eConnect® PDU & Electronic Lock Kit User Manual

Regulatory Model K-XXXX

Version 8.3.1
January 2026

CHATSWORTH PRODUCTS

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Rev. 01/26 MKT-60020-720

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1. INTRODUCTION

eConnect PDU and Electronic Lock Kit User Manual

This document is the User Manual for CPI eConnect Power Distribution Units (PDUs) (Sales Models EA-XXXX, Regulatory Model K-XXXX) and Electronic Lock Kit.

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CPI warrants all CPI-branded hardware products to be free from defects in material and/or workmanship (CPI's Standard Limited Warranty) for three (3) years following the purchase date (the Original Warranty Period).

The customer must contact CPI in writing or by oral communication confirmed in writing within the Original Warranty Period to report a product that the customer claims is defective. CPI reserves the sole and absolute right to determine if the product or any part thereof is defective. In the event a product (or any part thereof) is determined by CPI to be defective (an Accepted Claim), CPI will provide a re- manufactured or replacement product or part (the Replacement Product) at no cost to the customer and issue a Return Material Authorization (RMA) number.

Extended Limited Warranty

CPI Extended limited warranties on CPI-Branded Electronic and Non-Electronic hardware products are available for two additional years beyond the expiration of the Original Warranty Period (3 years). CPI's Extended Limited Warranty can be purchased concurrently with, or separately from, the initial purchase of the product until the expiration of the Original Warranty Period for that product**.**

For more information on CPI Warranties, visit the website**.**

Nomenclature

PDU: eConnect Power Distribution Unit product
Socket/Receptacle/Outlet: Electrical output port.
Secure Array®: Connects up to 48 PDUs (or 32 PDUs, if integrated with RFID electronic locks) under one IP address. A second connection provides failover capability, allowing linked PDUs to stay connected when one loses functionality.
Locking Outlet: PDUs with locking IEC C13, C13/C15, C19 or QuadLock outlets that secure equipment power cords to vertical PDUs to prevent accidental disconnections.
QuadLock: A socket/receptacle/outlet that acts as IEC C13/C15/C19/C21.
Primary Role: The role that is assigned to the PDU that is attached to the network and serves as the beginning of the Secure Array. This PDU should

have a level of functionality that is equal to or higher than that of all the remaining PDUs within the array. In an array with several PDUs with the highest level of

functionality, the PDU with the most outlets among this group should be assigned the Primary Role.

Secondary Role: The role assigned to a PDU that is 1) linked to the primary PDU, or 2) a standalone PDU.

Alternate Role: The role assigned to the PDU that is connected to the network to provide a backup network connection if the Primary Role PDU loses power. This PDU must be equivalent to the Primary PDU in functionality and number of outlets.

2. PRODUCT FEATURES

Vertically Mounted PDUs:

Physical Dimensions: refer to product cut sheet at www.chatsworth.com

Input Voltage:
100 – 415 Volts, varies by part number

Output Voltage:
100 – 240 Volts, varies by part number

Input/Output Configurations: Please refer to the cut sheet for the specific model available at chatsworth.com

Power Input Cable:
Length: Standard: 10 ft (3 m). Custom lengths between 3 – 15 ft.
Gauge: 4 – 12 AWG, varies by part number
Plug type: Current, Voltage and Configuration dependent, varies by part number. Some PDUs have an IEC C20 Input and some have an Input AC Terminal Block

Circuit Breakers:
Type: Single or Double Pole Hydraulic Magnetic UL489 listed Breakers Quantity: One, two, three or six, nine or 12 - varies by part number
Rating: 20 Amp or 30 Amp

Receptacles:
Types: NEMA, IEC, QuadLock, varies by P/N
Quantity: Varies by part number
Rating: C13: 10 Amp: C19: 16 Amp; 5-20R: 16 Amp; QuadLock: 16 Amp, varies by part number

Mounting:
Mounting style: 2 x Tool-less Buttons on the PDU rear cover
Distances: 61.25” (1556 mm) and 64.75” (1645 mm) apart
Positions: 4 mounting positions (A1, A2, B1, B2)

Single-phase unit. Actual information displayed may vary depending on whether the unit is single- or three-phase.

Field-Replaceable Controller Module

The Field-Replaceable Controller Module can be replaced at the customer site without having to return the entire PDU.

LCD local display with push button control:
(currently not available on horizontal models)
Dimension: 1.5” x 2.0” (38 mm x 51 mm)
Resolution: 240 x 320

1 **Proprietary Auxiliary ports:**
For Electronic Lock Kit or Sensor
ArrayConnector type: (2) RJ45
Aux1: For rear door
Aux 2: For front door

2 **Console 2 port**:
Console 2 is a Micro USB connection.
Same functions as Console 1.
Note: This is the port used for CLI connection. For CLI connection you must use a standard YOST cable. Refer to Appendix

3 **Status LED**

4 **Ethernet port**:
Connector type: (1) RJ45 Speed:
10/100/1000 Megabit/sec
Support: IPv6; IPv4; SNMP v1, v2, v3
Note: If using the 10/100/1000MB Ethernet port at a 1000MB (Gigabit) speed, please use shielded Ethernet cables only.

5 **Console 1 port**:
RJ45 YOST serial connection.
The Console1 is typically connected via a Cable – RJ45 YOST connector (PDU) to a DB-9 connector (PC)
Note: This is the port used for CLI connection. For CLI connection you must use a standard YOST cable. Refer to Appendix

6 **USB ports**
Quantity: 2 USB-A
Function: CPI Firmware upgrades
Temp/Humidity sensor will be plugged into either standard USB1 or USB2 port.

Secure Array/PDU Linking/Serial Port:

7 Connector type: (2) RJ45
(1) link-in/serial port

8 (1) link-out port for Secure Array PDU linking using a Cat 5/6 cable

Horizontally Mounted PDUs:

Physical Dimensions: refer to product data sheet at chatsworth.com

Input Voltage:
100 – 415 Volts, varies by part number
Output Voltage:
100 – 240 Volts, varies by part number

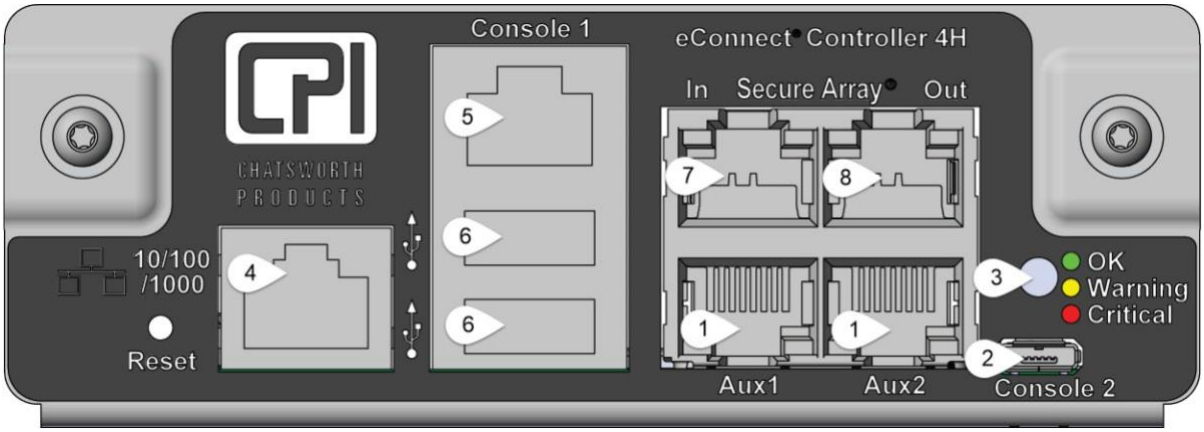
Input/Output Configurations: Please refer to the cut sheet for the specific model available at chatsworth.com

Power Input Cable:
Length: Standard: 10’ (3 m)
Gauge: 4 – 12 AWG, varies by part number
Plug type: Current, Voltage and Configuration dependent, varies by part number. Some PDUs have an IEC C20 Input.

Circuit Breakers:
Type: Single or Double Pole Hydraulic Magnetic UL489 listed Breakers Quantity: One, two, three or six, varies by part number
Rating: 20 Amp or 30 Amp

Receptacles:
Types: NEMA, IEC, QuadLock, varies by P/N
Quantity: Varies by part number
Rating: C13: 10 Amp, C19: 16 Amp; 5-20R: 16 Amp; QuadLock: 16 Amp, varies by part number

Mounting:
Mounting style: 19” EIA mounting brackets attach to cabinet or rack equipment mounting rails.



Field-Replaceable Controller Module
The field-replaceable controller module can be replaced at the customer site without having to return the entire PDU.

1 **Proprietary Auxiliary ports:** For Electronic Lock Kit or Sensor ArrayConnector
type: (2) RJ45
Aux1: For rear door
Aux 2: For front door

2 **Console 2 port**: Console 2 is a Micro USB connection.
Same functions as Console 1.
Note: This is the port used for CLI connection. For CLI connection you must use a standard YOST cable. Refer to Appendix

3 **Status LED**

4 **Ethernet port**: Connector type: (1) RJ45 Speed: 10/100/1000 Megabit/sec
Support: IPv6; IPv4; SNMP v1, v2, v3
Note: If using the 10/100/1000MB Ethernet port at a 1000MB (Gigabit) speed, please use shielded Ethernet cables only.
Before connecting the PDU to the network, view the Network Configuration Page for instructions.

5 **Console 1 port**: RJ45 YOST serial connection.
The Console1 is typically connected via a Cable – RJ45 YOST connector (PDU) to a DB-9 connector (PC)
Note: This is the port used for CLI connection. For CLI connection you must use a standard YOST cable. Refer to Appendix

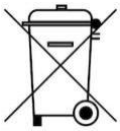
6 **USB ports**
Quantity: 2 USB-A
Function: CPI Firmware upgrades
Temp/Humidity sensor will be plugged into either standard USB1 or USB2 port.

Secure Array/PDU Linking/Serial Port:

7 Connector type: (2) RJ45
(1) link-in/serial port

8 (1) link-out port for Secure Array PDU linking using a Cat 5/6 cable

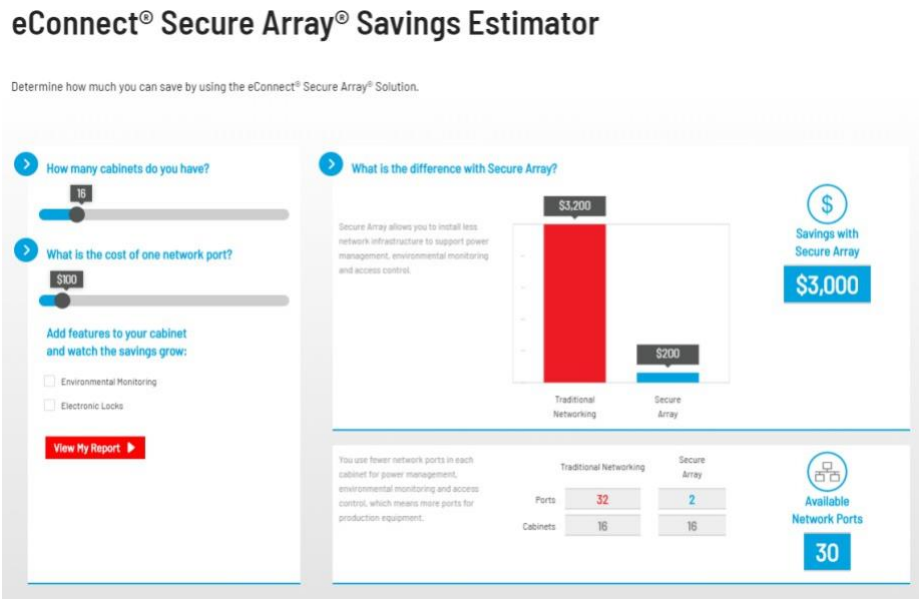
2.1 PRODUCT LABELING AND CERTIFICATIONS

CE	The presence of the CE Mark on equipment means that it has been designed, tested and certified as complying with all applicable European Union (CE) regulations and recommendations.
FC	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
c UL us LISTED	Samples of this product met UL's safety requirements for US and Canada.
	Do not dispose this product as unsorted municipal waste.

2.2 PDU MODELS

Functionality	Basic Power Distribution	Inlet Metering	Branch Circuit Metering	Networking	Access Control	Outlet Metering	Switched Outlets
Basic - Simple, reliable power distribution to equipment in your cabinets. Select a Basic PDU when no power monitoring is required.	✓						
Metered - Includes local LED display for easy reading of input current across phases. Selected a Metered PDU when networking of PDUs is not an option.	✓	✓					
Monitored - Includes local and remote power monitoring for the PDU. Select a Monitored PDU when you want to monitor total power usage.	✓	✓	✓	✓	✓		
Monitored Pro - Includes local and remote power monitoring for each outlet on the PDU. Select a Monitored Pro PDU when you need to remotely measure individual power used by each piece of equipment.	✓	✓	✓	✓	✓	✓	
Switched - Includes local and remote power monitoring for the PDU and individual outlet control. Select a Switched PDU if you need to remotely turn power on or off at each outlet.	✓	✓	✓	✓	✓		✓
Switched Pro - Includes local and remote power monitoring for the PDU and each outlet on the PDU, as well as individual outlet control. Select a Switched Pro PDU to remotely measure and control power at each outlet.	✓	✓	✓	✓	✓	✓	✓

Tip: See how much savings you can obtain by taking advantage of the



3. INSTALLATION CHECKLIST

Safety Warnings and Cautions

- DO NOT OPEN THE CHASSIS of an eConnect PDU. There are no user serviceable parts within an eConnect PDU, except for eConnect Field-Replaceable Controller Module. Opening or removing covers, receptacle plates, or other access points may expose you to dangerous shock hazards or other risks. Refer all servicing to qualified service personnel.
- Do not spill any liquids on the chassis.
- Do not insert objects of any kind into the eConnect chassis via vent holes or any openings as they may contact dangerous voltage points, which can be fatal or cause harmful 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.
- PDU must be installed VERTICALLY in a RESTRICTED ACCESS LOCATION.
- RESTRICTED ACCESS LOCATION: location for equipment where both of the following apply:
- Access can only be gained by SERVICE PERSONS or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.
- Access is using a TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.
- Hot surface warning label: The equipment may be hot under full load.

- If using the 10/100/1000MB Ethernet port at a 1000MB (Gigabit) speed, please use shielded Ethernet cables only.

Checklist for Electronic Lock Kit:

- Connect wires between latch and CAN bus module.
- Connect wires between sensors and CAN bus module.
- Connect wires between CAN bus and PDU. Aux 1 should be connected to the rear door's CAN module. Aux 2 should be connected to the front door's CAN module.
- Login to the web GUI using the default login information of "admin/admin" and navigate to the "Cabinet Access – Settings" page.
- Select the checkbox for the appropriate lock you wish to enable and select "Save."
- The lock is powered when you see a continuous blue light on the lock. At this point you should be able to refresh the web page and see the status update appropriately.
- Program the Card Reader and Smart Card ID (Go to APPENDIX for Electronic Lock Kit for eConnect for detailed information).
- Use the web GUI to change cabinet access and logging settings (Cabinet Access and Logging tabs respectively)
- The light will flash magenta/blue when the latch opens.

4. INSTALLATION GUIDE

Preparation:

- Prepare a plan identifying where each rack device is to be connected to the PDU receptacle. For ease of power cord management, if you are installing a vertically mounted PDU, it is recommended to connect the rack device to the receptacle that is approximately at the same height.

- When used in North America, regulatory rating of input is de-rated to 80% of input plug. Please use a breaker with corresponding rating upstream of the PDU.

    - 20 A for PDU Input current rated 16 A
    - 30 A for PDU Input current rated 24 A
    - 40 A for PDU input current rated 32 A
    - 60 A for PDU input current rated 48 A
    - 80 A for PDU input current rated 64 A
    - 100 A for PDU input current rated 80 A

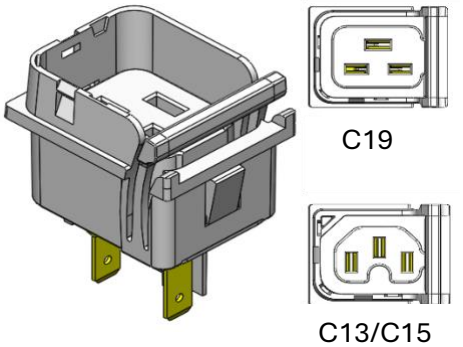
- It is recommended to retain the PDU Ethernet Hardware Address (MAC address) available through the LCD display under PDU Info. It's recommended to record the PDU name, rack/cabinet name, location and MAC address for future reference.

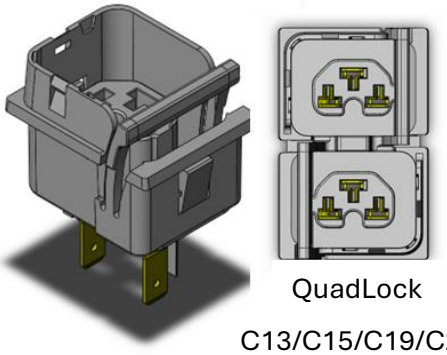
- If the rack device has more than 1 input for power for the purpose of redundancy, the power cables should be connected to different PDUs.

- If using a Universal Input PDU, please choose an appropriate Input Line Cord option that matches the plug type available on the facility side. Mate the universal connector on the PDU with the connector end of the line cord option.

- If using a PDU with an AC Terminal Block, have a qualified electrician wire the PDU terminal block to the facility power source.

Locking Outlets:

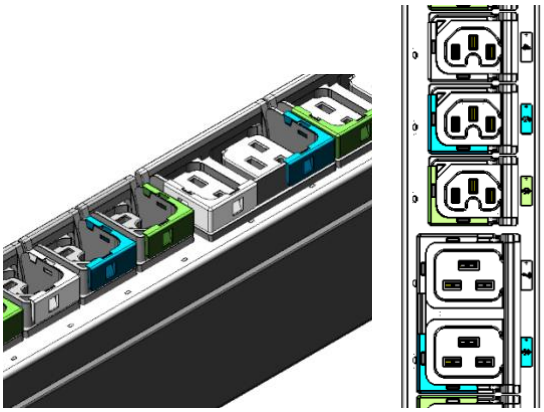




The locking receptacles feature a locking lever that engages with IEC corded plugs.

To engage, insert the IEC plug into the receptacle until you hear a click. Ensure the locking lever is engaged by squeezing the lever and IEC plug together.

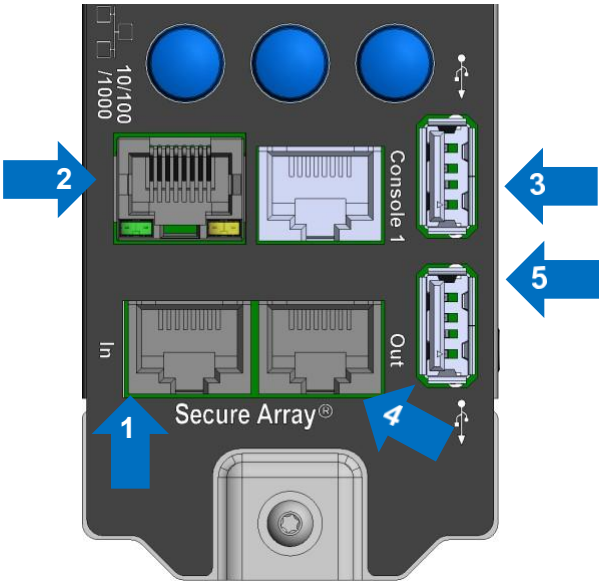
To disengage, press the locking lever simultaneously as you pull the IEC, then, disengage the IEC plug from the receptacle. If the locking lever does not hold open, use one of your fingers to hold it open as you disengage the IEC plug.



Color-coded tabs on the receptacles are added to easily identify receptacle to breaker association.

External Connections:

1. Install the PDU into the cabinet and secure the PDU external ground wire to the cabinet ground stud
2. Optional: Ethernet Port: Before connecting to LAN, go to the Network Configuration page for instructions. Use CAT5/6 cable. Note: If using the 10/100/1000MB Ethernet port at a 1000MB (Gigabit) speed, please use shielded Ethernet cables only.
3. Optional: Environmental Probe Port.
    a. Use USB Temperature and Humidity Sensor (P/N 14665-001) and attach to any of the USB ports
4. Optional: Out Port: For Secure Array when linking PDUs.
    a. Use a standard CAT5/6 cable.
5. Optional: USB Port: For firmware upgrades use USB Flash Drive.



Energizing the PDU

- Attach the input power cord to a matching power source.
- The PDU status light will blink Green for about 90 seconds as the PDU is booting up.
- A solid Green status light will follow with the LCD display coming on and displaying all zeroes.
- Once the PDU is energized, connect cabinet devices to their respective outlets.

Universal PDUs

- "Universal Input eConnect PDU's" that support 120V 1-ph; 120/208V 1-ph; 120/208V 3-ph; 208V 3-ph and 220-240/380-415V 3-ph voltages within a single PDU configuration.
- 4-wire (L21-30) and 5-wire (L22-30) adapters are connected to a single Universal PDU for "phase-phase" (delta) 208V and "Phase-Neutral" (wye) 120/240V configurations.
- By Default, Input Power wire count is selected as "4/5 Wire" at the "Settings -PDU" web page.
- Software change at "Settings -PDU" web page for 3-wire 208V, 240V and 120V configurations.

- Line Assignments logic for various configurations are defined below:
  - **3-Wire Input**
    - Branch Voltage **120V / 240V**
      - Input Phase X (Line-1)
      - Output Phase W
    - Branch Voltage **208V**
      - Input Phase X (Line-1)
      - Output Phase Y (Line-2)
  - **5-Wire Input**
    - Branch Voltage **120V / 240V**
      - Branch [1, 4, 7, 10]
        - Input Phase X (Line-1)
        - Output Phase W
      - Branch [2, 5, 8, 11]
        - Input Phase Y (Line-2)
        - Output Phase W
      - Branch [3, 6, 9, 12]
        - Input Phase Z (Line-3)
        - Output Phase W
  - **4-Wire Input**
    - Branch Voltage **208V**
      - Branch [1, 4, 7, 10]
        - Input Phase X (Line-1)
        - Output Phase Y (Line-2)
      - Branch [2, 5, 8, 11]
        - Input Phase Y (Line-2)
        - Output Phase Z (Line-3)
      - Branch [3, 6, 9, 12]
        - Input Phase Z (Line-3)
        - Output Phase X (Line-1)

4.1 USING THE LOCAL DISPLAY

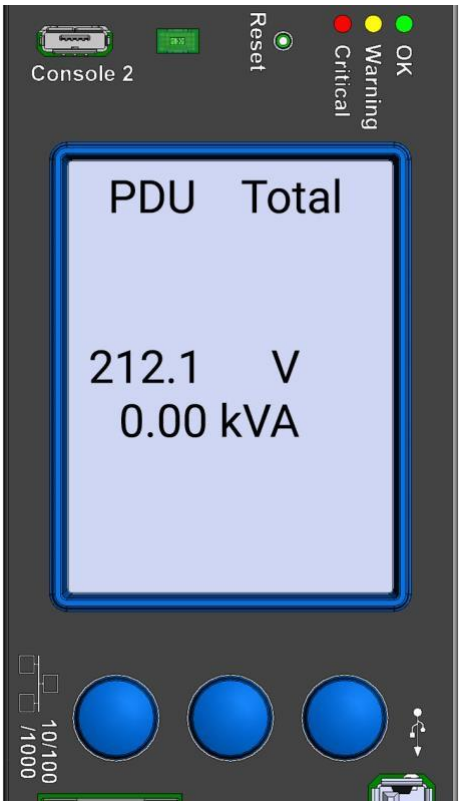
Vertical eConnect PDUs include a multifunctional LCD display with a 240 x 320 pixel resolution and can be navigated by three soft buttons located immediately above the display.

The local interface can display the following information:

- Sum of current, voltage and power values for single-phase PDUs.
- Line input current and sum of voltage and power values on three-phase PDUs.
- Current, voltage, power and power factor values per branch breaker.
- Temperature and humidity values when optional environmental sensors are attached.
- Per outlet current on Monitored Pro and Switched Pro models.
- Alarm notification when predefined warning or critical thresholds are reached.

The local interface can also be used to set up many functions of an eConnect PDU as following:

- Network IP setup (v4 and v6)
- Display settings – brightness, timeout, orientation.
- PDU role (primary or secondary)
- PDU info

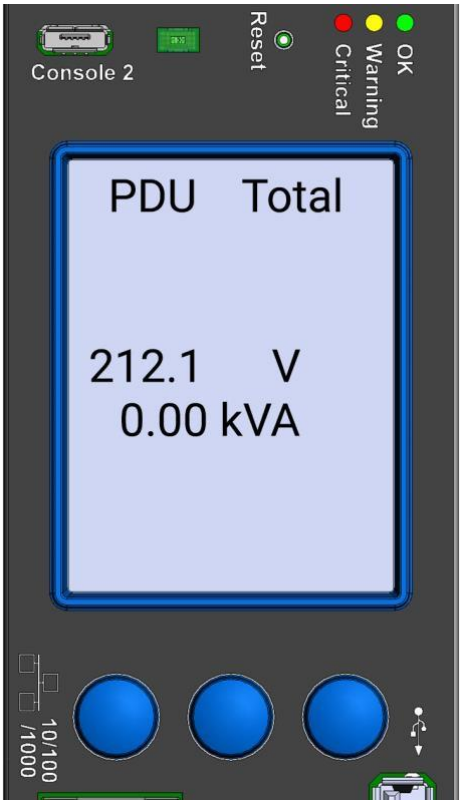


Actual Information displayed may vary depending on whether the unit is single- or three-phase.

Basic Menu Navigation

The legend below explains the meaning of each button on the PDU display:

Menu button/icon definitions and functions



- Go to the Main Menu.

Note: In PDUs in the Secure Array,

the blue icon —— —turns green—

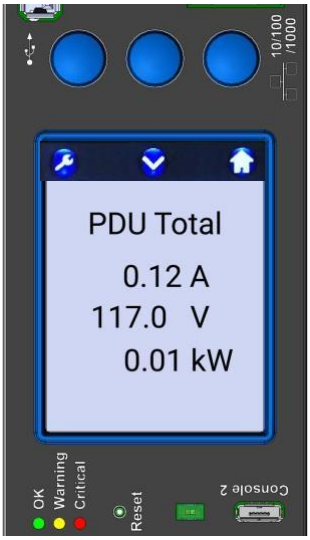
Note: The home icon turns purple during a firmware upgrade

- Select the highlighted menu item. Go to Setup menu.
- Move highlighted menu item down or to the right.
- Move highlighted menu item up or to the left.

Actual information displayed may vary depending on whether the unit is single- or three-phase.

4.2 MONITORING PDU CONDITIONS

The main screen on single-phase PDUs lists total amperage, voltage and power usage by equipment attached to the PDU. The main screen on three phase PDUs lists total voltage and power usage by equipment attached to the PDU.



Single-phase PDU

Three-phase PDU

From the Main menu press:

- **Left button** to set up the PDU.
- **Middle button** to view the next screen.
- **Right button** to go back to the Main Menu.

The following screen(s) list branch circuit values (CB1, CB2 or XY, YZ, ZX). There is one screen per phase/branch

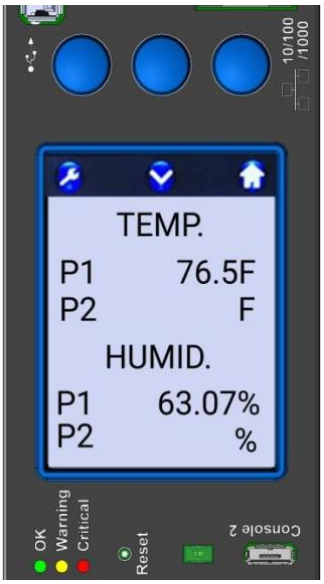
From the Main menu press:

- **Left button** to set up the PDU.
- **Middle button** to scroll through the remaining screens.
- **Right button** to go back to the Main Menu.

After scrolling through the branch/phase screens, the PDU will display the Environment summary screen. USB Temperature and Humidity Sensor (P/N 14665-001) must be attached to the PDU for environmental values to display.

From the Main menu press:

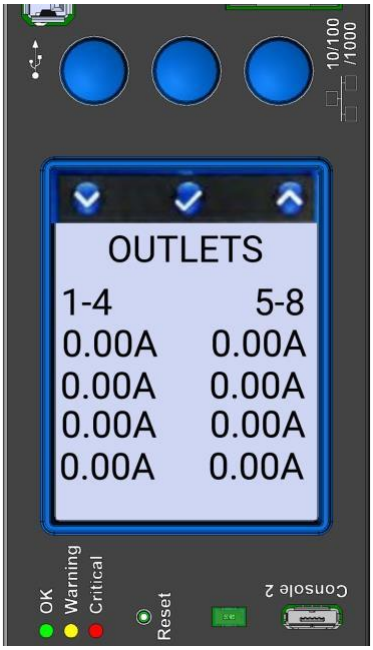
- **Middle button** to view next data screen. This will return to the PDU Total screen.
- **Left button** to set up the PDU.
- **Right button** to go back to the Main Menu.



On Monitored Pro and Switched Pro PDUs, the following screen(s) list total current use for each outlet. Eight outlets are listed on each screen.

From the Main menu press:

- **Left button** to set up the PDU.
- **Middle button** to go to the next data screen.
- **Right button** to go back to the Main Menu



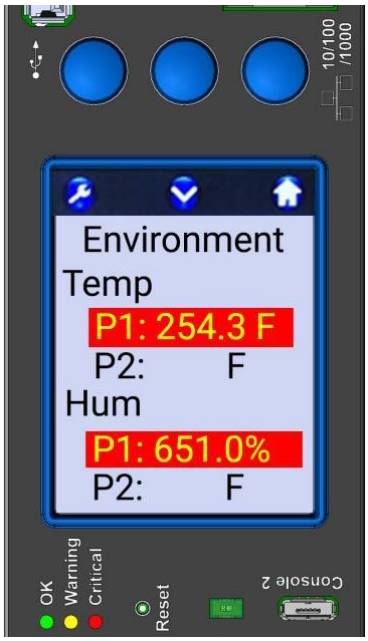
Alarms
When any alarm or warning threshold is hit, the Alarms summary will be displayed before the PDU Total values when the **Home Icon** is selected.

Color codes:
Text with Yellow background: Warning condition was reached.
Text with Red background: Critical condition was reached.

From the Main menu press:

- **Left button** to access the setup menu.
- **Middle button** to view additional summary screens.
- **Right button** to go back to the Main Menu

Additionally, when there is an alarm, the out-of-range measurements are highlighted on the respective summary screen, and the LED next to the display will flash.



4.3 NETWORK CONFIGURATION

Using DHCP
The default setting for the PDU is enabled for DHCP. The default address is **192.168.123.123**. Contact your network administrator to obtain the IP address assigned to the PDU by the DHCP server. To obtain the IP address for the PDU assigned by DHCP server, the PDU must be rebooted (go to **PDU Settings** to reset device).

To change network configuration using the LCD display, follow the instructions below. If the PDU does not have an LCD display, change network configuration using Command Line Interface (CLI)

- **Left button** to traverse down the list of options
- **Middle button** to select the highlighted option
- **Right button** to traverse up the list of options

Select **Exit** to exit this screen **Click on middle button** to set up IPv4 Network

- **Left button** to traverse down the list of options
- **Middle button** to select the highlighted option
- **Right button** to traverse up the list of options

Select **Save** or **Cancel** to exit this screen. Save updates IP information immediately. **Cancel** makes no changes to the setup.
Return to the Setup Menu

The image above is an example of the address given to the PDU by the DCHP server.

To use Zero Touch Provisioning (ZTP) with DHCP, go here.

Using Static IP Address
Make sure to switch the DHCP option to “NO”, then follow the instructions below.

Select the **Left Button** to access the PDU Setup Menu

- **Left button** to traverse down the list of options
- **Middle button** to select the highlighted option
- **Right button** to traverse up the list of options

Select **Exit** to exit this screen **Click on middle button** to set up IPv4 Network

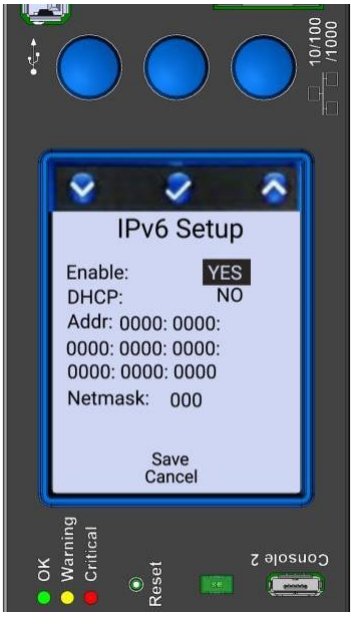
- **Left button** to traverse down the list of options
- **Middle button** to select the highlighted option
- **Right button** to traverse up the list of options

Select **Save** or **Cancel** to exit this screen. Save updates IP information immediately.
Cancel makes no changes to the setup.
Return to the Setup Menu

- **Use the Left Button** to select IPv6 Network.

Click on middle button to set up IPv6 Network Use the Left Button to select IPv6 Network

- Select **Save** or **Cancel** to exit this screen.
- **Save** updates IP information immediately.
- **Cancel** makes no changes to the setup



- Make sure the settings are “YES” for Enable and “NO” for DHCP, then enter the PDU Address and Netmask
- Select **Save** or **Cancel** to exit this screen
- **Save** updates IP information immediately.

Cancel makes no changes to the setup

4.4 DISPLAY SETUP

Return to the Setup Menu.
Use the Left button to select Display.
Click on the middle button to set up the Display.

Click on:
- **Left button** to traverse down the list of options
- **Middle button** to select the highlighted option
- **Right button** to traverse up the list of options.

Timeout – Controls how long display remains on (minutes)

Brightness – Controls display brightness (1-9)

Input Cord – Controls display orientation (TOP or

BOT input cord location). This rotates the display 180° so that it can be easily read regardless of whether the PDU is mounted with the cord toward the top or bottom of the cabinet. The display will automatically orient on power up.

Outlet – Controls whether individual outlet current measurements are displayed (Show or Hide) on Monitored Pro and Switched Pro models.

Select **Save** or **Cancel** to exit this screen. Save updates IP information immediately. Cancel makes no changes to the setup.

5. PDU SETTINGS

Return to the Setup Menu.
Use the **left** button to select PDU Settings.

Click on the middle button to set up advanced info for the PDU.

Optional - Click on:

- **Left button** to traverse down the list of options
- **Middle button** to select the highlighted option
- **Right button** to traverse up the list of options.

Role – There are three roles for the PDU: Secondary, Primary and Alternate. Secondary is the default role. Choose **PRIMARY** if PDU is the **FIRST PDU** in a Secure Array. Only one PDU may be Primary, and this must be the PDU with the highest level of functionality and highest number of outlets within that functionality. Choose **ALTERNATE** if the PDU will be a backup to the Primary. Only one PDU may be ALTERNATE, and this PDU must match the functionality and outlet quantity of the Primary in order to fully support the array. Otherwise keep or choose **SECONDARY**. See Network Settings for additional details.
Temp – Choose Celsius or Fahrenheit
Restore Defaults – Choose to select which fields will be restored (confirmation needed, see details on the next page)
Update FW – Choose to update firmware locally through USB port.

Save – Confirm all changes made in this session.
Cancel – Cancel all changes made in this session.

Network Only – Will immediately reset the IP address back to the default address (192.168.123.123) with DCHP enabled and reboot the controller module. Outlets will not lose power, but you will lose your network connection and monitoring during reboot.

Config Only – Will immediately reset PDU and outlet names, alarm thresholds, etc. back to defaults, and reboot the main controller module. Outlets will not lose power, but you will lose your network connection and monitoring during reboot.

User Only – Will immediately delete all accounts except the default administrative user account: Username: “admin”, Password: “admin”, and reboot the controller module. Outlets will not lose power, but you will lose your network connection and monitoring during reboot.

Reset All – Resets Network, Config and User values to defaults, the controller module. Outlets will not lose power, but you will lose your network connection and monitoring during reboot.

Reset Device – Only reboots the main controller module. No values are reset to default. Outlets will not lose power, but you will lose your network connection and monitoring during reboot.

Note: The physical reset pin under the screen will Reset Device and erase all local memory, including the date of the log file.

5.1 UPDATE FIRMWARE

Click on middle button to update firmware for the PDU.

Optional - Click on:

- **Left button** to traverse down the list of options
- **Middle button** to select the highlighted option
- **Right button** to traverse up the list of options.

Sample of Updating screen

Sample of Failed updating

6. PDU MODEL INFORMATION

Optional - Click on:

- **Left button** to traverse down the list of options
- **Middle button** to select the highlighted option
- **Right button** to traverse up the list of options.

.

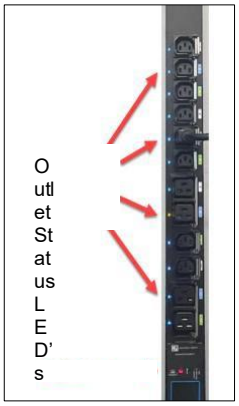
Click on the middle button to traverse back to the PDU Settings Menu

.

Click on the middle button to traverse back to the PDU Settings Menu
Note: *The P/N shown is the Regulatory Model number found on the UL label in the back of the unit*

Outlet Status LED's:

Switched Pro, Switched and Monitored Pro vertical eConnect configurations include an LED on every individual outlet that provides outlet status information as shown in the table below:



Switched Pro, & Switched:

LED Color	LED State	Outlet State	Potential Cause	Comments	Validation
Blue	Solid	Outlet On	Normal functionality	N/A	
Amber	Solid	Outlet Off	Normal functionality	N/A	
Blue	Blinking	Outlet On	Min Outlet Current Alarm -or-	Blinking is only on problem outlet	Check WebUI "Status-Alarms" page
			Max Outlet Current Alarm -or-	Blinking is only on problem outlet	Check WebUI "Status-Alarms" page
			Min Branch Voltage Alarm -or-	Blinking on all outlets of affected branch	Check WebUI "Status-Alarms" page
			Max Branch Voltage Alarm	Blinking on all outlets of affected branch	Check WebUI "Status-Alarms" page
Amber	Blinking	Outlet Off	Min Outlet Current Alarm -or-	Blinking is only on problem outlet	Check WebUI "Status-Alarms" page
			Min Branch Voltage Alarm -or-	Blinking on all outlets of affected branch	Check WebUI "Status-Alarms" page
			Max Branch Voltage Alarm -or-	Blinking on all outlets of affected branch	Check WebUI "Status-Alarms" page
			Circuit Breaker Trip	Blinking on all outlets of affected branch	Affected Branch's Circuit Breaker is tripped.

Monitored Pro:

LED Color	LED State	Outlet State	Potential Cause	Comments	Validation
Blue	Solid	Outlet On	Normal functionality	N/A	
Amber	Solid	Outlet Off	Normal functionality	N/A	
Blue	Blinking	Outlet On	Min Outlet Current Alarm -or-	Blinking is only on problem outlet	Check WebUI "Status-Alarms" page
			Max Outlet Current Alarm -or-	Blinking is only on problem outlet	Check WebUI "Status-Alarms" page
			Min Branch Voltage Alarm -or-	Blinking on all outlets of affected branch	Check WebUI "Status-Alarms" page
			Max Branch Voltage Alarm -or-	Blinking on all outlets of affected branch	Check WebUI "Status-Alarms" page
			Circuit Breaker Trip	Blinking on all outlets of affected branch	Affected Branch's Circuit Breaker is tripped.

Outlets LED and alarms behavior summary

Critical Outlet Current alarms, both minimum and maximum:
- Causes the associated outlet's LED to begin blinking
- No outlets turn off or turn on in response to this scenario.
- The alarm being cleared will stop the outlet's LED blinking

CRCM Low Voltage announcement (Breaker Trip or AC power loss)
- Turns off all outlets on the associated branch
- Begins blinking the LEDs of all outlets on the associated branch
- The system will NOT automatically turn outlets back on after a breaker trip recovery.
- The alarm being cleared will stop the LEDs blinking on all associated outlets

Critical Branch Minimum Voltage alarm
- Begins blinking the LEDs of all outlets on the associated branch
- The alarm being cleared will stop the LEDs blinking on all associated outlets

Critical Branch Maximum Voltage alarm
- Begins blinking the LEDs of all outlets on the associated branch
- The alarm being cleared will stop the LEDs blinking on all associated outlets

IMPORTANT: Visit the Notifications Threshold to check your alarms settings after an alarm has been triggered to verify threshold values are accurate.

7. USING THE BUILT-IN WEB SERVER (GUI) APPLICATION

Login

To access the PDU using the web GUI, connect the Ethernet port to a network switch.

The default setting for the PDU is enabled for DHCP. Contact your network administrator to obtain the IP address assigned to the PDU by the DHCP server. To obtain the IP address for the PDU assigned by DHCP server, the PDU must be rebooted (go to **PDU Settings** to reset device).

If the PDU does not have an LCD display, change network configuration using Command Line Interface (CLI).

To access the Web GUI, enter the PDU's IP address in your web browser, or contact your network administrator to obtain the IP address.

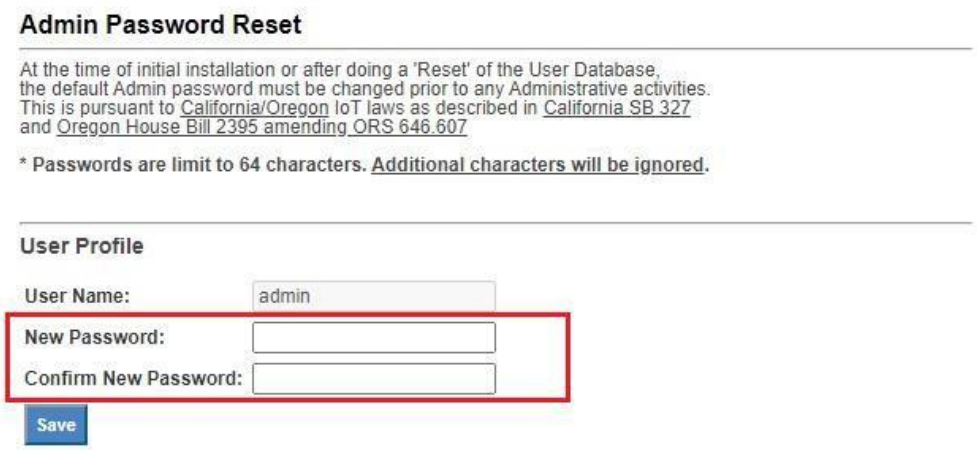
Default static IP address: **192.168.123.123**
Default Username/Password: **admin/admin**

The Login Screen will display:

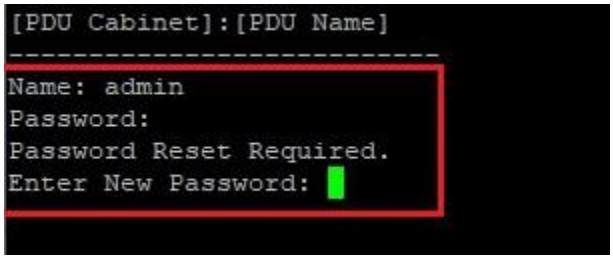
Log in using default Username and password: **admin**, **admin** and **click on Login** button or username and password if it has been created.

When logging into the Admin account, for the first time, when the PDU is placed into service or after doing a “Reset” of the User settings, you will be prompted to enter a new password.

Web GUI:



CLI:



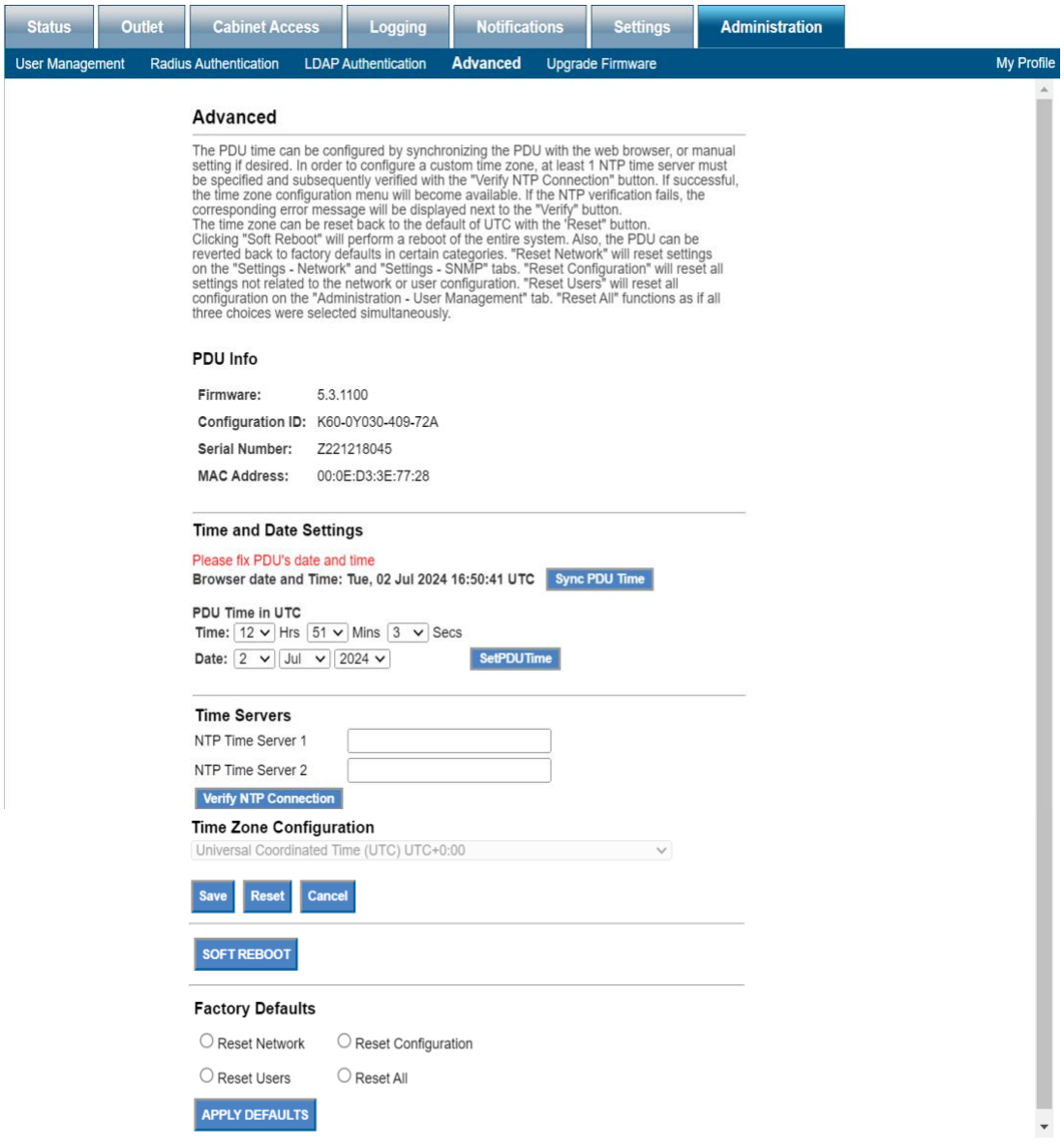
Things to Note:
In the event of a Reset of the Users forcing a change to the Admin password, there are some behaviors to be aware of:

1. If LDAP is Enabled when the Users are reset, LDAP will be disabled.
    a. As LDAP requires the user have a local account, the User reset removes those local accounts which will affect logging in with LDAP Authentication.
2. The change in password only affects the local login account. Any accounts authenticated by Radius will remain in effect.
    a. Logging in to the system will fail if the updated password does not match the authentication established when Radius is enabled.
    b. If Radius is ever disabled, the updated Admin password will be needed to log in to the local account.

First Login – Set Date and Time

The PDU has data logging and alarm notification functions that benefit from a time and date stamp. However, the PDU does not have a battery powered on-board clock. So, each time the PDU loses power, its clock also resets. This means you must manually reset the time and date or, alternatively, configure an NTP time server to do so automatically on power-up.

To assign an NTP time server, click on the **Administration** tab, **Advanced** sub menu. Scroll down the page to the heading **Time Servers.** Enter NTP Time Server.



The PDU must have network access to the time server. For detailed network setup, see the **Settings – Network** page. You can verify the PDU's ability to synchronize with the saved NTP time servers by using the "Verify NTP Connection" button.

If you do not wish to use a time server, and instead want to set the time and date manually, go to **Time and Date Settings** section. You can use either the "Sync PDU Time" button to synchronize the PDU's time to the browser date and time, or you can manually set the PDU's time using the "Set PDU Time" button. Time will be set in UTC by default, you can change this to a different time zone as needed.

To set the Time Zone, use the **Time Zone Configuration** drop down selection menu. To gain access to this menu, you will need to have a successful NTP verification with the "Verify NTP Connection" button.

Click on Sync PDU time and then **Save** button to update the clock on the PDU using the browser date and time, or manually set the time with the drop boxes.

Note that if you perform a firmware upgrade, the PDU will reboot and the time will need to be manually reset, unless you have configured NTP time servers on the PDU.

The remainder of the manual is ordered according to the tabs on the screen displayed above, so the next section is Status and the Status sub menus.

Note that the screenshot above is from a Switched Pro PDU, which includes Outlet Control and Monitoring features. Note that there are tabs for Status, Outlet, Settings and Administration. However, there is no Outlet tab on Monitored models.

7.1 STATUS - OVERVIEW

Click on the **Status** tab**, Overview** sub menu to view circuit, sensor, input and outlet status.

All models present branch circuit status and sensor status (when attached).

The image below shows the PDU Branch Status table for a six-breaker PDU. Branches are labeled as CB1 for Branch 1, CB2 for Branch 2, CB3 for Branch 3, CB4 for Branch 4, CB5 for Branch 5 and CB6 for Branch 6.

The PDU Branch Status table will have a row for each branch circuit on the PDU, this means other models may display fewer or more circuit rows in the PDU Branch Status table compared to the image below.

PDU Branch Status

Branch	Voltage	Current	PF	Power (kVA / kW)	Energy (kVAh / kWh)	Current Usage & Thresholds
CB1	208.0V	3.96A	0.94	0.82 / 0.78	963.42 / 910.57	
CB2	208.0V	3.96A	0.94	0.82 / 0.78	963.41 / 910.57	
CB3	208.0V	3.96A	0.94	0.82 / 0.78	963.41 / 910.57	
CB4	208.0V	4.00A	0.94	0.83 / 0.79	0.01 / 0.01	
CB5	208.0V	4.00A	0.94	0.83 / 0.79	0.01 / 0.01	
CB6	208.0V	4.00A	0.94	0.83 / 0.79	0.01 / 0.01	
TOTAL				4.96 / 4.69	2890.28 / 2731.75	0% 20% 40% 60% 80% 100%

* On units with firmware version 4.x.xxx, only kVA / kVAh values will be presented.

Once alarm thresholds are set (see **Notification Thresholds**), the PDU Branch Status table under the Status tab, Overview sub menu will show the operating range as a green bar, warning range as a yellow bar, and alarm range as a red bar. The actual measured value will be shown as a black line overlaying the graph.

This allows a quick visual reference for available power within the acceptable operating range for each circuit. The total power consumed is also displayed at the bottom of the graph as a percentage of power available.

Scroll down.

If an optional Temperature and Humidity Sensor is attached to the PDU, temperature and humidity will be displayed under Sensor Status. You can connect two sensors to each PDU.

Three-phase PDUs will also display PDU Input Status – the amount of current (Amperes) on each line input before the breakers. This value is not logged.

If deploying PDU with Auxiliary Ports and Electronic Lock Kit, scroll down the page to view

door and lock status.

Sensor Status

	Temp	Humidity
Probe 1 Name		
Probe 2 Name		

PDU Input Status

	Current
Line1	0.00A

When the Electronic Lock Kit is attached to the PDU, the doors and the locks will be displayed under Front Door Status and Rear Door Status.

Front Door Status

State
Door: Not Configured
Lock: Not Configured

Rear Door Status

State
Door: Not Configured
Lock: Not Configured

Door status:
- **Not Configured:** Lock is not enabled.
- **Closed:** Door is closed.
- **Opened:** Door is opened.

- **Tampered Open:** Door is opened, and lock is locked or tampered unlocked, or force unlocked.

Lock status:
- **Not Configured:** Lock is not enabled.
- **Locked:** Lock is locked and handle is in the cradle
- **Force Unlocked:** Unlock using the GUI.
- **Tamper Unlocked:** Unlock using the key and handle is not in the cradle.
- **Unlocked via Key Card:** A registered smart card was used to unlock.

Scroll down.

Monitored Pro, Switched, and Switched Pro models will also present per outlet status. The image below shows a Switched Pro model. Switched models do not include Current, Voltage, Power or Energy values. Monitored Pro models do not include Status or Control values. There are LEDs next to the outlets to identify the On/Off status of the outlets.

Outlet Status

Outlet Name	Status	Control	Branch	Current	Voltage	Power Factor	Power (kVA)	Energy (kVAh)
1 - Outlet 1	On	☐	CB1	0.00A	121.8V	0.00	0.00	0.00
2 - Outlet 2	On	☐	CB1	0.00A	121.8V	0.00	0.00	0.00
3 - Outlet 3	On	☐	CB1	0.00A	121.8V	0.00	0.00	0.00
4 - Outlet 4	On	☐	CB1	0.00A	121.8V	0.00	0.00	0.00
5 - Outlet 5	On	☐	CB1	0.00A	121.8V	0.00	0.00	0.00
6 - Outlet 6	On	☐	CB1	0.00A	121.8V	0.00	0.00	0.00
7 - Outlet 7	On	☐	CB1	0.00A	121.8V	0.00	0.00	0.00
8 - Outlet 8	On	☐	CB1	0.00A	121.8V	0.00	0.00	0.00

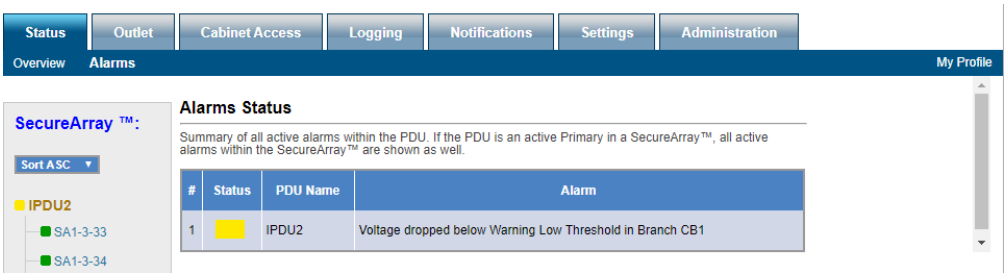
On Off Reset

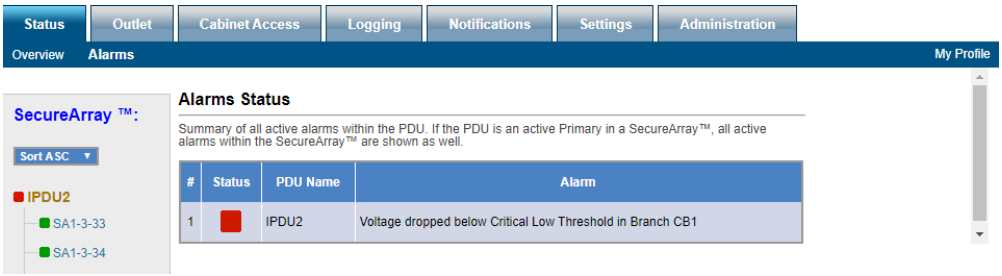
The PDU Status LED will be RED.
All LEDs will be back to normal as the alarm situation has been handled.

7.2 STATUS - ALARMS

Click on Alarms to view a summary of Alarm messages, if there are any present:

Warning thresholds are indicated by a yellow-colored rectangular alarm status symbol.
Critical thresholds are indicated by a red-colored rectangular alarm status symbol.



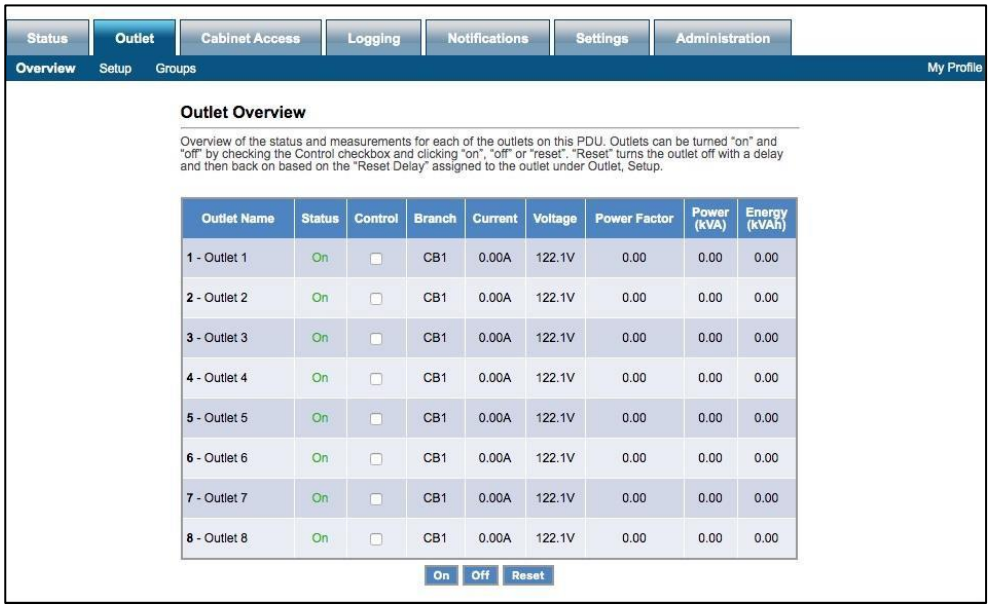


Note: The CPI alerts and notification system can be broken down into a few components:

- Configured thresholds.
- Active alarms based on the current metrics in relation to the configured thresholds.
- Notifications of these alarms in the form of SNMP traps, log entries, and emails when configured.

7.3 OUTLET - OVERVIEW

Monitored Pro, Switched and Switched Pro models, Click on Outlet, Overview tab to view Outlet Status on the PDU:

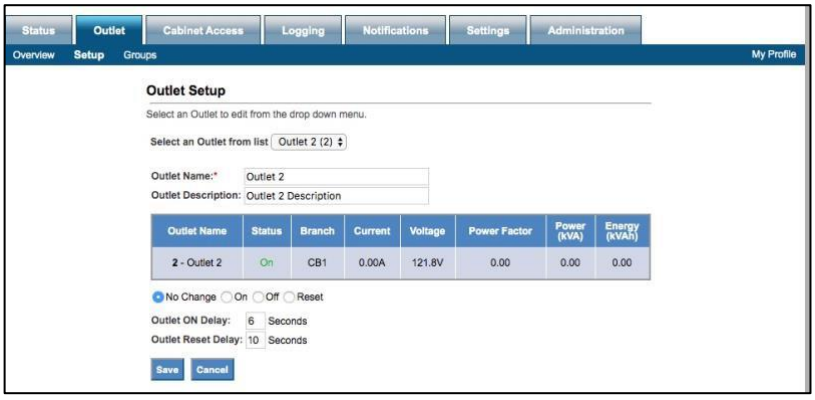


Switched and Switched Pro models, you can turn outlets on or off by clicking the checkbox under the Control column. The indicator in the Status column will change as the outlet switches on or off.

Scroll down to view the rest of the Outlets.

7.4 OUTLET - SETUP

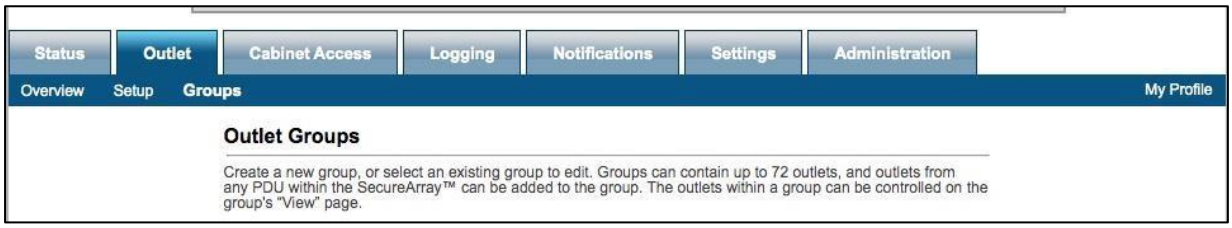
To name and enter alarm limits for a specific Outlet, from the **Outlet** tab, click on the **Set Up** sub menu, and use the drop-down list to select the outlet:



Switched and Switched Pro models include settings for Outlet ON Delay and Outlet Cycle Delay, allowing you to specify a delay when power is cycled. Enter Outlet data and click on **Save** button to save new data.

7. 5 OUTLETS – GROUPS

To create a group of outlets from a single PDU or multiple PDUs that are linked together, click on the **Outlet** tab, click on the **Groups** submenu, then click on **New Group**:



Name the Group, select PDU(s) and Outlets to be grouped and click on **Save** button:

To view, edit or remove an existing group, click on **View or Edit or Remove** under Action in the Outlet, Groups table:

View provides Group Status. You can see totals and control outlets on Switched and Switched Pro.

8. CABINET ACCESS – OVERVIEW

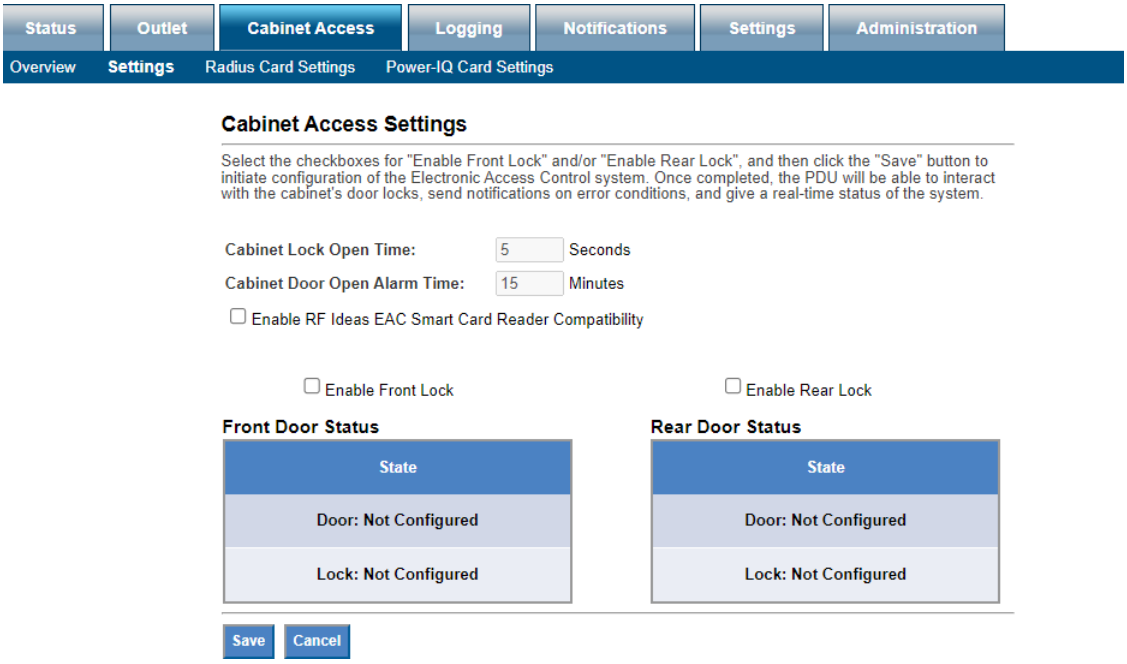
*Only applicable for eConnect PDUs with Auxiliary Ports to power and control RFID Electronic Locks.

8.1 CABINET ACCESS – SETTINGS

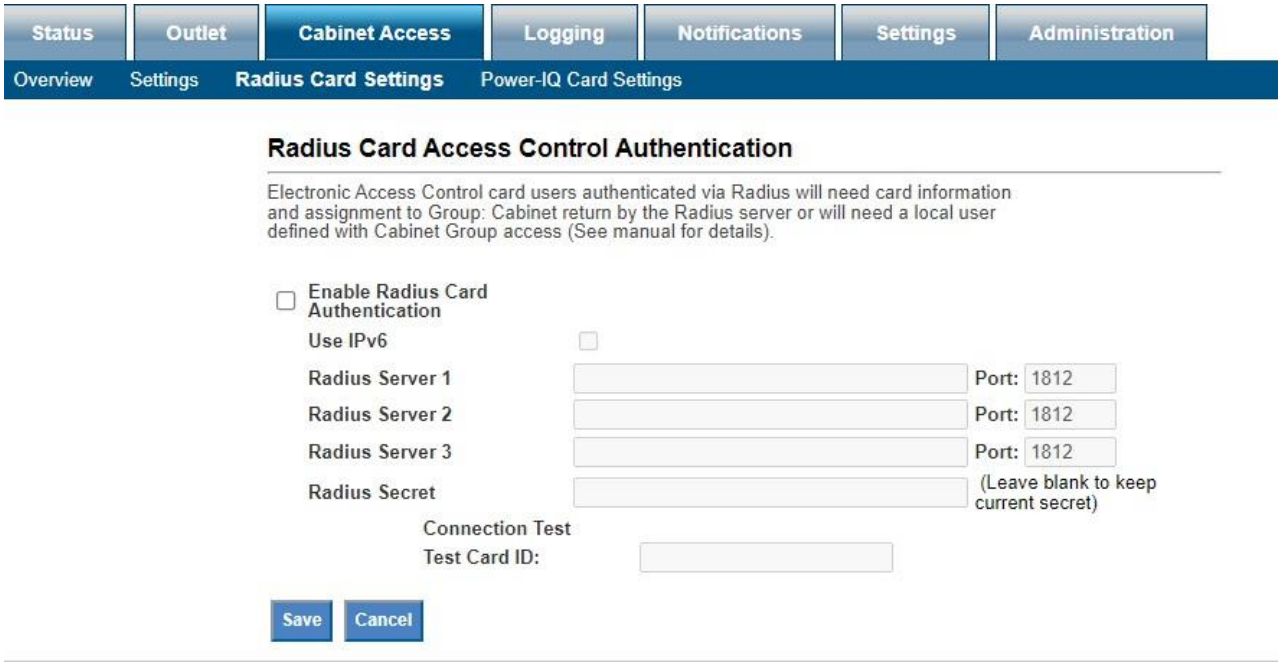
Enter the **Cabinet Lock Open Time**: 1 – 30 seconds. The default value is 5 seconds

Enter **Cabinet Door Open Alarm Time**: 1 – 240 mins. The default value is 10 minutes.

Check box to enable Front or/and Rear Lock(s) where applicable
Click on **Save** to save the configured data.



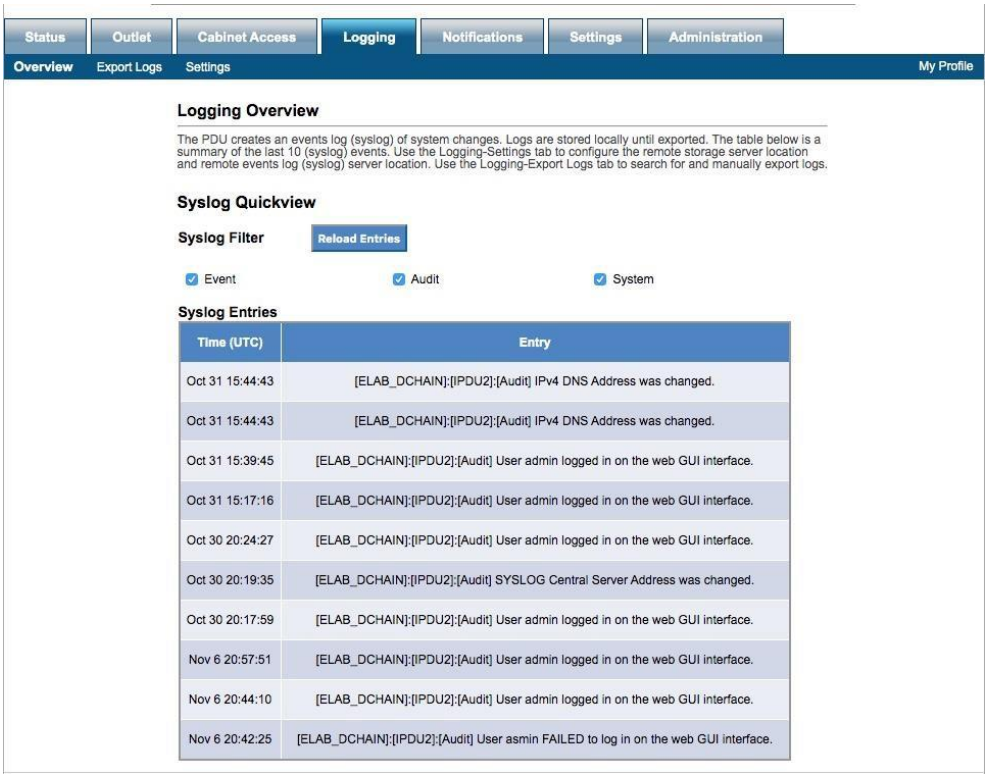
8.2 CABINET ACCESS – RADIUS CARD SETTINGS



After “Check the Use IPv6 box. If applicable, click Save.”

Power-IQ Card Access Control authentication. When enabled, the PDU sends Electronic Lock Sets events to PIQ, which can also be configured via PIQ. Select “Enable Power-IQ Traps” and click Save.

9. LOGGING – OVERVIEW



Select Syslog Filter by checking the check box(es) and click on the **Reload Entries** button to obtain up-to-date information.

9.1 LOGGING – EXPORT LOGS

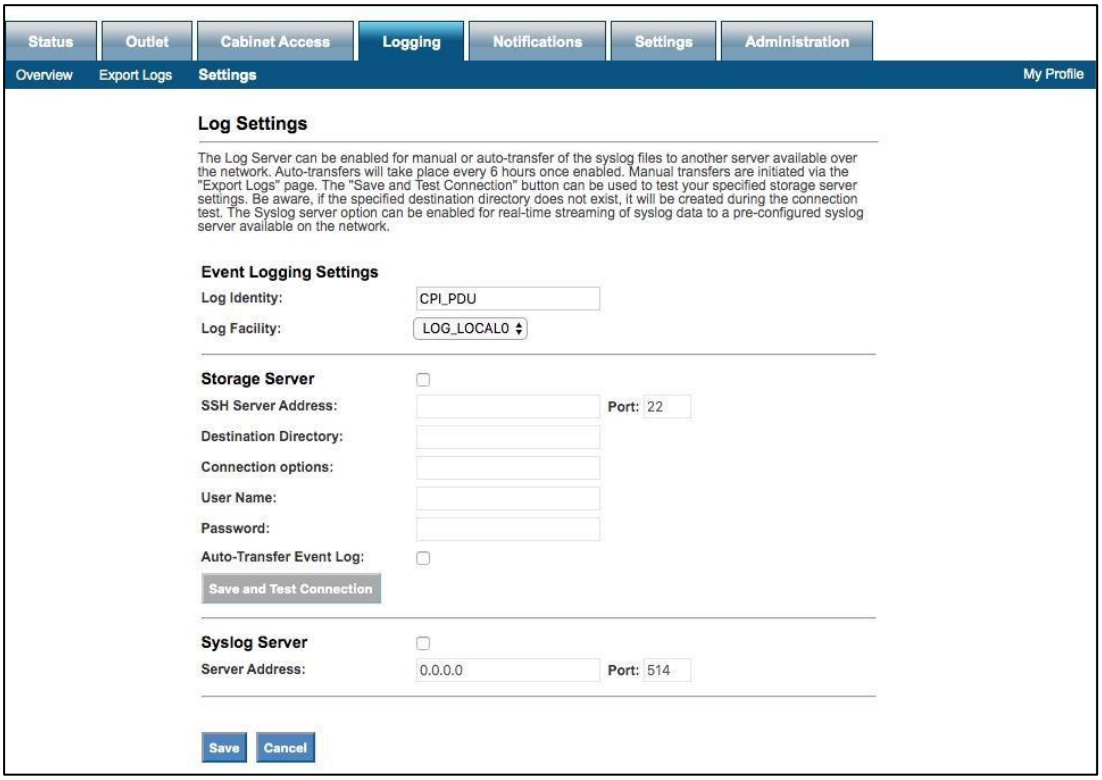
Select type of file and select the log file to be exported.

Click on **DOWNLOAD** to obtain the selected file to the connecting computer.

Click on **TRANSFER TO SERVER** to save the file on the designated storage server.

Click on **DELETE** to remove the saved file from the PDU.

9.2 LOGGING – SETTINGS



Metric Data Logging:

Check Enable Logging check box to begin capturing data on the PDU internal memory. Input the desired interval and Log Full Warning Level percentage.

Event Logging Settings:

Log Identity and Log Facilities are preset on the PDU memory system. Pick any Log Local to store data locally.

Storage Server:

Input information for Data Log and Event Log to be stored remotely. Make sure to click on the **Save and Test Connection** button to validate the connection and authorization to save data on the remote server.

Syslog Server:

Allows the use of the remote server as the Syslog instead of the PDU itself.

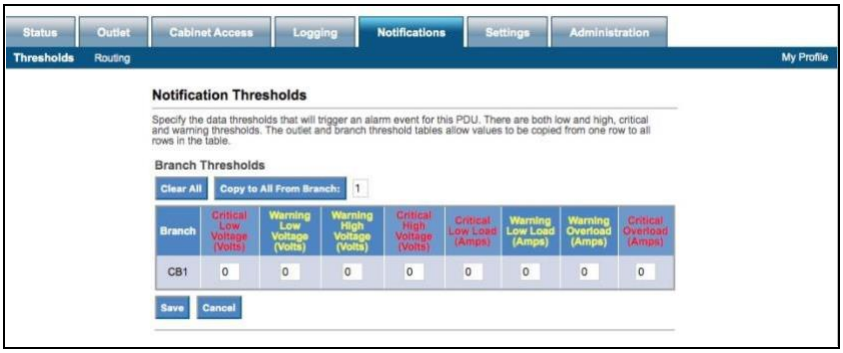
Click on **Save** to save all input data.

10. NOTIFICATIONS - THRESHOLDS

Branch Thresholds

Input all desired limitations to be set as thresholds.
Click on **Save**.

Scroll down to input other thresholds.



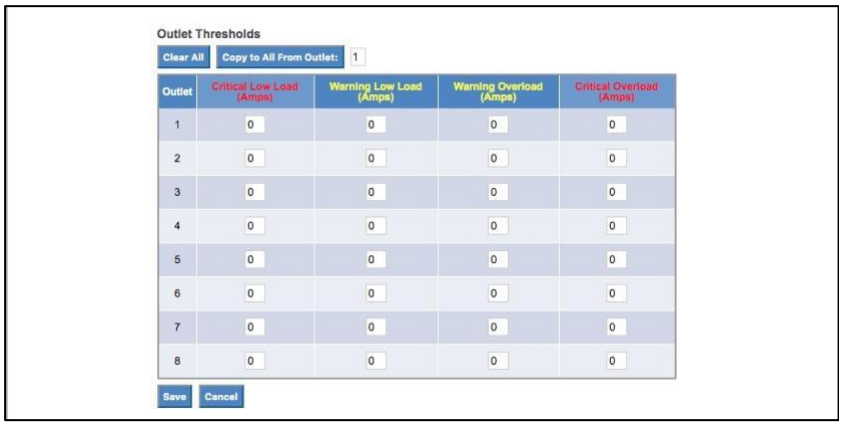
Environmental Thresholds

Input all desired limitations to be set as thresholds.
Click on **Save**.

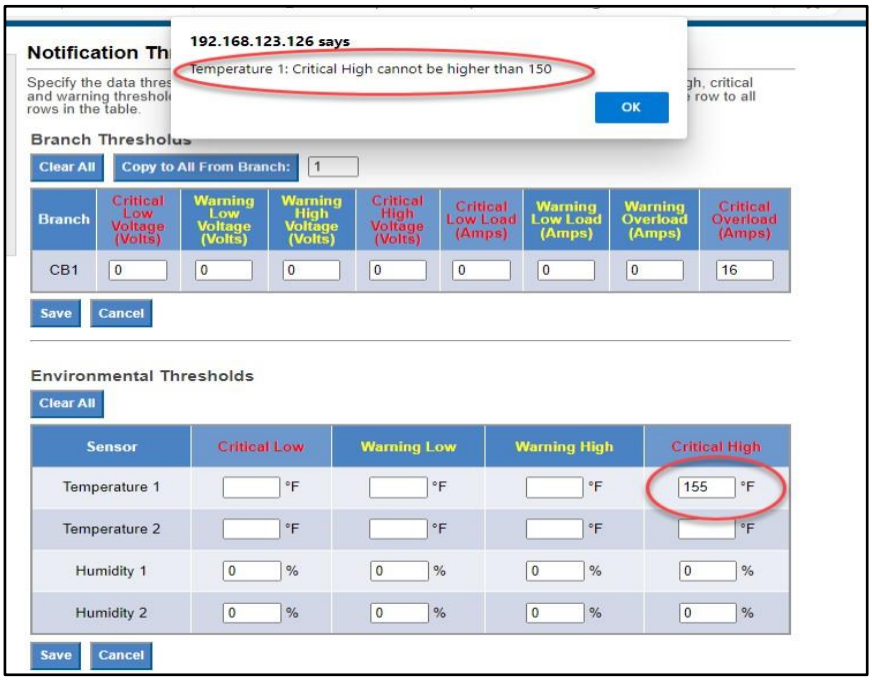
Scroll down to input other thresholds.

Environmental Thresholds (Continued)

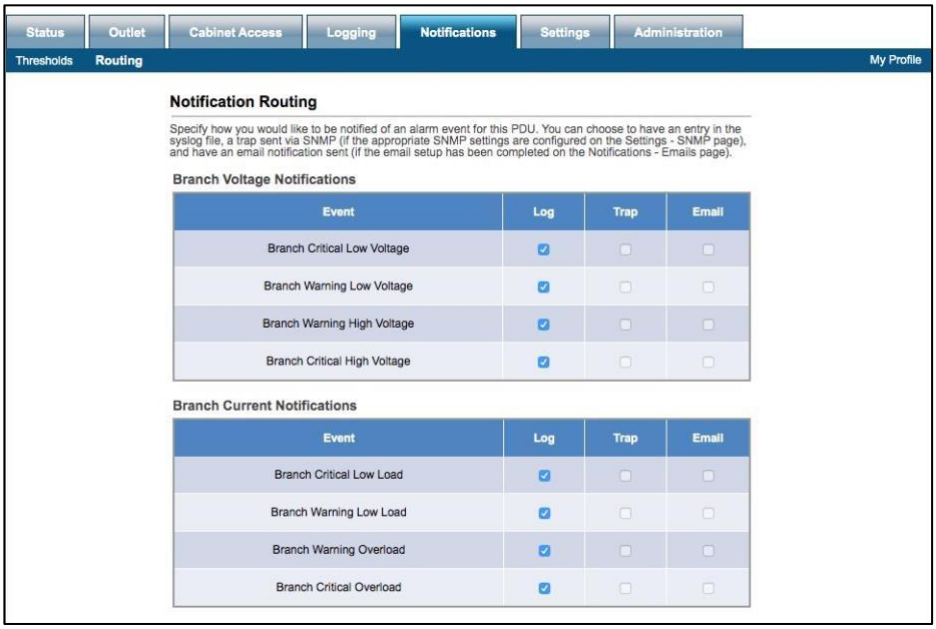
For Switched and Switched Pro models only:



Environmental Thresholds
Are limited to 150 °F (65.5 °C).



10.1 NOTIFICATIONS - ROUTING



Select method(s) of notifications for Branch Voltage and Branch Current by checking the check box(es): Log, Trap, Email

Check the Log boxes to check what kinds of events provoke a log entry. Then, check the boxes for the events you want to Trap.

With regards to emails, if a particular alarm becomes active, the PDU will send an email in response to this alarm becoming active, if configured to do so.

This configuration includes the email settings to get emails to work at all, plus the configuration on the **Notifications – Routing** page, which determines which alarms will provoke an email being sent.

These email messages will include which alarms have become active/cleared at the moment the email was sent. They do not, however, contain a message for every currently active alarm, only the alarms that have just “tripped” or “cleared”.

Scroll down for more notification settings.

Outlet Current Notifications

Event	Log	Trap	Email
Outlet Critical Low Current	☑	☐	☐
Outlet Warning Low Current	☑	☐	☐
Outlet Warning High Current	☑	☐	☐
Outlet Critical High Current	☑	☐	☐

Temperature Notifications

Event	Log	Trap	Email
Temperature Critical Low	☑	☐	☐
Temperature Warning Low	☑	☐	☐
Temperature Warning High	☑	☐	☐
Temperature Critical High	☑	☐	☐

Humidity Notifications

Event	Log	Trap	Email
Humidity Critical Low	☑	☐	☐
Humidity Warning Low	☑	☐	☐
Humidity Warning High	☑	☐	☐
Humidity Critical High	☑	☐	☐

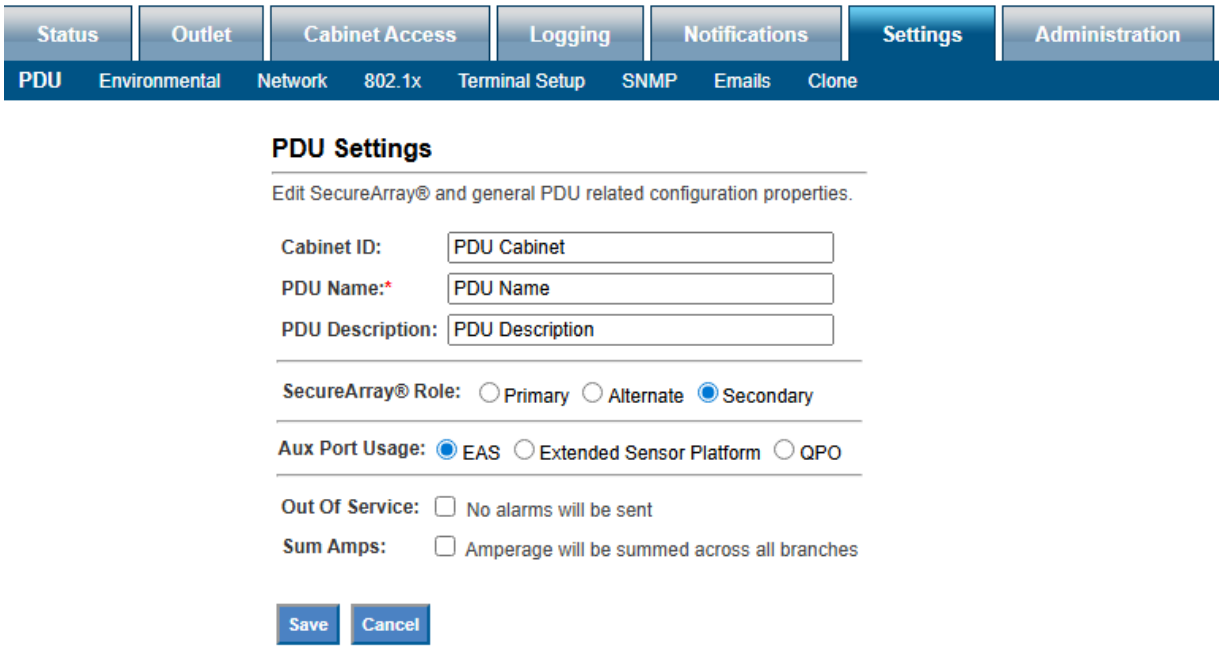
Select method(s) of notifications for Outlet, Temperature, Humidity if applicable by checking the check box(es): Log, Trap, Email.

Scroll down for more notification settings.

Select method(s) of notifications for Door, Lock, and PDU if applicable by checking the check box(es): Log, Trap, Email.

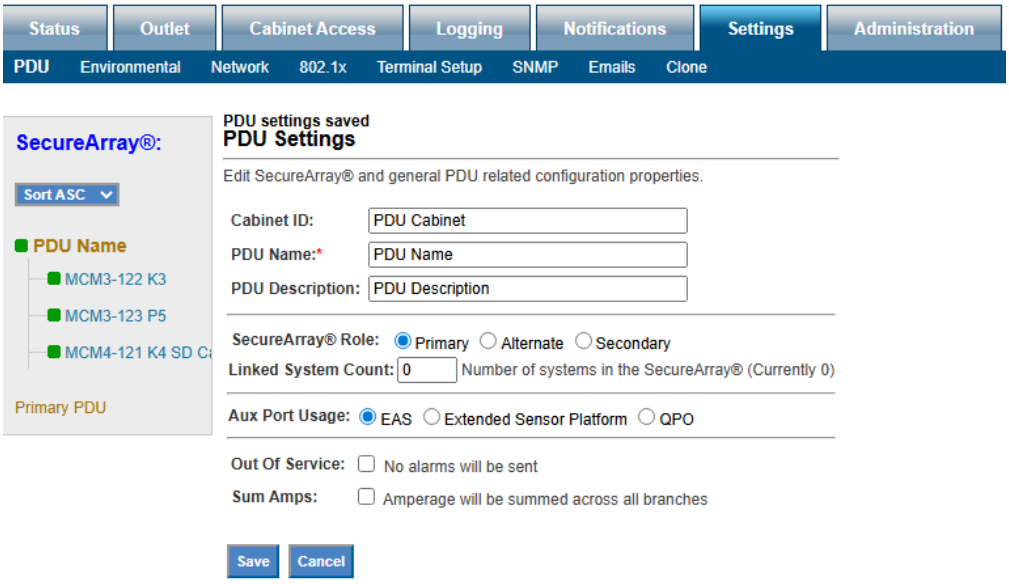
Click on **Save** to save the input data.

11. SETTINGS – PDU



Enter the desired **PDU Name** and **Location**. The PDU Name is displayed in the summary information at the top of each web interface screen and on the PDU's LCD screen.

Out of Service checkbox: Check this box to deactivate the Electronic Lock Kit alarms if a PDU goes offline or becomes "unlinked." Use this checkbox for planned service.



Primary PDU checkbox: eConnect PDUs can be linked together through a Secure Array to share a single IP address through a single network connection. Check this box for the PDU with the highest-level functionality. For several PDUs that have the highest level of functionality, check the box for the one that has the highest number of outlets. The check box for Primary PDU should only be checked if this PDU is linked with other PDUs, and if this is the PDU that is attached to the network. If this PDU is not linked to other PDUs, do not check the Primary PDU check box.

Remote cabinet access control through Electronic Lock Kit is possible with all the PDUs that are linked together in the Secure Array.

Share Role checkbox: When linking PDUs, there can also be an Alternate (Primary) PDU to provide a backup network connection if the Primary PDU loses its network connection.

To keep cabinet access control entries, make sure the Smart Card ID information is on both the Primary and Alternate PDU in case the role of the Primary PDU changes.

Link Count Change checkbox: Check this box to receive an alarm notification if the number of PDUs in the Secure Array changes indicating a potential link failure.

Role Change checkbox: Check this box to receive an alarm notification if the Alternate PDU assumes the Primary PDU role indicating a potential primary PDU or network connection failure.

Aux Port Usage: Check the QPO option if the PDU is linking to the “quick power off” switch. Fill in the desired choices and click on **Save**. Check the ESP option if the PDU is connected to eConnect Sensor Array and click on **Save**. This is a sensor bus system with support for environmental probes, door contact sensors, leak detection sensors, and an Electronic Access System.

11.1 SETTINGS - SENSORS

PDU can be connected to eConnect Sensor Array. This is a sensor bus system with support for Environmental probes, Door contact sensors, Leak detection sensors, and an Electronic Access System. The eConnect® Sensor Hubs are intelligent control modules that enable seamless integration of eConnect® Temperature & Humidity Sensors, Door Control Sensors, and Leak Detectors with eConnect® PDUs. Designed for modular environmental monitoring, the Sensor Hub collects and manages real-time telemetry data from multiple sensors, providing centralized visibility into cabinet-level conditions.

Environmental Probe Module

The eConnect® Temperature & Humidity Sensor is a modular environmental monitoring device that integrates with intelligent eConnect® PDUs using the Sensor Hub – Temperature & Humidity to monitor environmental temperature and humidity in cabinets

.

Door Contact Module

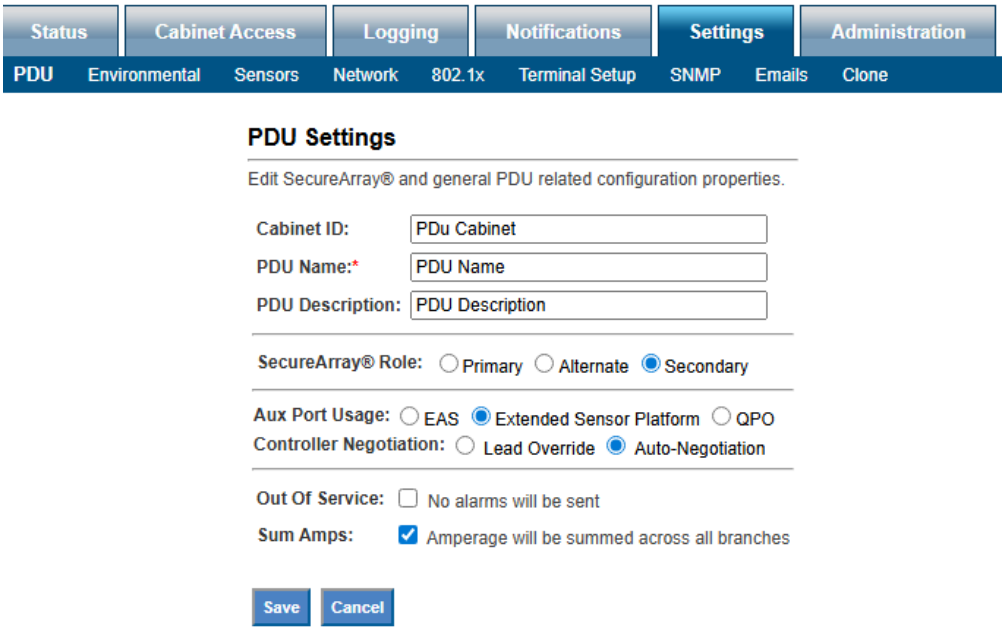
- The eConnect® Door Control Sensor is a modular access monitoring device designed to integrate seamlessly with intelligent eConnect® PDUs via the Sensor Hub – Door, Lights & Access. It enables real-time monitoring of cabinet door status—open or closed—providing telemetry data essential for physical security and operational awareness in datacenter and edge deployments.
- The eConnect® Work Light is a modular illumination solution designed to integrate seamlessly with intelligent eConnect® PDUs via the Sensor Hub. Paired with the eConnect® Door Control Sensor, the work light automatically activates when a cabinet door is opened, providing immediate visibility for maintenance and inspection tasks.

Leak Detection Sensor Module

The eConnect® Water Leak Detector Spot Sensor, Dielectric Spot Sensor and Rope Sensor are modular environmental monitoring devices designed to integrate seamlessly with intelligent eConnect® PDUs via the Sensor Hub – Leak Detection. It enables real-time detection of liquidpresence within critical infrastructure environments, providing telemetry data essential for proactive maintenance, risk mitigation, and operational continuity in datacenter and edge deployments.

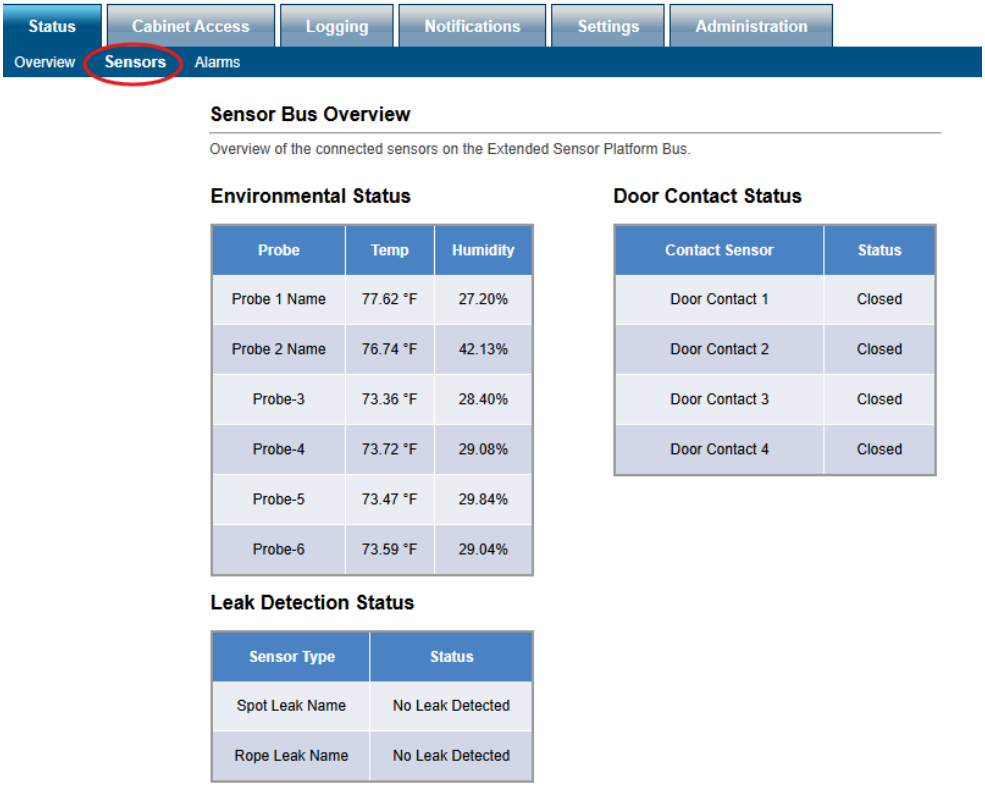
Electronic Access System

The eConnect® Electronic Lock Kit is a modular access monitoring device designed to integrate seamlessly with intelligent eConnect® PDUs via the Sensor Hub - Access. It enables real-time monitoring of cabinet lockstatus— locked or unlocked, open or closed—providing telemetry data essential for physical security and operational awareness in datacenter and edge deployment.

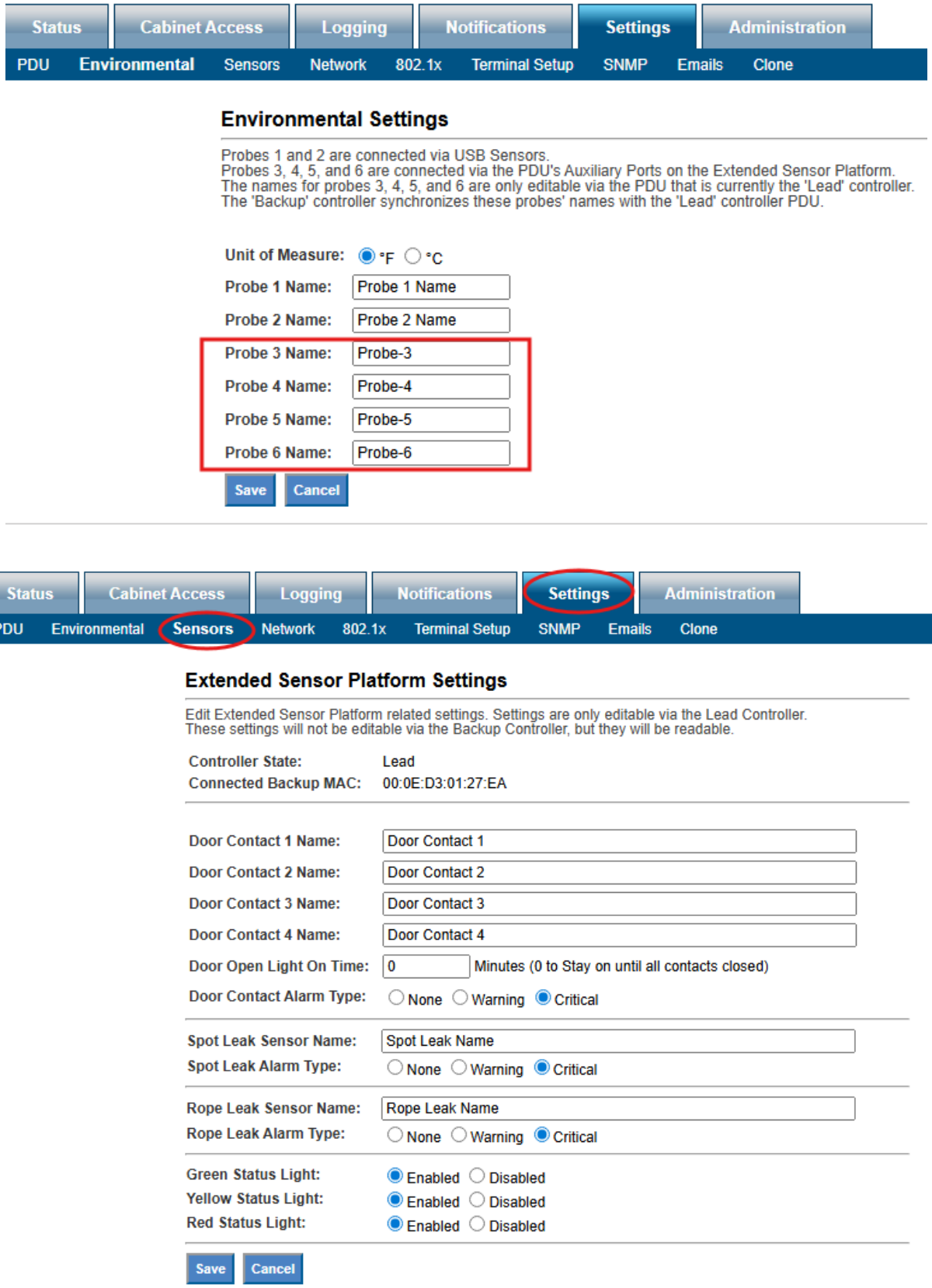


Enabling the Extended Sensor Platform (eConnect Sensor Array) via a WebUI interface, by default set as “Auto-Negotiation” Controller type. PDU unit with lower MAC address will be set as a "Lead" controller in a bus system. Results in the upcoming two new web pages, “Status -Sensors” and “Settings -Sensors”.

The “Status -Sensors” web page displays Environmental Status, Door Contact Status and Leak Detection Status.



The “Settings-Environmental” web page displays four sensor probes 3 ,4, 5 and 6 from the Environmental Sensor Module.

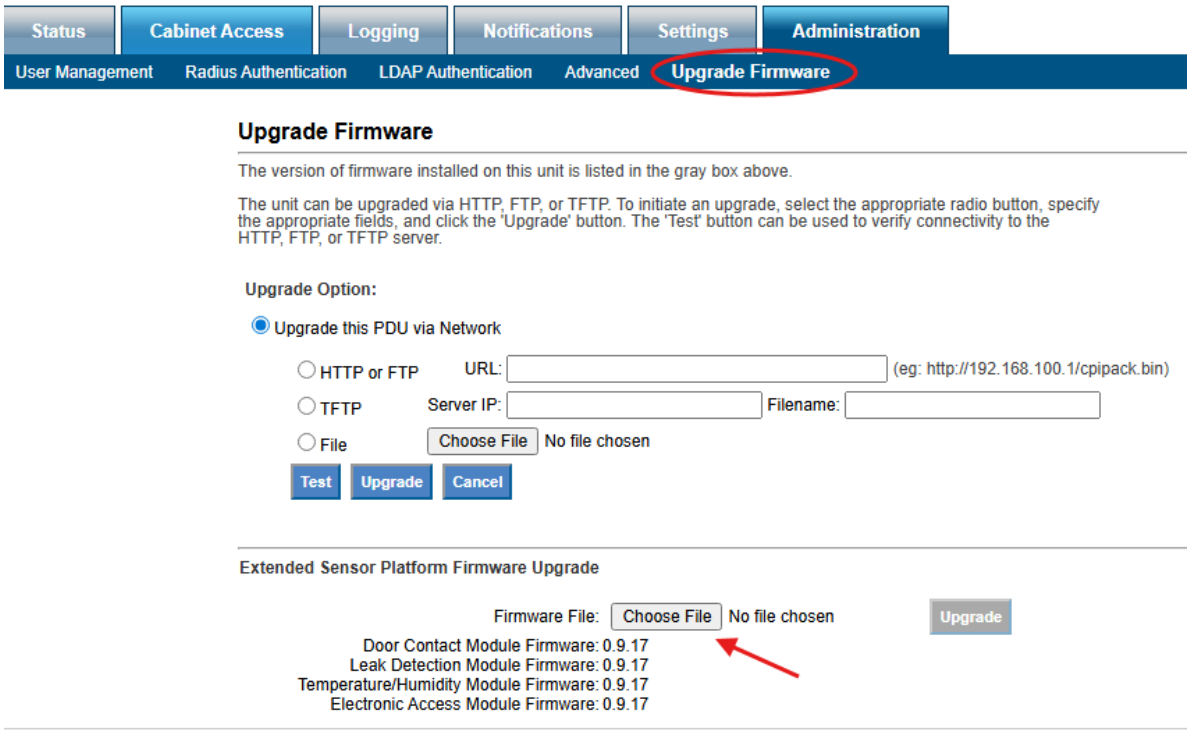


“Settings – Sensors” web page allows to set Door Contact Names, Door Open Light ON Time, Door Contact Alarm Type, Rope Leak Sensor Name, Rope Leak sensor Alarm Type, Spot Leak Sensor Name, Spot Leak Sensor Alarm Type, Green Status Light, Yellow Status Light and Red Status Light can be enabled or disabled.

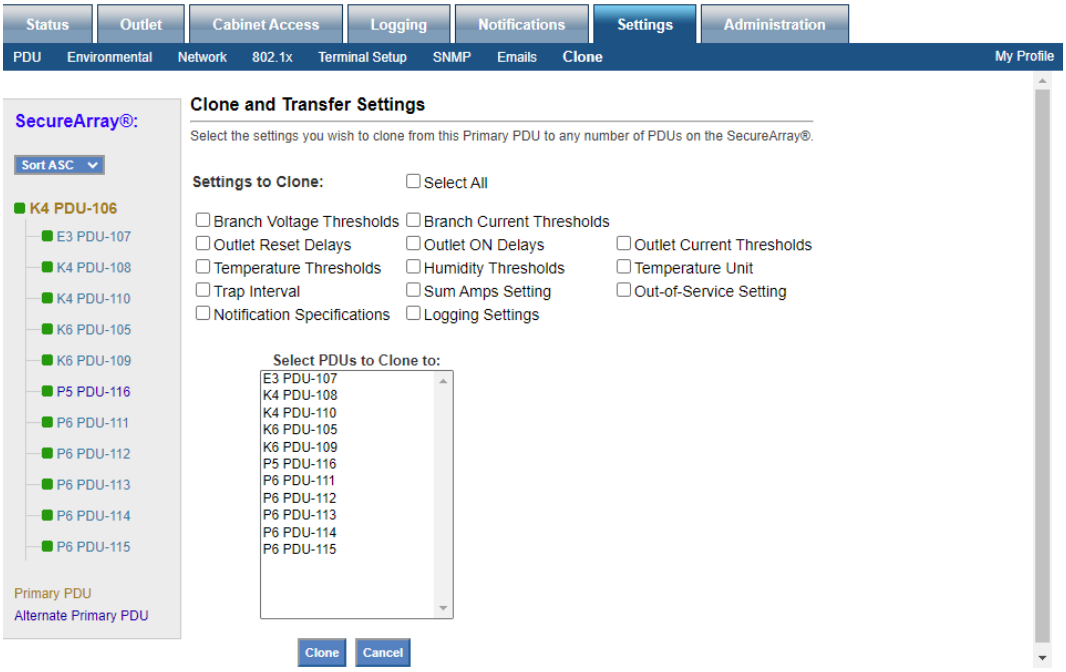
- Door Open Light ON Time can be set minimum as 0 minutes to stay ON until all contacts are closed and maximum of 1440minutes i.e. 24hrs.
- Alarm types can be “None”, “Warning” or “Critical”.
- Green Status Light, Yellow Status Light and Red Status Light can be enabled or disabled.

eConnect Sensor Array FW Upgrade:

1. The Extended Sensor Platform has the capability to receive FW upgrades from the PDU WebUI.
2. To initiate FW upgrade, first click on the “Administration” tab.
3. Next, select the “Upgrade Firmware” page.
4. There will be a section at the bottom where a .bin file can be uploaded to upgrade the FW for all modules connected to that PDU.
5. This section will also display the current FW version that each module currently is running.
6. After FW upgrade is initiated, a progress percentage will be present to display how far the upgrade is.
7. After FW upgrade is completed, this section will update and display the new FW version for each module flashed.



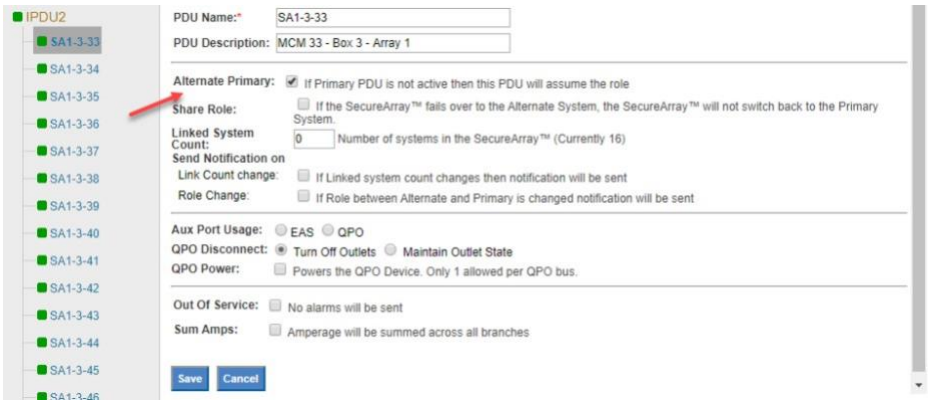
11.2 SETTINGS - CLONE



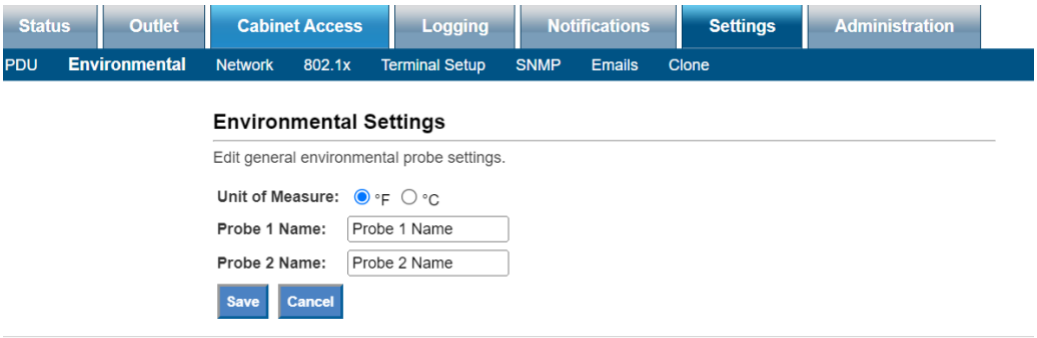
Data from the Primary PDU can be cloned to the other PDUs in the Secure Array by checking the desired parameters and selecting the PDUs to be cloned.

You can designate one of the linked PDUs as an Alternate PDU. The Alternate PDU serves as a backup to the Primary PDU. It has a second and separate network connection from the Primary PDU and assumes the Primary role, providing a network connection to the PDUs in the array, if the Primary PDU loses connection. The Alternate PDU must be equivalent to the Primary in functionality and outlet quantity to fully support the array. Additionally, if deploying an Electronic Lock Kit, the Alternate PDU must have the same user access information (ID card) from the primary PDU for the access logging information to show up in the GUI.

Check the Alternate Primary check box, fill in the desired choices and click on **Save**.

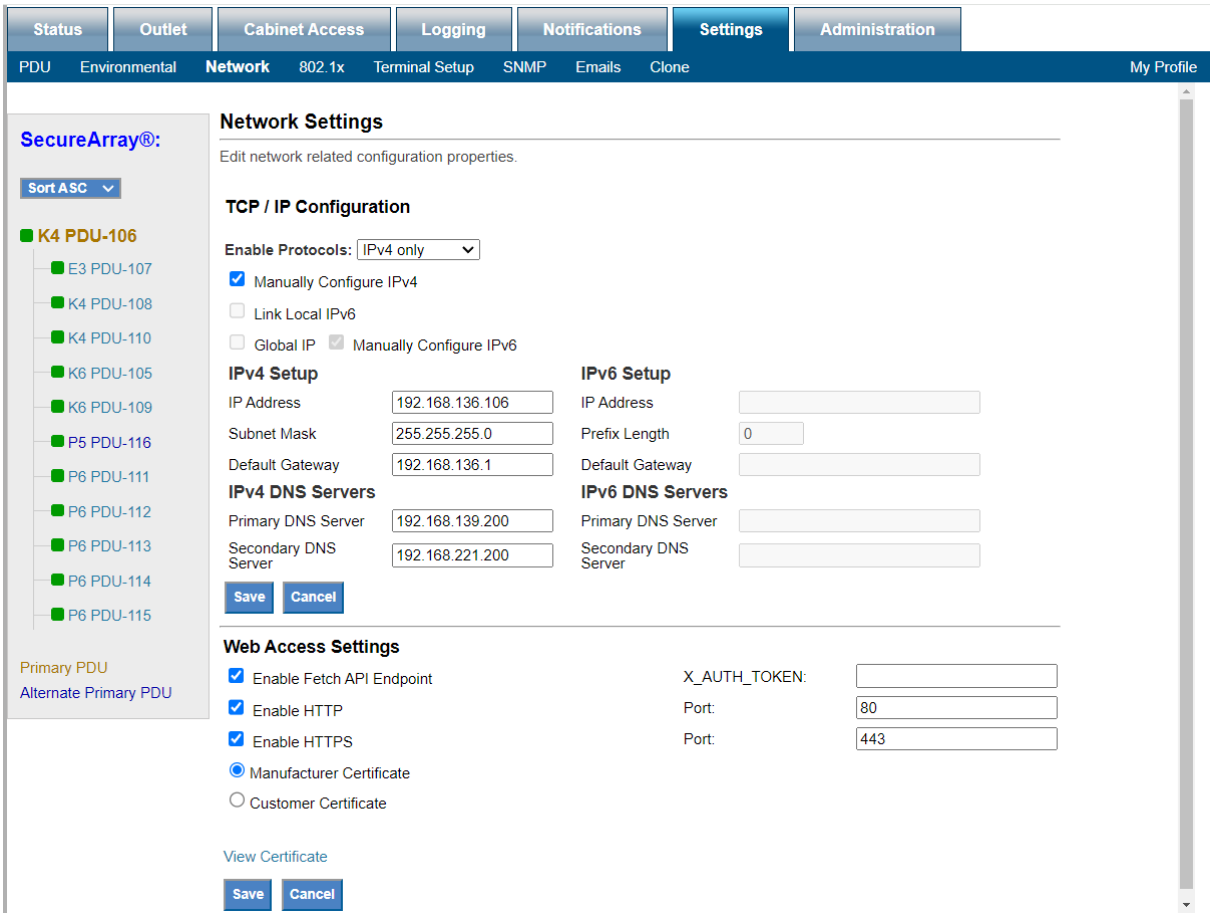


11.3 SETTINGS - ENVIRONMENTAL



Select choice of temperature unit, enter name for the temperature and humidity sensors. Click on **Save**.

11.4 SETTINGS - NETWORK



- **Network** - Using the Enable Protocols combo box, select the Network Protocol(s). Enter data for IPv4 and/or IPv6 Networking.
- **Web Access Settings** – Designate the PDU's access settings for both Web Browser and RESTful API access.
    - Enable Fetch API Endpoint – Enable/Disable the read-only "fetch" endpoint within the RESTful API.
    - X_AUTH_TOKEN – Optional password value for "fetch" endpoint access. Supplied as a header argument for "fetch" endpoint access.
    - Enable HTTP – Enable/Disable HTTP access and set the HTTP Port
    - Enable HTTPs – Enable/Disable HTTPs access and set the HTTPs Port
    - Manufacturer/Customer Certificate – Select whether to use the default manufacturer SSL certificate, or a user uploaded SSL certificate for HTTPs access.
    - Private Key Passphrase – Private Key password for the uploaded customer SSL certificate, if needed.

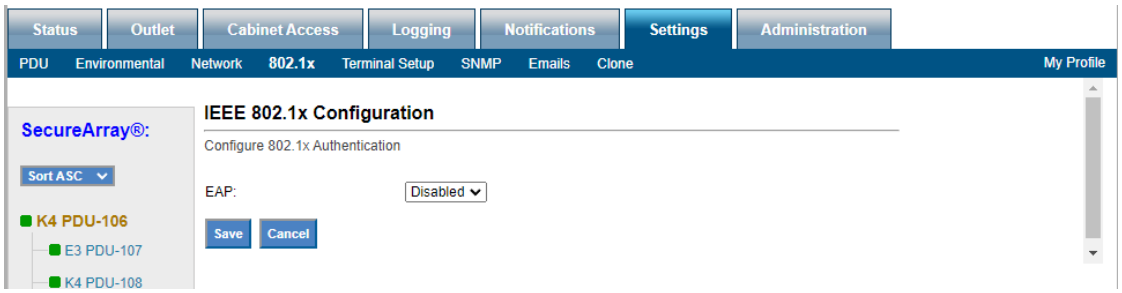
Click on **Save**.

11.5 SETTINGS - 802.1x

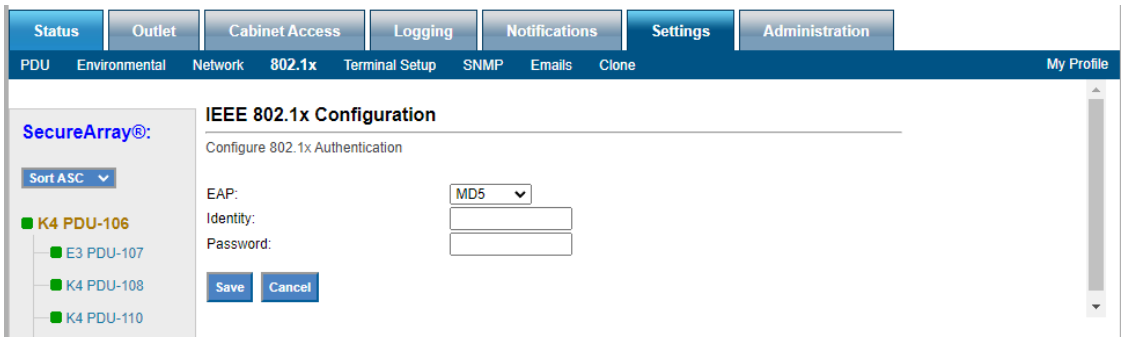
EAP – Select which EAP type to use with wired 802.1x Authentication. Options are:

- Disabled
- MD5
- PEAP
- TTLS
- TLS

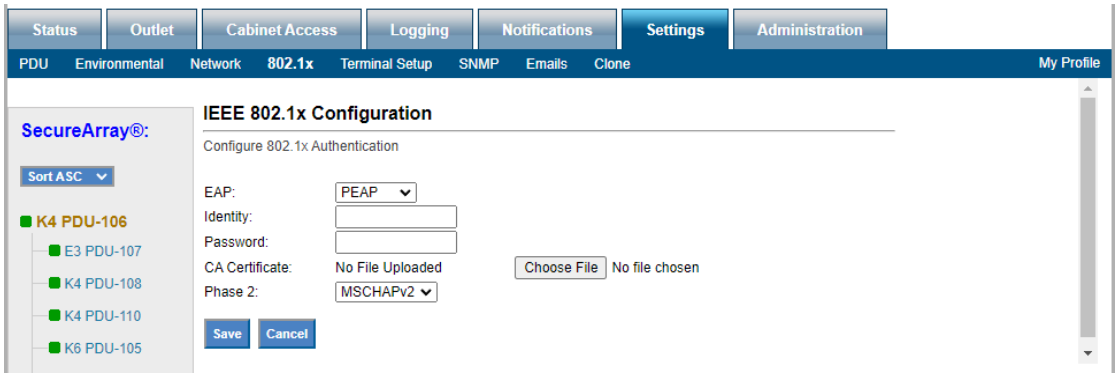
EAP – Disabled: Disable the 802.1x wired authentication functionality



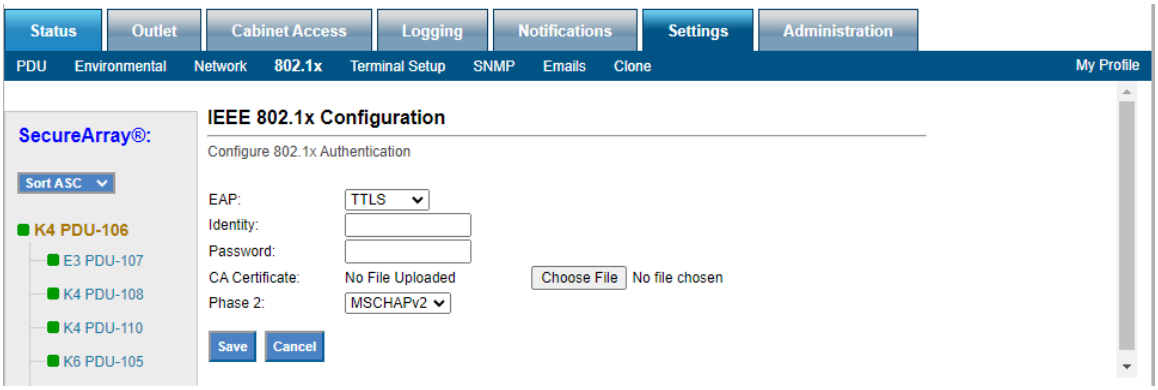
EAP – MD5: Enable the 802.1x wired authentication to use the EAP – MD5 protocol.



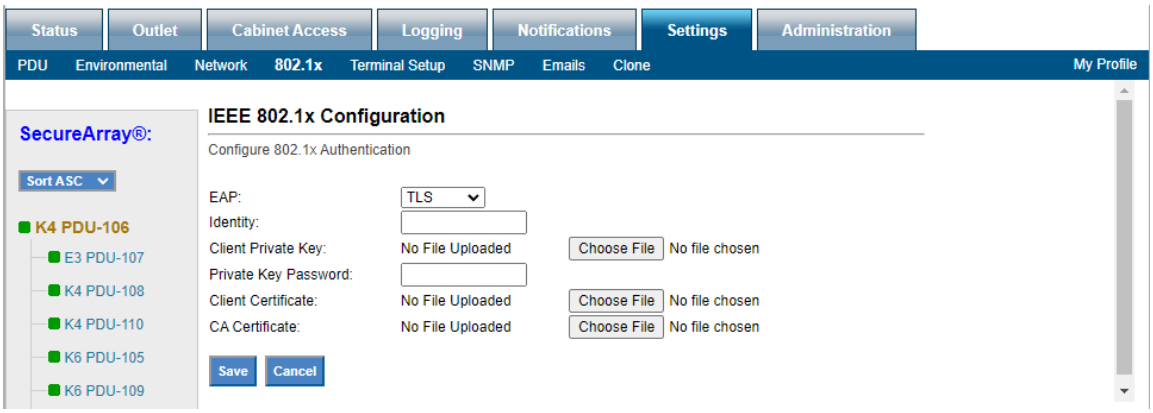
EAP – PEAP: Enable the 802.1x wired authentication to use the EAP – PEAP protocol.



EAP – TTLS: Enable the 802.1x wired authentication to use the EAP – TTLS protocol.

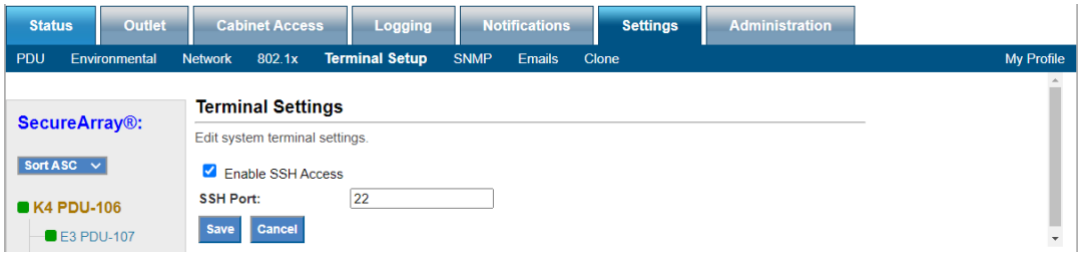


EAP – TLS: Enable the 802.1x wired authentication to use the EAP – TLS protocol.



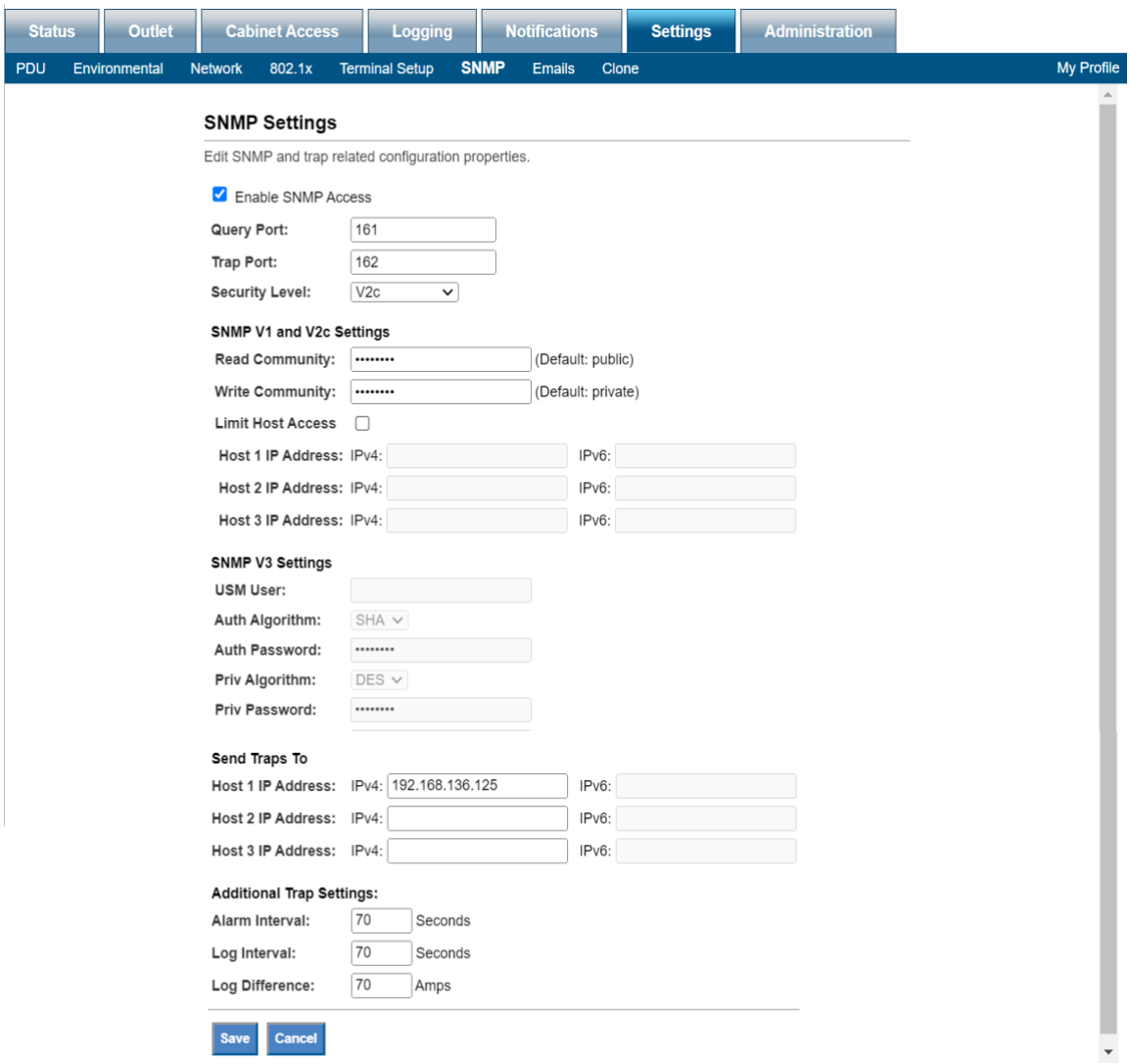
Identity – The identity used during 802.1x wired authentication for the PDU.
Password – The password used during 802.1x wired authentication for the PDU identity.
CA Certificate – The Certificate Authority Certificate file used during 802.1x wired authentication for the PDU. This is uploaded to the PDU from the web browser client host machine using the "Choose File" button.
Phase 2 – The inner authentication used during the 802.1x wired authentication process for the PDU.
Client Private Key – The private key file used for 802.1x wired authentication for the PDU client.
Private Key Password – The password for the uploaded Client Private Key file
Client Certificate – The certificate file used for 802.1x wired authentication for the PDU client.

11.6 SETTINGS - TERMINAL SETUP



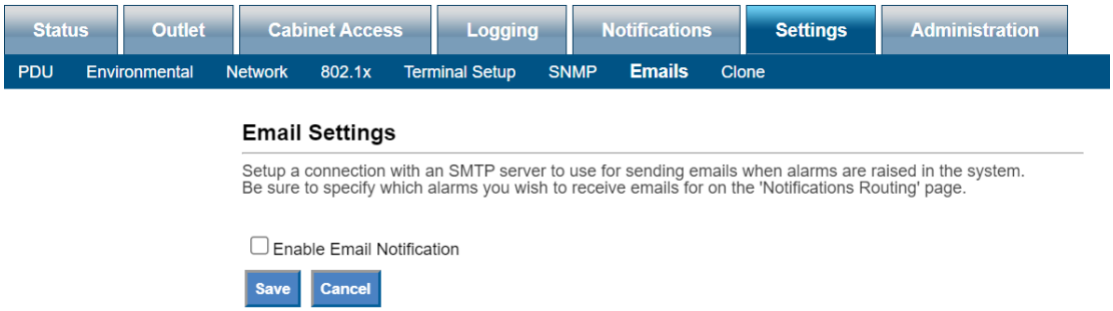
Enable SSH Access – Enable/Disable SSH remote access to the PDU
SSH Port – The tcp port used for SSH communication. Default is 22. Custom ports must be a value greater than 1024.

11.4 SETTINGS - SNMP



Enter data for SNMP v1, v2c or v3 settings.
Enter the IP Addresses you want to send traps to.
Click on **Save** to save all entered data.

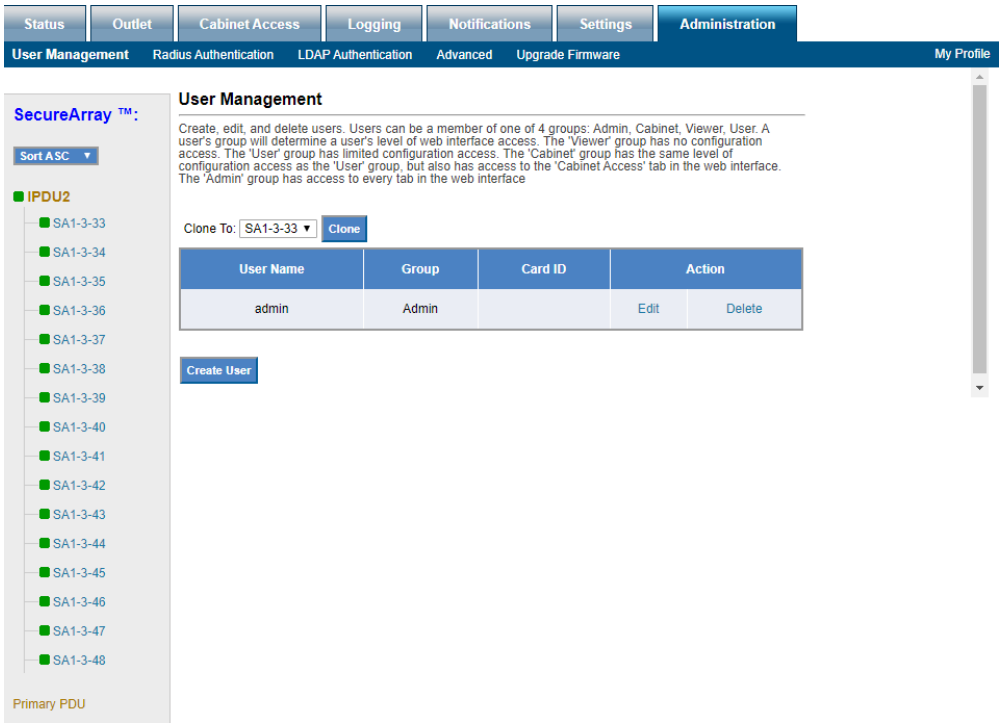
11.5 SETTINGS - EMAILS



The PDU does not include a mail server. In order to provide email notifications for the PDU, you must first set up an email account for the PDU on an accessible mail server.

- **SMTP Mail Server** – the mail server where the account resides, ex: smtp.google.com.
- **Port Number** – the provider's port number, usually 465 or 25.
- Check **Use TLS** or **Start TLS** check box(es) to match your provider's encryption requirements.
- **Email address** – the email address assigned to the PDU.
- If **Authentication** is required, select **Specify Credentials** from the drop-down list.
- Enter the **Username** and **Password** for the Email account.
- Select **Anonymous** if no Username and Password are required.
- Enter the email address(es) of the **Recipient(s)** (e.g.: your technician's email address.)
- Click on **Save** and **Send a Test Email** to make sure notification setup is correct. The PDU must have network access to the mail server.

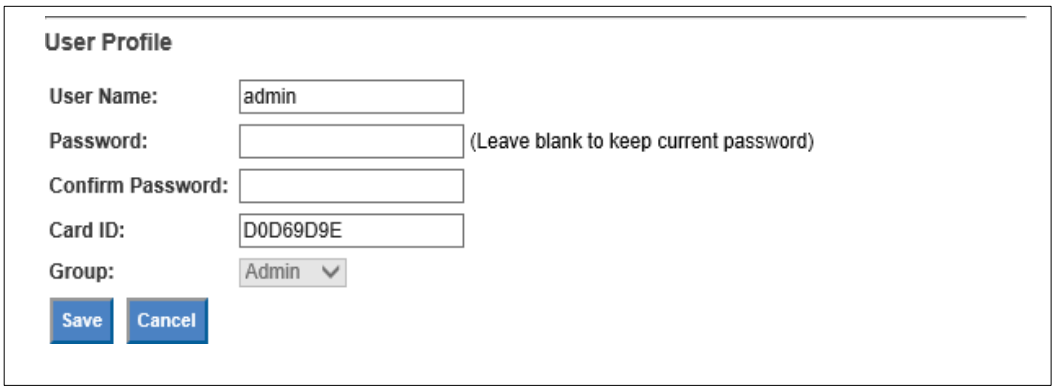
12. ADMINISTRATION – USER MANAGEMENT



Click on **Create User** to add a new user.

Input the username and password and click on **Create**.

To edit an existing user. Click on **Edit** for that username.

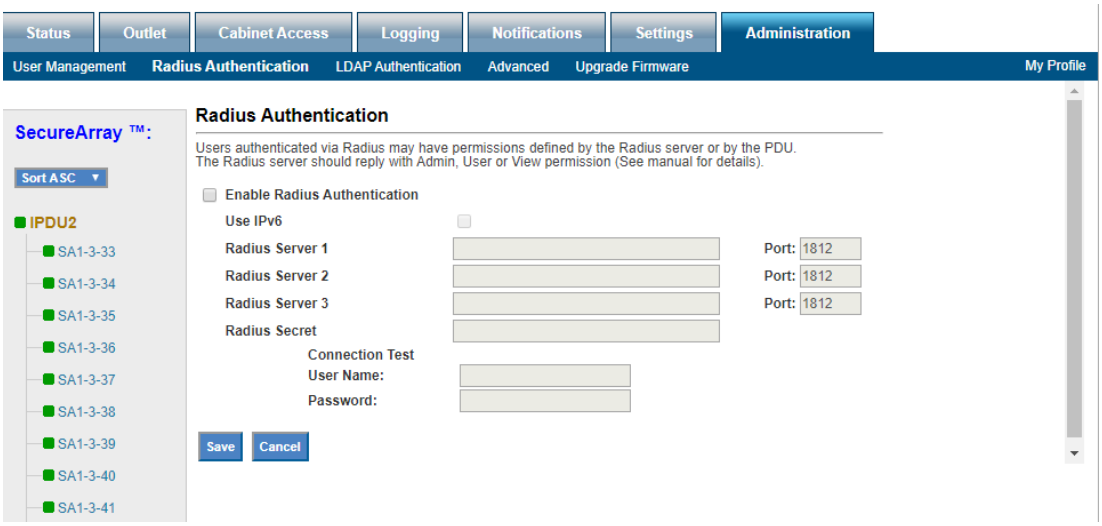


Change the necessary information. Input the Smart Card ID for the Electronic Lock Kit. If you don't know your Smart Card ID, see Appendix. The same information should be inserted for both the Primary and Alternate PDU to ensure the same logging authority will be carried through.

Click on **Save**.

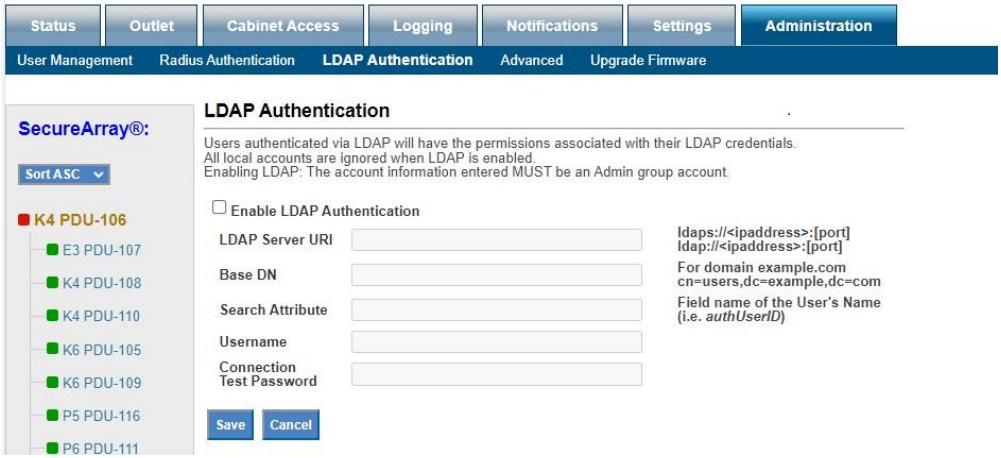
To clone a user from the Primary to Secure Array Members, select the PDU from the drop down and then click **Clone**. A success or failure message will come up on top.

12.1 ADMINISTRATION - RADIUS AUTHENTICATION



For network/website authentication using **Radius Authentication**, enter the necessary information and click **Save**. Note that users will need to be added under the **Local User List** to have **Control** or **Admin** capabilities.

12.2 ADMINISTRATION - LDAP AUTHENTICATION



To enable the PDU to use LDAP Authentication, select the “Enable LDAP Authentication” checkbox and enter all necessary information in the available text fields:

- LDAP Server URI: the LDAP server’s universal resource identifier
- Base DN: the Distinguished Name of the node that all necessary LDAP User and Groups are available under
- Search Attribute: the user attribute used for identifying a user by their username
- Username: username of an LDAP user who is a member of the LDAP group that maps to the “Admin” level group for the CPI PDU.
- Connection Test Password: LDAP password for the user specified in “Username”

Click the “Save” button to initiate a test connection against the specified LDAP server with the specified LDAP user. If this user is a member of an LDAP group that maps to the “Admin” level authorization, then there will be a message displaying “Authentication settings saved.” in black text at the top of the web page. At this point, the LDAP integration is enabled, and the PDU can only be logged into with users who authenticate through the configured LDAP.

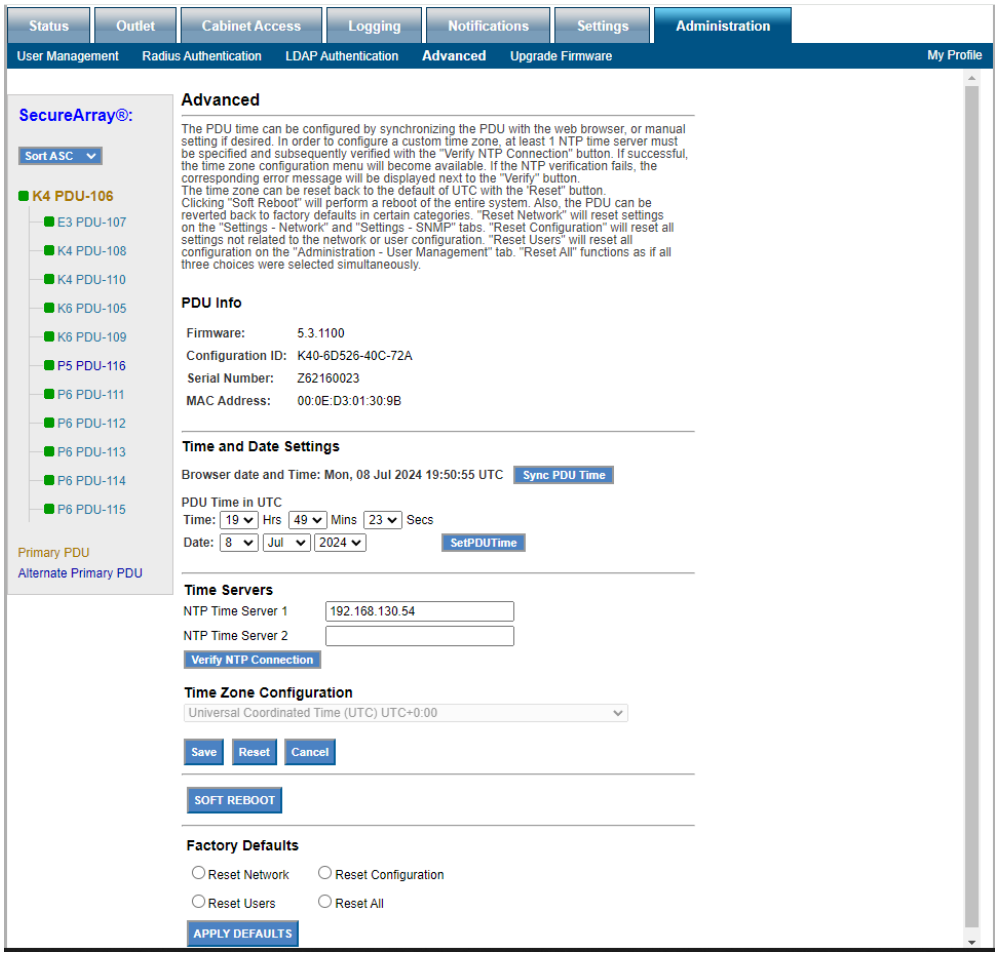
There are currently 4 authorization levels in a CPI PDU:

- Admin
- Cabinet
- User
- Viewer

To map an LDAP group to a CPI PDU authorization level, put the Authorization level, case sensitive, into the name of the LDAP group. For example, an LDAP group with a name of “LDAPGroupNameAdmin” will map to the “Admin” authorization level. This means any users who login to a CPI PDU while being a “member of” this group will login to the CPI PDU and have Admin level privileges.

Currently, there are no bind credential settings for CPI’s LDAP integration. Instead, the CPI PDU will first attempt anonymous binding, and if that fails, then the system will attempt to use the entered username/password as the bind credentials for LDAP access.

12.3 ADMINISTRATION – ADVANCED



PDU Info includes serial number and MAC address. Model number and firmware version are also displayed in the gray summary box at the top of each screen.

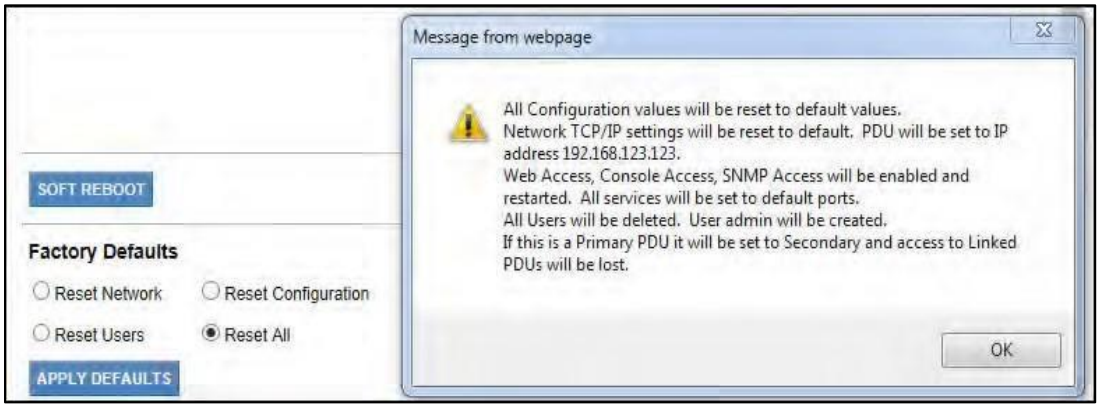
Time and Date Settings – Configure the date/time for log messages and alarms.
Sync PDU Time – Synchronize the PDU time with the reported browser time.
Set PDU Time – Set the PDU time manually.
Time Servers – Designate NTP time servers as the source for time after each reboot (requires a network connection). As an alternative, you can set the time in the “Time and Date Settings” section either manually with the “Set PDU Time” button or via a synchronization with the reported web browser time with the “Sync PDU Time” button.
NTP Time Server 1 – Primary NTP time server for PDU time synchronization
NTP Time Server 2 – Secondary NTP time server for PDU time synchronization

Time Zone Configuration – Configure the custom time zone for the PDU. Requires that the NTP connection is verified using the “Verify NTP Connection” button. The “Reset” button will reset the time zone back to the default “UTC” time zone.

Soft reboot restarts the network connection but does not power down outlets. Use this if you have connection problems.

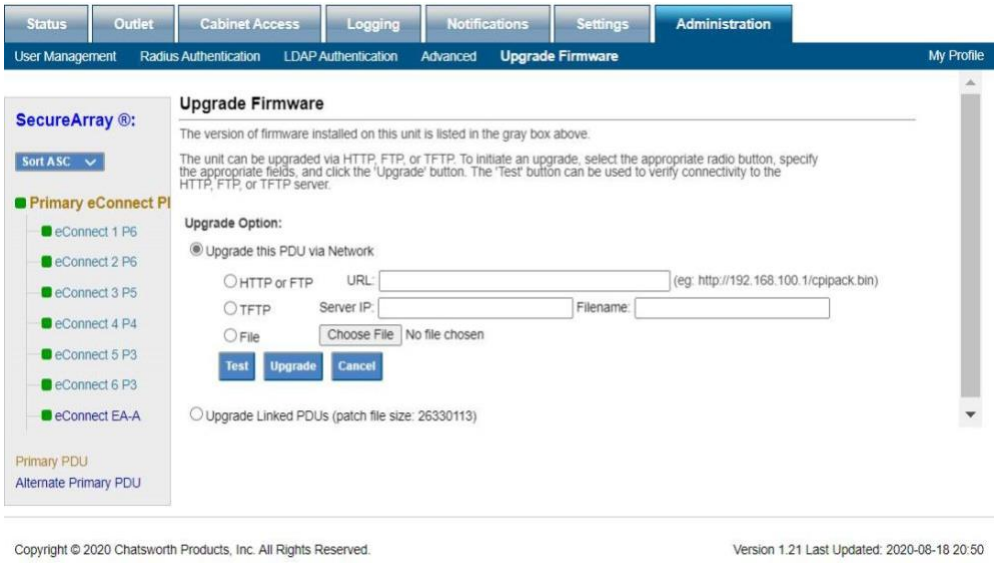
Factory Defaults reset customer-entered values to the original factory defaults:

- **Reset Network** – Resets the PDU Network information to factory defaults including IP address (192.168.123.123). You may lose your network connection.
- **Reset Configuration** – Resets the PDU Configuration information to factory defaults including PDU name, alarms thresholds, etc. You will lose all configured fields.
- **Reset User** – Deletes all users except the single factory default admin user. Login will be reset to admin admin and this user will have full admin capabilities.
- **Reset All** – Resets all fields to factory defaults.



To reset to factory defaults, select the appropriate radial button.
Review the warning message.
Click the **Apply Defaults** button to apply selected defaults. Resets are applied immediately.

12.4 ADMINISTRATION - UPGRADE FIRMWARE



Post the downloaded firmware to an accessible HTTPS/FTP or TFTP directory or to a directory on a computer on the same network subnet as the PDU.

For HTTPS/FTP or TFTP upgrade, enter HTTPS/FTP or TFTP data.
Click on **the Test** button to assure the remote site can be reached.
Click on the **Upgrade** button to perform the upgrade.

For File upgrade, browse to the file and select the file (.bin).
Click on **the Test** button to assure the computer can be reached.
Click on the **Upgrade** button to perform the upgrade.

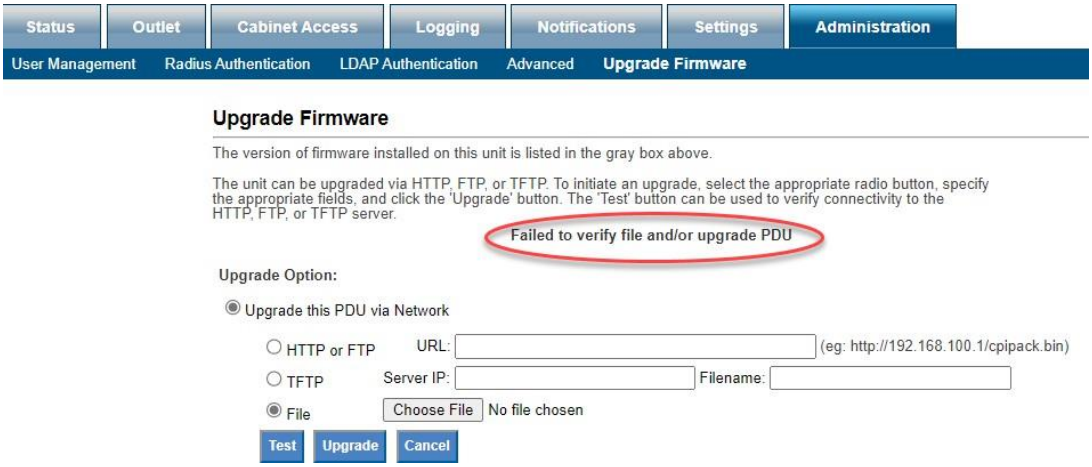
To upgrade the secondary PDU(s), select radial button Upgrade Linked PDUs and select the PDU to be upgraded.

Click on **the Test** button to assure the computer can be reached.
Click on the **Upgrade** button to perform the upgrade.

Note: This process runs in the background, can be unattended and the upgrading PDU(s) will still be fully functional while upgrading. However, this may take several hours depending on the number of devices in the Secure Array and amount of network traffic.

After successful installation, the new firmware version will display in the PDU Info box at the top of the screen.

Feedback to the WebUI when attempting a FW Update with a bad FW Update image:



Please ignore the Force option.

The FW Update process will validate the individual FW files against their MD5 checksums. Any validation failure will result in the FW running at that time, remaining intact.

13. CONFIGURE IP ADDRESS USING SERIAL CONNECTION AND CLI

The PDU has IPV4 network and DHCP enabled as defaults.
You can change network settings through the display on the PDU, the built-in GUI or CLI.

To configure the PDU using a serial connection and CLI, follow the steps below:

1. Using the YOST Serial cable with the DB9 to USB converter to connect the PDU to the laptop.

- RJ45 end to the Console1 port on the PDU.
- USB end to the USB port on the laptop.

2. Run a SSH Client on the laptop.

To identify the assigned IP address:
- Log into the PDU with name= admin, password= admin
- Type: **elevate** twice to get to admin level.
- Type: **config-get network-ipv4 enabled 0** to obtain the IPV4 enabling status.
- Type: **config-get network-ipv4 dhcp-enabled 0** to obtain DHCP enabling status.
- Type: **config-get network-ipv4 ip-address 0** to obtain IP address of the PDU.
- Type: **config-get network-ipv4 subnet-mask 0** to obtain subnet mask of the PDU.
- Type: **config-get network-ipv4 default-gateway 0** to obtain default gateway of the PDU.

To change network settings:
- Type: **config-set network-ipv4 enabled 0 1** to enable IPV4 if needed.
- Type: **config-set network-ipv4 dhcp-enabled 0 0** to disable DHCP if needed.
- Type: **config-set network-ipv4 ip-address 0 192.168.123.123** to set ipv4 ip address to 192.168.123.123 or insert a different ip address, if needed.
- Type: **config-set network-ipv4 subnet-mask 0 255.255.255.0** to set ipv4 subnet mask to 255.255.255.0 or insert a different subnet mask, if needed.
- Type: **config-set network-ipv4 default-gateway 0 192.168.123.1** to set ipv4 default gateway to 192.168.123.1 or insert a different default gateway, if needed.

13.1 BUILT-IN SOFTWARE FEATURES

USING RESTFUL INTERFACES (RESTFUL APIs)

Refer to this link to get instructions on how to use the different RESTful APIs supported by our eConnect PDU's.: www.chatsworth.com/en-us/power- management/resources/design-tools/software

USING COMMAND LINE INTERFACE (CLI)

The Command line allows you to make a direct connection to the computer. You'll need a console serial cable to connect between the computer and the PDU (**Go to Product Features** for console location on PDU controller module). Refer to this link for a list of commands: (www.chatsworth.com/en-us/power-management/resources/design-tools/software)

USING ZERO TOUCH PROVISIONING (ZTP)

The Zero Touch Provisioning (ZTP) feature allows a user to automate the configuration of a PDU with network access when PDUs are configured using DHCP server. This is accomplished via ethernet connection to a DHCP server and a repository server that is accessible via HTTP, FTP, or TFTP. Refer to this link to get ZTP instructions: www.chatsworth.com/en-us/power-management/resources/design-tools/software

14. TROUBLESHOOTING GUIDE

Local display is blank:
- Check the PDU status LED.
- Make sure the PDU is plugged into a live source.
- Timeout feature might be activated, press the middle button.

Receptacle has no power:
- Check the circuit breaker for the branch. If necessary, switch it off then back on and recheck. (Note that all equipment connected to the branch will lose power.)
- Check power at the source.
- If the problem persists, the Controller Module must be replaced. (See **Replacement Instructions** here)

PDU cannot establish Link to another PDU:
- Verify that proper cable is used to interface PDUs, use a standard Cat 5/6, 4-pair network cabinet with RJ45 connectors on both ends.
- Make sure the connectors are snapped in securely.
- Verify the integrity of the cable.
- If the problem persists after a power cycle, the Controller Module must be replaced. (See **Replacement Instructions** here)

PDUs in the Secure Array are not displaying in the interface:
- Verify that the PDU models are compatible.
- Models with auxiliary ports will only connect to models that support Gigabit Ethernet.

PDUs in the Secure Array are not displaying data that is appropriate to their level of functionality:

- Verify that the PDUs assigned to the PRIMARY and ALTERNATE roles are represented by the units with the highest level of functionality within the array.
- If the problem persists, verify that the units in the PRIMARY and ALTERNATE roles have the highest number of outlets within their functionality.

No Ethernet Connection:
- Verify connection with a ping tool from any computer in the network.
- Check that the green LED in the PDU Ethernet port is lit.
- Check that the end connectors are snapped in place.
- Check the integrity of the cabling from the PDU'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 PDU are set properly.

• If the Ethernet communication problem persists after power cycling it, the Controller Module must be replaced. (See Replacement Instructions here)

For eConnect PDU with Electronic Lock Kit installed:

Lock issue

If lock status shows as "Not Configured" or "Lost Communication"

- Check the cable that is connecting the lock to the CAN bus module for continuity.
- Check the cable that is connecting the CAN bus module to the PDU for continuity.

If lock status shows as "Unlocked"

- Check that the lock is locked using the appropriate mechanical key.
- Check the cable that is connecting the lock to the CAN bus module for continuity.

Door issue

If door status shows as "Not Configured" or "Lost Communication"

- Check the cable that is connecting the door sensors with the CAN bus module for continuity.
- Check the cable that is connecting the CAN bus module to the PDU for continuity.

If door status shows as "Open" while the door is closed:

- Check that the door magnets are aligned properly.

Check that the cable that is connecting the door magnets with the CAN bus module for continuity.

Customer Support:

US Tech Support: 1-800-834-4969 • techsupport@chatsworth.com

14.1 REPLACING THE FIELD-REPLACEABLE CONTROLLER MODULE

Notice
For most current information, refer to the installation instructions included with the module.

Safety Information

	WARNING: Improper use of this product may lead to serious injury or death. Read and understand all instructions for proper installation and use of this product.

Installation Guidelines

- While the Field-Replaceable Controller Module (MCM) can be replaced while the PDU is still powered, to reduce risk of electrical injury, disconnect input power to the PDU before servicing.
- Service personnel should use an anti-static strap and follow other proper anti-static practices while performing service on the MCM.

Notes

- **Service Personnel** – Only qualified service personnel should install, access, or service this equipment.
- **SD Card** – For full and proper functionality, replace the SD card in the new MCM with the SD card from the old MCM prior to installing the new MCM. Failure to properly swap SD cards will result in loss of functionality until completed.
- **MAC Address** – After replacing the MCM, the Serial Number of the PDU will remain the same (shown on PDU label), but the MAC address will be different. If the PDU is in a Secure Array, being monitored by DCIM software, the OIDs of any monitored data will need to be updated with this new MAC address.

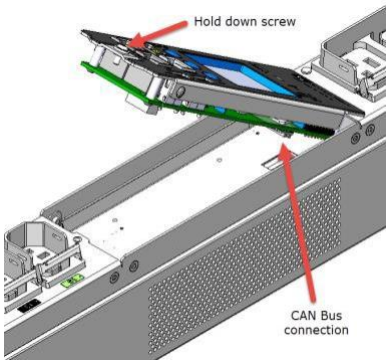
14.2 SERVICE AND MAINTENANCE

1. Disconnect power from the PDU.

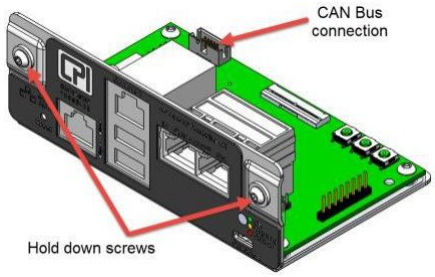
2. Unfasten the controller hold down screw using a T10 hexalobular driver.

3. On vertical PDUs, Pivot the controller away from the face of the PDU, taking care not to put tension on the connected ribbon cable, and disconnect the CAN Bus connector. On horizontal PDUs, slide the controller straight out from its mounting slot and disconnect the CAN Bus connector.

Vertical PDU:



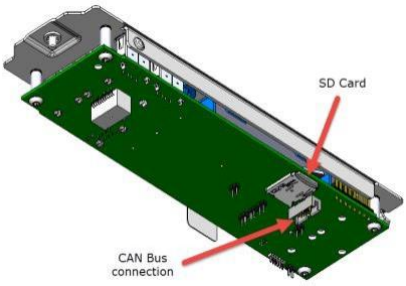
Horizontal PDU



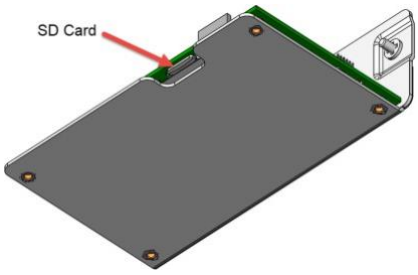
4. After the CAN Bus connector is removed, the controller can be completely removed.

5. To transfer PDU identity, configuration, and settings for the PDU, swap the SD card on the rear of the controller board from the old controller to the new controller. Remove SD Card replacement notification label and press in on installed SD card to release and remove. Install new SD card. Note that the SD Card does not transfer log data.

Vertical PDU:



Horizontal PDU:



6. Reconnect CAN Bus connector to new controller.

7. Place controller back in its mounting location and fasten the hold down screw. As you reinstall the controller for the vertical PDU, rotate the controller down to ~45 degrees and guide the CAN Bus cable with your finger to ensure the cable goes into the slot provided below the controller within the PDU.

15. APPENDIX

Regulatory Information:

CE
FCC Part 15, Class A
EN 55022
RoHS Compliant
UL & cUL Listed IEC
62368

Operating Temperature: 32 - 149˚F (0 - 65˚C) at Input Power Rating (kW) Operating non-condensing relative Humidity: 5 - 95%
Operating Elevation: 0-10000 ft (0-3000 m)
Storage Temperature: -13 - 149˚F (-25 - 65˚C)
Storage Relative Humidity: 5 - 95%
Storage Elevation: 0-50000ft (0-15000 m)

The Technical Construction File is held by CPI.

APPENDIX for Electronic Lock Kit for eConnect
Assigning a Smart Card ID

As discussed in the section **Administration – User Management** (page 50), each user may be assigned a unique smart card ID associated with their account that allows the PDU to unlock the Electronic Lock Kit mechanism (if installed) when a smart card is presented to the cabinet door lock. If the smart card ID is not known, there are two methods that can be used to interrogate the card electronically, in order to retrieve the smart card ID, and enter it into the eConnect system.

The first method utilizes the eConnect card reader and the event-logging system described in the **Logging – Overview** section of this manual to acquire the smart card ID.

Whenever a smart card is presented to Electronic Lock Kit, the key ID is read off the card, and then is compared to all key IDs known by the eConnect system. If the key ID is unknown, an entry is appended to the syslog to show that cabinet access has been attempted by an unknown user. The log entry includes the unknown smart card ID. The smart card ID can then be read from the syslog, and then entered into a user profile.

To easily copy the card ID from the syslog, double click the last set of characters on the pertinent log entry with the left mouse button to highlight it, then click the right mouse button and select **Copy** (or press **Ctrl-C** on the computer keyboard) to copy the characters to the windows clipboard.

Syslog Entries

Time (UTC)	Entry
Feb 9 19:05:07	[PDU Cabinet]:[P6 lock tester]:[Audit] User admin logged in on the web GUI interface.
Feb 9 19:04:34	[PDU Cabinet]:[P6 lock tester]:[Audit] Front Door has encountered a failed access attempt. Card ID was caa4b301f8ff12a4

Next, find the user that will be associated with this card, or create a new user if necessary and add the username and password and click save. Change the Group association for this user to the cabinet, place the mouse cursor on the Card ID text box and left click once, then paste the smart card ID in with mouse right-click **Paste** (or via the keyboard by pressing **Ctrl-V)**. Be sure to press the **Save** button to save the smart card ID.

From this point forward, the smart card ID will be known to the system and associated with the user. Note that once the card ID is into the system, it will no longer be displayed in the syslog entry for security purposes.

The second method to interrogate an unknown smart card is to utilize the pcProx® Plus external card reader, CPI part number 36653-001, and a windows-based computer that is logged on to the eConnect web interface. The external card reader plugs into any available USB port on the computer and will generate “keystrokes” when a card is presented. Thus, the user places the mouse cursor on the Card ID text box, and when the card is presented to the external reader, the smart card ID characters are injected into the text box automatically, as if they were entered manually with a keyboard.

The external USB card reader does require software to be downloaded from the third-party vendor’s website and configured to the type of smart card intended to be used on the system.

NOTE: At the time of writing of this manual, configurations have been tested for card types DesFire, HiD, iClass®, MIFARE and Prox cards. Other types of cards may be used with this reader, although some changes may need to be made to the external card reader settings so the key codes are correct. A comparison could be made between the syslog entry method described above to find the proper settings that provide a match for that family of cards. From that point forward, no changes to the external card reader’s configuration should be required to enroll more cards of the same type.

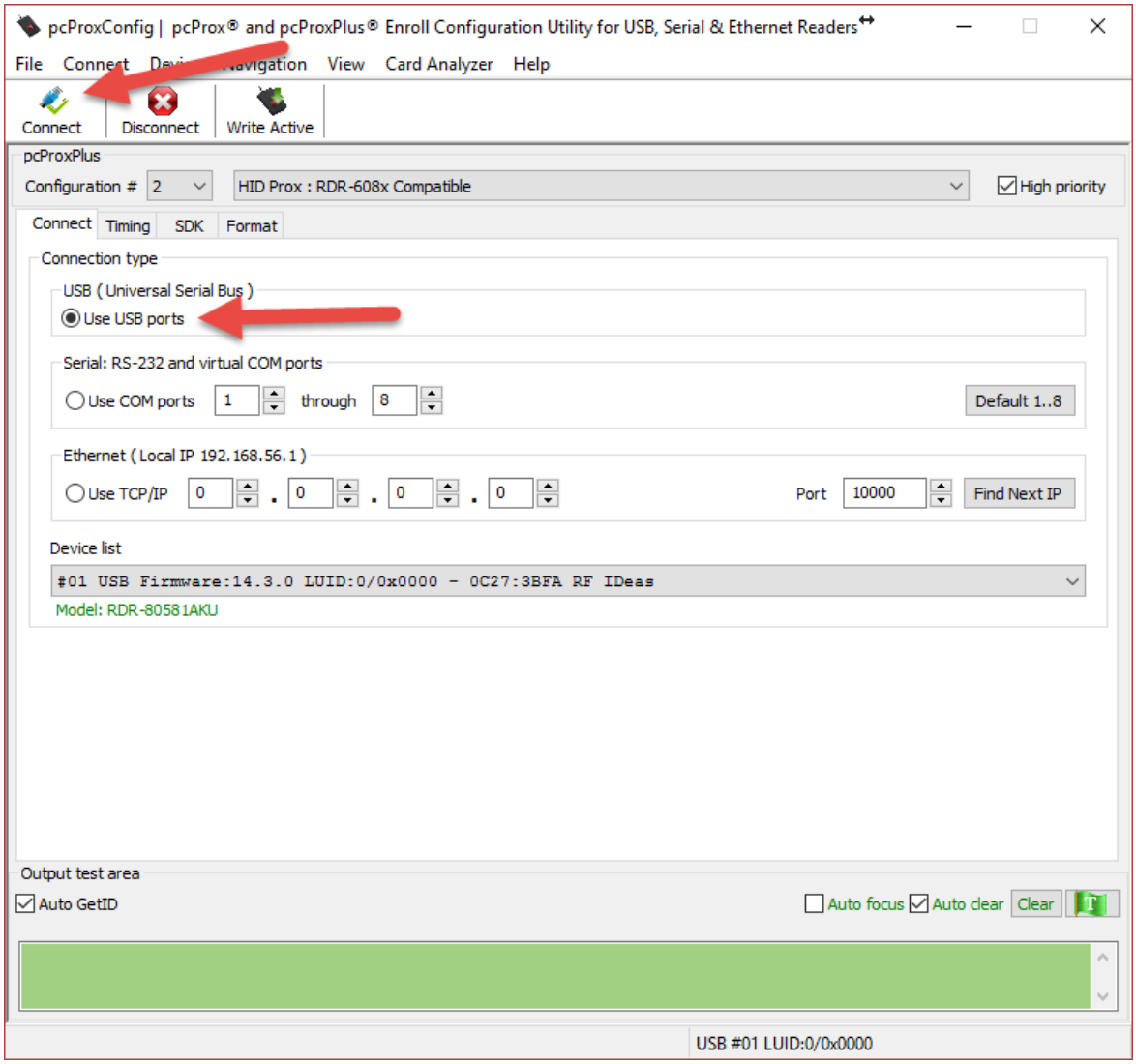
Preparation

To configure the pcProx® Plus card reader, you must have the pcProx® Configuration Utility installed on your computer, which is available at

www.rfideas.com/support/product-support/pcprox-plus

Click on the link above and save the resultant zip file to a directory on the computer. Unzip the contents of the zip file and click on the file pcProxConfig.exe (be sure the PC user has Administrator privileges to install programs). The pcProx® Configuration Utility will be installed with a start menu shortcut at **RF Ideas -> PCProx5 -> pcProxConfig.exe**

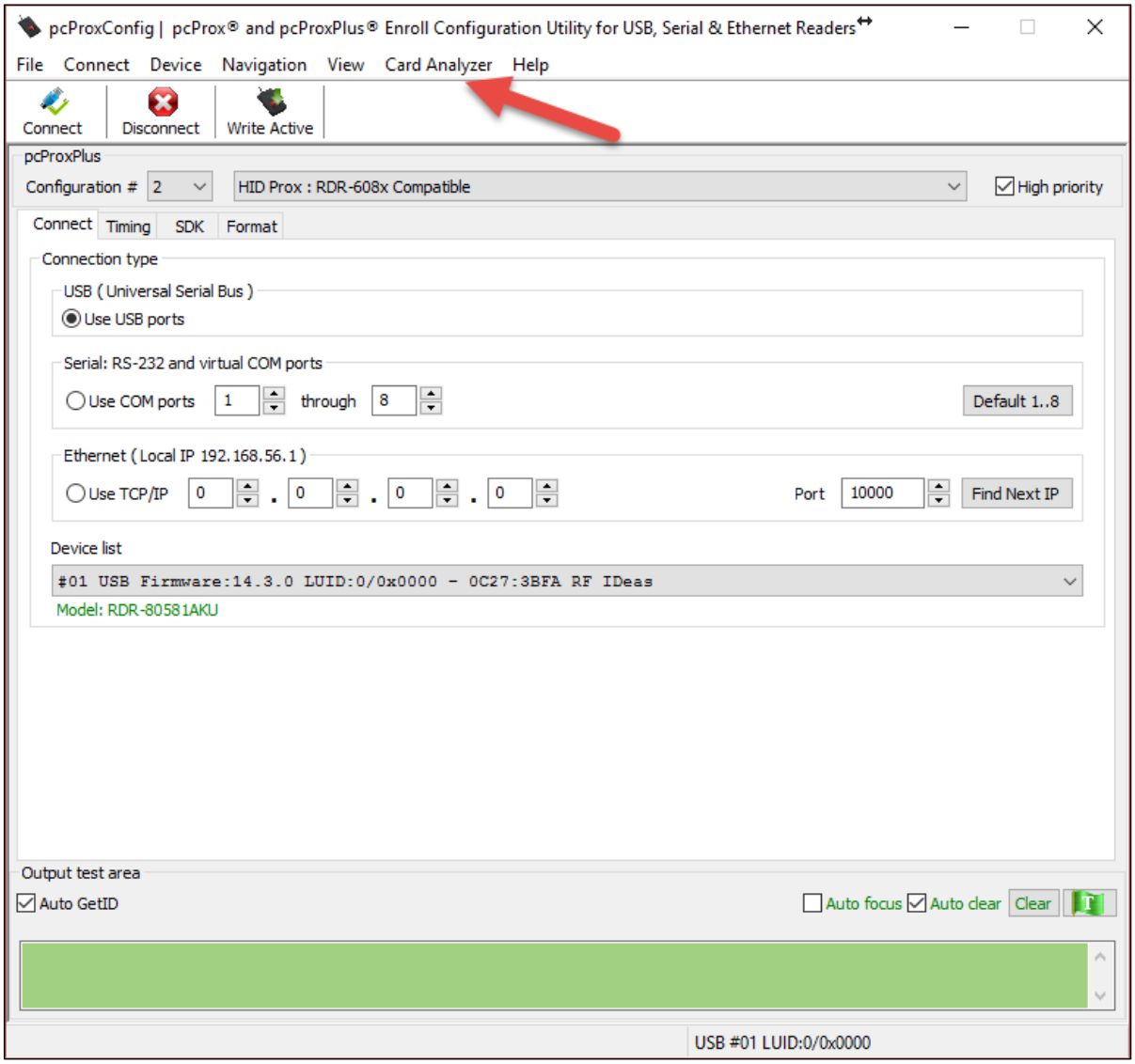
Plug in the pcProx® Plus card reader into an available USB port**.** Run the program PcProxConfig from the Windows start menu, click **Use USB ports,** and select the **Connect** button in the upper left of the screen to associate the program to the external reader.


pcProxConfig | pcProx® and pcProxPlus® Enroll Configuration Utility for USB, Serial & Ethernet Readers
File
Connect
Navigation
View
Card Analyzer
Help
Connect
Disconnect
Write Active
pcProxPlus
Configuration # 2
HID Prox : RDR-608x Compatible
High priority
Connect
Timing
SDK
Format
Connection type
USB (Universal Serial Bus)
Use USB ports
Serial: RS-232 and virtual COM ports
Use COM ports 1 through 8
Default 1..8
Ethernet (Local IP 192.168.56.1)
Use TCP/IP 0 . 0 . 0 . 0
Port 10000
Find Next IP
Device list
#01 USB Firmware:14.3.0 LUID:0/0x0000 - 0C27:3BFA RF IDeas
Model: RDR-80581AKU
Output test area
Auto GetID
Auto focus
Auto clear
Clear
USB #01 LUID:0/0x0000

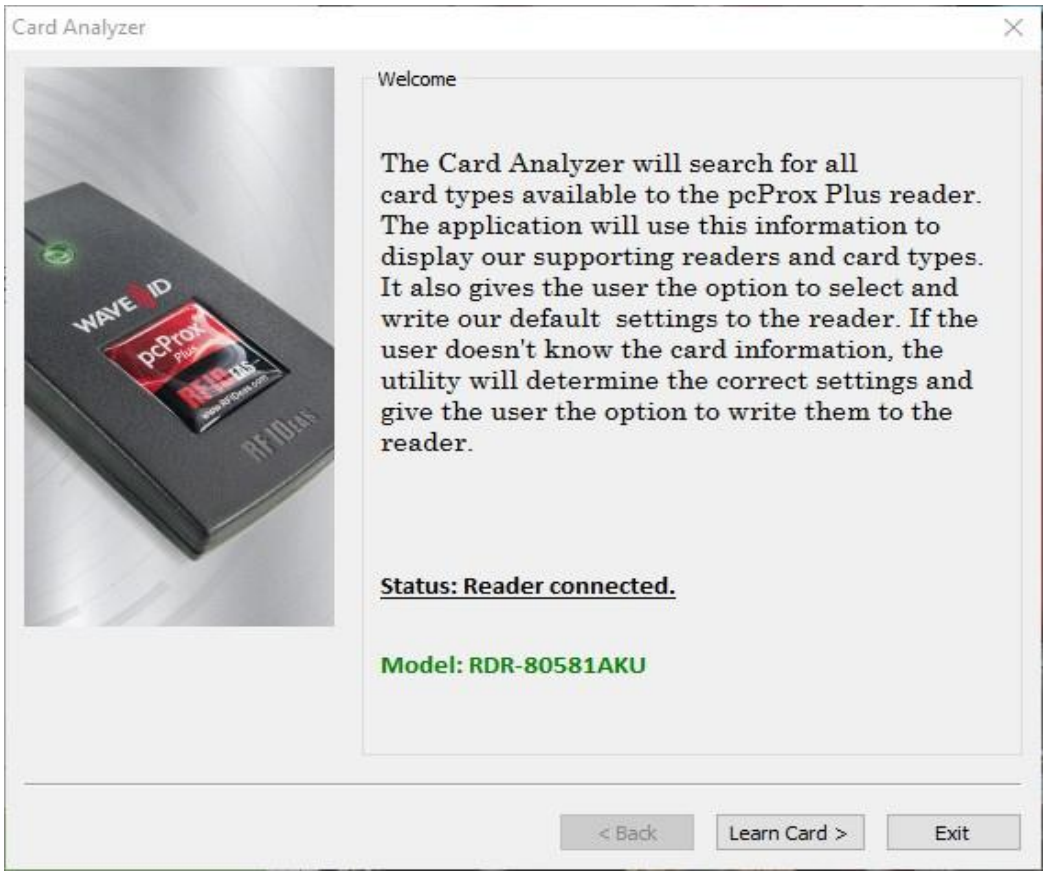
Determining what Card Profile to use

The pcProx® Plus Card enrollment reader must be tailored to the **RFID Card Type** that will be used with the Electronic Lock Kit system. If the card type is one of the Desfire, HiD iClass, Mifare Classic or Prox, please proceed to **Programming the pcProx® Plus reader** on page 83.

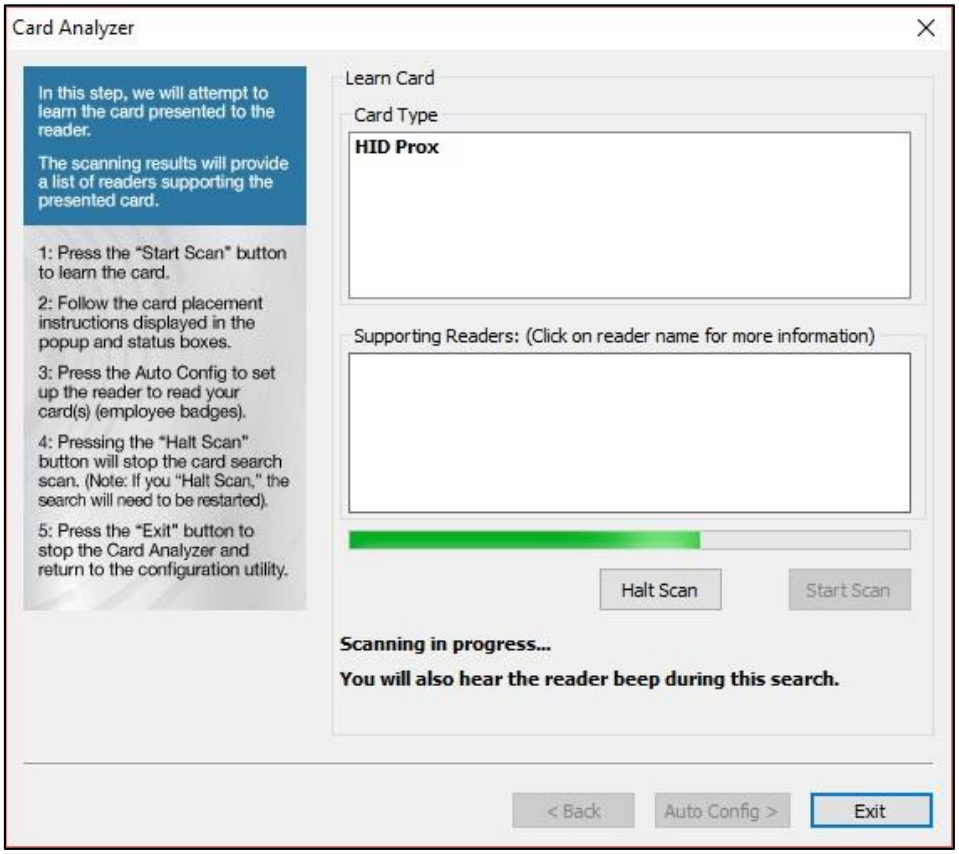
If the RFID card type is not known, the "**Card Analyzer**" Wizard, found under the "Card Analyzer" menu of the pcProxConfig program, can be used to scan for the Card Type:



After selecting Card Analyzer from the menu, place the ID card on the reader and press the Learn Card button:



The reader will then scan through several card types. When a compatible card type is found the **Card Type** box will show the type of card.

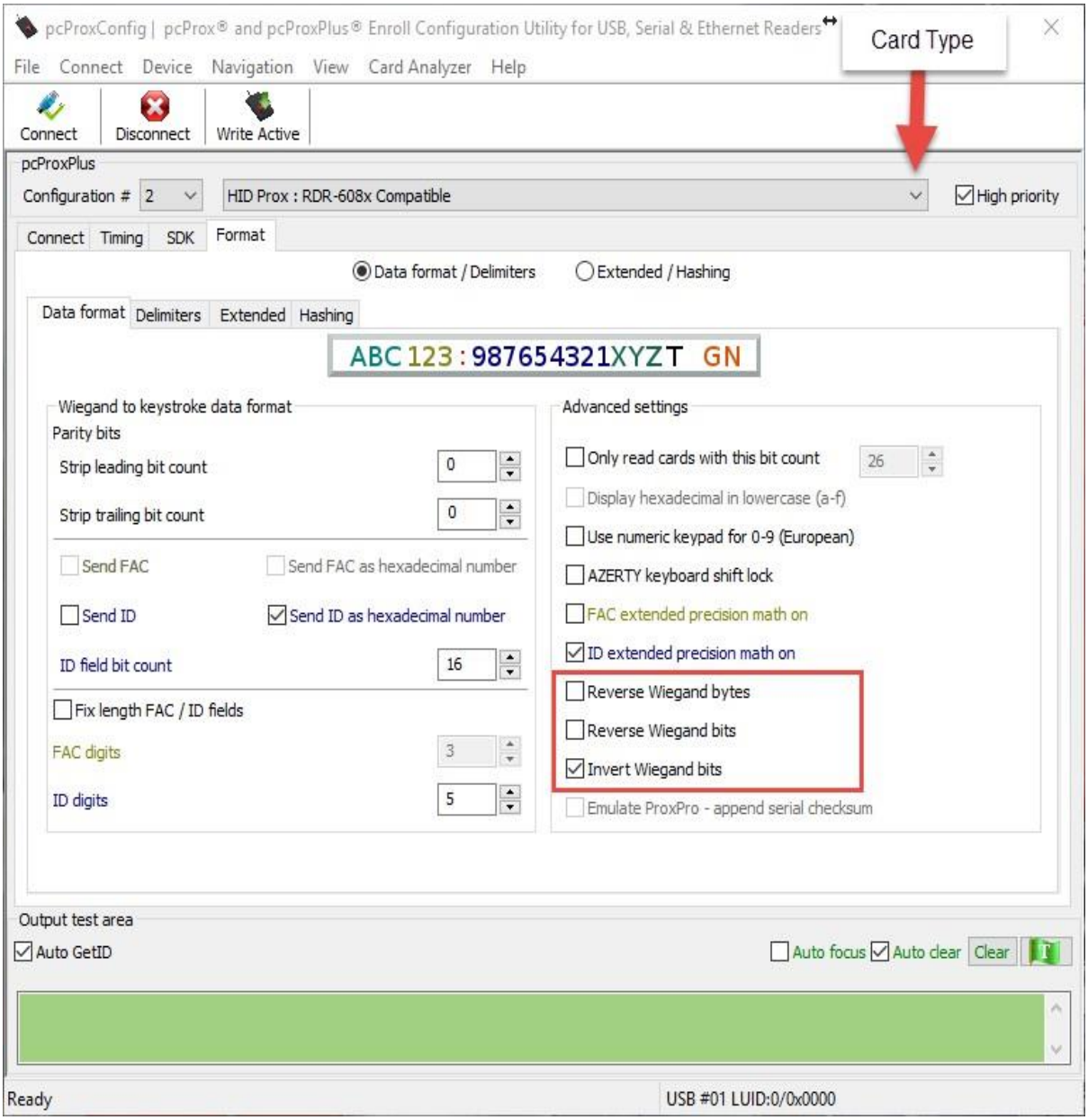


After determining the type, the user is ready to write the proper settings to the pcProx® Plus reader.

Programming the pcProx® Plus reader

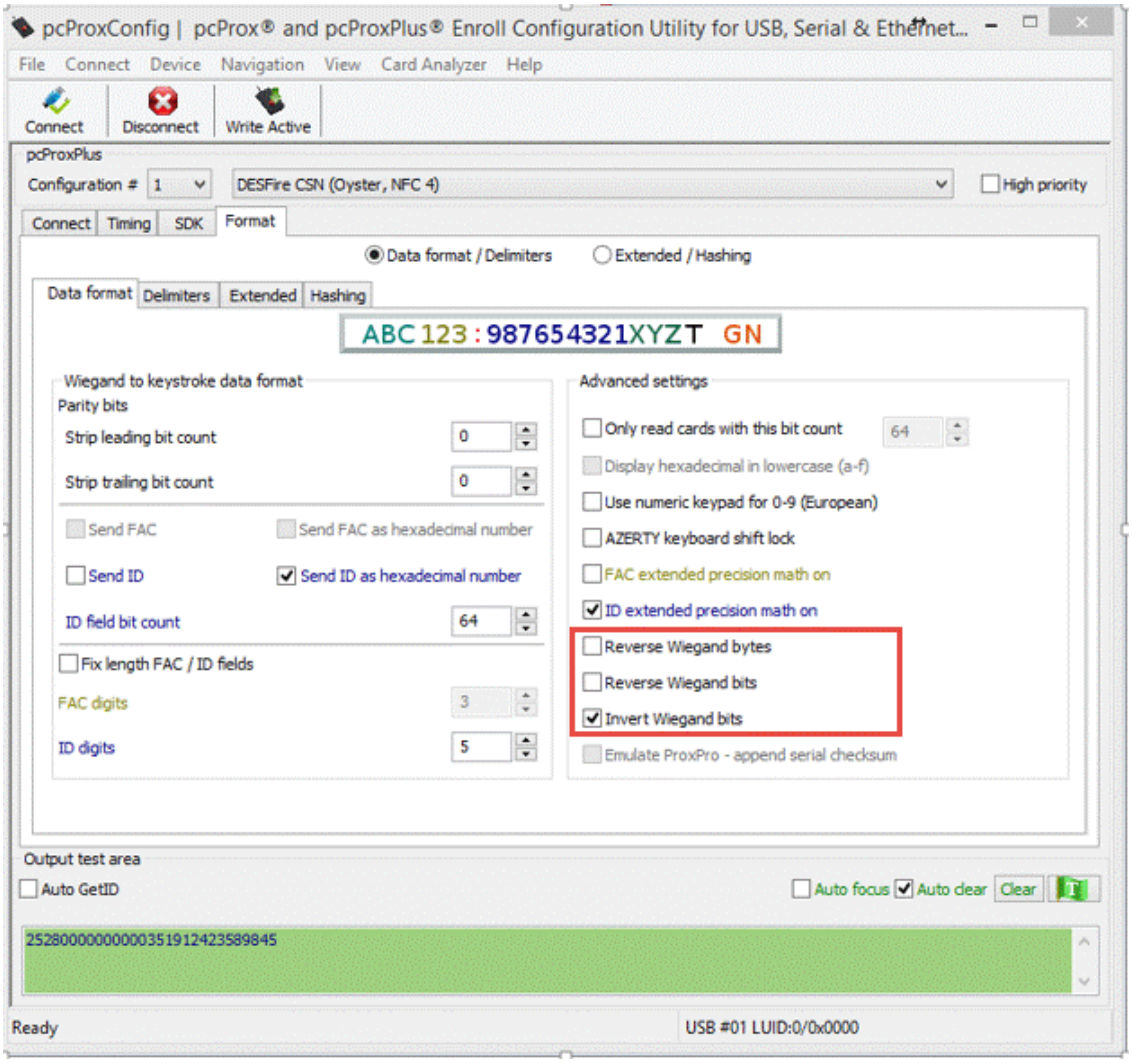
In order for the pcProx® Plus reader to be compatible with the Electronic Lock Kit, the card reader must be flashed with the proper reader settings, as shown in the following steps:

The **Card Type** must be set from the drop-down selector on the **Format – Data Format** tab page. Additionally, the other fields and checkboxes on that page should initially be configured as shown below. Three advanced settings shown within a red rectangle must be checked or unchecked, depending on the **Card Type**. After all the settings have been made press the **Write Active** button to write the settings to the pcProx® Plus reader.

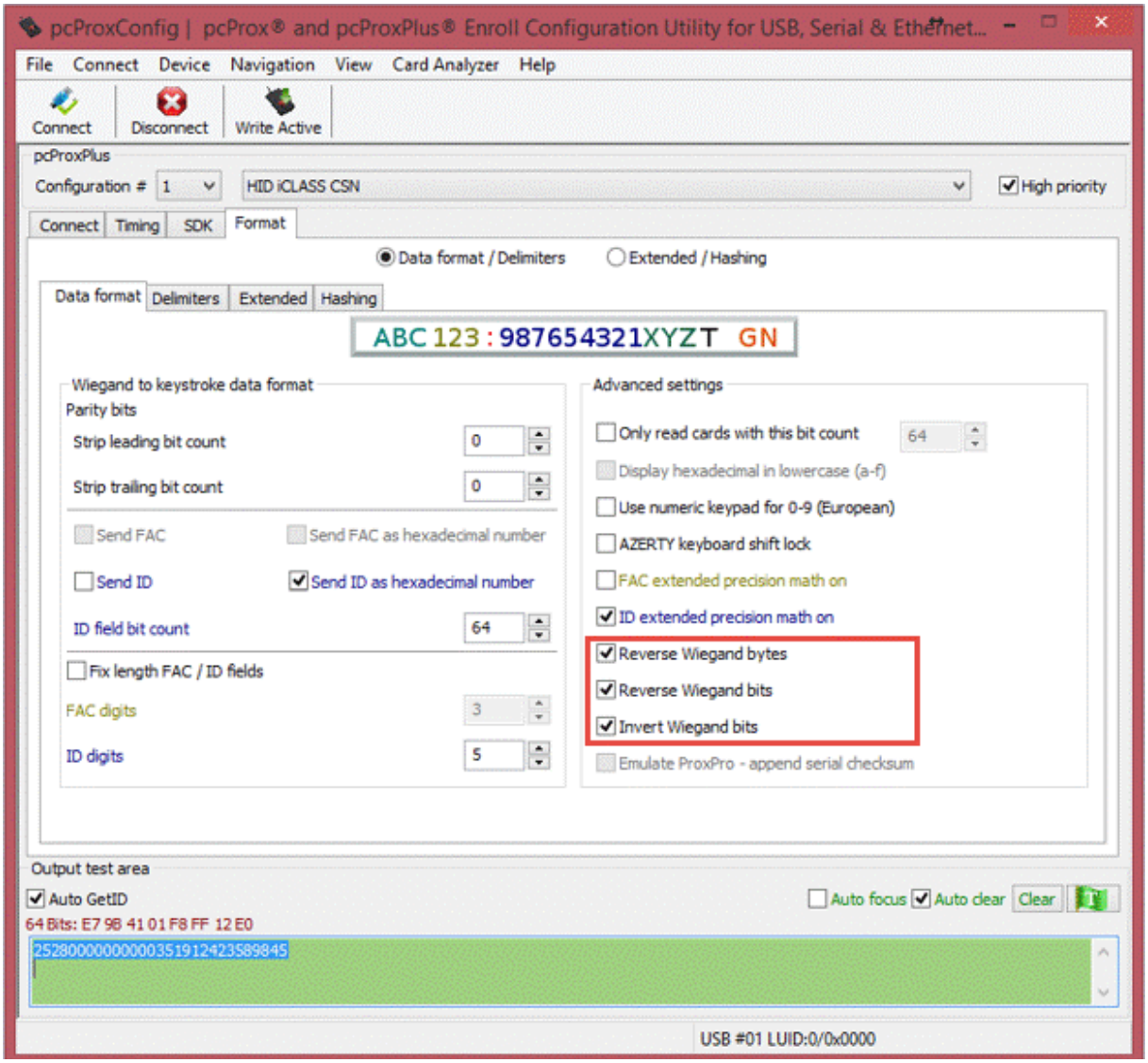

pcProxConfig | pcProx® and pcProxPlus® Enroll Configuration Utility for USB, Serial & Ethernet Readers
Card Type
File Connect Device Navigation View Card Analyzer Help
Connect
Disconnect
Write Active
pcProxPlus
Configuration # 2
HID Prox : RDR-608x Compatible
High priority
Connect Timing SDK Format
Data format / Delimiters
Extended / Hashing
Data format Delimiters Extended Hashing
ABC 123 : 987654321XYZT GN
Wiegand to keystroke data format
Parity bits
Strip leading bit count 0
Strip trailing bit count 0
Send FAC
Send FAC as hexadecimal number
Send ID
Send ID as hexadecimal number
ID field bit count 16
Fix length FAC / ID fields
FAC digits 3
ID digits 5
Advanced settings
Only read cards with this bit count 26
Display hexadecimal in lowercase (a-f)
Use numeric keypad for 0-9 (European)
AZERTY keyboard shift lock
FAC extended precision math on
ID extended precision math on
Reverse Wiegand bytes
Reverse Wiegand bits
Invert Wiegand bits
Emulate ProxPro - append serial checksum
Output test area
Auto GetID
Auto focus
Auto clear
Clear
Ready
USB #01 LUID:0/0x0000

Common RFID Card Types and Reader Format Settings

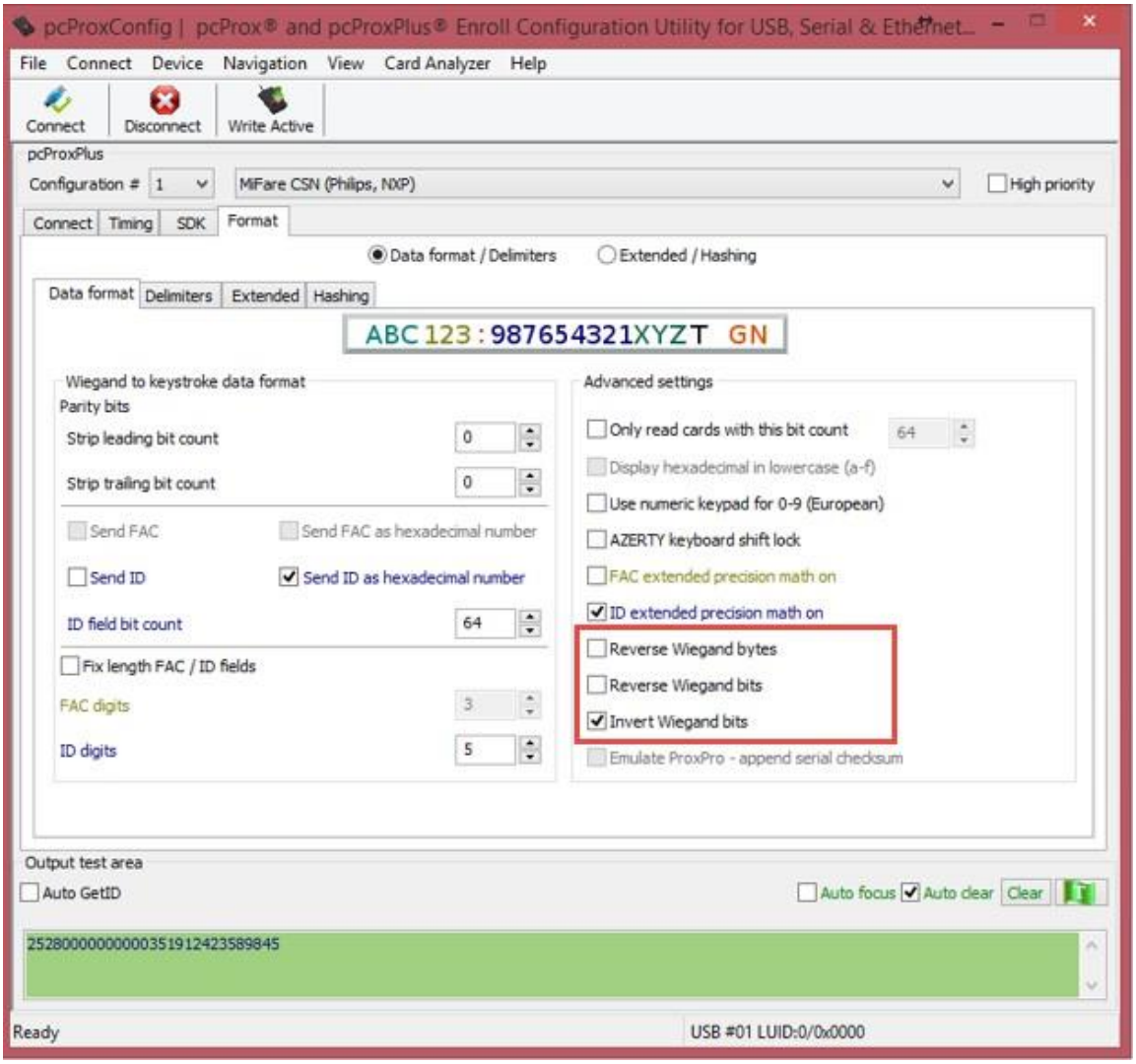
Desfire Card:

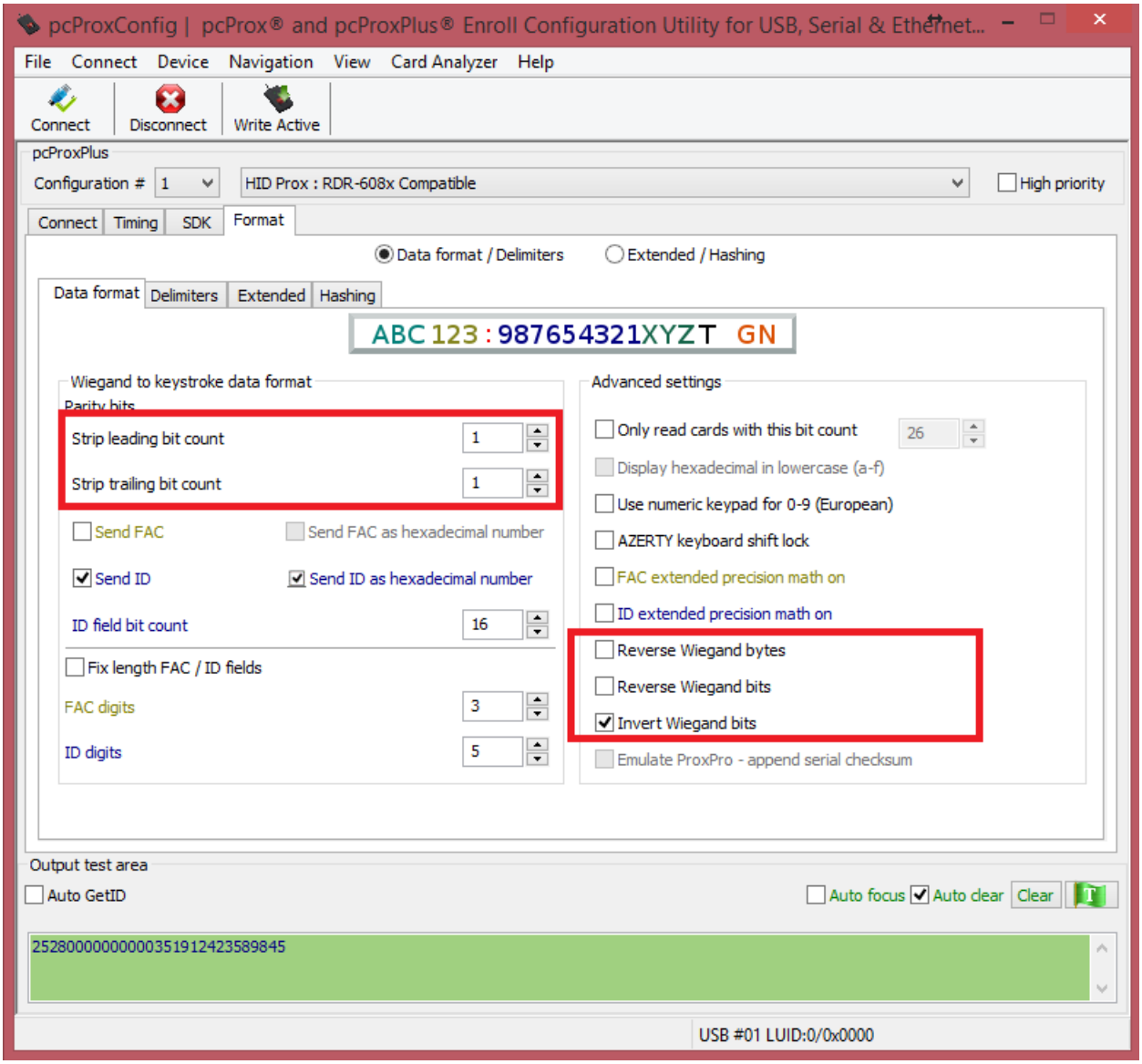


HiD iClass Card:



MiFare Classic Card:



Prox Card:

Prox cards require an additional setting in the **Wiegand to keystroke data format** box, as shown below: