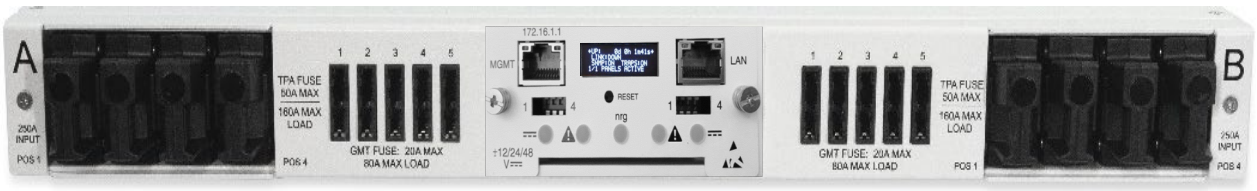
nrgSMART™ Controller

Configuration/User Guide



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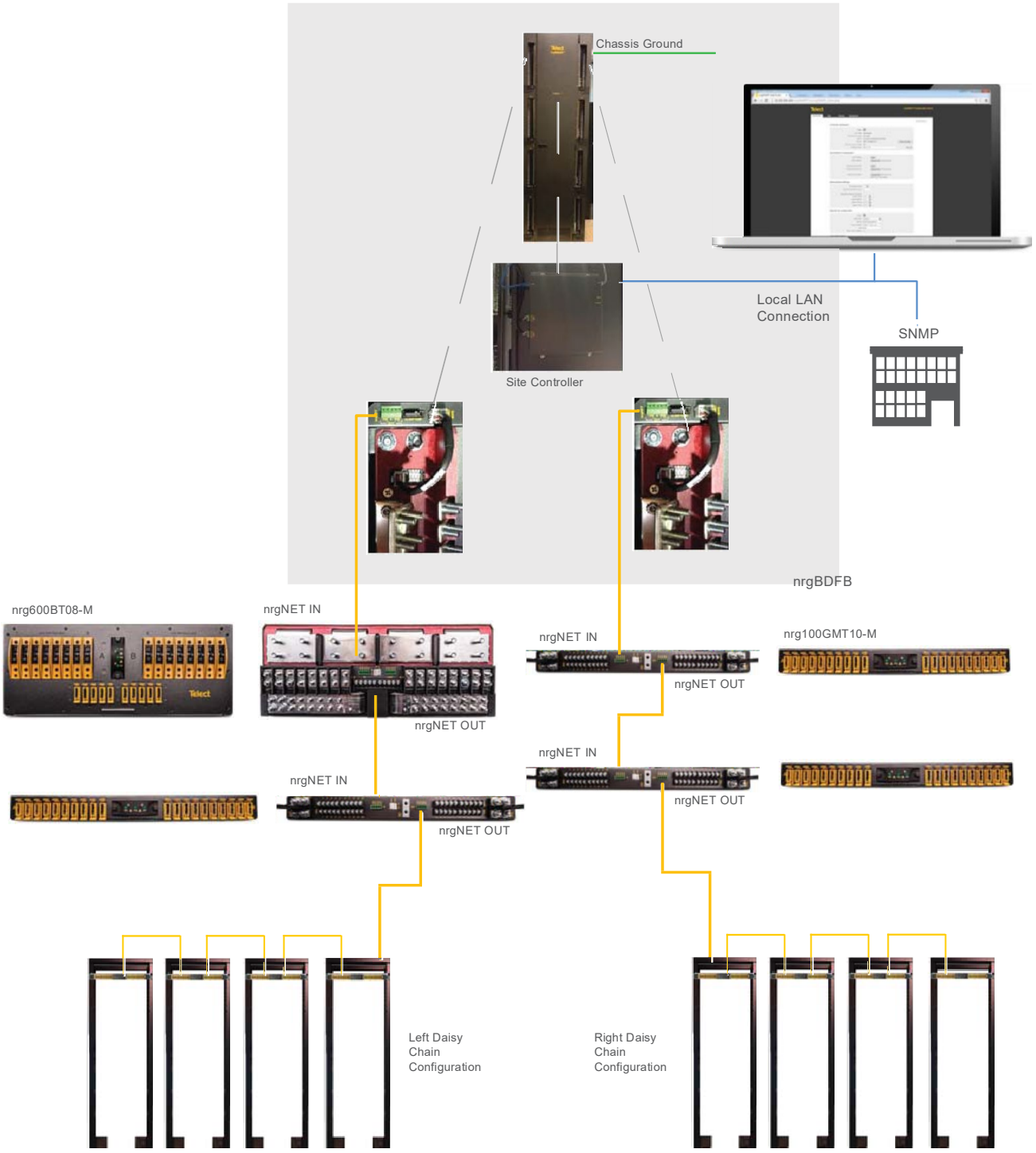

Figure 1 - nrgBDFB Connections

The nrgBDFB has a built-in controller that has a LAN connection port and nrgNET outputs that connect to 22 external nrgSMART panels and up to eight internal nrgBDP panels.

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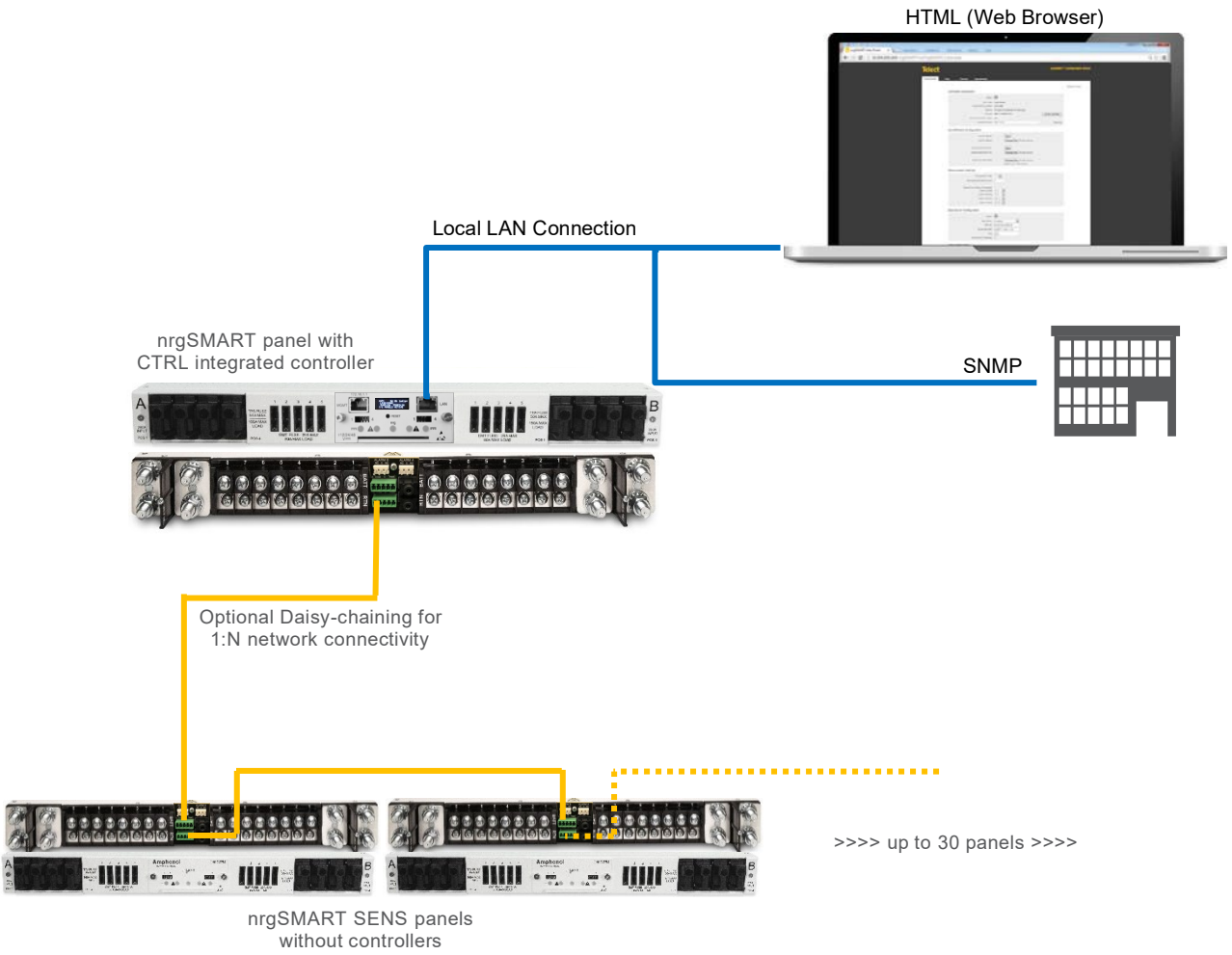

Figure 2a – nrgSMART™ CTRL Integrated Controller Connections

1:1 Connectivity, or **1:N Connectivity**

nrgSMART™ panels with CTRL integrated controllers connect to the local LAN connection port for 1:1 connectivity. When connecting to multiple panels in a 1:N setup, the rear-panel nrgNET connections are used to connect up to 30 external nrgSMART SENS panels.

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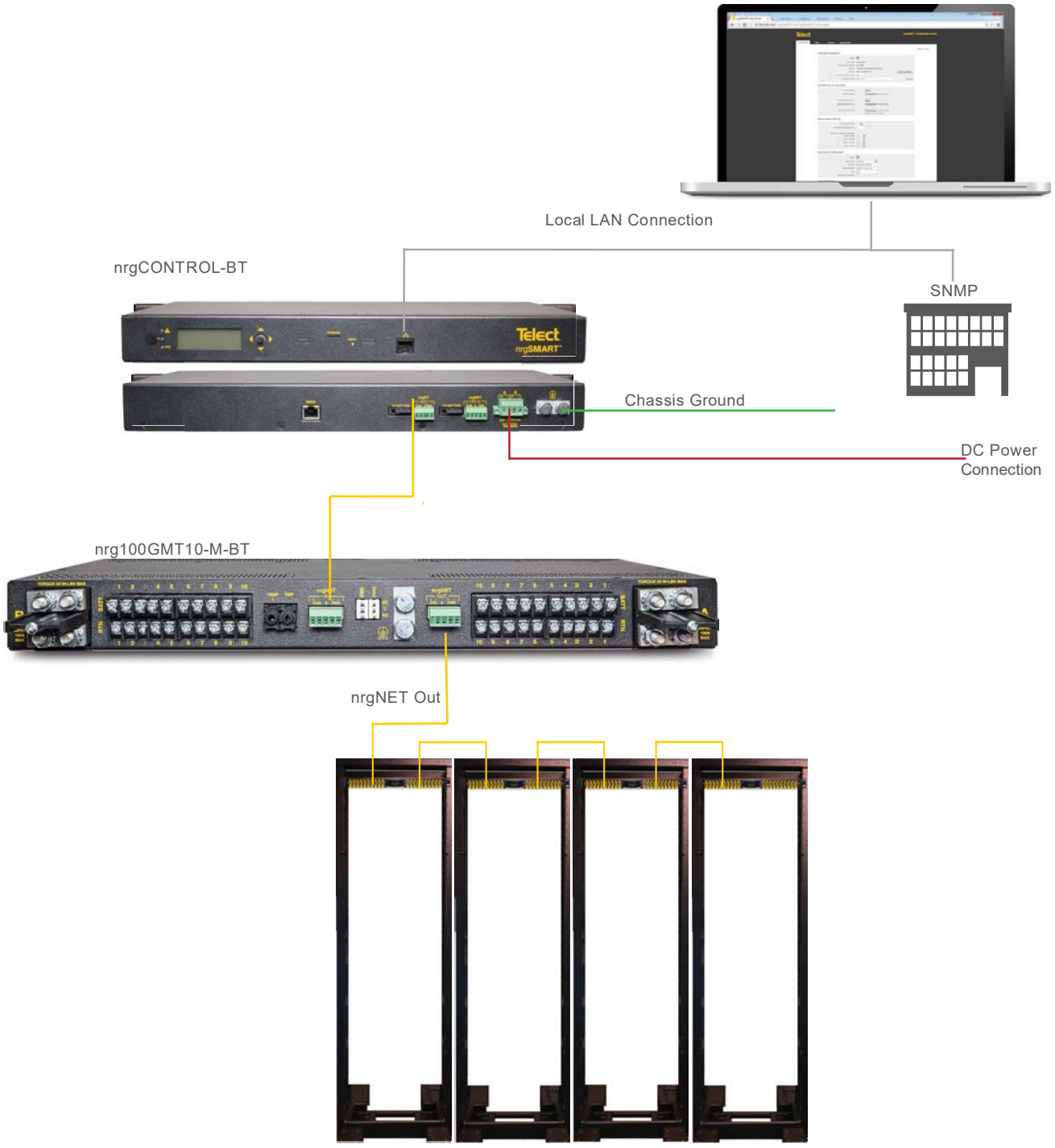

Figure 2b – nrgSMART™ nrgCONTROL-BT Controller Connections

The nrgCONTROL-BT connects to the local LAN connection port and nrgNET outputs connect up to 30 external nrgSMART panels. An nrgCONTROL-BT is required for legacy nrgSMART panels without CTRL integrated controllers or SENS capabilities.

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1. Introduction

Controller configuration software sets the structure of nrgSMART's system operation. It configures various parameters that define site labels, panel labels and circuit specific labels, thresholds and behaviors which instruct the controller to implement measures that facilitate equipment operation, monitoring and control.

1.1 Connect Controller

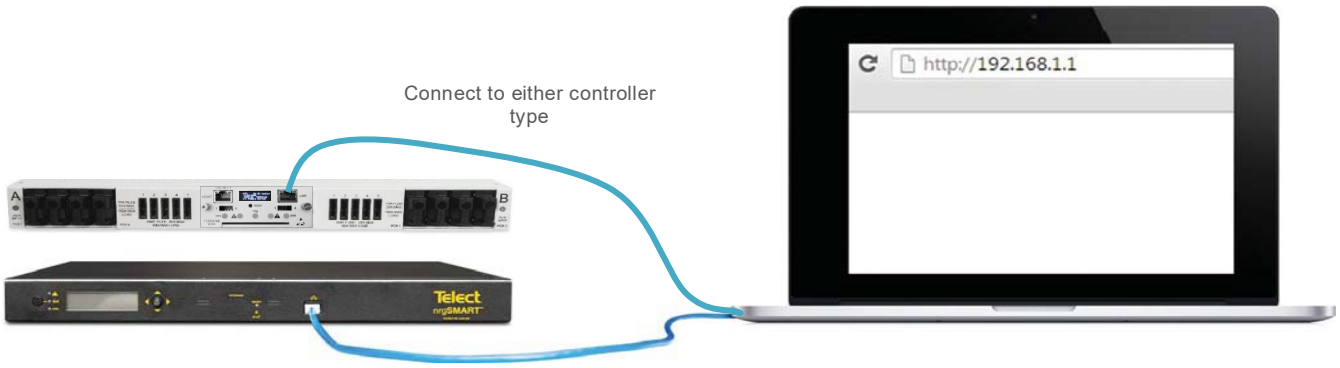

Figure 3 - nrgSMART Controller to PC Connection

To hook up the controller to a laptop or desktop computer:

1. Apply power to the computer and controller.
2. Attach Ethernet cable into the port on the PC.
3. Attach the other end of the Ethernet cable into the LAN port on the front of the controller. (See Figure 3)
4. In release 4.1.0 the controller is set to DHCP by default.
5. Connect to the network and the IP address will display on the LCD screen.
6. If no DHCP server is available, the LCD will display the local link address of 169.254.XXX.XXX
7. Your laptop will need to be on the same subnet as the IP address displayed on the LCD screen. Contact your administrator or IT dept. for assistance.
8. Open your internet browser.
   - Browsers supported include:
     * Chrome (recommended)
     * Firefox
9. In the URL field enter the IP address displayed on the LCD **http://192.168.1.1** and press return.

The controller is now connected and the nrgSMART Configuration web page will open. (See Figure 4)

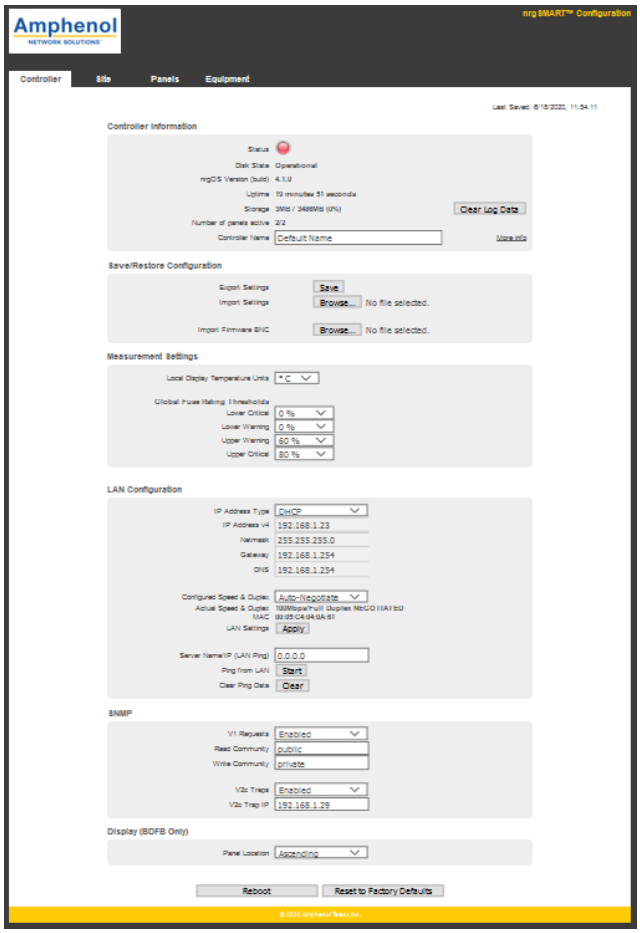

Figure 4 – Controller Configuration

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1.2 Configuration Wizard Display

When connected to the nrgSMART Configurator, four tabs—Controller, Site, Panels and Equipment are displayed at the top of the page. Each tab contains configuration screens where associated field values can be defined or viewed.

Figure 5 - Controller Tab

Controller Tab: View or modify controller information in the *Controller Tab page* and in the following screens: *Controller Information, Save/ Restore Configuration, Measurement Settings, LAN Configuration, SNMP and BDFB Display*.

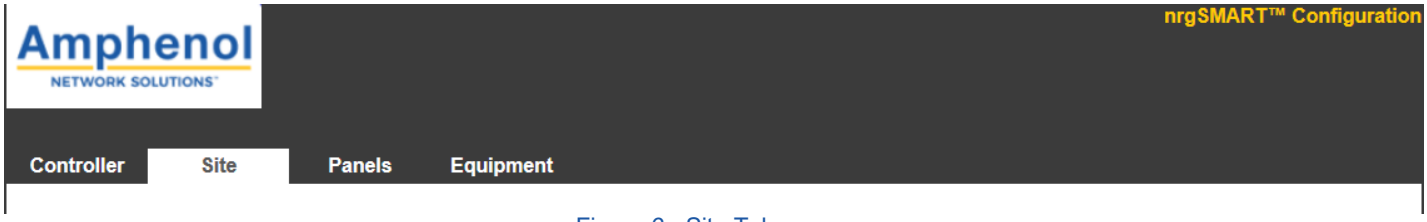

Figure 6 - Site Tab

Site Tab: View or modify site specific information in the *Site Tab Window* and in the *Site Information Screen*.

Figure 7 - Panels Tab

Panels Tab: View or modify panel information in the *Panels Tab*: *Panels, Panel Information, Circuit Configuration and Advanced (Panel Settings, Feed Alarms, Voltage Sensors, Temperature Sensors* and *Current Sensors)*.

Figure 8 - Equipment Tab

Equipment Tab: View or modify equipment information in the *Equipment Tab*: *Equipment, Equipment Models, Equipment Information, Equipment Power Source* and *Equipment Power Summary*.

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1.3 About this Guide

This guide provides guidelines to assist in the configuration of the nrgSMART Controller. While care has been taken to define all associated components of this product, every aspect of controller configuration may not be covered.

Throughout this guide, Notes, Alerts, Cautions, Warnings and Danger notifications may be used to convey important information the user should pay special attention to.

2. Controller Tab

The *Controller Tab* allows the user to view information and define how the controller communicates with the site, the panels and the equipment. From this tab, measurement setting thresholds are set, local networks defined and monitoring options designated.

2.1 Term Interpretation

Simple Network Management Protocol (SNMP)

SNMP is a way to monitor network devices that are on an IP network. Information is requested by the SNMP Manager about the device and connected equipment and status. With baseline measurements and continuous updates, equipment performance can be tracked and controlled. Additionally, SNMP traps sends alerts instantly whenever an event occurs.

The SNMP Manager uses Simple Network Management Protocol (SNMP) that interacts with a network device and its connected equipment. Through the Local Area Network (LAN), the SNMP Manager routinely requests information, such as power provisioning, remote site management and circuit threshold data from network devices. This information is recorded and stored via the SNMP manager and can be viewed in a user-friendly table or graph. The data collected can be displayed as equipment type and location, performance and power usage, and monitors threshold levels which allows proactive maintenance with equipment, mitigating downtime so that maintenance can be scheduled on a routine basis.

SNMP Traps send instant alerts from the network device when an event occurs. The network device sends these messages without receiving a request from the SNMP Manager. As soon as an event occurs an alarm is triggered indicating where the event occurred. Immediate access to equipment alarms can prevent unnecessary downtime. During an event, the SNMP manage promptly notifies the local technician who can then make repairs or prevent equipment damage

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2.2 Controller Tab Settings

The *Controller Tab* is comprised of the main window (*Controller Tab Window*) and screens that allow custom settings or display read only values which are pre-defined. The *Controller Tab Window* contains Reboot and Reset Settings buttons. Within the window are screens that allow other controller related settings to be defined or viewed.

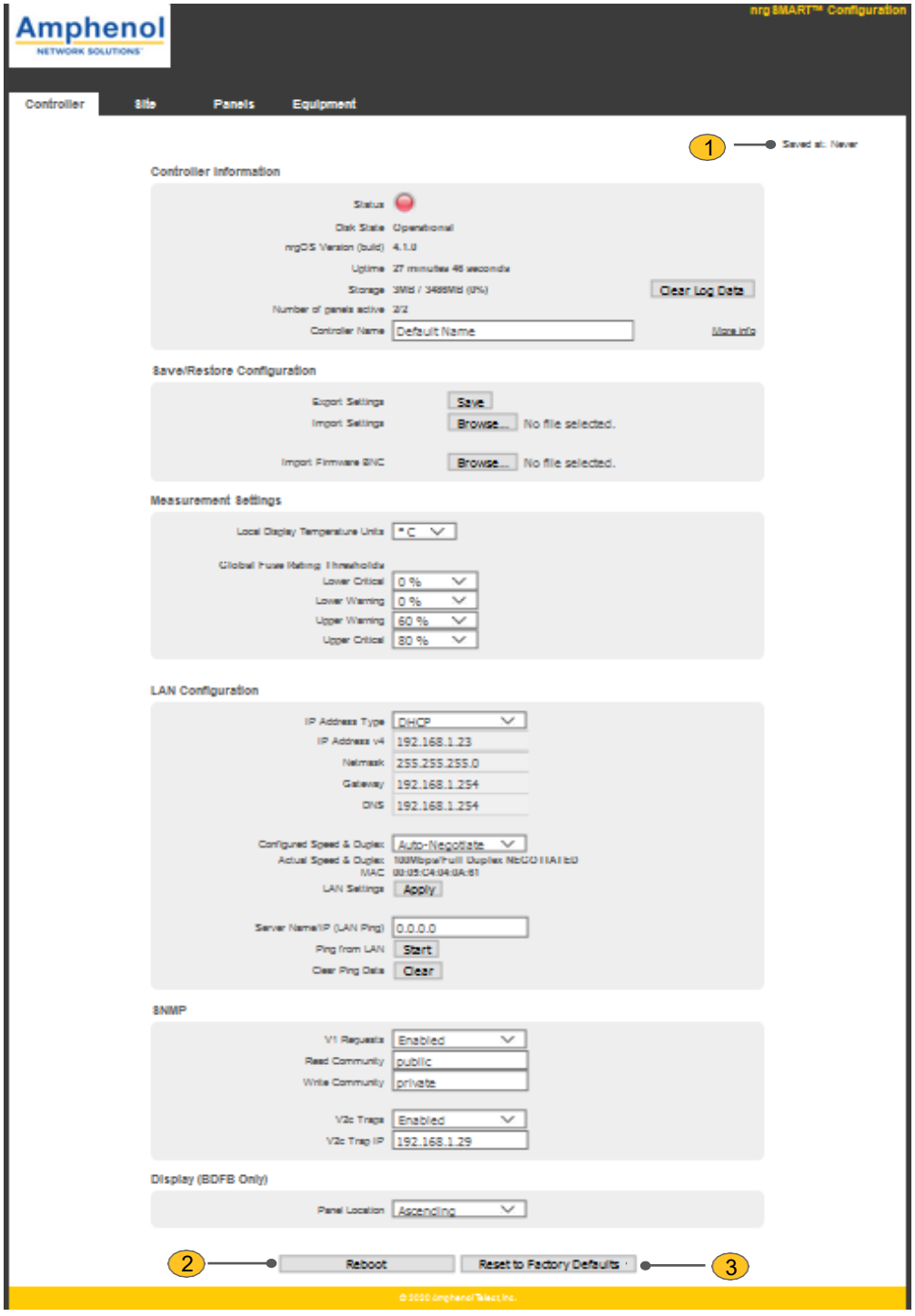

Figure 9 - Controller Tab Window

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Controller Tab Window

Ref.	Field	Type	Value	Description
1	Saved At	Read Only	Text	The date and time that information in the *Controller Tab* was last saved. *NOTE: When a field is updated within a window in the Controller Tab, clicking outside of the field saves the information and updates the Saved At time.* Field settings are: **Never**: Data not saved **Date/Time**: mm/dd/yyyy HH:MM:SS (AM/PM)
2	Reboot	Select	Button	Reboots the controller and retains settings. Select the **Reboot** button to reboot the controller.
3	Reset to Factory Defaults	Select	Button	Resets the controller. Select **Reset to Factory Defaults** button to reset the controller. *NOTE: Reset settings sets the controller back to factory default including the IP address.*

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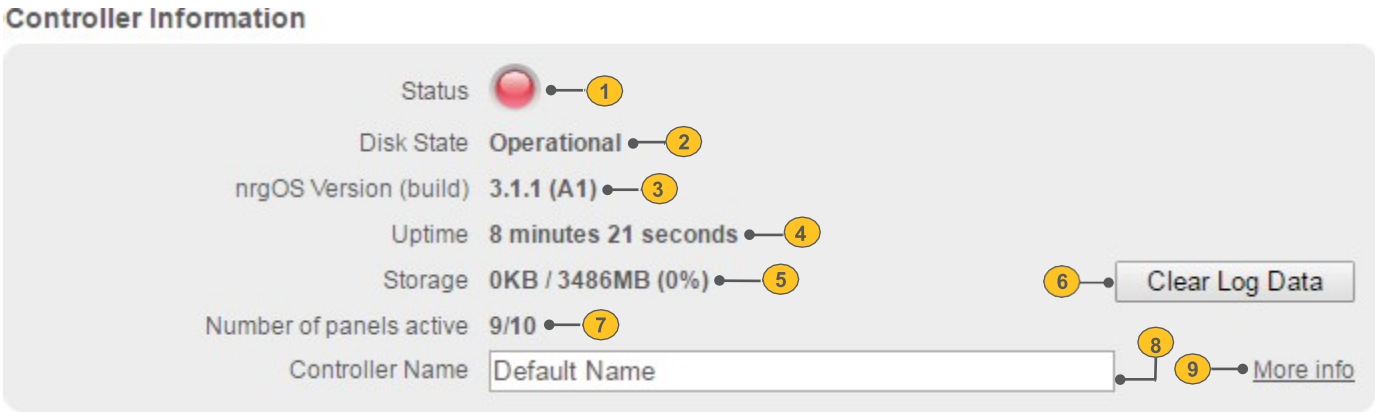

Figure 10 - Controller Information Screen

Controller Tab :: Controller Information Screen

Ref.	Field	Type	Value	Description
1	Status	Read Only	Light	color varies to show the state of the attached panels. **Green**: No alarms present. **Red**: One or more alarms present on attached panels, or a panel is missing.
2	Disk State	Read Only	Text	Micro SD card performance. **Operational**: Micro SD card operating normally. **Bad Disk**: Micro SD not functioning or is not installed.
3	nrgOS Version (Build)	Read Only	Text	nrgSMART Operating System version.
4	Uptime	Read Only	Text	How long the controller has been operating without interruption or reboot. Displays as: **Days / Hours / Minutes / Seconds**
5	Storage	Read Only	Text	Amount of storage space. Displays as: **Storage space in use / Storage space remaining (Percentage of space left)**
6	Clear Log Data	Select	Button	Clears logged data. Select the **Clear Log Data** button to remove all data from the log.
7	Number of Panels Active	Read Only	Text	The number of panels in use and how many panels are available. Displays as: **Number of panels active / Number of panels configured**
8	Controller Name	Input	Text	Name used to identify/distinguish this controller from another controller within the network. This should be unique Enter the Controller Name. This field accepts up to 40 characters. Valid characters are upper/lowercase letters, numbers and spaces.
9	More Info/Less Info	Select	Toggle	View more or fewer screen fields. Toggle **More info** to expand the screen and display additional fields or **Less info** to hide a portion of the screen.

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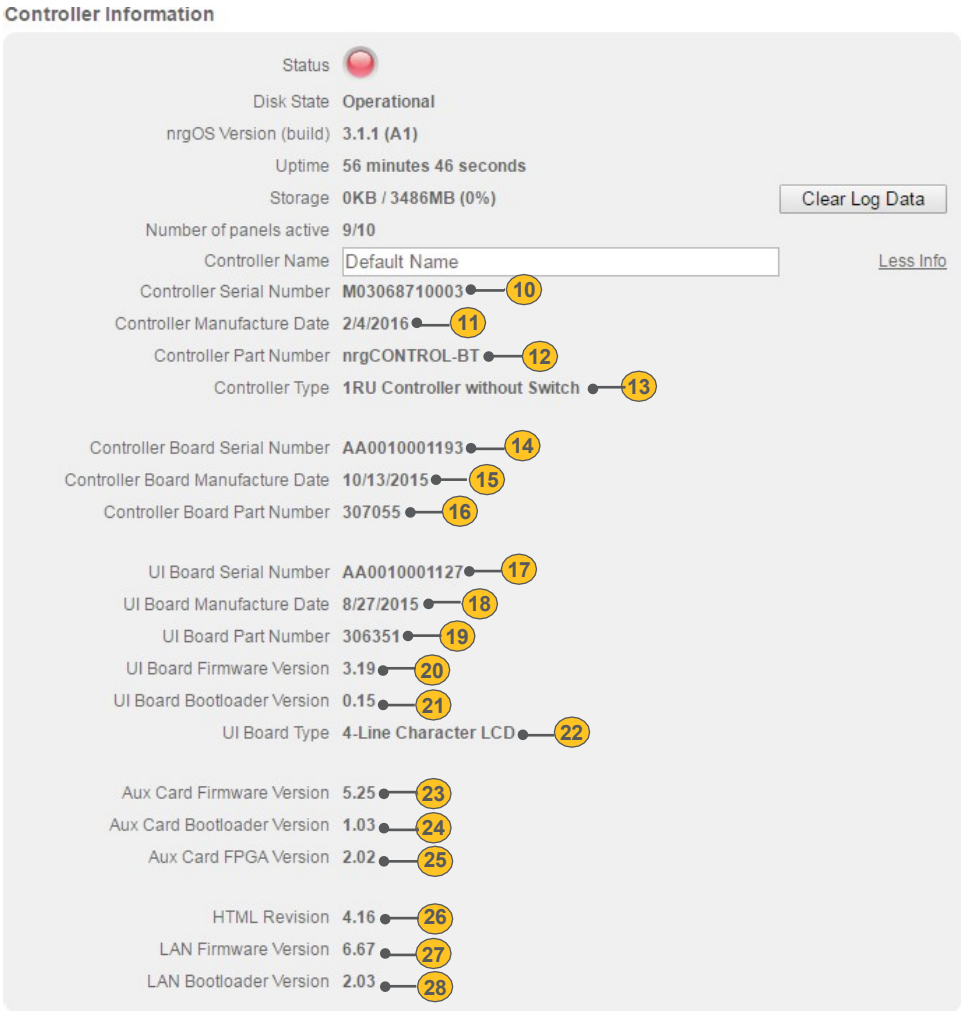

Figure 11 - Controller Information - More info/Less info Screen

Controller Tab :: Controller Information Screen

Ref.	Field	Type	Value	Description
10	Controller Serial Number	Read Only	Text	A 12-digit serial number mounted on the controller consisting of uppercase letters and numbers.
11	Controller Manufacturer Date	Read Only	Text	The date the controller was manufactured. Displays as: **mm/dd/yyyy**
12	Controller Part Number	Read Only	Text	A string of characters that identify the controller as a part consisting of 18 upper/lowercase letters, numbers and symbols. Part numbers that are longer than 18 characters will be truncated.
13	Controller Type	Read Only	Text	Describes the type of controller.
14	Controller Board Serial Number	Read Only	Text	A 12-digit serial number mounted on the Controller Board consisting of uppercase letters and numbers.
15	Controller Board Manufacturer Date	Read Only	Text	The date the Controller Board was manufactured. Displays as: **mm/dd/yyyy**
16	Controller Board Part Number	Read Only	Text	A string of characters that identify the Controller Board as a part consisting of numbers.

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Controller Tab :: Controller Information Screen

Ref.	Field	Type	Value	Description
17	UI Board Serial Number	Read Only	Text	A 12-digit serial number mounted on the User Interface Board consisting of uppercase letters and numbers.
18	UI Board Manufacturer Date	Read Only	Text	The date the controller was manufactured. Displays as: **mm/dd/yyyy**
19	UI Board Part Number	Read Only	Text	A six-digit number that identifies the User Interface Board as a part.
20	UI Board Firmware Version	Read Only	Text	The firmware version for the User Interface Board on the controller.
21	UI Board Bootloader Version	Read Only	Text	The bootloader version for the User Interface Board on the controller.
22	UI Board Type	Read Only	Text	Indicates the type of User Interface on the controller consisting of upper/ lowercase letters, numbers, symbols and spaces.
23	Aux. Card Firmware Version	Read Only	Text	The firmware version for the Aux. card in use by the controller.
24	Aux. Card Bootloader Version	Read Only	Text	The bootloader version for the Aux. card in use by the controller.
25	Aux. Card FPGA Version	Read Only	Text	The FPGA version for the Aux. card in use by the controller.
26	HTML Revision	Read Only	Text	The HTML revision in use.
27	LAN Firmware Version	Read Only	Text	The firmware version for the Local Area Network in use by the controller.
28	LAN Bootloader Version	Read Only	Text	The bootloader version of the Local Area Network in use by the controller.

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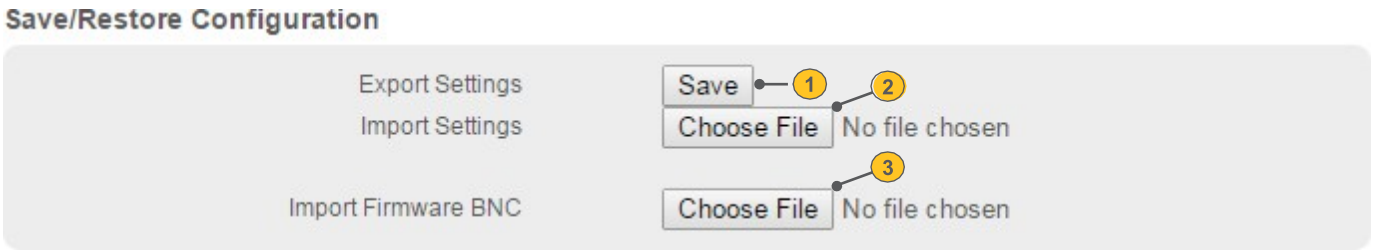

Figure 12 - Save/Restore Configuration Screen

Controller Tab :: Save/Restore Configuration Screen

Ref.	Field	Type	Value	Description
1	Export Settings	Select	Button	Exports configuration settings as a backup to your local PC. Select the **Save** button to save controller and panel configuration settings.
2	Import Settings	Select	Button	Imports configuration settings for the controller and panel. Select the **Choose File** button to browse for a file. Locate and select the desired ".ncs" file. Select **Open** to import configuration settings. *NOTE: The selected file name will appear next to the Choose File button. Requires reboot.*
3	Import Firmware BNC	Select	Button	Imports firmware BNC. Select the **Choose File** button to browse for a file. Locate and select the desired ".bnc" file. Select **Open** to import the file. *NOTE: Once a file has been added it will appear below the Choose File button. Requires reboot.*

Amphenol Network Solutions recommends backing up your settings once the controller is configured. This will make sure your settings are saved during future firmware updates or changes

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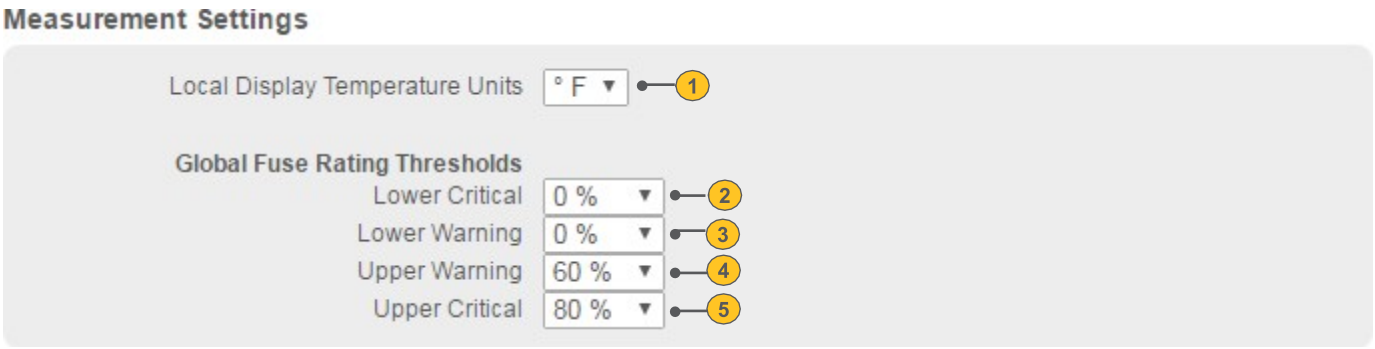

Figure 13 - Measurement Settings Screen

Controller Tab :: Measurement Settings Screen

Ref.	Field	Type	Value	Description
1	Temperature Units	Select	Drop down menu	Sets how temperature readings will display. From the Temperature Units drop down menu, select from: **°F**: Fahrenheit **°C**: Centigrade
Global Fuse Rating Thresholds				A percentage of a circuit's breaker range or fuse range as the threshold value for alarms. The following fields allow threshold values to be set to indicate lower or higher than normally expected current or voltage ratings. Global settings affect all panels attached to the controller.
2	Lower Critical	Select	Drop down menu	Lower Critical is a user defined threshold that is a percentage of the Global Fuse Rating and indicates a lower than expected measurement, defined as a critical alarm. Default is: **0%** From the Lower Critical drop down menu, select from: **0% to 100% in 5% increments**.
3	Lower Warning	Select	Drop down menu	Lower Warning is a user defined threshold that is a percentage of the Global Fuse Rating and indicates a lower than expected measurement, defined as a warning alarm. Default is: **0%** From the Lower Warning drop down menu, select from: **0% to 100% in 5% increments**.
4	Upper Warning	Select	Drop down menu	Upper Warning is user defined threshold that is a percentage of the Global Fuse Rating and indicates a higher than expected measurement, defined as a warning alarm. Default is: **60%** From the Upper Warning drop down menu, select from: **0% to 100% in 5% increments**.

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5	Upper Critical	Select	Drop down menu	Upper Critical is a user defined threshold that is a percentage of the Global Fuse Rating and indicates a higher than expected measurement, defined as a critical alarm. Default is: **80%** From the Upper Critical drop down menu, select from: **0% to 100% in 5% increments**.

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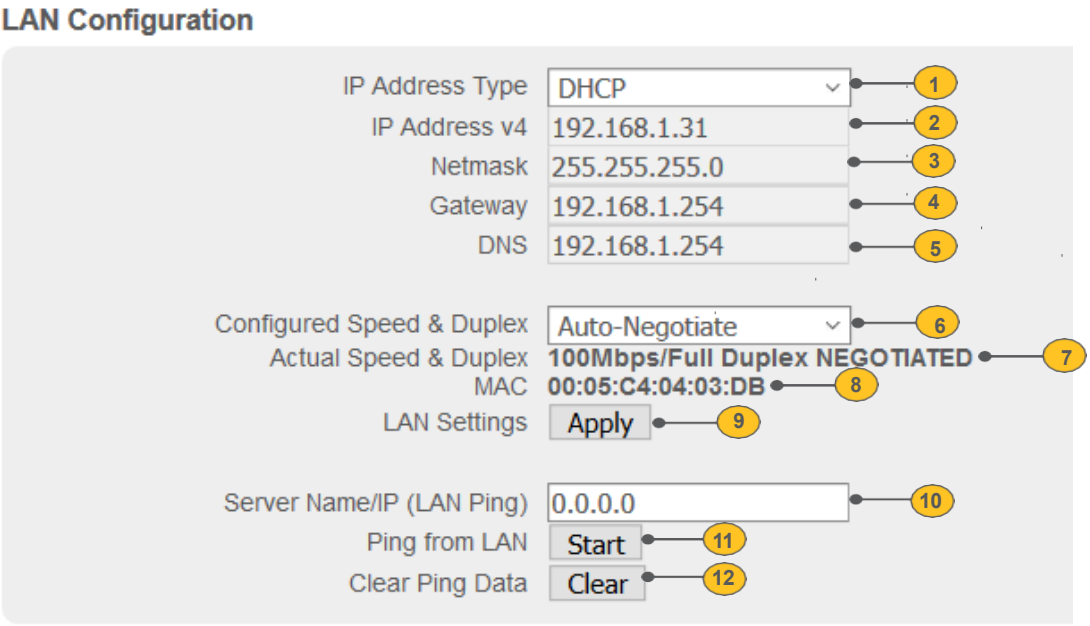

Figure 14 - LAN Configuration Screen

Controller Tab :: LAN Configuration Screen

Ref.	Field	Type	Value	Description
1	IP Address Type	Select	Drop Down Menu	Select DHCP or Static DHCP: Is a DHCP client that will receive and IP address from your DHCP server. Static: Manually set the IP address of the controller in the IP address v4 field
2	IP Address v4	Input	Text	Local Area Network IP address identified by a series of numbers separated by periods. Enter the LAN IP address. This field accepts four groups of numbers separated by periods with up to three numbers in each group (a total of 15 characters, including periods). Each group can be in the range of: **0 - 255**. *NOTE: Default IP address is shown above of 192.168.1.1*
3	Netmask	Input	Text	Local Area Network Netmask that defines the range of IP addresses to use. Enter the LAN Netmask address. This field accepts four groups of numbers separated by periods with up to three numbers in each group (a total of 15 characters, including periods). Each group can be in the range of: **0 - 255**.
4	Gateway	Input	Text	Local Area Network Gateway address that is used to bridge networks. Enter the LAN Gateway address. This field accepts four groups of numbers separated by periods with up to three numbers in each group (a total of 15 characters, including periods). Each group can be in the range of: **0 - 255**.

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Ref.	Field	Type	Value	Description
5	DNS	Input	Text	Local Area Network Domain Name Server address. Enter the LAN DNS address. This field accepts four groups of numbers separated by periods with up to three numbers in each group (a total of 15 characters, including periods). Each group can be in the range of: **0 - 255**.
6	Configured Speed and Duplex	Select	Drop down menu	Set the Speed and Duplex of the LAN Ethernet port. There are five options: **Auto-negotiate** **100 Mbps Full Duplex** **100 Mbps Half Duplex** **10 Mbps Full Duplex** **10 Mbps Half Duplex**
7	Actual Speed and Duplex	Read Only	Text	Displays the actual Speed and Duplex the Ethernet port is connected at.
8	MAC	Read Only	Text	Displays the local Area Network MAC address is a 12 digit hexadecimal number.
9	LAN Settings “Apply”	Select	Button	After changing LAN settings, you must select the “apply” button for changes to take effect. The controller will reboot.
10	Server Name/IP (LAN Ping)	Input	Text	You can ping a remote computer or server to verify connectivity. Insert IP address of that device.
11	Ping from LAN	Select	Button	Start the pinging sequence to the remote device.
12	Clear Ping Data	Select	Button	Clears the ping response data

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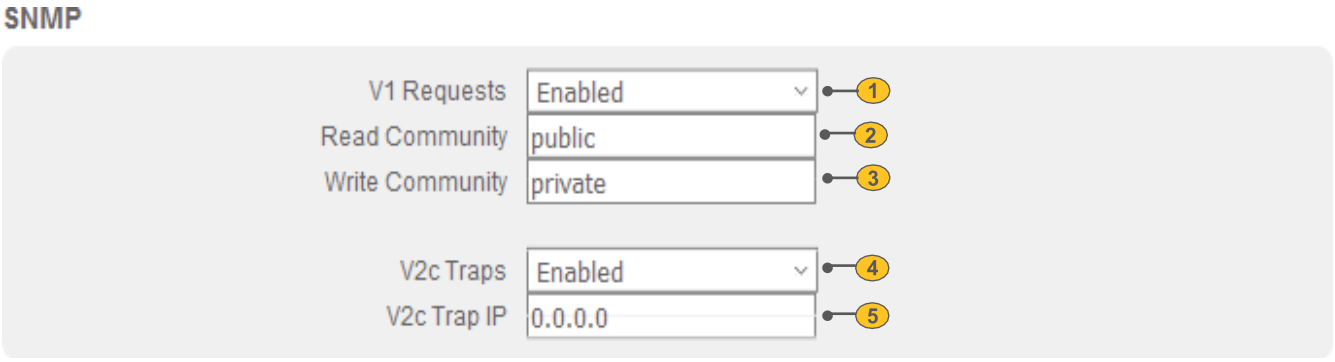

Figure 15 - SNMP Screen

Controller Tab :: SNMP Screen

Ref.	Field	Type	Value	Description
1	V1 Requests	Select	Drop down Menu	Allows use of SNMP Version 1 protocol. SNMP must be enabled for this field to allow input. From the Version 1 drop down menu, select **Enabled** to allow Version 1 protocol or select **Disabled** to prevent it. *Note: Version 1 has no security. When Version 1 is enabled, associated fields can be defined.*
2	Read Community	Input	Text	Defines the community body to have Version 1 Read rights. SNMP and Version 1 must be enabled for this field to allow input. Enter the community string to have SNMP V1 Read rights. Default value for this field is “public” although individual names can be added. This field accepts up to 19 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
3	Write Community	Input	Text	Defines the community body to have Version 1 Write rights. SNMP and Version 1 must be enabled for this field to allow input. Enter the community string to have SNMP V1 Write rights. Default value for this field is “private” although individual names can be added as. This field accepts up to 19 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
4	V2c Traps	Select	Drop down menu	SNMP Traps allows the network device to send an alert without receiving a request from the SNMP Manager. Alerts are sent at the time an event (i.e. fuse alarm, threshold alarm error, etc.) occurs and are not stored in the MIB. SNMP must be enabled for this field to allow input. From the SNMP Traps drop down menu, select **Enabled** to allow SNMP Traps or select **Disabled** to prevent them. When set to Enabled, the SNMP Traps IP fields can be defined.
5	V2c Trap IP	Input	Text	The Network Management System’s IP address that will receive the SNMP Traps message. SNMP and SNMP Traps must be enabled for this field to allow input. Enter the IP address that will receive the SNMP Traps message. This field accepts four groups of numbers separated by periods with up to three numbers in each group (a total of 15 characters, including periods).

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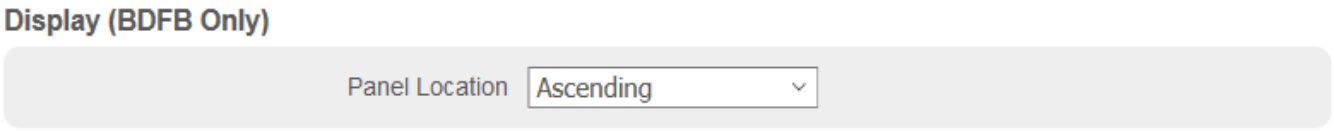

Controller Tab :: Display (BDFB Only)

Ref.	Field	Type	Value	Description
1	Panel Location	Select	Drop down Menu	Ascending = Numbering Top Down for panels and breaker positions Descending = Numbering Bottom up for panels and breaker positions

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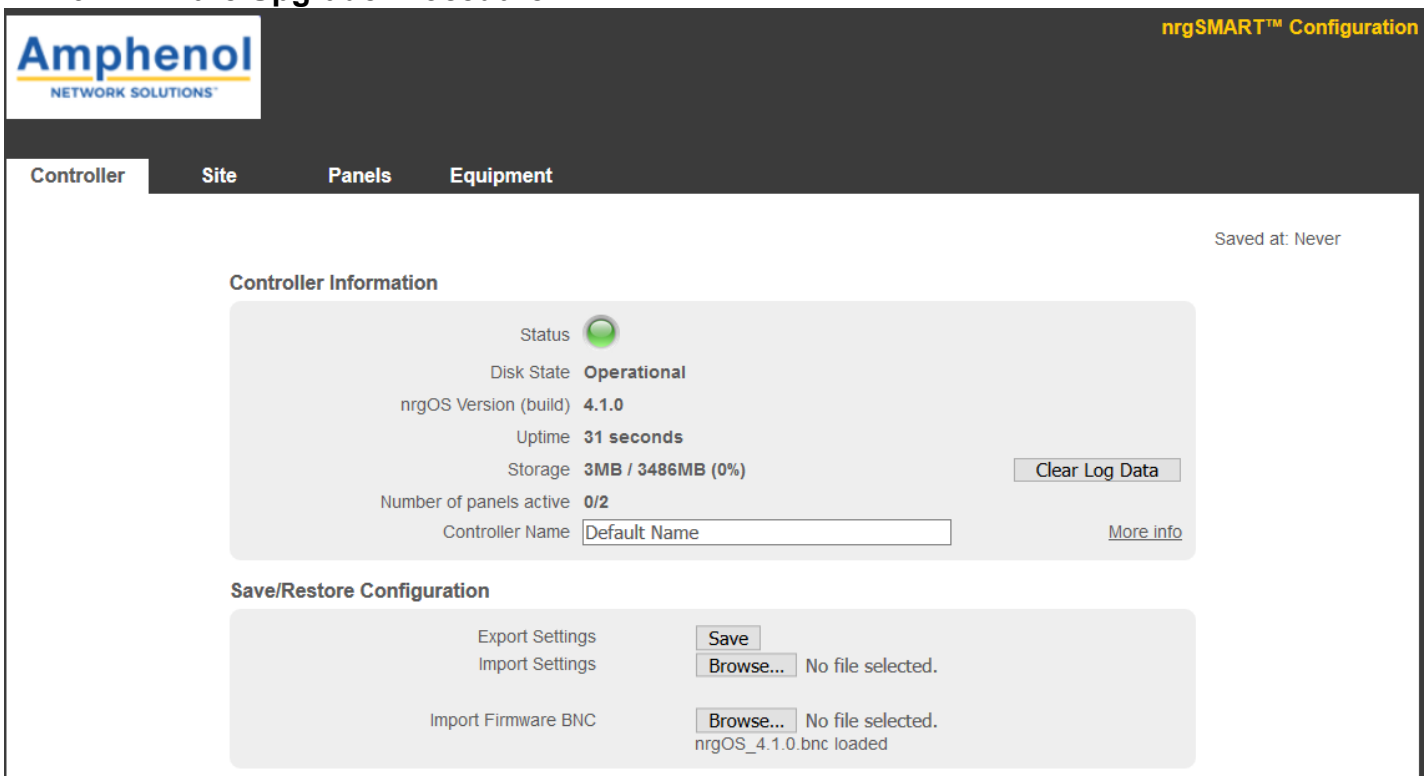
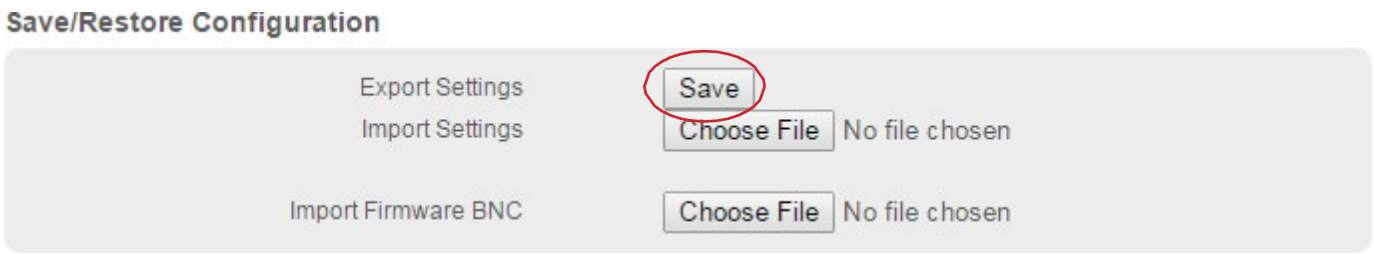
2.3 Firmware Upgrade Procedure

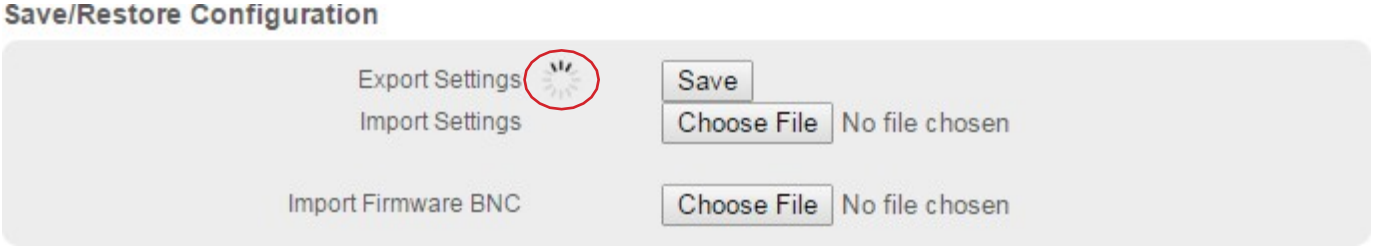


Step 1: Export settings to save by clicking “Save”



Step 2: Wait until browser begins download of settings file and equipment list select save for both files.

NOTE: This could take a few minutes if the controller has a lot of panels or settings.



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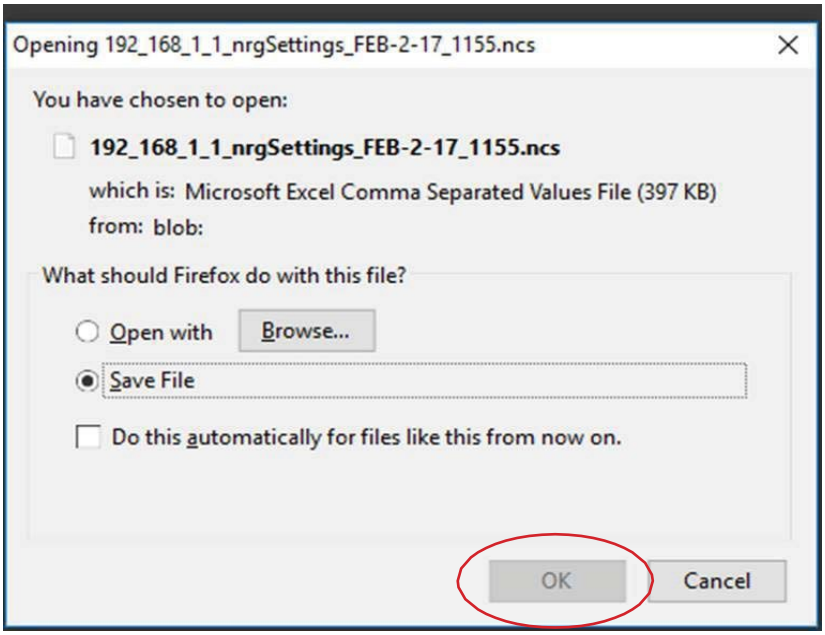
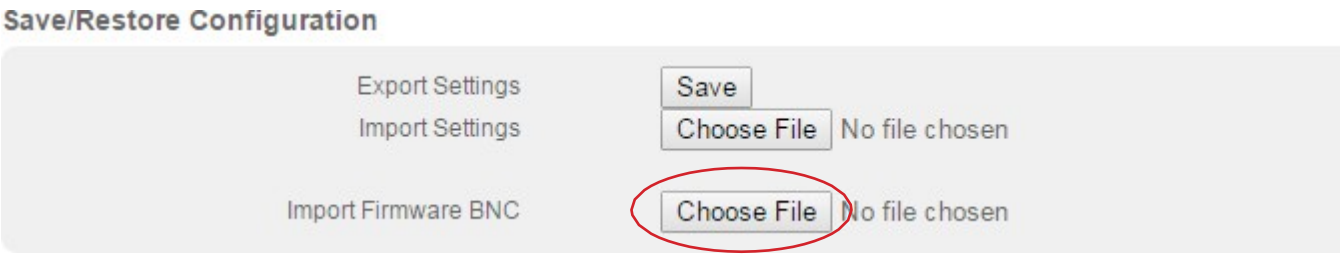
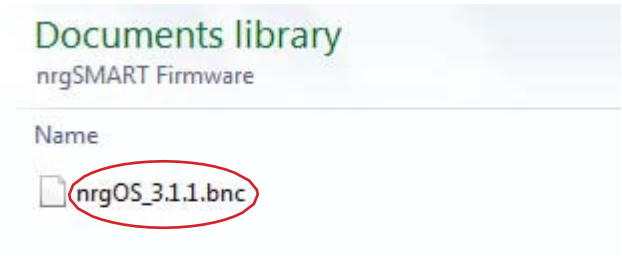
Step 3: Save the settings in a folder where it won't be lost. It saves to the downloads folder by default. Verify file has been saved into specified folder when complete. You will be prompted 2 times one for config file ".NSC" and one for equipment file ".CSV".



Step 4: After settings are saved, click Choose File next to Import Firmware BNC.



Step 5: Navigate to where the BNC file is located and select.



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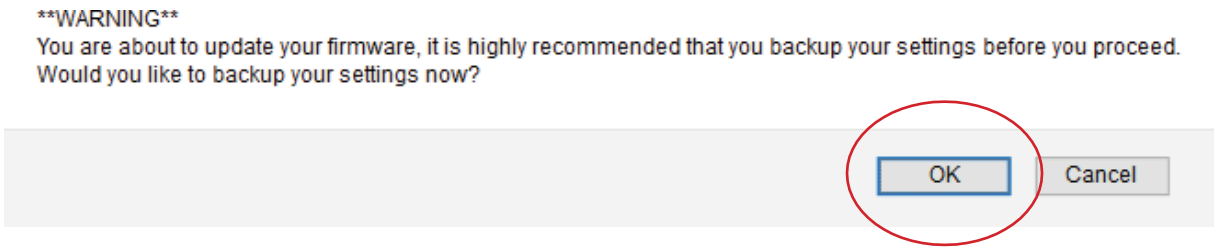
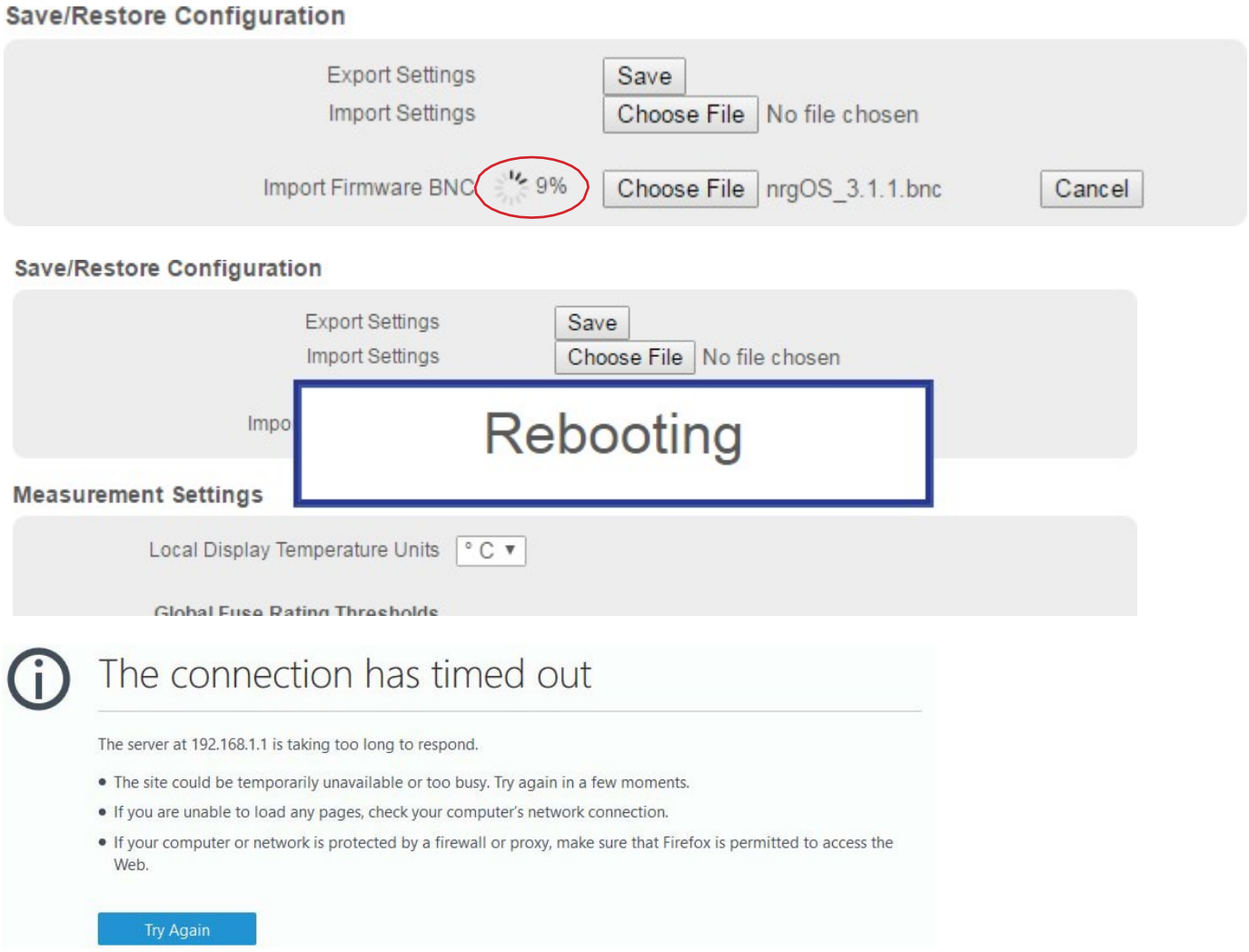
Step 6: When warning pops up, select 'OK' to resave settings. This is to make sure settings are saved.

Note: When updating firmware you will be prompted to save your configuration by selecting "OK". This is optional as we just saved the configuration in the previous step. You can select "Cancel" to prevent saving the configuration again.



Step 7: Firmware update will begin automatically after settings have been saved. Do not navigate away from this page while uploading.



Once your browser times out wait 1-2 minutes for the controller to restart and then refresh your browser.

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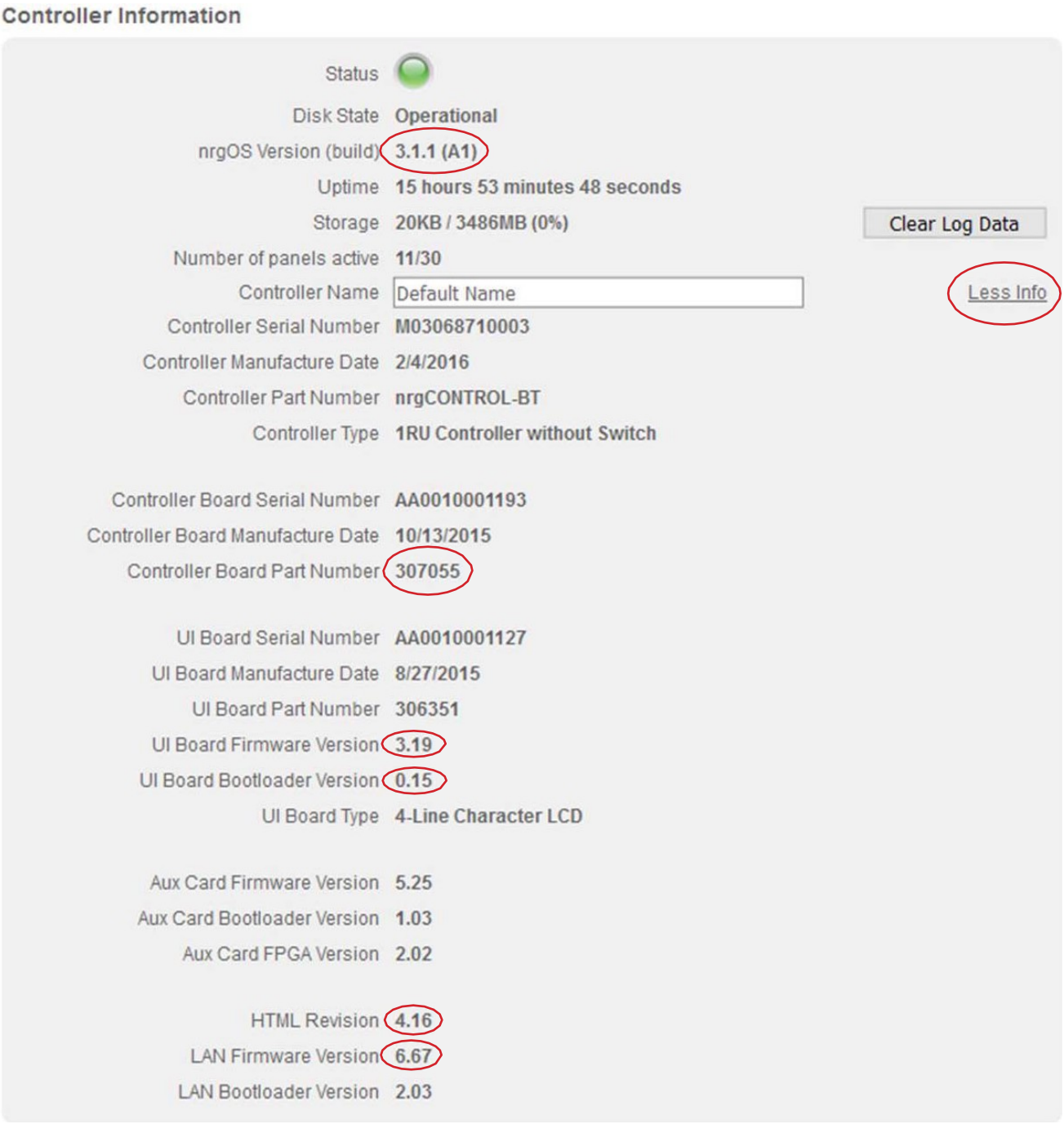
Step 8: Once firmware has uploaded, please verify that the proper version was uploaded correctly by clicking on “More Info” on the first page and reviewing the items circled against the release note.



Circled versions for 3.1.1 are shown.
See release notes for other versions. If any of the versions do not match:

1. First re-install firmware
2. If they still do not match after re-install contact Amphenol Network Solutions Technical Support at 509.926.6000

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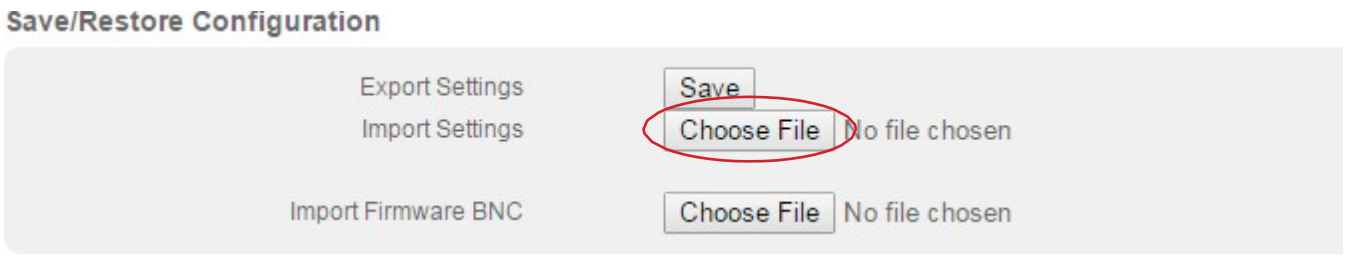
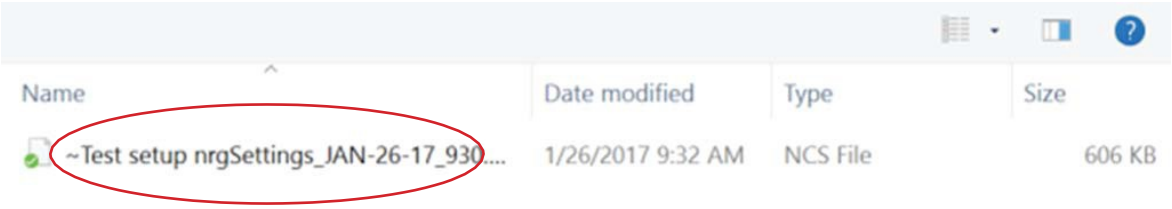
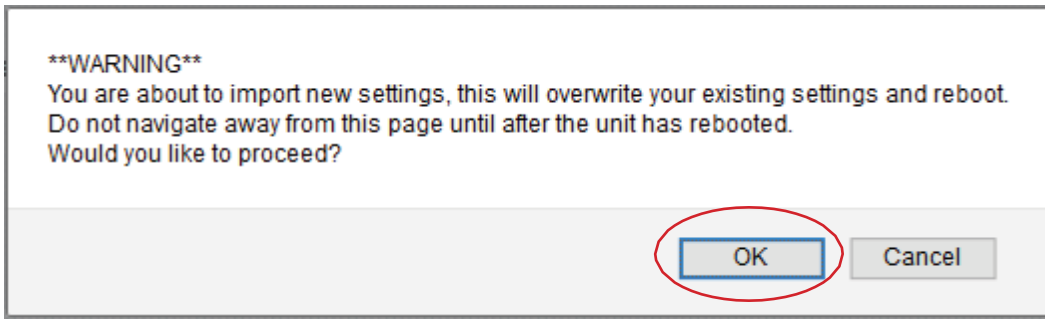
Step 9: After firmware upload has been verified, upload your recently saved configuration file as some settings have been overwritten during the firmware upgrade process.



Navigate to recently saved .NCS file.



Select OK to initiate upload.



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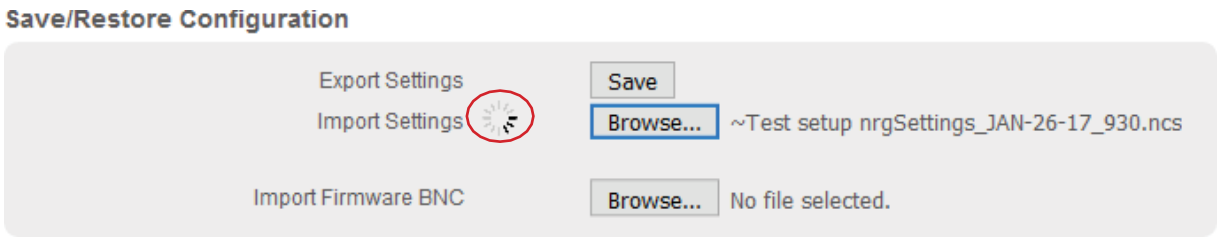

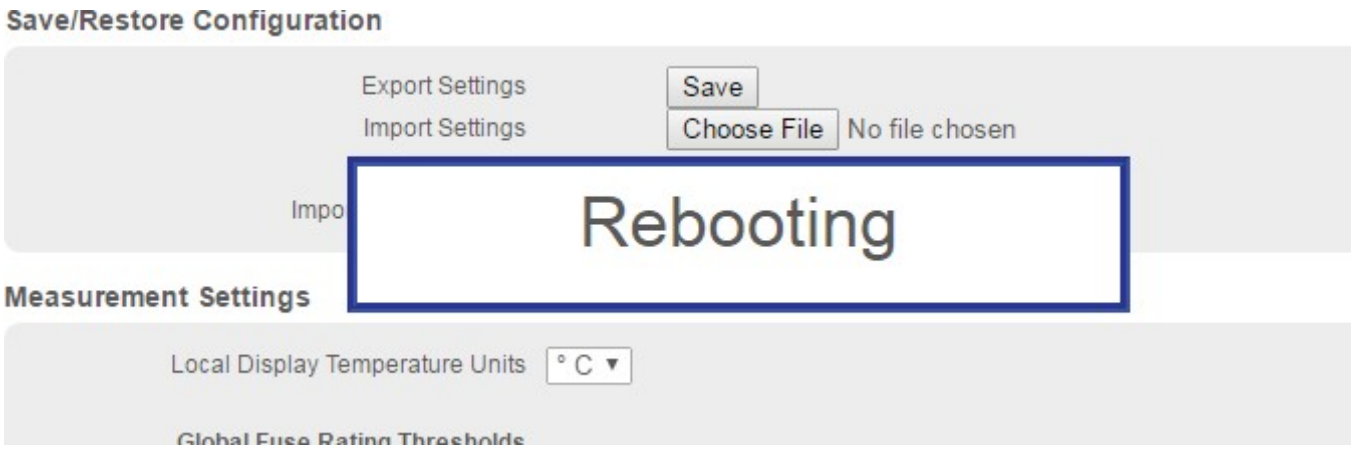

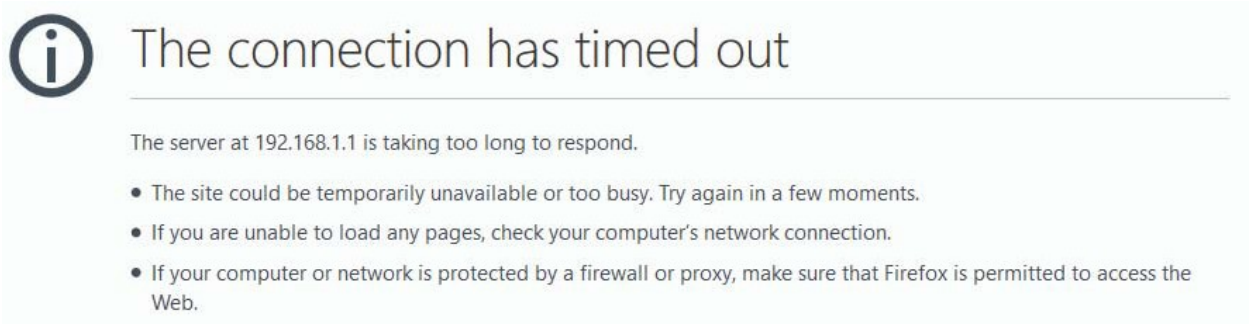

Once your browser times out wait 1-2 minutes for the controller to restart and then refresh your browser.

Step 10: Verify your settings.

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3. Site Tab Settings

The *Site Tab* is comprised of the main window (*Site Tab Window*) and the *Site Information Screen* where site location information is defined.

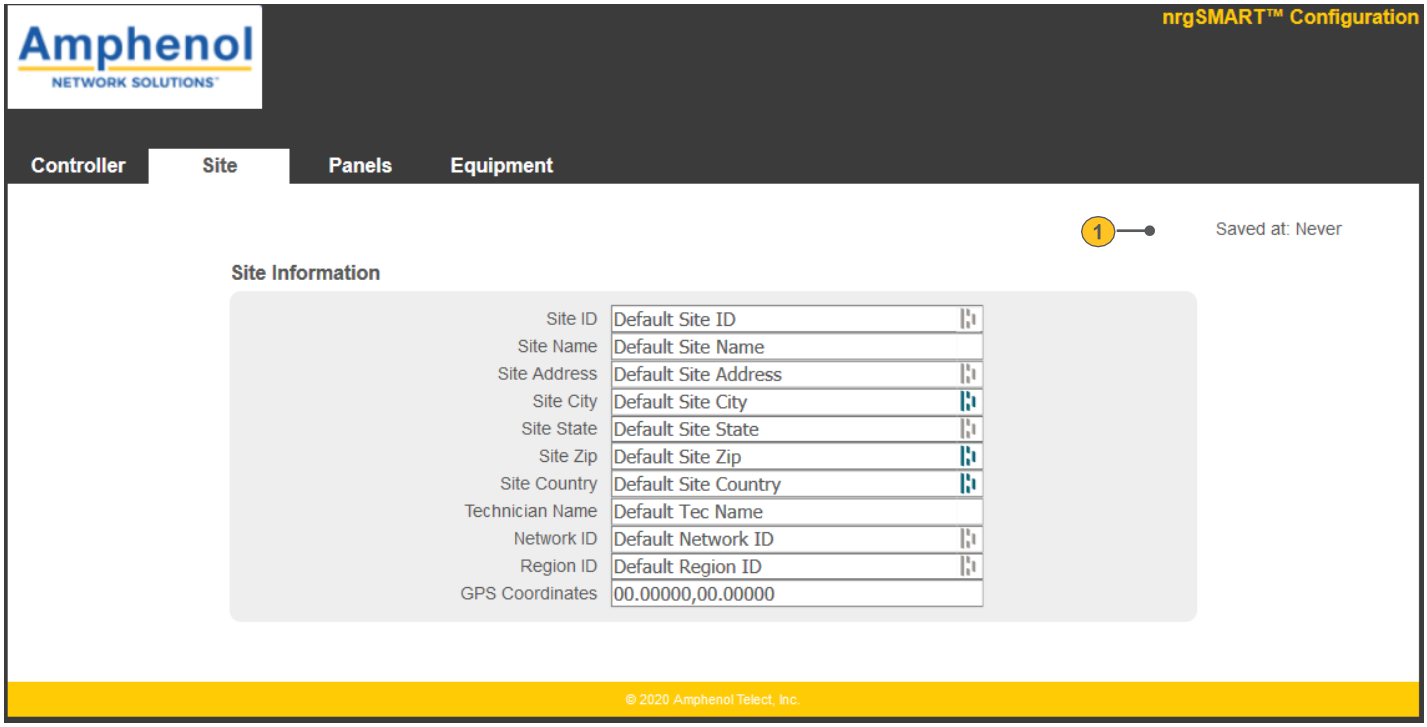

Figure 16 - Site Tab Window

Site Tab Window

Ref.	Field	Type	Value	Description
1	Saved At	Read Only	Text	The date and time that information in the *Site Tab* was last saved. *NOTE: When a field is updated within the Site Tab, clicking outside of the field saves the information and updates the Saved At time.* Field settings are: **Never**: Data not saved **Date/Time**: mm/dd/yyyy HH:MM:SS (AM/PM)

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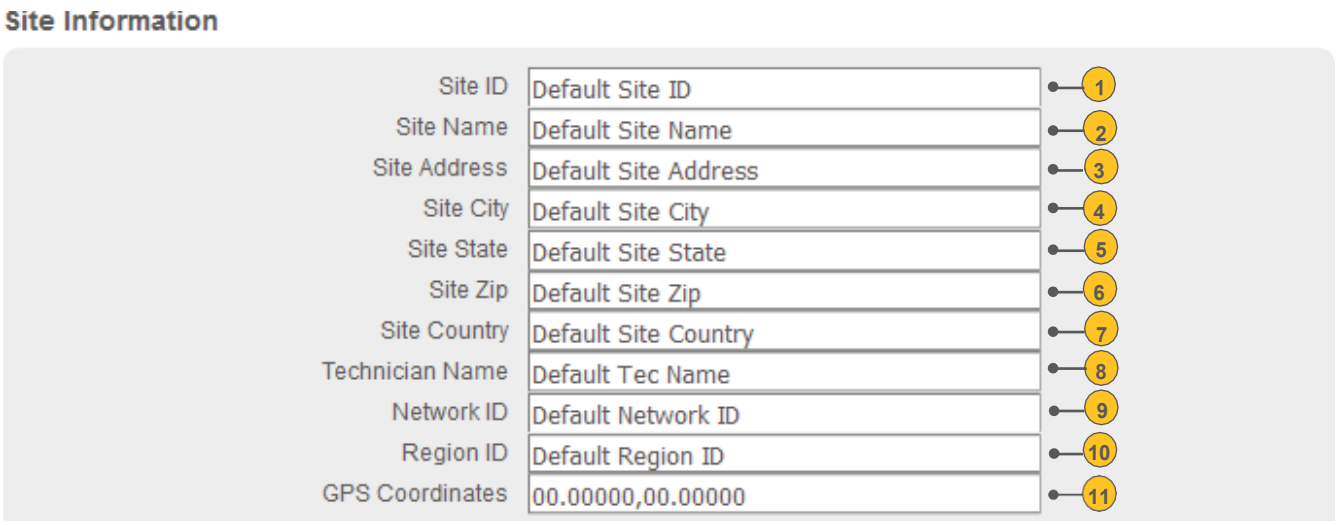

Figure 17 - Site Information Screen

The fields in the *Site Information Screen* can be defined in one of the following two ways:

1. **SNMP Only**: When SNMP is enabled, the fields can be defined through your SNMP manager or defined locally. (See *SNMP Screen* in the *Controller Tab* section for more information about SNMP.)

2. **None:** When not connected to SNMP these fields can be defined locally.

Site Tab :: Site Information Screen

Ref.	Field	Type	Value	Description
1	Site ID	Read Only or Input	Text	A descriptor that uniquely defines this site, setting it apart from other sites in the network. To define the field locally, enter the unique site descriptor as the Site ID. This field accepts up to 40 characters. Valid characters are upper/ lowercase letters, numbers and the underscore symbol. (Do not use any other symbols.) *NOTE: Choose the Site ID carefully. Once the Site ID is defined it cannot be changed/modified. To remove it, you have to perform a Reset Settings from the Controller Tab and all site configuration information must be re-entered.*
2	Site Name	Read Only or Input	Text	The Site Name distinguishes one site from another site. Enter a Site Name. This field accepts up to 40 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.

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Site Tab :: Site Information Screen

Ref.	Field	Type	Value	Description
3	Site Address	Read Only or Input	Text	The Street Address for the site. Enter the Site Address. This field accepts up to 40 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces. *NOTE: The exact physical location of the site is shown in the GPS Coordinates field.*
4	Site City	Read Only or Input	Text	City where the site is located. Enter the City where the site is located. This field accepts up to 40 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
5	Site State	Read Only or Input	Text	State where the site is located. Enter the State where the site is located. This field accepts up to 40 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
6	Site Zip	Read Only or Input	Text	Zip Code for this site. Enter the Zip Code for the site. This field accepts up to 40 characters. Use numbers and a dash.
7	Site Country	Read Only or Input	Text	Country where the site is located. Enter the Country where the site is located. This field accepts up to 40 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
8	Technician Name	Read Only or Input	Text	Lead technician or technician responsible for the site. Enter the Technician's Name at the site. This field accepts up to 40 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
9	Network ID	Read Only or Input	Text	Identifies the Network that the site is connected to. Enter the Network ID for the site. This field accepts up to 40 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
10	Region ID	Read Only or Input	Text	Identifies the Region ID where the site is located. Enter the Region ID for this site. This field accepts up to 40 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
11	GPS Coordinates	Read Only or Input	Text	The GPS coordinates showing the latitude/longitude location of the site. This field indicates coordinates in decimal degrees. Enter the GPS coordinates where this site is located. This field accepts up to 40 characters. Use numbers, comma, minus and period symbols.

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4. Panels Tab Settings

The *Panels Tab* is comprised of the main window (*Panels Tab Window*) and screens that contain settings for the panels installed. Within the window are screens that allow other panel related settings to be defined or viewed.

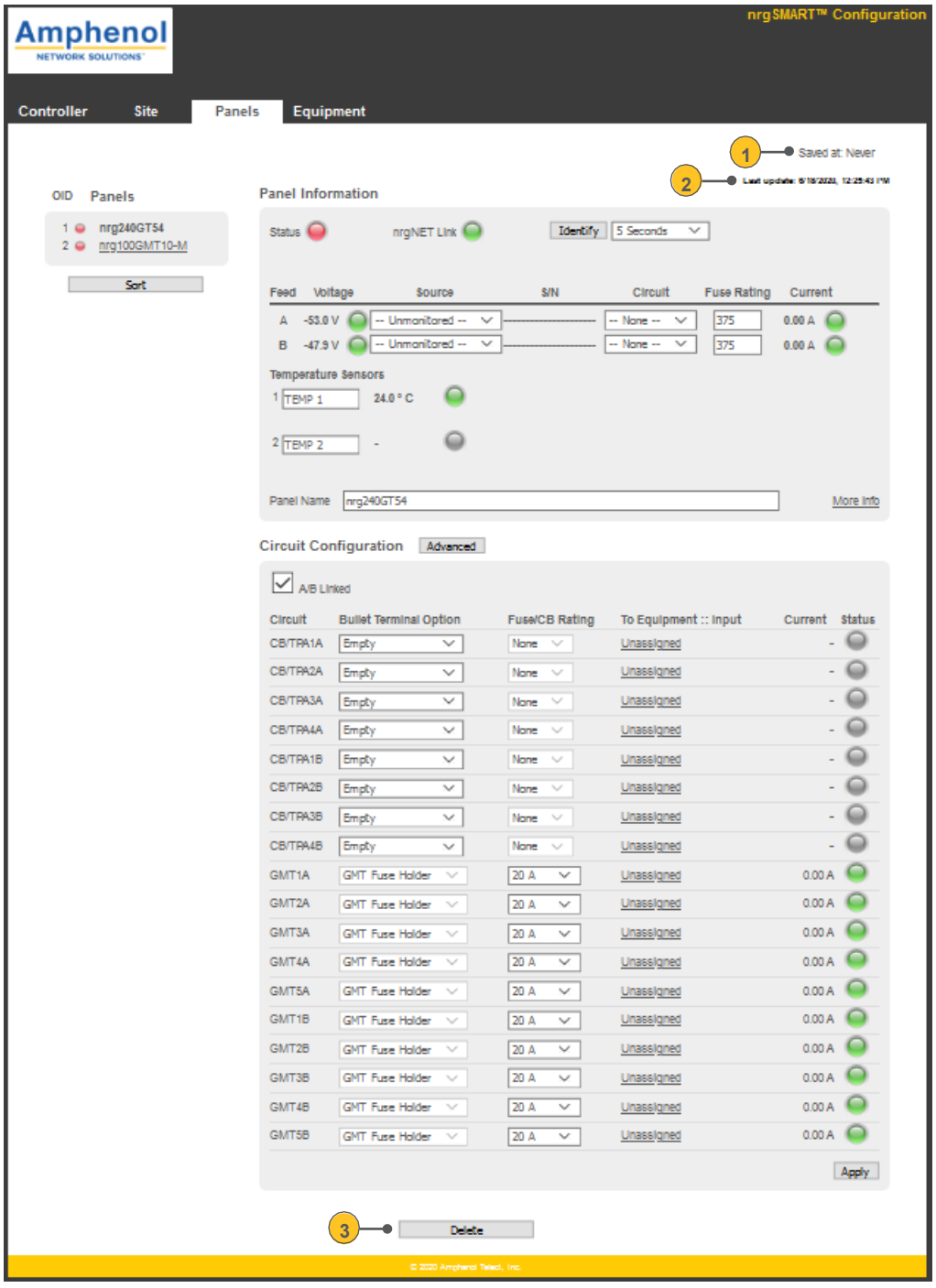

Figure 18 - Panels Tab Window

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Panels Tab Window

Ref.	Field	Type	Value	Description
1	Saved At	Read Only	Text	The date and time that information in the *Panels Tab* was last saved. *NOTE: When a field is updated within a window or screen in the Panels Tab, clicking outside of the field saves the information and updates the Saved At time.* Field settings are: **Never**: Data not saved **Date/Time**: mm/dd/yyyy HH:MM:SS (AM/PM)
2	Last Update	Read Only	Text	Displays the current date and time. Displays as: **mm/dd/yyyy HH:MM:SS** (AM/PM)
3	Delete	Select	Button	Removes the selected panel and all of the associated information from the *Panels Tab*. Select the **Delete** button to remove the selected panel and associated information from the *Panels Tab*. *NOTE: When a panel is deleted, the rows below the panel name row (in the Panels Screen) will shift up.*

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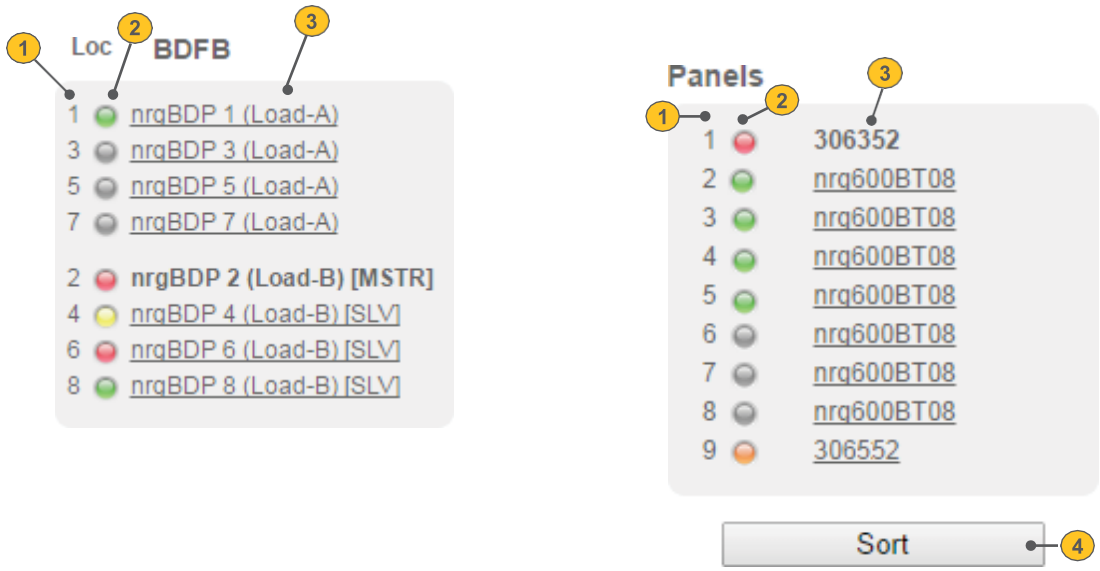

Figure 19 - BDFB and Panels Screens

When working with a BDFB the individual panels will be shown by position # within the frame. Power Panels will be displayed in numerical format that can be sorted based on location or naming convention.

NOTE: The fields in these tables are column headings that define data displayed in rows within the columns. (This does not apply to the Sort button.)

Panels Tab :: Panels Screen

Ref.	Field	Type	Value	Description
1	Location (column) BDFB Only Number for Controller	Read Only	Text	BDFB Only: Position number in BDFB are all odd numbered panels on Left (Load A) and all even numbered panels are on the right (Load B). Controller Only: Number of Devices
2	Light (column)	Read Only	Light	The overall state of the panel. **Green**: Normal operation. **Yellow**: Warning threshold reached. **Orange**: Critical threshold reached. **Red**: A blown fuse or a tripped breaker. **Gray**: Not connected.
3	Panel Name (column)	Select	Text	The Panel Name distinguishes one panel from another. Select a Panel Name to view or modify. When selected, the panel name becomes bold and associated fields populate the screens in the *Panels Information and Circuit* configuration fields. BDFB Only: All odd numbered panels on Left (Load A) and all even numbered panels are on the right (Load B) for panels in a nrgBDFB.
4	Sort	Select	Button	Allows *Panels Screen* row order to be modified. Select the **Sort** button to open the *Sort Order Screen* and modify row order.

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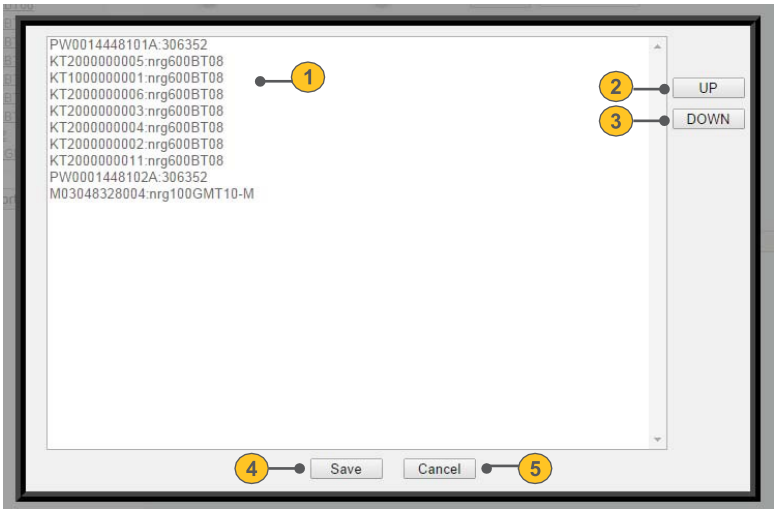

Figure 20 - Sort Order Screen

Panels Tab :: Panels Screen > Sort Order Screen

Ref.	Field	Type	Value	Description
1	Name and Row	Select	Text	The name of a panel on a selected row. Allows the order of *Panels Screen* panels to display in a different order. Select to highlight a panel row (identified by part number and panel name).
2	Up	Select	Button	Moves the selected row to display at a higher row number in the *Panels Screen*. Select the **Up** button to move the highlighted row up.
3	Down	Select	Button	Moves the selected row to display at a lower row number in the *Panels Screen*. Select the **Down** button to move the highlighted row lower.
4	Save	Select	Button	Changes the order of rows in the *Panels Screen* to display in the order shown in the *Sort Order Screen*. Select the **Save** button to save row settings and return to the *Panels Screen*.
5	Cancel	Select	Button	Leaves the *Sort Order Screen* without keeping modified settings. Select the **Cancel** button to return to the *Panels Screen* without making any changes.

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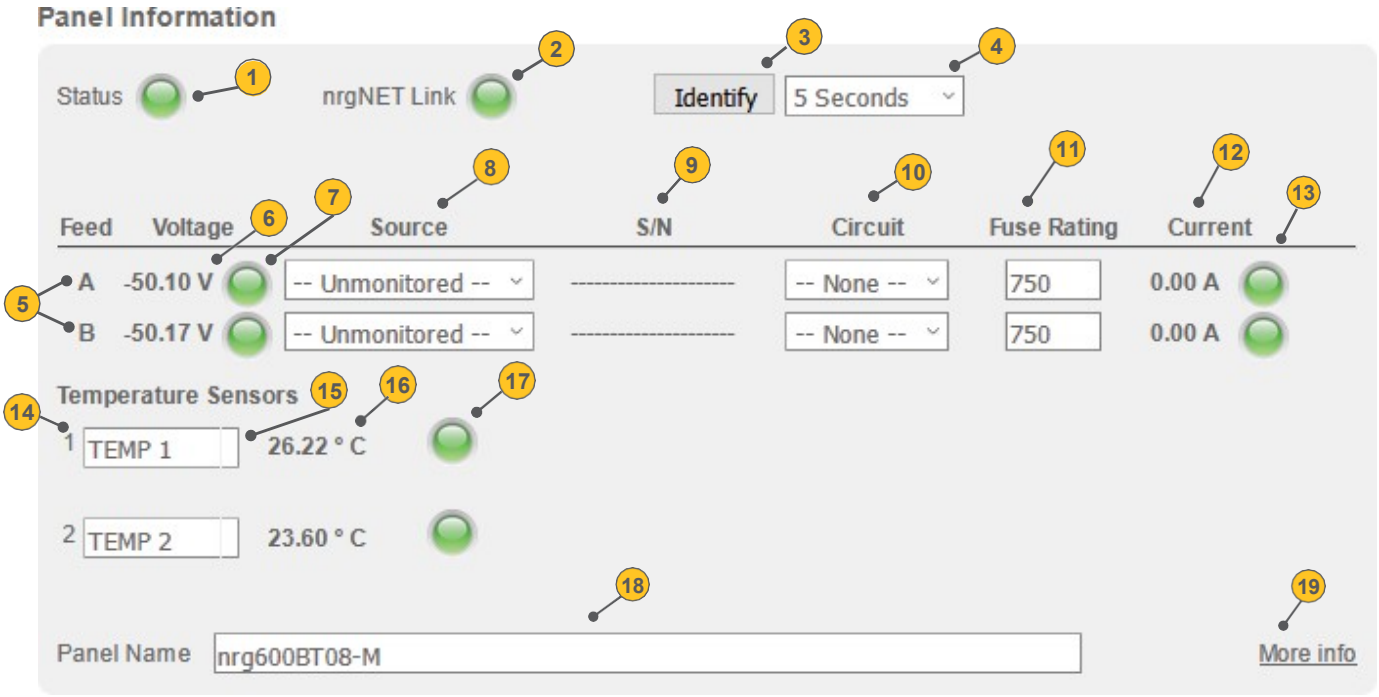

Figure 21 - Panel Information Screen

Panels Tab :: Panel Information Screen

Ref.	Field	Type	Value	Description
1	Status	Read Only	Light	Summarizes the current threshold status for this panel. **Green**: Normal operation. **Yellow**: Warning threshold reached. **Orange**: Critical threshold reached. **Red**: A blown fuse or tripped breaker. **Gray**: Not connected.
2	nrgNET Link	Read Only	Light	Shows if the panel is connected to the controller and communicating. **Green**: Communicating and connected. **Gray**: Not connected.
3 and 4	Identify and Find (down arrow)	Select	Button and Drop down menu	Assists in locating the selected panel by blinking a light on the physical panel for a specific amount of time. Select the **Identify** button to blink the nrg LED, a light that is centrally located on the front of the panel. To specify how long the light will blink, select the **Arrow** button to open the Find drop down menu and select from: **5 seconds, 30 seconds, 60 seconds, 5 minutes, and 10 minutes**
5	Feed	Read Only	Text	Identifies the Feed (A or B) Associated fields (total current, voltage and fuse alarm)
6	Voltage	Read Only	Text	A numerical display showing the voltage reading for this Feed.

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Panels Tab :: Panel Information Screen

Ref.	Field	Type	Value	Description
7	Light	Read Only	Light	Indicates the threshold status of the total voltage coming into the Feed. **Green**: Normal operation. **Yellow**: Warning threshold reached. **Orange**: Critical threshold reached. **Red**: A blown fuse or tripped breaker. **Gray**: Not connected.
8	Source	Read Only	Text	Displays equipment input label delivering power from the Equipment in the equipment list. The equipment input label is defined in the Equipment Tab.
9	S/N	Read Only	Text	A 12-digit number of the Source device consisting of uppercase letters and numbers.
10	Circuit	Select	Drop down Menu	Circuit position of Source device.
11	Fuse Rating	Read Only	Text	Insert the size of feed breaker in amps
12	Current	Read Only	Text	A numerical display showing the total current, in amps, coming into this Feed.
13	Light	Read Only	Light	Indicates the threshold status of the total current coming into a Feed. **Green**: Normal operation. **Yellow**: Warning threshold reached. **Orange**: Critical threshold reached. **Red**: A blown fuse or tripped breaker. **Gray**: Not connected.
14	Temperature Sensor Number	Read Only	Text	Row number for the temperature sensor.
15	Temperature Sensor Name	Input	Text	The Temperature Sensor Name distinguishes one temperature sensor from another. Enter a Temperature Sensor Name. This field accepts up to 9 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
16	Temperature	Read Only	Text	Temperature reading for the temperature sensor. The normal temperature operating range is **-40°C (-40°F) to 70°C (158°F)**
17	Light	Read Only	Light	The alarm light indicates the threshold status of the temperature sensor. **Green**: Normal operation. **Yellow**: Warning threshold reached. **Orange**: Critical threshold reached. **Red**: Outside of temperature operating range. **Gray**: Not connected.
18	Panel Name	Input	Text	The Panel Name distinguishes one panel from another. Select the Panel Name to view or modify from the *Panels Screen*. To rename a panel, highlight the name and enter a new name. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
19	More info / Less info	Select	Toggle	View more or fewer screen fields. Toggle **More info** to expand the screen to display additional fields or **Less info** to hide a portion of the screen.

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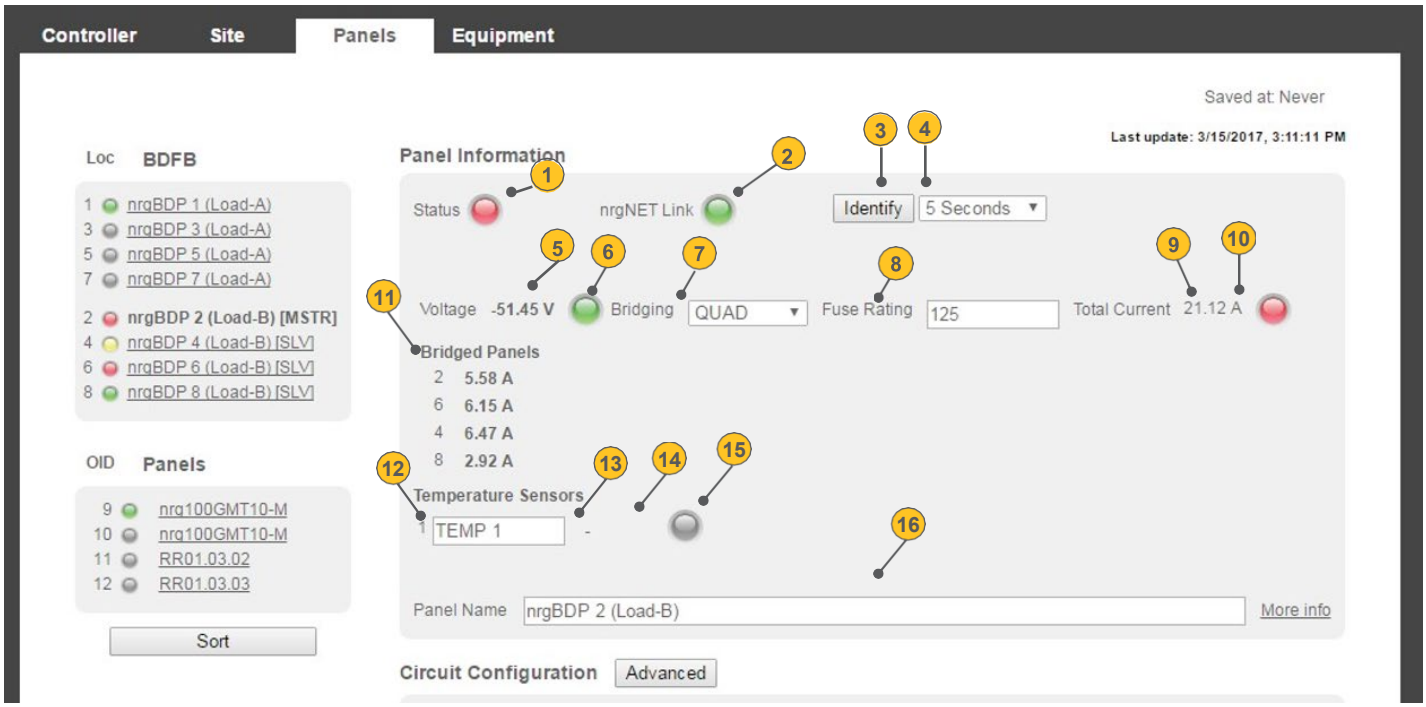

BDFB Only

Figure 22 - Quad System: This figure depicts a single master system with three slaves

Panels Tab :: Panel Information Screen

Ref.	Field	Type	Value	Description
1	Status	Read Only	Light	Summarizes the current threshold status for this panel. **Green:** Normal operation. **Yellow:** Warning threshold reached. **Orange:** Critical threshold reached. **Red:** A blown fuse or tripped breaker. **Gray:** Not connected.
2	nrgNET Link	Read Only	Light	Shows if the panel is connected to the controller and communicating. **Green:** Communicating and connected. **Gray:** Not connected.
3 and 4	Identify and Find (down arrow)	Select	Button and Drop down Menu	Assists in locating the selected panel by blinking a light on the physical panel for a specific amount of time. Select the Identify button to blink a light that is centrally located on the front of the panel. To specify how long the light will blink, select the Arrow button to open the Find drop down menu and select from: **5 seconds, 30 seconds, 60 seconds, 5 minutes and 10 minutes**
5	Voltage	Read Only	Text	A numerical display showing the voltage reading for this Feed.
6	Light	Read Only	Light	Indicates the threshold status of the voltage coming into the Feed. **Green:** Normal operation. **Yellow:** Warning threshold reached. **Orange:** Critical threshold reached. **Red:** A blown fuse or tripped breaker. **Gray:** Not connected.

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Panels Tab :: Panel Information Screen

Ref.	Field	Type	Value	Description
7	Bridging Mode	Read Only	Drop down menu	Bridging allows you the ability to request data from one device for the load side A or B. You have the following options: **None:** Single device **Dual:** One master and one slave **Triple:** One master and two slaves **Quad:** One master and three slaves
8	Fuse Rating	Input	Value	Insert the size of feed breaker in amps.
9	Total Current	Read Only	Text	Total current is the sum of the current. This can be the sum of single, dual, triple or quad.
10	Light	Read Only	Light	Indicates the threshold status of the total current coming into the Feed. **Green:** Normal operation. **Yellow:** Warning threshold reached. **Orange:** Critical threshold reached. **Red:** A blown fuse or tripped breaker. **Gray:** Not connected.
11	Bridging Panels	Read	Only	Shows the current of each slave panel when bridged.
12	Temperature Sensor Number	Read	Only	Row number for the temperature sensor.
13	Temperature Sensor Name	Input	Text	The Temperature Sensor Name distinguishes one temperature sensor from another. Enter a Temperature Sensor Name. This field accepts up to 9 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
14	Temperature	Read Only	Text	Temperature reading for the temperature sensor. The normal temperature operating range is **-40°C (-40°F) to 70°C (158°F)**
15	Light	Read Only	Light	The alarm light indicates the threshold status of the temperature sensor. **Green**: Normal operation. **Yellow**: Warning threshold reached. **Orange**: Critical threshold reached. **Red**: Outside of temperature operating range. **Gray**: Not connected.
16	Panel Name	Input	Text	The Panel Name distinguishes one panel from another. Select the Panel Name to view or modify from the *Panels Screen*. To rename a panel, highlight the name and enter a new name. Valid characters are upper/lowercase letters, numbers, symbols and spaces.

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BDFB Only

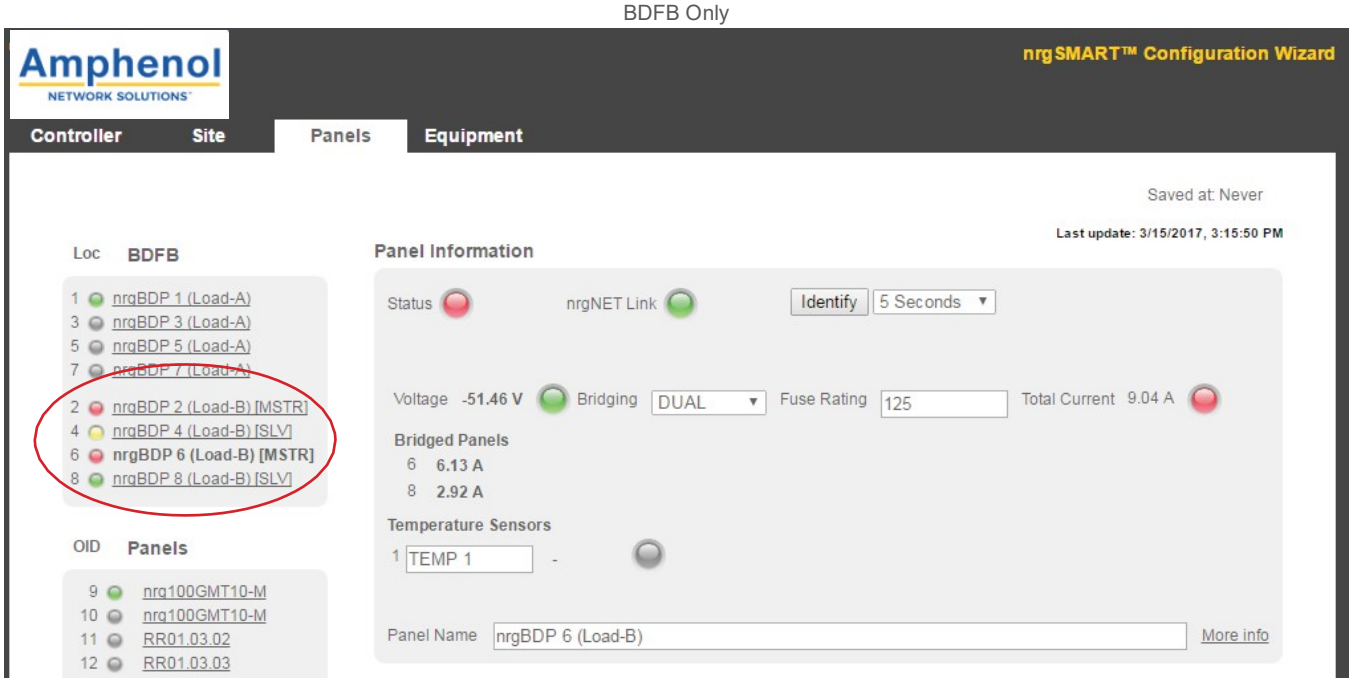

Figure 23 - Dual System: This figure depicts a dual master system showing the difference from the previous figure of one master system and three slaves

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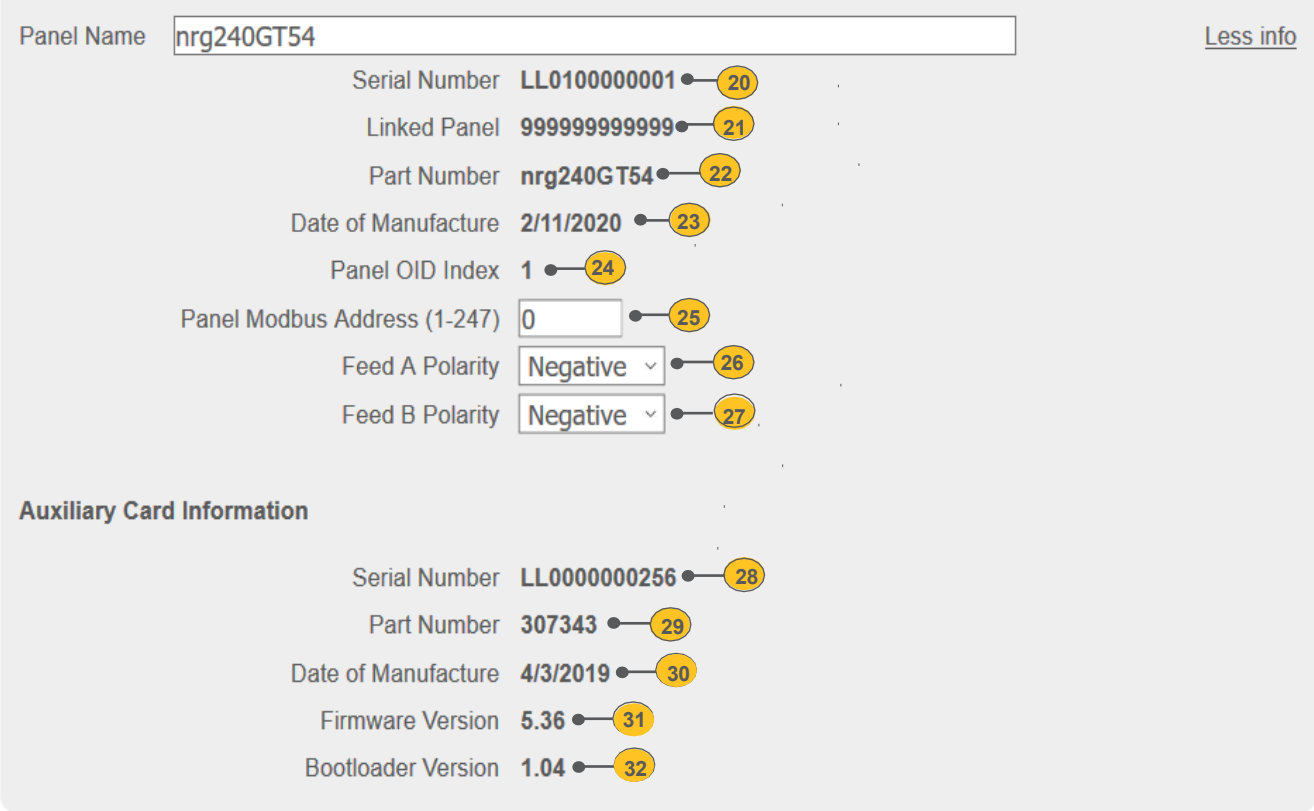

Figure 24 - Panel Information More info/Less info Screen

Panels Tab :: Panel Information Screen

Ref.	Field	Type	Value	Description
20	Serial Number	Read Only	Text	A 12-digit serial number mounted on the panel consisting of uppercase letters and numbers. The serial number must be a unique number for each piece of hardware. Amphenol Network Solutions recommends using the serial number of the hardware but can use a convention specific to your company or inventory needs.
21	Linked Panel	Read Only	Text	If an Amphenol Network Solutions panel is used for the source feed the serial number of that panel will be populated, if not it will display 999999999999.
22	Part Number	Read Only	Text	A string of characters that identify the panel as a part consisting of upper/ lowercase letters, numbers, symbols and spaces.
23	Date of Manufacture	Read Only	Text	The date the panel was manufactured. Displays as: **mm/dd/yyyy**
24	Panel OID Index	Read Only	Text	The OID (Object Identifier) is what the SNMP manager will use to request data along with the appropriate MIB. Each panel has a unique OID to collect data from.
25	Panel ModBus Address	Input	Text	If using ModBus enter Unique ID
26	Feed A Polarity	Select	Drop down	You can change the polarity from Negative to positive to reflect how it is wired.

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27	Feed B polarity	Select	Drop Down	You can change the polarity from Negative to positive to reflect how it is wired.
Auxiliary Card Information				The alarm card in the fuse panel. The following fields display Auxiliary Card information.
28	Serial Number	Read Only	Text	A 12-digit serial number mounted on the Auxiliary Card consisting of uppercase letters and numbers.
29	Part Number	Read Only	Text	A six-digit string of characters that identify the Auxiliary Card.
30	Date of Manufacture	Read Only	Text	Date that the Auxiliary Card was manufactured. Displays as: **mm/dd/yyyy**
31	Firmware Version	Read Only	Text	The firmware version of the Auxiliary Card.
32	Bootloader Version	Read Only	Text	The bootloader version of the Auxiliary Card.

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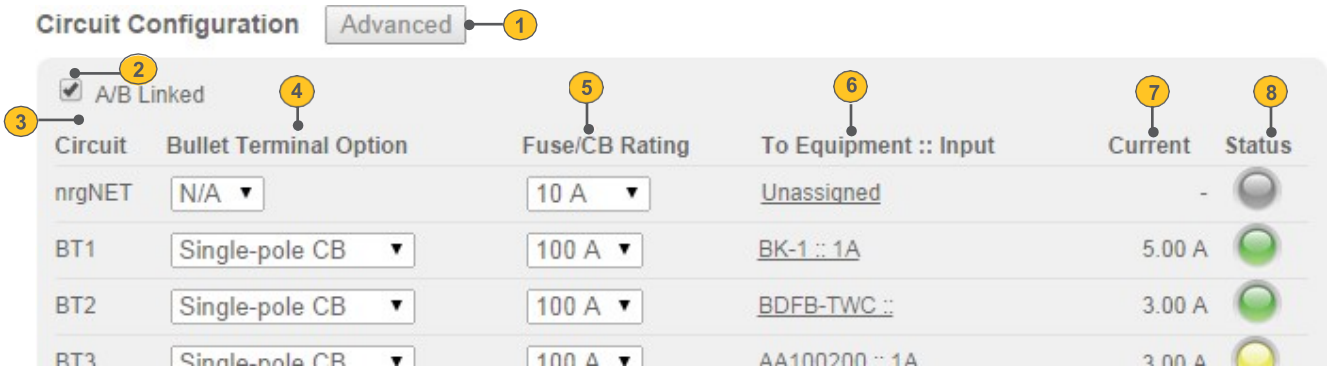

Figure 25 - Circuit Configuration Screen

Panels Tab :: Circuit Configuration Screen

Ref.	Field	Type	Value	Description
1	Advanced	Select	Button	Allows individual circuit setting alarms to be viewed or modified. Select the **Advanced** button to open the *Circuit Settings Screen*. For information on Circuit Settings, see table *Panels Tab :: Circuit Configuration > Circuit Settings Screen*.
2	A/B Linked	Select	Checkbox	Links and unlinks Feed A with Feed B. When linked, values assigned to a fuse in one Feed are also assigned to the fuse in the corresponding position in the other Feed. For example, values assigned to the fuse in circuit location BT1A are also assigned to the fuse in circuit location BT1B. If the Fuse/CB rating is 50 in BT1A and is changed to 40, it will also be changed in BT1B. The same is true if the setting is changed in BT1B it will change in BT1A. They both reflect the same settings when linked. *NOTE: Alarm threshold states remain independent even when linked is selected and display the fuse status for the fuse in the row it is located on.* When unlinked, the values assigned to a fuse in one Feed can be configured to different values from the other Feed. Both Feeds are independent of each other when unlinked. To link Feed A to Feed B, **select** (to check) the **A/B Linked** Checkbox. To unlink the Feeds, **deselect** the Checkbox.

NOTE: The following fields are column headings that define data displayed in rows within the columns.

3	Circuit (column)	Read Only	Text	Indicates the fuse type and its location in the panel. Circuit outputs can include: **nrgNET, BTx, GMT, TPS and TLS.** Refer to 6.2, *Fuse/Circuit Breaker Ratings* for more information. *NOTE: BDFB panels distribute power to monitor the alarm card through the nrgNET bus for controller communication. When applicable, the nrgNET power data displays on the first row in the Circuit Configuration Screen.*

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Panels Tab :: Circuit Configuration Screen

Ref.	Field	Type	Value	Description
4	Bullet Terminal Option (column)	Select	Button and Drop down menu	Identifies the bullet terminal on the circuit in the selected row. Bullet terminals are present and active when the panel supports bullet terminals. Select the **Arrow** button to open the Bullet Terminal Option drop down menu. When the panel supports bullet terminals select from: **Single-pole CB, Double-pole CB, Triple-pole** or **TFD**. Not applicable when panels do not have bullet terminals present: **N/A** Refer to *6.2, Fuse/Circuit Breaker Ratings* for more information.
5	Fuse/CB Rating (column)	Select	Button and Drop down menu	Indicates the rating for the fuse or circuit breaker installed in the panel. To add or modify the Fuse/CB Rating, select the **Arrow** button to open the Fuse/CB Rating drop down menu, and select from: No Rating: **None** Fuse/CB ratings: **amperage** Refer to 6.2, *Fuse/Circuit Breaker Ratings* for more information.
6	To Equipment :: Input (column)	Read Only	Text	Displays equipment input label receiving power from the fuse located in this row. The equipment input label is defined in the *Equipment Tab*.
7	Current (column)	Read Only	Text	Indicates the measured amount of current the equipment is consuming. Displays as amperage.
8	Status (column)	Read Only	Light	This light indicates the threshold level of current to the circuit on the row. **Green**: Normal current. **Yellow**: Warning threshold reached. **Orange**: Critical threshold reached. **Red**: A blown fuse or tripped breaker. **Gray**: Not connected.

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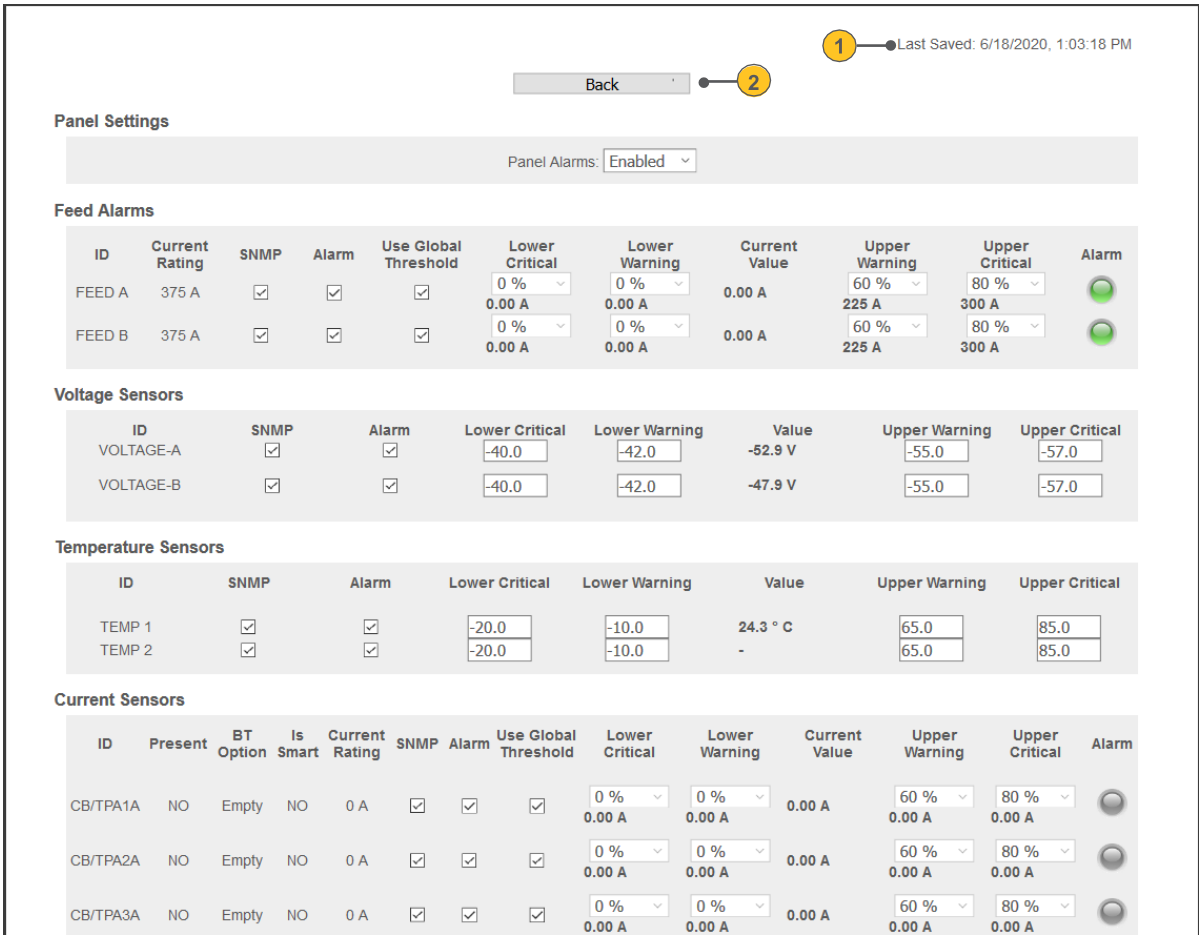

Figure 26 - Circuit Settings Window

NOTE: The Circuit Settings Window opens when the Advanced button is selected while in the Circuit Configuration Screen. This window contains Panel Settings, Breaker Alarms, Voltage Sensors, Temperature Sensors and Current Sensors Screens.

Panels Tab :: Circuit Configuration > Circuit Settings Window

Ref.	Field	Type	Value	Description
1	Saved At	Read Only	Text	The latest date and time that information in this window was saved. *NOTE: When a field is updated within the Circuit Settings Window, clicking outside of the field saves the information and updates the Saved At time.* Field settings are: **Never**: Data not saved **Date/Time**: mm/dd/yyyy HH:MM:SS (AM/ PM)
2	Back	Select	Button	Return to the *Circuit Configuration Screen*. Select the **Back** button to return to the *Circuit Configuration Screen*.

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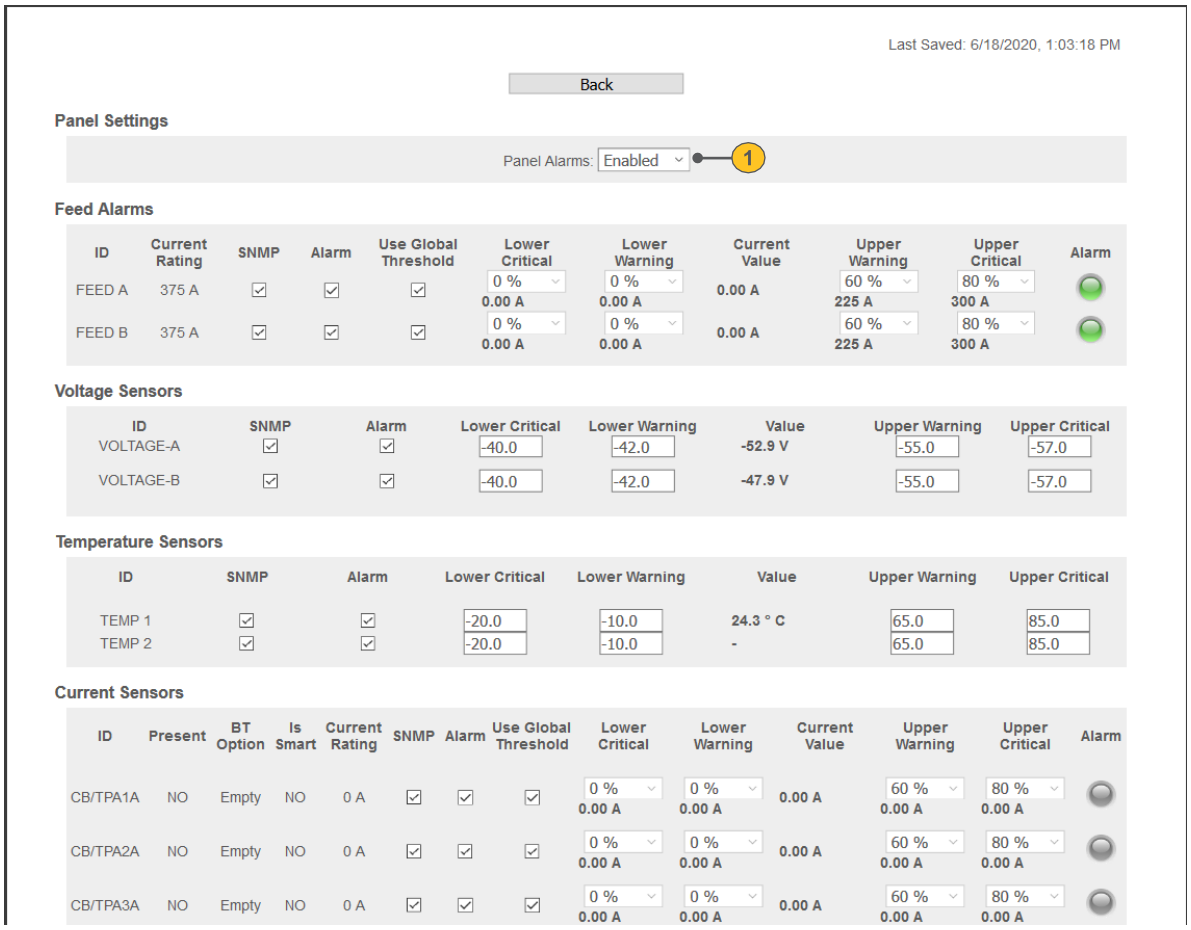

Figure 27 - Panels Settings Screen

Panels Tab :: Circuit Configuration > Circuit Settings > Panel Settings Screen

Ref.	Field	Type	Value	Description
1	Panel Alarms	Select	Drop down menu	This setting allows panel data to display pertaining to breaker alarms, voltage sensors, temperature sensors and current sensors. Default is: **Enabled** From the Panel Alarms drop down menu, select **Enabled** to allow panel data to display. Select **Disabled** to prevent panel data displays.

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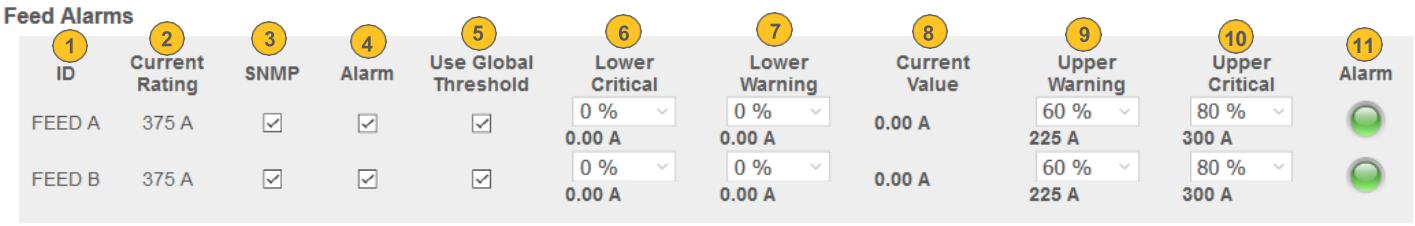

Figure 28 - Feed Alarms Screen

For data to display in the *Feed Alarms Screen*, select **Enabled** in the *Panels Screen*.

NOTE: Field values in this screen default to specific settings. They do not require additional input, but can be customized if desired. The fields in this table are column headings that define data displayed in rows within the columns.

ALERT

ALERT! Light indicators for these fields ONLY display in this screen as notification of breaker status.

Panels Tab :: Circuit Configuration > Circuit Settings > Breaker Alarms Screen

Ref.	Field	Type	Value	Description
1	ID	Read Only	Text	The row for the Feed.
2	Current Rating	Read	Text	Indicates the rating of the fuse or circuit breaker. Default is: **20 A** When defined in the Circuit Configuration Screen, the field defaults to that value.
3	SNMP	Select	Checkbox	When SNMP is enabled (in the *Controller Tab*) this checkbox allows the status of the breaker alarm for SNMP and all associated traps to be sent to the SNMP server. Default is: **Checked** To enable the breaker alarm status for SNMP to be sent, **select** (to check) the **SNMP** Checkbox. To disable the alarm, **deselect** the Checkbox. *NOTE: When this field is enabled, a software setting showing the status of the alarm can be sent. Threshold settings enabled during controller configuration remain operational even when this field is unchecked and the hardware will still display alarm notifications.* See the State field (below) for light indicator settings.

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Panels Tab :: Circuit Configuration > Circuit Settings > Breaker Alarms Screen

Ref.	Field	Type	Value	Description
4	Alarm	Select	Checkbox	The current sensor for the Alarm allows the alarm status to be sent to SNMP. This field also determines the availability of the Use Global Threshold checkbox. When the Alarm checkbox is selected, the option to use predetermined global threshold settings or change global threshold settings is available. If the Alarm checkbox is not selected, the option to change global threshold settings is not available. Default: **Checked** To enable the Alarm current sensor status to be sent and to allow global threshold settings to be adjusted, **select** (to check) the **Alarm** Checkbox. To disable, **deselect** the Checkbox. *Note: When unchecked, the Global Threshold Settings checkbox is not accessible. See Global Threshold Settings (Lower Critical, Lower Warning, Current Value, Upper Warning and Upper Critical) and the Alarm (light) fields below for indicator settings.*
5	Use Global Threshold	Select	Checkbox	A percentage of a circuit's breaker range or fuse range as the threshold value for alarms. The following fields allow threshold values to be set to indicate lower or higher than normally expected current ranges.
6	Lower Critical	Select	Drop down Menu	Lower Critical is a user defined threshold that is a percentage of the Global Fuse Rating and indicates a lower than expected measurement, defined as a critical alarm. Default is: **0%** From the Lower Critical drop down menu, select from: **0% to 100% in 5% increments**.
7	Lower Warning	Select	Drop down Menu	Lower Warning is a user defined threshold that is a percentage of the Global Fuse Rating and indicates a lower than expected measurement, defined as a warning alarm. Default is: **0%** From the Lower Warning drop down menu, select from: **0% to 100% in 5% increments**.
8	Current Value	Read Only	Text	Indicates the measured amount of current going into the equipment. Displays as amperage.
9	Upper Warning	Select	Drop down Menu	Upper Warning is user defined threshold that is a percentage of the Global Fuse Rating and indicates a higher than expected measurement, defined as a warning alarm. Default is: **60%** From the Upper Warning drop down menu, select from: **0% to 100% in 5% increments**.

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Controller Tab :: Measurement Settings Screen

Ref.	Field	Type	Value	Description
10	Upper Critical	Select	Drop down menu	Upper Critical is a user defined threshold that is a percentage of the Global Fuse Rating and indicates a higher than expected measurement, defined as a critical alarm. Default is: **80%** From the Upper Critical drop down menu, select from: **0% to 100% in 5% increments**.
11	Alarm	Read Only	Light	This light indicates the threshold level of current to the circuit on the row. **Green**: Normal current. **Yellow**: Warning threshold reached. **Orange**: Critical threshold reached. **Red**: A blown fuse or tripped breaker. **Gray**: Not connected.

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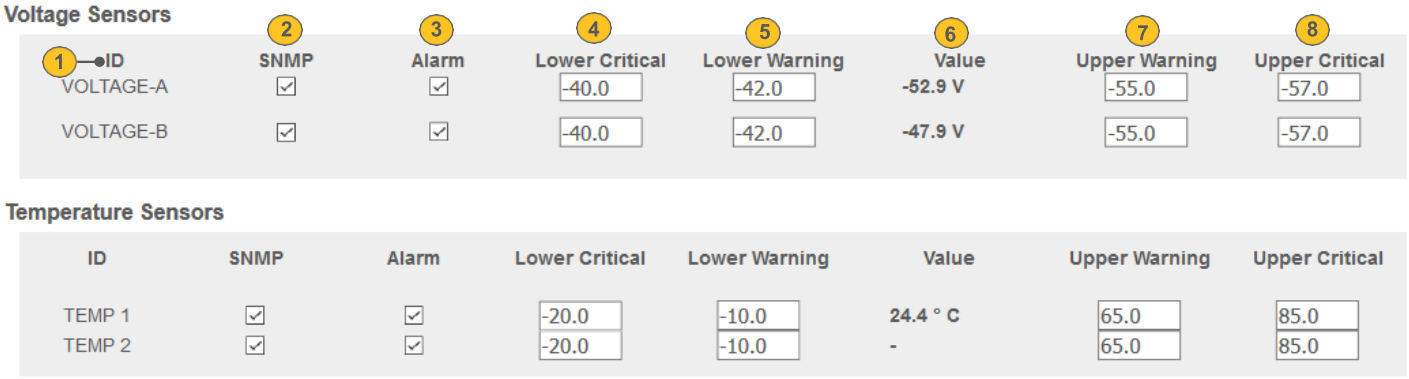

Figure 29 - Voltage Sensors Screen and Temperature Sensors Screen

For data to display in the *Voltage Sensors and the Temperature Sensors Screens*, select **Enabled** in the *Panels Screen*.

NOTE: Field values in these screens default to specific settings. They do not require additional input, but can be customized if desired. The fields in these tables are column headings that define data displayed in rows within the columns.

ALERT

ALERT! Unless otherwise noted, field settings are defined in the same manner for the *Voltage Sensors Screen* and the *Temperature Sensors Screen*. Indicators for these fields ONLY display in this screen as notification of sensor settings.

Panels Tab :: Circuit Configuration > Circuit Settings > Voltage Sensors and Temperature Sensors Screens

Ref.	Field	Type	Value	Description
1	ID (column)	Read Only	Text	The row for the sensor settings being defined.
2	SNMP (column)	Select	Checkbox	When SNMP is enabled (in the *Controller Tab*), this checkbox allows the voltage or temperature sensor data to be sent over SNMP. Default is: **Checked** To enable sensor settings for SNMP, **select** (to check) the **SNMP** Checkbox. To disable, **deselect** the Checkbox. *NOTE: Threshold settings enabled during controller configuration remain operational even when this field is unchecked, but sensor settings are not set.*
3	Alarm (column)	Select	Checkbox	This checkbox allows the voltage or temperature sensor for the Alarm state to send alarm data over SNMP. Default is: **Checked** To enable sensor settings for the Alarm to be sent, **select** (to check) the **Alarm** Checkbox. To disable, **deselect** the Checkbox. *NOTE: Threshold settings enabled during controller configuration remain operational even when this field is unchecked, but sensor settings are not set.* The Alarm sensor allows sensor alarms in the following fields. When this field is disabled, no threshold alarms display for the row.

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Panels Tab :: Circuit Configuration > Circuit Settings > Voltage Sensors and Temperature Sensors Screens

Ref.	Field	Type	Value	Description
4	Lower Critical (column)	Input	Text	Lower Critical is a user defined threshold that indicates a much lower than expected value. Voltage Default is: **-40.00** Temperature Default is: **-20.00** Enter a range to indicate the Lower Critical sensor threshold.
5	Lower Warning (column)	Input	Text	Lower Warning is a user defined threshold that indicates a lower than expected value. Voltage Default is: **-42.00** Temperature Default is: **-10.00** Enter a range to indicate the Lower Warning sensor threshold.
6	Value (column)	Read Only	Text	Measured value. No Voltage Default is: **0.00** No Temperature Default is: **-**
7	Upper Warning (column)	Input	Text	Upper Warning is a user defined threshold that indicates a higher than expected value. Voltage Default is: **-55.00** Temperature Default is: **-65.00** Enter a range to indicate the Upper Warning sensor threshold.
8	Upper Critical (column)	Input	Text	Upper Critical is a user defined threshold that indicates a much higher than expected value. Voltage Default is: **-57.00** Temperature Default is: **-85.00** Enter a range to indicate the Upper Critical sensor threshold.

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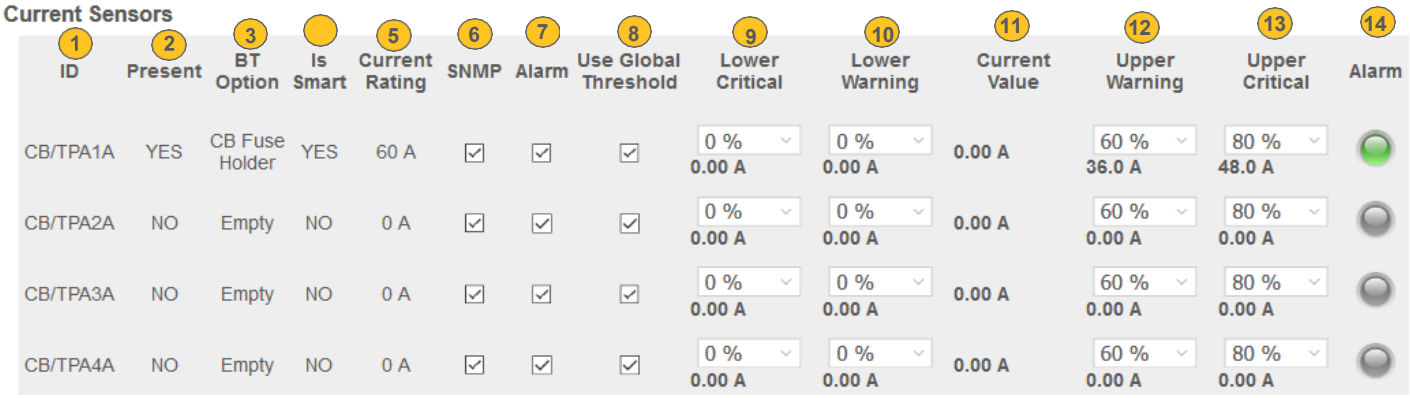

Figure 30 - Current Sensors Screen

For data to display in the *Current Sensors Screen*, select **Enabled** in the *Panels Screen*.

NOTE: Field values in this screen default to specific settings. They do not require additional input but can be customized if desired. The fields in this table are column headings that define data displayed in rows within the columns.

ALERT

ALERT! Global Threshold and light indicators for these fields will ONLY display in this screen.

The *Current Sensors Screen* is a tool to view how circuits are performing using sensors that indicate current status. Sensor precision values can be adjusted to reflect the degree of fluctuation in current. When enabled, global threshold values indicate where current levels are among one or both selected SNMP and Alarm sensors. The Alarm light displays the highest threshold value in the row depending on selection of one or both selected SNMP and Alarm sensors.

Panels Tab :: Circuit Configuration > Circuit Settings > Current Sensors Screen

Ref.	Field	Type	Value	Description
1	ID (column)	Read Only	Text	Indicates the fuse type and its location in the panel. Circuit outputs can include: **Single-Pole Output, Dual-Pole Output, Triple-Pole Output, GMT, TPS and TLS.** Refer to 6.2, *Fuse/Circuit Breaker Ratings* for more information.
2	Present (column)	Read Only	Text	Indicates if a sensor module is in the location indicated in the ID column. Default is: **No** When the sensor module has been added, this field defaults to **Yes**.

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Panels Tab :: Circuit Configuration > Circuit Settings > Current Sensors Screen

Ref.	Field	Type	Value	Description
3	BT Option (column)	Read Only	Text	Indicates if a bullet terminal has been selected at the selected location. Default is: **N/A**, No selection When there is a bullet terminal sensor present, this field defaults to **Yes**.
4	Is Smart (column)	Read Only	Text	Indicates the presence of a monitoring sensor. Default is: **No**, indicating a pass through module that does not monitor. When a monitoring sensor is installed, this field defaults to **Yes**.
5	Current Rating (column)	Read Only	Text	Indicates the rating of the fuse or circuit breaker. Default is: **20 A** When defined in the *Circuit Configuration Screen*, the field defaults to that value.
6	SNMP (column)	Select	Checkbox	When SNMP is enabled (in the *Controller Tab*) the current sensor for SNMP checkbox allows the current status to be sent. Default is: **Checked** To enable the SNMP current sensor status to be sent over SNMP, **select** (to check) the **SNMP** Checkbox. To disable the alarm, **deselect** the Checkbox. *NOTE: When this field is enabled, a software setting showing the status of the alarm can be sent. Threshold settings enabled during controller configuration remain operational even when this field is unchecked.* See Global Threshold Settings (Lower Critical, Lower Warning, Current Value, Upper Warning and Upper Critical) and the Alarm (light) fields below for indicator settings.

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Panels Tab :: Circuit Configuration > Circuit Settings > Current Sensors Screen

Ref.	Field	Type	Value	Description
7	Alarm (column)	Select	Checkbox	The current sensor for the Alarm allows the alarm status to be sent to SNMP. This field also determines the availability of the Use Global Threshold checkbox. When the Alarm checkbox is selected, the option to use predetermined global threshold settings or change global threshold settings is available. If the Alarm checkbox is not selected, the option to change global threshold settings is not available. Default is: **Checked** To enable the Alarm current sensor status to be sent and to allow global threshold settings to be adjusted, **select** (to check) the **Alarm** Checkbox. To disable, **deselect** the Checkbox. *NOTE: When unchecked, the Global Threshold Settings checkbox is not accessible.* See Global Threshold Settings (Lower Critical, Lower Warning, Current Value, Upper Warning and Upper Critical) and the Alarm (light) fields below for indicator settings.
8	Use Global Threshold	Select	Checkbox	Allows predetermined global threshold settings to be used in detecting current sensor status at the selected location or to adjust settings in this screen. Default is: **Checked** to use predetermined global threshold settings. *NOTE: The current sensor Alarm checkbox must be checked for this field to allow input.* To use predetermined global threshold settings, **select** (to check) the **Use Global Threshold** Checkbox. To adjust global threshold settings in this screen, **deselect** the Checkbox. When the Use Global Threshold Checkbox is not selected, threshold values can be changed in the Lower Critical, Lower Warning, Upper Warning and Upper Critical fields below. The Current Value field reflects the value of the current and is read only.
9	Lower Critical (column)	Select	Drop down Menu	Lower Critical is a user defined threshold that indicates a much lower than expected value. The number below the percentage setting displays the current value that the circuit will be at if the lower critical threshold is reached. Default is: **0%** and current value is **0.00 A** *NOTE: The Use Global Threshold checkbox must be unchecked to change a value.* From the Lower Critical drop down menu select a percentage of the fuse rating to indicate the lower critical sensor threshold. Select from **0% to 100% in 5% increments**.

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Panels Tab :: Circuit Configuration > Circuit Settings > Current Sensors Screen

Ref.	Field	Type	Value	Description
10	Lower Warning (column)	Input	Drop down Menu	Lower Warning is a user defined threshold that indicates a lower than expected value. The number below the percentage setting displays the current value that the circuit will be at if the lower warning threshold is reached. Default is: **0%** and current value is **0.00 A** *NOTE: The Use Global Threshold checkbox must be unchecked to change a value.* From the Lower Warning drop down menu, select a percentage of the fuse rating to indicate the lower warning sensor threshold. Select from **0% to 100% in 5% increments**.
11	Current Value (column)	Read Only	Text	Measured value.
12	Upper Warning (column)	Select	Drop down Menu	Upper Warning is a user defined threshold that indicates a higher than expected value. The number below the percentage setting displays the current value that the circuit will be at if the upper warning threshold is reached. Default is: **60%** and current value is **12.00 A of 20 AMP** *NOTE: The Use Global Threshold checkbox must be unchecked to change a value.* From the Upper Warning drop down menu, select a percentage of the fuse rating to indicate the upper warning sensor threshold. Select from **0% to 100% in 5% increments**.
13	Upper Critical (column)	Select	Drop down Menu	Upper Critical is a user defined threshold that indicates a much higher than expected value. The number below the percentage setting displays the current value that the circuit will be at if the upper critical threshold is reached. Default is: **80%** and current value is **16.00 A of 20 AMP** *NOTE: The Use Global Threshold checkbox must be unchecked to change a value.* From the Upper Critical drop down menu, select a percentage of the fuse rating to indicate the upper critical sensor threshold. Select from **0% to 100% in 5% increments**.
14	Alarm	Read Only	Light	Indicates the most elevated status of the selected sensors at the selected location according to global threshold values (shown in this screen). This light indicates the breaker and threshold alarm status for the individual circuit. **Green**: Normal current. **Yellow**: Warning threshold reached. **Orange**: Critical threshold reached. **Red**: A blown fuse or tripped breaker. **Gray**: Not connected.

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5. Equipment Tab Settings

The *Equipment Tab* is comprised of the main window (*Equipment Tab Window*) and screens that display information pertaining to associated equipment or assign equipment input labels to specific PDU circuit locations.

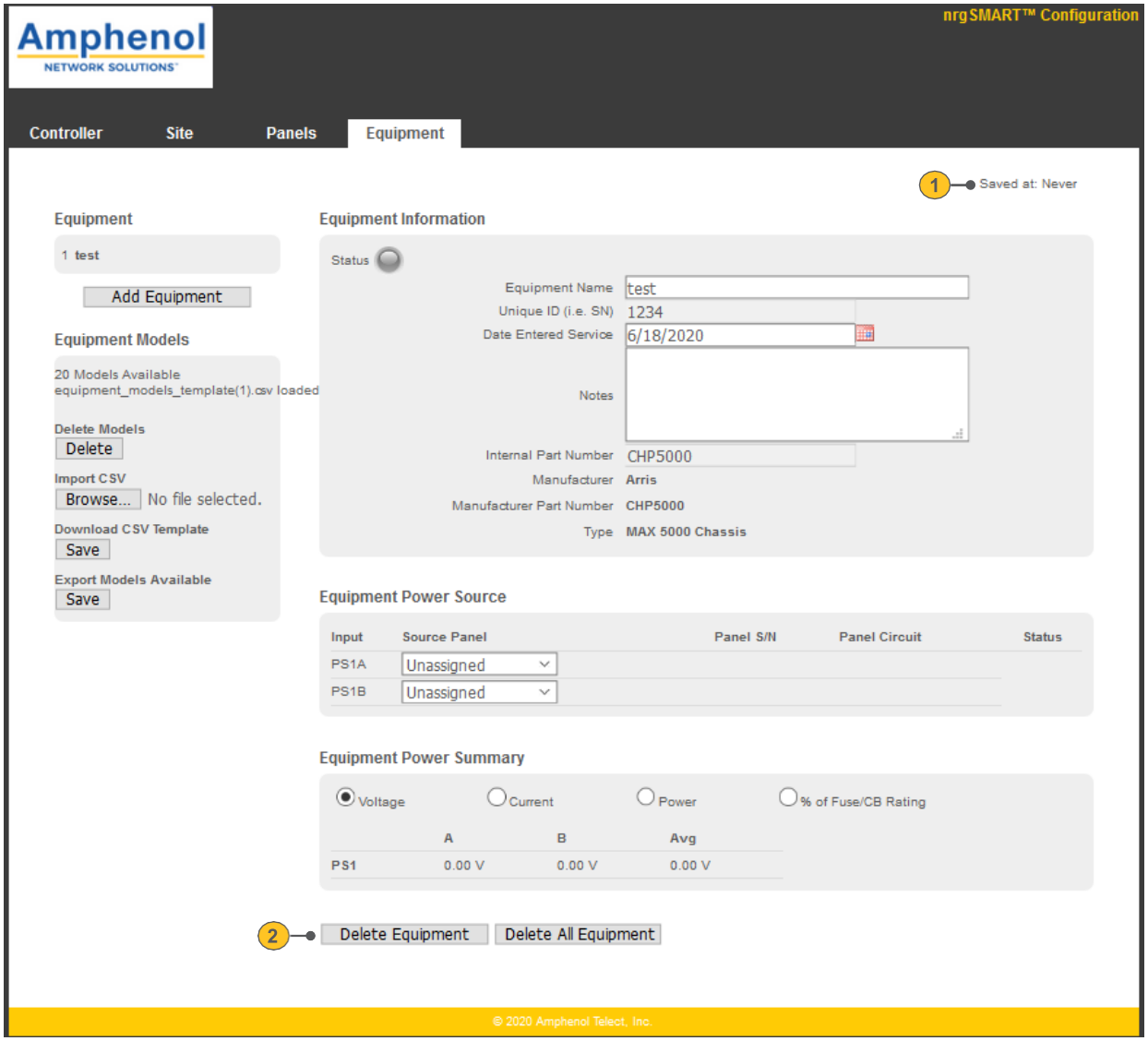

Figure 31 - Equipment Tab Window

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Equipment Tab Window

Ref.	Field	Type	Value	Description
1	Saved At	Read Only	Text	The date the information in the *Equipment Tab* was last saved. *NOTE: When a field is updated within a screen in the Equipment Tab, clicking outside of the field saves the information and updates the Saved At time.* Field settings are: **Never**: Data not saved **Date/Time**: mm/dd/yyyy HH:MM:SS (AM/PM)
2	Delete Equipment	Select	Button	Removes the selected equipment and all of the associated information from the *Equipment Tab*. Select the **Delete Equipment** button to remove the selected equipment and associated information from the *Equipment Tab*. When equipment is deleted, the rows below the Equipment Name row in the *Equipment Screen* shift up. *NOTE: This button deletes information from the Equipment Tab, not the equipment model.*

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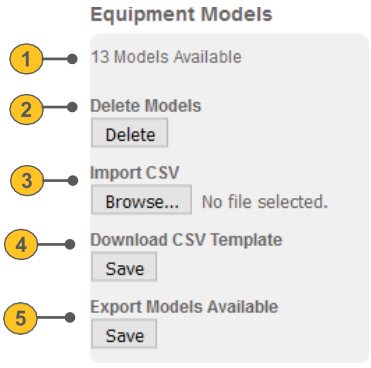
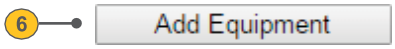
Take the following steps to view and monitor equipment in the *Equipment Tab*:

1. See page 61-62 on importing and adding new equipment.



2. Select the **Add Equipment** button and choose the equipment to add in the *New Equipment Information Screen*.



3. Highlight an equipment name in the *Equipment Screen* to view information and monitor power settings in the *Equipment Tab*.

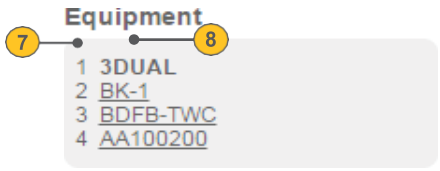


Figure 32 - Equipment Models, Add Equipment and Equipment

Equipment Tab :: Equipment Models Screen

Ref.	Field	Type	Value	Description
1	Models Available and File Name	Read Only	Text	Displays equipment model list, with the number of equipment models to choose from, and the name of the file in use for defining a unique equipment instance.
2	Delete Models	Select	Button	Removes all models in equipment list. Select the **Delete** button to remove the selected panel and associated information from the Panels Tab. *Note: This will remove all models.*
3	Import CSV Template	Select	Button	Download a pre-defined equipment model list containing the equipment models that you have entered in the CVS file. Select the **Browse** button to select a file to import. Select **Open** to import the file. The file name displays in the Models Available field.
4	Download CSV Template	Select	Button	Download a pre-defined equipment model list containing the equipment models to choose from. Select the **Save** button to select the file location to save in. Select **Open** to save the file.
5	Export Models Available	Select	Button	Exports a list of equipment models associated with the controller. Select the Equipment Model containing the list of equipment you wish to export. Select the **Save** button to export the file.

Equipment Tab :: Add Equipment button

Ref.	Field	Type	Value	Description
6	Add Equipment	Select	Button	Opens the *New Equipment Information Screen* where new equipment can be defined and added to the *Equipment Screen*. Select the **Add Equipment** button to define additional equipment in the *New Equipment Information Window*.

Equipment Tab :: Equipment Screen

Ref.	Field	Type	Value	Description
NOTE: The fields below are column headings that define data displayed in rows within the columns.				
7	Number (column)	Read Only	Text	The row number for the equipment named.
8	Equipment Name (column)	Select	Text	The Equipment Name identifies the equipment. Highlight a name to select equipment to view and monitor. When selected, the Equipment Name becomes bold and associated fields populate the screens in the *Equipment Tab*.

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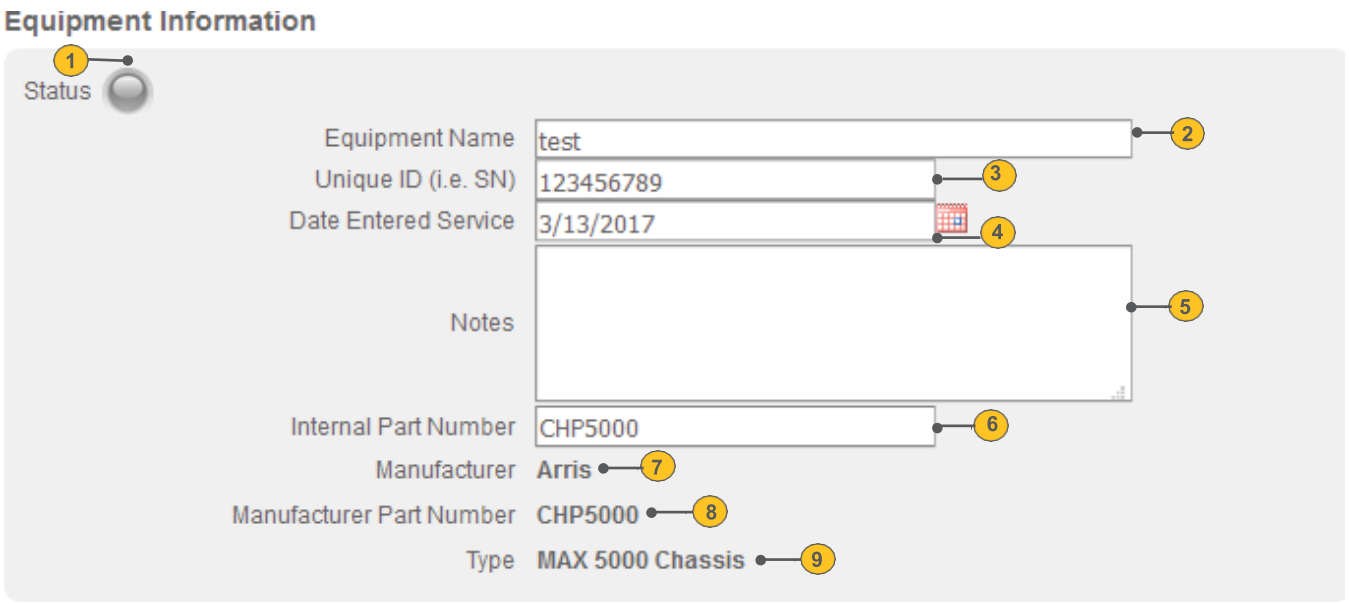

Figure 33 - New Equipment Information Window/Equipment Information Screen

Define equipment in the *New Equipment Information Window* and select the **Create** button at the bottom. The newly created equipment information displays in screens in the *Equipment Tab*.

Equipment Tab :: New Equipment Information Window/Equipment Information Screen

Ref.	Field	Type	Value	Description
1	Status Light	Read Only	Light	*NOTE: The status light does not display in the New Equipment Information Window. It only displays in the Equipment Information Screen after equipment has been added.* Located in the upper corner of the *Equipment Information Screen*, the Status light summarizes the operating state of the equipment. **Green**: Normal operation. **Yellow**: Warning threshold reached. **Orange**: Critical threshold reached. **Red**: A blown fuse or tripped breaker. **Gray**: Not connected.
2	Equipment Name	Input	Text	Name of the equipment whose information is defined or displays in this screen. Enter an equipment name to add new equipment information (*New Equipment Information Window*) or to view or modify other equipment information, enter a different valid Equipment Name in this field. This field accepts up to 40 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
3	Equipment Serial Number	Input	Text	The Serial Number shown on the equipment. Enter the Serial Number when adding new equipment, or view or modify existing information. Valid characters are upper/lowercase letters, numbers, symbols and spaces.

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Equipment Tab :: New Equipment Information Window/Equipment Information Screen

Ref.	Field	Type	Value	Description
4	Date Entered Service	Input	Text	The date that the equipment is connected and is operational. Default is: **Current date**, displays as mm/dd/yyyy, indicating the date the equipment is added. To change this setting, enter a new date or click on the calendar and make a selection.
5	Notes	Input	Text	Add additional information specific to this equipment. Enter any notes or additional information pertaining to this equipment. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
6	Internal Part Number	Select	Drop down	The internal part number assigned to the equipment by the equipment model. View the internal part number or change it by selecting the Internal Part Number drop down menu and selecting the internal part number to assign to the equipment. The internal part number automatically populates the following fields from the model definition.
7	Manufacturer	Read Only	Text	The name of the equipment manufacturer.
8	Manufacturer Part Number	Read Only	Text	The part number assigned to the equipment by the manufacturer.
9	Type	Read Only	Text	Identifies the kind of equipment.

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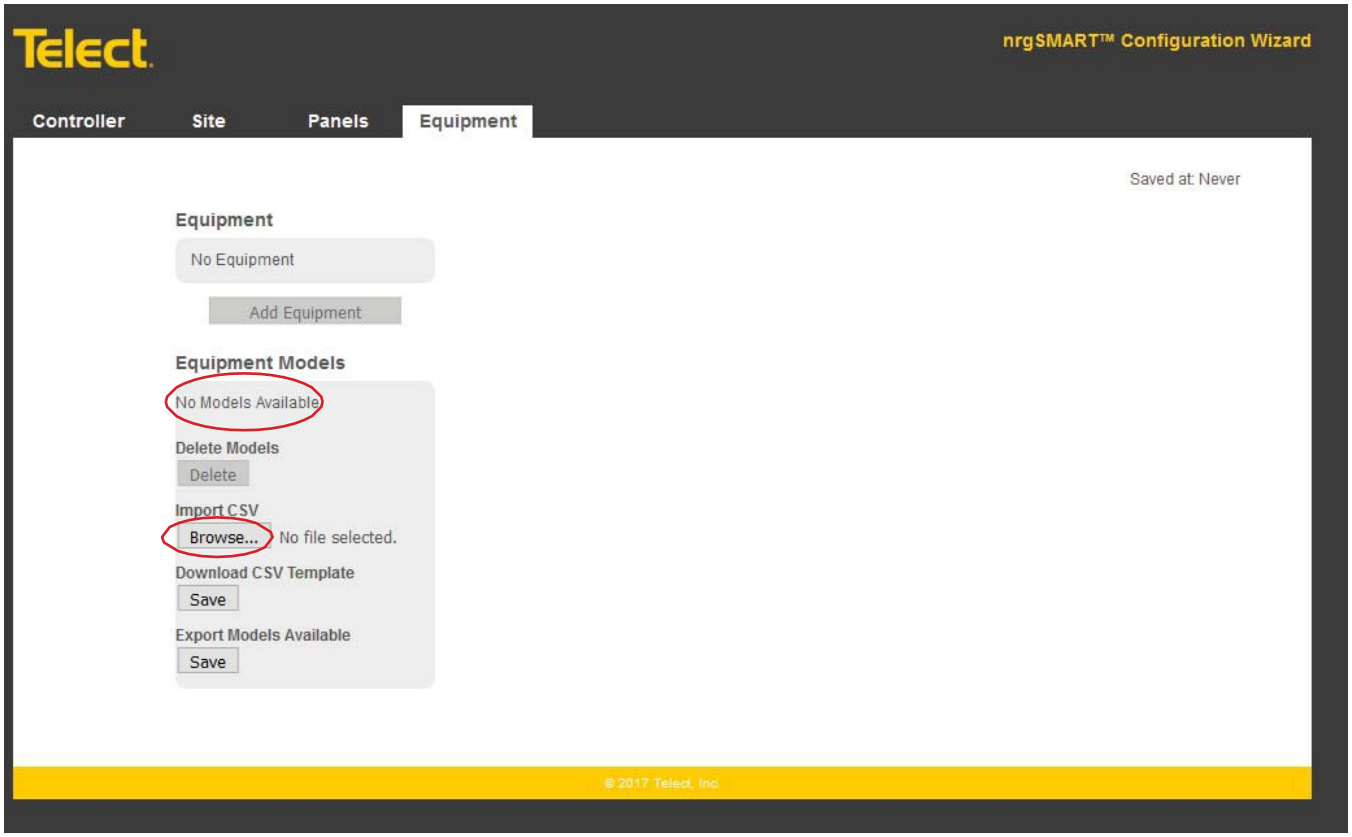
5.1 Importing CSV and Adding Equipment



No models available to add equipment. Select browse to import CSV file with equipment models you would like to add.

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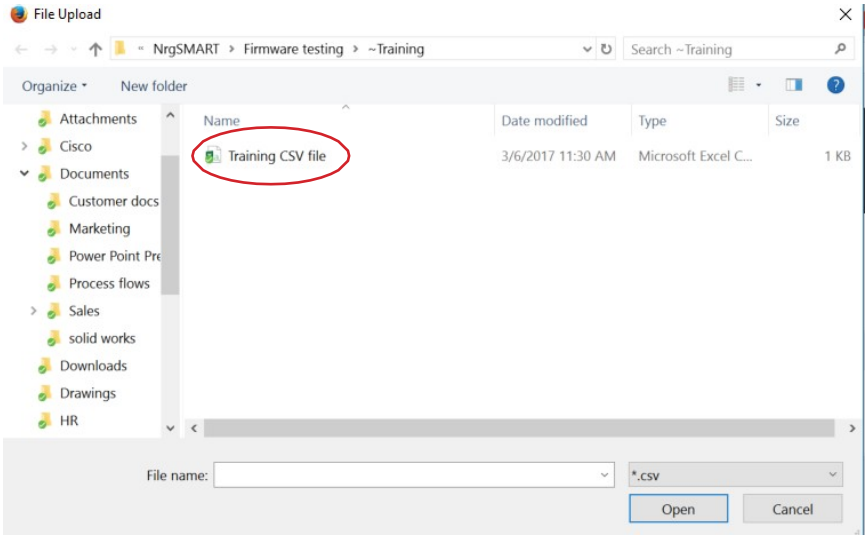
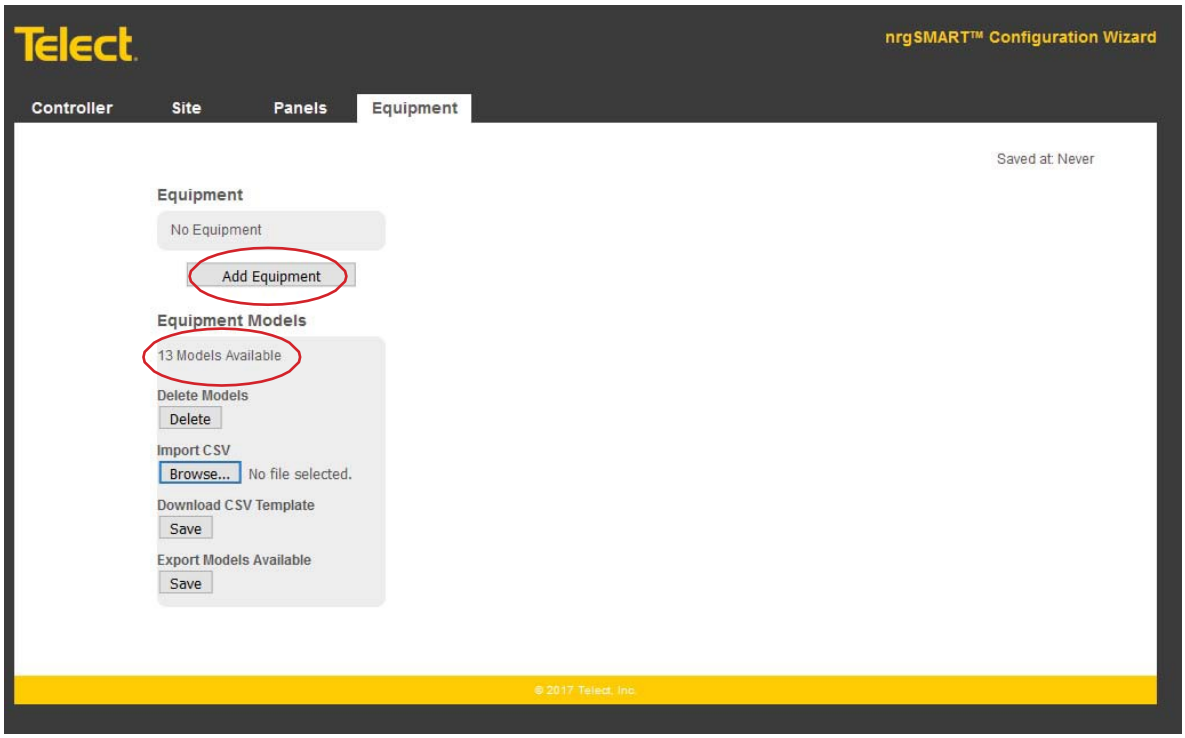


Select the CSV file you would like to import.

This screen shows that you have imported your CSV file correctly and you have 13 models available.



Select “Add Equipment” to install equipment attached to nrgSMART panels.

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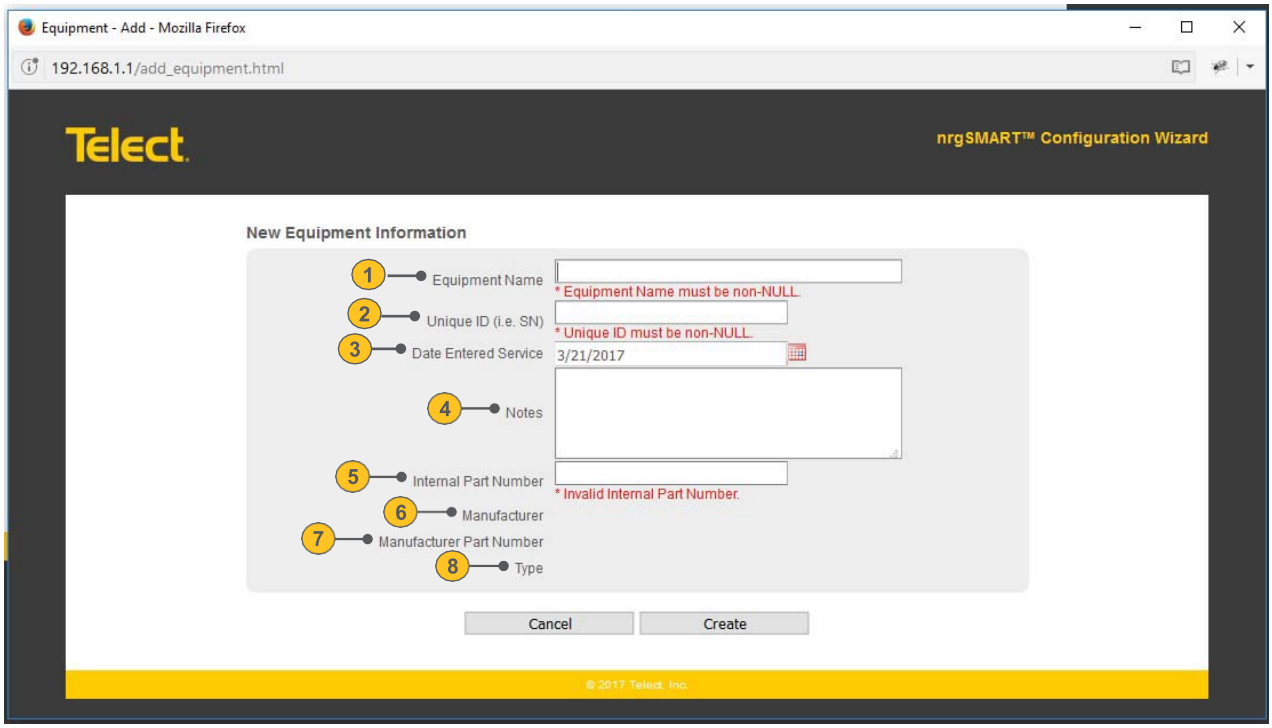

Equipment Tab :: New Equipment Information Window/Equipment Information Screen

Ref.	Field	Type	Value	Description
1	Equipment Name	Input	Text	Name of the equipment whose information is defined or displays in this screen. Enter an equipment name to add new equipment information (*New Equipment Information Window*) or to view or modify other equipment information, enter a different valid Equipment Name in this field. This field accepts up to 40 characters. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
2	Unique ID (i.e.Serial Number)	Input	Text	The Serial Number shown on the equipment. Enter the Serial Number when adding new equipment, or view or modify existing information. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
3	Data Entered Service	Input	Text	Insert date of when equipment was placed into service.

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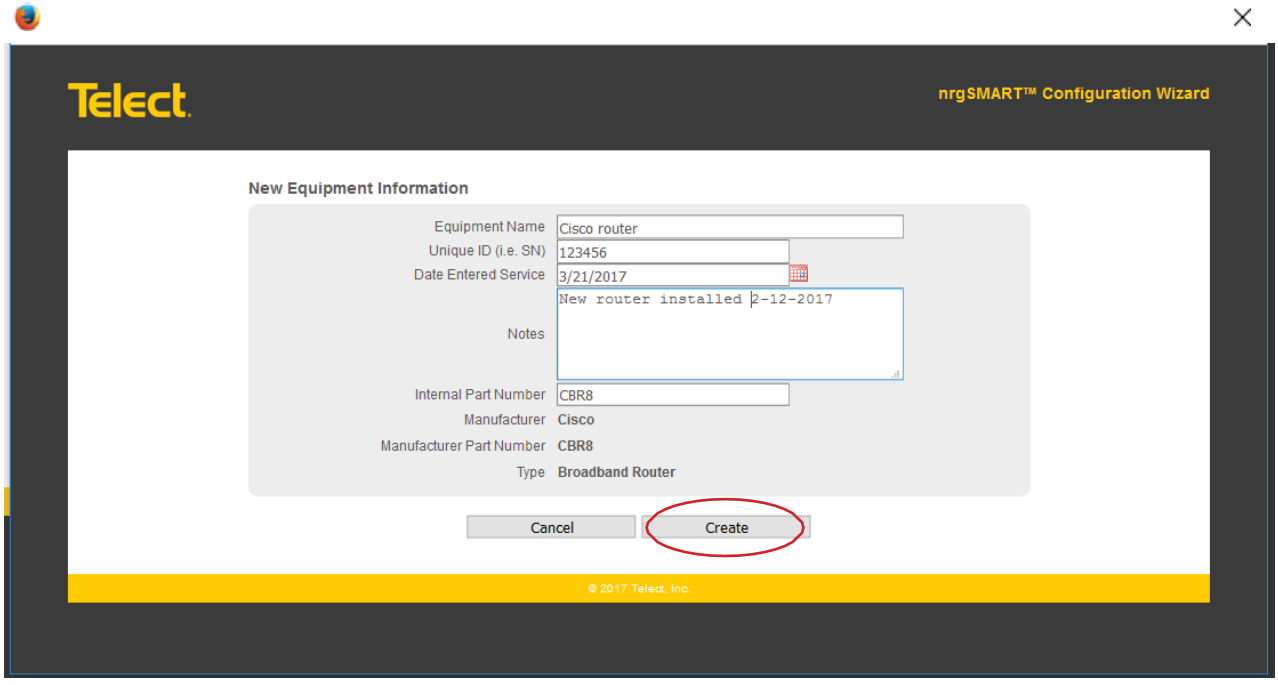
Equipment Tab :: New Equipment Information Window/Equipment Information Screen

Ref.	Field	Type	Value	Description
4	Notes	Input	Text	Add additional information specific to this equipment. Enter any notes or additional information pertaining to this equipment. Valid characters are upper/lowercase letters, numbers, symbols and spaces.
5	Internal Part Number	Select	Dropdown Menu	The internal part number assigned to the equipment by the equipment model. View the internal part number or change it by selecting the Internal Part Number drop down menu and selecting the internal part number to assign to the equipment. The internal part number automatically populates the following fields from the model definition.
6	Manufacturer	Read Only	Text	The name of the equipment manufacturer.
7	Manufacturer Part Number	Read Only	Text	The part number assigned to the equipment by the manufacturer.
8	Type	Read Only	Text	Identifies the kind of equipment.



Once New Equipment Information form has been filled out, select “Create” to complete.
All fields in red must be completed.

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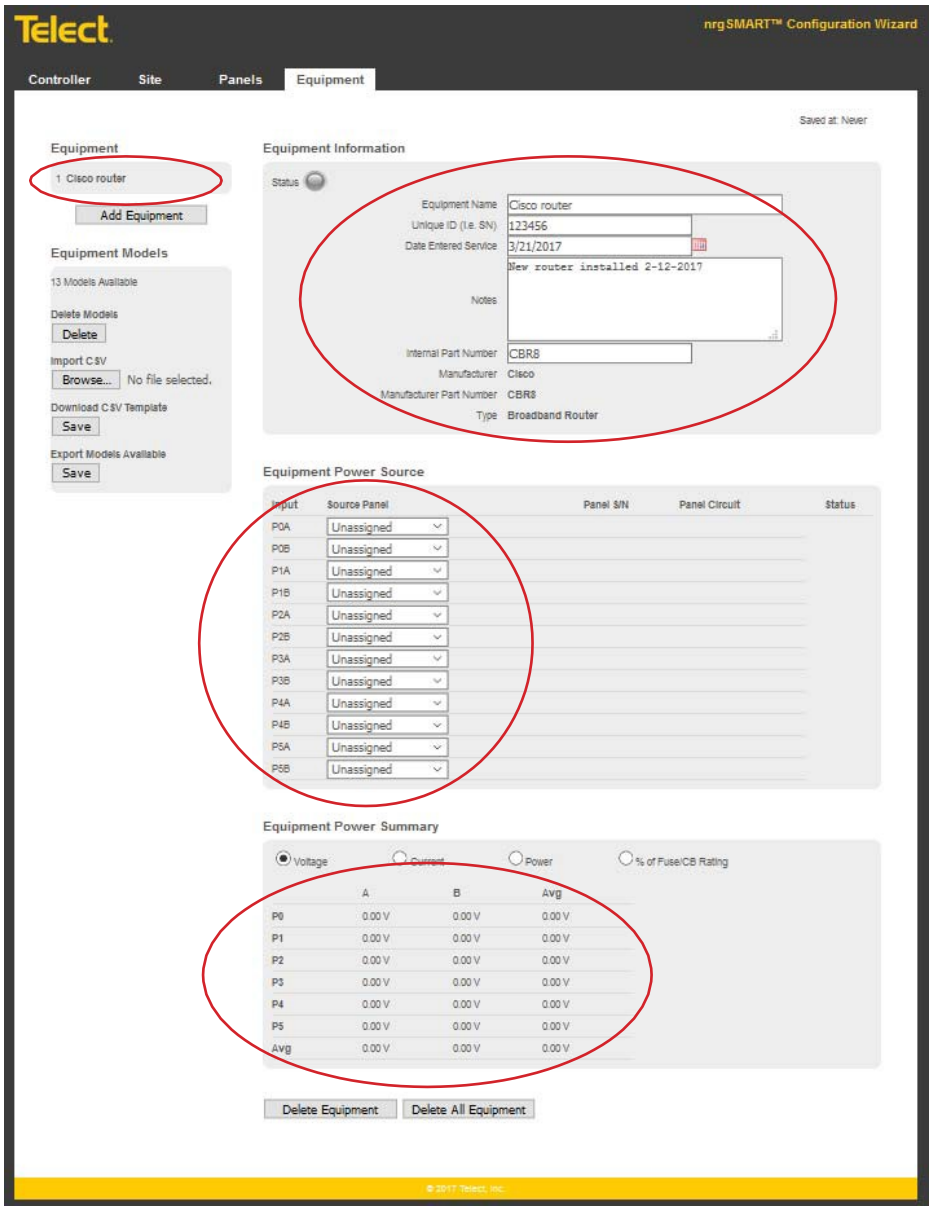

This screen shows newly added equipment and the populated fields associated to that hardware.

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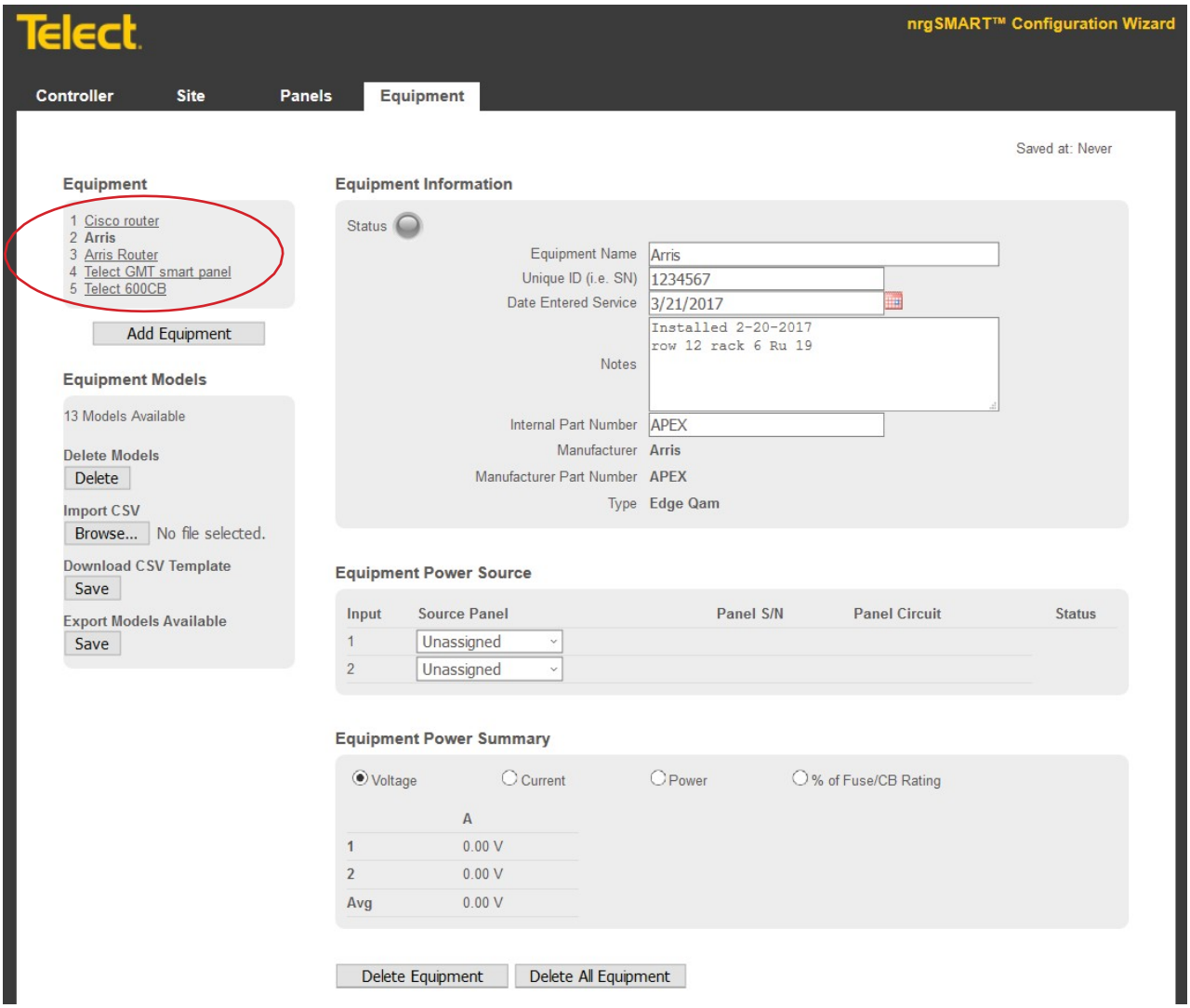

This screen shows several pieces of equipment that have been added.

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	A	B	C	D	E	F	G	H	I
1	Internal Part Number (40 chars)	Spec Power Draw (integer)	Manufacturer (40 chars)	Manufacturer Part Number (40 chars)	Uses A/B Feed Inputs (1/0 Boolean)	Number Of Power Inputs (1-36)	Equipment Type (40 chars)	Format String (10 chars)	Label Start Index
2	nrg100GMT10	0	Telect	nrg100GMT10	1	2	Power Panel	#	1
3	nrgBDP	0	Telect	nrgBDP	0	1	Power Panel	#	1
4	nrg600BT08	0	Telect	nrg600BT08	1	2	Power Panel	#	1
5	nrg600BT10	0	Telect	nrg600BT10	1	2	Power Panel	#	1
6	nrg600BT20S	0	Telect	nrg600BT20S	0	1	Power Panel	#	1
7	ATX MP3BA	5	ATX	ATX MP3BA	1	2	Active Chassis	#	1
8	CBR8	215	Cisco	CBR8	1	12	Broadband Router	P#	0
9	NSG9000-40G	16	Harmonic	NSG9000-40G	0	2	Edge Qam	#	1
10	CHP5000	12	Arris	CHP5000	0	2	MAX 5000 Chassis	PS#	1
11	ARPD	2	Arris	ARPD	0	1	Demodulator	#	1
12	APEX	7	Arris	APEX	0	2	Edge Qam	#	1
13	OM2000	2	Motorola	OM2000	0	1	Multiplexer/ Modulator	#	1
14	E6000	79	Arris	E6000	1	2	Edge Router	#	1
15									
16									
17									
18									

Here is a sample CSV file that you will need to populate your equipment into.

Note: Do not alter the format of this CSV file as it will not populate the fields correctly in the controller.

.CSV FILE COLUMN DEFINITIONS

A. Internal part number (40 Characters): Quick Name or model number
B. Spec Power Draw (Integer): Use whole numbers in AMPS
C. Manufacturer (40 Characters): Place MFG name
D. Manufacturer Part Number (40 Characters): Place whole MFG part number
E. Uses A/B feed Inputs (1/0 Boolean): 1 for True A/B feeds - 0 for FALSE A/B feeds (single feed)
F. Number of power inputs (1-36): Place number of power supplies per device
G. Equipment type (40 Characters): Type of power panel (GMT, TPA, Router etc.)
H. Format String (10 Characters): Format of power supplies naming convention by Manufacturer (PS1 or PSM0 etc.)
I. Label start index: Starting position of power supply, either 0 or 1

Definitions of CSV fields above.

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Figure 34 - Equipment Power Source Screen

NOTE: The fields in this table are column headings that define data displayed in rows within the columns.

Equipment Tab :: Equipment Power Source Screen

Ref.	Field	Type	Value	Description
1	Input (column)	Read Only	Text	Input description for the equipment in the row.
2	Source Panel (column)	Select	Drop down menu	Select the PDU panel for the equipment input. From the Source Panel drop down menu, select from: **Unassigned**: no selection **List of available panels**
3	Panel S/N (column)	Read Only	Text	Displays the serial number for the selected source panel.
4	Panel Circuit (column)	Select	Drop down menu	Select the PDU panel circuit for the equipment input. From the Panel Circuit drop down menu, select from: **Unassigned**: no selection **List of available circuits**
5	Status (column)	Read Only	Light	Indicates the overall status for the selected row. **Green**: Normal operation. **Yellow**: Warning threshold reached. **Orange**: Critical threshold reached. **Red**: A blown fuse or tripped breaker. **Gray**: Not connected.

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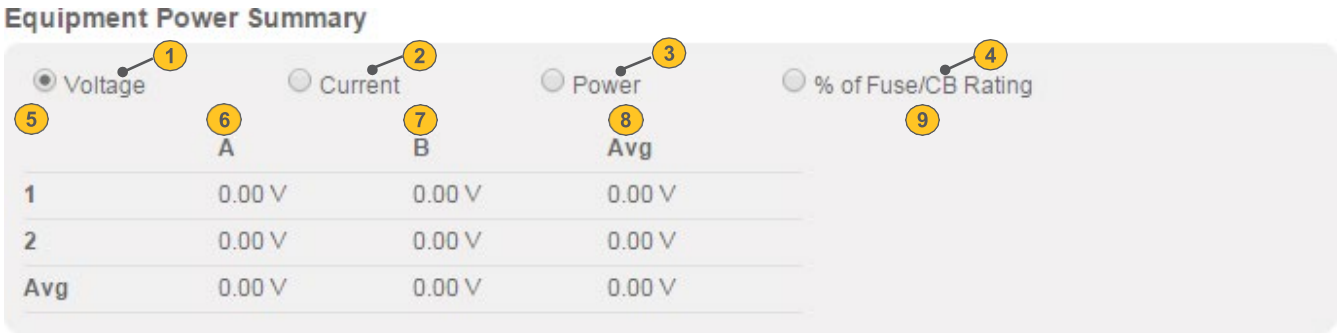

Figure 36 - Equipment Power Summary Screen

Equipment Tab :: Equipment Power Summary Screen

Ref.	Field	Type	Value	Description
1	Voltage	Select	Button	Selection of this button enables voltage readings for Feed A and Feed B and their averages to display in the following rows. Select the **Voltage** button to display voltage readings.
2	Current	Select	Button	Selection of this button enables current readings for Feed A and Feed B and their averages to display in the following rows. Select the **Current** button to display current readings.
3	Power	Select	Button	Selection of this button enables power readings for Feed A and Feed B and their averages to display in the following rows. Select the **Power** button to display power readings.
4	% of Fuse/CB Rating	Select	Button	Selection of this button enables the percentage of fuse or circuit breaker in use to display for Feed A and Feed B in the following rows. Select the **% of Fuse/CB Rating** button to display the percentage of the fuse or circuit breaker that is in use for each row.

NOTE: The following fields are column headings that define data displayed in rows within the columns.

5	Row # (column)	Read Only	Text	The row identifier. *NOTE: The last row (the Avg row) is an average of the total consumption for that column.*
6	A (column)	Read Only	Text	Depending on the button selected at the top of the screen, this column displays the settings for Feed A of this row. V: voltage - measured in volts C: current - measured in amps W: power - measurement in kilowatts
7	B (column)	Read Only	Text	Depending on the button selected at the top of the screen, this column displays the settings for Feed B of this row. V: voltage - units measured in volts C: current - units measured in amps W: power - measurement in kilowatts
8	Avg (column)	Read Only	Text	Average of the measured value in columns A and B. The button selected at the top of the screen determines which unit displays.
9	% Fuse/CB Rating (column)	Read Only	Text	Displays the percentage of the fuse/circuit breaker in the row depending on the rating for that device.

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6. Supplementary Information

6.1 MIB Table

Download Management Information Base Table at: http://support.telect.com/nrgSmart_HUB

6.2 Fuse/Circuit Breaker Ratings

Fuse/Circuit Breaker Rating

Amps	.18	.25	.5	.75	1	1.33	1.5	2	2.5	3	3.5	4	5	7.5	10	12	15	20	25	30	40	50	60	70	80	90	100	110	125	150	175	200	225	250					
Single-pole					X			X		X			X		X			X	X	X	X	X	X	X	X	X	X	X	X									
Double-pole*																																	X	X	X					
Triple-pole*																																				X	X	X		
TFD TPS													X		X			X	X	X	X	X	X	X	X	X														
TFD TLS																													X	X	X	X	X							
GMT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																					

*multi-pole breaker only selectable if panel type allows multi-pole breakers

6.3 Fuse and Circuit Breakers

Asymmetrical Breakers (600CBxx family, nrg600BT08-M, nrgBDFB family)

Standard Trip Circuit Breakers

Item	Description	Part Number	Item	Description	Part Number
Single Pole	1A	118714	Double Pole	125A	134634
	2A	119103		150A	134635
	3A	124210		175A	135921
	5A	117852	Triple Pole	200A	134636
	10A	116669		225A	134637
	15A	115999		250A	134638
	20A	116670			
	25A	117402			
	30A	116671			
	40A	116672			
	50A	116673			
	60A	118160			
	70A	118161			
	80A	118162			
	90A	118163			
	100A	118159			
600CBXX faceplate		600CBXX-CBK	nrgXX faceplate		139875-2

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Asymmetrical Breakers (009-6212-2100, 350CB06, 009-7000-0104 family, 125DM08 family)

Standard Trip Circuit Breakers with Faceplates

Single-Pole	Part Number	Single-Pole	Part Number
1A	090-0052-0001	30A	090-0052-0030
2A	090-0052-0002	40A	090-0052-0040
3A	090-0052-0003	50A	090-0052-0050
5A	090-0052-0005	60A	090-0052-0060
10A	090-0052-0010	70A	090-0052-0070
15A	090-0052-0015	80A	090-0052-0080
20A	090-0052-0020	90A	090-0052-0090
25A	090-0052-0025	100A	090-0052-0100

Asymmetrical Breakers (007-0001-260x family)

Standard Trip Circuit Breakers with Faceplates

Single-Pole	Part Number	Single-Pole	Part Number
1A	090-0052-1001	30A	090-0052-1030
2A	090-0052-1002	40A	090-0052-1040
3A	090-0052-1003	50A	090-0052-1050
5A	090-0052-1005	60A	090-0052-1060
10A	090-0052-1010	70A	090-0052-1070
15A	090-0052-1015	80A	090-0052-1080
20A	090-0052-1020	90A	090-0052-1090
25A	090-0052-1025	100A	090-0052-1100

Symmetrical Breakers (nrg600BT10-x and nrg600BT20S-x only)

Standard Trip Circuit Breakers

Item	Description	Part Number	Item	Description	Part Number
Single-Pole	5A	147604	Double-Pole	125A	148038
	10A	147605		150A	148039
	15A	147606		175A	148040
	20A	147607	Triple-Pole	200A	148041
	25A	147608		225A	148042
	30A	147609		250A	148043
	40A	147610			
	50A	147611			
	60A	147612			
	70A	147613			
	80A	147614			
	90A	147615			
	100A	147616			
	Faceplate	139875-2			

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Instantaneous Trip Circuit Breakers (009-6212-2100, 350CB06, 009-7000-0104 family, 125DM08 family)

Item	Description	Part Number
Single-Pole	20A	140368
	25A	140369
	30A	140370
	40A	140371
	50A	140372
	60A	140373
	70A	140374
	80A	140375
	90A	140376
	100A	140377

Mid-Trip Circuit Breakers (600CBxx family)

Item	Description	Part Number	Item	Description	Part Number
Single-Pole	2.5A	138680	Single-Pole	60A	138672
	5A	136983		70A	138671
	7.5A	138679		80A	138670
	10A	138678		90A	138669
	15A	138677		100A	138392
	20A	138676		Faceplate (required)	
	30A	138675	Double-Pole	150A	143463
	40A	138674		200A	143465
	50A	1386733			

1RU Slimline Breakers (300CB08/nrg300CB08)

Part Number	Description
149710	Circuit Breaker: 5A, Slimline, STD Delay
149711	Circuit Breaker: 10A, Slimline, STD Delay
149712	Circuit Breaker: 15A, Slimline, STD Delay
149713	Circuit Breaker: 20A, Slimline, STD Delay
149714	Circuit Breaker: 25A, Slimline, STD Delay
149715	Circuit Breaker: 30A, Slimline, STD Delay
149716	Circuit Breaker: 40A, Slimline, STD Delay
149717	Circuit Breaker: 45A, Slimline, STD Delay
149718	Circuit Breaker: 50A, Slimline, STD Delay
149719	Circuit Breaker: 60A, Slimline, STD Delay

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TPS/TLS Fuses

Compatible with: 600CBxx family, 350CB06, 007-0001-260x family, 009-6212-2100, 009-7000-0104 family, and 125DM08 family.
These cannot be used in the nrg600BT10 or nrg600BT20S.

Item	Description	Part Number
TFD Fuse Holder	TPS/TLS Fuse Holder	129816
TPS Fuses	3A	130749
	5A	130481
	10A	130485
	15A	130487
	20A	130489
	25A	130476
	30A	130478
	40A	130482
	50A	130484
	60A	130486
	70A	130488
TLS Fuses	80A	140640
	90A	140641
	100A	140642
	110A	140643
	125A	140644

TPC Fuses

TPC Fuse	Part Number
TPC Fuse Holder	129347 Compatible with: 600CBxx family, 350CB06, 007-0001-260x family, 009-6212-2100, 009-7000-0104 family, and 125DM08 family
20A	146469
25A	125441
30A	125442
40A	125443
50A	125444
60A	125445
75A	125446
90A	125447
100A	125448
125A	125449

KLM and TPA Fuses

KLM Fuse	Part Number	TPA Fuse	Part Number
1A	118675	5A	124818
2A	118676	10A	124819
5A	118673	15A	124820
10A	118438	20A	124821
15A	118439	25A	125244
20A	118440	30A	122734
25A	118441	40A	122738
30A	118442	50A	122739
Dummy KLM Fuse	110852	Replacement TPA Holder	146010

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GMT Fuses

For additional dummy fuses, order part number 132748. For GMT safety (splash/splatter) covers, order part number 116915 for GMT fuses up to 15A. Amphenol Network Solutions recommends using only UL-recognized supplementary protectors.

GMT Fuse	Part Number
0.18A Yellow (YEL)	130781
0.25A Violet (VIO)	100151
0.5A Red (RED)	004001
0.75A Brown (BRN)	004008
1A Gray (GRY)	100991
1.18A White (WHT)	004006
1.5A White/Yellow (WHT/YEL)	004011
2A Orange (ORN)	004002
2.5A White/Orange (WHT/ORN)	130783
3A Blue (BLU)	004012
3.5A White/Blue (WHT/BLU)	130782
4A White/Brown (WHT/BRN)	004013
5A Green (GRN)	004014
7.5A Black/White (BLK/WHT)	004010
10A Red/White (RED/WHT)	004015
12A Yellow/Green (YEL/GRN)	102287
15A Red/Blue (RED/BLU)	102288
20A White/Green Without Safety Cover (WHT/GRN)	127240RC
20A White/Green With Safety Cover (WHT/GRN)	131340

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