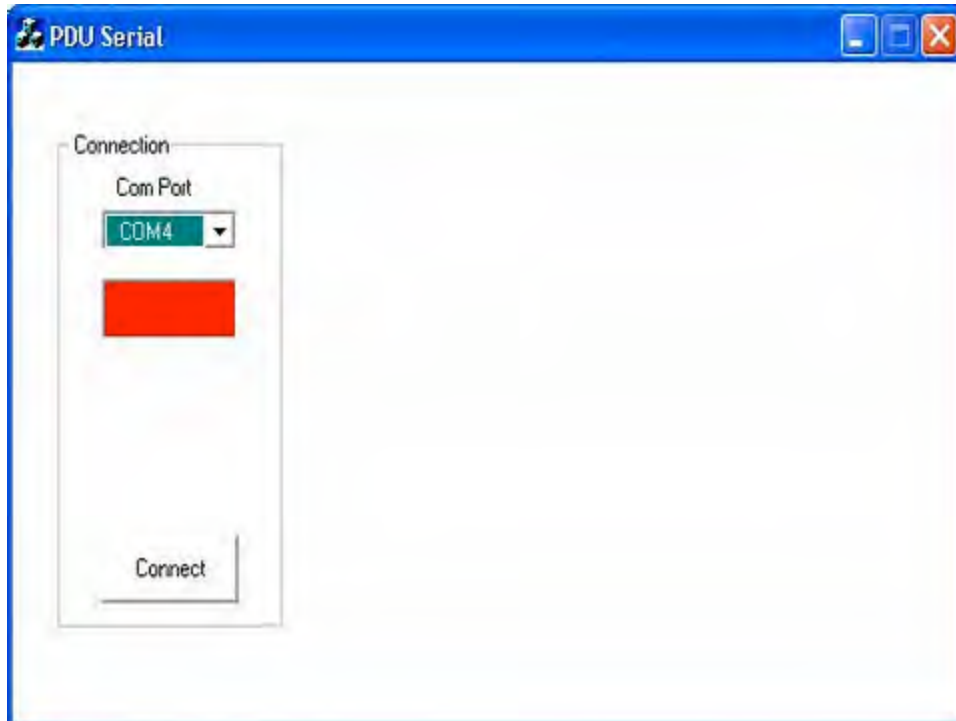
Insert the PowerScope brackets at both sides. See Picture 2.

- Install the PowerScope into the rack and secure the PowerScope ground
- Connect the Ethernet cable from PowerScope's ENET port to the Network Switch.
- Optional: Connect the Environmental Probe Cable:
- Optional; connect the Serial cable from the PowerScope's Serial port to a Server's serial port. The user should select a Server to run the PowerScope serial setup application from.
- Apply power to the PowerScope. On the models that have Local Displays, the LED Current Displays for all circuits will be lit up.

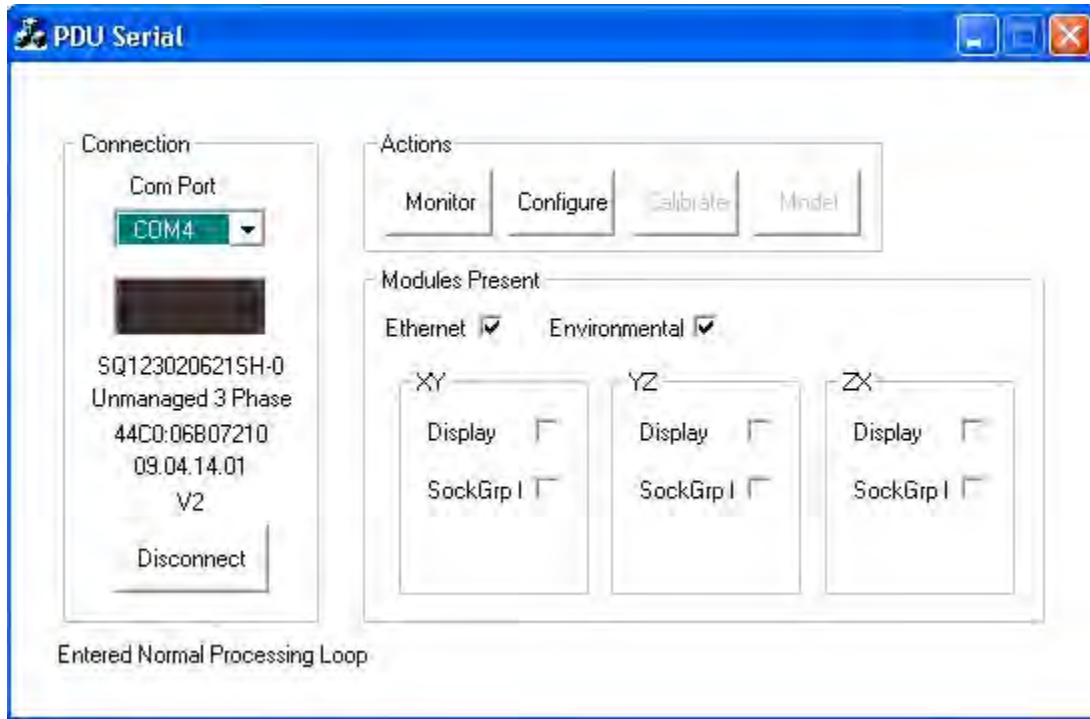
## Software

The distribution CD contains two folders: Documentation and Tools

- Copy the distribution CD to C:\Epicenter\PDU folder on a computer that has a serial port.
- Run C:\Epicenter\PDU\Tools\PDUSerial.exe



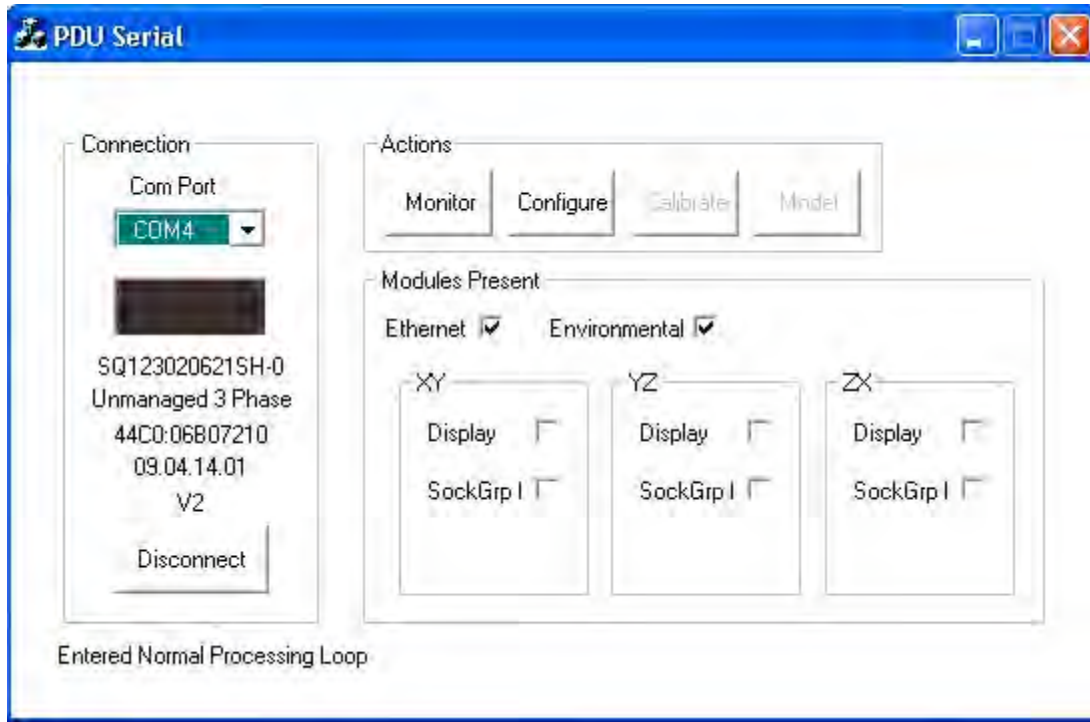
Select the appropriate COM Port and click on Connect button.



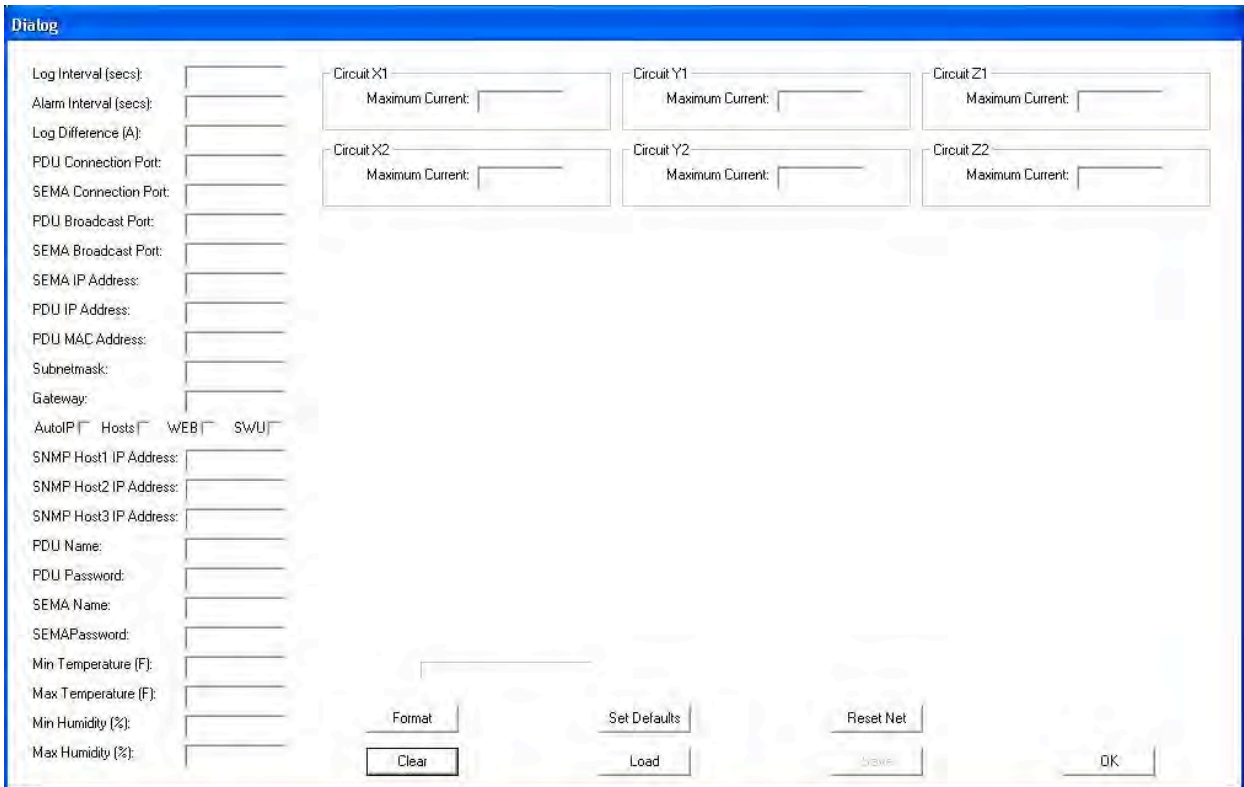
Click on the Monitor button: to display the current, temperature, humidity.  
 (Note: Temperature and humidity only display if a Temperature and Humidity Sensor is attached to the PowerScope's environmental port.)



Click OK to go back to the Main Screen.



To configure the PowerScope, click on Configure button



Click on Load button to load current data of the unit.

**Dialog**

Log Interval (secs):	10	Circuit X1	Maximum Current: 20.0	Circuit Y1	Maximum Current: 20.0	Circuit Z1	Maximum Current: 20.0
Alarm Interval (secs):	100	Circuit X2	Maximum Current: 20.0	Circuit Y2	Maximum Current: 20.0	Circuit Z2	Maximum Current: 20.0
Log Difference (A):	5.0						
PDU Connection Port:	2001						
SEMA Connection Port:	2002						
PDU Broadcast Port:	2003						
SEMA Broadcast Port:	2004						
SEMA IP Address:	0.0.0.1						
PDU IP Address:	192.168.100.12						
PDU MAC Address:	00:00:0A:8C:00:00						
Subnetmask:	0.0.0.0						
Gateway:	0.0.0.0						
AutoIP <input checked="" type="checkbox"/> Hosts <input type="checkbox"/> WEB <input type="checkbox"/> SWU <input type="checkbox"/>							
SNMP Host1 IP Address:	192.168.100.13						
SNMP Host2 IP Address:	192.168.100.13						
SNMP Host3 IP Address:	192.168.100.13						
PDU Name:	PduName00						
PDU Password:							
SEMA Name:							
SEMAPassword:							
Min Temperature (F):	91.0						
Max Temperature (F):	101.0						
Min Humidity (%):	12.0						
Max Humidity (%):	21.0						

Format      Set Defaults      Reset Net

Clear      Load      Save      OK

Make changes and click on the Save button.

These are the configuration variables for the PowerScope:

**Log Interval:** Time interval (in seconds) that the PowerScope will send updated metrics to SEMA over network. If this variable is set to a value of less than 10 the logging is disabled. Maximum value that can be entered is 64,000.

**Alarm Interval:** Time interval (in seconds) that the PowerScope will send notification to SEMA over network when an alarm condition arises. If this variable is set to a value of less than 10 the alarm notification is disabled. Maximum value that can be entered is 64,000.

**Log Difference:** Absolute value difference (in Amps) that the PowerScope must detect in the change of consumption before it will send updated metrics to SEMA over network. If this variable is set to 0 the difference logging is disabled. Maximum value that can be entered is 640.00.

**PDU Connection Port:** This is the TCP/IP port number that the PowerScope uses to listen for communications from SEMA. This value is normally set to 2001 and should not be changed unless it is done system wide with the SEMA. Maximum value that can be entered is 64,000.

**SEMA Connection Port:** This is the TCP/IP port number that the SEMA uses to listen for communications from a PowerScope. This value is normally set to 2002 and should not be changed unless it is done system wide with the SEMA. Maximum value that can be entered is 64,000.

**PDU Broadcast Port:** This is the TCP/IP port number that the PowerScope uses to listen for broadcast communications from SEMA. This value is normally set to 2003 and should not be changed unless it is done system wide with the SEMA. Maximum value that can be entered is 64,000.

**SEMA Broadcast Port:** This is the TCP/IP port number that the SEMA uses to listen for broadcast communications from a PowerScope. This value is normally set to 2004 and should not be changed unless it is done system wide with the SEMA. Maximum value that can be entered is 64,000.

**SEMA IP Address:** Contains the assigned IP address for SEMA in the form of xxx.xxx.xxx.xxx, where xxx is a number from 1 to 254.

**PDU IP Address:** Contains the assigned IP address for the PowerScope in the form of xxx.xxx.xxx.xxx, where xxx is a number from 1 to 254.

**PDU MAC Address:** Contains the assigned MAC address for the PowerScope's network interface hardware. This value cannot be changed.

**Subnet Mask:** Contains the network masking bits for the PowerScope in the form of xxx.xxx.xxx.xxx, where xxx is usually 255 or 0 to designate a bit pattern that masks in the network address portion of the IP address. These values depend on the network class of the assigned IP address.

**Gateway:** Contains the IP address of the network's gateway PowerScope in the form of xxx.xxx.xxx.xxx, where xxx is a number from 1 to 254.

**AutoIP:** Check if the Inline Scope is having the IP address assigned by DHCP server. Not recommended.

**Host:** Check if SNMP traps are to be sent to specific SNMP Host address. If checked, at least one of the 3 SNMP Host Addresses below has to be filled in.

**WEB:** Check to enable standalone WEB GUI mode.

**SWU:** Check to enable software update.

**SNMP Host Address:** Contains the assigned IP address for the PowerScope in the form of xxx.xxx.xxx.xxx, where xxx is a number from 1 to 254 of the Host(s) that the SNMP traps will be sent to.

**PDU Name:** Name assigned to this PowerScope, the maximum number of characters that can be entered is less than 32.

**PDU Password:** Holds the password used by the PowerScope to access SEMA. This is a protected variable accessible only by SEMA.

**SEMA Name:** Name of the SEMA group that this PowerScope belongs to. This is a protected variable accessible only by SEMA.

**SEMA Password:** Holds the password used by SEMA to access this PowerScope. This is a protected variable accessible only by SEMA.

**Min Temperature:** Set the low temperature threshold (in degrees Fahrenheit) that when reached the PowerScope will send notification to SEMA over network. If this variable is set to 0 the notification is disabled. Maximum value that should be entered is 199.

**Max Temperature:** Set the high temperature threshold (in degrees Fahrenheit) that when reached the PowerScope will send notification to SEMA over network. If this variable is set to 0 the notification is disabled. Maximum value that should be entered is 199.

**Min Humidity:** Set the low humidity threshold (in %) that when reached the PowerScope will send notification to SEMA over network. If this variable is set to 0 the notification is disabled. Maximum value that should be entered is 100.

**Max Humidity:** Set the high humidity threshold (in %) that when reached the PowerScope will send notification to SEMA over network. If this variable is set to 0 the notification is disabled. Maximum value that should be entered is 100.

**Maximum Current:** Is the value (in Amps) that when the branch circuit consumption is reached the PowerScope will send alert to SEMA. If this variable

is set to 0 the detection/notification is disabled. Maximum value that can be entered is 640.00.

**Maximum Socket Lock Current:** Is the value (in Amps) that when the branch circuit consumption is reached will lock all the OFF state sockets. To turn any of those sockets ON, the user must reduce the current consumption on the branch or increase this value.

These are the configuration actions:

**Format:** Manufacturing initialization of the non-volatile storage for the configuration variables. This action will destroy any previous values that were saved.

**Set Defaults:** Sets all the configuration variables to some pre-set default manufacturing values.

**Clear:** Clears all the configuration variables.

**Reset Net:** Makes effective the changes made to the network parameters.

**Save:** saves all the displayed configuration data into the PowerScope's non-volatile storage and apply the newly configured values.

**Cancel:** discards all the changes made in the current session.

**Load:** shows all the current PowerScope configuration data.

---

## TROUBLESHOOTING GUIDE

---

For references of SEMA, refer to SEMA User Manual

### **No display:**

Check power at the source.

Unplug the PowerScope input cable from the source and inspect the cable to make sure there are no cuts or visible damage. Inspect the input plug to make sure there are no damages to the pins.

If problem persists, the PowerScope unit must be replaced.

### **Display shows -1.8.8.8:**

Cycle power to the entire PowerScope.

If problem persists, the PowerScope unit must be replaced.

### **No Serial Connection:**

Verify that proper cable is used to interface from serial RJ45 port to the computer or a concentrator.

Make sure the connectors are snapped in securely.

Verify the integrity of the cable.

Check the baud rate setting of the application program in the control computer: 9600, 8 bit, no parity, 1 stop bit. Check that there are no other applications running or special drivers installed that alter the characteristics of the serial COM port in the control computer.

If problem persists after a power cycle, the PowerScope unit must be replaced.

### **No Ethernet Connection:**

Verify connection with a ping tool from any computer in the network.

Check that the green LED in the PowerScope Ethernet port is lit.

Check that the end connectors are snapped in place.

Check the integrity of the cabling from the PowerScope's Ethernet port to the network switch/hub/router.

Verify the port integrity of the network switch/hub/router.

Verify via serial port that the network configurations for the PowerScope are set properly.

If set for auto (dynamic) IP verify that DHCP server is operating properly.

If the Ethernet communication problem persists after power cycling it, replace the PowerScope unit.

**No SEMA Connection:**

Check the integrity of the Ethernet connection.

Use SEMA server's Device Finder application and check that it is detected with proper Hardware and IP addresses.

Verify via serial port that the SEMA group configurations for the Inline PowerScope are set properly.

If the SEMA communication problem persists after power cycling it, contact technical support for possible firmware upgrade.

## APPENDICES

---

### One year Warranty

Chatsworth Products, Inc. (CPI) guarantees manufactured products and each part or component thereof against all defects in material and/or workmanship. Chatsworth Products, Inc. agrees to remedy any manufacturing defect either through replacement or repair at no charge provided that the defective unit is returned, transportation prepaid, to the Chatsworth Products, Inc. factory. The warranty extends for a period of one year from the date of installation or initial use, provided that this period shall not exceed 18 months from the original date of shipment from the factory.

Any product that has been repaired or replaced shall be similarly warranted on its repair or replacement for the remaining product warranty period or 90 days from the date of repair or replacement, whichever expires last.

This warranty does not extend to products that have been subjected to neglect, accident or improper use, nor to units that have been altered by non- Chatsworth Products, Inc. personnel.

No warranties other than those set forth in this section are given or implied with respect to the products furnished. Chatsworth Products, Inc. shall, in no event, be liable for consequential damages, for loss, damage or expense directly or indirectly arising from the use of the products, for any inability to use materials or from any other cause.

## Factory Default Setting

Configuration variables for the Inline PowerScope:

Log Interval = 0  
Alarm Interval = 0  
Log Difference = 0  
PDU Connection Port = 2001  
SEMA Connection Port = 2002  
PDU Broadcast Port = 2003  
SEMA Broadcast Port = 2004  
SEMA IP Address = 0.0.0.0  
PDU IP Address = 0.0.0.0  
PDU MAC Address = 0:0:0:0:0:0  
Subnet Mask = 255.255.255.0  
Gateway = 0.0.0.0  
Options Dynamic = dynamic IP and static DNS  
SNMP Host1 Address = 0.0.0.0  
SNMP Host2 Address = 0.0.0.0  
SNMP Host3 Address = 0.0.0.0  
PDU Name = pduname00  
PDU Password = <blank>  
SEMA Name = <blank>  
SEMA Password = <blank>  
Min Temperature = 0  
Max Temperature = 0  
Min Humidity = 0  
Max Humidity = 0  
Maximum Current = 14.90

## Specifications

Dimensions: 17"W x 1.75"H x 9"D (Rack-mount, 19"EIA x 1 RMU)

Weights: up to 13 lbs for the dual input unit with 3ft cable length.

Altitude:

- Operating: 0 to 10,000 ft (0 to 3048 m)
- Non-operating: 0 to 30,000 ft (0 to 9144 m)

Audible Noise: Less than 60 db LpA (Sound pressure level at bystander position)  
The above noise level is not for office environment. It is for dedicated Datacenter environment.

Heat Dissipation: 10 BTU/hr maximum.

Shock and Vibration:

- Operating: 5 to 500 Hz, 0.5 g (0.1 octave/min)
- Non-operating: 5 to 100 Hz, 1 g (0.1 octave/min); 100 to 500 Hz, 1.5g (0.2 octave/min); 500 to 1000 Hz, 1.5 g (0.2 octave/min)

Electrical

- Grounding: Chassis grounded.
- Voltage: 110 or 208V AC
- Current: 20 or 30 Amps per input
- Line Frequency: Single phase 50 or 60 Hz.
- Output Power Capacity: 20 or 30 Amps per output
- Configurable Power: 20 or 30 Amps per output
- Nominal Output Voltage: 110 or 208V AC (same as input)
- Output Voltage distortion: same as input
- Output Frequency: 50 or 60 Hz (same as input)
- Waveform type: same as input

Temperature:

- Operating: 32° (0°C) to 104° (40°C)
- Storage: -4° (-20°C) to 140° (60°C)

Humidity:

- Operating: Non-condensing, 10 to 90 percent.
- Storage: Non-condensing, 5 to 95 percent.

Local Connection:

- RJ11connector: Environmental probe connection
- RJ45 connector: Serial connection

Remote Connection:

- Network: 10/100/1000 RJ45
- Network Protocol: TCP/IP