

DISPLAYPAK+

Switched IP-Controllable Surge Protected PDU

USER MANUAL



SX-DPP-102



SX-DPP-104



SX-DPP-102i



SX-DPP-104i

AMETEK®

ADVANCED SERIES MODE®	ELIMINATOR SERIES™	ICE®	NEXT GEN®	SURGE ELIMINATION®
AXESS®	EMPOWER®	IMPEDANCE TOLERANT™	PCS™	SURGEX®
COUVS®	ENVISION®	INRUSH CURRENT ELIMINATION®	POWERFRAME®	
DEFENDER SERIES®	ESP®	MULTIPAK®	REMOTE PORTAL®	
DIGITAL QC®	FLATPAK™	MULTI-STAGE®	SERIES MODE®	

This product may be covered by one or more claims of the following patents or published patent application:

U.S. Patent Nos.: RE39,446; 4,870,528; 4,870,534; 5,136,455; 6,040,969; 6,728,089; 6,744,613; 6,947,266; 7,068,487; 7,184,252; 7,511,934; 7,541,696; 7,551,412; 8,482,885; 8,520,349; 8,547,672; 8,614,866; 9,166,396; 9,225,534; 9,310,870; 9,489,026; 9,577,473; 9,787,081; 9,787,086; 9,831,662; 10,014,680; 10,090,662; 10,114,395; 10,184,963

U.S Patent Application Publication Nos.:
2012/0221161; 2012/0265361; 2013/0073060 2013/0258538; 2013/0073232: 2017/0005963

Canadian Patent Nos.: 1,332,439; 1,333,191; 2,461,332 and 2,511,695

European Patent Nos.: EP2469554; EP2482085; EP2512092; EP2555004; EP2680014; EP3021441: EP3062409

China Patent Nos.: 102916388B

Table of Contents

- 1. Introduction 1**
 - 1.1 Metering 1
 - 1.2 Physical Interfaces 2
 - 1.3 Rating 2
- 2. Installation and Components 3**
 - 2.1 AC Power: Output 3
 - 2.2 AC Power: Input 3
 - 2.3 Ethernet and Account Admin Password 3
 - 2.4 USB-Micro AB 3
 - 2.5 Update to the Latest Firmware 4
 - 2.6 LED Indicators 4
 - 2.7 Buttons 4
 - 2.7.1 Hardware Reset 4
 - 2.7.2 Software Reset 4
 - 2.8 External Fuse 4
- 3. Wall Mount Installation 5**
 - 3.1 Wall Mount 6
- 4. Web Server 7**
 - 4.1 Login 7
 - 4.2 Power Management 7
 - 4.3 Reports 8
 - 4.4 Power Monitoring 8
 - 4.5 Charts 9
 - 4.6 Setup 9
 - 4.6.1 Device Setup 9
 - 4.6.1.1 Device Configuration 9
 - 4.6.1.2 Outlet Configuration 10
 - 4.6.1.3 Outlet Group Configuration 11
 - 4.6.1.4 Date/Time Settings 12

4.6.2	Network Setup.....	13
4.6.2.1	Network settings	13
4.6.2.2	Wi-Fi	14
4.6.3	Network Advanced Setup.....	15
4.6.3.1	SNMP.....	15
4.6.3.2	802.1X Settings	16
4.6.3.3	LDAP Client Settings	17
4.6.4	Cloud Setting	18
4.6.5	Users Setup	18
4.6.6	Triggers Setup.....	18
4.6.7	Sequences Setup.....	20
4.7	Utilities	20
4.7.1	File Upload	21
4.7.2	Backup/Restore.....	21
4.7.3	Factory Reset.....	21
4.7.4	Soft Reboot	22
4.8	System Info	22
4.9	User Profile	22
5.	Security.....	22
5.1	Authentication	22
5.1.1	802.1X.....	22
5.1.2	SSO (Single Sign-On).....	23
5.2	Interfaces	23
5.2.1	Network Interface	23
6.	Part Numbers	23
6.1	Part Number Scheme	23
7.	Troubleshooting.....	24
8.	Specifications	25

1. Introduction

The SurgeX DisplayPak+ is an AC power distribution unit with power conditioning, control, and monitoring. Designed to be placed on a flat surface or vertically as a wall mount, the DisplayPak+ has 2 to 4 independently IP-switchable AC outlets and a current monitoring inlet. An internal web server is available for configuration, output control, monitoring and logging. Multiple security and communication interface options are supported.

DisplayPak+ incorporates multistage surge suppression and EMI/RFI filtering technology to safeguard the AC outlets.

The extensive programming capabilities of the DisplayPak+ provide advanced sequencing and scheduling operations. Triggers can be programmed to activate on an “if X then do Y, then do Z when no longer X” basis. Trigger sources include various AC power measurements, scheduling and AutoPing. Various actions include turning receptacles on and off, cycling a receptacle, executing previously defined sequences, and putting a unit into shutdown. For example, an action can be created to power cycle a network appliance if it fails to respond to a series of pings.

1.1 Metering

Metering is performed at the system level, and includes:

- Line Voltage
- Neutral-Ground Voltage
- Input Current
- Power
- Line Frequency
- Power Factor
- Voltage Crest Factor
- Energy

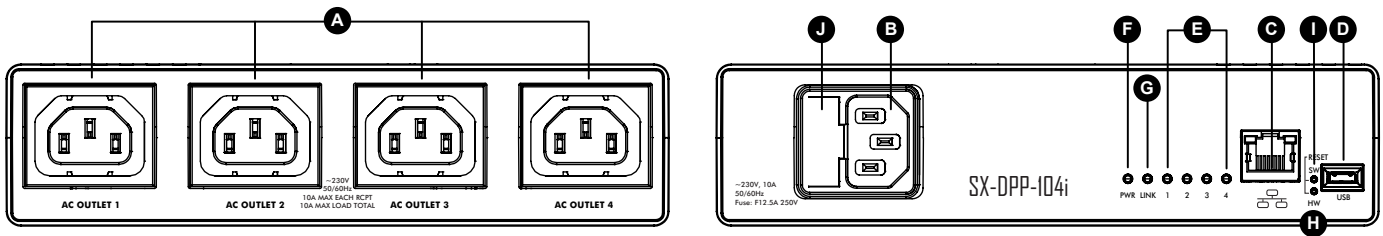
1.2 Physical Interfaces

MODEL	OUTPUT	INPUT	COMMUNICATION
SX-DPP-102	(2) NEMA 5-15R	(1) NEMA 5-15P	(1) RJ45 (1) USB-Micro AB (1) Wi-Fi
SX-DPP-104	(4) NEMA 5-15R	(1) NEMA 5-15P	(1) RJ45 (1) USB-Micro AB (1) Wi-Fi
SX-DPP-102i	(2) IEC 13	(1) IEC C14	(1) RJ45 (1) USB-Micro AB (1) Wi-Fi
SX-DPP-104i	(4) IEC 13	(1) IEC C14	(1) RJ45 (1) USB-Micro AB (1) Wi-Fi

1.3 Rating

MODEL	DESCRIPTION	INPUT VOLTAGE AND CURRENT RATING	FREQUENCY	OUTLET
SX-DPP-102	2 NEMA outlet, 10A	120V,10A	50/60 Hz	120V, 10A Each Receptacle, 10A Max Load
SX-DPP-104	4 NEMA outlet, 10A	120V,10A	50/60 Hz	120V, 10A Each Receptacle, 10A Max Load
SX-DPP-102i	2 IEC outlet, 10A	230V,10A	50/60 Hz	230V, 10A Each Receptacle, 10A Max Load
SX-DPP-104i	4 IEC outlet, 10A	230V,10A	50/60 Hz	230V, 10A Each Receptacle, 10A Max Load

2. Installation and Components



DisplayPak+ is designed to be installed horizontally on a flat surface or vertically as a wall mount. The supplied screws and wall anchor must be used to mount the DisplayPak+ to the wall through the mounting holes of the wall mount bracket, following the appropriate local regulations and requirements.

2.1 AC Power: Output

Plug the equipment cord **(A)** into the suitable receptacles as needed. Please review Introduction, Physical Interfaces, column Outputs, for the suitable plugs for each model's receptacles.

2.2 AC Power: Input

Connect power to the DisplayPak+ using an appropriately rated 3 wire grounding type power cord provided with the equipment in inlet **(B)**. Do not plug the unit into a relocatable power tap. Check the outlet for correct polarity and presence of a ground conductor before plugging the unit in.

2.3 Ethernet and Account Admin Password

Use the Ethernet/RJ-45 cable or other suitable Cat 5 cabling (shielded is preferred) for Ethernet connectivity **(C)**. The default IP address is DHCP assigned. To find the IP address of the device, please use the discovery tool at ametekesp.com. The mDNS protocol is supported for dynamic device discovery.

The default login credentials are:

Username: **admin**

Default password: **Adm1nXXXXXX**

Where XXXXXX are the last six characters of the MAC address in ALL CAPS excluding the “.”.

2.4 USB-Micro AB

The USB-Micro AB connector **(D)** is for diagnostics and troubleshooting IP connectivity issues. To use, please use the discovery tool at ametekesp.com or manually enter the static IP address <http://169.254.10.100> into a supported browser. The web server will always be accessible at <http://169.254.10.100> through this USB port. The web server on this interface cannot be changed and will always be unsecured HTTP at port 80.

2.5 Update to the Latest Firmware

WARNING: Using outdated firmware may cause the device to lock up.

1. Go to: <https://www.ametekesp.com/surgex/displaypak-plus/displaypak-plus-120v>
2. Open the Firmware section and download the latest file.
3. On the device, open the menu (☰) and select Utilities > File Upload.
4. Set File Type to Firmware Update, select the firmware file, and choose Upload.

The device will automatically load the firmware.

2.6 LED Indicators

The receptacles have individual power indicator LEDs (E), paralleled in the control interface. In addition, the unit has an LED indicating power (F), and Wi-Fi Link (G).

2.7 Buttons

2.7.1 Hardware Reset

Hardware Reset (H): The Hardware Reset button performs a hard reboot of the processor. This hard reboot will immediately switch controlled outlets off, removing power to connected equipment on all outputs.

2.7.2 Software Reset

Software Reset (I): The Software Reset button has multiple functions depending on the length of press. If the button is held for longer than 10 seconds, the unit resets itself to factory defaults, and all custom configurations are erased. If the button is held for less than 10 seconds, the unit will perform a software reset that will neither reset any data nor power cycle the connected equipment.

2.8 External Fuse

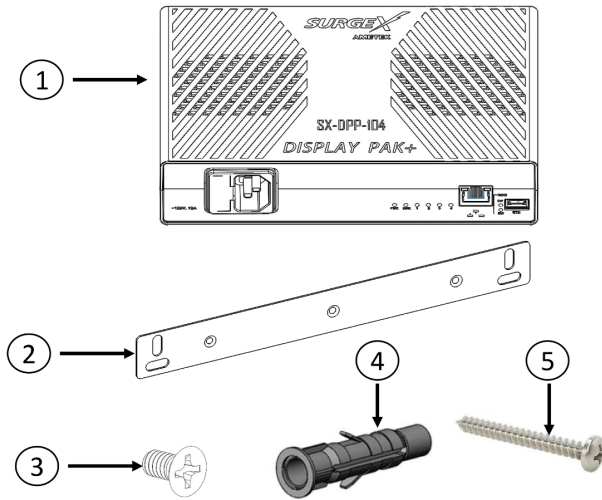
The product is equipped with a fuse (**J**) to safeguard against electrical overloads and short circuits. The fuse dimensions shall be 5 × 20 mm (cartridge type).

- For SX-DPP-104 and SX-DPP-102 models, the replaceable fuse shall be F15A 250V AC.
- For SX-DPP-104i and SX-DPP-102i models, the replaceable fuse shall be F12.5A 250V AC.

Ensure the product is disconnected from the power source before replacing the fuse. If the fuse blows repeatedly, contact customer support for assistance.

3. Wall Mount Installation

The DisplayPak+ is designed to be installed horizontally on a flat surface or vertically as a wall mount. The supplied screws and wall anchor must be used to mount the DisplayPak+ to the wall through the mounting holes of the wall mount bracket, following the appropriate local regulations and requirements.



Inventory

Sl. No	Items	Qty
1	DisplayPak+	1
2	Wall Mount Bracket	1
3	Flat Head Screws	3
4	Wall Anchor	2
5	Pan Head Tapping Screws	2

⚡ DANGER ⚡

HAZARD OF ELECTRICAL SHOCK, EXPLOSION, OR ARC FLASH

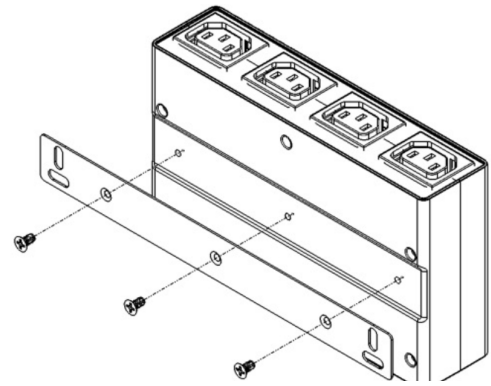
- This Unit is intended to use indoor only.
- Do not install this Unit where excessive moisture or heat is present.
- Never install any wiring, equipment, or Units during a lightning storm.
- Plug this Unit into a three-wire, grounded power outlet only. The power outlet must be connected to appropriate branch circuit/mains protection (fuse or circuit breaker). Connection to other type of power outlet may result in a shock hazard.
- Install the unit in such a way that the Wall socket-outlet should be readily accessible.
- Use only the supplied brackets for mounting and use only the supplied hardware to attach the mounting brackets
- Do not use extension cords or adapters with this Unit
- If a socket-outlet is not accessible to the equipment, a socket-outlet shall be installed.
- Do not work alone under hazardous conditions.
- Check that the power cord, plug, socket and unit are in good condition.
- Do not use unit if the plastic enclosure is observed crack or damage.
- Disconnect the Unit from the power outlet before you install or connect equipment to reduce the risk of electric shock when you cannot verify grounding. Reconnect the Surge Unit to the power outlet only after you make all connections
- Unit installation instructions that require verification of the Protective earthing connection of the socket-outlet by a Skilled person.
- This equipment is not suitable for use in locations where children are likely to be present.
- Use a protective earth connector with equipment. This type of connector carries the leakage current from the load devices (computer equipment).
- Do not exceed a total leakage current of 3.5 mA
- Do not handle any kind of metallic connector before the power has been removed
- Use one hand, whenever possible, to connect or disconnect signal cables to avoid a possible shock from touching two surfaces with different grounds.
- This unit does not have any user-serviceable parts. Repairs are to be performed only by factory-trained service personnel.
- The Unit is intended to be installed and operated by a skilled person in as controlled location with restricted access.
- The ambient operating temperature of a closed or multi-unit rack environment may be greater than the ambient temperature of the room. Ensure the ambient operating temperature of your rack environment does not exceed the rated ambient operating temperature for the device.
- Ensure the Unit is mounted securely and evenly.
- To avoid possible electrical shock and equipment damage, Use only the supplied/recommended hardware.

Failure to follow these instructions will result in death or serious injury.

3.1 Wall Mount

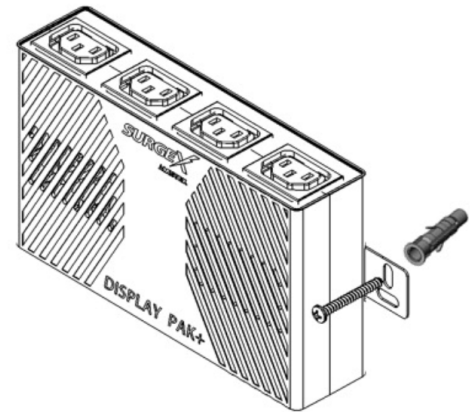
1. Mounting Wall Mount Bracket

Secure wall mount brackets to the unit using 3 flat head screws



2. Mounting Unit to the Wall

Secure unit to the wall using wall anchor and screw (4)

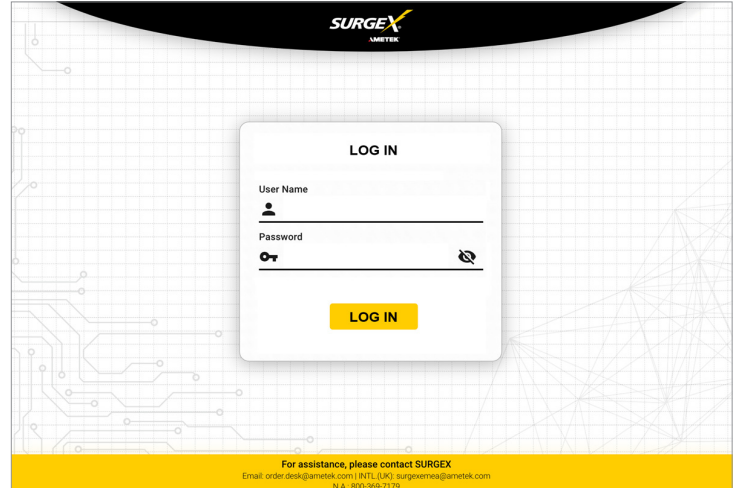


4. Web Server

The DisplayPak+ provides an internal web server to act as a comprehensive portal for configuration, monitoring and control.

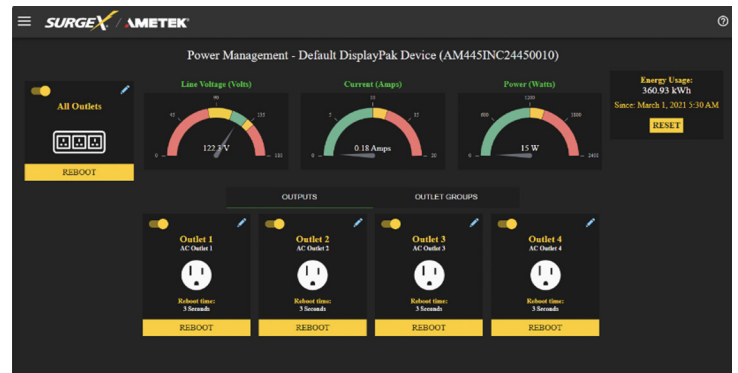
4.1 Login

The Login page is the first page displayed when a web browser makes a connection to the DisplayPak+. Enter a valid username and password in their respective fields, and press “Login” to log in.



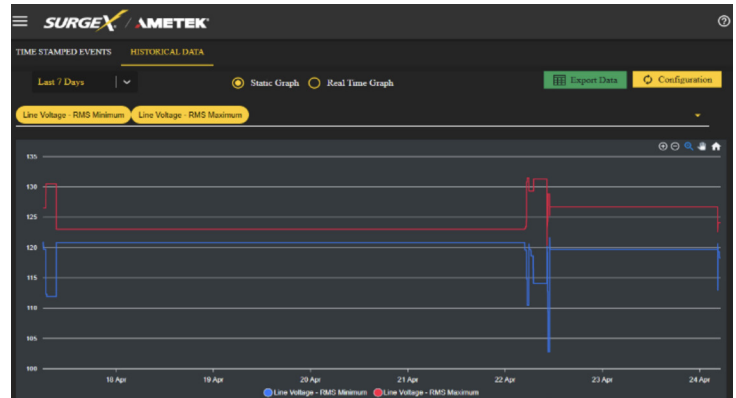
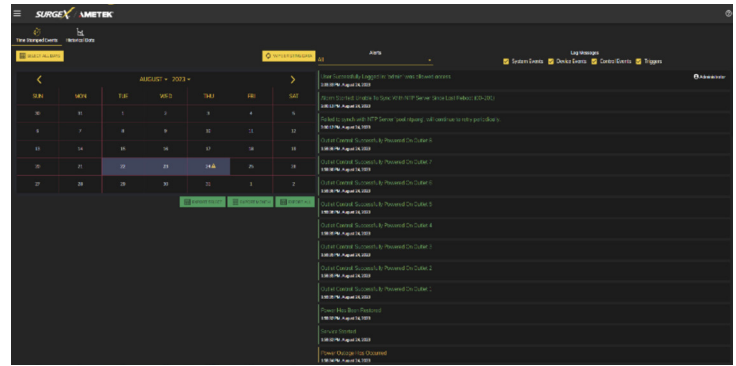
4.2 Power Management

The Power Management page provides information and status for the DisplayPak+ and individual outlets, as well as basic control of each outlet.



4.3 Reports

The Reports page displays data collected by the DisplayPak+ and stored in its internal memory. The data is presented in two groups: Time Stamped Events and Historical Data. Time Stamped Events are specific events recorded with the date and time of occurrence. Historical Data is a graphical representation of the measured parameters. It can also be exported to an Excel spreadsheet. For the most accurate time stamps and to eliminate clock drift, we suggest verifying NTP connection.



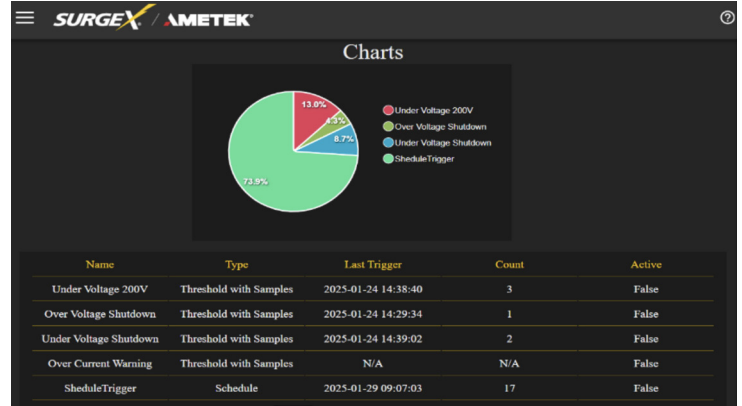
4.4 Power Monitoring

The Power Monitoring page provides real-time data collected by the DisplayPak+. It presents details regarding the total outlet power and the power distributed through each outlet. The metrics displayed include Line-Neutral Voltage, Neutral-Ground Voltage, Current, Frequency, Power Consumption, Crest Factor, and Power Factor.



4.5 Charts

The Chart page provides a comprehensive log of all user-defined triggers activated by the DisplayPak+. It includes detailed information such as the trigger name, type, last activation timestamp, activation count, and current status. Additionally, a pie chart offers a visual representation of the relative frequency of trigger activations, providing a clear comparison of trigger activity.



4.6 Setup

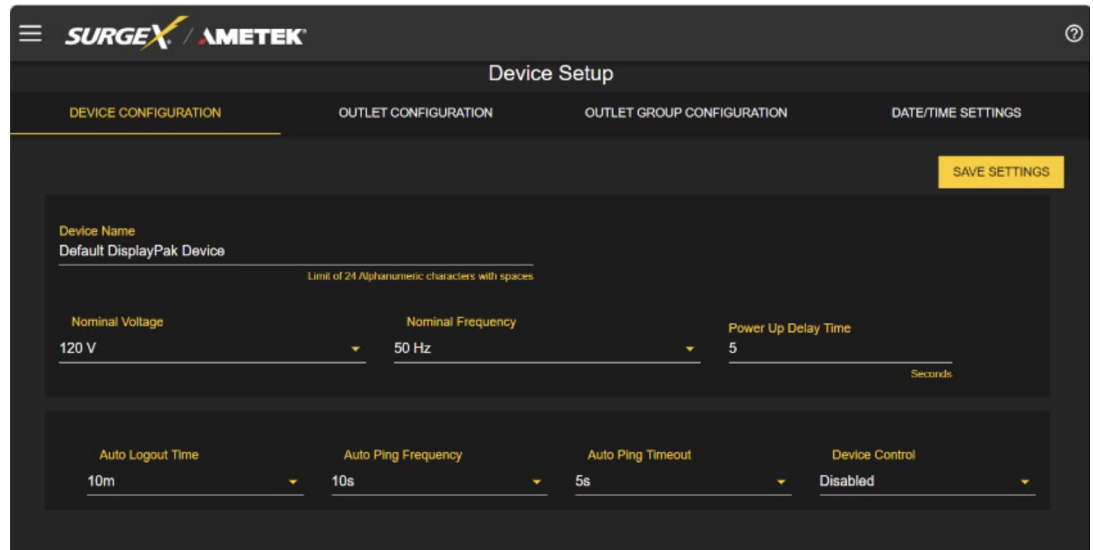
Complete setup and configuration of DisplayPak+ is provided via the 7 Setup web pages described in the following sections. Each setup page has a save button at the top which must be pressed to keep the configuration changes. A green success message will temporarily appear on the top right of the page when the settings are saved properly

4.6.1 Device Setup

The Device Setup page allows for the specification of basic device parameters.

4.6.1.1 Device Configuration

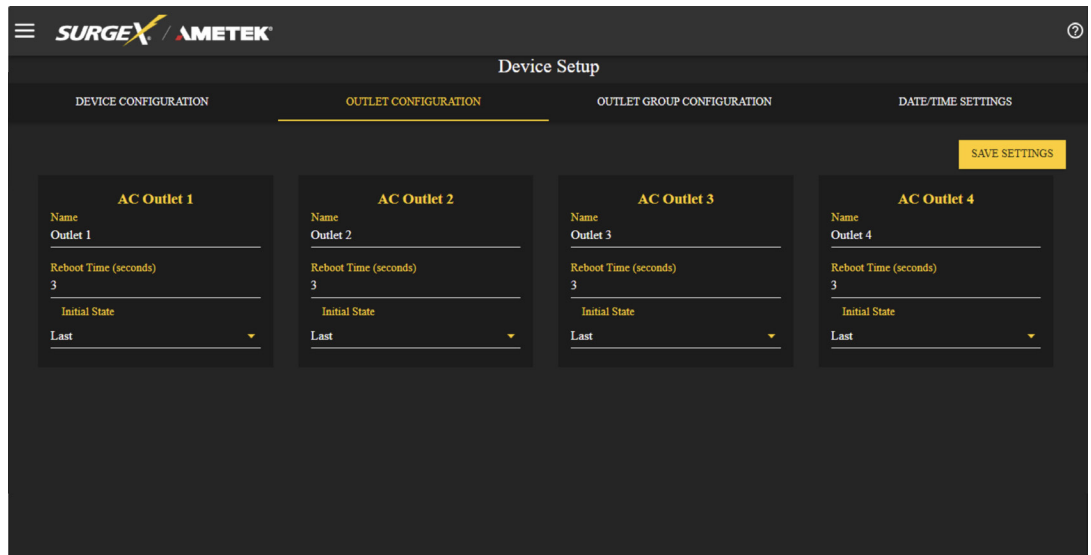
The Device Configuration tab allows for the specification of visual feedback and device initialization.



DEVICE CONFIGURATION	
Item	Description
Device Name	Specifies the name label to be associated with this DisplayPak+ device.
Nominal Voltage	Specifies the expected voltage of the input receptacle. This selection does NOT change any settings for over/under voltage shutoff. This is only for visual coloring of gauges.
Nominal Frequency	Specifies the expected frequency of the input receptacle. This selection does NOT change any settings for triggers. This is only for visual coloring of gauges.
Power-Up Delay Time	Specifies the amount of time in seconds by which to stagger the manual turning on of multiple outlets when applying the initial state.
On Power Up	Specifies whether to set outlets to initial states run a predefined sequence when DisplayPak+ device powers up, or the hard reset button is pushed.
On Shutdown Clear	Specifies whether to set outlets to initial states run a predefined sequence when Shutdown state clear.
Auto Logout	Specifies the web security timeout in minutes.
Auto Ping Frequency	Specifies the frequency at which the DisplayPak+ device will send pings to an IP Address or Hostname for an auto ping trigger.
Auto Ping Timeout	Specifies the amount of time the DisplayPak+ device will wait for a ping response before calling the attempt a failure.
Device Control	Specifies if the user has permission to control device from cloud.

4.6.1.2 Outlet Configuration

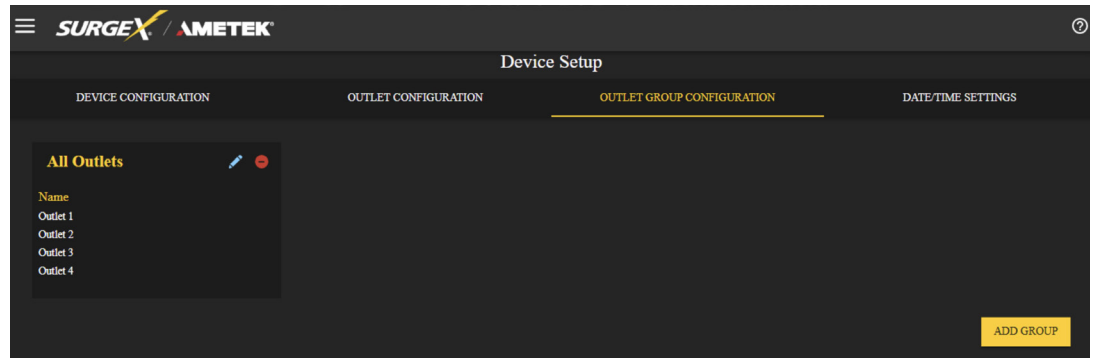
The Outlet Configuration tab allows for the specification of unique names and reboot times per outlet. The configuration for initial state per outlet is also here.



OUTLET CONFIGURATION		
Item	Description	
Outlet Description	A fixed short phrase that references a physical feature.	
Outlet Name	Specifies the name label to be associated with this Outlet	
Reboot Time	Number of seconds that the device will wait in between turning an outlet off and turning the outlet back on during a reboot command.	
Initial State	The state that an outlet will assume during start up or after a shutdown clears, if the initial state setting is selected in the Device Configuration tab. Options are as follows:	
	Always On	Regardless of other settings, this outlet will always be on. Ignores Shutdown state and deselecting Initial State in the Device Configuration tab. Outlet ignores user commands to reboot or power off. The only thing that will kill power with this selected is a hard reboot or power outage.
	Always Off	The opposite of Always On, this setting will never allow an outlet to pass power.
	On	The outlet will start in an On state.
	Off	The outlet will start in an Off state.
	Last	The outlet will assume the last state it was in. (Factory Default)
Reboot Only	The outlet will act like the On state but will ignore user commands to power off. This outlet will only respond to reboot commands. Useful for network appliances that may need to be rebooted, but otherwise want to be on all the time. Using this setting, the outlet will still turn off during Shutdown state.	

4.6.1.3 Outlet Group Configuration

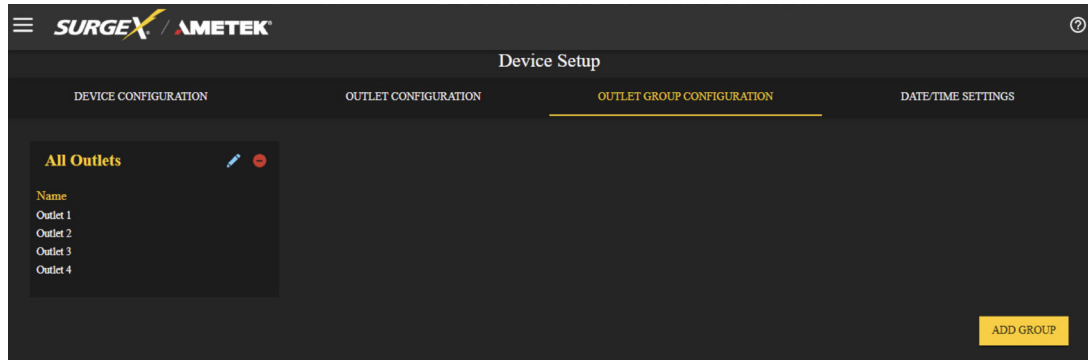
The outlets can be grouped under unique names. Users can modify, add and delete groups.



OUTLET GROUP CONFIGURATION	
Item	Description
Group Name	Specifies the name label to be associated with the outlet group.
Member Name	Specifies the outlet members of this outlet group.

4.6.1.4 Date/Time Settings

The Date/Time Settings tab allows for the specification of device time. As the DisplayPak+ has no internal RTC, only NTP and manual time methods are available.

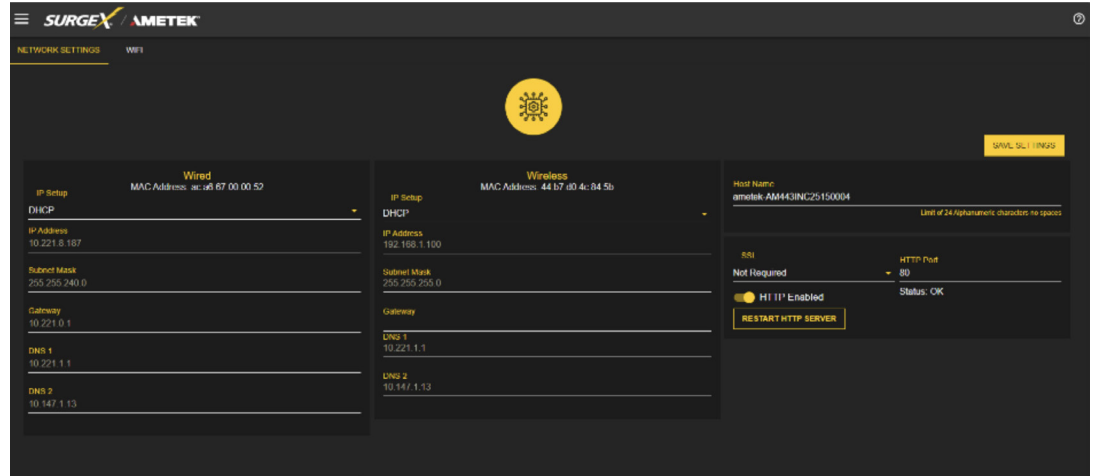


DATE/TIME CONFIGURATION	
Item	Description
Server Time	Returns the device's internal time based on the local time zone.
Set Time	Specifies the method for setting the time in the DisplayPak+ device. Options for this setting are NTP or manual. NTP will use the NTP Server option to sync the device time automatically every day.
Time Zone	Specifies the desired time zone adjustment for the DisplayPak+.
NTP Server	Specifies the hostname or IP address of the NTP server to use for time synchronization.

4.6.2 Network Setup

4.6.2.1 Network settings

The Network Setup page allows for the specification of network settings, including the network interface.



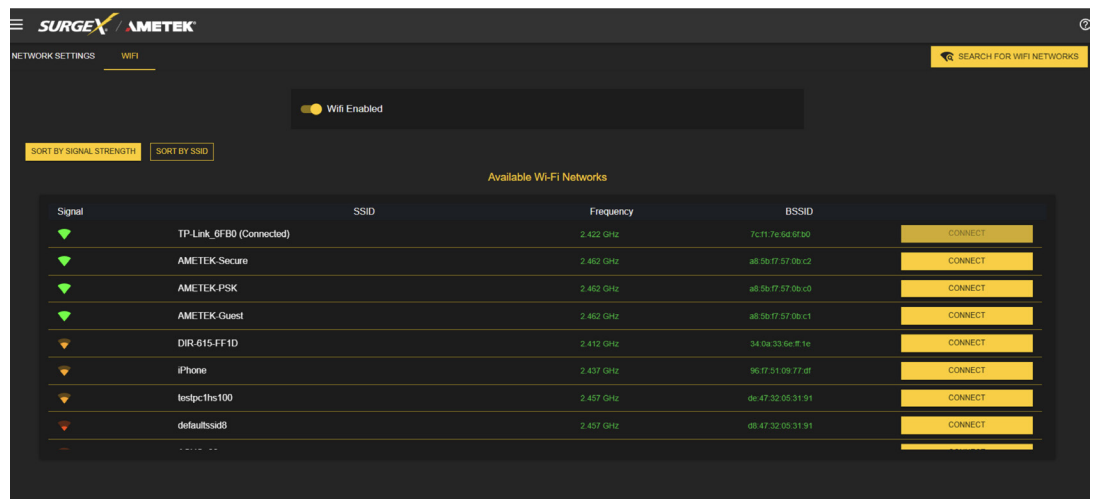
NETWORK CONFIGURATION	
Item	Description
IP Setup	Specifies if the device IP address will be static or dynamically assigned through DHCP.
IP Address	Current IP Address of the network interface on the RJ-45 Ethernet port / Wi-Fi.
Subnet Mask	Current Subnet Mask of the network interface on the RJ-45 Ethernet port / Wi-Fi.
Gateway	Current Gateway of the network interface on the RJ-45 Ethernet port / Wi-Fi.
DNS 1	Current DNS1 of the network interface on the RJ-45 Ethernet port / Wi-Fi.
DNS 2	Current DNS2 of the network interface on the RJ-45 Ethernet port / Wi-Fi.
Host Name	A configurable unique name to be used to access the device instead of an IP Address.
	Specifies whether the web server will be SSL encrypted (HTTPS) or not (HTTP). The default certificate is self-signed and will require the user to continue through a safety notification if a custom signed certificate is not uploaded to the device.
SSL	Specifies if the web server is enabled or disabled.
HTTP Enabled	NOTE: If disabling the web server, the web interface and REST API will be disabled. Only limited functionality over SNMP will remain enabled.
HTTP Port	Port number to use for the web server.

4.6.2.2 Wi-Fi

DisplayPak+ has Wi-Fi connectivity options for network integration. Users can initiate a Wi-Fi search using the Search for Wi-Fi Networks button, which displays all available networks. Users can also sort the list of available networks by SSID or signal strength. Detailed information such as the frequency & BSSID of each network is also displayed.

Setting up Wi-Fi Connection:

1. Ensure the network Wi-Fi router is turned on.
2. Connect the device using the Ethernet/Micro-USB port (refer to sections 2.3 or 2.4).
3. Go to the Network page and select the Wi-Fi tab.
4. Select the preferred Wi-Fi network by clicking on the connect button.
5. Enter the Wi-Fi password.
6. Once connected, “**(Connected)**” will be displayed beside the Wi-Fi SSID as shown below.
7. The blue LED will glow on the device once connected to the Wi-Fi network.
8. The Ethernet/Micro-USB cable can be disconnected after the Wi-Fi connection is successfully established.
9. The device will automatically connect to the Wi-Fi network when it is turned on next time.



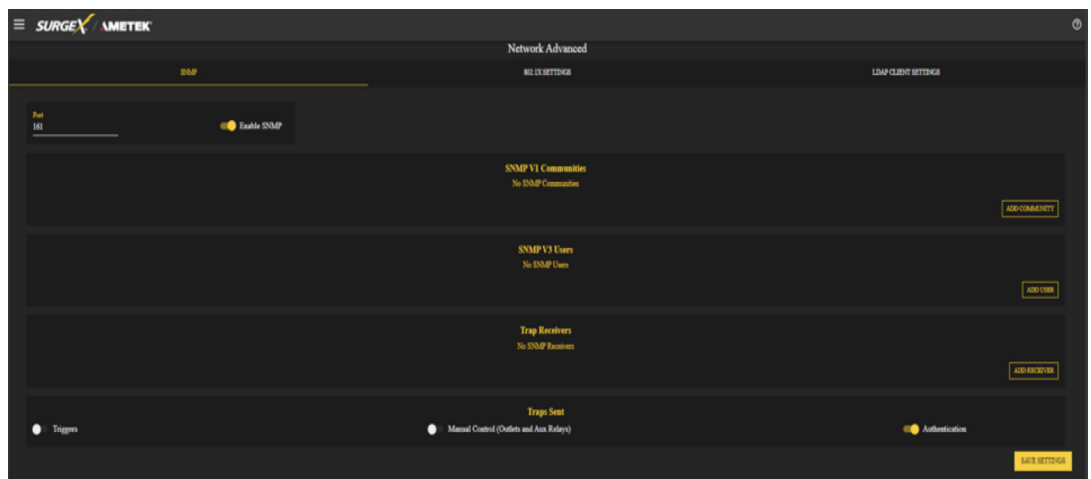
4.6.3 Network Advanced Setup

The Network Advanced Setup page allows for the specification of more advanced network security and monitoring options.

4.6.3.1 SNMP

The SNMP tab allows for the specification of parameters for the SNMP agent, supporting V1 through V3.

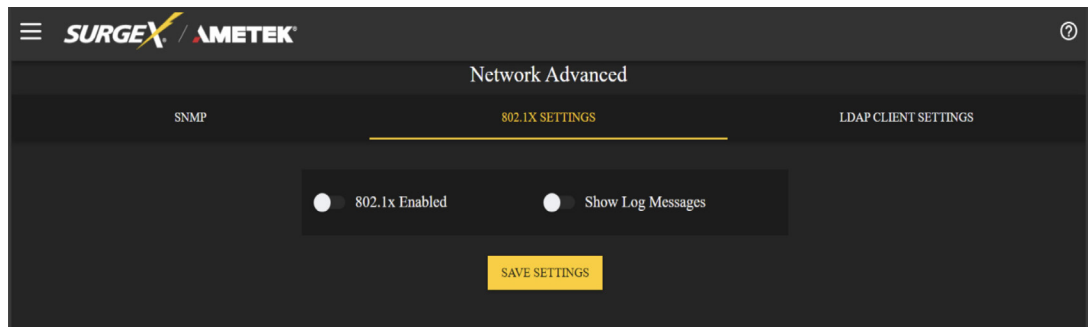
SNMP SETUP	
Item	Description
Enable SNMP	Specifies whether to enable the SNMP agent.
Port	Specifies the port number for the SNMP agent. 161 is the standard SNMP port.
SNMP V1 Communities	A table of all SNMP communities, supporting SNMP V1 at a minimum.
Name	Specifies the Community name for read and/or write access.
Source	Specifies an unrequired whitelist. If requests are not to be filtered by hostname or IP Address, this field can be left blank.
Access	Specifies the type of access allowed by the community.
SNMP V3 users	A table of Users specifically for SNMP V3 authorization. Users here will not apply to the REST API, and REST API users will not be able to authenticate via SNMP V3 without redefining their credentials here. SNMP credentials cannot be authenticated using the LDAP Client.
Name	The name or username for authorization.
Authorization	Type of encryption used per user. Options are DES or MD5.
Access	Type of access per user. Options are Read Only or Read/Write.
Passphrase	Passphrase or password for the user.
Trap Receivers	A table of all the destinations for SNMP traps.
Name	The name of the community for traps.
Host Name	The hostname or IP address of the SNMP Manager that is going to receive traps.
Port	The port number on which the SNMP Manager is listening for traps.
Traps Sent	Specifies which specific traps are to be sent. Triggers send traps for Triggering and Clearing. Manual Control sends traps for outlet state changes, and Authentication sends traps for failed authentication attempts.



4.6.3.2 802.1X Settings

The 802.1X Settings tab allows for the specification of 802.1x authentication and debugging of errors as they may arise.

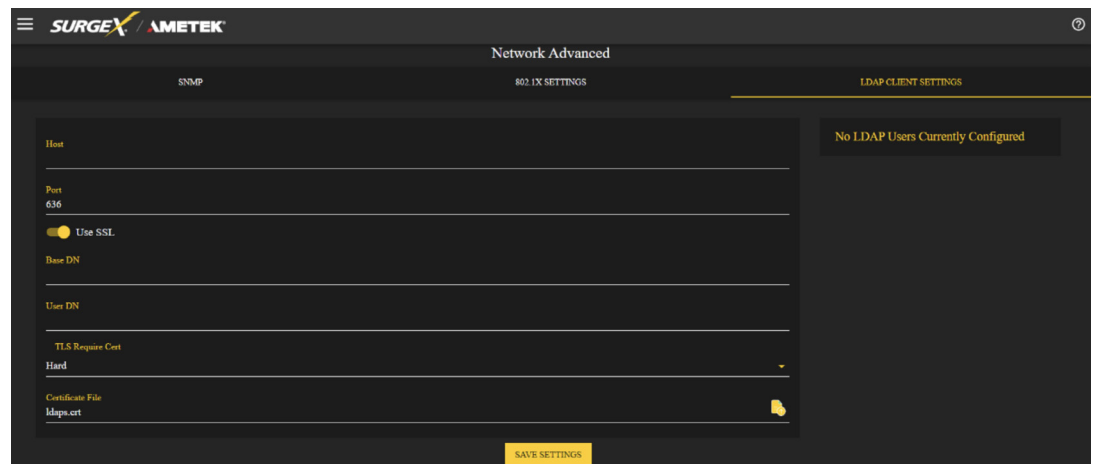
802.1X SETTINGS SETUP	
Item	Description
802.1x Enabled	Enables the 802.1x authentication client. This does not require the user to have a unique password for the DisplayPak+ device. Network login credentials can be used.
Show Log Messages	Opens and hides a table with date/time coded 802.1x related messages for debugging an authentication failure.
Authentication Type	Specify the authentication method used during the 802.1x negotiation. Different authentication options and settings will be displayed based on the selected Authentication Type.



4.6.3.3 LDAP Client Settings

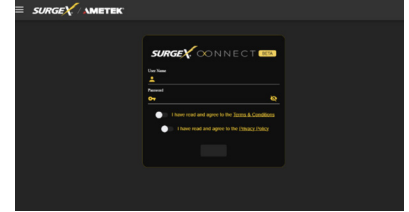
The LDAP Client Settings tab allows for the specification of the LDAP server and authentication method, and an interface to test the server setup.

LDAP CLIENT SETTINGS SETUP	
Item	Description
Host	The hostname or IP address of the LDAP server
Use SSL	A switch that will enable or disable SSL when attempting to connect to the LDAP server. This is a separate option from the web server port number, in the case that a site is using a nonstandard port for authentication, but still wants the ability to specify encryption. We always suggest using encryption when using LDAP.
Base DN	The base point in the directory tree where the user distinguished name search will begin.
User DN	The distinguished name of a user that will be used to authenticate. Multiple users are supported by using macros. For example, in the above image, the username test User attempts to log in, and the User DN pulls the name "Test User" from the user's definition for use in the authentication to replace the string %Full Name%.
TLS Require Cert	This specifies how to handle server certificates during TLS negotiations. Never: the client never asks the server for a certificate. Allow: the client will ask for a certificate, if none is provided the session proceeds normally. If a certificate is provided but the client is unable to verify it, the certificate is ignored and the session proceeds normally, as if no certificate had been provided. Try: the certificate is requested, and if none is provided, the session proceeds normally. If a certificate is provided and it cannot be verified, the session is immediately terminated. Demand: the certificate is requested, and a valid certificate must be provided, otherwise the session is immediately terminated.
Certificate File	This is the certificate that will be sent to the LDAP Server when/if requested.
User Name	The information for a user that is defined in the Users page. The first part (name), is accessible by the %Full Name% macro, and the second part (username) is accessible with the %User Name% macro.
Password	The password for the given user to test the LDAP server configuration.
Test User	A button to send an authentication request using the given settings for the user and password above. NOTE: Settings should be saved using the "Save Settings" button at the bottom of the page before testing a configuration change.



4.6.4 Cloud Setting

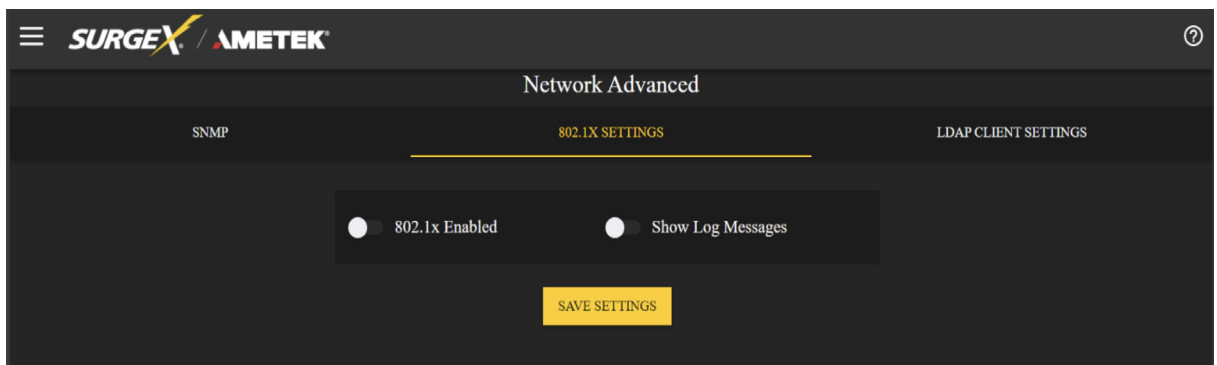
To start the device registration process, click on the Cloud Settings menu. Follow these steps carefully: First, register on the Surgex Connect app and log in using your registered credentials. Next, click on the “Register Device” button to initiate the device registration. Note that the Device Registration Page will not be visible if the device is already registered. Upon successful registration, you will be redirected to a page where you can view basic device information on the cloud. If you ever need to de-register your device, click on the “De-Register” button. Only use this option if you want to remove your device from the cloud.



4.6.5 Users Setup

To add a new user, click the Add New User button. You can edit/add or delete user accounts on this screen. Each user will have a unique name, username, authentication mode, and may be assigned access to specific features. For each user, you can select the Authentication Mode as either LDAP or internal. You can also set up Privileges for each user, which include:

- Trigger Config: Allows the user to configure triggers.
- Device Control: Grants the user control over device outlets.
- Network Settings: Permits the user to modify network settings.
- Software Update: Enables the user to update software.
- UserAdmin: Provides administrative privileges over user accounts.

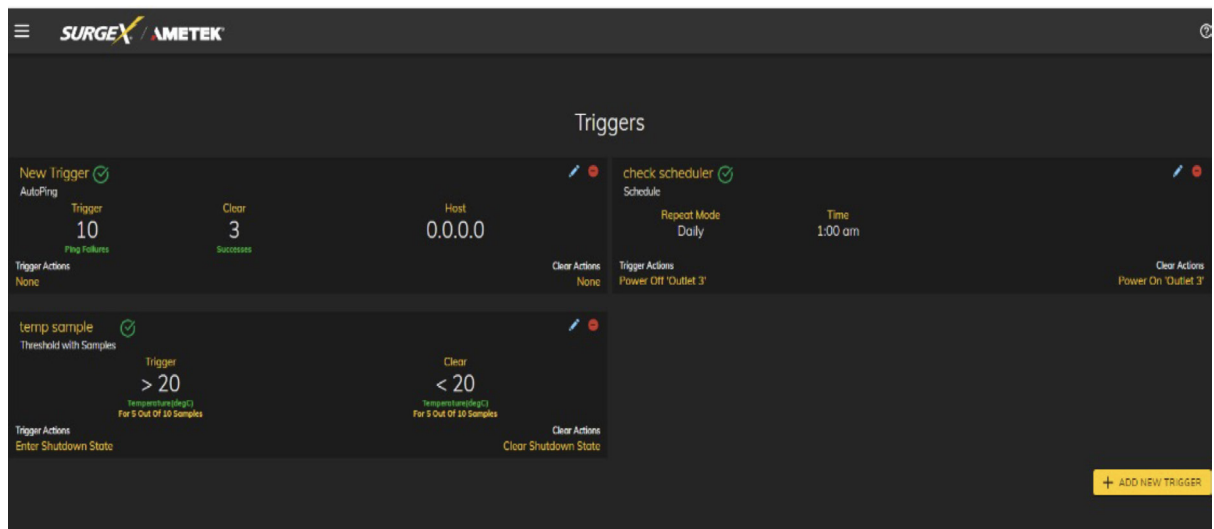


4.6.6 Triggers Setup

The Triggers Setup page allows for the modification of Triggers. Triggers define event logging parameters and allow configuration to automatically control and protect connected equipment. Triggers are categorized into three types, autoping, Threshold with Samples, and Schedule but all have the same possible actions. Actions can either be on the onset (Trigger/Alarm Actions) or offset (Clear Actions) of a trigger. All Triggers are logged, along with the associated actions.

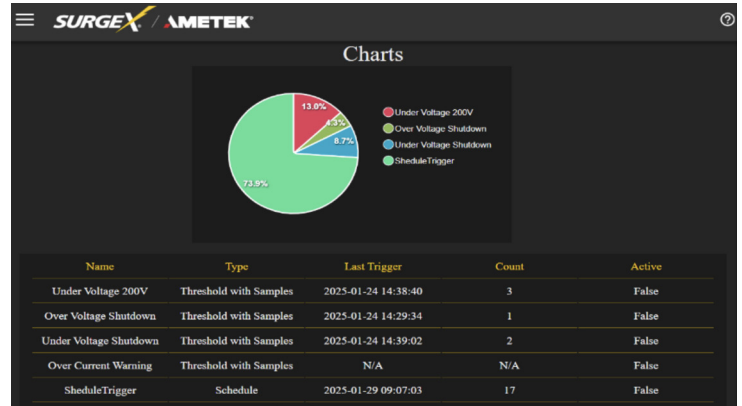
TRIGGER TYPES	
Item	Description
Threshold with Samples	Uses measurements over an allotted time to take an action. This trigger type is configurable to act very quickly or very slowly depending on environmental/system needs.
Auto Ping	Issues a ping function on a periodic basis to determine if an IP asset is accessible.
Schedule	Uses the device time to issue a one time or periodic command. We suggest ensuring the NTP server is updating correctly to use the schedule trigger.

ACTION TYPES	
Item	Description
None	Do not take any action, only log the event. This is useful as a Clear Action when an action should persist, or for both Alarm and Clear actions when just logging the event is desired.
Power On	Power on a specific outlet if the outlet configuration allows it.
Power Off	Power off a specific outlet if the outlet configuration allows it.
Reboot	Reboot a specific outlet if the outlet configuration allows it. If an outlet is already off when this command is issued, the outlet will simply turn on after the outlet specific reboot delay time.
Run Sequence	Run a specific sequence.
Enter Shutdown State	Put the device into a shutdown state. This state turns off all outlets (unless they are configured for always on). The only way to clear a shutdown state, is another trigger, a button on the web interface, or a REST API command.
Clear Shutdown State	Clear the device's shutdown state. Clearing the device's shutdown state will cause the outlets to follow the logic defined by the On Shutdown Clear setting.



4.6.7 Sequences Setup

The Sequences Setup page allows for the creation and modification of sequences. A sequence is a set of actions to be taken in a specific order, and with a specified delay time between each step. Using sequences avoids manually performing each action, or turning each outlet on or off, individually.



A sequence, as defined for this product, is purely a one-way sequence. That is, you do not use the same sequence to turn outlets on as you use to turn the same outlets off in reverse order. One sequence must be created for the turn-on function, and then a second sequence must be created for the turn-off function.

To create a new sequence, press the “Add Sequence” button. The new sequence must be given a unique name. This name should clearly indicate what the sequence will do, such as “All On”, “All Off” or “Stage Equipment On”.

To run a sequence to test it, press “Run Sequence”. To edit an existing sequence, press the pencil icon. To delete a sequence, press the minus “-” icon.

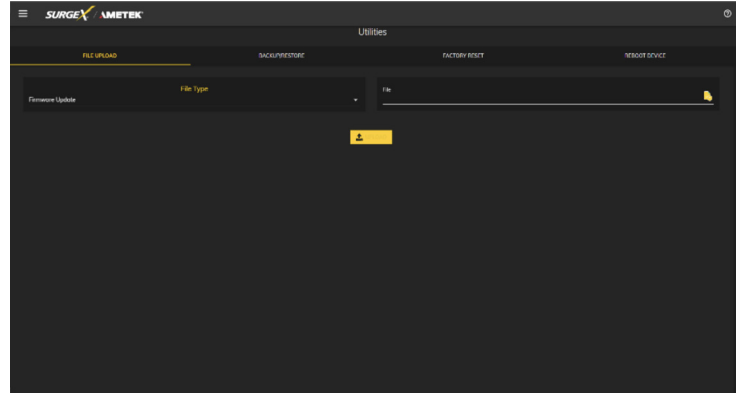
After a sequence has been saved, it will be available at the Sequences page, and when creating or editing a trigger when run sequence is selected as an action.

4.7 Utilities

DisplayPak+ contains several utilities to ease the configuration and deployment that may be performed on a per unit basis through several web pages.

4.7.1 File Upload

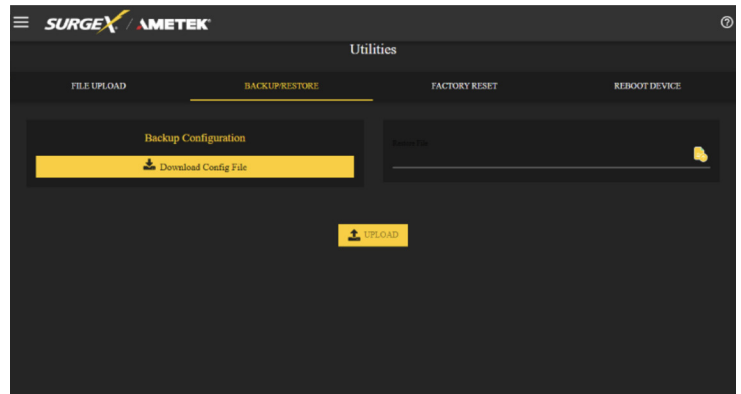
DisplayPak+ allows for a variety of files to be uploaded. This is also the method for upgrading the firmware. Current firmware versions can be obtained from the SurgeX website. DisplayPak+ will not automatically contact SurgeX servers for new firmware.



Other files that can be uploaded include a variety of certificates and configurations. By default, DisplayPak+ ships with a self-signed HTTPS certificate if HTTPS is enabled. A different certificate can be uploaded for use by the HTTPS server by selecting “HTTPS SSL Certificate” under the File type drop down.

4.7.2 Backup/Restore

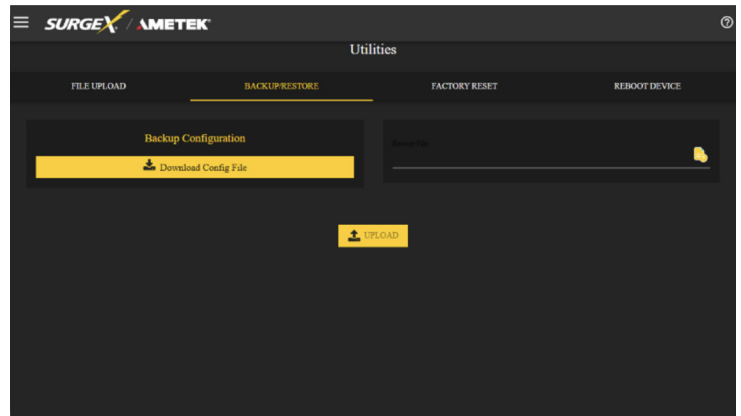
The current configuration may be saved to a file and downloaded for archival. Previously stored configurations may be applied to other units to easily mass configure a larger deployment. IP Settings will not be saved in the Backup Configuration.



4.7.3 Factory Reset

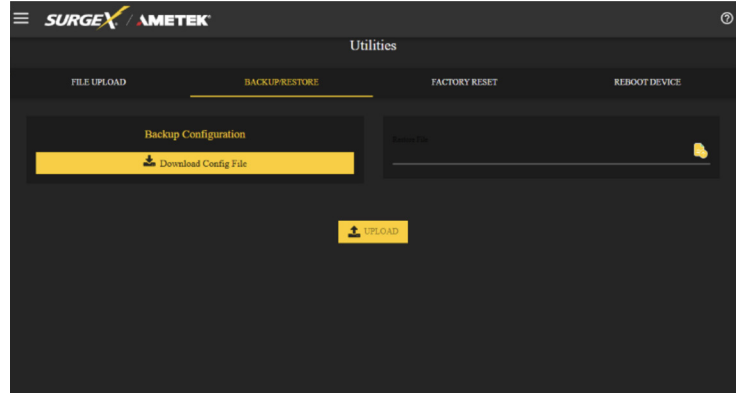
Factory default settings may be applied through the web interface.

- Option to keep or reset network IP settings - Web Server settings will be reset. A custom port number will be reset to 80, and SSL will be disabled by default.



4.7.4 Soft Reboot

Adds the ability to reboot the DisplayPak+ processor. A soft reboot will not change the outlet state or disconnect power from connected equipment. This request will add a message in the event log “Rebooting Adapter Due to User Request”.



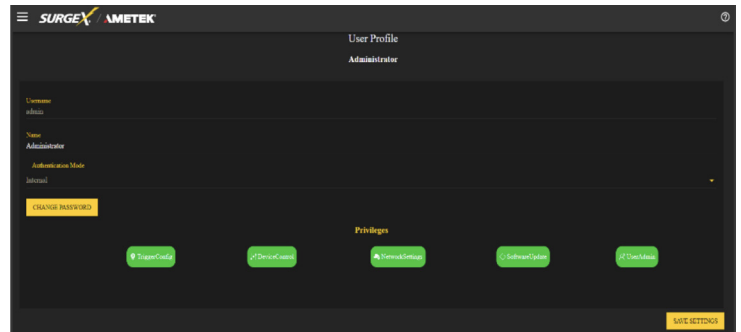
4.8 System Info

The System Info screen provides hardware and software information about the device and the number of users connected to the device.



4.9 User Profile

The User Profile screen provides the current user’s information and allows them to change their password. On this page, users can also edit their username, password, and view their privileges and authentication mode. This screen helps users to manage their own profiles and maintain their account security.



5. Security

DisplayPak+ has been designed with security as a priority. All ports and features may be changed or disabled.

5.1 Authentication

DisplayPak+ supports basic and secure authentication for users and network connections.

5.1.1 802.1X

802.1X network authentication may be enabled for networks requiring supplicant authentication.

5.1.2 SSO (Single Sign-On)

DisplayPak+ users may be configured to use either Internal or SSO (Single Sign-On) authentication. Internal authentication uses basic usernames and passwords assigned by the administrator on a per-unit basis. SSO authentication uses LDAP (Lightweight Directory Access Protocol) to authorize users, and determine their level of privileges, using Microsoft® Active Directory. While it is possible to use LDAP to authorize users without SSL encryption, we suggest only configuring the connection to the authentication server using SSL encryption to plain text network traffic.

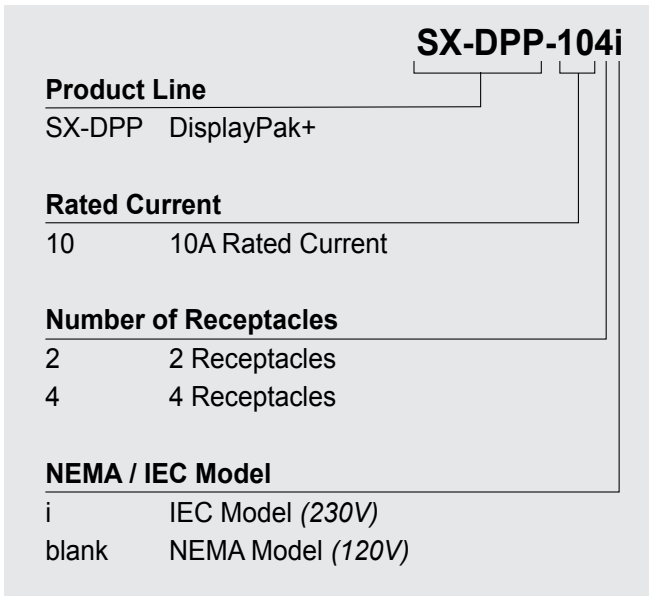
5.2 Interfaces

5.2.1 Network Interface

- **Web Server:** It is possible to enable and disable the internal web server, change the security from none (HTTP) to TLS 1.3 (HTTPS), as well as change its port. These settings also apply to the REST API.
- **SNMP:** DisplayPak+ supports SNMP V3 for secure communications, with the ability to enable and disable.

6. Part Numbers

6.1 Part Number Scheme



7. Troubleshooting

1. Checking for power input issues:
 - Verify if the power source is functioning correctly and ensure that all connections are secure.
 - Verify the fuse.
 - Verify the incoming line cord to the device is accidentally disconnected or if the mains plug is pulled out from the wall receptacle.
2. Diagnosing overloading issues - Check if the device is being overloaded by too many connected devices or if there is a problem with the power distribution unit. Please refer to the Overload current specification table.

MODEL NUMBER	FUSE RATING
SX-DPP-102i SX-DPP-104i	12.5A
SX-DPP-102 SX-DPP-104	15A

3. Inspecting for physical damage - Check for any signs of physical damage, such as bent pins, frayed cords, or broken components.
4. Testing voltage levels - Verify that the voltage levels are within the appropriate range for the specific device and check for any voltage fluctuations or spikes. Improper mains voltage to the device may result in fire.
5. Checking for firmware or software issues - Ensure that the firmware or software of the device is up-to-date and functioning correctly.
6. Investigating environmental factors - Check for any environmental factors that may be affecting the device, such as extreme temperature or humidity.
7. Replacing a component or subsystem in the device without a trained technician may lead to device malfunctionn.
8. Contacting customer support - If the above troubleshooting methods do not resolve the issue, the user may be advised to contact customer support for further assistance.

8. Specifications

PARAMETER		SX-DPP-102	SX-DPP-104	SX-DPP-102i	SX-DPP-104i	
AC Load Rating		10A @ 120V	10A @ 120V	10A @ 230V	10A @ 230V	
No of Outlets - back		2	4	2	4	
No of Outlets - front		-	-	-	-	
Measurement Accuracy	Voltage	± 5%				
	Current	± 5%				
	Power	± 10%				
	Energy	± 10%				
Timestamp Accuracy		± 1%				
Network	Ports	10/100 Ethernet connection on Female RJ-45, Auto Negotiating with 10/100 network connections with Link and Activity LEDs				
		USB RNDIS Device on micro-AB				
	Wireless	Wi-Fi 2.4 GHz				
Weight		1.15 Lbs/0.52Kg	1.2 Lbs/0.54Kg	1.15 Lbs/0.52Kg	1.2 Lbs/0.54Kg	
Dimensions (Enclosure)	Height:	1.73"/44 mm	1.73"/44 mm	1.73"/44 mm	1.73"/44 mm	
	Width:	7.09"/180.2 mm	7.09"/180.2 mm	7.09"/180.2 mm	7.09"/180.2 mm	
	Depth:	4.23"/107.5 mm	4.23"/107.5 mm	4.23"/107.5 mm	4.23"/107.5 mm	
Temperature Range: 100% Load		0 to 45 °C (32 - 113 °F)				
Humidity Range		5% to 95% R.H. Non-condensing				
Altitude		0 - 10000ft (0 - 3048meters)				
Agency Listings	Safety	Certified to UL 62368-1		Certified to UL 62368-1		
		CAN/CSA C22.2 No 62368-1:19, 3rd Ed		CE Mark		
		RoHS: Compliant		WEEE		
		Prop 65		RoHS: Compliant		
	EMC	FCC 47 CFR PART 15 SUBPART B ICES-003 ISSUE 7		REACH: Compliant		
				EN 55032:2015 + A1:2020 Class B		
				EN 55035:2017 + A11:2020		
				ETS EN 301 489-1 V2.2.3: 2019		
				ETS EN 301 489-17 V3.2.6: 2023		
				EN IEC 61000-3-2:2019+A1:2021		
EN 61000-3-3:2013+A2:2021						
Surge Protection		Multi-Stage				
IP protection class		IPX0				
AC Power System Type		TN				
Pollution Rating		Pollution degree (PD) PD 2				