

# USER MANUAL

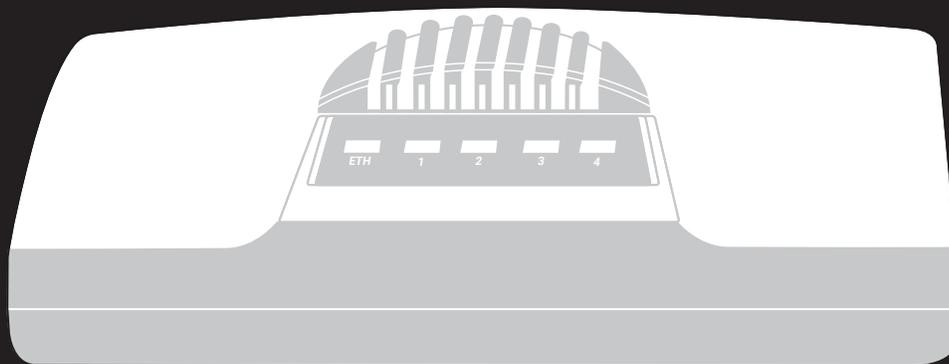
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EME161A

# ALERTWERKS HUB 4-PORT

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24/7 TECHNICAL SUPPORT AT 1.877.877.2269 OR VISIT [BLACKBOX.COM](http://BLACKBOX.COM)



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# CHAPTER 1: SPECIFICATIONS

**TABLE 1-1. HUB SPECIFICATIONS**

<b>SPECIFICATION</b>	<b>DESCRIPTION</b>
Inputs	(4) RJ-45 sensor ports for connecting AlertWerks sensors (1) RJ-45 Ethernet 10/100 ports
Outputs	(4) RJ-45 sensor ports (These ports can carry configurable output signals [0 VDC/5 VDC].)
Number of Users	Maximum: 10,000 users Default: 100 users
Components	Uses low-power surface mount technology for long-term reliability
Memory	8 to 16 MB flash memory
Indicators	(3) LEDs: (1) Power, (1) Network Connectivity, (1) Sensor Online and Threshold Status: (1) Buzzer for audible alert on sensor status
Power	5- VDC, 3-A
Mounting	Rackmounted or DIN-rail mounted
Operating Environment	Temperature: -13 to +176° F (-25 to +80 ° C) Humidity: 20 to 80% noncondensing
MTBF	1,400,000 hours
Dimensions	:1.25"H x 4.5" W x 2.5" D (3.2 x 11.4 x 6.4 cm)



## CHAPTER 2: OVERVIEW

### 2.1 INTRODUCTION

This manual covers the main features and basic configuration of the AlertWerks Hub.

The AlertWerks Hub is a high-speed, accurate, intelligent environmental monitoring device, featuring a completely embedded host and operating system.

The thermal map combines 4 sensors into one sensor port on the AlertWerks Hub, specially designed to monitor the air entering and leaving a computer rack. The Thermal Rack Map is performed from the EMEMS using the Thermal Sensor connected to the AlertWerks Hub. The Thermal Map Sensors monitor the temperature and humidity at different points of the rack.

### 2.2 FEATURES

- ◆ IP based, including SNMPv3, HTTPS, VPN
- ◆ Send encrypted SNMP Trap and Email Notifications
- ◆ Supports 4 Intelligent Sensors
- ◆ Notification Wizards
- ◆ Front and rear thermal mapping for any server cabinet
- ◆ Low cost daisy-chained temperature sensors
- ◆ Optional expansion module connectivity
- ◆ Virtual sensors
- ◆ Patented fire suppression feature
- ◆ Swing handle lock support

NOTE: Some of the pictures shown in this manual might not represent the actual Web UI of the unit; this is because we are constantly working on improving the firmware. Contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com) if you have any issues configuring your unit.

## CHAPTER 2: OVERVIEW

### 2.3 WHAT'S INCLUDED

Your package should contain the following items. If anything is missing or damaged, contact lack Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com)

- (1) Alertwerks Hub
- (1) Power Supply (100-240 V, 50/60 Hz, 5 V, 3 A, 15 W)
- (1) RJ-45 to RJ-45 cable, 5-foot (1.5-m)
- (1) CD (Manual)

### 2.4 HARDWARE DESCRIPTION

#### 2.4.1 BACK PANEL: PORTS

Port numbering starts from the power connector on the unit: the closest port to the power connector is Port 1 and closest to the Ethernet interface is Port 4.

You may connect AlertWerks intelligent sensors to any available ports.

**CAUTION:** If you're using analog pins on the sensor ports (with manually on-lined DCV sensors, and pin 7 of the RJ-45 connector), make sure that the voltage doesn't exceed 3 Volts. Otherwise, you might damage the unit!



FIGURE 2-1. BACK PANEL

TABLE 2-1. BACK PANEL COMPONENTS

NUMBER IN FIGURE 2-1	COMPONENT	DESCRIPTION
1	(1) RJ-45 connector #4	Links to intelligent sensor #4
2	(3) RJ-45 connectors #1-3	Links to intelligent sensors #1-3
3	(1) barrel connector	Links to 12-VDC power supply

## 2.4.2 TOP PANEL: STATUS LEDs

Figure 2-2 shows the LEDs on the top panel of the AlertWerks Hub. Table 2-2 describes their functions.



FIGURE 2-2. TOP PANEL: STATUS LEDs

TABLE 2-2. TOP PANEL COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	(1) Power/Etthernet (ETH) LED (red/green)	Turns red if there's no network connection, and blinks green (according to LAN activity) when the connection is normal.
2	(4) Sensor LEDs #1-4 (green)	Off = offline On = online and normal Slow blinking = Warning status Fast blinking = Critical and Error status

## CHAPTER 2: OVERVIEW

### 2.4.3 SIDE PANEL: RESET BUTTON

There are specific commands you can send to the unit by holding the Reset button for a specified amount of time.

You'll have to use something sharp, such as a straightened paperclip to be able to press Reset.

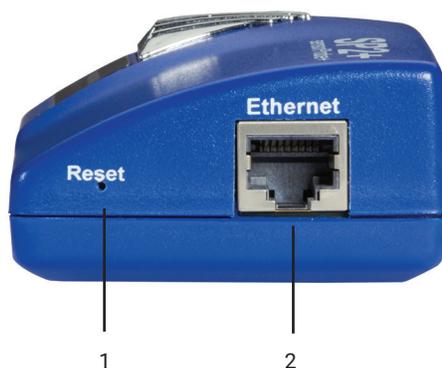


FIGURE 2-3. SIDE PANEL

TABLE 2-3. SIDE PANEL COMPONENTS

NUMBER IN FIGURE 2-3	COMPONENT	DESCRIPTION
1	Reset button	Resets the hub, see Table 2-4 for functions
2	RJ-45 connector	Links to Ethernet

TABLE 2-4. RESET BUTTON FUNCTIONS

TIME TO HOLD	ACTION
3 to 7 seconds	Reboot
7 to 12 seconds	Web UI password reset
12 to 17 seconds	Serial flash erase (DB erase without factory reset, the system configuration is kept)
17 to 25 seconds	Reset to factory defaults (serial flash erase + config erase)

## CHAPTER 3: CONFIGURATION

### 3.1 SETTING UP THE UNIT'S IP ADDRESS

VERY IMPORTANT NOTE: The units ship with the passwords enabled. The default log in for the web interface is:

**Username:** admin

**Password:** public

Every unit is shipped with the default IP address of 192.168.0.100

First, we will go through the process of changing this IP address to fit your own network configuration.

NOTE: In some cases, your computer might not be able to connect to this default IP address. In this situation, you either need to:

- a) add this IP your computers routing table or
- b) add a secondary IP address to the LAN card to allow access to the unit.

See below for how to set up these.

Ensure the following items are available to you before starting:

- ◆ RJ-45 CAT5 crossover cable with an RJ-45 male connection
- ◆ A PC with Ethernet card or LAN socket, logged in with Administrator rights

Follow these steps:

1. Connect the unit via the Ethernet port of the unit to your computer's LAN or Ethernet port with a CAT5 crossover cable.
2. Open a web browser and type the default IP address, then press enter.
3. You'll be presented with the Summary page.
4. Go to the System/Network page to change the network settings (see Section X.X in this manual).

Once you have assigned the new IP address use the "ping" command to test the unit's reply.

#### 3.1.1 HOW TO ADD A MANUAL ROUTE TO THE COMPUTER'S ROUTING TABLE

---

Open an Administrator Command Prompt (CMD) window and type:

```
route add 192.168.0.100 10.1.1.20
```

Where 10.1.1.20 is the IP address of the Ethernet interface on the PC that the unit is plugged into with the crossover cable.

NOTE: If you do not receive an OK message. then a parameter was wrong or missing.

The route is not persistent (removed upon rebooting), but you can also delete it with the route delete 192.168.0.100 command.

## 3.1.2 HOW TO ADD A SECONDARY IP ADDRESS TO THE COMPUTER'S LAN CARD

You can do this via the GUI by opening the LAN connection's properties:

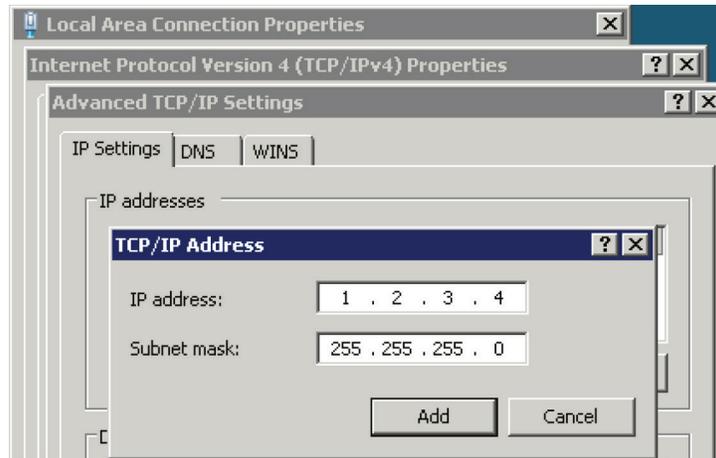


FIGURE 3-1. TCP/IP ADDRESSES SETTING SCREEN

Or open an Administrator Command Prompt (CMD) window and type:

```
netsh interface ipv4 add address "Local Area Connection" 192.168.0.2 255.255.255.0
```

The above command adds the IP Address 192.168.0.2 (with Subnet Mask 255.255.255.0) to the connection titled "Local Area Connection."

You will then be able to connect to the unit with its default IP.

NOTE: The secondary IP address is permanent for the LAN connection; don't use it if you only need it once. Instead, use the routing table method above.

# CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

## 4.1 SUMMARY PAGE

Figure 4-1 shows the summary page.

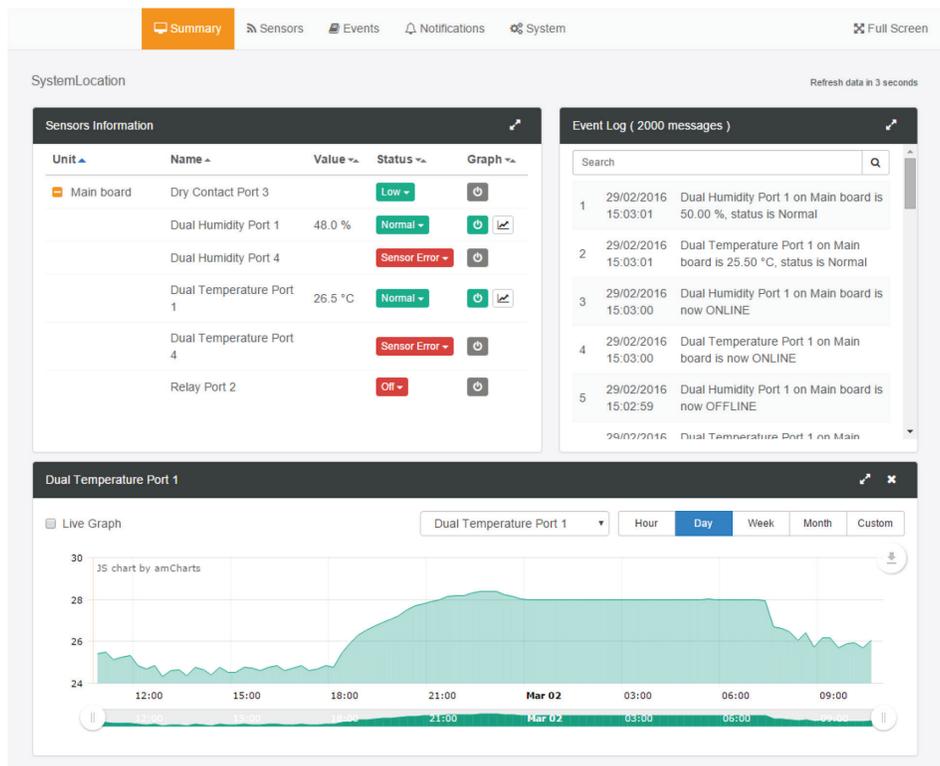


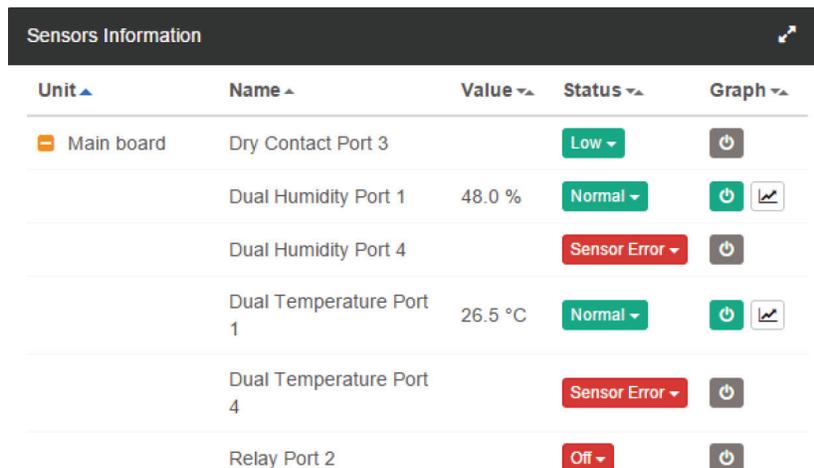
FIGURE 4-1. SUMMARY PAGE

This is the Summary page with Sensor Status and the Event Log, with the Sensor Graph enabled.

The Event Log contains all entries from the "All Events" category.

The last 30 entries are shown, but if you're scrolling down the list, more events (30 more) will be loaded automatically. You can view the full log if you keep scrolling down.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)



Unit ▲	Name ▲	Value ▼▲	Status ▼▲	Graph ▼▲
☰ Main board	Dry Contact Port 3		Low ▼	⏻
	Dual Humidity Port 1	48.0 %	Normal ▼	⏻ 📈
	Dual Humidity Port 4		Sensor Error ▼	⏻
	Dual Temperature Port 1	26.5 °C	Normal ▼	⏻ 📈
	Dual Temperature Port 4		Sensor Error ▼	⏻
	Relay Port 2		Off ▼	⏻

FIGURE 4-2. SENSOR INFORMATION WINDOW

In the Summary page's Sensors Information window you can do the following:

- ◆ Directly acknowledge a sensor's status, and put the sensor offline.

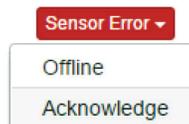


FIGURE 4-3. ACKNOWLEDGE SENSOR OR PUT IT OFFLINE

- ◆ Control the relay-type sensors.

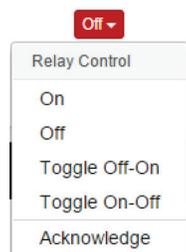


FIGURE 4-4. CONTROL THE RELAY TIME SENSORS

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

- ◆ Enable/disable graph data collection per sensor, and display the graph display window for the Summary page.

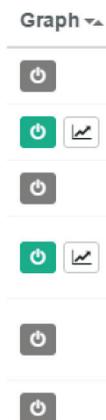


FIGURE 4-5. GRAPH DISPLAY WINDOW

We'll explain the Graph feature in more detail next.

### 4.1.1 GRAPH FEATURE

After you've enabled the data collection for a sensor, you can choose to display specific time intervals of the stored data: hourly/daily/weekly/monthly and custom display interval.

You can also export the recorded data in multiple formats.

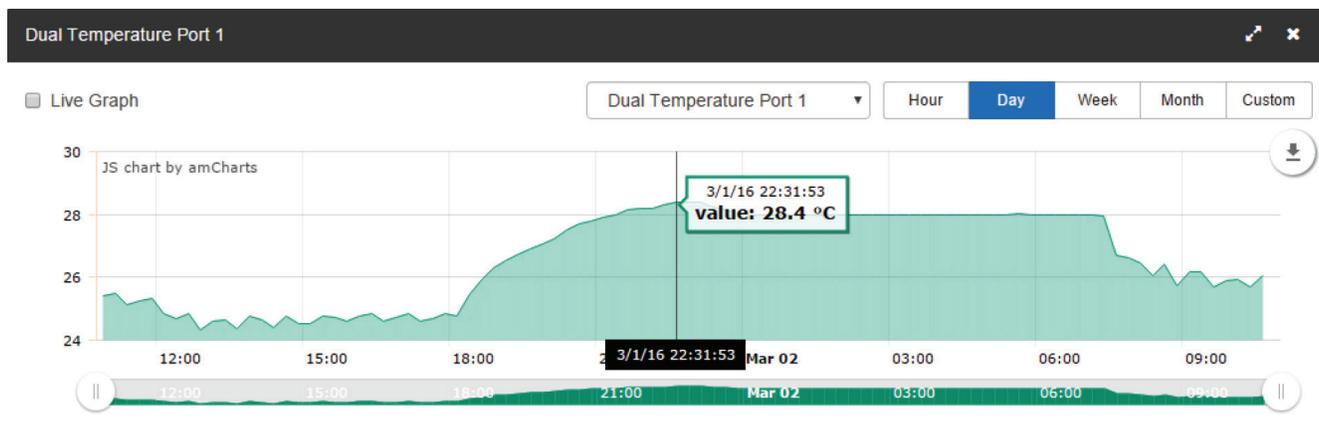


FIGURE 4-6. GRAPH FEATURE EXAMPLE

In this example picture, we've chosen to display the temperature sensor's daily maximum.

You could also resize the graph window (including full screen) and move the scale to display more or less data.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

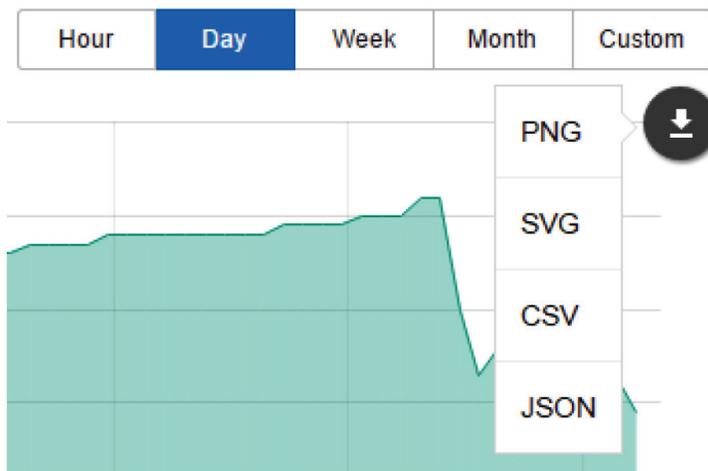


FIGURE 4-7. GRAPH FORMATS DROPDOWN MENU

You can choose to export the graph data in selected formats by clicking on the icon on the right.

The file will be downloaded automatically and assigned a file name that will contain the sensor's name, IP address of the unit, and the date and time.

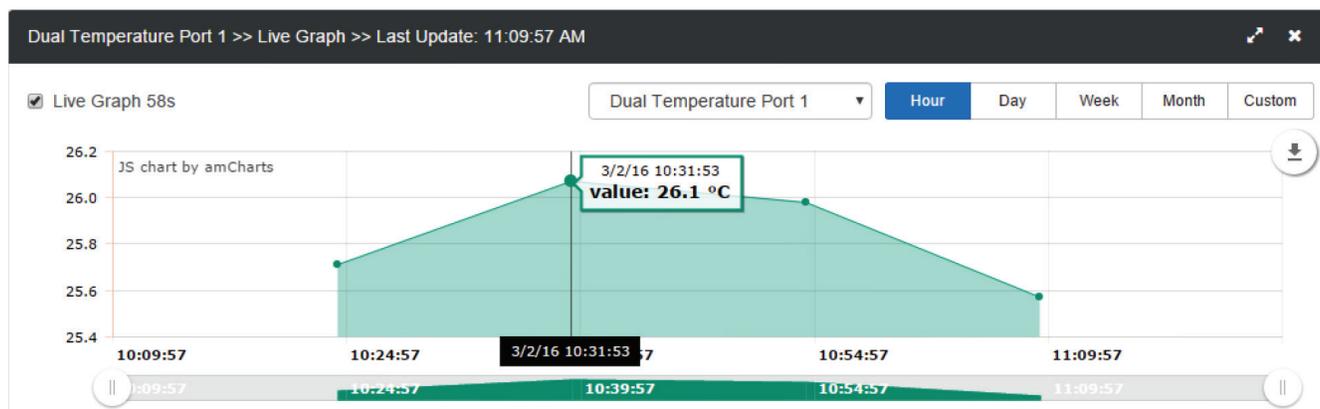


FIGURE 4-8. LIVE GRAPH OPTION

By choosing the Live Graph option, you can get continuous updates of the graph data (by default every 60 seconds). If you don't use this option, the graph data needs to be refreshed manually.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

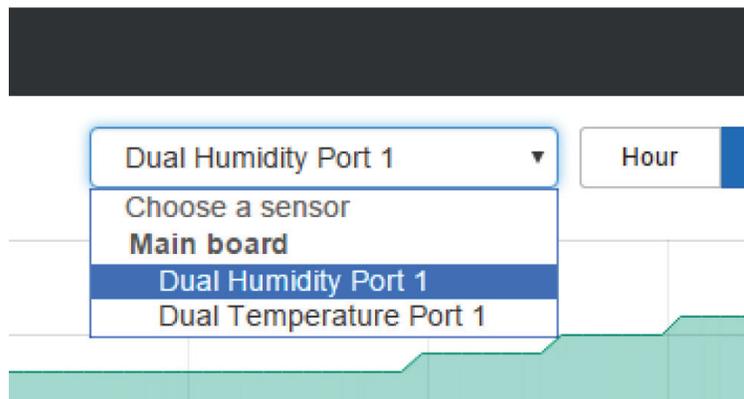


FIGURE 4-9. SENSORS' DROP-DOWN MENU

To change to a different sensor's graph, choose it from the drop-down menu.

NOTE: You can only choose a sensor here that you've already enabled the graph data collection for.

### 4.2 SYSTEM PAGE

Figure 4-1 shows the summary page.

#### 4.2.1 GENERAL

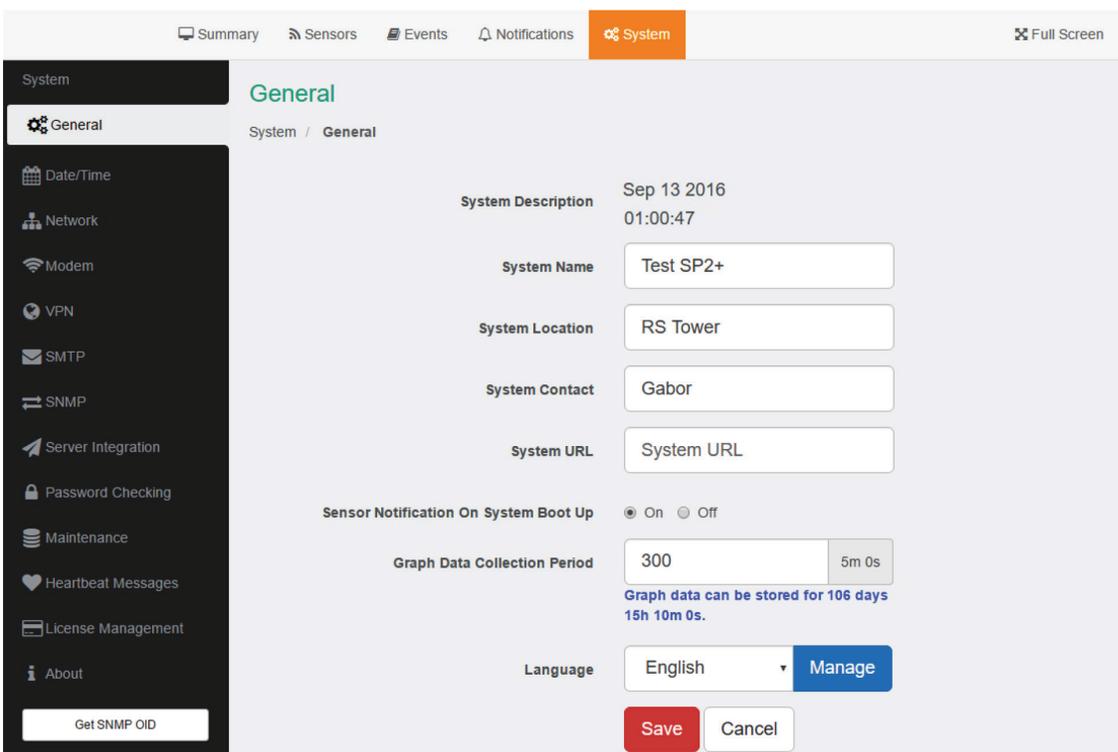


FIGURE 4-10. SYSTEM PAGE, GENERAL SETTINGS

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

in the previous screen, you can change general settings for the device.

The unit's firmware version is shown in the Description field, and the System Name/Location/Contact options are user configurable.

You can also specify the System URL option for quick access of a custom part of the Web UI for example, but you can specify any URL.

By changing the Graph Data Collection Period, you can choose how frequently the data is sampled.

NOTE: If you had stored graph data previously, changing this setting will clear the data.

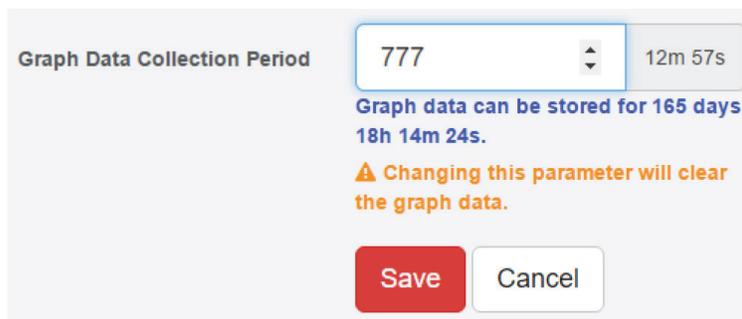


FIGURE 4-11. GRAPH DATA COLLECTION PERIOD SCREEN

NOTE: A Low Power Mode is selectable from EMEMS; on the Web UI this option is not shown.

With the Sensor Notification On System Boot Up option, you can choose to allow/disallow running the notifications with sensor values read at system boot up. In some cases, invalid values are read while the unit is starting up, and you could get false alarm notifications. You can disable the notification processing at startup with this option.

On each System subpage you can see a Get SNMP OID button (where applicable).

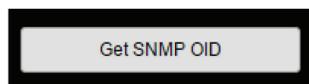


FIGURE 4-12. GET SNMP OID BUTTON

This will give you a popup window with all relevant OIDs for the actual page (the General page is shown next).

SNMP OID of General

Description ▲	Syntax ▼▲	Access ▼▲	SNMP OID ▲
cfgSystemDescription	DISPLAY STRING	read-write	.1.3.6.1.4.1.3854.3.2.1.8.0
cfgSystemName	DISPLAY STRING	read-write	.1.3.6.1.4.1.3854.3.2.1.9.0
cfgSystemLocation	DISPLAY STRING	read-write	.1.3.6.1.4.1.3854.3.2.1.10.0
cfgSystemContact	DISPLAY STRING	read-write	.1.3.6.1.4.1.3854.3.2.1.11.0
cfgGraphDataCollectionPeriod	INTEGER	read-write	.1.3.6.1.4.1.3854.3.2.1.104.0
cfgSystemURL	DISPLAY STRING	read-write	.1.3.6.1.4.1.3854.3.2.1.107.0

FIGURE 4-13. SNMP OID OF GENERAL PAGE

You can use OIDs for SNMP calls and in custom scripts, or for setting up the unit for monitoring by a third party NMS software such as WhatsUpGold or Paessler.

This button is also accessible on the Sensors page.

## 4.2.2 LANGUAGE MANAGEMENT

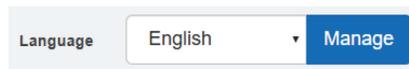


FIGURE 4-14. LANGUAGE MANAGEMENT BUTTON

You can change the display language of the Web UI with this option. Only one additional language is supported, together with the default (and fallback if there's an error) English.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

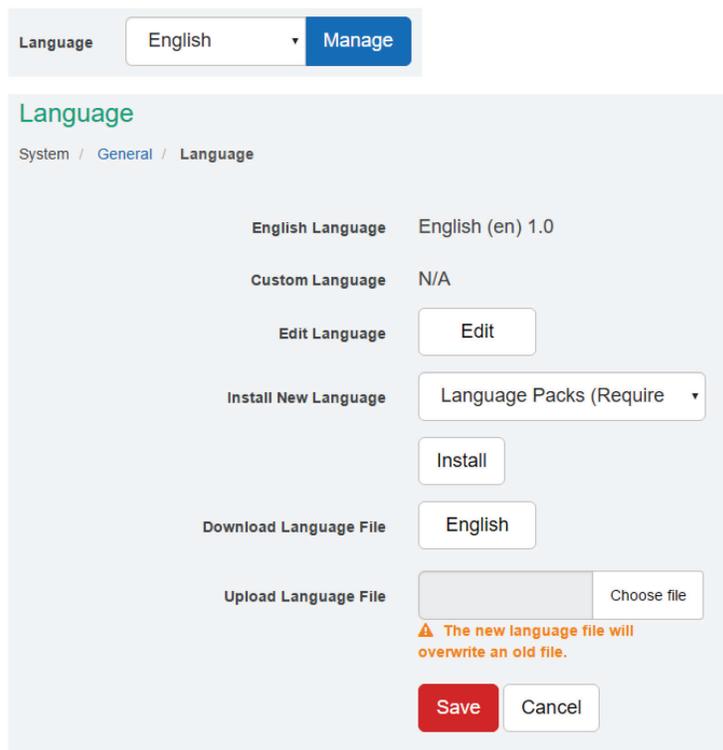


FIGURE 4-15. LANGUAGE SCREEN

In Manage, you can choose to Download Language File if you'd like to edit the language file offline (you can also download the custom language's file if it's already present). Then upload the completed file, and it will be selectable as the Custom Language. For official translation files, the language code and version will show the correct values.

NOTE: Whenever you upload or install a custom language file, it will overwrite the old file. Only one additional language is supported. For separately downloadable language files, contact Black Box Technical Support.

If you have an active internet connection, the unit supports installing the official language files directly from our server.

Select a language from the drop-down menu Install New Language.

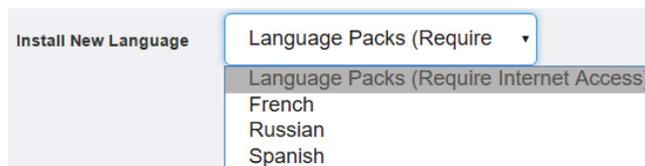


FIGURE 4-16. INSTALL NEW LANGUAGE BUTTON

Then press the Install button. It will ask you to confirm the action in a popup window.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

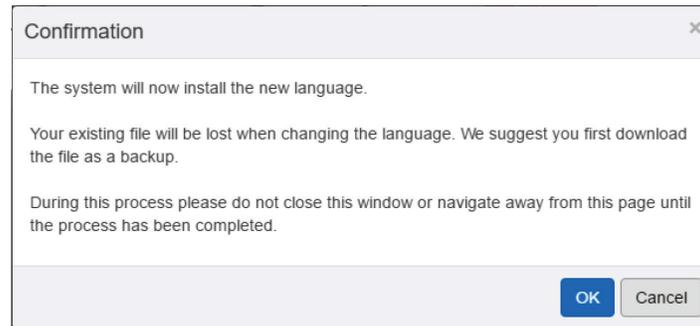


FIGURE 4-17. CONFIRMATION WINDOW

Wait until the language is downloaded and installed.

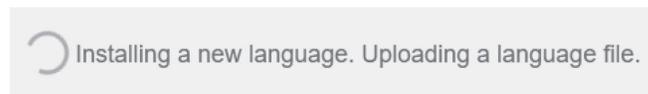


FIGURE 4-18. INSTALLING LANGUAGE MESSAGE

The unit will notify you about the successful language change, and will change the language of the Web UI. You can switch back to English by selecting it from the drop-down list on the General page, then press Save.

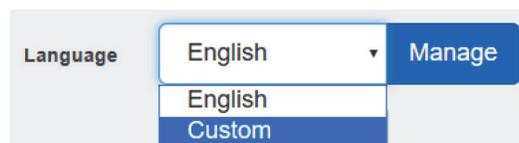


FIGURE 4-19. DROP-DOWN LIST

After you've added the custom language, you can manage it from the same menu.

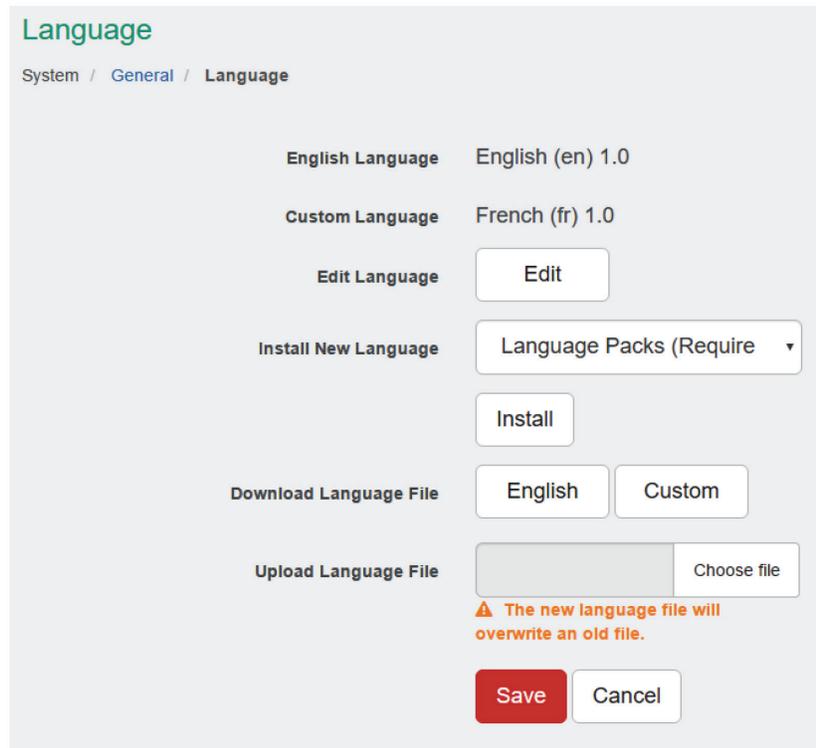


FIGURE 4-20. LANGUAGE SCREEN, CUSTOM LANGUAGE

NOTE: The official language files are also included in the firmware update packages.

You can also edit the chosen language directly in the Web UI, if you choose Edit Language.

# CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

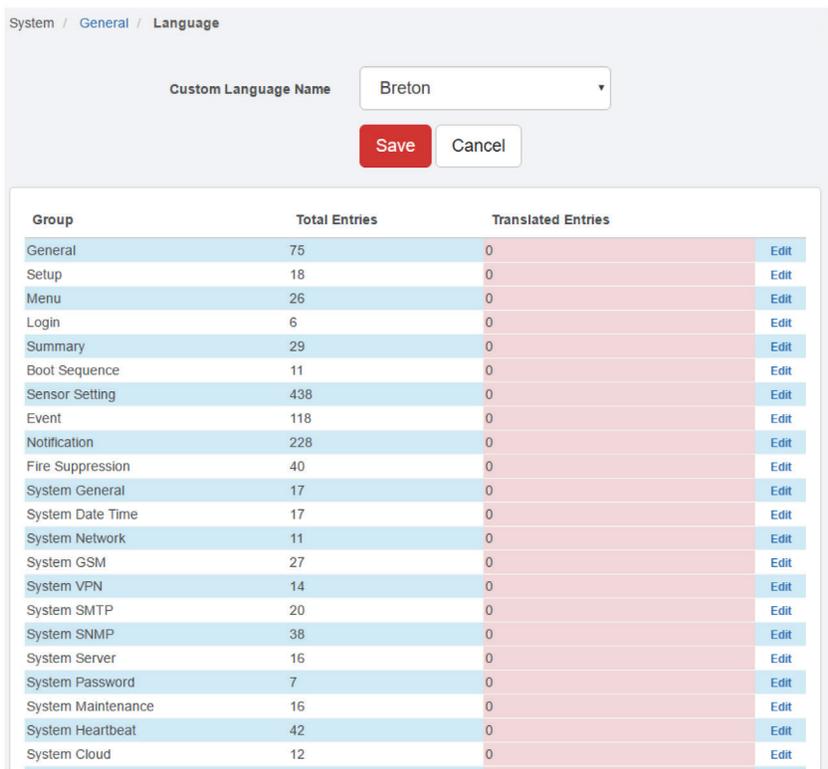


FIGURE 4-21. EDIT LANGUAGE IN WEB UI

If the custom language file is present, you can select it from the drop-down list on the General page.



FIGURE 4-22. DROP-DOWN LIST

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### 4.2.3 DATE/TIME

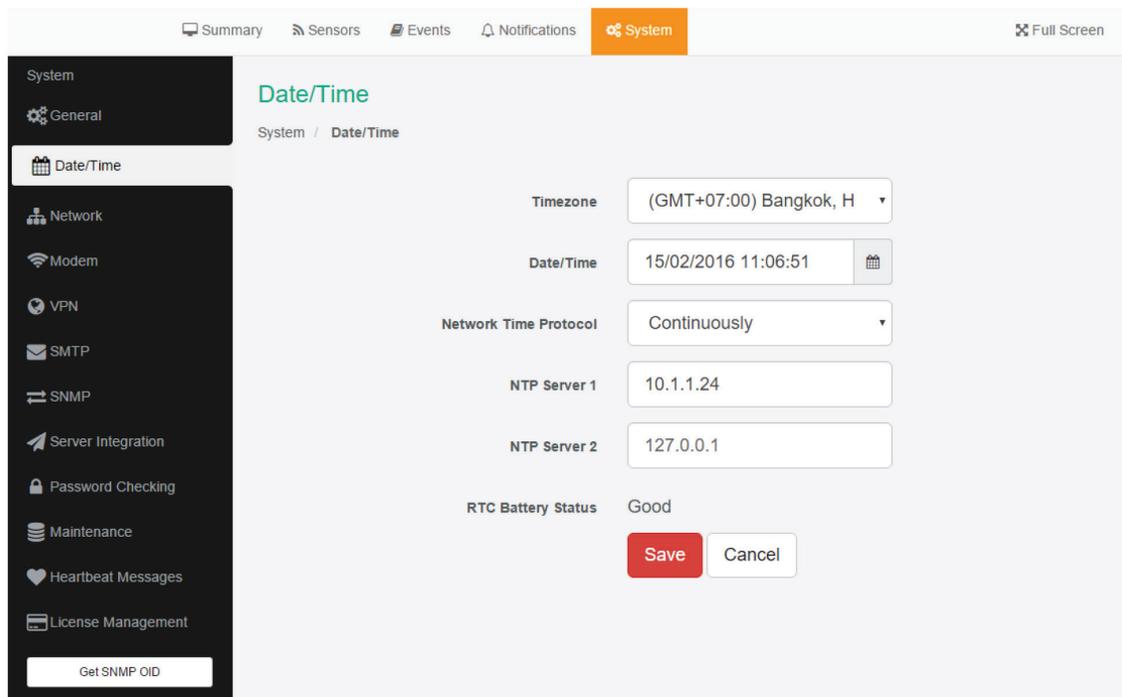


FIGURE 4-23. DATE/TIME OPTION

The system date and time with time zone is user configurable, with NTP server synchronization. If the unit is connected to EMEMS, then it will sync with the NTP service. Also displayed is the status of the battery (good/bad).

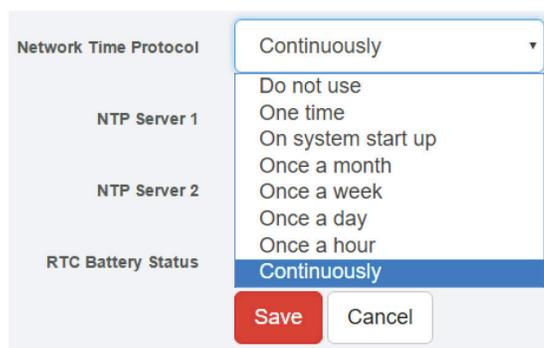


FIGURE 4-24. NTP DROP-DOWN MENU

You can also select the frequency of NTP synchronization with the drop-down menu.

## 4.2.4 NETWORK

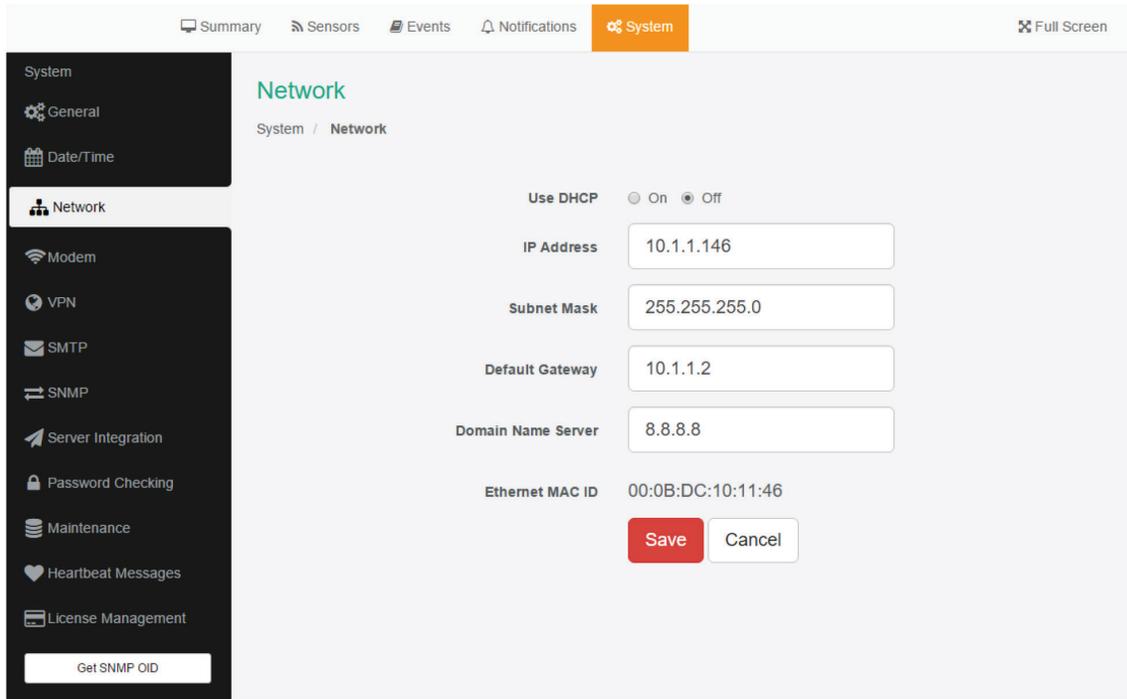


FIGURE 4-25. NETWORK OPTION

The unit's MAC ID is displayed here, and all user configurable options for IPv4 with fixed IP or DHCP client mode.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### 4.2.5 VPN

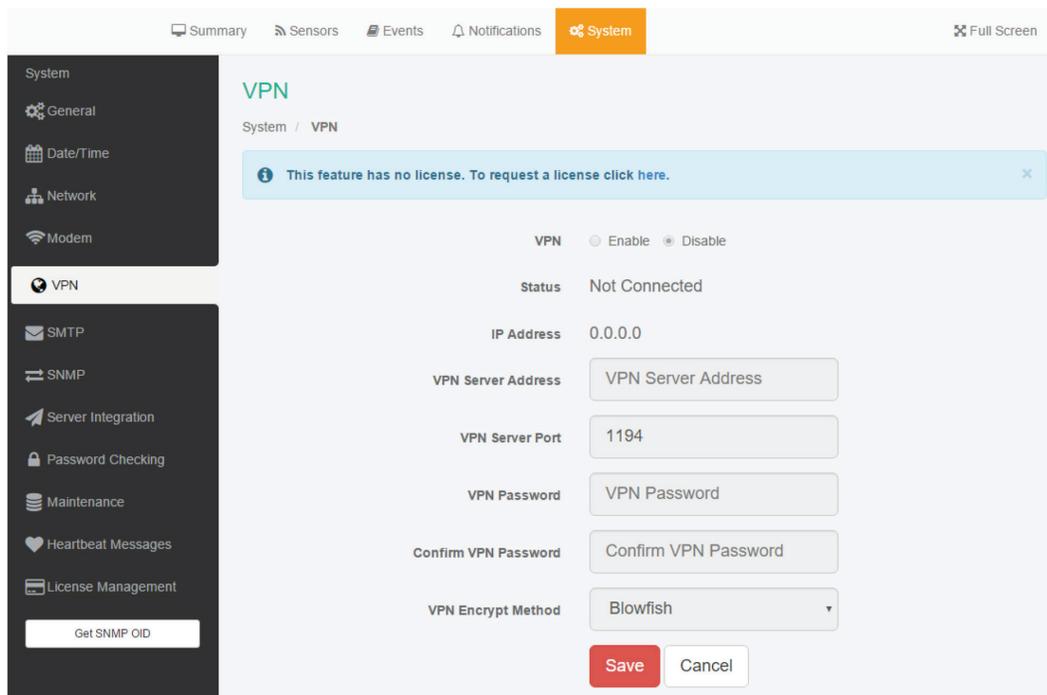


FIGURE 4-26. VPN SCREEN

This feature requires a separate license. You can read more details about the licensing later in this manual.

This feature is used by connecting the AlertWerks Hub to the VPN server. After the license has been activated and the VPN server is set up, you'll need to fill out the same options here to be able to use the VPN connection.

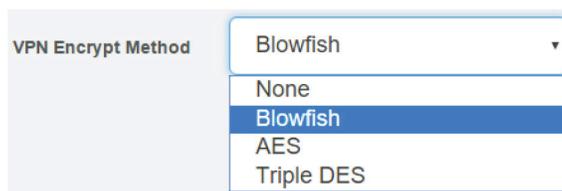


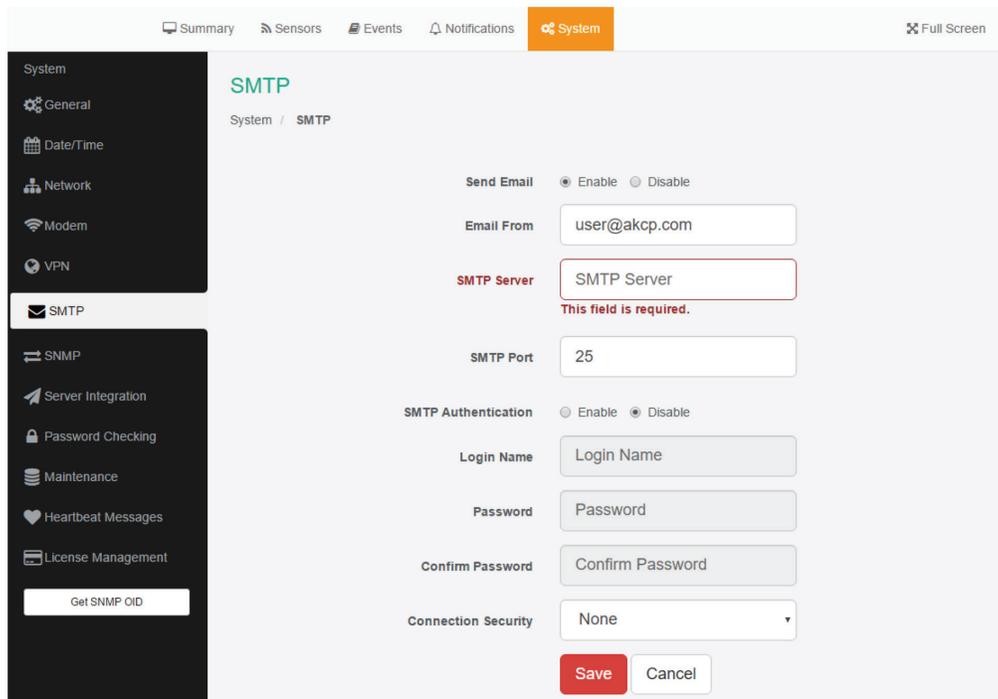
FIGURE 4-27. VPN ENCRYPT METHOD DROP-DOWN MENU

NOTE 1: You can also configure these settings from the console for the unit.

NOTE 2: If you use the VPN option, the maximum number of sensors that can be used by the unit will be reduced to 50.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### 4.2.6 SMTP



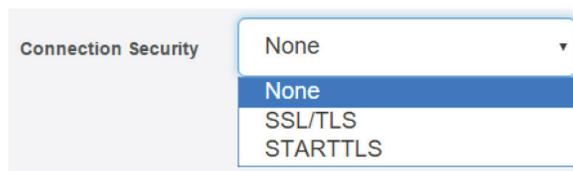
The screenshot shows the SMTP configuration page in a web GUI. The page title is "SMTP" and the breadcrumb is "System / SMTP". The left sidebar contains a menu with items: System, General, Date/Time, Network, Modem, VPN, SMTP (selected), SNMP, Server Integration, Password Checking, Maintenance, Heartbeat Messages, and License Management. The main content area has the following fields and options:

- Send Email:** Radio buttons for "Enable" (selected) and "Disable".
- Email From:** Text input field containing "user@akcp.com".
- SMTP Server:** Text input field containing "SMTP Server" with a red border and the message "This field is required." below it.
- SMTP Port:** Text input field containing "25".
- SMTP Authentication:** Radio buttons for "Enable" and "Disable" (selected).
- Login Name:** Text input field containing "Login Name".
- Password:** Text input field containing "Password".
- Confirm Password:** Text input field containing "Confirm Password".
- Connection Security:** A dropdown menu currently showing "None".
- Buttons:** "Save" (red) and "Cancel" (white) buttons at the bottom.

FIGURE 4-28. SMTP SCREEN

The SMTP server configuration options are shown here; it's required to be set up for the Email actions.

Fill out all parameters; the address in the Email From parameter will be used by the Email actions by default, but you could change it if your mail server supports it (when it's not required to match the SMTP user for example).



The close-up shows the "Connection Security" dropdown menu. The current selection is "None". The dropdown list is open, showing the following options:

- None (highlighted)
- SSL/TLS
- STARTTLS

FIGURE 4-29. CONNECTION SECURITY DROP-DOWN MENU

SSL/TLS and STARTTLS are supported for the connection security.

You could also turn off any email sending from the unit by disabling the Send Email option.

## 4.2.7 SNMP

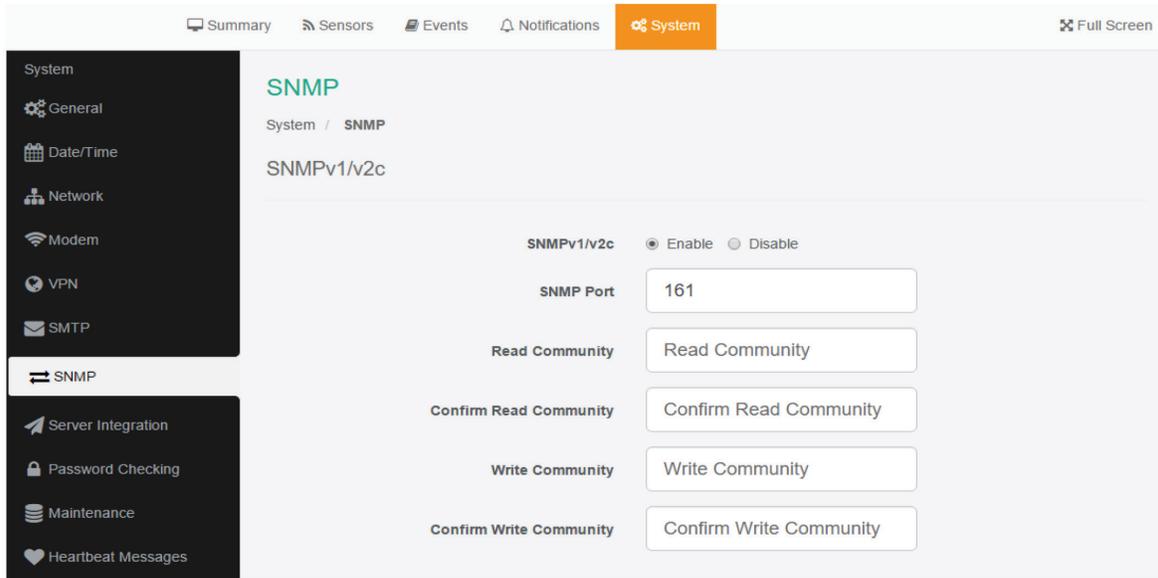


FIGURE 4-30. SNMP PAGE

The SNMP service configuration options are shown here; it is required for SNMP operations.

SNMPv1 is enabled by default, with community password “public”.

Scroll down for SNMPv3 options.

## 4.2.8 SNMPV3

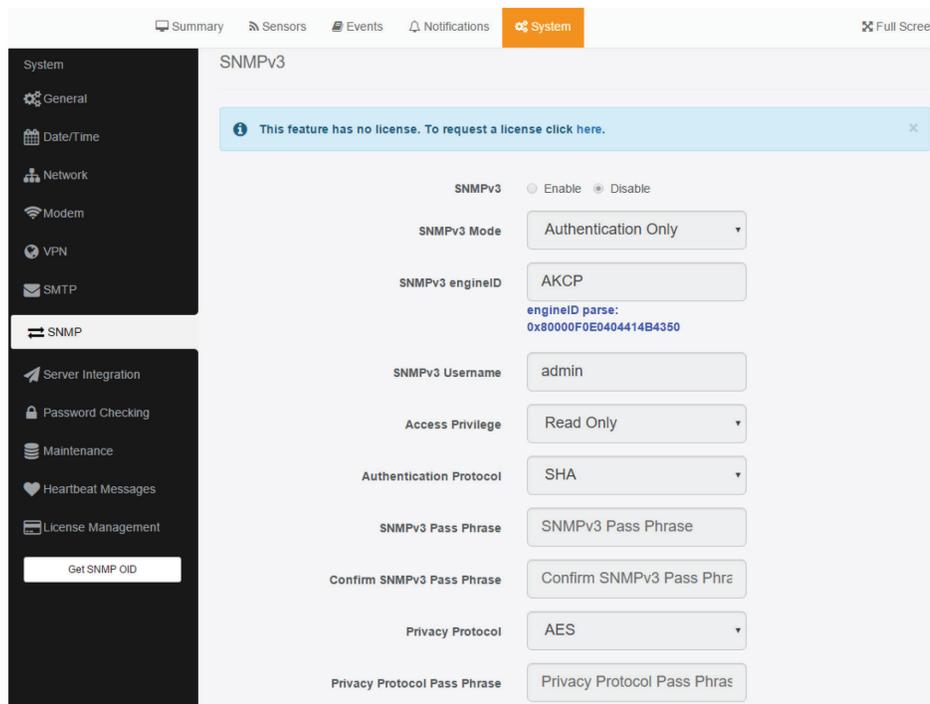


FIGURE 4-31. SNMP PAGE

The SNMPv3 options can be found by scrolling down on the SNMP page.

This feature requires a separate license. You can read more details about the licensing in this manual.

The table below shows a quick description of each setting.

TABLE 4-1. SNMPV3 OPTIONS

LEVEL	AUTHENTICATION	ENCRYPTION	DESCRIPTION
No Authentication (same as SNMP v1/v2c)	Username	No	Match Username
Authentication Only Algorithms (check password)	MD5 or SHA	No	Auth Based on
Auth & Privacy	MD5 or SHA	Yes - DES	Auth Algorithms and Encryption

Basically, if you select No Authentication, then the setup will be the same as with SNMP v1 and v2c versions: authentication is only checked by unencrypted username.

Authentication Only will provide password protection but no encryption.

Authentication & Privacy provides encrypted username and password protection.

## 4.2.9 SERVER INTEGRATION

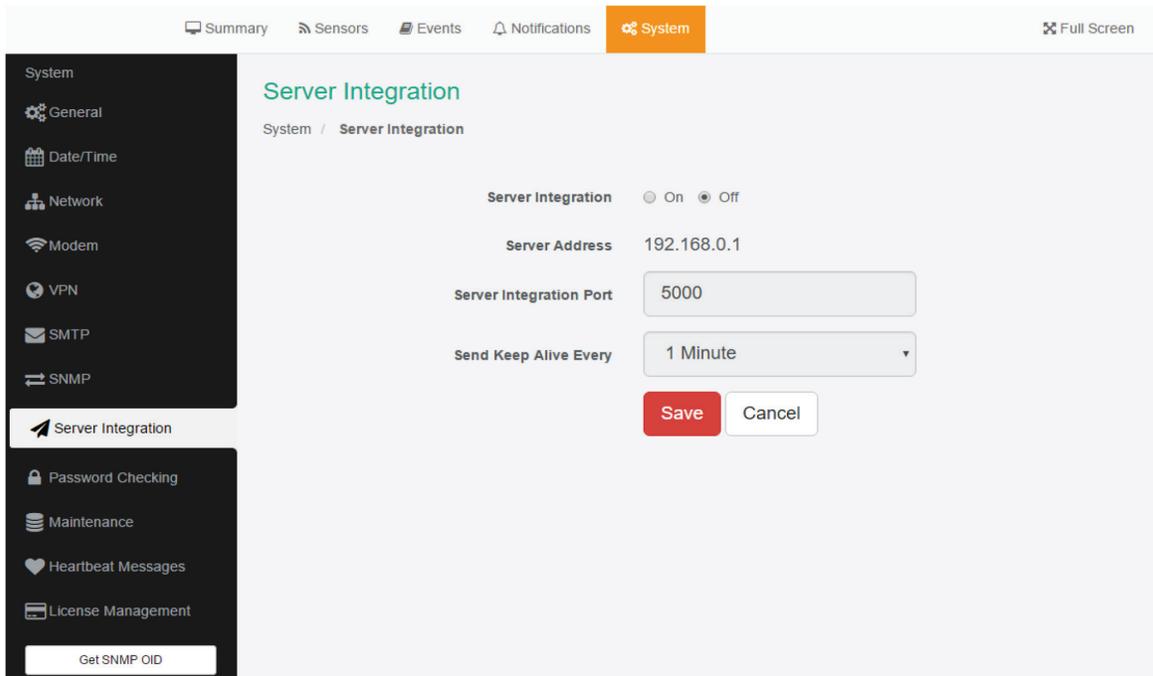


FIGURE 4-32. SERVER INTEGRATION SCREEN

If the unit has been added to the EMEMS console, the server's IP address will be displayed here. User configurable options are the APS port and keep-alive period.

You can change the APS port from the Web UI when the server's port changes.

Alternatively you can re-initialize your unit from the APS console to re-establish communication.

## 4.2.10 PASSWORD CHECKING

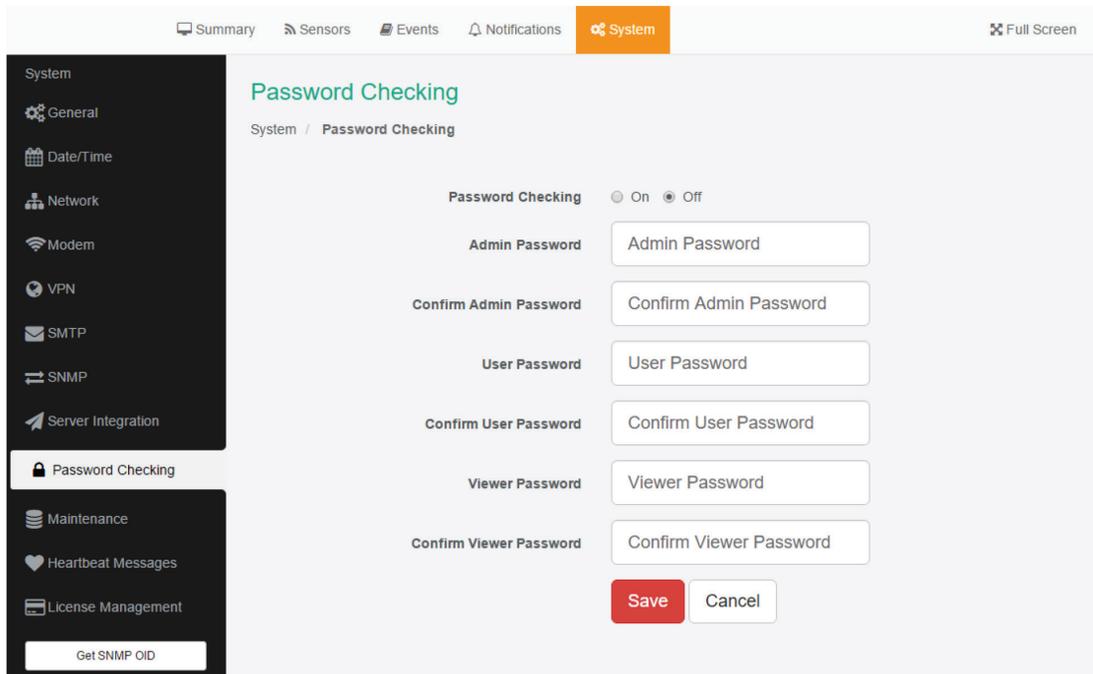


FIGURE 4-33. PASSWORD CHECKING SCREEN

Password checking for the Web UI can be turned on/off here, along with the option for specifying the password for the different user access levels.

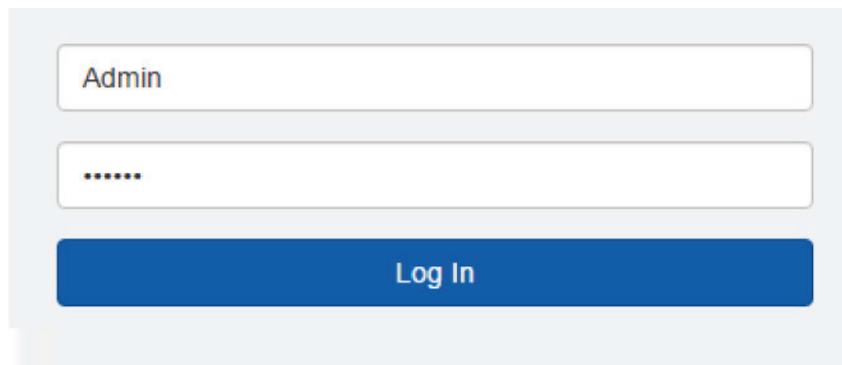


FIGURE 4-34. LOGIN SCREEN

After you enable the password checking, you'll need to re-login.

If you don't remember the admin password, you can hold the unit's reset button for 7-12 seconds to be able to log in to the Web UI without a password.

See below for details about permissions for the different user access levels.

NOTE 1: The passwords can only be set from the unit's Web UI; this option is not available from APS.

NOTE 2: The default password is "public" for all access levels.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### WEB UI USER ACCESS LEVELS AND PERMISSIONS

Admin - full access to all settings, system and notification configurations

Viewer - read-only guest access for every page

User - full access to most settings except for those which are the system-related such as network

In detail, the User access level provides these permissions in addition to the Viewer level:

- ◆ Allow modifying board/sensor settings
- ◆ Allow add/modify/remove notifications
- ◆ Allow add/modify/remove heartbeats
- ◆ Allow open/close the door on the Handle Lock
- ◆ Allow send configuration to Support
- ◆ Allow change Graph settings
- ◆ Allow change the Web UI language

### 4.2.11 MAINTENANCE

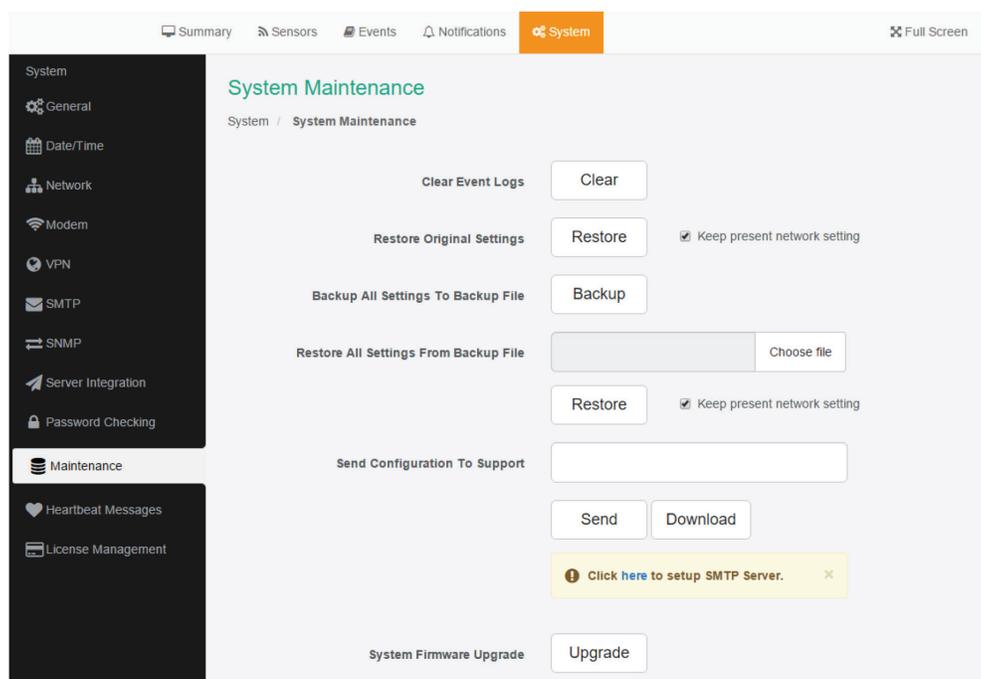


FIGURE 4-32. SERVER INTEGRATION SCREEN

On this page, the following options are available:

- ◆ Clear Event Logs: clears all logged events.
- ◆ Restore Original Settings: removes all customized settings and returns the unit to factory defaults—you can also choose to keep the network configuration intact.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

- ◆ Backup/Restore All Settings: the unit's configuration can be backed up to a file and restored quickly and easily. You can choose to keep the present network settings, if the backup file is from another unit. The backup file contains all settings and notifications for the unit.
- ◆ Send Configuration To Support: when asked by Support, this sends the unit's backup file to us.
- ◆ System Firmware Upgrade: allows you to upgrade to the latest firmware of the unit—alternatively you could upgrade from EMEMS. We'll show you the process of the Web UI firmware upgrade in another section.

### 4.12.12 HEARTBEAT MESSAGES

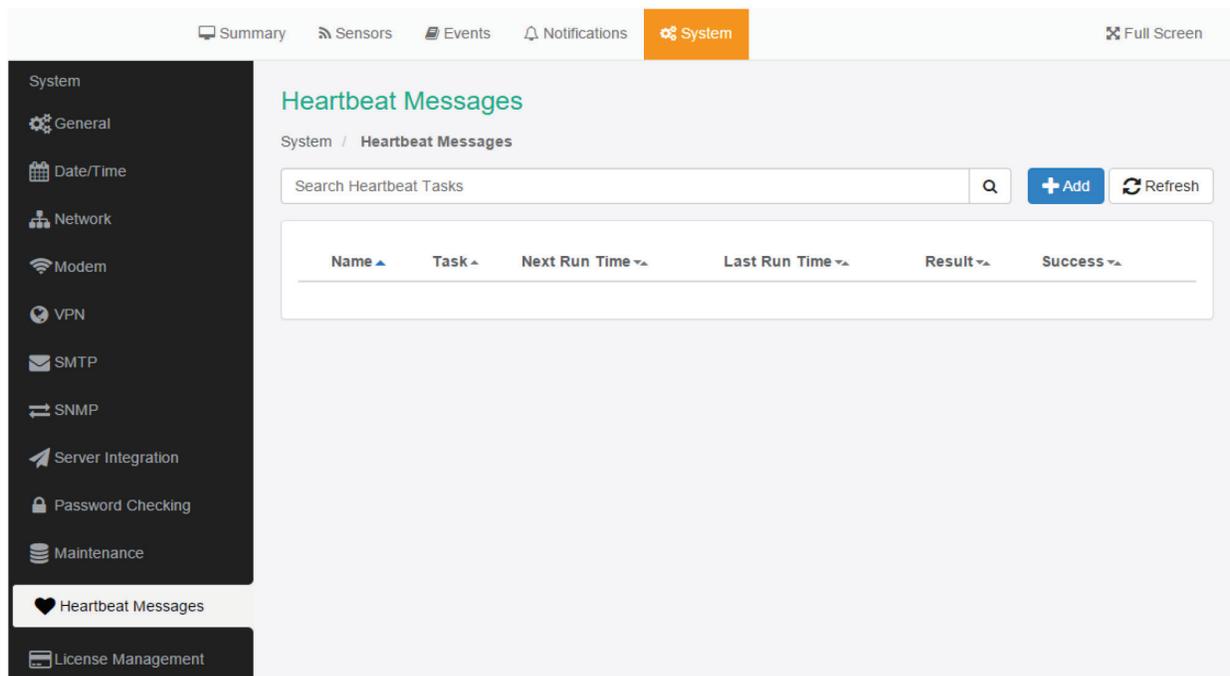


FIGURE 4-36. HEARTBEAT MESSAGES SCREEN

This feature allows you to set up periodical “keep alive” notifications task by email, SMS or SNMP Trap to indicate the unit is still working properly.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### 4.2.13 LICENSE MANAGEMENT

The screenshot displays the 'License Management' interface. It features a sidebar on the left with various system settings. The main area is divided into two sections: 'License Management' and 'License Key'.

**License Management Table:**

License Type	Total	Used	Remaining
5 Dry Contact	0	0	0
Access Control User	100	1	99
SNMPv3	✓	✓	✓
Virtual Sensor	5	0	5
VPN	✗	✗	✗

**License Key Table:**

License Key	5 Dry Contact	Access Control User	Virtual Sensor	SNMPv3	VPN	Status
Default License	0	100	5	✗	✗	Activated
[Redacted License Key]	0	0	0	✓	✗	Activated

FIGURE 4-37. LICENSE MANAGEMENT SCREEN

Here you can manage the purchased licenses for specific features on the unit.

For example you can request SNMPv3 license by clicking on the Request License button.

This will send an email to our Sales team with your unit's MAC ID. You can then add the purchased license key with the Add button and activate this feature on the unit.

License keys can be backed up/restored with the backup file.

All keys are unique per device and per feature.

#### Features that needs separate licensing:

- ◆ Access Control User licenses over 100: The first 100 user licenses are free (1 is always used for the Admin user), and you can get more licensed users in blocks of 100; the limit is 1000.
- ◆ SNMPv3 feature: Allows you to use and configure secure, authenticated SNMP trap messages.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

- ♦ Virtual Sensors: Allows you to use and configure virtual sensors. The first 5 sensors are free, you can get more licenses in blocks of 5; the limit is 32.
- ♦ VPN feature: Currently the VPN integration is supported, to use a secure VPN channel between the unit and EMEMS.

NOTE: When using this option, the number of maximum sensors that can be used by the unit will be reduced to 50.

### 4.2.14 ABOUT

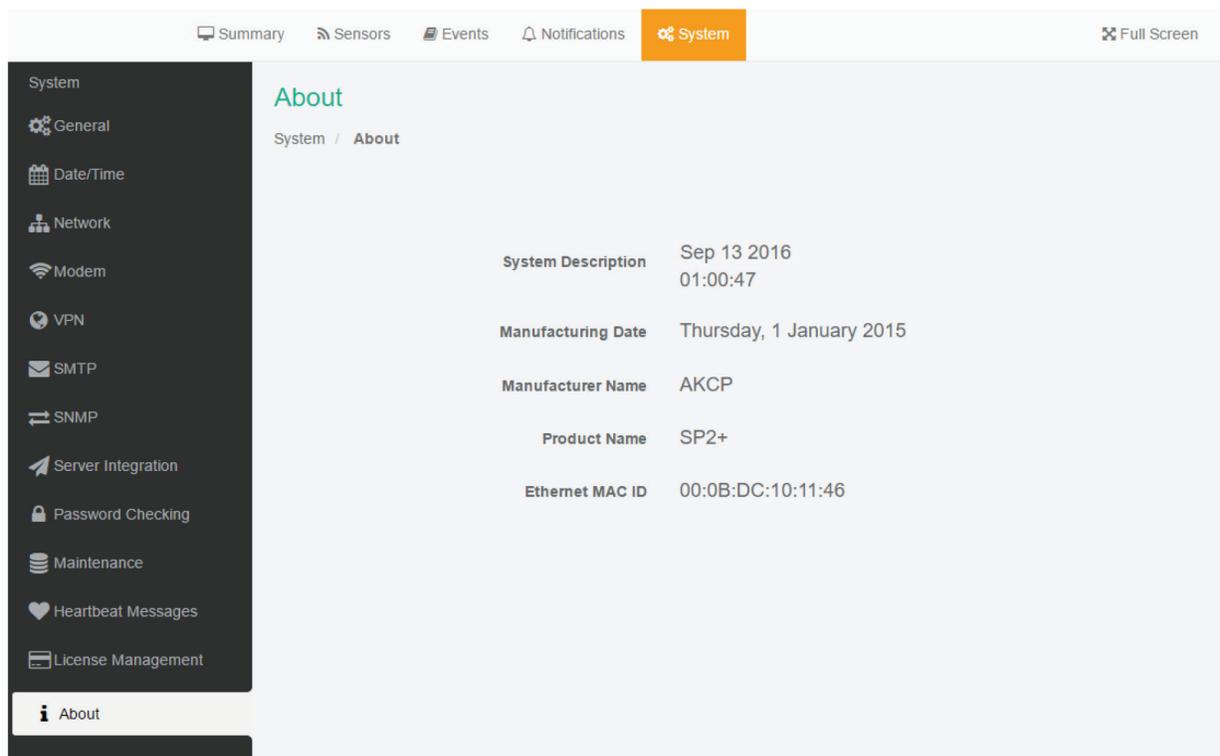


FIGURE 4-38. ABOUT SCREEN

This page shows information about the Manufacturing Date, Ethernet MAC ID, and System Description, which are important when you request support.

You could make a similar screenshot when you need help with your unit, as this information can help us diagnose the problem.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### 4.3 SENSORS PAGE

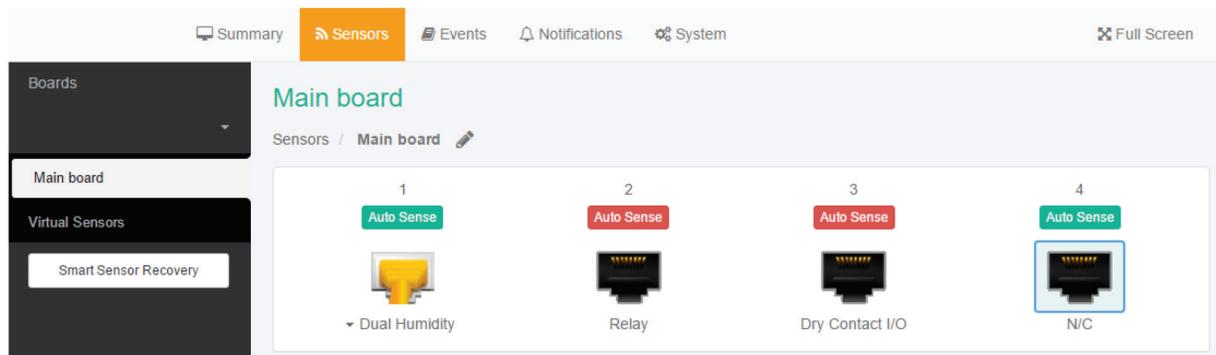


FIGURE 4-39. SENSORS PAGE

On this page, you can view all sensors connected to the unit per port.

Non-connected sensors will be also displayed, until you re-attach or manually remove them from the configuration.

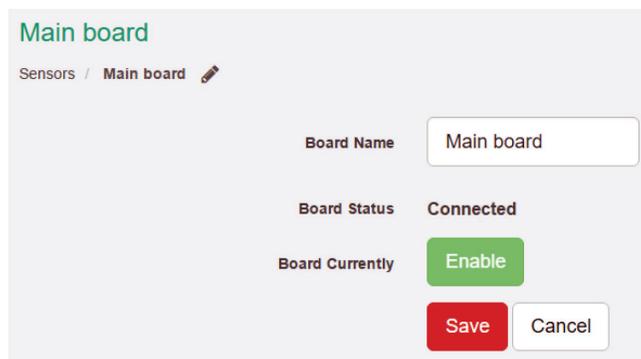


FIGURE 4-40. MAIN BOARD SCREEN

You could also rename the unit's Main board by clicking on the pencil icon.

Please note the maximum supported cable length to use with Thermal Map Sensors (TMS):

- ♦ Maximum extension cable length from the AlertWerks Hub sensor port to the TMS using CAT5 = 28 Feet
- ♦ Maximum extension cable length from the AlertWerks Hub sensor port to the TMS using CAT5e & CAT6 = 60 Feet

**CAUTION:** If you're using analog pins on the sensor ports (with manually on-lined DCV sensors, and pin 7 of the RJ-45 connector) make sure that the voltage doesn't exceed 3 Volts. Otherwise, you can damage the unit!

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### 4.4 GENERAL OPTIONS FOR ALL SENSORS

You can change the following general options for all sensors: Disable Auto Sense, Choose Sensor Type, Offline a Sensor and Smart Sensor Recovery.

#### 4.4.1 DISABLE AUTO SENSE

A green rectangular button with the text "Auto Sense" in white.

FIGURE 4-41. AUTO SENSE BUTTON

Click on the Auto Sense button to turn off the automatic sensor detection for a port.

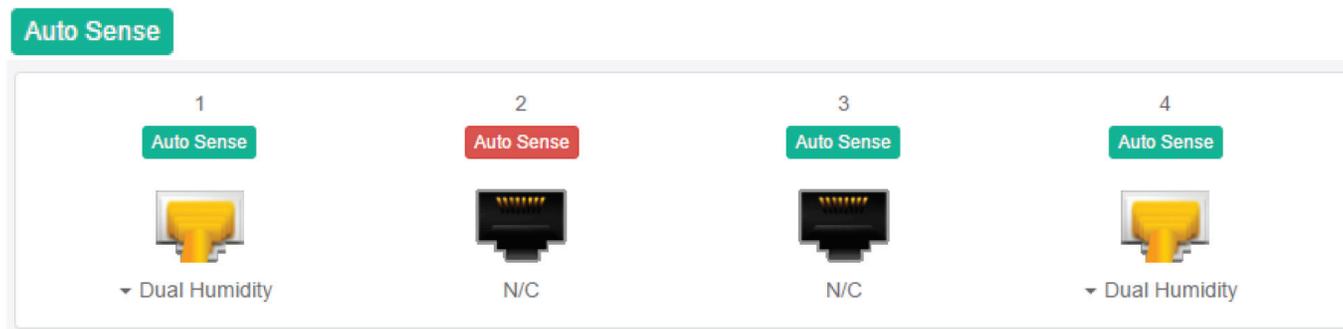


FIGURE 4-42. AUTO SENSE SCREEN

This feature is useful if you want to simulate a sensor (this works for Relay type sensors) or to prevent a sensor from going into offline state.

NOTE: The sensor will be in "sensor error" state if the unit can't get any reading from the sensor.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### 4.4.2 CHOOSE SENSOR TYPE

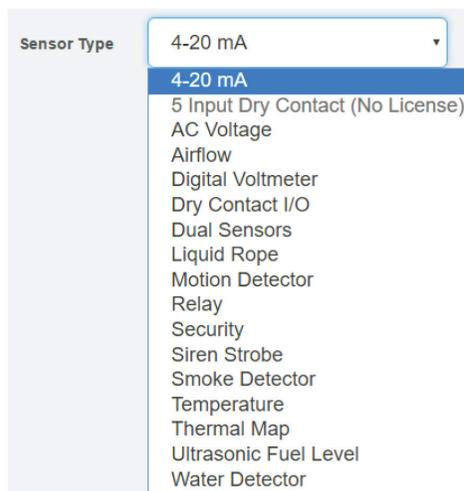


FIGURE 4-43. SENSOR TYPE DROP-DOWN MENU

You can pre-configure a specific sensor type if needed, for example if you put the sensor offline before.

### 4.4.3 OFFLINE A SENSOR



FIGURE 4-44. GREEN ONLINE BUTTON

You can manually offline any sensor by clicking on the green Online button on the sensor's configuration page.

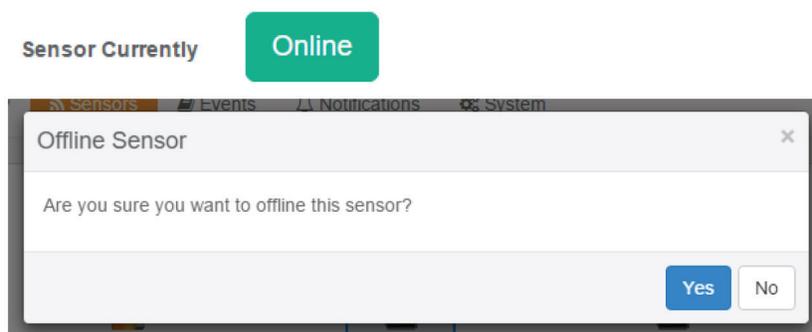


FIGURE 4-45. CONFIRMATION POPUP WINDOW

You'll be asked for confirmation in a popup window.

NOTE: if you change a sensor to offline, it will no longer be displayed on the web interface. To reactivate it, you have to toggle it back to online.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### 4.4.4 SMART SENSOR RECOVERY



FIGURE 4-46. SMART SENSOR RECOVERY BUTTON

This feature will be used only for the new Smart Sensor type. The firmware can be updated on these sensors automatically, and if the upgrade has failed for some reason and the sensor becomes unresponsive, with this option you can recover them to the default firmware. It's not used by other sensor types.

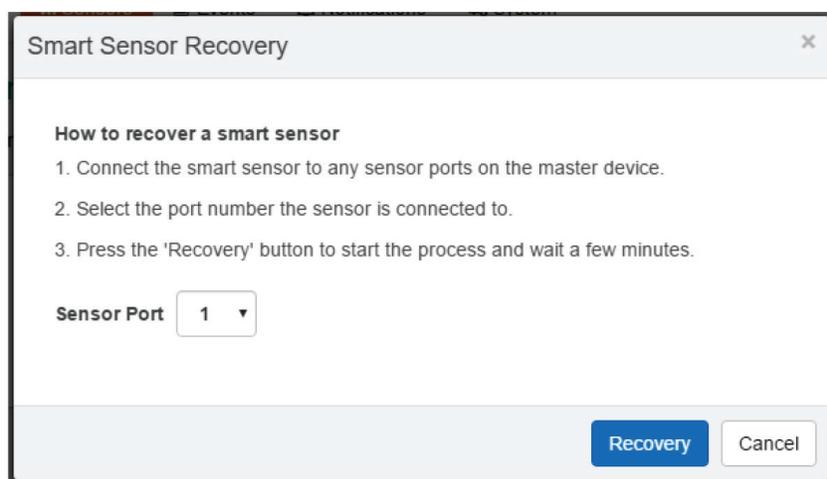


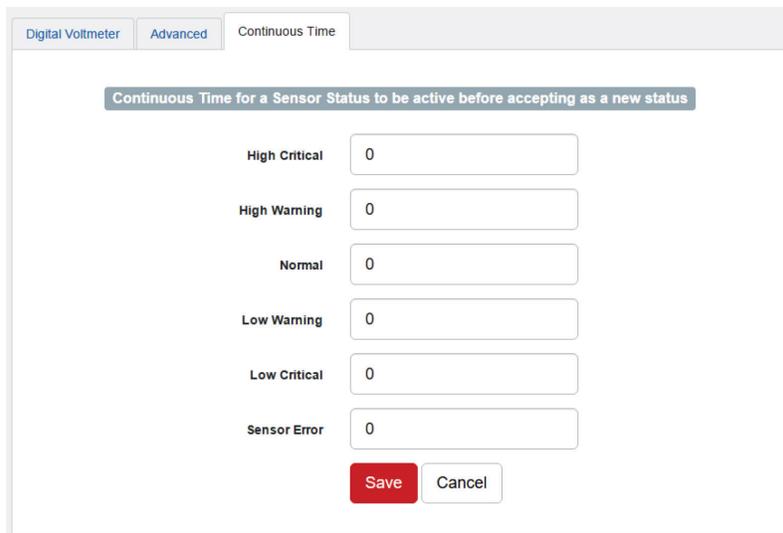
FIGURE 4-47. SMART SENSOR RECOVERY SCREEN

**NOTE:** If there's a difference between the version stored in the unit's firmware and the sensor's firmware, it will upgrade/downgrade the sensor's firmware upon powering up/reboot of the unit, or on sensor reconnection.

If you need to downgrade the smart sensor firmware, you can only do so together with the unit's firmware.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### 4.4.5 CHANGE CONTINUOUS TIME



Digital Voltmeter Advanced Continuous Time

Continuous Time for a Sensor Status to be active before accepting as a new status

High Critical 0

High Warning 0

Normal 0

Low Warning 0

Low Critical 0

Sensor Error 0

Save Cancel

FIGURE 4-48. CONTINUOUS TIME SCREEN

The following advanced functions are for setting the time frame in which the system should delay a notification being triggered when a sensor gives a reading that exceeds the thresholds (high warning, normal, etc).

- ◆ Continuous Time to Report High Critical: This helps to eliminate unnecessary messages during minor fluctuations. You can set the amount of time to delay a notification of a status change from high warning to high critical. Enter the time in seconds and press the “Save” button. The amount of time that can be entered is between 0 and 65535 seconds, which equals approximately 18 hours.
- ◆ Continuous Time to Report High Warning: As above, but delays notification for “High Warning”.
- ◆ Continuous Time to Report for Normal: As above, but delays notification for return to “Normal” state.
- ◆ Continuous Time to Report for Low Warning: As above, but delays notification for “Low Warning” state.
- ◆ Continuous Time to Report for Low Critical: As above, but delays notification for “Low Critical” state.
- ◆ Continuous Time to Report for Sensor Error: As above, but delays notification being sent for sensor going into an error state.

**Example:** An airflow sensor or humidity sensor may have temporary drops in readings that are normal operating characteristics; a logical time limit is set to show abnormal conditions.

## 4.5 VIRTUAL SENSORS

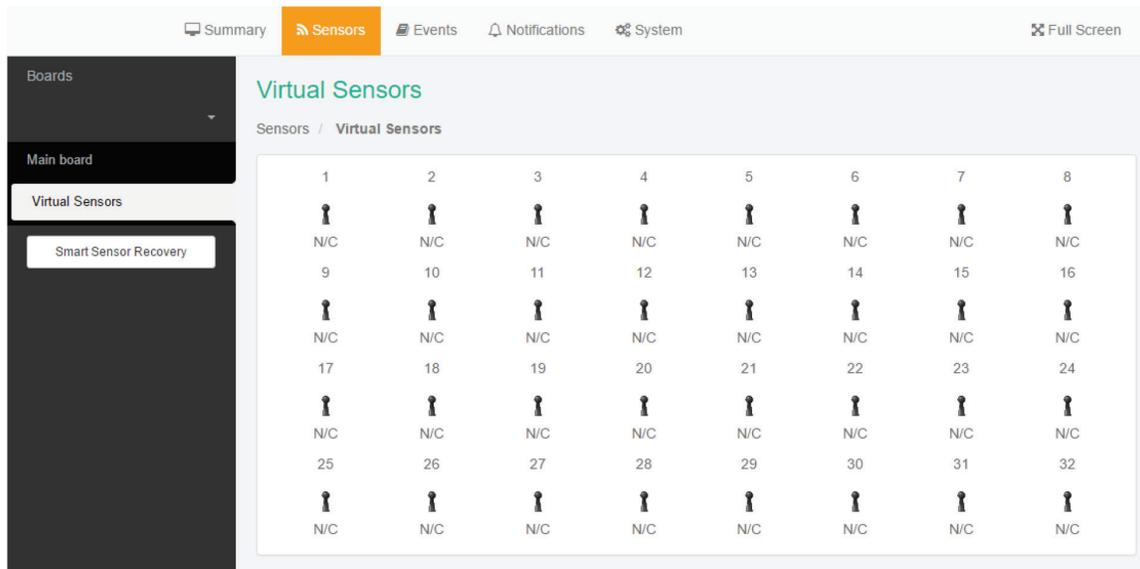


FIGURE 4-49. VIRTUAL SENSORS SCREEN

On this page, you can configure the Virtual Sensors. The first 5 sensors are free, if you need to use more you can purchase additional licenses (see the Licensing section in this manual).

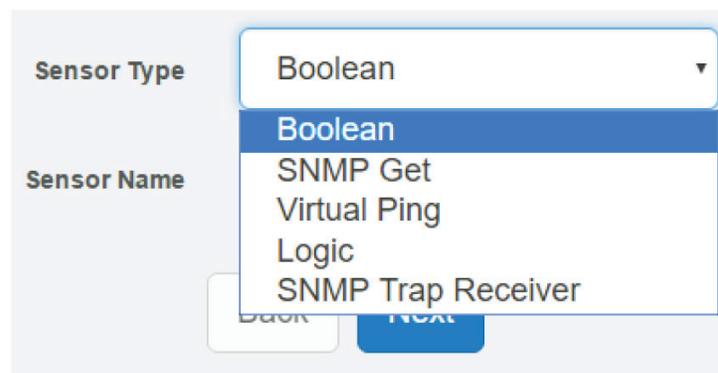


FIGURE 4-50. SENSOR TYPE DROP-DOWN MENU

Virtual Sensors can be a very powerful tool in your monitoring system. On the AlertWerks Hub, you can have up to 32 of these virtual sensors and they allow for a multitude of applications.

SNMP Get, sensor logic evaluation and ping commands among others are all possible from the virtual sensors. An example use of this could be to use the AlertWerks Hub as a probe manager. If you had a AlertWerks Hub and multiple AlertWerks sensor devices they could all be monitored, mapped and alerted via the AlertWerks Hub. You can perform SNMP Get commands on a server to monitor memory or CPU load, or you can ping network enabled devices and be alerted if they go offline.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### 4.6 EXAMPLE SENSOR CONFIGURATION

Below we'll show the configuration of 2 sensor types: the Temperature/Humidity and a Relay sensor.

The configuration of these 2 types of sensors covers most settings that can be configured for other sensor types.

#### 4.6.1 TEMPERATURE/HUMIDITY SENSOR

Click on the sensor port where the sensor is connected to open the sensor's configuration.

NOTE: Another way of accessing this page is to click on the sensor from the Summary page.

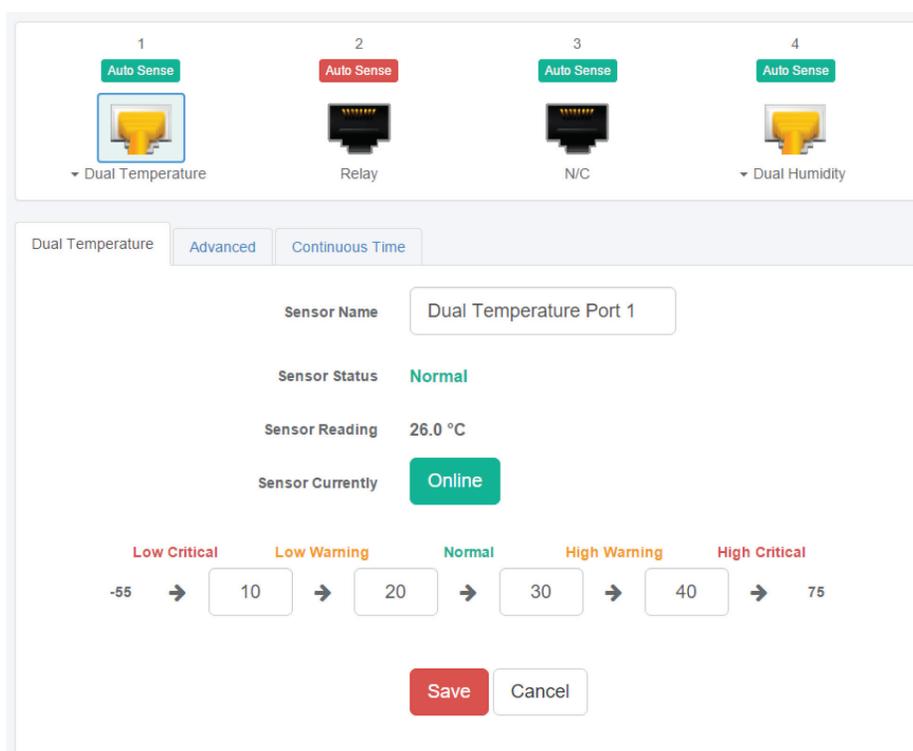


FIGURE 4-51. SENSOR'S CONFIGURATION SCREEN

From this page you can carry out various operations. You can view the current status (normal, low critical, high critical etc), rename the sensor, put it offline and change the thresholds. In the screen shot above you can see the sensor is indicating a temperature of 26 degrees °C, and a status of Normal.

You can re-configure the thresholds for each sensor state. After changing a threshold value, click Save. In the next screen shot, you can see that a threshold has been changed to 27 make a new "low warning" state, and along with it the sensor status has changed.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

Dual Temperature

Advanced Continuous Time

Sensor Name Dual Temperature Port 1

Sensor Status Low Warning

Sensor Reading 25.5 °C

Sensor Currently Online

Low Critical -55 → Low Warning 10 → Normal 27 → High Warning 30 → High Critical 40 → 75

Save Cancel

FIGURE 4-52. SENSOR STATE CHANGED SCREEN

NOTE: the Humidity sensor has the same configuration options as the Temperature sensor. You might see a Temperature Search option for the connected Temperature sensors.

Temperature Search

Search

FIGURE 4-53. SEARCH BUTTON

What this button does is to search for new temperature sensors in a chain, if you've connected more than one sensor in a daisychain Temperature (DCT) sensor chain.

It is not available for Thermal Map Sensors (TMS).

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

Temperature | Advanced | Continuous Time

Sensor Name: Temperature Port 1

Sensor Status: Normal

Sensor Reading: 27.5 °C

Sensor Currently: Online

Temperature Search: Search

Low Critical: -55 → 10 → 20 → 30 → 40 → 75

Low Warning: 10 → 20 → 30 → 40 → 75

Normal: 20 → 30 → 40 → 75

High Warning: 30 → 40 → 75

High Critical: 40 → 75

Save Cancel

FIGURE 4-54. TEMPERATURE SEARCH SCREEN

### ADVANCED SENSOR CONFIGURATION FOR TEMPERATURE/HUMIDITY SENSORS

Dual Temperature | Advanced | Continuous Time

Unit:  Celsius  Fahrenheit

Rearm: 2

Reading Offset: 0

Data Collection Type: Average

Enable Calendar:  On  Off

Graph Enable:  Enable  Disable

Filter Status:  Enable  Disable

Save Cancel

FIGURE 4-55. ADVANCED SENSOR CONFIGURATION SCREEN

Fields in above screen:

- ◆ Units: Changes units from °C to °F or vice versa.
- ◆ Rearm: The Rearm parameter is useful for sensors whose values can vary, such as the temperature and humidity sensors.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

It is used to prevent the sensor from rapidly changing between two states. For example if the Warning High threshold for the temperature sensor is set to 80 degrees and the sensor were to vary between 79 and 80 you could be faced with a very large number of emails, traps, and events logged. The Rearm parameter prevents this by forcing the temperature to drop by the Rearm value before changing the state back to normal. In this example, if Rearm is set to 2, then the sensor would have to drop from 80 down to 77 before the status would change from Warning High back to normal.

- ◆ Reading Offset: The Reading Offset feature is a calibration tool. If you wish to calibrate the temperature sensor, for example, you could enter an offset value of 5. This would mean if the sensor reads 20 degrees then it would record as 25 degrees. This figure can also be a minus figure (e.g. -5 would show 15 degrees instead of 20).

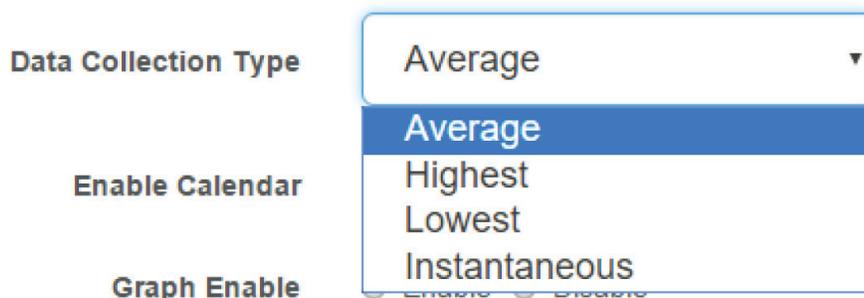


FIGURE 4-56. DATA COLLECTION TYPE DROP-DOWN MENU

**Data Collection Type:** This refers to the data collection from the sensor and how the data is then displayed on the graphs.

There are four options for the collection of data: Average, Highest, Lowest and Instantaneous. The default setting is Average.

- ◆ When the data collection type is set to Average, the averaged value between 2 graph intervals is stored and output graphs for the daily, monthly, and yearly all have the same size on the screen. For the daily graph, each data point on the graph is one data point collected from the sensor. But for the monthly and yearly graph, to display more data into the same size as the daily graph, some consolidation on the data is needed. One data point on the monthly and yearly graph is an average of the sensor data in a range.

The maximum and minimum values showing on the monthly and yearly graphs are the value of this consolidated data and not the raw data over that period of that time.

- ◆ When the Data Collection Type is set to the Highest setting, then you will get the graphing output displaying the sensors highest average readings during sampling. This is the same for the Lowest setting (lowest average).
- ◆ With the Instantaneous setting, you can store the actual value of the sensor at the sampling interval without averaging.
- ◆ Graph Enable: To save the data from the sensors on the unit, you will need to enable the Graphing feature on the unit. You need to change the Enable Graph to the On position and click on the Save button to enable the graphing.

**NOTE:** You can also enable the graphing from the Summary page.

- ◆ Filter Status: The Sensor Filter Status is a feature that you can Enable or Disable and when enabled will check the sensor status. If the status of the sensor changes very rapidly, then it will report how many times the sensor status changed, instead of having multiple separate entries in the syslog.

When enabled, this will report the changes and status of a sensor only once.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### 4.6.2 RELAY SENSOR

Click on the sensor port where the sensor is connected to open the sensor's configuration.

NOTE: Another way of accessing this page is to click on the sensor from the Summary page.

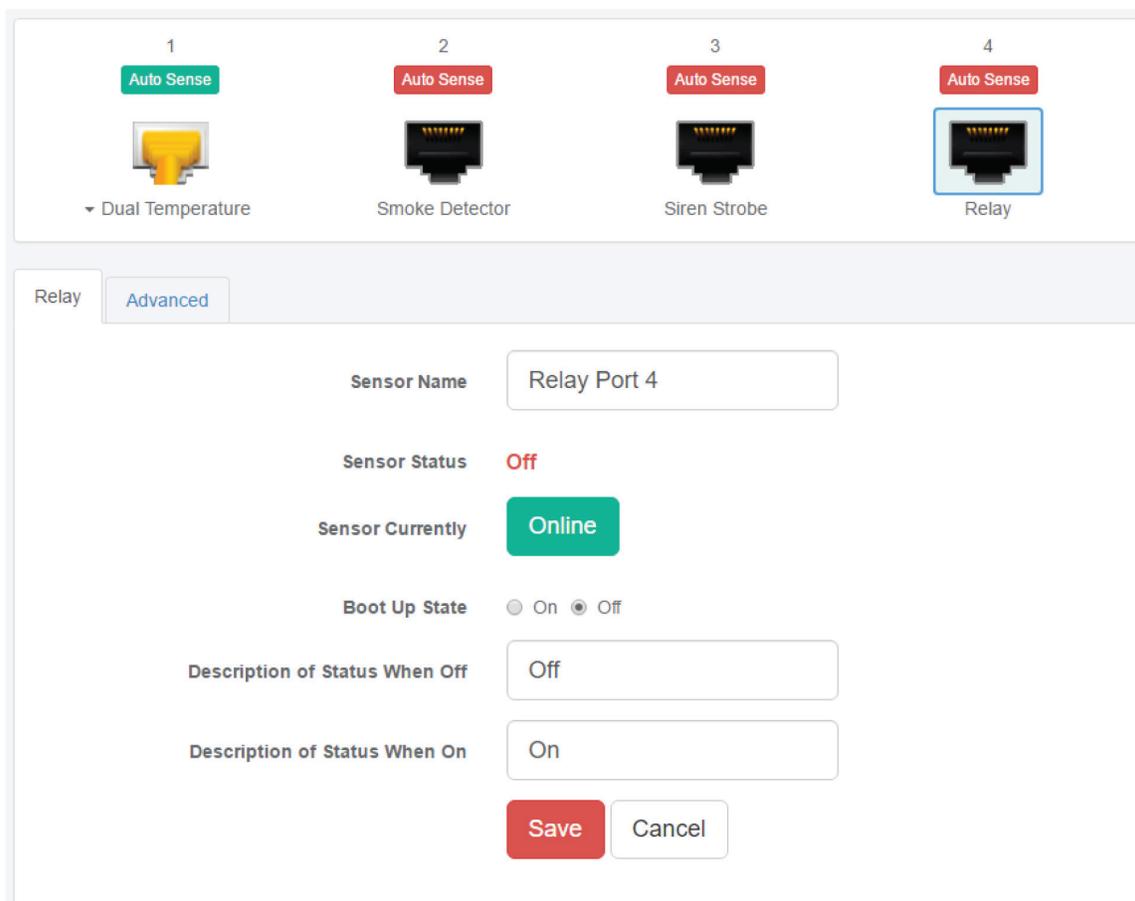


FIGURE 4-57. RELAY SENSOR SCREEN

- ◆ **Boot Up State:** You can change the state of the relay when the unit starts. The default is Off.
- ◆ **Description of Status When Relay Off:** This field is the custom description, which will be displayed in the Relay Status field when the relay state is off. The same text is listed as one of the relay actions used to turn off the relay. Examples for this field are Close Door, Turn Pump Off, Turn Light Off, etc.
- ◆ **Description of Status When Relay On:** This field is the custom description, which will be displayed in the Relay Status field when the relay state is on. The same text is listed as one of the relay actions used to turn on the relay. Examples for this field are Open Door, Turn Pump On, Turn Light On, etc.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### ADVANCED SENSOR CONFIGURATION FOR RELAY SENSORS

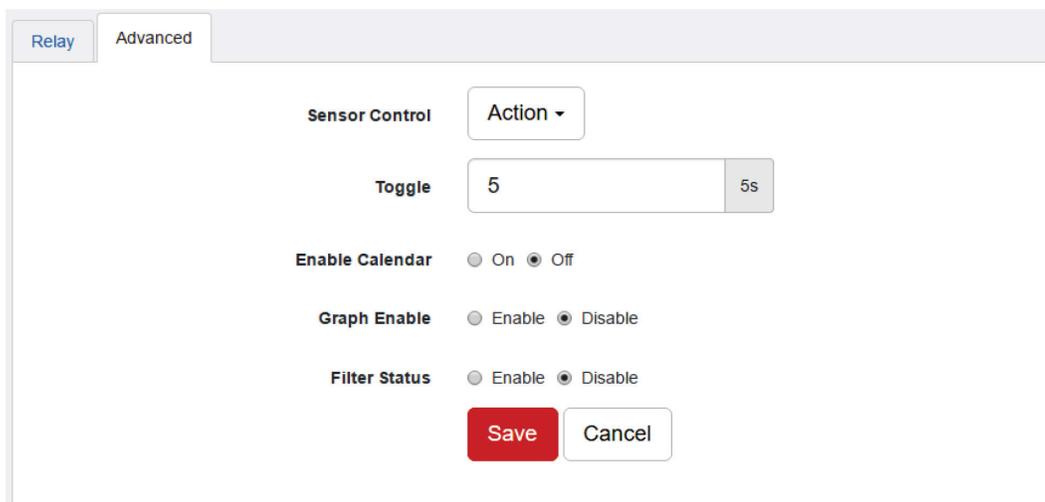


FIGURE 4-58. ADVANCED SENSOR CONFIGURATION SCREEN

- ◆ Sensor Control:

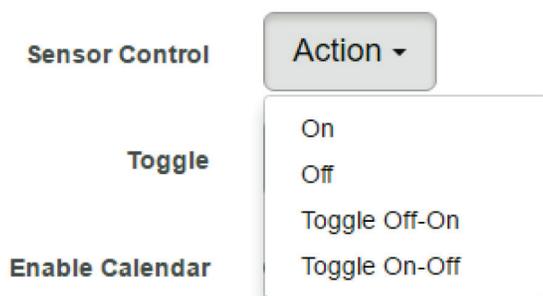


FIGURE 4-59. SENSOR CONTROL ACTION DROP-DOWN MENU

This button allows you to manually control the relay by controlling the cycle of the relay in an on-off-on or an off-on-off cycle. You can also set the “Toggle” (Cycle Time) here in seconds.

You don’t need to change an option to be able to link the relay to an action.

The following actions can be chosen in an action: Turn on until sensor normal, turn off until sensor normal, cycle the relay, turn on until acknowledged, and turn off until acknowledged.

- ◆ Enable Calendar: Allows you to setup a Calendar Profile for what days and times you want or do not want the relay to be active.

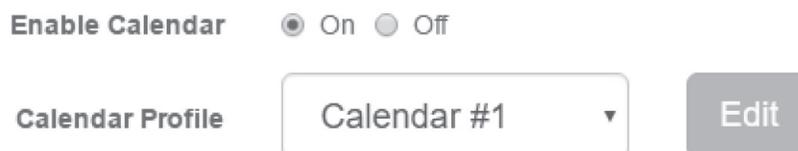


FIGURE 4-60. CALENDAR PROFILE EDIT BUTTON

Click on the Edit button next to a selected calendar to modify it.

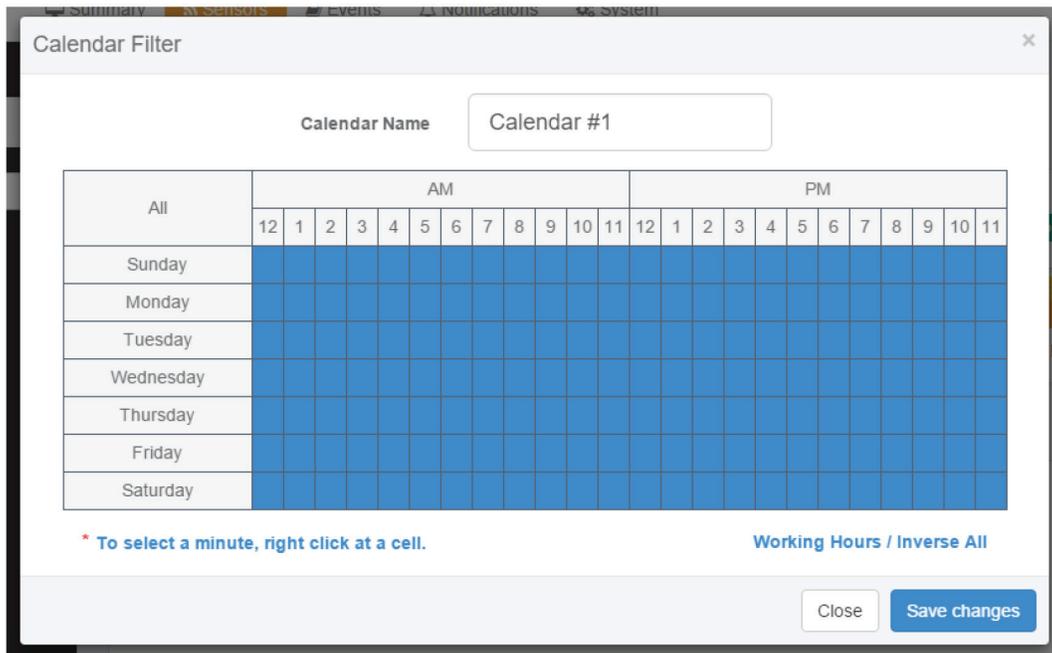


FIGURE 4-61. CALENDAR FILTER SCREEN

Blue cells means that the notification is on, white cells means it's off.

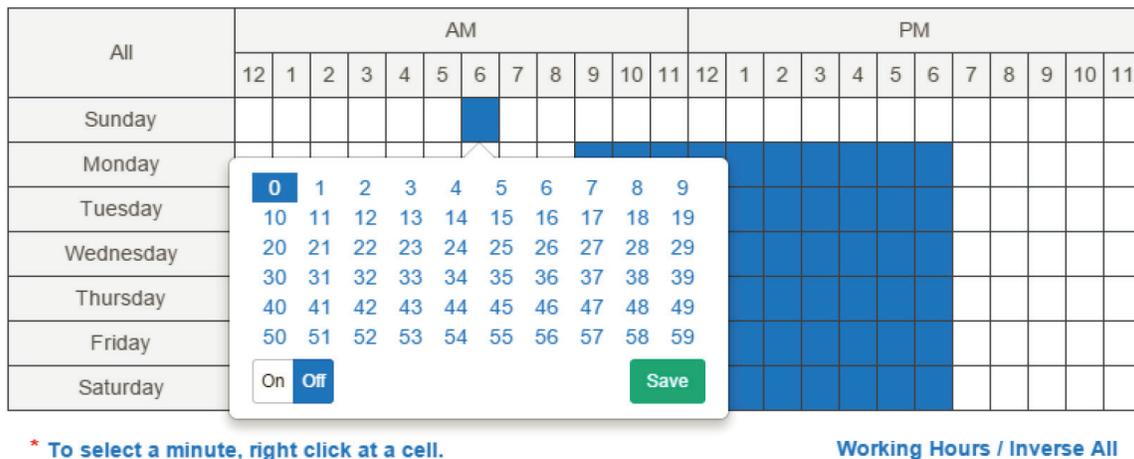


FIGURE 4-62. CALENDAR SCREEN

You can quickly select the Working Hours only, and specify a custom schedule down to minutes by right clicking on a cell.

## CHAPTER 4: WEB GRAPHICAL USER INTERFACE (GUI)

### 4.7 FIRMWARE UPGRADE THROUGH THE WEB UI

The firmware upgrade process is very simple and straight-forward.



FIGURE 4-63. SYSTEM/MAINTENANCE PAGE

Open the System/Maintenance page and click on the Upgrade button at the System Firmware Upgrade section.

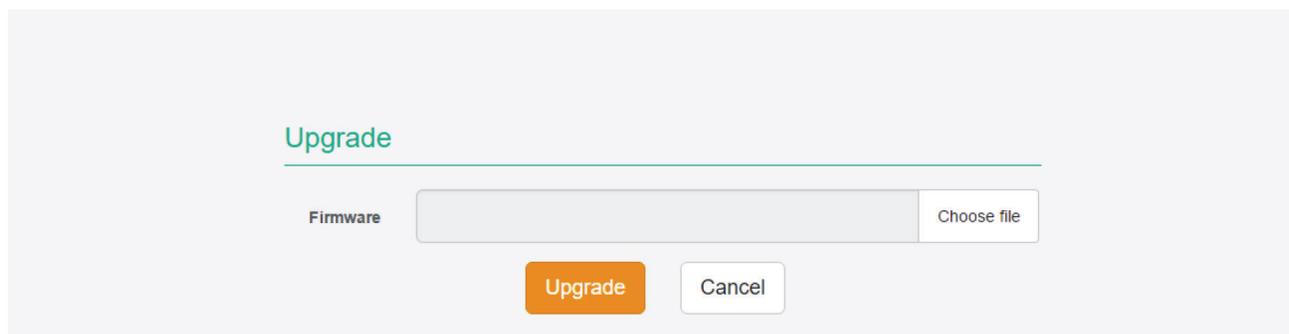


FIGURE 4-64. UPGRADE PAGE

This will start the Upgrade page. Choose the firmware file from your PC and click on Upgrade to start the process.

The firmware file for the AlertWerks Hub has the following format:

spplus-1.0.1804.bin

- where 1.0.1804 is the build version.

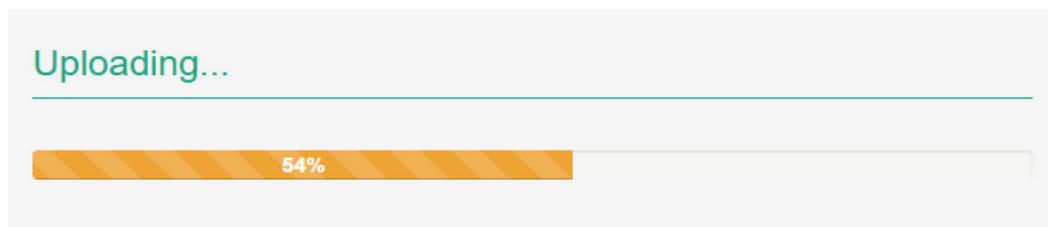


FIGURE 4-65. UPLOADING... SCREEN

First the file will be uploaded to the unit...

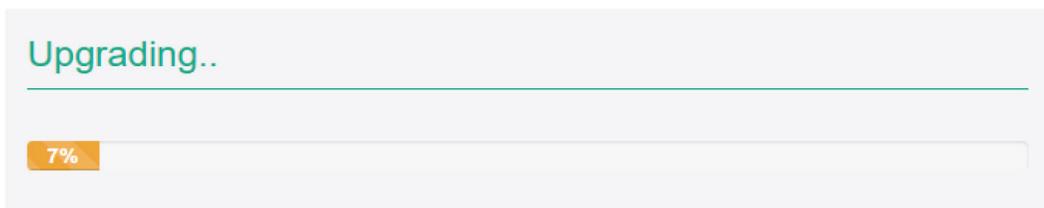


FIGURE 4-66. UPLOADING... SCREEN

...then the upgrade process will run. The whole process can be done in a few minutes.  
The Power/Ethernet LED will be red during the upgrade.

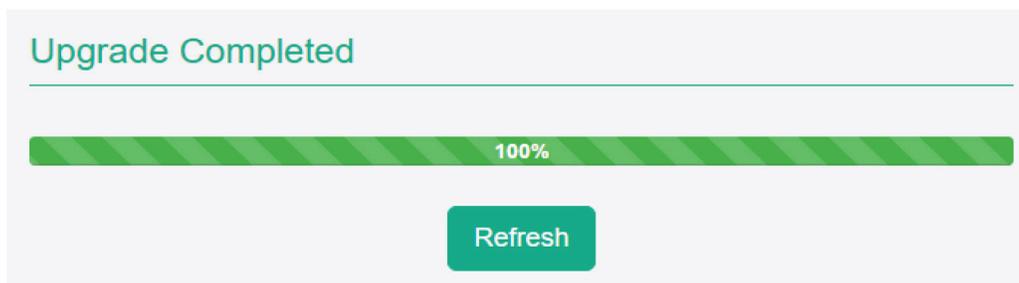


FIGURE 4-67. UPGRADE COMPLETED SCREEN

The unit will reboot at the end of the upgrade. Click on the Refresh button to reload the Web UI.

## APPENDIX A: REGULATORY INFORMATION

### FCC STATEMENT

Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or telephone reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

Reorient or relocate the receiving antenna.

- ♦ Increase the separation between the equipment and receiver.
- ♦ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ♦ Consult an experienced radio/TV technician for help.

#### CAUTION:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

To meet FCC requirements, shielded cables and power cords are required to connect this device to a personal computer or other Class B certified device.

This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

## APPENDIX A: REGULATORY INFORMATION

### A.2 NOM STATEMENT

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.



## APPENDIX B: DISCLAIMER/TRADEMARKS

### B.1 DISCLAIMER

Black Box Corporation shall not be liable for damages of any kind, including, but not limited to, punitive, consequential or cost of cover damages, resulting from any errors in the product information or specifications set forth in this document and Black Box Corporation may revise this document at any time without notice.

### B.2 TRADEMARKS USED IN THIS MANUAL

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