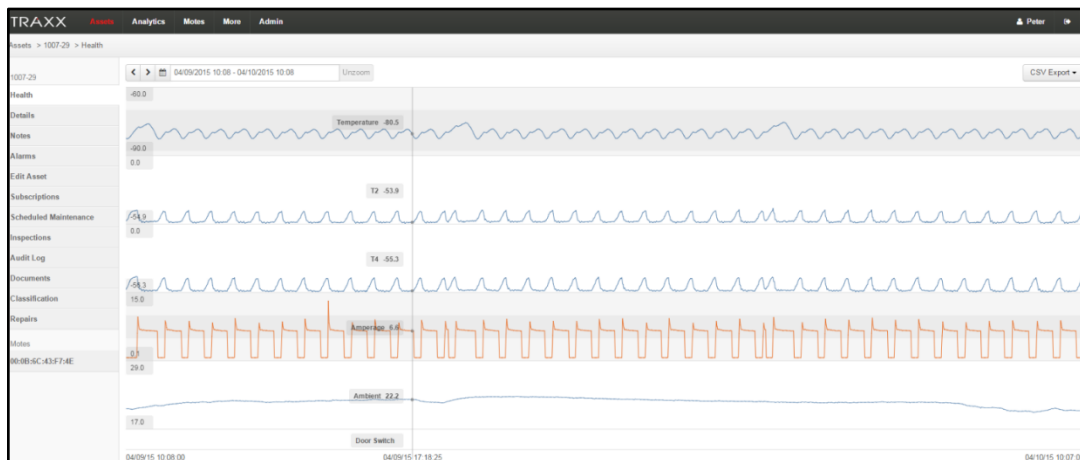


# TRAXX<sup>®</sup> Software User Manual



TRAXX version 4.13.3

**IMPORTANT:** Read this user manual. Failure to follow the instructions in this manual may result in damage to the unit, injury to operating personnel, and poor equipment performance.

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## 1. Notices

### Safety Instructions:

Do not use this product for protection or as part of an automated emergency system or for any other application that involves protecting people and/or property. Customers and users of TRAXX® products are responsible for making sure that the product is fit for the intended usage. Do not open the product casing and do not disassemble or modify internal components in any manner. Except for mote batteries, TRAXX products do not contain any internal components that require user intervention or repair. If the device shows signs of improper operation, disconnect it immediately from its power source and contact KLATU Networks technical services.

### Electrical warning for devices with AC adapter:

When using a TRAXX product with a [PoE \(Power Over Ethernet\)](#) or AC/DC adapter, always use the specific adapter provided by your supplier (same brand, same product reference). Do not open the adapter yourself and do not dismantle internal components or modify them in any manner. The adapter does not contain any user-reparable parts. If the adapter shows any sign of malfunction, unplug it immediately and contact KLATU Networks for repair or replacement. Do not connect the adapter to a device or peripheral other than the TRAXX product for which it was intended. Unplug the power cable from the electrical outlet when the adapter is not in use. Do not cause a short circuit with the electrical plug. Do not force either the AC or DC plug. Before removing the connector from any TRAXX hardware devices or unplugging power cables, first unplug the cable from the power outlet. Do not subject the adapter to physical shock, which could cause serious malfunction or damage. Do not use or place the adapter in a wet or humid location. This adapter is not waterproof.

### Intended Use:

- The system will collect, store, and provide analytical data. The data analytics collected from multiple assets (fleet) will provide the operator with supporting data for efficiency and cost reduction recommendations.
- To monitor the performance of the asset to meet the asset's intended use and assess overall health using trending analysis from baseline and other comparable units.
- Temperature alarm feature is for reference only and it is not intended for specific application requirements for critical sample protection, nor can it be used as a substitute for monitoring the critical temperature performance.

### For reference only:

- The system will monitor overall asset health, detect and alarm on asset malfunction and degradation
- Service vs. buy decisions
- Remote system health monitoring and troubleshooting for service providers
- It is not stated or implied that the system will uplift the intended use of the asset.

 **Battery Warning:**

Some TRAXX products contain lithium batteries. Make sure you observe polarity (+/-) when inserting batteries into TRAXX devices. Reversing polarity by inserting the batteries incorrectly can cause the product to heat up and may lead to a battery liquid leak. Use only batteries recommended by KLATU Networks. Do not change battery types, such as alkaline and magnesium, or use batteries of different brands or even different types of batteries of the same brand. Incorrect batteries may cause the device to heat up and may result in a fire or battery liquid leakage. Please properly dispose of used batteries. Never dispose of batteries in a fire. Do not charge regular batteries that are not specifically rechargeable. When batteries are low, or if the battery-operated device in question remains unused for a long period of time, remove the batteries from the device to avoid any risk of battery liquid leakage. Never leave batteries within reach of children. In case of a battery leak, avoid all contact with the liquid present on the batteries. Rinse with clear water immediately if the battery liquid comes into contact with the eyes, mouth or skin. Contact a doctor or emergency service immediately. Battery liquid is corrosive and can damage vision, or cause blindness or chemical burns.

 **Recommended maintenance and PM intervals:**

- Recommended to change the mote battery annually, if battery is the main power source.
- Recommended to change the mote battery every two (2) years, if mote is line powered and the battery serves as the backup power source.

 **Environmental operating limits:**

- Modules shall not be placed in environmental conditions beyond recommended specifications.
- RTD and thermocouple sensors are not submersible
- Operating temperature range: -40C to +85C
- Operating humidity range: 5 - 95%RH, non-condensing

 **Environmental protection:**

- Please respect local regulations concerning disposal of packaging, unused wireless devices and their accessories, and promote their recycling.

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## 2. Getting Started

### 2.1 TRAXX Overview

The TRAXX solution is comprised of wireless modules (motes), sensors, and software tools that allow the user to monitor an asset's<sup>1</sup> temperature, energy consumption, door access, reliability and predictive failure analytics, as well as other parameters using Wi-Fi or Ethernet. Alarms are issued automatically to users' email and mobile devices when threshold breaches are detected by the system.

TRAXX motes collect data from sensors at regular intervals and transmit the data to the cloud servers.

The TRAXX web-based application is available to customers on any Internet connected device (PC, tablet, mobile phone)<sup>2</sup> and enables the user to manage system configuration and all actions relating to sensors, motes, data, alarms, users, and reporting.

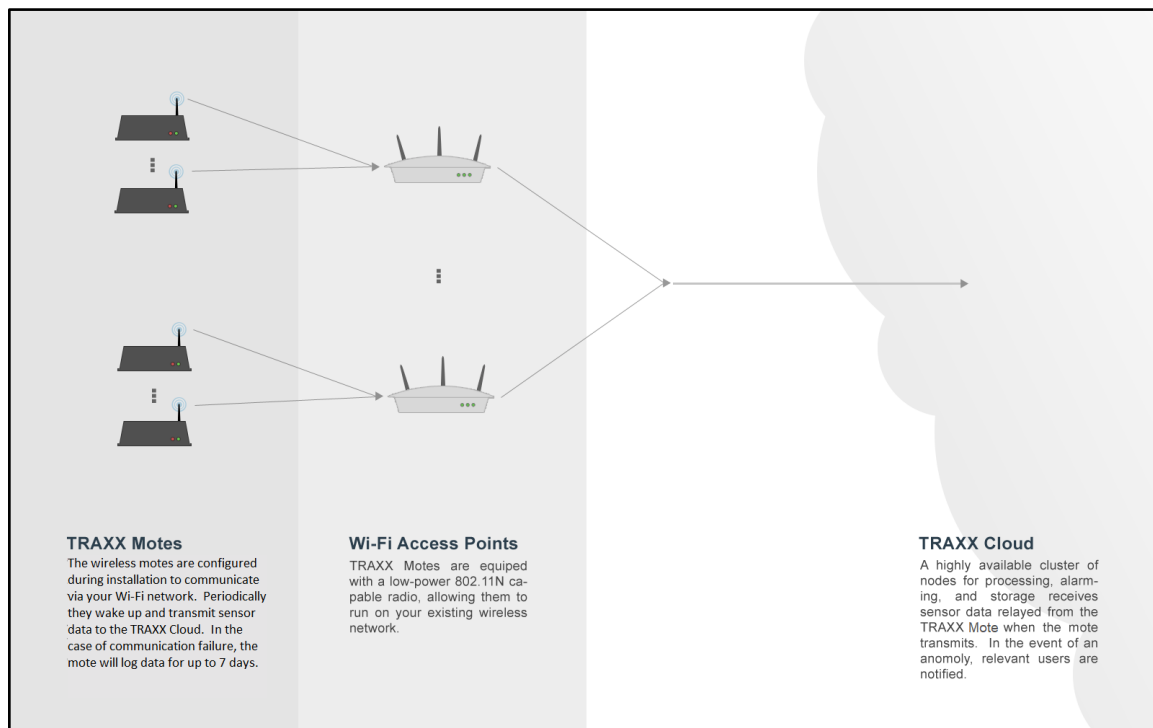


Figure 1 – TRAXX architecture (Wi-Fi direct to TRAXX cloud servers)

<sup>1</sup> An “asset” is referred to throughout this document as anything being monitored by sensors (e.g. ULT freezer, refrigerator, incubator, cryo tank, N<sub>2</sub> flow, CO<sub>2</sub> concentration, etc.)

<sup>2</sup> Some features may not be fully implemented on tablets and mobile phones.

## 2.2 About this Manual

This user manual details the use of the online TRAXX application, but does not cover sensor, mote, or gateway installation. Please see the various TRAXX installation guides and service manuals for system requirements, troubleshooting, and hardware installation instructions.

This manual focuses on the fields and windows you will encounter in TRAXX. Not all screens will be available to all users (access is based on user permission levels).

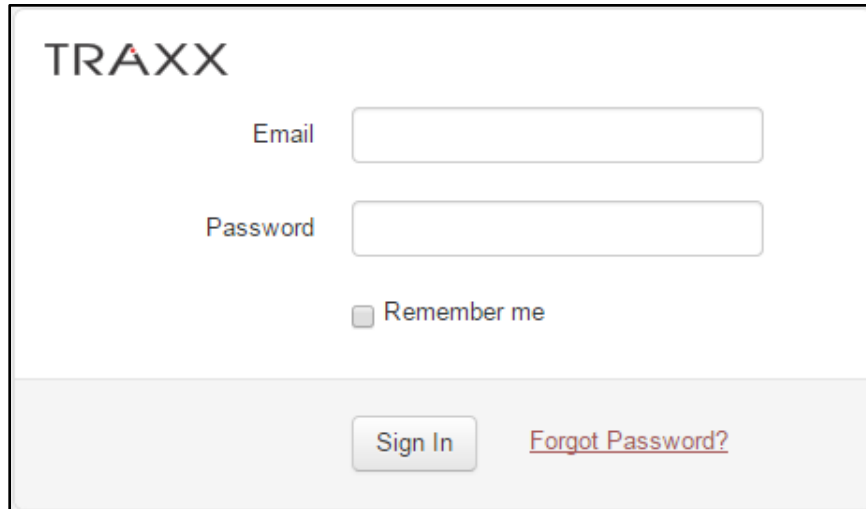
## 2.3 Log In

Supported Internet browsers:

- Chrome
- Firefox (version 17 and later)
- Internet Explorer (version 9 and later)
- Edge
- Safari
- Opera (version 12 and later)
- Browsers on mobile devices are supported, but not all TRAXX features are supported.

Because TRAXX is a web-based application, your device must be connected to the Internet in order to log in. When your account is initially created by an administrator, TRAXX will automatically email you your TRAXX credentials (your email address and password) and a link that will take you to the TRAXX login page. Click the link in the email to go to the login page for the first time.

It is recommended that you bookmark the login page for easy access in the future to your custom URL. Contact your system administrator or KLATU customer support if you don't know your URL.

The TRAXX login screen. It features the "TRAXX" logo in the top left. Below it are two input fields: "Email" and "Password". To the right of the "Password" field is a checkbox labeled "Remember me". At the bottom, there is a "Sign In" button and a link labeled "Forgot Password?".

TRAXX

Email

Password

☐ Remember me

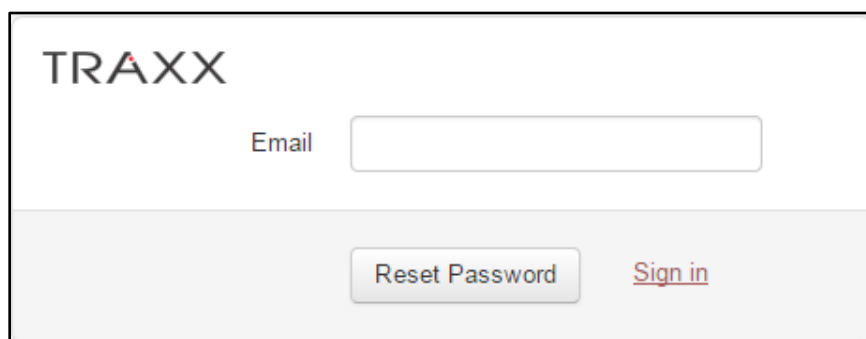
[Forgot Password?](#)

Figure 2 – Login screen

Once on the login page, enter your email address and password. Passwords must be a minimum of 8 characters, are case sensitive, and can consist of letters, numbers, and/or symbols. Check the **Remember Me** checkbox to stay logged in to TRAXX, even if you close your browser window. Click **Sign In** to login to the application.

TRAXX will display an error stating, “Invalid Credentials,” if the email address or password is incorrect. A user’s account will be temporarily locked after five unsuccessful login attempts. A TRAXX administrator must unlock the account, and a temporary password will be emailed to the locked-out user.

If you can’t remember your password, click the **Forgot Password** link on the login screen. Enter your email address and click **Reset Password**. TRAXX will send you a new password.

The TRAXX reset password screen. It features the "TRAXX" logo in the top left. Below it is an input field labeled "Email". At the bottom, there is a "Reset Password" button and a link labeled "Sign in".

TRAXX

Email

[Sign in](#)

Figure 3 – Reset password

Upon logging in the very first time, the user will have to accept the end-user license agreement. Read the agreement, scroll to the bottom, and then click the **Continue** button. The TRAXX **Asset List** will be displayed after logging in. Users will see all assets in their assigned zones. Users with a basic “User” role will only see the assets that they are subscribed to by the Admin or Lab Manager. If a basic User logs in and sees no assets in the **Asset List**, then they haven’t yet been subscribed to any assets by an Admin or Lab Manager.

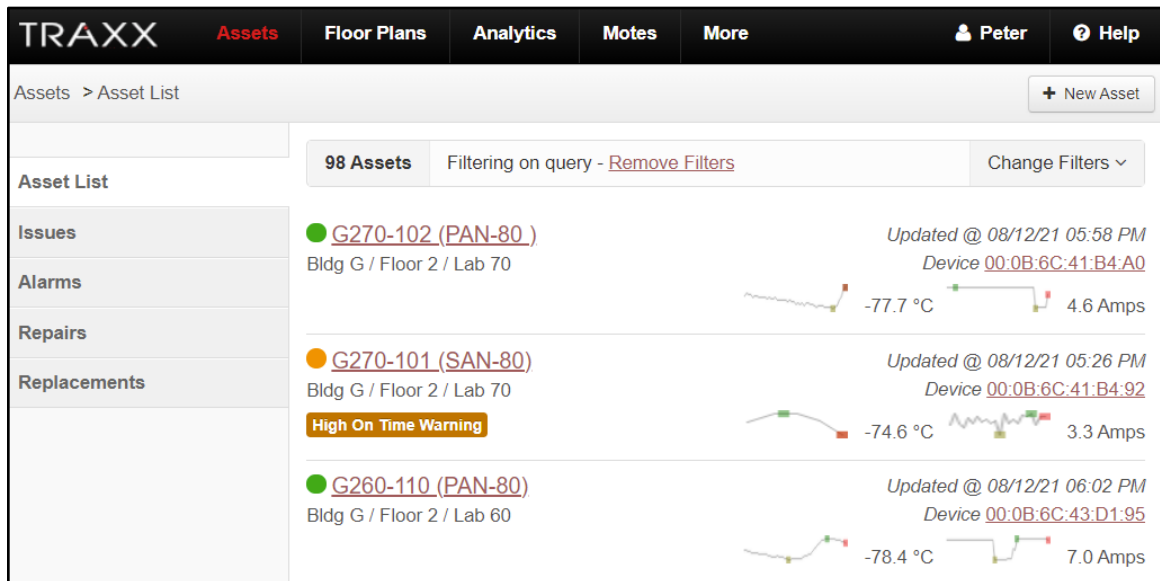


Figure 4 – Asset List

## 2.4 TRAXX Screen Layout

You may click the **Help** link at the top right corner of TRAXX to download the newest version of this manual or to view the change log for the latest updates.

There are two menu systems in TRAXX that are always visible:

- **Top menu bar.** This horizontal menu is static and never changes. Options are limited by user role (e.g. Admins can see more than basic Users).
- **Left sidebar menu.** This vertical menu changes depending on what features you are using in TRAXX. The options are limited by user role (e.g. Admins can see more than basic Users). Below displayed is an image for an Administrator role user.

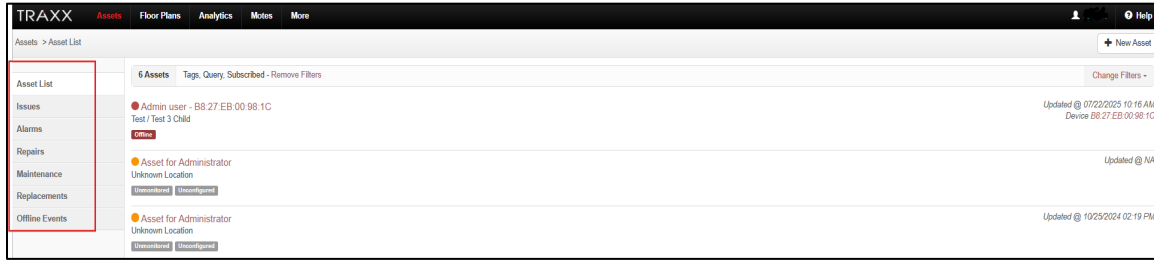


Figure 5 – Menus

## 2.5 Personal Profile

You can access your personal profile by clicking on your name at the top-right corner of the screen, then selecting **My Profile**. Make sure to click the **Save Profile** button at the bottom of the screen to save any changes made to the profile.

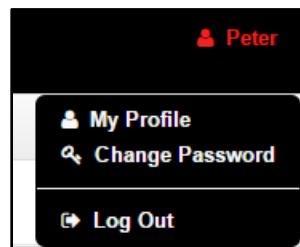


Figure 6 – Access profile

In the **Contact Information** section, you can modify the following:

- Email address (required) – This address is used to log in to TRAXX. It is also where all alarms and TRAXX correspondence is sent. **CAUTION:** Only one email address is allowed in this field.
- First name (required)
- Last name (required)
- Title
- Office phone
- Mobile phone
- Time zone (required) – Choose a time zone where you are primarily located. All sensor data in TRAXX will be adjusted to this time zone.
- Click the **Save Profile** button at the bottom of the screen to save any changes.

Contact Information

\* Email

plarsson@klatunetworks.com

\* First name

Peter

\* Last name

Larsson

Title

Director Field Operations

Office phone

619-548-3442

Mobile phone

619-548-3442

\* Time zone

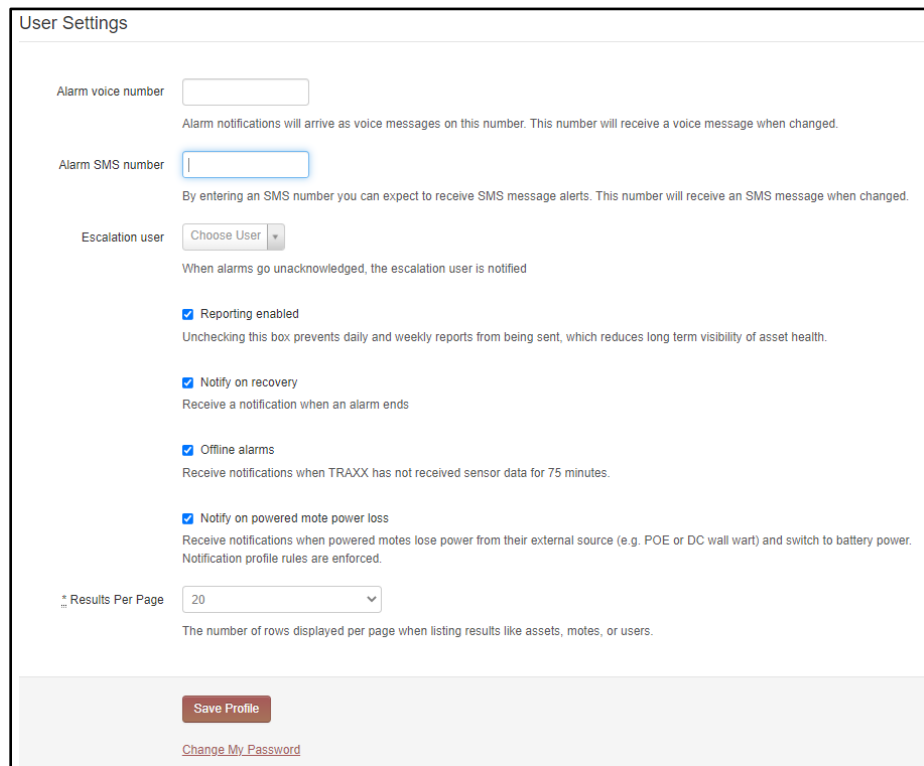
Pacific Time (US & Canada)

Figure 7 – Profile Contact Information

In the **User Settings** section, you can modify the following:

- Alarm voice number – If you add a phone number here, TRAXX's automated calling service will call this number whenever there is an alarm condition. Email alarms will still be sent. Do not add a phone number if you do not want to be called.
- Alarm SMS number – If you add a phone number here, TRAXX's automated SMS service will send a text message to this number whenever there is an alarm condition. Email alarms will still be sent. Do not add a phone number if you do not want to be texted.
- Escalation user – If an alarm goes unacknowledged, then the user selected here will be notified *and you will no longer be notified*. Leave blank if you'd like the alarms to be escalated to yourself.
- Reporting enabled – Check this box if you'd like to receive daily status reports to your email address. Unchecking this box reduces long term visibility of asset health and is not recommended. In order to receive the daily status email, the user has to either be subscribed to at least one asset or have Admin permissions.
  - Users with a basic User role will receive a report containing only assets that they are subscribed to.
  - Users with an Admin role will receive a report containing all assets at the facility.
- Notify on recovery – Check this box if you'd like to receive a notification when an alarm condition ends. By default, this box is not checked, and no notifications are sent when alarm conditions end.

- Offline Alarms – Check this box if you'd like to receive a notification if a subscribed asset goes offline. Some customers will have this feature disabled so that no users may check this box.
- Notify on Powered Mote Power Loss – Check this box if you'd like to receive a notification if a mote loses wall power (e.g. power outage or mote is unplugged from outlet).
- Click the **Save Profile** button at the bottom of the screen to save any changes.



**User Settings**

Alarm voice number   
Alarm notifications will arrive as voice messages on this number. This number will receive a voice message when changed.

Alarm SMS number   
By entering an SMS number you can expect to receive SMS message alerts. This number will receive an SMS message when changed.

Escalation user  When alarms go unacknowledged, the escalation user is notified

☒ Reporting enabled  
Unchecking this box prevents daily and weekly reports from being sent, which reduces long term visibility of asset health.

☒ Notify on recovery  
Receive a notification when an alarm ends

☒ Offline alarms  
Receive notifications when TRAXX has not received sensor data for 75 minutes.

☒ Notify on powered mote power loss  
Receive notifications when powered motes lose power from their external source (e.g. POE or DC wall wart) and switch to battery power. Notification profile rules are enforced.

\* Results Per Page   
The number of rows displayed per page when listing results like assets, motes, or users.

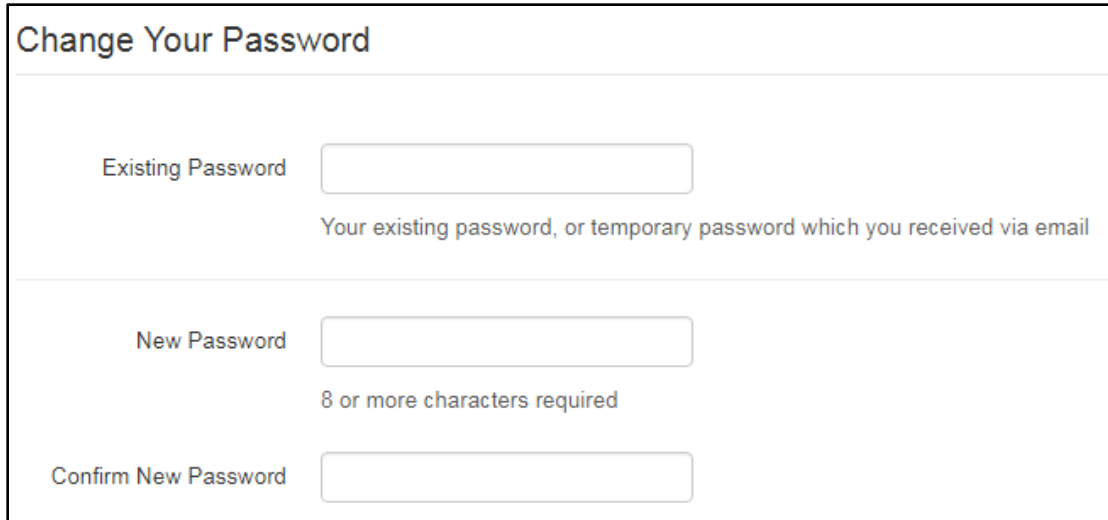
[Change My Password](#)

**Figure 8 – User Settings**

## 2.6 Change Password

Passwords must be a minimum of 8 characters. To change your password:

- Click on your name at the top-right corner of the screen (**Fig. 7** and **11**).
- Select the **Change Password** link.
- Enter your current password in the **Existing Password** field.
- Enter your new password in the **New Password** field.
- Enter your new password again in the **Confirm New Password** field.
- Click the **Update Password** button to save the changes.

A web form titled "Change Your Password" with a light gray background. It contains three input fields: "Existing Password", "New Password", and "Confirm New Password". Below the "Existing Password" field is a hint text: "Your existing password, or temporary password which you received via email". Below the "New Password" field is a requirement text: "8 or more characters required".

Change Your Password

Existing Password

Your existing password, or temporary password which you received via email

New Password

8 or more characters required

Confirm New Password

Figure 9 – Change password

## 2.7 Log Out

To log out of TRAXX:

- Click on your name at the top-right corner of the screen.
- Select the **Log Out** link.

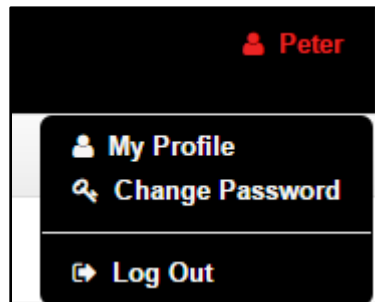


Figure 10 – Log out

### 3. Assets

The **Assets** menu allows you to manage:

- **Asset List**
- **Issues**
- **Alarms**
- **Repairs** (not available for the basic User role)
- **Replacements** (not available for the basic User role)
- **Maintenance**
- **Offline Events**

Clicking **Assets** from the menu at the top of the screen takes you to the **Asset List** by default. Select an item from the left sidebar menu to go to that screen.

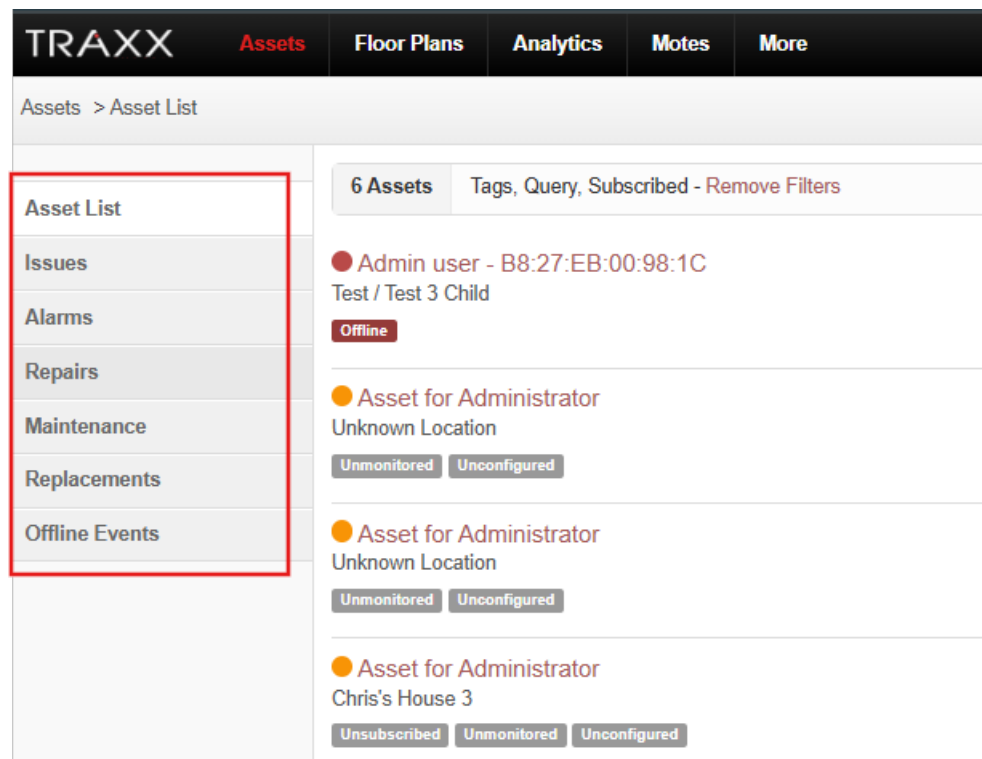


Figure 11 – Assets menu

#### 3.1 Asset List

The **Asset List** screen allows the user to see the high-level status of all assets that they are authorized to view. On this screen the user can see/do the following:

- **Color coding** – The colored dot (green/orange/red) to the left of each asset reveals the high-level status of the asset. The color reflects the highest severity

of the tags associated with the asset. See §3.1.3 for descriptions of all tags and their severity.

- Red = Critical; asset is offline and not reporting data, the mote's battery is dead (Gen2, Gen3, Blackbird), a sensor is unplugged or damaged, or there is a set point alarm condition.
  - Orange = High priority; asset is in trend alarm, the mote's battery is low or being consumed too quickly, the asset is unmonitored or unsubscribed, or the compressors are on too long during each cycle.
  - Green = All clear; the asset currently has no issues.
- Asset name – Located just to the right of the colored dot. This is a link that will take you to a detailed view of the asset.
- Asset location (aka **Zone**) – Located just beneath the asset name, this is typically where the asset is physically located.
- Tags – Located just below the Zone, these labels tell the user valuable information about the asset's condition. See §3.1.3 for more information.
- Date and time of last sensor reading.
- Mote MAC address (e.g. 00:0B:6C:41:BB:9F) – This is the unique identifier of each mote in the system and is printed on the mote label. The mote listed is the mote that is monitoring the asset. This is a link that will take you to a detailed view of the mote. Not visible to basic User roles.
- Spark lines and last reading for temperature and amperage (if CT sensor installed) – The spark lines are a summary graph of the last 1 hour of sensor data with a numerical value for the last data point received (see **Fig. 13**).
- View total asset count – The number in bold at the top of the list is the total number of assets that the user is authorized to view.
- Filter – Clicking the **Change Filters** button opens a filter box that allows the user to narrow the number of assets in the list.
- Add new asset – Clicking the **+ New Asset** button opens a new screen and allows the user to create/add a new asset to the list.

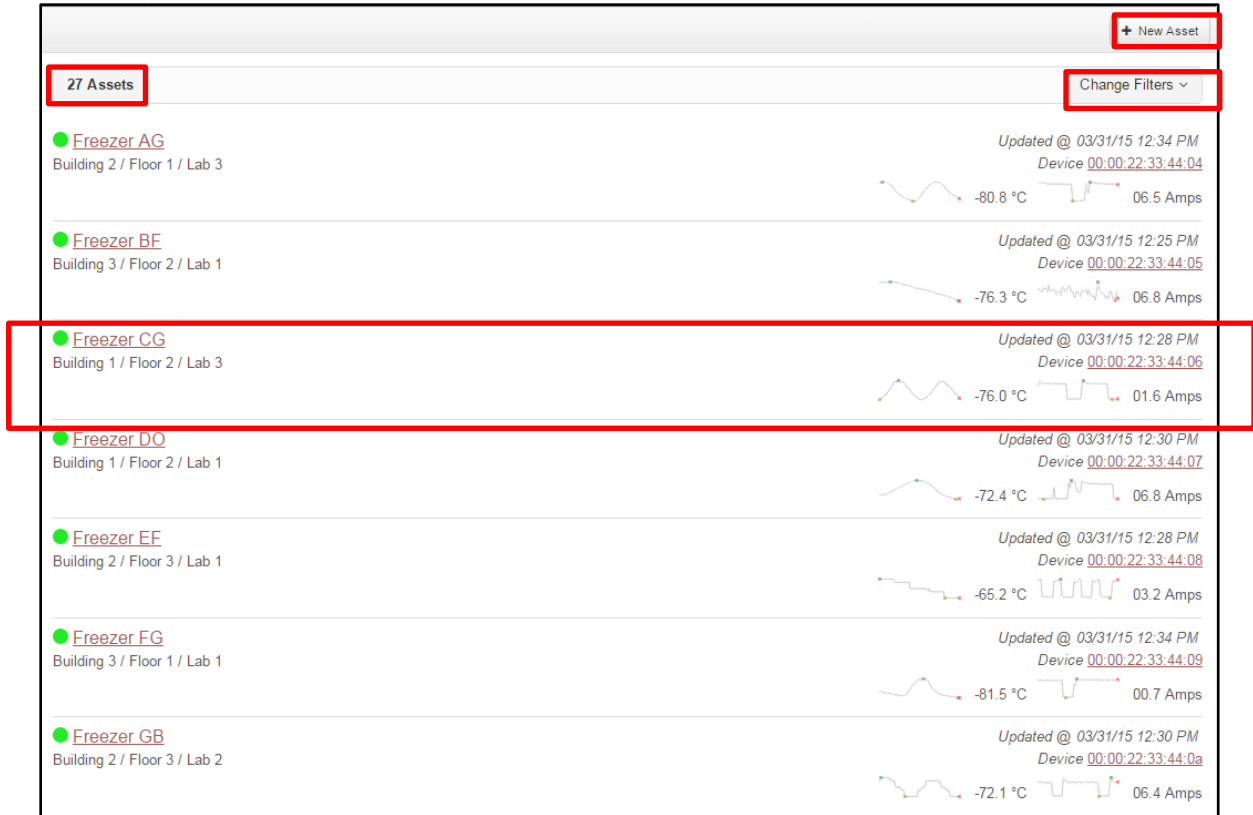


Figure 12 – Asset List

### 3.1.1 Asset Count

Shows the total count of assets in the current view, based on the filters and zone restrictions applied.

### 3.1.2 Filter

Click the **Change Filters** button to open the filter box. The filter box allows the user to narrow the view of assets in the asset list.

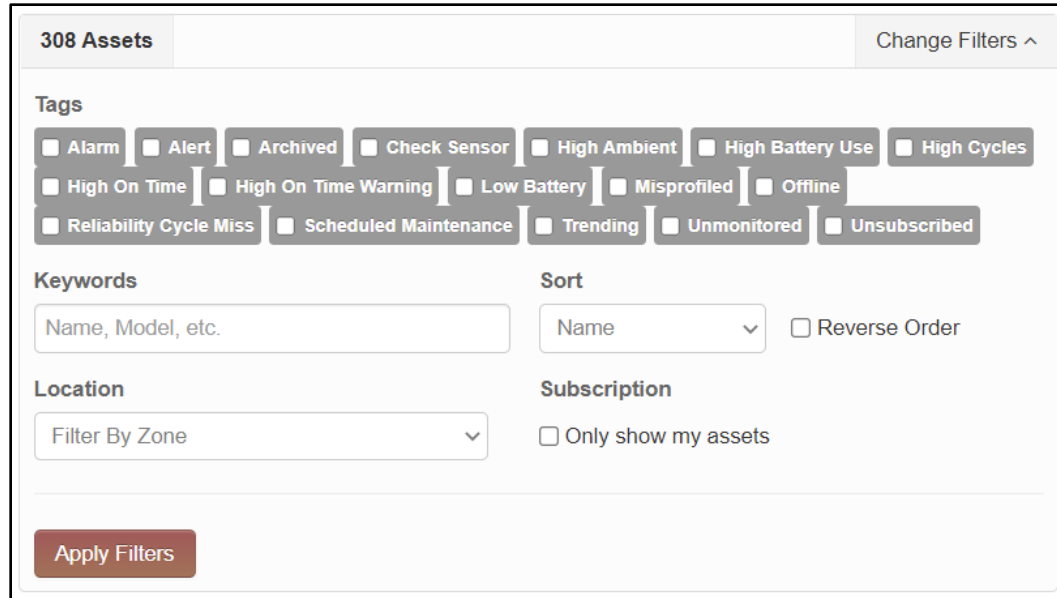


Figure 13 – Filter box

You can filter by any or all of the following:

- Tags – for example, check the **Alarm** box to view only assets that are currently in alarm.
- Keywords – for example, type “AB43” in the **Keywords** field to view all assets associated with the string “AB43” (e.g. in the make/model, serial number, location, name, etc.).
- Location – select a Zone from the **Location** drop-down menu to view only assets in that zone.
- Subscribed assets – check the box next to **Only Show My Assets** to reduce the asset list to only those assets to which you are subscribed to (not available to basic User roles).
- Use “Exclude scheduled maintenance” to exclude assets in scheduled maintenance from the asset view.

You can also sort the asset list. Click on the **Sort** drop-down menu and select the desired sorting parameter (Name, Last Checkin, or Location). Check the box next to **Reverse Order** to invert the sort order.

When filtering for more than one tag, you can toggle between “all” or “any” mode.

The current filtered list of assets can be exported using the link at the top.

### 3.1.3 Tags

Asset tags are labels that tell the user valuable information about the asset’s condition. The color of the tag represents the severity of the condition and the recommended action. Click on any tag in TRAXX to reveal an informational pop-up window.

- Red – Critical/Severe; requires immediate attention
- Orange – High priority/Warning; important and worth looking into, but not critical
- Gray – Low priority/Informational; look into when time allows

| Tag                    | Description                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alarm                  | One or more sensor readings are outside of the configured set points.                                                                                        |
| Check Sensor           | One or more sensors are not reporting valid measurements. This will cause false alarms or prevent alarms from being sent.                                    |
| Offline                | The servers are not receiving data from one or more sensors. The mote may not be transmitting.                                                               |
| Alert                  | One or more sensor readings are outside of the configured set points. The hold off is active. No notifications have been sent yet.                           |
| Alert                  | It's also possible that TRAXX has detected an alarm condition on one of the sensors, but no users are subscribed to the asset.                               |
| High Ambient           | The ambient temperature of the asset is higher than typical ambient laboratory conditions. This may increase energy usage and mechanical wear.               |
| High Battery Use       | The mote's battery is being consumed faster than expected. This can be due to prolonged alarm conditions, frequent door openings, or poor Wi-Fi.             |
| High Cycles            | The compressors are cycling on and off frequently. This may increase mechanical wear.                                                                        |
| High On Time           | The compressors are running more than normal. This increases energy usage and indicates failing/stress conditions that could likely lead to failure.         |
| High On Time Warning   | The compressors are running slightly more than normal. This increases energy usage and indicates stress conditions that could lead to failure.               |
| Low Battery            | The mote's battery is low and should be replaced without delay.                                                                                              |
| Replace Battery        | Applies only to Gen3 and Piper4XS motes. The mote's backup battery is critically low and should be replaced immediately.                                     |
| Trending               | The moving average of temperature or energy consumption has changed by more than 15% over the last week or month.                                            |
| Archived               | The asset is archived for historical purposes.                                                                                                               |
| Misprofiled            | The asset's alarm boundaries are not configured properly and sensor values are out of range more than 7 unique times per day. This may trigger false alarms. |
| Reliability Cycle Miss | Only for TSX models. The asset's reliability cycle was missed yesterday.                                                                                     |
| Scheduled Maintenance  | The asset is currently scheduled for maintenance. Alarming is temporarily disabled while this feature is active.                                             |
| Unconfigured           | The asset has no sensors configured. No sensor data will be collected.                                                                                       |
| Unmonitored            | The asset has sensors configured, but no alarm criteria are enabled. Sensor data will be collected, but no alarms will be sent to users.                     |
| Unsubscribed           | The asset has no subscribers. No alarms will be sent to users.                                                                                               |

Figure 14 – Tag Descriptions

| Tag                    | Action                                                                                                                             |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Alarm                  | Check the asset for any issues and follow your company's Standard Operating Procedures (SOP).                                      |
| Check Sensor           | Verify the physical connection of the sensors. If the physical connection looks good, inspect to ensure the sensor is not damaged. |
| Offline                | Replace mote battery if low. Otherwise work with IT to determine root cause.                                                       |
| Alert                  | No action required until asset tag changes to "Alarm."                                                                             |
| Alert                  | Fix underlying problem with asset or adjust profile                                                                                |
| High Ambient           | Identify the source of heat and take action when possible.                                                                         |
| High Battery Use       | Fix alarm conditions or contact IT if Wi-Fi is an issue.                                                                           |
| High Cycles            | Consider repair or talk with your freezer technician.                                                                              |
| High On Time           | Consider repair, defrost, reducing the set point, or increasing free airflow around the asset.                                     |
| High On Time Warning   | Consider repair, defrost, reducing the set point, or increasing free airflow around the asset.                                     |
| Low Battery            | The mote's battery should be replaced without delay.                                                                               |
| Replace Battery        | Applies only to Gen3 and Piper4XS motes. Replace the mote's battery immediately.                                                   |
| Trending               | Identify the root cause and take action to stabilize trend.                                                                        |
| Archived               | No action required.                                                                                                                |
| Misprofiled            | Edit the asset to adjust alarm boundaries for sensors frequent crossing the boundary.                                              |
| Reliability Cycle Miss | If tag persists, contact Thermo technical support.                                                                                 |
| Scheduled Maintenance  | Cancel maintenance or wait until maintenance window ends.                                                                          |
| Unconfigured           | Add sensors to the asset on the Edit Asset screen.                                                                                 |
| Unmonitored            | Edit asset to enable alarm conditions for important sensors.                                                                       |
| Unsubscribed           | Add one or more subscribers to the asset.                                                                                          |

Figure 15 – Recommended Tag actions

### 3.1.4 Viewing Asset Data

To view detailed information about any asset, click on the asset name from the Asset List.



Figure 16 – This is an individual row representing one asset in the Asset List

The resulting screen will reveal data graphs and a new menu in the left sidebar specific to the chosen asset. It will always default to the Health view. Users with a basic User role can see only a limited menu in the left sidebar (see **Fig. 17**).

The following sections will describe in detail the items available in the left-side sidebar.

|                          |  |
|--------------------------|--|
| Health                   |  |
| Details                  |  |
| Notes                    |  |
| Alarms                   |  |
| Energy Usage             |  |
| Health History           |  |
| Edit Asset               |  |
| Subscriptions            |  |
| Maintenance              |  |
| Inspections              |  |
| Audit Log                |  |
| Documents                |  |
| Classification           |  |
| Repairs                  |  |
| Performance Certificates |  |
| Notes                    |  |

|                |
|----------------|
| Health         |
| Details        |
| Notes          |
| Alarms         |
| Energy Usage   |
| Health History |
| Audit Log      |
| Documents      |

Figure 17 – Asset specific menus  
(Left Menu: Admins, Managers, Service Providers; Right Menu: Users)

#### 3.1.4.1 Health

Select **Health** from the left margin menu to view data graphs for all sensors monitoring the asset.

- Move the cursor over the graph to see specific sensor values and time stamps.

- To zoom in on the data, click, hold and drag your mouse over the desired area of the graph.
- To zoom out, click on the **zoom out** button just above the graph.

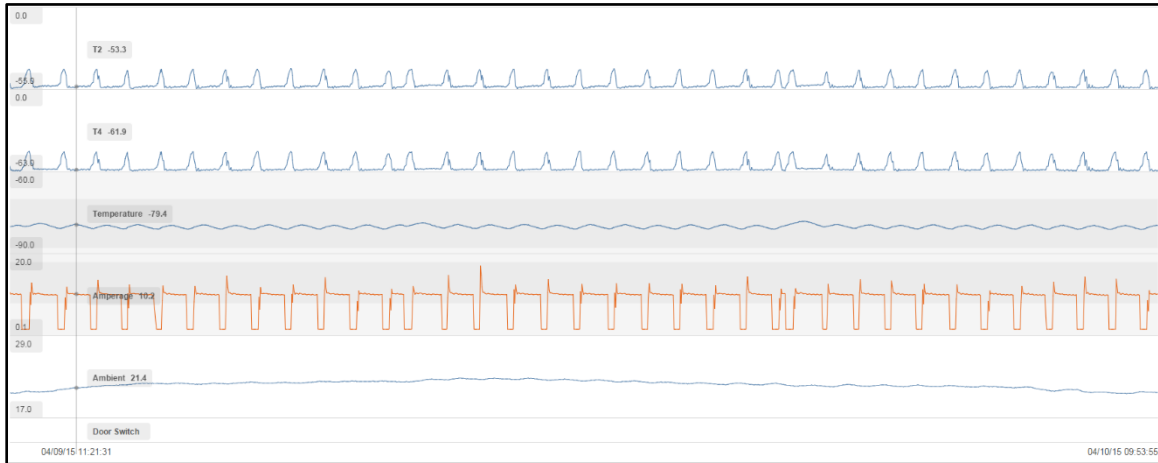


Figure 18 – Asset Sensor graphs

Click on the left and right arrow keys just above the graph to move the graph back and forward in time.

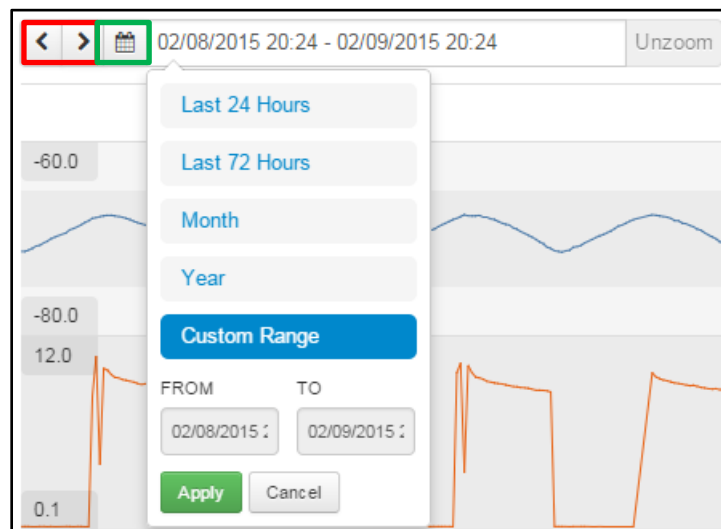


Figure 19 – Calendar function; arrow keys (red) and calendar button (green)

The date range of the graph defaults to the last 24 hours. To change the date range, click on the button with the calendar symbol (see **Fig. 19**) and select one of the following options:

- Last 72 Hours – graph shows the last 3 days of data; every data point is displayed.

- Month – graph shows the last month of data; the data displayed is the daily average over the last month.
- Year – graph shows the last year of data; the data displayed is the daily average over the last year.
- Custom Range – a calendar opens and the user can specify the exact data and time range.
  - Select up to 96 hours to display 1-minute sensor data resolution.
  - Daily averages are displayed for custom ranges greater than 96 hours.

 Sensor data is typically sampled every minute. In the event of a network/Wi-Fi outage, the Motes go into datalogging mode. If Motes are unable to communicate with the server, they will log all sampled data until the Mote reestablishes comms with the server. This could result in delays of important alarm notifications. If this does not resolve itself or you were not warned of a planned outage, please contact your IT department for assistance.

Sensor data can be exported to a .csv, .pdf file, or .png image. To export data:

- Select the date range for the data you'd like to export.
- Click the **CSV Export** or, **PDF Export** button located above the graph.
- The graph itself can be exported via the 'Export Graph' button
- Select which sensor type you'd like to export.
- The file will either be downloaded from your browser or emailed to you depending on which export you have selected.

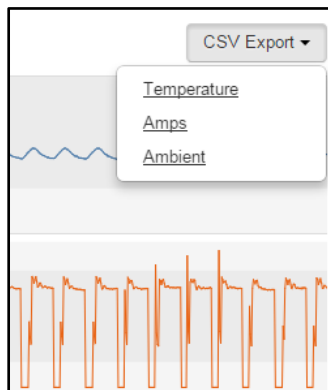


Figure 20 – Export sensor data to a .csv file

There are three tabs below the sensor graph that give the user easy access to important information about the asset:

- **Active Alarms** – Any active alarm conditions will be listed here. Click the **View Alarm Details** link to go to the individual alarm details screen (see §3.1.4.4).

- **Analytics** – This table contains an aggregation of analytical data from the previous calendar day, including the percent change from the day, week, and month prior.
  - ⚠ Note that the analytics categories that will be visible for an asset are dependent on the sensor data available for that asset.
    - **Amp Hours** – This is the total amp hours consumed by the asset. This value combined with voltage is used to calculate kWh.
    - **Cycle Variance** – This is the statistical variance of the compressor cycle duration. It determines if the compressor cycles are consistent. A lower number (less than 500) is better.
    - **Mean Duration of Door Openings** – Mean length of time a door switch is open (minutes)
    - **Door Opening Impact** – Ratio of extended compressor cycle duration to duration of a door being open. Lower is better
    - **Minutes the Door is Kept Open**
    - **Number of Door Openings** – The number of times the door has been opened
    - **Efficiency** – A calculation considering energy use, capacity, ambient temperature, and internal cabinet temperature. A lower number is better.
    - **kWh** – Total kilowatt hours consumed by the asset.
    - **kWh/ft<sup>3</sup>** – The energy consumption per asset volume.
    - **Max. Temperature** – The maximum temperature measured inside the asset.
    - **Mean Ambient** – The mean ambient temperature at the mote location.
    - **Mean Temperature** – The mean temperature inside the asset.
    - **Min. Temperature** – The minimum temperature measured inside the asset.
    - **Number of Cycles** – The total number of times the compressors cycled.
    - **Compressor States**
      - 1 = compressors are always on
      - 2 = both compressors are either on or off
      - 3 = both compressors are either on or off, but occasionally just one compressor is on 100% of the time
    - **On Time** – The percentage of the day that the compressors were on. If the On Time percentage is color coded, then the asset has High On Time (red) or High On Time Warning (orange) and it should be serviced.
- **Details** – Identical information is contained in the Details section from the left margin menu (see §3.1.4.2).

#### 3.1.4.2 Details

Select **Details** from the left sidebar menu to view asset specifics. Nothing can be edited from this view—it is purely informational—but these fields can be edited in other areas of TRAXX.

| Details                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Location: Santa Monica / Building B / Floor 1 / Room B1-63<br>Serial #: 111887061180427<br>Barcode #:<br>Set Point: -80.0<br>Place in Service: 09/16/20<br>Description: 102657                                                                                                          |
| Make & Model                                                                                                                                                                                                                                                                            |
| Make: Thermo Fisher<br>Model: TSX70086A<br>Base Model: TSX<br>Type: ULT Freezer<br>PM Inspection Type: ULT -80 Freezer 115V<br>Description:<br>Dimensions: 45.2 x 78.0 x 37.6<br>Capacity: 33.5 cuft<br>Mfg Spec kWh: 0.36                                                              |
| Subscriptions                                                                                                                                                                                                                                                                           |
| <a href="#">Peter Larsson</a> subscribes with a 30 minute hold off.<br><a href="#">Ricardo Ayvar</a> subscribes with a 10 minute hold off.<br><a href="#">Cristina Cois</a> subscribes with a 10 minute hold off.<br><a href="#">Dustin Moore</a> subscribes with a 10 minute hold off. |
| Temperature (Cabinet Temperature)                                                                                                                                                                                                                                                       |
| Range: -90.0 to -70.0.                                                                                                                                                                                                                                                                  |
| Amperage (System Amps)                                                                                                                                                                                                                                                                  |
| Range: 0.1 to 10.0.<br>Average value per 1 day over 7 days does not change more than 15.0%.<br>Average value per 1 day over about 1 month does not change more than 15.0%.                                                                                                              |
| Door Switch (Door Switch)                                                                                                                                                                                                                                                               |
| Switch should be closed.                                                                                                                                                                                                                                                                |

Figure 21 – Asset details

There are two buttons in the upper-right corner of the screen – **Print Details** and **Print Placard**.

- Click **Print Details** to print out what is being shown on the **Details** screen.
- Click **Print Placard** to print out a 1-page table that contains information about the mote, freezer, and contacts, and is typically attached to the front of the asset.

### 3.1.4.3 Notes

Select **Notes** from the left sidebar menu to add new or view existing notes.

Notes can be seen by all users authorized to view the asset. Notes are permanent records and can't be edited or deleted by other users. You may delete your own

note, but only for 24 hours after initially adding it. To delete your note, simply click the **Remove Note** link located beneath the note.

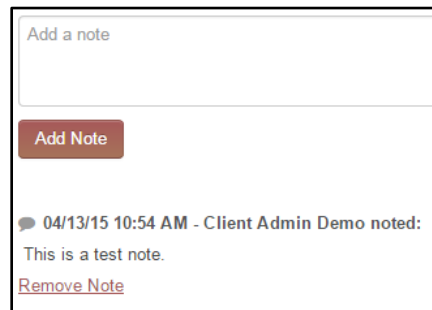


Figure 22 – Asset notes

### 3.1.4.4 Alarms

Select **Alarms** from the left sidebar menu to view a list of all alarms that have been issued for this asset.

| Type              | Began               | End                 | Description                    | Actions                    |
|-------------------|---------------------|---------------------|--------------------------------|----------------------------|
| Out Of Bounds Low | 09/16/2025 01:47 PM | Active              | Temperature is below -1.0 °C.  | <a href="#">View Alarm</a> |
| Out Of Bounds Low | 08/12/2025 10:26 PM | 09/14/2025 01:46 PM | Temperature was below -1.0 °C. | <a href="#">View Alarm</a> |
| Out Of Bounds Low | 01/09/2025 03:33 AM | 08/12/2025 10:25 PM | Temperature was below -1.0 °C. | <a href="#">View Alarm</a> |

Figure 23 – Asset alarm list (For an administrator role user)

Column descriptions are as follows:

- Type – Out of Bounds, Switch State, Trend, or Long-Term Trend.
  - Out of Bounds alarms occur when the sensor value breaches the upper or lower alarm bounds.
  - Trend alarms occur when the moving average changes beyond the configured threshold over the shorter trend window.
- Long Term Trend alarms occur over the longer trend window.
- Began – When the alarm condition started.
- End – When the alarm condition ended. This is caused by the sensor value returning to a value between the upper and lower alarm bounds. If the alarm is still active, then **Active** will be displayed in the “End” column for that alarm. The “End” column will display a timestamp when the alarm is no longer active.
- Description – The condition that caused the alarm.
- Actions – The actions vary depending on the role of the user. In the above case, only the ‘View Only’ user role is selected, so click **View Alarm** to see

the details of a specific alarm event. A graph will be displayed of the entire alarm event.

- The red vertical line in the graph represents where the alarm set point was breached.
- The gray shaded area of the graph represents the area between the high and low alarm bounds.
- The Notifications table below the alarm graph shows which users were notified of the alarm, when they were notified, and what action (if any) they took (e.g. acknowledged alarm).<sup>3</sup>
- The user can take several actions here by clicking one of the corresponding buttons:<sup>4</sup>
  - Acknowledge Alarm – This will disable the alarm notifications for all users. The asset will still display alarm tags and the alarm will still be displayed as active until the sensor values go back to a value between the upper and lower bounds.
  - Change Profile – This will take the user to the Edit Asset screen where asset's alarm bounds (set points) can be modified.
  - Escalate – This will automatically escalate the alarm to the user's escalation user (see §2.5) and alarm notifications will no longer be sent to the user who escalates the alarm. If the user escalating the alarm has no escalation user assigned, then the alarm will simply be resent to the original user.
  - Sleep Alarm<sup>5</sup> – This will stop alarm notifications from being sent to the current user for the time period selected in the drop-down menu. Alarm notifications will resume once the sleep period elapses and if the asset is still in alarm.
  - Add Note – This allows users to add contextual information to an alarm. This note is also added to the Audit Trail.

---

<sup>3</sup> No individual notifications are sent for moving average/trend alarms. Notifications for these events are sent to each user in a daily status email each morning.

<sup>4</sup> Moving average/trend alarms cannot be acknowledged or slept.

<sup>5</sup> Configurable, so not available to all customers.

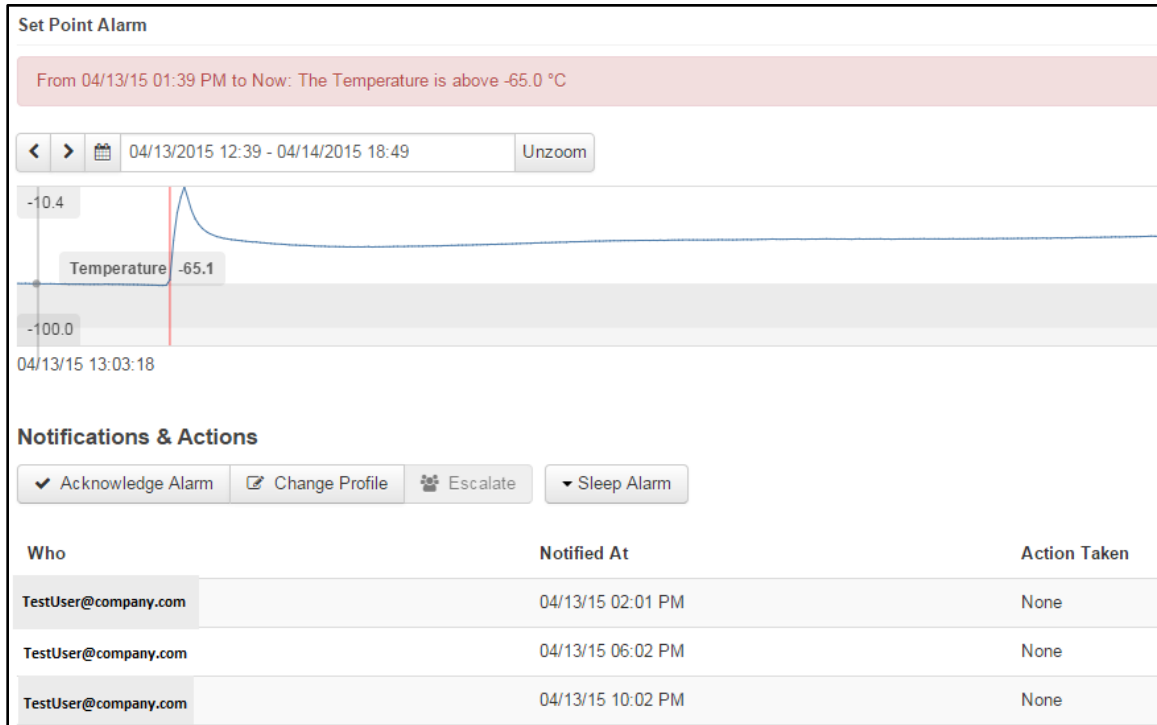


Figure 24 – Individual alarm details

### 3.1.4.5 Energy Usage

The Energy Usage menu option is available only if the asset is monitored by a CT sensor. Select **Energy Usage** from the left sidebar menu to access the asset's energy consumption data.

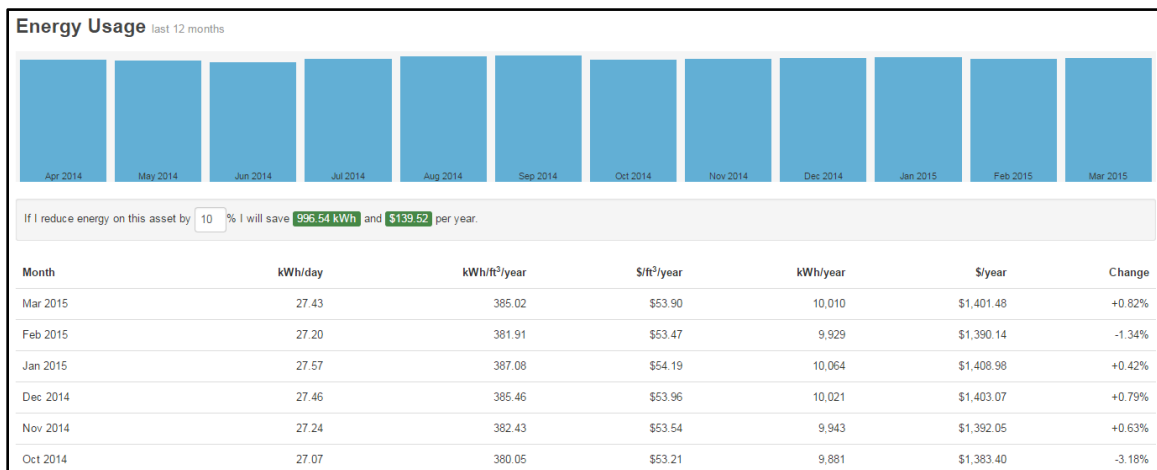


Figure 25 – Asset Energy Usage report

### Key features of the Energy Usage report:

- Rolling 12-month bar graph at top of screen.
  - Move the mouse pointer over each bar to see average kWh/day for that month.
  - The amplitude of each bar is based on that month's energy consumption.
- "What If" calculator.
  - Calculates hypothetical savings based on user's desired percent reduction in energy consumption.
- Rolling 12-month table with rows containing energy consumption data for each month.
  - **kWh/day** – The average daily energy consumption for that month.
  - **kWh/ft<sup>3</sup>/year** – The annualized energy consumption per asset volume.
  - **\$/ft<sup>3</sup>/year** – The annualized cost per asset volume.
  - **kWh/year** – The annualized energy consumption based on that month's data.
  - **\$/year** – The annual operating cost of the freezer based on that month's data.
  - **Change** – The percent change from the previous month.

### 3.1.4.6 Health History

Select **Health History** from left sidebar menu to view a rolling 12-month history of the asset's daily health. Use this information to see how well the asset's health has been managed.

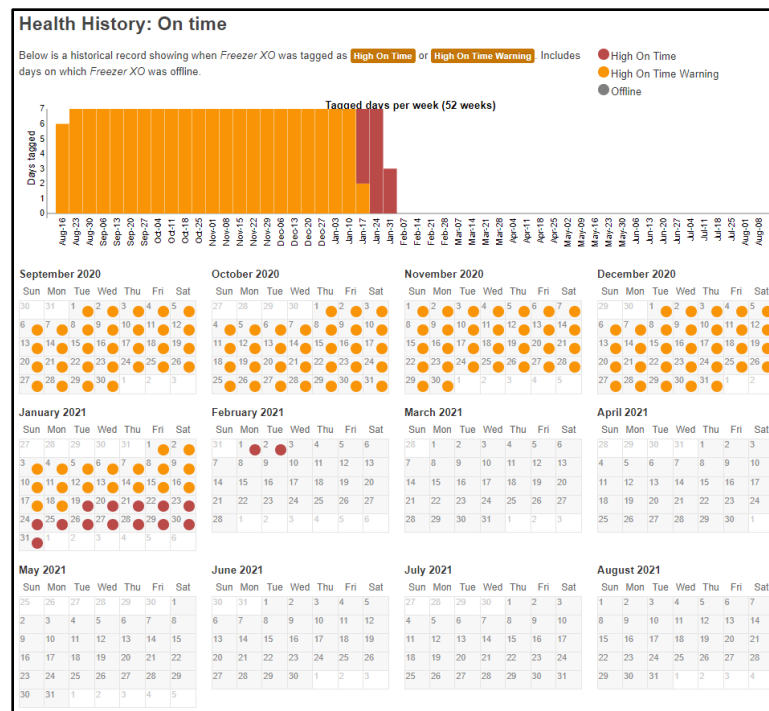


Figure 26 – Asset Health History

The Health History calendar displays one of four different statuses for each day of the last year:

- Red – the asset was tagged with High On Time
- Orange – the asset was tagged with High On Time Warning
- Gray – the asset was offline (no sensor data from the CT that day)
- No color – the asset was online and did not have High On Time

### 3.1.4.7 Edit Asset

Select **Edit Asset** from the left sidebar menu to edit the asset.

The Edit Asset screen is divided into two sections: Details and Sensors & Alarm Conditions.

The Details section allows the user to configure basic information about the asset. The Sensors & Alarm Conditions section allows the user to pair the asset with the mote MAC address, the sensor type, and the alarm profile set points.

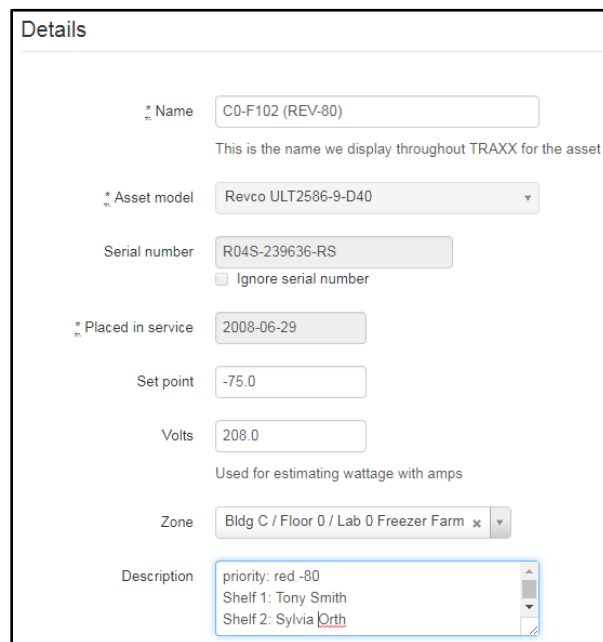


Figure 27 – Edit Asset > Details section

### Details Section

Here are the descriptions of each field found in the Details section of the Edit Asset screen:

- Name – Choose a unique name for the asset that will appear in the Asset List.

- **Asset Model** – This is the make/model of the asset being monitored. This field cannot be edited beginning 72 hours after initial configuration. Asset models can be added in the **More>Asset Models** menu.
- **Serial Number** – This is the serial number of the asset being monitored. This field cannot be edited beginning 72 hours after initial configuration. Check the “Ignore Serial Number” box if the asset does not have a serial number (e.g. cold room).
- **Placed in Service** – This is the date that the asset was configured in TRAXX. This field cannot be edited beginning 72 hours after initial configuration.
- **Set point** – The target temperature set point.
- **Volts** – The instantaneous voltage taken when the CT sensor is first installed on the asset. This value is used in all energy calculations for the asset.
- **Zone** – This is where the asset is located. Zones can be added in the **More>Zones** menu.
- **Description** – Any text added in the Description box will be included in all sensor alarm emails.

### Sensors & Alarm Conditions

The user can click the **Remove Sensor** link if an existing sensor needs to be removed from the asset. **WARNING:** removing a sensor using the **Remove Sensor** link will delete all of that sensor’s historical data from TRAXX and it cannot be recovered.

If a failed mote needs to be replaced with a new mote, then select the new mote’s MAC address from the Sensor drop-down menu—do not click the **Remove Sensor** link.

The user must click the **Add Sensor** link if a new sensor needs to be added to the asset.

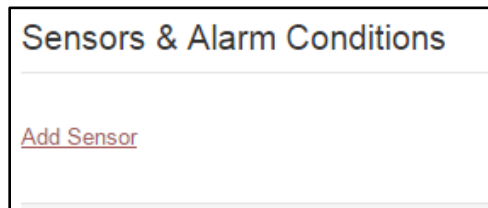


Figure 28 – Add Sensor link

If the **Add Sensor** link is clicked, then a new form is added in the Sensors & Alarm Conditions section. This new sensor will be added to the asset’s sensor graphs on the Health screen.

### Sensors & Alarm Conditions

\* Name

\* Sensor

\* Subject

A more specific location for the sensor on the asset.

☒ Enable Boundary Alarming

Profile

Lower Bound

Upper Bound

Escalation Hold Off

Number of minutes after which an unacknowledged alarm will be passed on to a superior. 0 will disable any escalation.

[Remove sensor](#)

Figure 29 – Sensor & Alarm Conditions section of Edit Asset screen

Here is a description of each field in the Sensors & Alarm Conditions section:

- Name – The name of the sensor that will appear in the asset’s sensor graph
- Sensor – The MAC address of the mote monitoring the asset. This is an autocomplete field, so the user can type in a partial MAC address to improve search speed. In this drop-down menu, the mote’s MAC address is followed by the general sensor type (e.g. 1-RHUSB-TEMP) that is plugged into a specific port on the mote.
- Subject - Select what the sensor is monitoring or where the sensor is located.
- Enable Boundary Alarming – Check this box to enable high/low alarms for the sensor. Uncheck the box to disable high/low alarms for the sensor.
- Profile – Select a preconfigured alarm rule profile for the sensor (see §6.2 for creating preconfigured profiles). If a Profile is selected, then some data fields will not be editable. Click the “X” next to the selected Profile to remove the Profile and allow manual data entry.
- Lower Bound – The low alarm set point for the sensor.
- Upper bound – The high alarm set point for the sensor.
- Escalation Hold Off – The number of minutes after which an unacknowledged alarm will be escalated and resent. Enter 0 to disable alarm escalation. If

escalation is disabled, then only one alarm will be sent per event to subscribers.

- Asset Power Loss Alarm (CT sensor only) – Enables detection of asset power loss using current (CT) sensor data. This alarm monitors the CT sensor for **continuous zero-amp readings**.
- Duration (Power Loss Alarm) – The number of consecutive minutes that the CT must be reporting zero amps before an alarm notification is sent.
  - This number should be set after manually analyzing a full day of compressor cycles.
  - For assets that never go to zero amps during normal operation, we recommend using a 10-minute duration
  - For assets that do go to zero amps during normal operation. note the maximum number of minutes that the compressor is off during the day and add a small buffer so false alarms are not sent.
  - For example, if the compressor is off and is reporting zero amps for a maximum of 20 minutes per cycle, then enter 30 minutes in the Duration field.
    - An alarm will be sent out if the CT sensor reports zero amps for 30 consecutive minutes.
  - ⚠ Note that the Power Loss Alarm does not wait for the user's hold off period before sending alarm notifications. Users hold off periods are only used for boundary alarms.
- Enable Switch Alarming (door sensor and contact switch only) – Check this box to enable door switch or contact alarms for the sensor.
- Duration (for door switches and contact alarms) – The number of consecutive minutes that a door switch must be open or contact alarm must be active before an alarm notification is sent.
  - ⚠ Note that the switch alarm does not wait for the user's hold off period before sending alarm notifications. Users hold off periods are only used for boundary alarms.
- **CAUTION**: Remember to click the **Save Asset** button after any changes.

### Change the Order of Sensor Graphs

By default, the sensor graphs will be displayed in the order (top to bottom) that they are entered in the Sensors & Alarm Conditions section. To change the sensor order, use the up/down arrow keys to the right of each sensor to move that sensor up/down in the list. Each sensor can also be dragged up/down by clicking and holding the left mouse button. Remember to click the **Save Asset** button after any changes.

### Asset Actions

In the upper right corner of the Edit Asset screen is a drop-down called **Asset Actions** (Fig. 30). Clicking the **Asset Actions** button gives the user the option to either Delete, Archive, or Replace the asset. Selecting **Adv. Alarm Conditions** provides options for

configuring complex cold room alarms (contact KLATU customer support for more information).

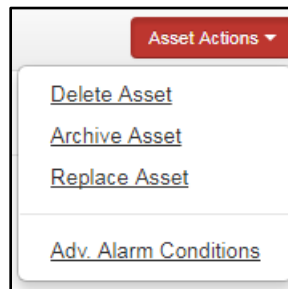


Figure 30 – Asset Actions button and resulting options

- **Delete Asset** – Selecting this option will permanently delete this asset and all of its historical data from TRAXX. **WARNING:** This action is not reversible.
- **Archive Asset** – Selecting this option will do several things:
  - The mote MAC addresses associated with this asset will become available to use on other assets.
  - All users will become unsubscribed from this asset and its alarms.
  - The asset will be removed from the Asset List.
  - The asset's data will be preserved and can be accessed by checking the **Archived** box in the Asset List filter.
    - The user will see two options above the sensor graphs when viewing an archived asset: Delete Asset and Unarchive Asset.
    - Select **Delete Asset** to permanently delete this asset and all of its data from TRAXX.
    - Select **Unarchive Asset** to return the asset to the Asset List. The user will have to edit the asset, enable alarms, and subscribe users to the alarms.
- **Replace Asset** – Selecting this option will do the following:
  - The original asset will be archived. All alarms and reporting associated with the original asset will cease.
  - All alarm subscriptions, MAC addresses, sensors, and alarm set points from the original asset will be transferred to the new asset.
  - The original asset name, set point, and zone are copied to a new asset form. Fill out the remainder of the form with information from the new asset.
    - **Old asset stop date** – The date on which the original asset was disconnected.
    - **New asset start date** – The date on which the new asset was connected to the system.
    - **Name** – The name of the new asset (the original asset's name is copied here, but it can be changed if desired).

- **Asset model** – The make/model of the new asset.
- **Serial number** – The serial number of the new asset.
- **Placed in service** – The date the new asset was brought online.
- **Set point** – The temperature set point of the new asset (the original asset's set point is copied here, but it can be changed if desired).
- **Volts** - Enter the voltage of the new asset taken at the time of CT sensor installation.
- **Zone** – The physical location of the new asset (the original asset's zone is copied here, but it can be changed if desired).
- **Description** – A text box for basic notes about the new asset.
- Click the **Replace and Archive** button to complete the asset replacement procedure.

### 3.1.4.8 Subscriptions

Select **Subscriptions** from the left sidebar to assign alarms to users.

#### Manage Subscriptions

Filter Users

|                                     | User                                                   | 60 (Hold Off)                   | Notification Profile |
|-------------------------------------|--------------------------------------------------------|---------------------------------|----------------------|
| <input checked="" type="checkbox"/> | <a href="#">Admin Demo (traxx@traxxekg.com)</a>        | <input type="text" value="60"/> | Default ▼            |
| <input type="checkbox"/>            | <a href="#">Client Admin Demo (admin@traxxekg.com)</a> | <input type="text" value="60"/> | Default ▼            |
| <input checked="" type="checkbox"/> | <a href="#">Manager Demo (manager@traxxekg.com)</a>    | <input type="text" value="60"/> | Default ▼            |
| <input type="checkbox"/>            | <a href="#">PI Demo (pi@traxxekg.com)</a>              | <input type="text" value="60"/> | Default ▼            |

Figure 31 – Manage Asset Alarm Subscriptions

- Check the box next to all desired subscribers.
  - Checked users will be subscribed to all alarms for all sensors associated with the asset.
  - Use **Notification Profiles** to customize the alarms per user and per asset.
- Enter a **Hold Off** for each subscriber.
  - Hold Off = how long (minutes) TRAXX will wait before sending the alarm notification to that user after a sensor boundary alarm enters an alarm state.
- Select a **Notification Profile** for each user.

- Notification Profile is a set of rules that can configured for the specified asset's alarm subscriptions.
- For example, permit temperature alarms via email only, Monday – Friday; permit only text alarms on Saturday and Sunday; prevent amperage alarms every day 12am – 7am.
- See §6.1.5 for instructions to create Notification Profiles.
- Click **Save Subscriptions** button when done making changes.
- Filter Users – When the Username or E-mail address entered in the filter input field the system filter outs the users as per the filtered or the searched criteria

### 3.1.4.9 Maintenance

Select **Maintenance** from the left sidebar menu to access a feature that allows the user to temporarily shut off all alarms for a defined time period.

Use this feature when repairing or moving the asset so alarms aren't sent unnecessarily.

| Window      | Begin               | End                 | Reason  | Scheduler    | # Assets | Status |      |
|-------------|---------------------|---------------------|---------|--------------|----------|--------|------|
| MHV50       | 09/14/2025 01:45 PM | 09/19/2025 01:45 PM | Defrost | Chris Exline | 1 asset  | Active | Edit |
| Notes: test |                     |                     |         |              |          |        |      |

Figure 32 – Main Scheduled Maintenance table

To create a new maintenance window and temporarily disable all alarms:

- Click the **+ New Maintenance Window** button.
- Fill out the form.
  - Click the clock symbol at the bottom of the “Begins at” and “Ends at” calendar to select specific times of day.
  - All alarms will be disabled between the “Begins at” and “Ends at” date/time.
- Click the **Create Maintenance window** button to save.
- This feature could be used to disable alarms during a scheduled defrost or repair that would put the sensor values outside of the configured alarm thresholds.

To edit an existing maintenance window:

- Go to the main Scheduled Maintenance table and click **Edit**.
- Edit the form.
- Click the **Update Maintenance window** button to save.

Scheduled Maintenance Window

The "Scheduled Maintenance" feature allows the user to temporarily shut off all alarms for this asset for a defined time period. Use this feature when repairing, defrosting, or moving the asset so alarms aren't sent unnecessarily.

\* Begins at 2025-09-14 01:46 PM

\* Ends at 2025-09-19 01:46 PM

\* Reason Defrost

Notes test

Assets

I Pete Piper X (Staging - F0:53)...

+ Add Asset

Update Maintenance window

The system sends automatic email notifications to all subscribed users shortly before the maintenance window begins.

\* Begins at 2025-09-14 01:46 PM

\* Ends at

\* Reason

Notes

+ Add Asset

Update Maintenance window

September 2025

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 31 | 1  | 2  | 3  | 4  | 5  | 6  |
| 7  | 8  | 9  | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 1  | 2  | 3  | 4  |
| 5  | 6  | 7  | 8  | 9  | 10 | 11 |

Figure 33 – Edit Scheduled Maintenance form and calendar

To cancel an existing maintenance window:

- Go to the main Scheduled Maintenance table and click **Cancel**.
- Click **OK** to confirm.
- The Status column will change to "Canceled."

### 3.1.4.10 Inspections

Select **Inspections** from the left sidebar to access electronic preventative maintenance inspection forms (PMs) for the asset.

| User                             | % Passed | Created  | Updated  | Actions              | PDF                          |
|----------------------------------|----------|----------|----------|----------------------|------------------------------|
| Admin Demo                       | 90%      | 08/16/21 | 08/16/21 | <a href="#">View</a> | <a href="#">Download PDF</a> |
| Admin Demo                       | 100%     | 11/29/12 | 11/29/12 | <a href="#">View</a> | <a href="#">Download PDF</a> |
| Admin Demo                       | 90%      | 12/14/11 | 12/14/11 | <a href="#">View</a> | <a href="#">Download PDF</a> |
| Admin Demo                       | 80%      | 11/18/10 | 11/18/10 | <a href="#">View</a> | <a href="#">Download PDF</a> |
| Admin Demo                       | 80%      | 05/14/10 | 05/14/10 | <a href="#">View</a> | <a href="#">Download PDF</a> |
| <a href="#">+ New Inspection</a> |          |          |          |                      |                              |

Figure 34 – Asset Inspection table

To create a new PM:

- Click the **+ New Inspection** button.
- Fill out the form.
- Click the **Save Inspection** button.

To view an existing PM:

- Go to the main Inspections table and click **View**.

To edit an existing PM:

- Go to the main Inspections table and click **Edit**.
- Edit the form then click the **Save Inspection** button.

|   | Instruction                                     | Criteria        | Measurement | Result | Comments |
|---|-------------------------------------------------|-----------------|-------------|--------|----------|
| a | Measure Line Voltage with unit on               | 200 to 230 VAC  | 0.0         | Pass ▼ |          |
| b | Measure High Stage Compressor Amps with unit c  | 1.5 to 8.0 Amps | 0.0         | Pass ▼ |          |
| c | Measure Low Stage Compressor Amps with unit o   | 1.5 to 8.0 Amps | 0.0         | Pass ▼ |          |
| d | Measure condenser Fan Motor(s) Amps (total of a | 0.5 to 2.0 Amps | 0.0         | Pass ▼ |          |
| e | Check for Hardware for wear                     |                 | 0.0         | Pass ▼ |          |
| f | Check door gasket for wear                      |                 | 0.0         | Pass ▼ |          |
| g | Test Alarm Battery Voltage                      | 13 to 15 VDC    | 0.0         | Pass ▼ |          |
| h | Record Unit's Display Reading (C)               |                 | 0.0         | Pass ▼ |          |
| i | Measure Unit's Meter Reading (C)                |                 | 0.0         | Pass ▼ |          |
| j | Record Unit's Set Point                         |                 | 0.0         | Pass ▼ |          |
| k | Measure Freezer Intake Vent Temp (F)            |                 | 0.0         | Pass ▼ |          |
| l | Measure Freezer Exhaust Vent Temp (F)           |                 | 0.0         | Pass ▼ |          |

**Addition Information**

Notes

\* Voltage

\* Passing ☒ Check if the inspection passes overall

Figure 35 – Asset Inspection (PM) form

To delete an existing PM:

- Go to the main Inspections table and click **Remove**.

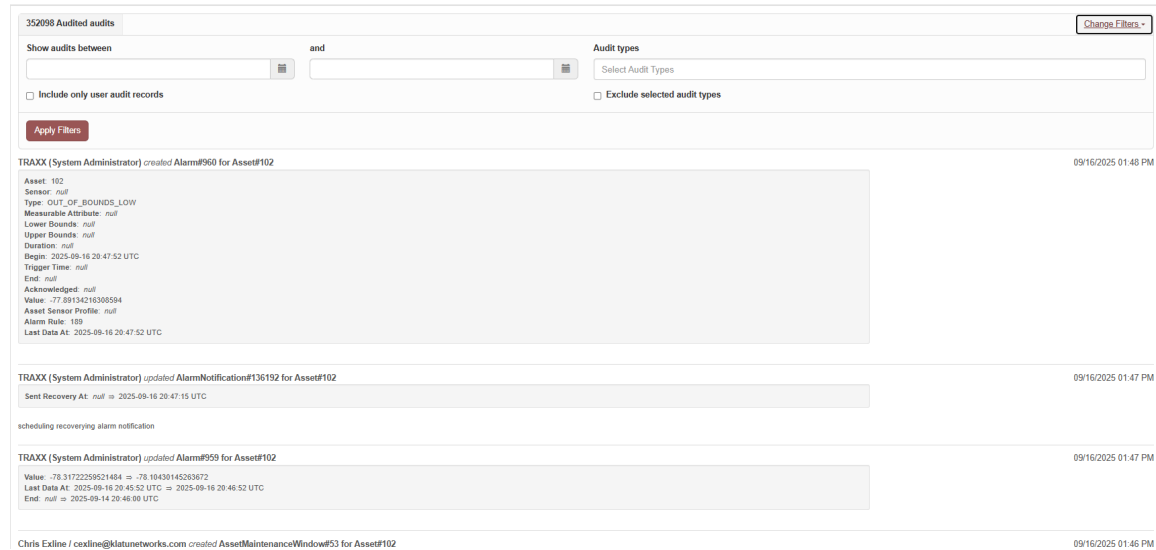
To download a PDF version of the form:

- Go to the main Inspections table and click **Download PDF**.

#### 3.1.4.11 Audit Log

Select **Audit Log** from the left sidebar menu to see a log of changes made to the asset.

- New and cancelled alarm subscriptions.
- Sensor alarm events.
- Alarm notes.
- Any modifications to the asset's configuration via the **Edit Asset** screen.
- The user who made the change, the time stamp of the change, as well as the IP address of the computer that made the change are recorded.
- Filter capabilities



The screenshot displays the '352098 Audited audits' section of the TRAXX interface. At the top, there are filter controls including a 'Show audits between' date range selector, an 'Audit types' dropdown, and checkboxes for 'Include only user audit records' and 'Exclude selected audit types'. An 'Apply Filters' button is located below these controls. The main area lists several audit entries, each with a timestamp on the right. The entries include details such as the user (TRAXX [System Administrator]), the action (created, updated), the asset ID (Asset#102), and various attributes like Sensor, Type, Measurable Attribute, Lower Bound, Upper Bound, Duration, Begin, End, Trigger Time, Acknowledged, Value, Asset Sensor Profile, Alarm Rate, and Last Data At.

Figure 36 – Audit Log entries

## 1. Date Range Filter

- Users can specify a **start date** and **end date** to narrow down audit logs within a particular time frame.
- Each date field is accompanied by a calendar picker, allowing for easy date selection.

## 2. Audit Type Selection

- The **Audit Types** dropdown allows users to filter audits by specific event categories (e.g., user login, record update, deletion).
- Multiple audit types can typically be selected for more granular filtering.

## 3. User-Only Records

- A checkbox labelled “**Include only user audit records**” enables filtering to display only audits generated by user actions, excluding automated/system-generated events.

## 4. Exclude Audit Types

- An additional checkbox “**Exclude selected audit types**” inverts the selection, displaying all audit records **except** the chosen types.

## 5. Apply Filters Button

- Once the desired filter parameters are set, clicking the **Apply Filters** button refreshes the audit log table, showing only the records that meet the criteria.

## 6. Change Filters Option

- A quick access button in the top-right corner allows users to modify or reset filters without navigating away from the page.

### 3.1.4.12 Documents

Select **Documents** from the left sidebar menu to upload/download documents associated with the asset.

Use the Documents section to upload user manuals, service manuals, spec sheets, engineering diagrams, receipts, repair invoices, etc. A sample of file types that can be uploaded: PDF, XLS, XLSX, CSV, DOC, DOCX, TXT, JPEG, PNG, etc.

To upload a new document:

- Go to the main Documents screen.
- Click the **+ Upload** button.
- Click the **Choose File** button.
- Select a file from the computer.
- Click **Upload button**.
- There is a maximum file size of 5 megabytes.

To download an existing document:

- Go to the main Documents screen.
- Click on the underlined document name.
- Choose a location to save the document on the computer.

To delete an existing document:

- Go to the main Documents screen.
- Click **Remove** in the row containing the document to be deleted.
- Click **OK**.

### 3.1.4.13 Classification

Select **Classification** from the left sidebar menu for options to manually classify non-cascading freezer systems. Non-cascading freezers systems behave differently than traditional cascading systems and TRAXX, by default, will erroneously tag the non-cascading freezers as poorly performing. Use the classification system to configure non-cascading freezers so they are not tagged.

TRAXX automatically detects some traits of freezers based on accumulated data. These are labeled as “Detected Classes” at the bottom of the Classification screen.

Classify Asset XYZ1

Manually classify the asset to support automatic classification and tagging.

☐ Overlapping Cycles (default for Continental - 2-DOOR UPRIGHT FREEZER: no)  
☒ Always On (default for Continental - 2-DOOR UPRIGHT FREEZER: no)  
☐ High Use

Classify

Detected Classes: fitv ambient.20.22 temp.20.22 set\_point.5.18

Health Check Modules UnsubscribedTagGenerator Check Sensor TagGenerator UnmonitoredTagGenerator OfflineTagGenerator AmbientTagGenerator MaintenanceTagGenerator AlarmTagGenerator LowLatTagGenerator MisconfiguredTagGenerator UnconfiguredTagGenerator

Figure 37 – Freezer Classification

#### Classification types:

- Overlapping Cycles – Use this classification for Sanyo/Panasonic Twin Guard freezers (MDF-U500VXC, MDF-U700VXC). High compressor “On Time” is ignored and not tagged, except when On Time = 100% *and* Compressor State = 1 (flat line/no cycles).
- Always On – This classification disables tags for high compressor cycles and On Time. The tags control the color coding on the Asset List screen, so colors are also disabled. Use cases: 1) a freezer that has 100% compressor On Time, but the customer doesn't want to repair it; 2) a make/model that is designed to run 100% of the time.
- High Use – This classification is for freezers that have many door openings every day. This affects the compressor On Time calculations. Future work will involve determining if the usage (door openings) matches the High Use classification.
- A default setting is included for the asset's make/model (in parentheses after the classification types). If the default indicates “yes,” then that classification type is already enabled for that model and the box should be checked. If the box is unchecked, then it will override the default “yes” setting for that make/model.

#### 3.1.4.14 Repairs

Select **Repairs** from the left sidebar for access to the module that allows users to associate repair data with a freezer.

TRAXX checks the sensor data pre- and post-repair to determine if the repair is effective and persistent.

When a freezer is being repaired and you want to add it to TRAXX:

- Select **Repairs** from the left sidebar menu.
- Click **+ Add Repair** button.

- Fill out the form and check the boxes for any problem and repair codes.

### Repair Details

Started At



Completed At



Repair Price

Figure 38 – Initial Repair details

- **Started At** – Date when the freezer was taken offline for repairs and disconnected from TRAXX.
- **Completed At** – Date when the freezer was reconnected to TRAXX after repairs were completed.
- **Repair Price** – How much did the repair cost?

### Problem Codes

☐ Accumulator Leak  
☐ Control Board Failure  
☐ Compressor Failure  
☐ Dirty Condenser Coil  
☐ Dirty Filter  
☐ Door Hardware  
☐ Heavy Usage  
☐ Inefficient Compressor  
☐ Iced Over  
☐ Overheating Asset  
☐ Oil Logging  
☐ Repair Declined  
☐ Refrigeration Leak  
☐ Short Cycling  
☐ Worn Door Gasket  
☐ Low Set Point  
☐ Miscalibrated Temp Sensor  
☐ High Compressor On-Time

Other

Figure 39 – Problem codes

Repair Codes

☐ Clean Condenser Coil  
☐ Change Temperature Setpoint  
☐ Defrost  
☐ Dual Compressor Overhaul  
☐ Replace Inner Door Gasket  
☐ Dual System Flush  
☐ Replace Door Striker Plate  
☐ New Filter Drier  
☐ New Filter Media on condenser coil  
☐ Replace High Stage Comp. Start Components  
☐ Replace Low Stage Compressor  
☐ Replace Low Stage Comp. Start Components  
☐ Move unit to cooler location/better circulation  
☐ Repair Declined  
☐ Single System Flush  
☐ Warranty Repair  
☐ Temp Sensor Calibration

Other

Figure 40 – Repair codes

- Check the boxes next to subscribers that want to keep track of this specific repair (aka Watchers). Watchers are subscribers who are notified via email throughout the progression of the repair. They will receive emails based on the effectiveness and persistence of the repair.
  - An automated email is sent to the Watchers one week after the repair is completed. This informs them to check on the effectiveness of the repair.
  - An automated email is sent to the Watchers six months after the repair is marked as “effective.” This informs them to check on the persistence of the repair.

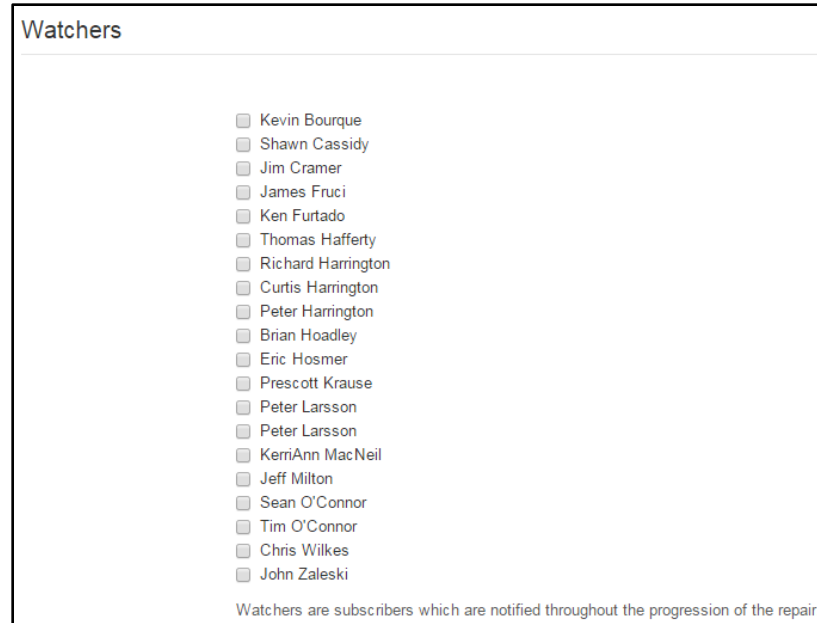


Figure 41 – List of Repair Watchers

After the repair has been added to the system, it will appear in the Repairs table.

From the Repairs table, the user can:

- Click **Edit** to edit the repair details.
- Click **Manage** to view the Repair Effectiveness graph

| ◆ Date     | Status                      | ◆ Cost     | Cost Benefit (1yr / 3yr) | Resources                                     |
|------------|-----------------------------|------------|--------------------------|-----------------------------------------------|
| 04/10/2015 | Repaired, Effectiveness TDB | \$2,500.00 | N/A                      | <button>Edit</button> <button>Manage</button> |

Figure 42 – Repairs table

Key features of the Repair Effectiveness graph (see **Fig. 43**):

- Click the **Metrics** drop-down menu at the top of the graph. Click on any or all metrics that you'd like to appear in the Repair Effectiveness graph.
  - Temperature – The average, minimum, and maximum temperatures inside the asset chamber during a 24-hour period.
  - Amp Hours – Total amp hours during a 24-hour period.
  - Cycles – Total number of compressor cycles during a 24-hour period.
  - Energy – Total kWh consumed during a 24-hour period.
  - On time – Percentage of time that the compressors were running during a 24-hour period.
  - Door Switch Count – Total number of door openings during a 24-hour period.

- Door Switch Total Duration – Total number of seconds that the door was open during a 24-hour period.
- Ambient - The average, minimum, and maximum ambient temperatures outside the asset chamber during a 24-hour period.
- Shaded area – Time between when the repair was started and completed.
- Any gaps in the graph indicate time periods that have no data. Most likely the wireless mote was offline, or the CT sensor was unplugged during that period.

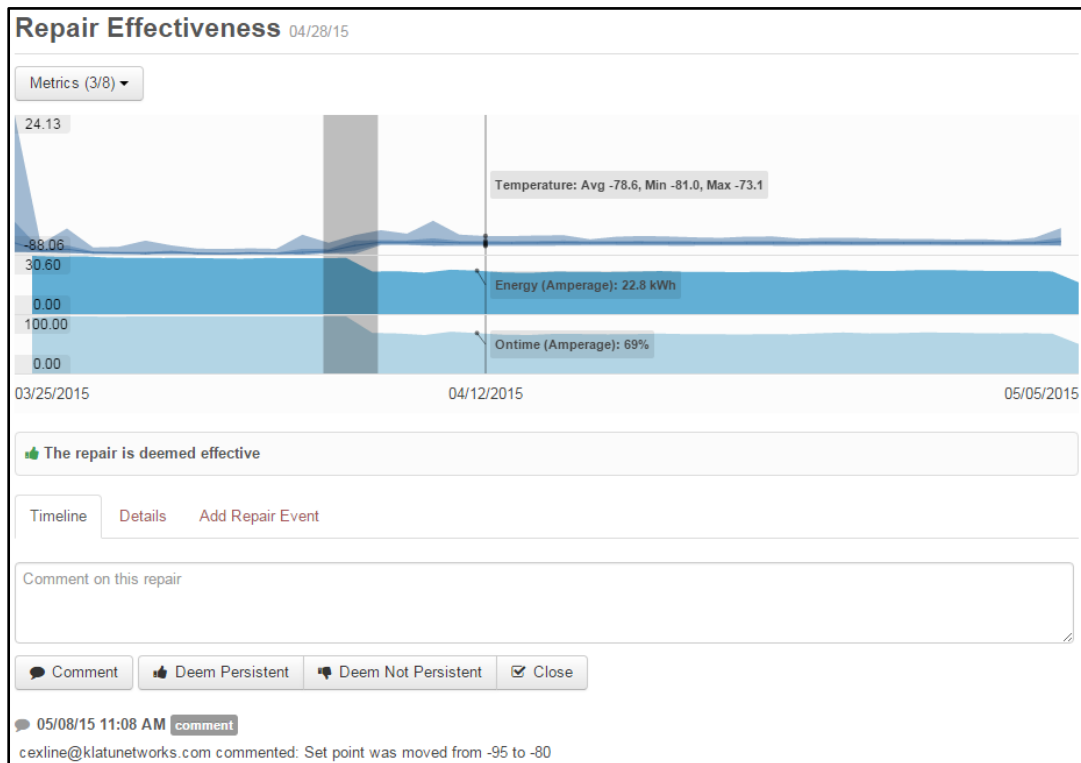


Figure 43 – Repair Effectiveness graph and Timeline tab

There are three tabs just below the graph: Timeline, Details, and Add Repair Event.

- **Timeline tab**
  - The Timeline tab shows a time-stamped log of all actions related to the repair.
  - **Comment** button – Add a comment to the field labeled, “Comment on this repair”, then click the **Comment** button to add an entry to the log at the bottom of the screen.
  - **Deem Effective** button – Click the **Deem Effective** button to manually tag the repair as effective (do this if the immediate post-repair data indicates that the repair fixed the asset). All Watchers will be notified via email.

- **Deem Ineffective** button – Click the **Deem Ineffective** button to manually tag the repair as ineffective (do this if the immediate post-repair data indicates that the repair did not fix the asset).
- **Deem Persistent** button – Click the **Deem Persistent** button to manually tag the repair as persistent (do this if the long-term post-repair data indicates that the repair fixed the asset and the asset is still fixed after 6 months).
- **Deem Not Persistent** button – Click the **Deem Not Persistent** button to manually tag the repair as not persistent (do this if the long-term post-repair data indicates that the asset has reverted to an unfixed state).
- **Close** button – Click the **Close** button to close out the repair. This should be done for repairs that have been deemed effective and persistent. The “Cost Benefit (1yr/3yr)” is calculated after the repair has been closed.
- **Details** tab
  - The Details tab lists information about the repair.
  - Repaired – The date the repair ended and the unit was brought back online. This date was entered when the repair was created in TRAXX.
  - Cost – The cost of the repair entered when the repair was created.
  - Repair Codes – The repair codes checked when the repair was created.
  - Repair Notes – Any notes manually entered when the repair was created.
  - Problem Codes – The problem codes checked when the repair was created.
  - Problem Notes – Any notes manually entered when the repair was created.
  - Tags – Any tags associated with the repair (effective, ineffective, persistent, and not-persistent tags).
  - Watchers – List of all users who were checked as “watchers” when the repair was created.

| Timeline      | Details                              | Add Repair Event |
|---------------|--------------------------------------|------------------|
| Repaired      | 09/21/13 12:08 PM                    |                  |
| Cost          | \$100.00                             |                  |
| Repair Codes  | <b>TSC</b> Temp Sensor Calibration   |                  |
| Repair Notes  | Temp sensor calibration.             |                  |
| Problem Codes | <b>MCS</b> Miscalibrated Temp Sensor |                  |
| Problem Notes | Freezer running too cold.            |                  |
| Tags          |                                      |                  |
| Watchers      | Pete Larsson                         |                  |

Figure 44 – Details tab (Repair Effectiveness)

- **Add Repair Event tab**
  - This tab allows the user to add a new and subsequent repair to the original repair.
  - Repair Code – Use the drop-down menu to select which repair was done.
  - Performed At – Use the calendar to select the date the repair was completed and the asset was reconnected to TRAXX.
  - Click the **Add Repair** button to save the new repair.

| Timeline                                                                                                                                                                                                                      | Details | Add Repair Event |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------|
| <div>Repair code <input type="text"/></div> <div>Performed at <input type="text" value="2015-04-28 16:05"/> </div> <div>Add Repair</div> |         |                  |

Figure 45 – Add Repair Event tab

### 3.1.4.15 Performance Certificates

Select **Performance Certificates** from the left sidebar menu to create the performance certificate for a particular asset reflecting its performance in a certain defined time period

#### Create Certificate

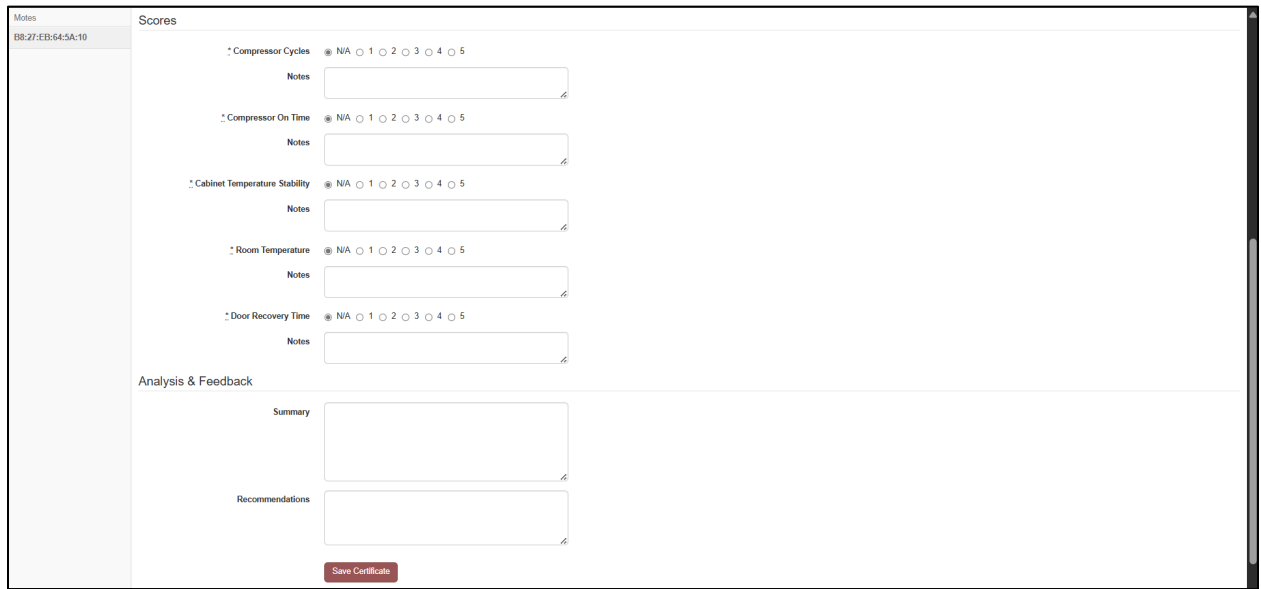


Figure 46 – Certificate Creation

This certificate validates the operational performance of the asset monitored under the TRAXX solution. Based on recorded data and analysis, the following parameters were evaluated:

- **Compressor Cycles** – Evaluated to ensure the compressor operates within the expected frequency range, indicating optimal cooling efficiency and system health.
- **Compressor On Time** – Measured to verify that compressor run-time remains within acceptable thresholds, preventing overuse or inefficiency.
- **Cabinet Temperature Stability** – Checked for consistency in maintaining the desired internal temperature range, ensuring reliable preservation of stored materials.
- **Room Temperature** – Assessed to confirm that surrounding conditions support stable equipment performance.
- **Door Recovery Time** – Evaluated to measure how quickly the cabinet returns to its set temperature after door openings, validating cooling resilience.

## Analysis & Feedback:

A detailed review of the collected data has been conducted, and notes for each parameter are recorded for traceability.

- **Summary:** A consolidated view of system performance across all critical parameters, highlighting overall compliance with expected operational standards.
- **Recommendations:** Actionable insights and suggested improvements (if any) for system optimization, energy efficiency, or preventive maintenance.

This certificate ensures that the system is tested against key operational benchmarks and serves as validation for continued reliable performance.

| Data Range              | Date Created | Score | Creator      |                                                   |
|-------------------------|--------------|-------|--------------|---------------------------------------------------|
| 09/09/2025 - 09/23/2025 | 09/25/2025   | 1.0   | Santhik Tygi | <a href="#">Edit</a> <a href="#">Download PDF</a> |

Figure 47 – Certificate Display

## Edit and Export

| Data Range              | Date Created | Score | Creator      |                                                                                                                                                 |
|-------------------------|--------------|-------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 09/09/2025 - 09/23/2025 | 09/25/2025   | 1.0   | Santhik Tygi | <a href="#">Edit</a> <a href="#">Download PDF</a> <ul style="list-style-type: none"> <li>Standard PDF</li> <li>Digital Optimized PDF</li> </ul> |

Figure 48 – Edit and Export options

## Edit Functionality

The **Edit** option allows users to modify the details of the selected record. Users can update fields such as the data range, score, or other associated information. Once changes are made, the system will save the updated information and reflect it immediately in the record view. This ensures that all records remain accurate and up to date.

## Export Functionality

The **Export PDF** option allows users to download the record in PDF format. When a user selects one of the available options — **Standard PDF** or **Digital Optimized PDF** — the system automatically generates the PDF and downloads it to the user's local device without any additional action required.

### 3.1.4.16 Motes

When viewing an individual asset, the user can see which wireless mote is monitoring the asset. In the left-hand menu, click on the MAC address of the mote to go to that mote's **Network Health** screen. See §5 for information regarding motes.

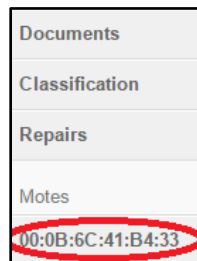
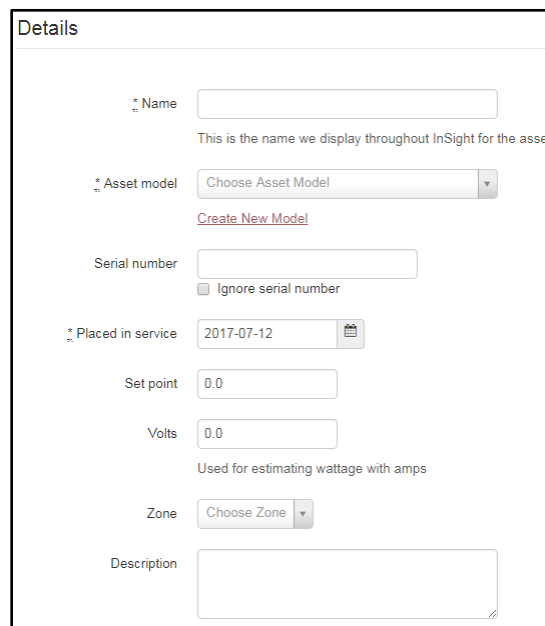


Figure 49 – Mote MAC address in left-hand menu

### 3.1.5 Adding a New Asset<sup>6</sup>

Follow this procedure to add a new asset to TRAXX:

1. Select **Assets** from the top horizontal menu.
2. Select **Asset** List from the left sidebar menu.
3. Click the **+ New Asset** button located at the top-right corner of the asset list table.



**Details**

\* Name   
This is the name we display throughout InSight for the asset

\* Asset model   
[Create New Model](#)

Serial number   
☐ Ignore serial number

\* Placed in service  

Set point

Volts   
Used for estimating wattage with amps

Zone

Description

Figure 50 – Details section when adding new asset to TRAXX

<sup>6</sup> It is recommended that the user verify that the new asset's Make/Model and Zone are already in the TRAXX database prior to adding the new asset.

4. Fill out the “Details” section of the form.
  - a. Name – This is the name that will appear in the TRAXX Asset List. The asset should have a unique name.
  - b. Asset Model – Select the asset’s make/model from the drop-down menu.
    - i. This is a “type-ahead” field, so just enter a partial make and/or model number and TRAXX will filter the list based on what is entered.
    - ii. This field cannot be edited beginning 72 hours after initial configuration.
    - iii. If the exact make/model is not listed in our database, then add a new make/model by going to the **More>Asset Models** menu (Admins only).
  - c. Serial Number – This is the serial number of the asset being monitored. This field cannot be edited beginning 72 hours after initial configuration. Check the “Ignore Serial Number” box if the asset does not have a serial number (e.g. cold room).
  - d. Placed in Service – This is the date that the asset was configured in TRAXX. This field cannot be edited beginning 72 hours after initial configuration.
  - e. Set Point – This is the ideal target operating temperature of the asset.
  - f. Volts – Enter the voltage taken at the time of CT sensor installation. This value is used in all energy calculations for the asset.
  - g. Zone – Select the physical location of the asset from the drop-down menu.
    - i. This is a “type-ahead” field, so just enter a partial zone name and TRAXX will filter the list based on what is entered.
    - ii. If the exact zone is not listed in our database, then create the new zone by going to the **More > Zones** menu. (Admins only; See §6.4).
  - h. Description – A simple text field for entering information about the asset. Any text added in the Description box will be included in all sensor alarm emails.
5. Click the **Add Sensor** link located just below the “Details” section. A new form will appear.

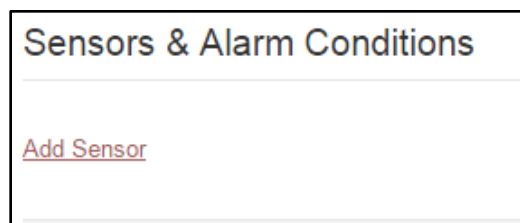


Figure 51 – Add Sensor link

### Sensors & Alarm Conditions

\* Name

Temp - RTD 7395

\* Sensor

B8:27:EB:D5:3C:46-SmartRTD-0000817395

\* Subject

CABINET

A more specific location for the sensor on the asset.

☒ Enable Boundary Alarming

Profile

ULT temp

Lower Bound

-90

Upper Bound

-65

Escalation Hold Off

30

Number of minutes after which an unacknowledged alarm will be passed on to a superior. 0 will disable any escalation.

[Remove sensor](#)

Figure 52 – Sensor & Alarm Conditions section

6. Name – Enter a name for the sensor that will be displayed on the asset sensor graph.
7. Sensor – Select the MAC address and sensor channel of the mote that is monitoring this asset.
  - a. The MAC address can be found on labels on the side or bottom of the mote.
  - b. This is a “type-ahead” field, so just enter a partial MAC address and TRAXX will filter the list based on what is entered. For example, enter the last 4 digits of the MAC address to narrow the list (e.g. 7A:6F).
  - c. Make sure to select the MAC with the correct sensor channel and type (e.g. B8:27:6C:41:7A:6F-SmartRTD-0000818158). If using a Smart Sensor cable for RTDs, CTs and door switches, then the cable’s serial number can be found on a sticker affixed to each cable. The cable’s serial number in this example is 0000818158.
8. Subject – Select what the sensor is monitoring or where the sensor is located.
9. Enable Boundary Alarming – Check this box to enable high/low alarms for the sensor. Uncheck the box to disable alarms for the sensor.
10. Profile – Select a preconfigured alarm menu profile for the sensor.
  - a. New alarm profiles can be created by going to the **More > Alarm Rule Profiles** menu. See §6.2.

- b. If a Profile is selected, then some data fields will not be editable.
  - c. Click the “X” next to the selected Profile to remove the Profile and manual data entry.
- 11. Lower Bound – This is the low alarm set point.
- 12. Upper Bound – This is the high alarm set point.
- 13. Escalation Hold Off – The number of minutes after which an unacknowledged alarm will be escalated and resent. Enter 0 to disable alarm escalation. If no escalation user is set (see §2.5), then the escalation alarm notification will be sent to the same user that received the original alarm notification.
- 14. Asset Power Loss Alarm (CT sensor only) – Enables detection of asset power loss using current (CT) sensor data. This alarm monitors the CT sensor for **continuous zero-amp readings**.
  - a. Duration (Power Loss Alarms) – The number of consecutive minutes that the CT must be reporting zero amps before an alarm notification is sent.
    - i. This number should be set after manually analyzing a full day of compressor cycles.
    - ii. For assets that never go to zero amps during normal operation, we recommend using a 10-minute duration.
    - iii. For assets that do go to zero amps during normal operation. note the maximum number of minutes that the compressor is off during the day and add a small buffer so false alarms are not sent.
    - iv. For example, if the compressor is off and is reporting zero amps for a maximum of 20 minutes per cycle, then enter 30 minutes in the Duration field. An alarm will be sent out if the CT sensor reports zero amps for 30 consecutive minutes, indicating a power outage or tripped breaker.
    - v. ⚠ Note that the Power Loss Alarm does not wait for the user’s hold off period before sending alarm notifications. Users hold off periods are only used for boundary alarms.
- 15. Enable Switch Alarming (door sensor and contact switch only) – Check this box to enable door switch or contact alarms for the sensor.
  - a. Duration (for door switches and contact alarms) – The number of consecutive minutes that a door switch must be open or contact alarm must be active before an alarm notification is sent
  - b. ⚠ Note that the switch alarm does not wait for the user’s hold off period before sending alarm notifications. Users hold off periods are only used for boundary alarms.
- 16. Click the **Add Sensor** link located at the bottom of the screen to add/associate another sensor to this asset. A new form will appear.
  - a. Repeat steps 6 - 15.
- 17. Click the **Save Asset** button at the bottom of the screen to save the new asset.

## Change the Order of Sensor Graphs

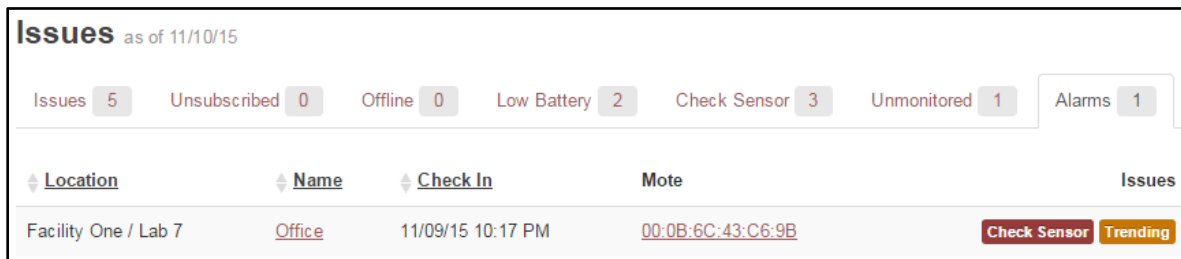
By default, the sensor graphs will be displayed in the order (top to bottom) that they are entered in the Sensors & Alarm Conditions section. To change the sensor order, use the up/down arrow keys to the right of each sensor to move that sensor up/down in the list. Each sensor can also be dragged up/down by clicking and holding the left mouse button. Remember to click the **Save Asset** button after any changes.

## 3.2 Issues

The **Issues** screen, located in the left sidebar menu, provides the user with a high-level view of any general issues occurring with the local TRAXX installation.

To access the Issues screen:

1. Select **Assets** from the horizontal menu at the top of the screen.
2. Select **Issues** from the left sidebar menu.



| Location             | Name   | Check In          | Mote              | Issues                |
|----------------------|--------|-------------------|-------------------|-----------------------|
| Facility One / Lab 7 | Office | 11/09/15 10:17 PM | 00:0B:6C:43:C6:9B | Check Sensor Trending |

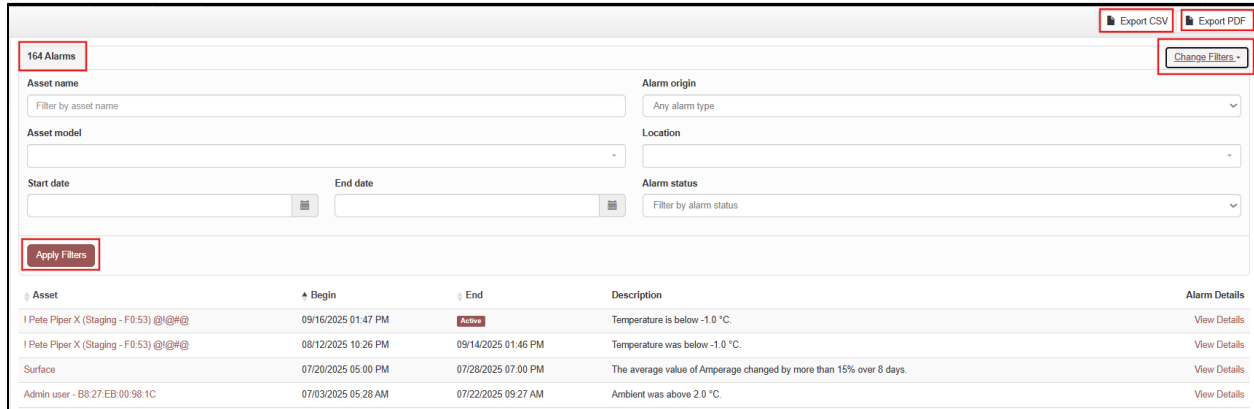
Figure 53 – Issues screen

There are several tabs across the top of the Issues screen; click the tab to see the affected assets and notes:

- **Issues** – A catchall of all issues in TRAXX.
- **Unsubscribed** – No users are subscribed to any alarms for the asset.
- **Offline** – The asset is offline because either the mote is not transmitting or a sensor is not reporting any data.
- **Low Battery** – The mote's battery is low and should be replaced.
- **High Battery Use** – The mote is consuming more battery than expected.
  - This is typically caused by locations that have poor Wi-Fi environments (lots of interference, poor signal strength, high latency, etc).
  - It can also be caused by Gen2 and Blackbird motes that are in alarm for long periods of time. Motes in an alarm state transmit much more quickly than normal, draining the battery.
- **Replace Battery** – This tag applies only to Gen3 and Piper4XS motes. If displayed, the mote battery will likely expire imminently and should be replaced without delay.
- **Check Sensor** – The sensor is reporting bad values, so it should be manually inspected.

- Unmonitored – The asset has no alarm settings configured.
- Alarms – Lists all assets currently in an alarm state.

### 3.3 Alarms



The screenshot shows the 'Alarms' page with a header indicating '164 Alarms'. It includes filter sections for 'Asset name', 'Asset model', 'Start date', 'End date', 'Alarm origin', 'Location', and 'Alarm status'. There are buttons for 'Export CSV', 'Export PDF', 'Change Filters', and 'Apply Filters'. Below the filters is a table of alarm events.

| Asset                                 | Begin               | End                 | Description                                                         | Alarm Details                |
|---------------------------------------|---------------------|---------------------|---------------------------------------------------------------------|------------------------------|
| I Pete Piper X (Staging - F0.53) @!@# | 09/16/2025 01:47 PM | Active              | Temperature is below -1.0 °C.                                       | <a href="#">View Details</a> |
| I Pete Piper X (Staging - F0.53) @!@# | 09/12/2025 10:26 PM | 09/14/2025 01:46 PM | Temperature was below -1.0 °C.                                      | <a href="#">View Details</a> |
| Surface                               | 07/20/2025 05:00 PM | 07/28/2025 07:00 PM | The average value of Amperage changed by more than 15% over 8 days. | <a href="#">View Details</a> |
| Admin user - 08:27 EB:00 98:1C        | 07/03/2025 05:28 AM | 07/22/2025 09:27 AM | Ambient was above 2.0 °C.                                           | <a href="#">View Details</a> |

Figure 54 – Alarms Page

This dashboard is the central interface for monitoring, filtering, reporting, and investigating all historical and active alarm events generated by connected assets within the system.

- **Total Alarms:** The count indicates the total number of records currently visible on the page. This number dynamically updates based on the application of filters.

### Data Export

These functions are used for Exporting the alarms data present.

- **Export CSV:**
  - **Function:** Downloads the current filtered list of alarms as raw data by sending a link to a downloadable file to the user's associated E-mail address.
  - **Output:** Comma-Separated Values (CSV) file, ideal for analysis in spreadsheet software (e.g., Excel).
- **Export PDF:**
  - **Function:** Generates a printable, non-editable report of the current filtered alarm list by sending a link to a downloadable file to the user's associated E-mail address.
  - **Output:** Portable Document Format (PDF).

### Filtering and Search

The filtering section allows users to define specific criteria to narrow down the alarm records. The search is executed by clicking the **Apply Filters** button.

#### Filtering Criteria:

- **Asset name:** Search for alarms related to a specific piece of equipment (e.g., "Pete Piper X").
- **Asset model:** Filter by the specific hardware model of the device.
- **Alarm origin:** Filter by the source or type of the alarm (e.g., Temperature, Power, Connectivity, etc.) using a dropdown list.
- **Location:** Filter by the physical location or zone where the asset is installed.
- **Start date & End date:** Define a specific time window for the alarm occurrence using the date pickers.
- **Alarm status:** Filter by the current state of the alarm (e.g., *Active*, *Cleared*, *Acknowledged*) using a dropdown list.

#### Alarm List Table:

This is the main display area (as attached in the fig) , providing a detailed, chronological record of all alarms matching the current filter criteria.

#### Column Descriptions:

- **Asset:** The unique identifier or name of the device/mote that triggered the alarm.
- **Begin:** The exact date and time the alarm condition was initially detected.
- **End:** The exact date and time the alarm condition was resolved or cleared from the system. (This field is left blank if the alarm is currently **Active**).
- **Status Indicator:** A visual tag (e.g., a red **Active** badge) showing the immediate current state of the alarm.
- **Description:** A clear, human-readable summary of the condition that violated the threshold (e.g., "Temperature is below  $-1.0^{\circ}\text{C}$ ").
- **Alarm Details (View Details):** A link to a separate page for an in-depth investigation of the specific event. This page typically includes sensor trend data, associated events, and acknowledgment history.

### 3.4 Repairs

The **Repairs** screen displays a list of all assets in TRAXX that have ever been repaired. To access the Repairs screen:

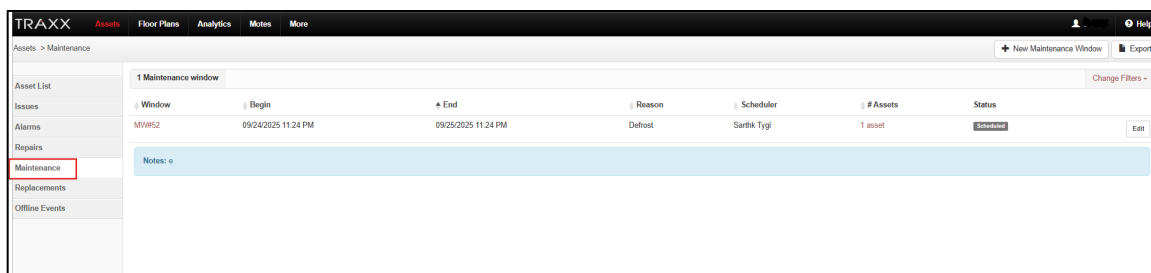
1. Select **Assets** from the horizontal menu at the top of the screen.
2. Select **Repairs** from the left sidebar menu.
  - a. Click on the asset name in the table to go directly to the asset's health screen.
  - b. Click **Edit** to edit the Repair Details, Problem Codes, Repair Codes, and Watchers.
  - c. Click **Manage** to view the Repair Effectiveness graph.
3. See §3.1.4.14 for mote details.

| Asset                                        | Completed  | Status            | Cost       | Cost Benefit (1yr / 3yr) | Manage      |
|----------------------------------------------|------------|-------------------|------------|--------------------------|-------------|
| Freezer YO<br>Building 1 / Floor 1 / Lab 2   | 07/20/2021 | Repair Completed  | \$100.00   | N/A                      | Edit Manage |
| Freezer AG<br>Building 2 / Floor 2 / Lab 2   | 06/17/2021 | Repair Completed  | \$150.00   | N/A                      | Edit Manage |
| Freezer SG-1<br>Building 3 / Floor 3 / Lab 2 | 04/16/2021 | Repair Persistent | \$1,200.00 | N/A                      | Edit Manage |

Figure 55 – Repairs table

## 3.5 Maintenance

The Global Maintenance Window page allows users to create and manage maintenance windows at a broader level across all assets. Multiple assets can be added to a maintenance window. Alarms will be disabled during the maintenance window period. An email will be sent to all subscribers 24 hours before the maintenance window ends letting them know that the maintenance window will be ending soon.



| Window | Begin               | End                 | Reason  | Scheduler  | # Assets | Status   |
|--------|---------------------|---------------------|---------|------------|----------|----------|
| MW52   | 09/24/2025 11:24 PM | 09/25/2025 11:24 PM | Defrost | Sarkk Tygi | 1 asset  | Schedule |

Figure 56 – Maintenance Window screen

## 3.6 Replacements

The **Replacements** screen displays all assets in TRAXX that have ever been replaced (see §3.1.4.7; see Fig. 57).

To access the Replacements screen:

1. Select **Assets** from the horizontal menu at the top of the screen.
2. Select **Replacements** from the left sidebar menu. The resulting table lists all assets that have been replaced with new assets.
  - a. Old Asset – The name of the old asset that was replaced.
  - b. Make-Model – The make/model of the old asset that was replaced.
  - c. Disconnected On – The date that the old asset was disconnected from TRAXX.
  - d. New Asset – The name of the new (replacement) asset.
  - e. Make-Model – The make/model of the new (replacement) asset.
  - f. Connected On – The date that the new (replacement) asset was connected to TRAXX.
  - g. Location – The physical location of the new (replacement) asset.

| Old Asset | Make - Model            | Disconnected On | New Asset   | Make - Model                     | Connected On | Location                             |
|-----------|-------------------------|-----------------|-------------|----------------------------------|--------------|--------------------------------------|
| 1007-42   | Revco - ULT2186-3-D34   | 06/04/2015      | FL-8        | Revco - UXF60086D60              | 06/06/2015   | 5781 Van Allen / Distribution Center |
| 1007-49   | So-Low - U85-25         | 04/08/2015      | 14718       | Revco - UXF70086D                | 06/04/2015   | 5781 Van Allen / Distribution Center |
| 1007-53   | So-Low - U85-25         | 04/08/2015      | 1007-62     | Revco - UXF70086D61              | 06/04/2015   | 5781 Van Allen / Distribution Center |
| 1007C-011 | Harris - ELT-21V-85-A34 | 04/15/2015      | 6023-23     | Thermo Scientific - ULT2090-10-D | 05/12/2015   | 5781 Van Allen / Distribution Center |
| 1007-74   | Revco - ULT2090-9-D31   | 05/02/2015      | 14721       | Revco - UXF70086D                | 05/07/2015   | 5781 Van Allen / Distribution Center |
| 1007-80   | Revco - ULT2186-7-D12   | 04/09/2015      | TSX Freezer | Thermo Scientific - TSX600D      | 05/06/2015   | 5781 Van Allen / Distribution Center |
| 1007C-25  | REVCO - ULT2186-3-A12   | 04/26/2015      | 14834       | Revco - UXF70086D63              | 05/06/2015   | 5781 Van Allen / Distribution Center |
| 1007-63   | Revco - ULT2090-9-D31   | 04/08/2015      | 14696       | Revco - UXF70086D63              | 04/09/2015   | 5781 Van Allen / Distribution Center |

Figure 57 – Asset Replacements table

## 3.7 Offline Events

| TRAXX Assets Floor Plans Analytics Notes More |                                      |                   |                     |                     |             |
|-----------------------------------------------|--------------------------------------|-------------------|---------------------|---------------------|-------------|
| Assets > Offline Events                       |                                      |                   |                     |                     |             |
| Asset List                                    | 12 Offline events                    |                   |                     |                     |             |
| Issues                                        | Offline Events Last 7 day(s)         |                   |                     |                     |             |
| Alarms                                        | Asset Name                           | Note(s)           | Zone                | Offline begin       | Offline end |
| Repairs                                       | TRAXX - 663 (2)                      | B8 27 EB 00 98 1C | Bldg C              | 06/27/2025 11:02 AM | -           |
| Maintenance                                   | TRAXX - 663                          | B8 27 EB 0C EA A9 | Bldg C              | 03/26/2025 02:39 AM | -           |
| Replacements                                  | TRAXX - 663 (3)                      | B8 27 EB 90 8D 64 | Bldg C              | 03/26/2025 02:34 AM | -           |
| Offline Events                                | Test - Cross functionality on Sensor | B8 27 EB 64 5A 10 | Test / Test 4       | 03/10/2025 10:52 PM | -           |
|                                               | Admin user - B8 27 EB 00 98 1C       | B8 27 EB 00 98 1C | Test / Test 3 Child | 01/28/2025 10:43 PM | -           |

Figure 58 – Offline Events

The *Offline Events* page provides a detailed log of assets that have gone offline within the last 7 days. This section helps administrators and operators monitor asset connectivity issues, analyze downtime, and take corrective actions.

## 1. Key Columns and Their Purpose

### Asset Name

- Displays the name of the asset that has gone offline.
- Multiple entries of the same asset may appear if the asset experienced repeated disconnections.

### Mote(s)

- Represents the unique hardware identifiers (MAC addresses) associated with the asset.
- If multiple motes are linked to a single asset, they are listed together.

### Zone

- Indicates the geographical or logical zone where the asset is located.
- Examples: *Bldg C*, *Zone Z/NOIDA*.

### Offline Begin

- Shows the exact date and time when the asset went offline.
- Format: *MM/DD/YYYY HH:MM AM/PM*.

### Offline End

- Displays the date and time when the asset came back online.
- A dash ( - ) indicates that the asset is still offline and has not yet reconnected.

### Export:

The *Export* feature allows users to download the complete list of offline events for record-keeping, reporting, or further analysis outside the application.

- The **Export** button is located at the top-right corner of the *Offline Events* page.
- When the user clicks on the **Export** button:
  - A **CSV file** containing all offline event records is automatically generated.

The CSV file mirrors the data displayed in the *Offline Events* table, including:

- Asset Name
- Mote(s)
- Zone
- Offline Begin
- Offline End

## 4. Analytics

The **Analytics** screens provide the user with actionable information regarding the overall health and energy consumption of their CTUs. For an asset to appear in any of the Analytics screens, it must have a CT sensor installed.

 Not all Analytics features and tags are available for assets warmer than +4°C or colder than -90°C.

### 4.1 Trends

The **Trends** report displays a sortable and exportable table that allows the user to filter on a variety of metrics to gauge the health of all assets that have a CT sensor connected. It compares the previous day's values to the 1-day, 1-week, 1-month, 6-month, and 1-year changes. To access the Trends report:

1. Select **Analytics** from the horizontal menu at the top of the screen.
2. Select **Trends** from the left sidebar menu.

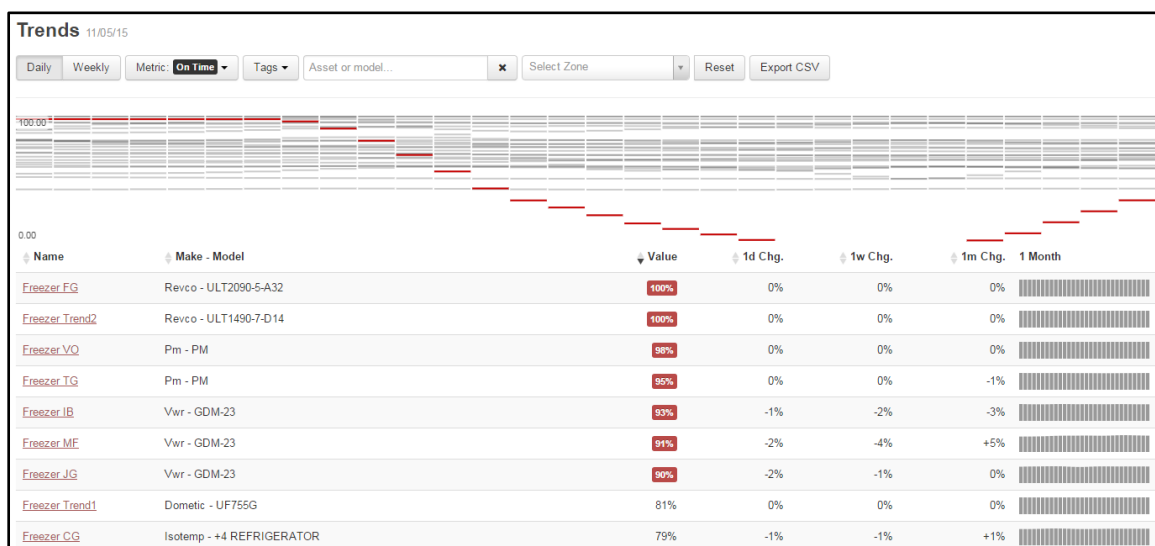


Figure 59 – Trends report

Key features of the Trends report:

- Date at top of screen indicates data based on that day's measurements.
- The report displays either Daily or Weekly data.
  - Click either the **Daily** or **Weekly** button.
  - Daily data is compared against the previous day, week, and month average.
  - Weekly data is compared against the previous month, 6-month, and year average.
    - The weekly value that is displayed in the Value column is the daily average of the previous 7 days.

- Numbers for the selected metric are color coded automatically by TRAXX to classify the perceived severity of the asset's health.
  - Red = Very unhealthy asset. Asset is wasting a lot of energy and has a stressed system. Immediate investigation recommended.
  - Orange = Unhealthy asset. Asset is wasting energy and has a moderately stressed system.
  - No color highlight = Asset is operating normally and within spec.
- Change the **Metric** to view different aspects of asset health. Click on the **Metric** drop-down menu to choose from the following:
  - On Time – This refers to the percentage of the day that the compressors were running, which is a key indicator of asset health. The higher the On Time in a compressor-based cooling system, the sicker the asset. Assets with 100% On Time had no compressor cycles during day, thus the compressor are running 100% of the time.
    - Assets with unhealthy On Time percentages will be color coded (red/orange) based on the severity.
  - Cycles/Day – How many times the compressors cycled during the day.
  - kWh/Day – How much energy the asset consumed during the day.
  - kWh/ft<sup>3</sup>/Day – The average daily energy consumption per asset volume.
  - Cycle Variance – “Cycle variance” is the variance of the cycle duration values, for a given time period.
    - For example, if there are 14 compressor cycles in a day, and each cycle was ~100 minutes long, the cycle variance would be near 0.
    - Large cycle variance values can be a sign of an unhealthy asset.
    - Small cycle variance values are a sign of a healthy, consistent asset.
  - Door Openings – How many door openings there were during the day.
    - An active door sensor is required for this metric.
- Narrow the number of assets in the table by clicking on the **Tags** drop-down menu.
  - Select any of the volume, voltage, or temperature filters and the table will filter to just the assets with those characteristics.
- Filter by specific asset make/model using the text box labeled “**Asset or model...**”
  - Click the **X** button to clear this text box and remove the make/model filter.
- Filter to a specific zone by using the drop-down menu labeled “Select Zone”.
  - Use the type-ahead text box to quickly find the desired zone.
- Click the **Reset** button to clear the make/model filter and all Tags.
- Export the data.
  - Click the **Export CSV** button to export the raw data used to generate the table.
- Use the graph above the table to visually compare an asset against all others.
  - The y-axis displays the minimum and maximum values for chosen metric based on the entire population in the table.
  - Areas that are darker have more assets at that value.
  - Areas that are lighter have less assets at that value.

- While looking at **Daily** data, hover the mouse pointer over an asset in the table to highlight that asset's daily stats for the last month
  - Each vertical column represents one day of the previous month.
  - There are 30 vertical columns.
  - The highlighted asset will be represented by a red horizontal bar.
- While looking at **Weekly** data, hover the mouse pointer over an asset in the table to highlight that asset's weekly stats for the last year.
  - Each vertical column represents one week of the previous year.
  - There are 52 vertical columns.
  - The highlighted asset will be represented by a red horizontal bar.

## 4.2 Energy Usage

The **Energy Usage** report displays a sortable and exportable table that tracks energy usage statistics for all assets that have a CT sensor connected. To access the Energy Usage table:

1. Select **Analytics** from the horizontal menu at the top of the screen.
2. Select **Energy Usage** from the left sidebar menu.

Key features of the Energy Usage report:

- “Type-ahead” search field that filters as you type.
  - Click the **X** at the edge of the search field to clear the search filter.
- Filter by Zone using the **Zones** drop-down menu.
- Click the **Reset** button to clear all the filters.
- Click the **Export** button to export the raw data used to create the table.
- Rolling 12-month bar graph at top of screen.
  - Move the mouse pointer over each bar to see the total kWh consumed by all assets, as well as the average kWh consumed per asset, during that month.
  - The amplitude of each bar is based on that month's total energy consumption.
  - The orange line indicates the number of assets included during that month.
- Sortable table with rows containing energy consumption data for each asset. Click on the column header to sort by that column.
  - **Asset** – Name of the asset. Click the asset name to go directly to that asset's Energy Usage page.
  - **Zone** – Location of the asset at the customer facility.
  - **Make-Model** – The make and model of the asset.
  - **kWh/day** – The average daily energy consumption of that asset for the trailing 12 months.
  - **kWh/ft<sup>3</sup>/day** – The average daily energy consumption per asset volume for the trailing 12 months.
  - **kWh/yr** – The normalized annual energy consumption of that asset.

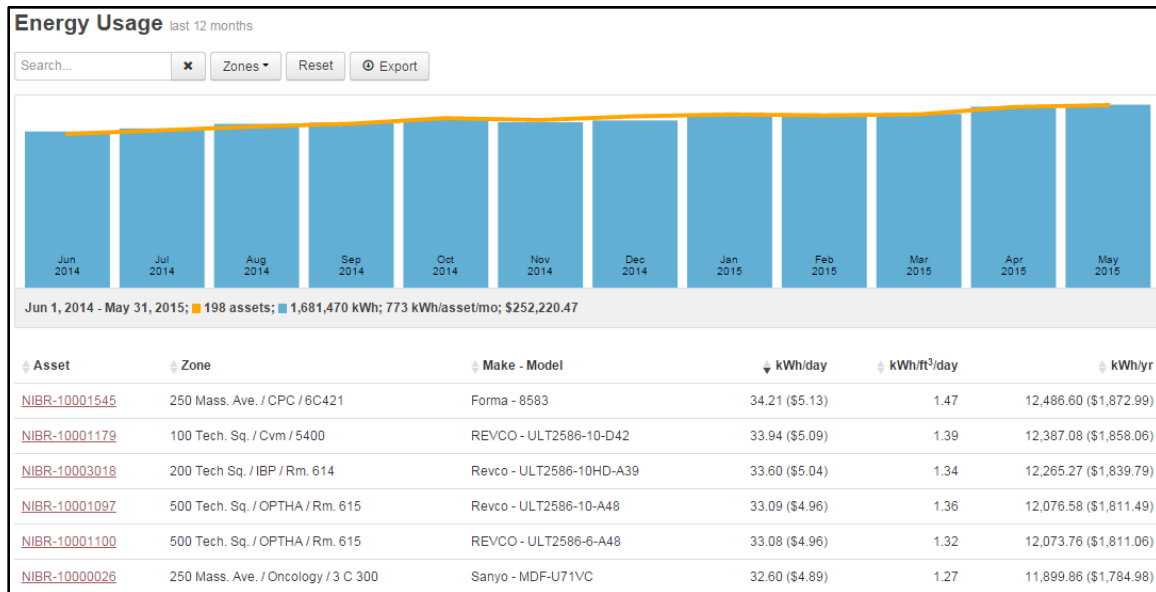


Figure 60 – Energy Usage report

### 4.3 Study Groups

**Study Groups** allow users to create baseline and post-baseline energy performance snapshots of assets. To be added to a study group, an asset must be monitored by a CT sensor. The snapshots are useful for comparing energy consumption before/after repairs or replacements, or comparing different freezer make/models.

To access the Study Group feature:

1. Select **Analytics** from the horizontal menu at the top of the screen.
2. Select **Study Groups** from the left sidebar menu.

To create a new Study Group:

1. Click **+ New Study Group** button at top of screen. A new form will appear.

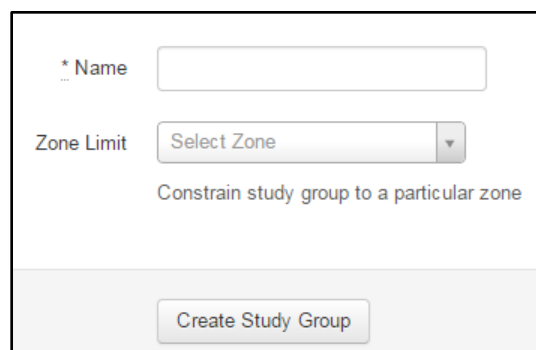


Figure 61 – Form for creating new study group

2. Enter a name. This name will appear in the main Study Group table.
3. Select a Zone from the **Zone** drop-down menu (optional). Only assets in the selected zone will be available to add to the study group.
4. Click **Create Study Group** button.
5. The new study group now appears in the main Study Groups table

| + New Study Group             |          |                     |                |                  |          |
|-------------------------------|----------|---------------------|----------------|------------------|----------|
| Search...                     |          |                     |                |                  |          |
| Search                        |          |                     |                |                  |          |
| Name                          | # Assets | Yearly kWh Savings  | Avg            | StdDev           | Started  |
| <a href="#">CVM</a>           | 7        | 4,361 / \$654.15    | 623 / \$93.45  | 1,538 / \$230.75 | 04/24/14 |
| <a href="#">CVM2</a>          | 23       | 1,499 / \$224.95    | 65 / \$9.78    | 806 / \$120.91   | 09/19/14 |
| <a href="#">DMP</a>           | 22       | 11,670 / \$1,750.56 | 530 / \$79.57  | 1,614 / \$242.15 | 09/19/14 |
| <a href="#">NBC2</a>          | 11       | 2,644 / \$396.72    | 240 / \$36.07  | 918 / \$137.76   | 09/19/14 |
| <a href="#">New Brunswick</a> | 15       | 0 / \$0.00          | 0 / \$0.00     | 0 / \$0.00       | 09/24/14 |
| <a href="#">NIBR Phase 1</a>  | 22       | 8,041 / \$1,206.29  | 804 / \$120.63 | 2,278 / \$341.71 | 09/14/12 |
| <a href="#">NIBR02</a>        | 16       | 12,608 / \$1,891.33 | 900 / \$135.10 | 1,656 / \$248.41 | 07/18/14 |

Figure 62 – Main table listing various Study Groups

To add an asset's *standard* baseline/comparison snapshot to a study group:

1. Go to the main Study Groups table and click on the name of the desired study group.
2. Click the **+ Add Snapshot** button at the top-right corner of the screen.

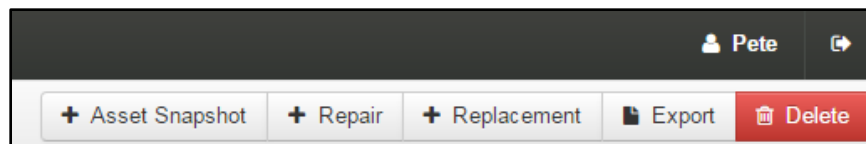


Figure 63 – Add Asset Snapshot button

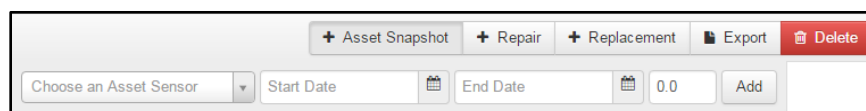


Figure 64 – Add Asset Snapshot form

3. Use the **Choose an Asset Sensor** drop-down menu to add the desired asset.

- a. Only assets configured with a CT sensor will appear in the list.
4. Use the **Start Date** drop-down menu to select the start date for the energy baseline/snapshot.
  - a. It is advisable to check the asset's **Health** graphs to verify that there is valid amperage data for the time period selected for the baseline/snapshot.
5. Use the **End Date** drop-down menu to select the end date for the energy baseline/snapshot.
  - a. Snapshots must have a minimum date range of 3 days and maximum of 30 days.
  - b. A minimum snapshot period of two weeks is recommended.
6. The **Volts** will populate automatically in the field immediately to the right of the **End Date**, using the value entered on the **Edit Asset** screen.
  - a. Before an asset is added, the volts field reads 0.0 by default (see **Fig. 64**).
7. Click the **Add** button to save changes and add the snapshot to the study group table.
  - a. If this is the first snapshot created for the asset, then it will have a **Baseline** tag next to the entry.
  - b. If a baseline already exists, then the second snapshot will be tagged as **Comparison** (only if the dates are later in time than the baseline dates).
  - c. Any snapshots taken with date ranges between the baseline and comparison will appear in the table but will not be tagged.
8. Repeat steps 2 – 7 to add more asset snapshots.

To add an asset's *repair* baseline/comparison snapshot to a study group (this is useful for quickly comparing the asset's energy consumption pre- and post-repair):

1. Go to the main Study Groups table and click on the name of the desired study group.
2. Click the **+ Repair** button at the top-right corner of the screen (see **Fig. 65**).

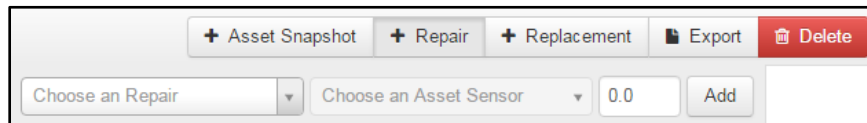


Figure 65 – Add Repair Snapshot form

3. Use the **Choose a Repair** drop-down menu to add the desired asset.
  - a. Only assets that have a Repair in the system (see §3.3), and are configured with a CT sensor, will appear in the list.
4. Use the **Choose an Asset Sensor** drop-down menu to select the sensor type to use for the energy baseline/snapshot.
5. The **Volts** will populate automatically in the field immediately to the right of the **Choose an Asset Sensor**, using the value entered on the **Edit Asset** screen.

- a. Before an asset is added, the volts field reads 0.0 by default (see **Fig. 64**).
6. Click the **Add** button to automatically add the asset's baseline and comparison data to the study group table.
  - a. The pre-repair data will be tagged as **Baseline**.
  - b. The post-repair data will be tagged as **Comparison**.

To add an asset's *replacement* baseline/comparison snapshot to a study group (this is useful for quickly comparing two assets' energy consumption pre- and post-replacement):

1. Go to the main Study Groups table and click on the name of the desired study group.
2. Click the **+ Replacement** button at the top-right corner of the screen (see **Fig. 65**).

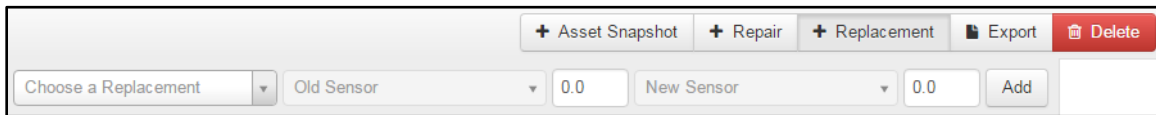


Figure 66 – Add Replacement Snapshot form

3. Use the **Choose a Replacement** drop-down menu to select the asset pair (original >> replacement) that you'd like to compare.
    - a. Only assets that have been specifically replaced in the system (see §3.1.4.7 and see **Fig. 57**), and are configured with a CT sensor, will appear in the list.
  4. Use the **Old Sensor** drop-down menu to select the original asset's sensor for the energy baseline.
  5. Use the **New Sensor** drop-down menu to select the replacement asset's sensor for the energy comparison.
  6. The **Volts** for each asset will populate automatically in the field immediately to the right of the **Old/New Sensor**, using the values entered during asset creation.
    - a. Before an asset is added, the volts field reads 0.0 by default (see **Fig. 64**).
  7. Click the **Add** button to add both assets to the study group table.
    - a. The original (old) asset will be tagged as **Baseline**.
    - b. The replacement (new) asset will be tagged as **Comparison**.

To export the data in a study group table:

1. Go to the main **Study Groups** table and click on the name of the desired study group.

2. Click the **Export** button at the top-right corner of the screen (see **Fig. 67**).

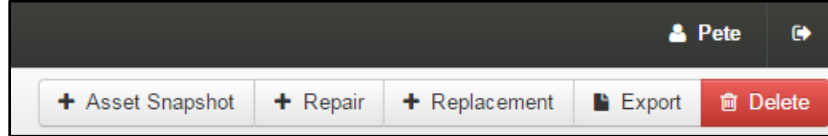


Figure 67 – Study Group Export button

Features of the Asset Study Group table (see **Fig. 71**):

- The study group can be permanently removed from TRAXX by clicking the red **Delete** button at the top-right corner of the screen. **WARNING:** This cannot be undone.
- There is a bar chart across the top of the study group table.
  - Each vertical bar (left-to-right) represents and corresponds to one asset in the table (top-to-bottom).
  - The gray bar represents the baseline energy calculation for that asset.
  - The green bar represents the comparison energy calculation for that asset.
  - The amplitude of each colored bar represents the normalized energy consumption for that asset, based on the time period selected for the snapshot.
- The circle with a % inside represents the percentage energy savings (baseline minus comparison) across all assets in the study group.
- Features of the individual study group table:
  - Asset column – This column lists each asset with a tag underneath indicating *Baseline* or *Comparison*. Click on the asset name to go to a new screen that shows energy consumption graphs for each snapshot (see **Fig. 70**).
    - Above each individual set of snapshot energy consumption graphs is the following (based on data across the entire snapshot period):
      - Date range of the snapshot (they are listed in chronological order, top-to-bottom).
      - Average compressor cycles per day.
      - Annualized kWh/year based on the energy consumed.
      - Average time that the compressors were running (On Time).
      - Voltage measured at the freezer.
    - The snapshot graphs display the actual amperage measurements during the selected date range.
    - If the snapshots were created using the **Repair** or **Replacement** function, then a message above the individual snapshot graphs will indicate so (see **Fig. 68** and **69**).

- Click on the date range link in the message to go to the asset's Repair screen.
- Click on the asset name to go to the asset's Health screen.
- Use the **Dates** field under the graph to modify the snapshot period.
- Click on the red **Remove** button below a graph to delete the snapshot from the study group.

This study group entry reflects the [04/08/2015 - 04/08/2015 repair of 1007-60](#).

Figure 68 – “Repair” message above snapshot

This study group entry reflects the replacement of [1007-53](#) with [1007-62](#) between the dates [04/08/2015 - 06/04/2015](#).

Figure 69 – “Replacement” message above snapshot

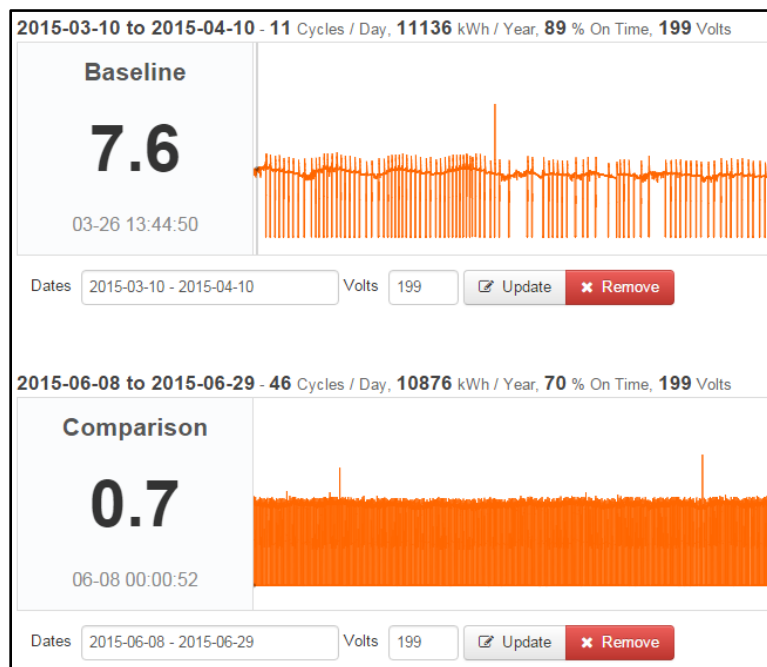


Figure 70 – Individual energy snapshot graphs

- Date column – This displays the start date of each snapshot.
- Repaired – Displays if the asset has been repaired.
- On Time – This represents the percentage of time that the compressors were running during the snapshot period.
- Yearly kWh/\$ – This represents the normalized annual energy consumption and cost for the snapshot period.
- Yearly kWh/\$ Savings – This represents the savings between the baseline and comparison snapshots; the comparison kWh and annual cost is subtracted from the baseline values.

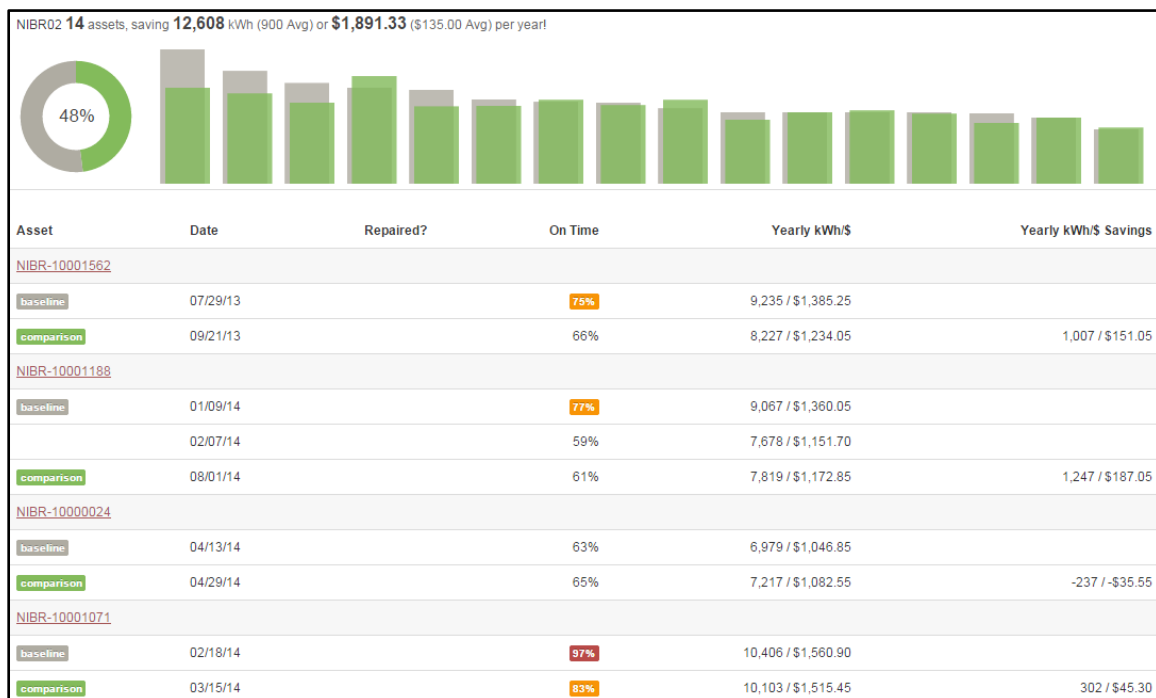


Figure 71 – Study Group table with asset snapshots

## 4.4 Health History

Select **Health History** from the left sidebar menu to view the compressor On Time health histories of all assets in a single view.

The sortable table lists all assets that have an active CT sensor and displays the following information for each asset:

- **Streak** – The number of consecutive days that the asset has been in its current color (health) state.
- **Last 30** – The total number of days in the last month that the asset has been in a red (High On Time) or orange (High On Time Warning) state.
- **Last 90** – The total number of days in the three months that the asset has been in a red (High On Time) or orange (High On Time Warning) state.
- **Last 365** – The total number of days in the last year that the asset has been in a red (High On Time) or orange (High On Time Warning) state.

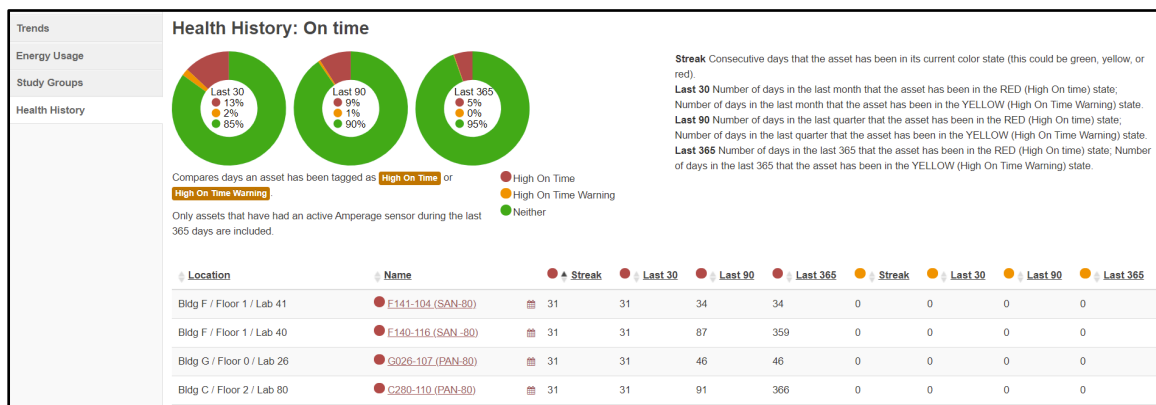


Figure 72 – Global Health History

## 5. Motes

The **Motes** section of TRAXX is intended for IT professionals or superusers who want to dig deep into the wireless performance of the motes. All motes listed in TRAXX have been configured to communicate either directly to the TRAXX Cloud servers or to the TRAXX Link gateway server (located at the customer's facility) and have transmitted successfully at least once to the servers. If a mote is not listed, then it has not yet successfully communicated with the Cloud servers.

All mote models store data internally in the event of a Wi-Fi or network outage. The mote memory functions as a circular buffer, so the oldest data gets overwritten once the memory is full. Gen2 motes can store up to 24 hours of data; Gen3, Piper, and Blackbird motes can store up to 7 days of data.

### 5.1 Mote List

To access the list of motes communicating at a customer facility:

1. Select **Motes** from the horizontal menu at the top of the screen.
2. Select **Mote List** from the left sidebar menu.

| 218 Motes                                                                                                                                                                                                          | Change Filters ▾ |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <div>● 00:30:66:00:06:14 checked in @ 03/23/15 10:54 PM</div> <div>RFM C2T2 2.4.597</div> <div>250 Mass. Ave. / Compound Bank <a href="#">Picking</a></div> <div>3.3 volts, -67 db</div>                           |                  |
| <div>● 00:30:66:00:10:4D checked in @ 03/23/15 10:54 PM</div> <div>RFM C2T2 2.4.597</div> <div>250 Mass. Ave. / NBC / Rm. 6B-311 <a href="#">NIBR-10003026</a></div> <div>3.5 volts, -79 db</div>                  |                  |
| <div>● 00:30:66:00:0F:F6 checked in @ 03/23/15 10:54 PM</div> <div>RFM C2T2 2.4.597</div> <div>100 Tech. Sq. / Cvm / 5206 <a href="#">NIBR-10001184</a></div> <div>3.2 volts, -68 db</div>                         |                  |
| <div>● 00:30:66:00:0F:9D checked in @ 03/23/15 10:54 PM</div> <div>RFM C2T2 2.4.597</div> <div>100 Tech. Sq. / Cvm / 4405 <a href="#">NIBR-10003023</a></div> <div>3.2 volts, -73 db</div>                         |                  |
| <div>● 00:30:66:00:10:36 checked in @ 03/23/15 10:54 PM</div> <div>RFM C2T2 2.4.597</div> <div>250 Mass. Ave. / AS / 6C180 <a href="#">NIBR-10001082</a></div> <div>3.0 volts, -53 db</div> <div>Low Battery</div> |                  |

Figure 73 – Mote List

The **Mote List** screen allows the user to see the high-level status of all motes that have been configured on the network. On this screen the user can see/do the following:

- Color coding – The colored dot (green/orange/red) to the left of each asset reveals the high-level status of the mote.

- Red = Critical; mote is offline and not reporting data.
- Orange = The wireless signal is weak, the wireless network is not optimized for the mote, the mote's battery is draining too quickly, or the mote has a low battery that should be replaced. Discuss with the IT department, as necessary.
- Green = All clear; the mote is online and transmitting with no serious issues.
- MAC Address – Located just to the right of the colored dot. The MAC address is the mote's unique identifier and is in the format xx:xx:xx:xx:xx:xx. The MAC address is printed on the mote's label. This is also a link that will take you to the mote's detailed network diagnostics (see §5.1.1).
- Located just to the right of the MAC address is the date and time of last mote check in to the server.
- Mote hardware type and firmware version – Located just beneath the MAC address.
- Associated asset zone and name – Located just beneath the mote hardware/firmware version, the zone is where the asset is physically located. The asset name is a link that will take you to the asset's Health screen (see §3.1.4.1).
- RSSI and battery voltage – Located at the far-right side of each row is the mote's battery voltage and the RSSI of the last transmission received.
  - Each mote model has its own battery voltage range. In general, the batteries in battery-powered motes should last approximately one year in optimized wireless network environments.
  - The Gen3 mote battery is rechargeable and is used for backup purposes only. It will be discharged only in the event of a power outage. The battery will last up to three hours, depending on local Wi-Fi conditions and configured sensors on the device. A fully charged battery will report approximately 4.1V.
  - RSSI is a measure of radio signal strength at the receiver. As the RSSI approaches -70dBm, the mote will have a more difficult time communicating and burn battery more quickly. In terms of RSSI, larger numbers are better (e.g. -50dBm is better than -70dBm).
- Tags – Located just below the battery voltage and RSSI, these labels tell the user valuable information about the mote's condition. Click on any tag in TRAXX to reveal an informational pop-up window. Descriptions of mote tags:
  - **Powered** – The mote is currently powered by an external power supply. This tag disappears if the mote is unplugged from the external power supply.
  - **Ext Powered** – TRAXX expects the mote to be powered by an external (non-battery) power supply. If a mote with this tag is unplugged from its external supply, then the users subscribed to the asset associated with this mote will receive a notification within 10 minutes that the mote has lost power.

- Gen3 and Piper motes are automatically tagged with Ext Powered.
- Gen2 and Blackbird motes that are externally powered must be individually configured with this tag. See §5.1.3 for instructions on configuring this tag.
- **Offline** – The mote is no longer transmitting. This could be due to a variety of factors including dead battery, no Wi-Fi network available, broken mote, etc.
- **High Battery Use** – The mote’s battery is being consumed faster than expected. This can be due to prolonged alarm conditions, frequent door openings, or poor Wi-Fi signal.
- **Low Battery** – The mote’s battery has dropped below the recommended voltage for that mote model. Replace the battery as soon as possible.
- **Replace Battery** – The mote’s rechargeable backup battery can no longer be recharged and it should be replaced immediately to avoid an offline event.
- **Low Signal** – The wireless signal is weak. Adding an additional wireless access point (AP) near the mote should create a stronger signal.
- View total mote count – The number in bold at the top of the list is the total number of motes that have checked in to the cloud servers.
- Filter – Clicking the **Change Filters** button opens a filter box that allows the user to narrow the number of motes in the list.

To view detailed information about any mote, click on the **MAC Address** from the Mote List. The resulting screen will reveal data graphs and a new left sidebar menu specific to the chosen mote. It will always default to the **Network Health** view.

The following sections will describe in detail the items available in the left sidebar menu.

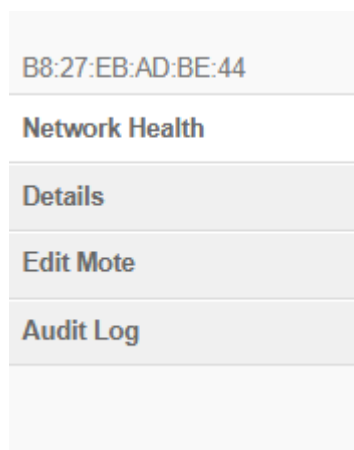


Figure 74 – Mote specific menu

### 5.1.1 Network Health

The Network Health graphs display important metrics about a mote's transmissions. To view the Network Health screen:

1. Select **Motes** from the horizontal menu at the top of the screen.
2. Click on the **MAC Address** of the mote you want to view from the Mote List.
3. Select **Network Health** from the left sidebar menu.
  - a. Gen2 motes display the following stats:
    - i. PER – Packet Error Rate. Numbers lower than 50% are good.
    - ii. Radio Time – How long the radio is on during each transmission. Numbers higher than 5000ms will dramatically reduce battery life.
    - iii. Latency – How much lag there is in the local network between the mote and the TRAXX Link server. Spikes indicate data throughput issues.
    - iv. Samples – How many data packets were sent during the transmission.
    - v. Interval – Time since last transmission. Spikes indicate missed transmissions.
    - vi. Battery – Battery voltage. For Gen2 motes, the battery voltage is considered low when the average daily voltage falls below 3.0V.
    - vii. RSSI – Signal strength at the receiver. Numbers approaching -70dBm indicate a poor radio environment and can result in missed transmissions. Adding another AP typically resolves the issue.

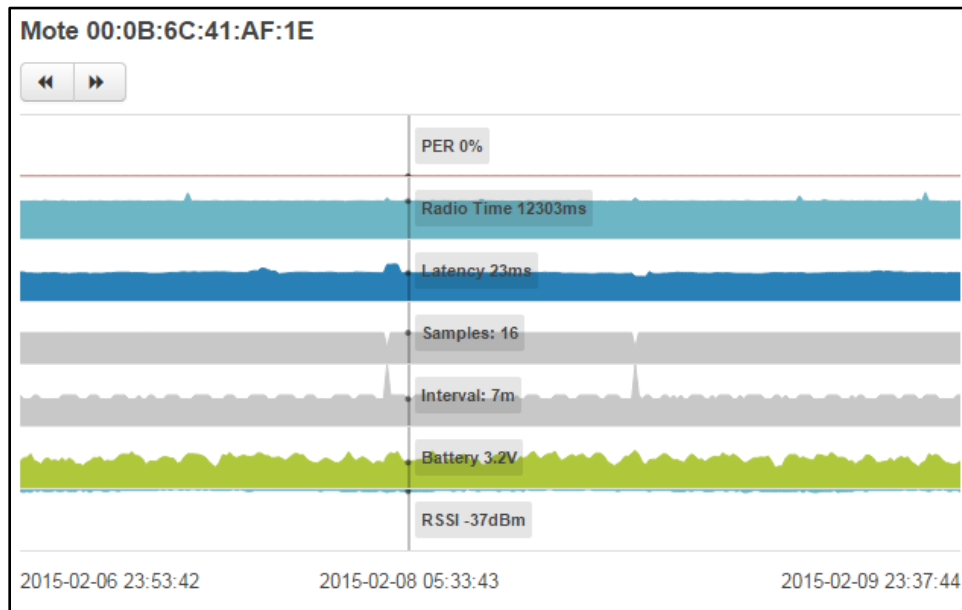


Figure 75 – Gen2 Mote Network Health Graph

- b. Gen3 and Piper motes display the following stats:
- i. Link Quality – Signal quality is a value ranging from 0 to 100, which considers, along with signal strength, the noise generated by interference sources. The higher the number, the better. Anything over 50% is OK.
  - ii. Cloud Latency – How much lag there is in the local network between the mote and the TRAXX Cloud Server. Spikes indicate data throughput issues. The lower the number, the better. Anything under 200ms is OK.
  - iii. WLAN Speed – How fast the Wi-Fi connection is between the mote and the Access Point (AP). The higher the number, the better. Anything over 14.4Mbps is OK.
  - iv. RSSI – Signal strength at the receiver. The higher the number, the better (e.g. -40dBm is better than -65dBm). Numbers approaching -70dBm indicate a poor radio environment and can result in missed transmissions. Adding another AP typically resolves the issue.

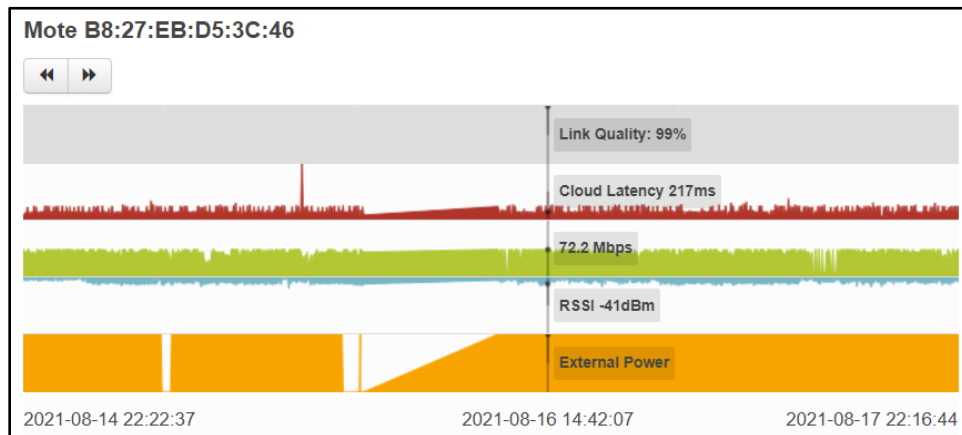


Figure 76 – Gen3 Mote Network Health Graph

c. Blackbird motes display the following stats:



Figure 77 – Blackbird mote Network Health graph

Some key features of the Network Health Graph:

- Move the cursor over the graph to view specific data points and time stamps.
- To zoom in on the data, click, hold and drag your mouse over the desired area of the graph.
- Click the left/right arrow keys above the graph to scroll back/forward in time.
- The **Access Points** table below the graph displays all access points (APs) that the mote communicated with during the last 72 hours.
  - Move the mouse pointer horizontally across the network health graphs. For each data point in the graph, a row in the Access Points table will be highlighted. The access point in highlighted row was used for the mote transmission.
  - AP = the MAC address of the AP
  - Samples = how many transmissions went through that AP
  - Signal = the average RSSI for transmissions through that AP
- The **Events** section displays the following metrics that occurred during the time period displayed on the graph:

### Gen2 Motes

- Reboots – How many times the mote rebooted.
- Recoveries – How many times the mote recovered from an error state.
- Clock Errors – How many mote clock errors were detected and corrected.
- DHCP Failures – How many times the mote failed to get a DHCP address.
- Association Failures – How many times the mote couldn't associate with an AP.
- Powered – Indicates "YES" if the mote is externally powered. Indicates "NO" if the mote is running on battery power only.

### Gen3 and Piper Motes

- Down Events – How many times the mote recovered from an error state.

### Blackbird Motes

- Sensor Data Unsent – How many times the mote missed a transmission.
- System Faults – How many times the mote detected an error condition.
- HTTP Errors – How many times the mote failed to associate with the Internet.
- Power Glitches – How many times the mote detected a power glitch.

## 5.1.2 Details

The Details page displays sensor channel information, last sensor readings and time stamps, asset association, and internal configuration settings. To view the mote's details:

1. Select **Motes** from the horizontal menu at the top of the screen.
2. Click on the **MAC address** of the mote you want to view from the Mote List.
3. Select **Details** from the left sidebar menu.
  - The information on this page automatically updates every few seconds.

Here are the column header descriptions for the **Channels** table:

- Channel – This lists all sensor inputs configured on the mote. All sensor types are not available on all mote models.
  - For Gen2 and Blackbird motes, some sensor types have multiple input options on the mote. The number displayed immediately before or after the sensor type indicates the input number on the mote (e.g. RTD-1 = RTD input #1 on the mote).
    - RTD = RTD sensor
    - TCT = type-T thermocouple sensor
    - CT = Current Transducer sensor
    - OBT = On Board Temperature sensor (ambient temperature sensor)

- OBH = On Board Humidity sensor (ambient humidity sensor)
- VBAT = Battery voltage sensor
- DI = Digital Input (for door switches and contact closure connections)
- For Gen3 and Piper motes, there may be an LL, LR, UL, or UR next to the sensor type (newer firmware versions only). These indicate which USB port the sensor is plugged into: Lower Left, Lower Right, Upper Left, or Upper Right.
  - SmartRTD = RTD sensor
  - SmartCT = Current Transducer sensor
  - SmartDI = Door switch or contact alarm connected to the SmartDI cable
  - Serial-DI = Ddoor switch or contact alarm connected to the RS232/RS485 port on the mote
  - GMP-1-CO2 = Vaisala CO2 sensor
  - HMP-1-TEMP = Vaisala temp sensor
  - HMP-2-HUM = Vaisala humidity sensor
  - 1-RHUSB-TEMP = Omega temp sensor
  - 2-RHUSB-HUM = Omega humidity sensor
  - OBT = On Board Temperature sensor (ambient temperature sensor)
  - OBH = On Board Humidity sensor (ambient humidity sensor)
  - New sensor types not listed here may become supported at any time
- Attribute – This lists the type of sensor associated with the channel.
- Last Value – This is the last value reported by the sensor connected to this channel.
- Last Update – This is the last time the mote reported data for this channel.
- Asset – This is the asset name associated with the sensor channel.

Here are the **Settings** definitions (not all settings are available for each mote type):

- Gen2 motes:
  - MAC – MAC address of the mote
  - Make – Make/model, hardware version, sensor type, and firmware build
  - Last Report – Time stamp of the last mote transmission
  - Signal – Signal strength (dBm) at the receiver
  - Battery – Voltage of mote battery
  - Powered – Is the device powered by an external power supply?
  - Intervals – Mote checkin intervals (seconds) for configuration packets (Cfg) and sensor samples (Sample)
  - WiFi IP – The IP address of the mote
  - Transmit Interval – How often the mote sends sensor data packets (seconds)

- Report Interval – How often the mote sends report data packets (seconds)
- Config Interval – How often the mote sends configuration packets (seconds)
- Make/Model – Make/Model of the mote
- Version – Hardware version, sensor type, and firmware builds
- Linkup Interval – How often the mote sends linkup packets (seconds)
- Sample Interval – How often the mote samples sensor data (seconds)
- Gen3 and Piper motes:
  - MAC – MAC address of the mote
  - Make – Make/model, hardware version, and firmware build
  - Last Report – Time stamp of the last mote transmission
  - Signal – Signal strength (dBm) at the receiver
  - Battery – Voltage of mote battery
  - Intervals – Mote checkin intervals (seconds) for configuration packets (Cfg) and sensor samples (Sample)
  - WiFi IP – The IP address of the mote
  - Make/Model – Make/Model of the mote
  - Version – Hardware version, sensor type, and firmware builds

### 5.1.3 Audit Log

Select **Audit Log** from the left sidebar menu to view a running log of important mote events.

- Use the Filter box at the top of the screen to narrow down the log.
- Manually add a note to the log by typing in the text box above the log then clicking the red **Add Note** button.

### 5.1.4 Associated Assets

When viewing an individual mote, the user can see which asset is being monitored by this mote. In the left-hand menu, click on the asset name (just below “Associated Assets”) to go to that asset’s **Health** screen.

### 5.1.5 Edit Mote

When editing the mote, there are certain mote types that allow for the indication that the mote is being line powered.

**Power Settings:** Toggle *Powered Install* to specify whether the device runs on battery or external power.

## 5.2 AP Associations

The AP Associations screen displays which AP (access point) each mote used during its last transmission. Click the **Change Filters** button at the top of the screen to filter and/or sort the mote-AP association graph.

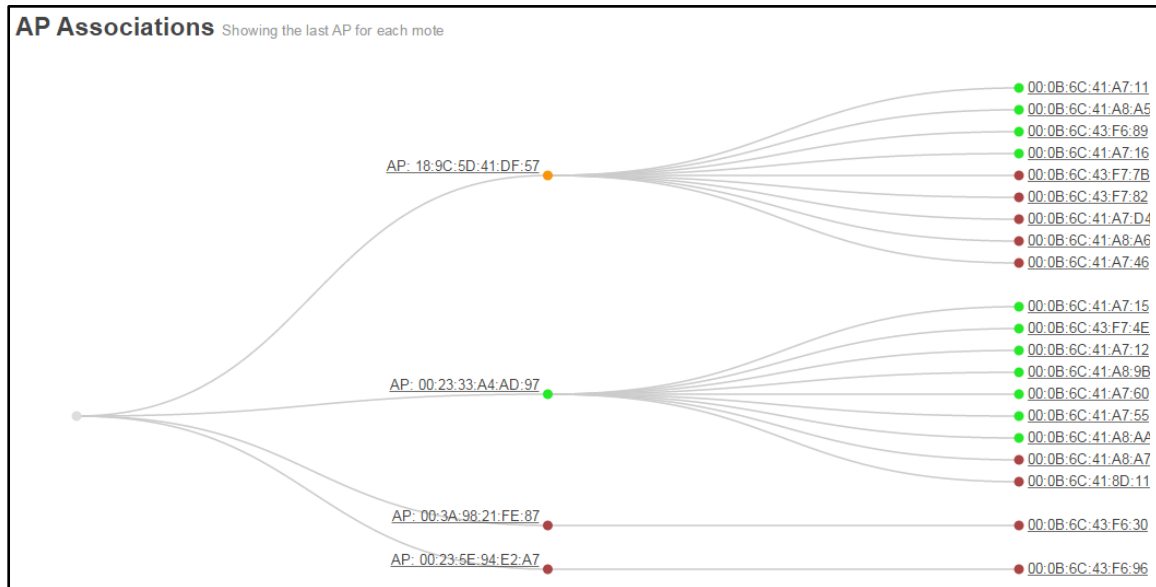


Figure 78 – AP Associations

## 6. More Menu

The **More** menu allows the user to manage:

- Users
- Alarm Rule Profiles
- Asset Models
- Zones
- Asset Inspections
- Downloads
- Settings
- Audit Trail
- Gateways
- Bulk Imports
- Installation Reviews

These menu items will be described in more detail in the following sections.

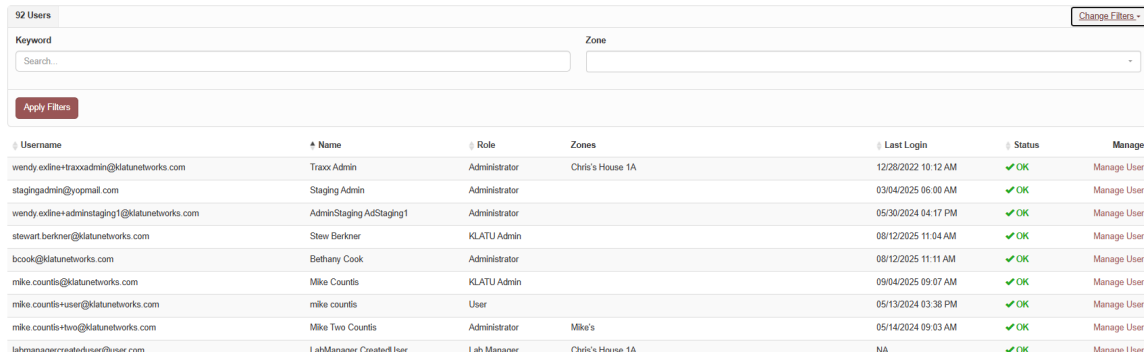
|                      |
|----------------------|
| Users                |
| Alarm Rule Profiles  |
| Asset Models         |
| Zones                |
| Asset Inspections    |
| Downloads            |
| Settings             |
| Audit Trail          |
| Gateways             |
| Credit Usage         |
| Credit Vouchers      |
| Bulk Imports         |
| Installation Reviews |

Figure 79 – More menu (left sidebar)

Clicking **More** from the menu at the top of the screen takes you to the **Users** table by default. Select an item from the menu in the left sidebar to go to that screen.

## 6.1 Users

Select **Users** from the menu in the left sidebar to view a sortable table of all users that have access to TRAXX.



The screenshot shows a web interface for managing users. At the top, there's a header '92 Users' and a 'Change Filters' button. Below this is a search bar with 'Keyword' and 'Zone' labels. A red 'Apply Filters' button is on the left. The main part of the interface is a table with the following columns: Username, Name, Role, Zones, Last Login, Status, and Manage. The table lists several users, including Traxx Admin, Staging Admin, AdminStaging1, Stewart Berkner, Bethany Cook, Mike Countis, and Mike Two Countis. Each row has a 'Manage User' link in the final column.

| Username                                     | Name                     | Role          | Zones            | Last Login          | Status | Manage      |
|----------------------------------------------|--------------------------|---------------|------------------|---------------------|--------|-------------|
| wendy.exline+traxxadmin@klatunetworks.com    | Traxx Admin              | Administrator | Chris's House 1A | 12/28/2022 10:12 AM | ✓ OK   | Manage User |
| stagingadmin@yopmail.com                     | Staging Admin            | Administrator |                  | 03/04/2025 06:00 AM | ✓ OK   | Manage User |
| wendy.exline+adminstaging1@klatunetworks.com | AdminStaging AdStaging1  | Administrator |                  | 05/30/2024 04:17 PM | ✓ OK   | Manage User |
| stewart.berkner@klatunetworks.com            | Stew Berkner             | KLATU Admin   |                  | 08/12/2025 11:04 AM | ✓ OK   | Manage User |
| bcook@klatunetworks.com                      | Bethany Cook             | Administrator |                  | 08/12/2025 11:11 AM | ✓ OK   | Manage User |
| mike.countis@klatunetworks.com               | Mike Countis             | KLATU Admin   |                  | 09/04/2025 09:07 AM | ✓ OK   | Manage User |
| mike.countis+user@klatunetworks.com          | mike countis             | User          |                  | 05/13/2024 03:38 PM | ✓ OK   | Manage User |
| mike.countis+two@klatunetworks.com           | Mike Two Countis         | Administrator | Mike's           | 05/14/2024 09:03 AM | ✓ OK   | Manage User |
| lshldmanow@createll.com                      | L shldmanow Createll Inc | L shldmanow   | Chris's House 1A | NA                  | ✓ OK   | Manage User |

Figure 80 – Users table

Click the **Include Disabled Users** link to show users that had previously been disabled. Disabled users do not appear in the list by default. Disabled users will appear in the list with a horizontal line through the row.

Click the **Hide Disabled Users** link to show the list without users that have been disabled.

Click the **Enable User** link to restore access to TRAXX for a user that had previously been disabled. The user will have to resubscribe to the desired assets.

Click the **Manage User** link to edit the user. A new menu in the left sidebar appears (see **Fig. 81**) and the screen updates to the **Edit** screen by default (see **§6.1.2**).

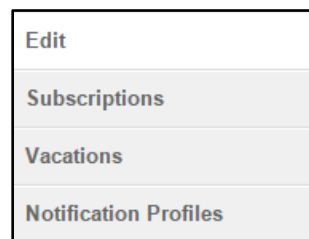
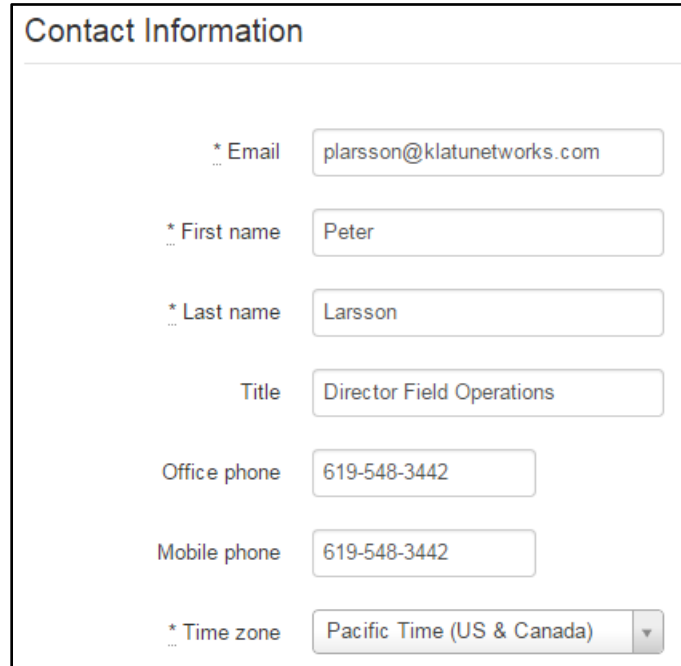


Figure 81 – Manage User menu (left sidebar)

### 6.1.1 Add New User

To add a new user, click the **+ New User** button located at the top of the **Users** screen. A new form appears. Fill out the fields in the **Contact Information** section (maximum range for all fields = 255 characters):



The screenshot shows a form titled "Contact Information" with the following fields:

- \* Email**: Input field containing "plarsson@klatunetworks.com"
- \* First name**: Input field containing "Peter"
- \* Last name**: Input field containing "Larsson"
- Title**: Input field containing "Director Field Operations"
- Office phone**: Input field containing "619-548-3442"
- Mobile phone**: Input field containing "619-548-3442"
- \* Time zone**: Dropdown menu showing "Pacific Time (US & Canada)"

Figure 82 – Contact Information form

- Email address (required) – This address is used to log in to TRAXX. It is also where all alarms and TRAXX correspondence is sent. The email address can be updated, but only one email address can be used.
- First name (required)
- Last name (required)
- Title
- Office phone
- Mobile phone
- Time zone (required) – Choose a time zone where the user is primarily located. All sensor data in TRAXX will be adjusted to this time zone.

Fill out the fields in the **User Settings** section:

- Alarm voice number – If a phone number is added here, TRAXX's automated calling service will call this number whenever there is an alarm condition. Email alarms will still be sent. Do not add a phone number if the user does not want to be called.
- Alarm SMS number – If a phone number is added here, TRAXX's automated SMS service will send a text message to this number whenever there is an alarm

condition. Email alarms will still be sent. Do not add a phone number if the user does not want to be texted.

- Escalation user – If an alarm goes unacknowledged, then the user selected here will be notified and the primary user will no longer be notified. Leave blank if all alarm notifications should be sent to the primary user.
- Reporting enabled – Check this box if the user wants to receive daily status reports via email. Unchecking this box reduces long term visibility of asset health and is not recommended. The daily status report only includes assets that the user is subscribed to.
- Notify on recovery – Check this box if the user wants to receive a notification when an alarm condition ends.
- Offline alarms – Check this box if the user wants to receive a notification when a subscribed asset goes offline. The setting may not be available if a TRAXX Administrator has disabled offline alarms globally.
- Notify on Powered Mote Power Loss – Check this box if the user wants to receive a notification when a non-battery powered mote loses power. This notification will be sent within 10 minutes of the mote losing power.
- Results per page – Use the drop-down menu to select how many rows of data to display on each page of TRAXX.

User Settings

Alarm voice number

Alarm notifications will arrive as voice messages on this number. This number will receive a voice message when changed.

Alarm SMS number

By entering an SMS number you can expect to receive SMS message alerts. This number will receive an SMS message when changed.

Escalation user

Choose User

When alarms go unacknowledged, the escalation user is notified

☒ Reporting enabled

Unchecking this box prevents daily and weekly reports from being sent, which reduces long term visibility of asset health.

☒ Notify on recovery

Receive a notification when an alarm ends

☒ Offline alarms

Receive notifications when TRAXX has not received sensor data for 75 minutes.

☒ Notify on powered mote power loss

Receive notifications when powered motes lose power from their external source (e.g. POE or DC wall wart) and switch to battery power. Notification profile rules are enforced.

\* Results Per Page

20

The number of rows displayed per page when listing results like assets, motes, or users.

Save Profile

[Change My Password](#)

Figure 83 – Advanced user profile form

In the **Roles** section the following can be configured:

- Role – Check only one box to determine the user's permissions to view and interact with TRAXX (see **Figs. 79** and **80** for a permission matrix).
- Zone Restrictions – Click the **Add Zone Restriction** button and use the drop-down menu to restrict the user to specific zones. Click the **Add Zone Restriction** button multiple times to restrict the user to multiple zones. The user's Role will be applied to all selected zones. If no zones are selected, then the user has the potential to view all assets in all zones.

Click the red **Create User** button at the bottom of the form to save the new user.

| Permission                   | Admin | Manager | Lab Manager      | User             | View Only        | Service Provider |
|------------------------------|-------|---------|------------------|------------------|------------------|------------------|
| View Sensor Data             | ✓     | ✓       | ✓                | ✓                | ✓                | ✓                |
| Export Sensor Data           | ✓     | ✓       | ✓                | ✓                | ✓                | ✓                |
| Receive Alarms               | ✓     | ✓       | ✓                | ✓                |                  | ✓                |
| Acknowledge Alarms           | ✓     | ✓       | ✓                | ✓                |                  | ✓                |
| Create/Edit Assets           | ✓     | ✓       | ✓                |                  |                  |                  |
| Create/Edit Users            | ✓     |         | ✓                |                  |                  |                  |
| View Users                   | ✓     |         | ✓                |                  | ✓                |                  |
| Subscribe Alarms to Users    | ✓     |         | ✓                |                  |                  |                  |
| Create Alarm Rule Profile    | ✓     |         |                  |                  |                  |                  |
| Create Scheduled Maintenance | ✓     | ✓       | ✓                |                  |                  | ✓                |
| View/Edit Floor Plans        | ✓     | ✓       | ✓<br>(view only) | ✓<br>(view only) | ✓<br>(view only) |                  |
| View Energy Usage            | ✓     | ✓       | ✓                | ✓                | ✓                | ✓                |
| Create/Edit Repairs          | ✓     | ✓       | ✓                |                  |                  | ✓                |
| View Repairs                 | ✓     | ✓       | ✓                |                  | ✓                | ✓                |
| Receive Daily Email Report   | ✓     | ✓       | ✓                | ✓                |                  | ✓                |
| Create/Edit Study Groups     | ✓     | ✓       | ✓                |                  |                  | ✓                |
| View Study Groups            | ✓     | ✓       | ✓                | ✓                | ✓                | ✓                |
| View Motes                   | ✓     | ✓       | ✓                |                  | ✓                | ✓                |

User Roles Permissions Table

## 6.1.2 Edit an Existing User

Select the **Manager User** link next to the user to be edited. Select **Edit** from the left sidebar menu to edit the user's profile. See §6.1.1 for descriptions of each field.

Any user can be disabled if they no longer need access to TRAXX. To disable a user:

1. Click the red **User Actions** button at the top-right of the screen.
2. Select **Disable User**
  - a. Disabling keeps the user's profile intact.
  - b. The user's usage history is not deleted from TRAXX.
  - c. The user can no longer access TRAXX.
  - d. The user is unsubscribed from all alarms.
  - e. The user's name is ~~strikethrough~~ mode in the Users table.
  - f. Disabled users can be restored by clicking the **Enable User** link in the main **Users** table.
    - i. The user will have to resubscribe to all desired alarms and recreate/reassign any custom Notification Profiles.

### 6.1.3 Subscriptions

Select **Subscriptions** from the left sidebar menu to mass-subscribe the user to asset alarms.

How to mass-subscribe:

1. Select **More** from the horizontal menu at the top of the screen.
2. Select **Users** from the left sidebar menu.
3. Click **Manage User** in the row of the desired user.
4. Click **Subscriptions** from the left sidebar menu.
5. Check the boxes next to assets you wish to subscribe the user to.
  - a. To subscribe to all assets, check the topmost box.
6. Use the **Filter Assets** box to narrow down the assets in the list.
7. Enter a **Hold Off** for each asset.
  - a. Hold Off = how long (minutes) after the sensor boundary alarm enters an alarm state that TRAXX will wait before sending the alarm notification to that user.
  - b. To set the same hold off for all subscriptions, enter the desired value in the topmost field.
8. Select a **Notification Profile** for each asset.
  - a. Notification Profile is a set of rules that can be set up and applied to any alarm subscription.
  - b. For example, permit temperature alarms via email only, Monday – Friday; permit only text alarms on Saturday and Sunday; prevent amperage alarms every day 12am – 7am.
  - c. To set the same Notification Profile for all subscriptions, select the Notification profile from the dropdown menu at the top.
  - d. See §6.1.5 for instructions to create Notification Profiles.
9. Click the **Save Subscriptions** button at bottom of screen.

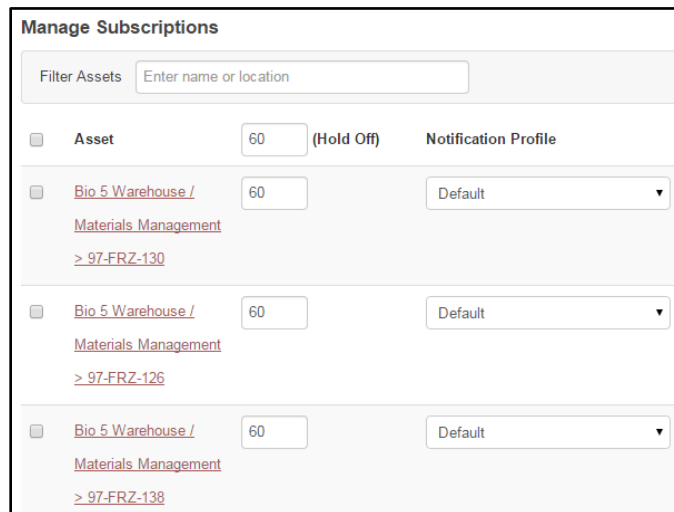


Figure 84 – User Subscription form

## 6.1.4 Vacations

The **Vacations** screen provides the ability to delegate alarms to a different TRAXX user while another user is on vacation.

Select **Vacations** from the left sidebar menu to enter a new vacation delegate:

1. Click the **+ Add Vacation** button.
2. Select a **Delegate User** from the drop-down menu.
  - a. This user will temporarily inherit all alarms during the vacation period. The original subscriber's Hold Offs will apply to the delegate user.
3. Select a start date from the **Begin** calendar.
  - a. All alarms will be delegated to the assigned user starting on the Begin date.
4. Select an end date from the **End** calendar.
  - a. All alarming will revert to the original subscriber after the End date.
5. Select a Notification Profile (optional).
6. Click the red **Create Vacation** button.

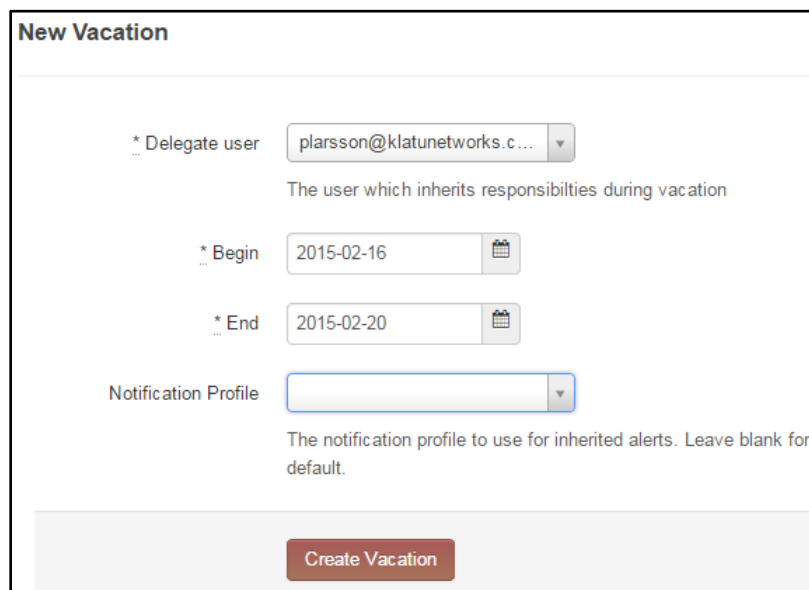


Figure 85 – Vacation form

## 6.1.5 Notification Profiles

Notification profiles allow the user to customize alarms. Select **Notification Profiles** from the left sidebar menu to view the Notification Profiles table. *Please note that when configuring new profiles, “prevent” rules trump “permit” rules.*

| Notification Profiles            |                |         |                 |                      |                        |
|----------------------------------|----------------|---------|-----------------|----------------------|------------------------|
| <a href="#">+ Create Profile</a> |                |         |                 |                      |                        |
| Name                             | Default?       | # Rules | # Subscriptions | Edit                 | Remove                 |
| No offline alarms                | <b>Default</b> | 1       | 0               | <a href="#">Edit</a> | <a href="#">Remove</a> |

Figure 86 – Notification Profile table

Click the **Edit** link in the table to edit an existing Notification Profile. Click the **Remove** link in the table to permanently delete the Notification Profile from the system.

The following are displayed for each Notification Profile in the table:

- **Default?** – If a green highlighted “Default” is displayed in this column, then this notification profile will apply to all subscribed sensor alarms. If there is nothing displayed in this column, then it is not a default notification profile and must be manually assigned to an alarm subscription on the **Subscriptions** screen.
- **# Rules** – How many rules are used in this notification profile.
- **# Subscriptions** –Total number of sensor alarms subscriptions that this notification profile is assigned to.

To create a new **Notification Profile**:

1. Click the **+ Create Profile** button at the top of the screen. A new form appears.
2. Enter a name for the profile.
3. Check the **Default Profile** box if you’d like this profile to apply to all alarms that the user is subscribed to.
4. Click the **Add A Rule** link.
5. Fill out the form to create the new rule.
  - a. For example, you don’t want to receive text messages for amperage alarms Monday through Friday.
  - b. Rule Type
    - i. Click **Prevent** so that the circle is filled.
  - c. Days of Week
    - i. Check the boxes next to Monday, Tuesday, Wednesday, Thursday, and Friday.
  - d. Begin Time
    - i. Set to 00:00 (midnight).
  - e. End Time
    - i. Set to 24:00 (midnight).
  - f. Metric
    - i. Check only the **Amperage** box.
  - g. Notification Type
    - i. Check only the SMS (text) box.
7. Repeat steps 4 and 5 to add more rules to the profile.
8. Click the red **Save** button to create the profile.

9. If the **Default Profile** box was not checked, then you must add this profile to the desired asset alarms (see §3.1.4.8 and §6.1.3).

### Create Notification Profile

\* Name

No Amp Alarm Texts

☐ Default profile  
The default profile applies to all alarm subscriptions which do not specify a notification profile

#### New Rule (Remove)

Rule Type

☐ Permit
☒ Prevent

\* Days of week

☒ Sunday
☒ Monday
☒ Tuesday
☒ Wednesday
☒ Thursday
☒ Friday
☒ Saturday

\* Begin time

00:00

\* End time

24:00

\* Metric

☐ Temperature
☒ Amperage
☐ Ambient
☐ Offline

\* Notification type

☐ Phone
☐ Email
☒ SMS

[Add A Rule](#)

Save

Figure 87 – Create a Notification Profile

## 6.2 Alarm Rule Profiles

An Alarm Rule profile is a preconfigured alarm set point profile that can be assigned to an asset (see §3.1.4.7 and §3.1.5). Select **Alarm Rule Profiles** from the left sidebar menu to view the table of existing sensor alarm profiles. Click the title of a profile in any row to edit that profile.

|                                                                  |                                             |
|------------------------------------------------------------------|---------------------------------------------|
| More > Alarm Rule Profiles <span>+ New Alarm Rule Profile</span> |                                             |
| Users                                                            | Title                                       |
| Alarm Rule Profiles                                              | <a href="#">Incubator Temp</a>              |
| Asset Models                                                     | <a href="#">CO2 Incubator Temp</a>          |
| Zones                                                            | <a href="#">Cryo Freezer Temp</a>           |
| Asset Inspections                                                | <a href="#">Refrigerator Temperature</a>    |
| Downloads                                                        | <a href="#">-20 Freezer Temperature</a>     |
| Settings                                                         | <a href="#">ULT Freezer Temp</a>            |
| Audit Trail                                                      | <a href="#">Room Ambient Temp</a>           |
| Gateways                                                         | <a href="#">Incubator CO2 Concentration</a> |
|                                                                  | <a href="#">RH Incubator</a>                |

Figure 88 – Alarm Rule Profile table

To create a new Alarm Rule Profile:

1. Click the **+ New Alarm Rule Profile** button at the top of the screen.
2. Title – Give the profile a name that will appear in the table.
3. Description – This is a simple text box to add additional detail.

### Alarm Rule Profile

\* Title

Description

Figure 89 – Alarm Rule Profile: Title/Description fields

4. Type – Select the desired alarm type from the drop-down menu.
  - a. Boundary – Select this option for sensor alarms that require a set point boundary (e.g. temperature, amperage, CO2 concentration, humidity).
  - b. Switch State – Select this option for door switch alarms or contact closure alarms (e.g off/on, open/close, yes/no).
  - c. Asset Power Loss – Select this option for CT sensors to detect asset power loss (see §3.1.4.8).

Rule Properties

Type

Boundary

Data type

Raw data

Escalation Hold Off

30

Lower bound

-85

Upper bound

-65

Save Profile

Raw data rules are checked as soon as data is received. Rollup data rules look at average data and are checked on a daily basis.

Number of minutes after which an alarm is first triggered before it is sent on to a superior.

Figure 90 – Rule Properties: Boundary Alarms

Rule Properties

Type

Switch State

Escalation Hold Off

30

Duration

Save Profile

Number of minutes after which an alarm is first triggered before it is sent on to a superior.

Number of minutes a switch must be open before an alarm is triggered.

Figure 91 – Rule Properties: Switch State Alarms

Rule Properties

Type

Asset Power Loss

Escalation Hold Off

10

Number of minutes after which an unacknowledged alarm will be escalated and resent.  
 Entering 0 will disable any escalation and no further notifications will be sent.  
 SMS/Voice notifications only occur during the first 12 hours of an alarm.

Duration

10

Number of minutes after which alarm notifications will be sent.

Save Profile

Figure 92 – Rule Properties: Asset Power Loss Alarms

5. Escalation Hold Off – The sensor must be in alarm this many consecutive minutes after the initial sensor alarm notification before sending an escalation alarm notification to the escalation user.
6. Duration (*Switch State alarms only*) – This is the number of consecutive minutes a switch must be open before an alarm is triggered and notifications are sent.  
 ⚠ **Note:** the user's hold off period is not used for switch alarms.
7. Duration (*Asset Power Loss alarms only*) – This is the number of consecutive minutes a CT sensor must report zero amps before an alarm is triggered and notifications are sent.  
 ⚠ **Note:** the user's hold off period is not used for Asset Power Loss alarms
8. Data Type - *Available for Boundary alarms only.*
  - a. Raw Data – Raw data alarm rules are checked as soon as the data is received by the mote.
  - b. Rollup Data – Rollup data alarm rules look at the average sensor values over a 24-hour period and are checked once per day.
9. Lower Bound – *Available for Boundary alarms only.* Individual alarm notifications are sent (via email, text, or call) when the value exceeds the lower set point and the user's hold off period has expired.
10. Upper Bound – *Available for Boundary alarms only.* Individual alarm notifications are sent (via email, text, or call) when the value exceeds the upper set point and the user's hold off period has expired.
11. Click the red **Save Profile** button to save the new profile.
12. The Alarm Rule Profile is now available to add to assets when editing an asset or creating a new asset (see §3.1.4.7 and §3.1.5).

### 6.3 Asset Models

When a new asset is created or edited, the user is required to select a make/model. If the make/model does not already exist in the TRAXX database, then the user must add a new make/model.

To create a new asset make/model:

1. Select **Asset Models** from left sidebar menu.
2. Click the **+ New Model** button at top of page.
3. Fill out the form (see **Fig. 93**).
  - a. Make – Enter the make of the asset.
  - b. Base Model – Enter the base model number of the asset.
  - c. Model – Enter the model number of the asset.
  - d. Type – Select the asset type from the drop-down menu.
  - e. PM Inspection Type – Select the PM inspection type from the drop-down menu.
  - f. Description – This is a basic text box.
  - g. Width – Enter the interior width (inches).
  - h. Height – Enter the interior height (inches).
  - i. Depth – Enter the interior depth (inches).
  - j. Cubic Feet – Enter the capacity/volume of the asset.
  - k. Mfg. Spec kWh – Enter the manufacturer's specification for energy consumption.
  - l. Classifications – Select a particular classification for the newly created model from two options which are as follows:
    1. Always On - Will cause all newly created assets to be classified as being "always on". This classification can be removed from individual assets manually.
    2. Overlapping Cycles - Will cause all newly created assets to be classified as having "overlapping cycles". This classification can be removed from individual assets manually
  - m. Click the **Create Asset Model** button.

Details

Make

Base model

Model

Type

PM Inspection Type

Description

Dimensions

Width (Inches)

Height (Inches)

Depth (Inches)

Cubic Feet

Energy Information

Mfg Spec kWh/day

Classifications

Always On

Overlapping Cycles

Create Asset model

Figure 93 – Create New Asset Make/Model form

## 6.4 Zones

The physical location of an asset is called a **Zone**. When a new asset is created, the user is required to select a Zone. If the zone does not already exist in the TRAXX database, then the user must add a new zone. To create a new Zone:

1. For example, Building A, Floor 5, Room 232. The asset is located in Room 232.
2. Select **Zones** from the left sidebar menu.
3. Click the **+ New Zone** button at the top of the screen.

|                        |                                                                                 |
|------------------------|---------------------------------------------------------------------------------|
| + New Zone             |                                                                                 |
| Bio 5 Warehouse        | <a href="#">Edit</a> <a href="#">View Assets</a> <a href="#">Print Placards</a> |
| > Materials Management | <a href="#">Edit</a> <a href="#">View Assets</a> <a href="#">Print Placards</a> |
| > Q C Materials        | <a href="#">Edit</a> <a href="#">View Assets</a> <a href="#">Print Placards</a> |

Figure 94 – Zone table

4. Fill out the form:
  - a. Name – name of the new zone (e.g. Building A)
  - b. Zone – use the drop-down menu to select a parent zone.
    - i. Do not select a zone if the new zone is a parent zone.
    - ii. In this example, Building A is the parent zone, so don't select a zone when creating Building A.
      - a. When creating Floor 5, select Building A as the parent zone.
      - b. When creating Room 232, select "Building A/Floor 5" as the parent zone.
  - c. Description – this is a basic text box.
  - d. Asset Container – check this box if assets (e.g. freezers) will be located directly in this zone.
    - i. This box is typically not checked when creating zones for buildings and floors. Buildings and floors are typically parent zones.
    - ii. In this example, the asset will not reside directly in Building A, so do not check the box.
    - iii. If the zone being created is Room 232, then the box should be checked because the asset will be physically located in this room.
  - e. Override kWh Rate – Check this box if this zone and all subzones have a kWh cost different than the overall site's rate. Otherwise leave unchecked.
  - f. kWh Rate – If the **Override kWh Rate** box is checked, then enter a dollar value in this box. This kWh rate will apply to all assets in this zone and all subzones.
  - g. Click the red **Save Zone** button. The new parent zone now appears in the Zones table.

Zone Information

\* Name

The display name for the zone

Zone

Choose Parent Zone ▼

Description

Asset container

☐

Assets directly reside in this zone

Zone kWh

☐ Override kWh Rate

Override the kWh cost for this zone, subzones, and assets within.

\* kWh Rate

Cost per kWh in dollars (e.g. 0.14). Defaults to parent kWh rate.

Save Zone

Figure 95 – Create new zone form

5. Click the **+ New Zone** button at the top of the screen again.
6. Fill out the form again.
  - a. Name - name of the new zone (e.g. Floor 5)
  - b. Zone – use the drop-down menu to select a parent zone.
    - i. In this example, Building A is the parent zone.
  - c. Description – this is a basic text box.
  - d. Asset Container – check this box if assets (e.g. freezers) will be located directly in this zone.
    - i. In this example, the asset will not reside directly on Floor 5, so do not check the box.
  - e. Complete the **Zone kWh** section if this zone has a different kWh rate than the rest of the facility.
  - f. Click the red **Save Zone** button. The new zone now appears in the Zones table under the parent zone (Building A).
7. Fill out the form again.
  - a. Name - name of the new zone (e.g. Room 232)

- b. Zone – use the drop-down menu to select a parent zone.
    - i. In this example, Building A / Floor 5 is the parent zone.
  - c. Description – this is a basic text box.
  - d. Asset Container – check this box if assets (e.g. freezers) will be located directly in this zone.
    - i. Check the box to see if the new zone is a lab or room.
    - ii. The asset will reside in this room, so check the box.
  - e. Complete the **Zone kWh** section if this zone has a different kWh rate than the rest of the facility
  - f. Click the red **Save Zone** button. The new zone now appears in the Zones table under the parent zone (Building A / Floor 5).
8. The new zone (Building A / Floor 5 / Room 232) can now be selected when adding new assets to TRAXX.

## 6.5 Asset Inspections

Select **Asset Inspections** from the left sidebar menu to access a filter that allows the user to see all assets with or without an inspection (PM) for a selected time period.



Show inspections between  and   % ☐ Has notes?

Figure 96 – Asset Inspections search filter

To see all asset inspections (PMs) done within a specified time period:

1. Select the start and end dates using the calendar boxes, then click the **Go** button.
2. A table will appear that contains all inspections done during that time period.
3. Click **Details** to see the specifics of any PM.
4. Click the **Export PDF** button to save all of the inspection forms to a PDF file. Click the arrow to the right side of the box and click **Export CSV** to save all of the inspection forms to a CSV file.

| Asset                              | Inspection Date | % Passed | Details                 |
|------------------------------------|-----------------|----------|-------------------------|
| <a href="#">C:029-104 (THR-60)</a> | 05/15/14        | 100%     | <a href="#">Details</a> |
| <a href="#">C:029-104 (THR-60)</a> | 11/12/14        | 100%     | <a href="#">Details</a> |
| <a href="#">C:029-106 (THR-60)</a> | 05/15/14        | 100%     | <a href="#">Details</a> |
| <a href="#">C:029-106 (THR-60)</a> | 11/12/14        | 100%     | <a href="#">Details</a> |

Figure 97 – Search results for assets with inspections

To see all assets that haven't had an inspection (PMs) done within a specified time period:

1. Select start and end dates using the calendar boxes, then click the **Show Assets Without Inspections** button.
2. A table will appear that contains all assets that don't have an inspection during that time period.
3. Click **View Asset** in the **Details** column to go to the asset's Health screen.
4. Click the asset in the **Asset** column to go to the asset's Health screen.
5. Click the **Create Inspection** link to go to the inspection form for that asset (see Fig. 34).

| Asset                             | Details                    | Create Inspection                 |
|-----------------------------------|----------------------------|-----------------------------------|
| <a href="#">C029-101 (THR-80)</a> | <a href="#">View Asset</a> | <a href="#">Create Inspection</a> |
| <a href="#">C029-102 (THR-60)</a> | <a href="#">View Asset</a> | <a href="#">Create Inspection</a> |
| <a href="#">C029-103 (THR-80)</a> | <a href="#">View Asset</a> | <a href="#">Create Inspection</a> |
| <a href="#">C029-104 (THR-60)</a> | <a href="#">View Asset</a> | <a href="#">Create Inspection</a> |

Figure 98 – Search results for assets without inspections

## 6.6 Downloads

Select **Downloads** from the left sidebar menu to access Downloads:

- TRAXX User Manual – This is a digital copy of this manual.
- Asset Summary Report – This is a PDF file of every asset in TRAXX and its corresponding details (see §3.1.4.2).
- Assets Export for Excel – This is a CSV file of every asset and its corresponding:
  - Name
  - Location
  - Serial Number
  - Set Point
  - Voltage
  - Make/Model
  - Date placed in service
  - Last sensor sample time stamp
  - Text from the “Description” box on the Edit Asset screen.
  - Associated note

|                                                                                             |                          |
|---------------------------------------------------------------------------------------------|--------------------------|
| Downloads may take a minute depending on the number of assets and your internet connection. |                          |
| Asset summary report                                                                        | <a href="#">Download</a> |
| Assets export for excel                                                                     | <a href="#">Download</a> |

Figure 99 – Downloads screen

- User Export for Excel – This is a CSV file of every user and their corresponding:
  - Email address
  - First and last name
  - Title
  - Office phone number
  - Mobile phone number
  - TRAXX role (permission level)
  - Zone restriction list
- User Report (PDF) – This is a PDF file which contains the User Information in their corresponding:
  1. Email
  2. First Name
  3. Last Name
  4. Title
  5. Office Phone
  6. Mobile Phone
  7. Role
  8. Zone List Last Login
- Motes Export for Excel – This is a CSV file of every mote and its corresponding:
  - MAC address
  - Model
  - Firmware version (as of time of download)
  - Assigned asset
  - Asset location
  - Last battery voltage
  - Last RSSI (wireless signal strength)
  - Date of first transmission
- Asset Subscriber Export – This is a CSV file of every subscriber to every asset, as well as each asset's:
  - Name
  - Location
  - Serial number
  - Temp set point (degrees C)
  - Voltage

- Make/Model
- Place in service date (date the asset was created in TRAXX)
- Date of last sensor reading
- Asset subscriber
  - First and last name
  - User name (email address)
  - Alarm hold off
  - Notification profile status
- Asset Issue Export – This is a CSV file that contains issues associated with the assets, as well as each asset's:
  1. Location
  2. Asset
  3. Check In
  4. Mote(s)
  5. Mote tags
  6. Issues

## 6.7 Settings

Select **Settings** from the left sidebar to edit Global Settings for the customer.

***These settings affect all alarming, accounting and energy calculations for all customer users, so these should only be changed after consulting with the site Administrator.***

- Alarm Reading Count – The number of sensor readings shown in alarm emails.
- Allow Sleeping of Alarms – Check this box if users need to be able to sleep alarm notifications.
- Offline Alarms – Check this box if users need to be able to receive alarms when assets go offline (e.g. dead battery, power unplugged, powered off, network outage etc.).
- Offline Duration – If Offline Alarms box is checked, then this is the number of minutes that must elapse before an offline asset notification is sent to the user.
- kWh Rate – How much the customer pays for each kWh. This is used to calculate energy consumption. Changing this value will change all future energy calculations; it will not change any historical calculations.
- Title 21 CFR Part 11 Compliant – Check this box if the customer must abide by Title 21 CFR Part 11.
- Password Expiration – The number of days until a user password expires. Each user will be prompted to change their password at the end of the password expiration period. Enter a value of 0 to disable the password expiration feature.

### System Settings

\* Alarm reading count   
 The number of readings shown in alarm emails.

☒ Allow sleeping of alarms

☐ Offline alarms

\* Offline duration   
 Number of minutes before assets are offline.

\* kWh Rate   
 Cost per kWh in dollars (e.g., 0.14).

☐ Title 21 CFR Part 11 Compliant

\* Password Expiration   
 Number of days until a password expires. Use 0 to disable.

### System Settings

\* Alarm reading count   
 The number of readings shown in alarm emails.

☒ Allow sleeping of alarms

☒ Offline alarms

\* Offline duration   
 Number of minutes before assets are offline.

\* kWh Rate   
 Cost per kWh in dollars (e.g., 0.14).

☐ Title 21 CFR Part 11

☐ 21 CFR 11: Authenticate user when performing sensitive action  
 Along with a "reason", require user to enter their password to confirm their identity when performing an action that will affect the functions of the application.

\* Password Expiration   
 Number of days until a password expires. Use 0 to disable.

☒ Include Action links in emails

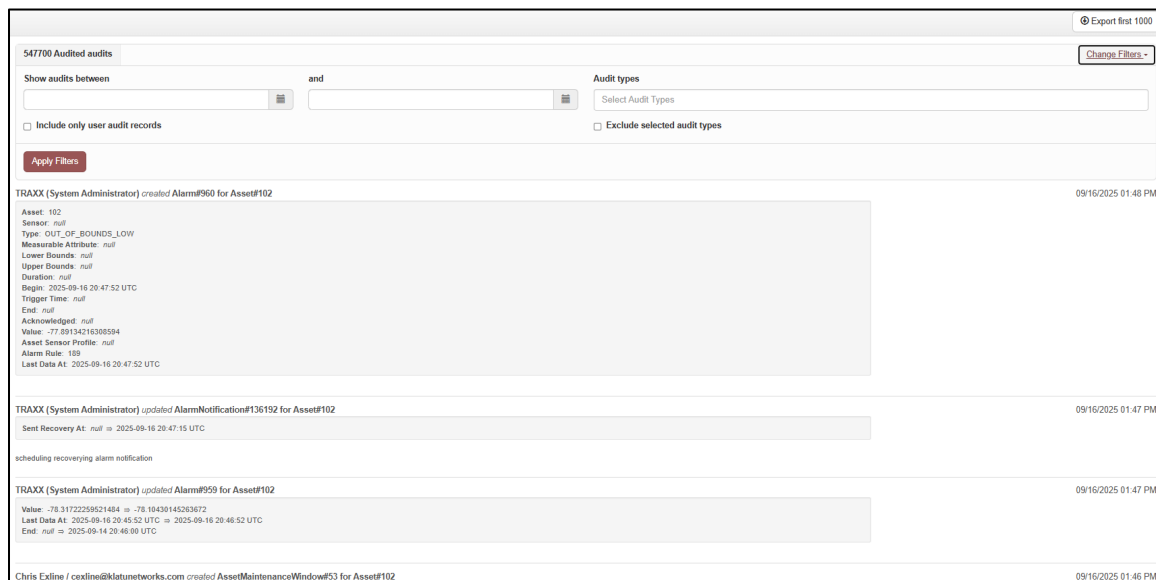
Alarm cut off hours   
 Number of hours after which voice and SMS alarm message will halt. (12-96 hours)

Figure 100 – System Settings screen

## 6.8 Audit Trail

Select **Audit Trail** from the left sidebar menu to view the audit trail for the entire customer site. The audit trail has filter and export functionality. Audit entries are created when records are created, updated, or deleted.

- To the right of each audit trail entry is the time stamp when the change was made and the IP address of the computer that made the change.
- The user who made the change is listed just above the audit trail entry.
- Click the 'Export First 1000' button located in the upper-right corner of the screen to export the Audit Trail. The system will generate a PDF file and send a download link to the user's registered email address.
- Click the **Show Filters** button in the upper right corner of the screen to add a date filter. Enter a start and end date, then click **Filter**; the Audit Trail will be narrowed to the period between those dates.
- The users can filter audit records based on specific Audit Types and have the option to exclude selected audit types by enabling the 'Exclude selected audit types' of checkbox within the filter section. Click the **Clear Filters** button to show the entire unfiltered Audit Trail.



The screenshot displays the 'Audit Trail' interface. At the top, it shows '547700 Audited audits' and an 'Export first 1000' button. Below this is a filter section with 'Show audits between' and 'and' dropdowns, 'Audit types' (with a 'Select Audit Types' button), and checkboxes for 'Include only user audit records' and 'Exclude selected audit types'. An 'Apply Filters' button is also present. The main area lists audit entries, each with a timestamp and a detailed description of the change. For example, the first entry is 'TRAXX (System Administrator) created Alarm#960 for Asset#102' with a timestamp of '09/16/2025 01:40 PM'. The entry details include: Asset: 102, Sensor: null, Type: OUT\_OF\_BOUNDS\_LOW, Measurable Attribute: null, Lower Bounds: null, Upper Bounds: null, Duration: null, Range: 2025-09-16 20:47:52 UTC, Trigger Time: null, End: null, Acknowledged: null, Value: -77.89134216308594, Asset Sensor Profile: null, Alarm Rule: 100, and Last Data At: 2025-09-16 20:47:52 UTC. Other entries show updates to alarm notifications and asset maintenance windows.

Figure 101 – Audit Trail

## 6.9 Gateways

Select **Gateways** from the left sidebar menu to view TRAXX Link servers for the customer site. These servers are used for legacy motes. Customers who use TRAXX Link gateway servers may have one or several gateways, depending on mote type, network configuration, and validated/non-validated installations.

**⚠ Note:** Gateway servers are not required for motes that connect directly to the TRAXX Cloud via the customer's internet connection.

| Name      | Last Check        | Last Data         | Version | Uptime   | Host | Hooks | Actions                                   |
|-----------|-------------------|-------------------|---------|----------|------|-------|-------------------------------------------|
| Gateway 0 | 07/17/17 05:00 AM | 07/17/17 05:00 AM | NA      | 000 days | NA   | 0     | <a href="#">View</a> <a href="#">Edit</a> |
| Gateway 1 | 07/17/17 05:00 AM | 07/17/17 05:00 AM | NA      | 000 days | NA   | 0     | <a href="#">View</a> <a href="#">Edit</a> |
| Gateway 2 | 07/17/17 05:00 AM | 07/17/17 05:00 AM | NA      | 000 days | NA   | 0     | <a href="#">View</a> <a href="#">Edit</a> |
| Gateway 3 | 07/17/17 05:00 AM | 07/17/17 05:00 AM | NA      | 000 days | NA   | 0     | <a href="#">View</a> <a href="#">Edit</a> |
| Gateway 4 | 07/17/17 05:00 AM | 07/17/17 05:00 AM | NA      | 000 days | NA   | 0     | <a href="#">View</a> <a href="#">Edit</a> |
| Gateway 5 | 07/17/17 05:00 AM | 07/17/17 05:00 AM | NA      | 000 days | NA   | 0     | <a href="#">View</a> <a href="#">Edit</a> |
| Gateway 6 | 07/17/17 05:00 AM | 07/17/17 05:00 AM | NA      | 000 days | NA   | 0     | <a href="#">View</a> <a href="#">Edit</a> |
| Gateway 7 | 07/17/17 05:00 AM | 07/17/17 05:00 AM | NA      | 000 days | NA   | 0     | <a href="#">View</a> <a href="#">Edit</a> |

Figure 102 – Gateways Table

The Gateways table lists the following:

- **Name** – This is the name of the server. This name can be changed by selecting **Edit** in the table. It is *recommended to not change* this name once the site has been brought online.
- **Last Check** – This is the last time the gateway checked in to the cloud servers.
  - Not applicable for Gen3/Piper/Blackbird mote applications when the motes are communicating directly with the cloud servers.
- **Last Data** – This is the last time the gateway sent sensor data to the cloud servers.
  - Not applicable for Gen3/Piper/Blackbird mote applications when the motes are communicating directly with the cloud servers.
- **Version** – This is the software version of the gateway.
  - Not applicable for Gen3/Piper/Blackbird mote applications when the motes are communicating directly with the cloud servers.
- **Uptime** – This is how long has the gateway been online.
  - Not applicable for Gen3/Piper/Blackbird mote applications when the motes are communicating directly with the cloud servers.
- **Host** – This is the IP address of the gateway.
  - Not applicable for Gen3/Piper/Blackbird mote applications when the motes are communicating directly with the cloud servers.

- Hooks – This is the number of users that are subscribed to gateway notifications. The user will be notified if the system detects that the *on-site* gateway is no longer communicating with the cloud servers or there is no sensor data available from the network.
  - Not applicable for Gen3/Piper/Blackbird mote applications when the motes are communicating directly with the cloud servers.
  - Click **Edit** to add/edit/remove hooks.
  - Notifications can be delivered to an email address or mobile phone number (text message).
- Actions
  - Select **View** to see detailed information about the gateway server. Contact KLATU customer support for more information regarding information on this screen.
    - **Access URL**
      - For example –

```
https://KF3GQNEHBMZC254DQ:KLYDIXQLQ3KLVKNRZEKXXIJ7TWASD5EDMMXTQ@api.traxxekg.com
```

- This is used in its entirety to configure each Gen3 and Piper mote.
  - This string must be entered in each mote's Cloud URL field during mote configuration.
- Parts of the Access URL are also used to configure Blackbird motes using the mote commissioner software.
  - In the example above the API Key = `KF3GQNEHBMZC254DQ`
  - In the example above, the API Secret = `KLYDIXQLQ3KLVKNRZEKXXIJ7TWASD5EDMMXTQ`
- Select **Edit** to add notification hooks to the gateway or to change the gateway's name.
  - To change the gateway's name, modify the text in the **Name** field. Click the red **Update Wormhole** button to save the change.
    - It is *recommended to not change* this name once the site has been brought online.
  - To add a new gateway hook, click the **+ Add Hook** link.
    - Not applicable or necessary for Gen3/Piper/Blackbird mote applications that communicate directly to the cloud.
    - Use the **Action** drop-down menu to select either **Email** or **SMS** (text message).
    - If **Email** selected, then add a valid email address in the **Destination** field.
    - If **SMS** selected, then add a valid mobile phone number in the **Destination** field.

- Click the red **Update Wormhole** button to save any changes.
- To remove an existing gateway hook, click the **x Remove Hook** link, then click the red **Update Wormhole** button.

### Gateway Details

\* Name

Vertex Boston

Name of wormhole for email and sms alerts.

### Notification Hooks

Notification hooks send email or SMS alerts when a gateway goes offline, stops receiving mote data, or recovers. Add hooks for IT staff responsible for gateway operations.

\* Action

EMAIL

\* Destination

neteng@email.com

x Remove Hook

\* Action

SMS

\* Destination

619-555-1234

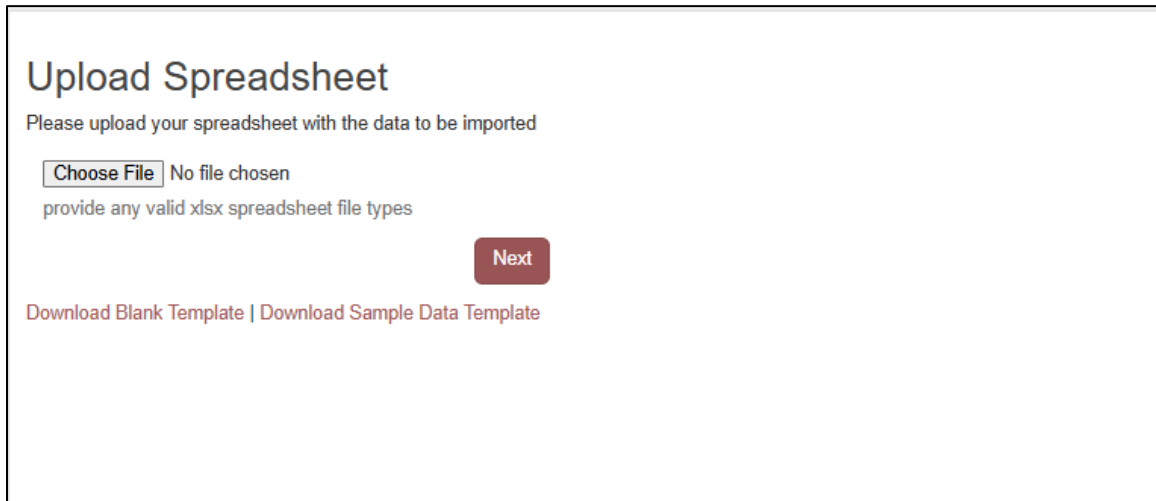
x Remove Hook

+ Add Hook

Update Wormhole

Figure 103 – Gateway Edit

## 6.10. Bulk Imports

A screenshot of the "Upload Spreadsheet" interface. The title "Upload Spreadsheet" is at the top. Below it is the instruction "Please upload your spreadsheet with the data to be imported". There is a "Choose File" button followed by the text "No file chosen". Below this is the text "provide any valid .xlsx spreadsheet file types". A red "Next" button is positioned to the right. At the bottom, there are two links: "Download Blank Template" and "Download Sample Data Template".

**Upload Spreadsheet**

Please upload your spreadsheet with the data to be imported

[Choose File](#) No file chosen

provide any valid .xlsx spreadsheet file types

[Next](#)

[Download Blank Template](#) | [Download Sample Data Template](#)

Figure 104 – Bulk Imports page

Select **Bulk Imports** from the left sidebar menu to bulk imports the users in the system.

This feature simplifies the process of onboarding multiple users into the system by allowing administrators to upload user data in bulk using a structured spreadsheet. This functionality eliminates the need to create user accounts individually, saving time and reducing manual errors.

The **Upload Spreadsheet** section (shown in the image) provides a user-friendly interface for administrators to upload .xlsx files containing user data.

### Choose File Button

- Allows the administrator to browse and select a valid .xlsx spreadsheet from their local machine.
- The system validates the file type to ensure compatibility before processing.

### Next Button

- After selecting a file, clicking **Next** initiates the data import process.
- The system parses and validates the data within the spreadsheet before adding it to the database.

## Sample Download Templates

The Sample Template Download provides two helpful resources to ensure that user data is prepared correctly before uploading. These templates minimize errors and maintain consistency during bulk imports.

- Download Blank Template
- Download Sample Data Template

### Blank Template:

This option provides an empty spreadsheet preconfigured with all the required columns. Administrators can use this template to manually enter new user information from scratch while following the correct data structure. It is particularly useful when onboarding a completely new set of users or when creating records in a standardized format.

### There are different tabs in the Template:

- **Asset Info** – The columns in this tab are - Manufacturer, Model #, Serial #, Location/Zone, Asset ID, Base Temp Set Point, Volts, Description
- **Zones** - The columns in this tab are - Name, Description, Asset container
- **TRAXX Cloud Users** – The columns in this tab are First Name, Last Name, Email, Mobile Phone, Time Zone (Pacific/Honolulu, America/Los\_Angeles, America/Denver, America/Chicago, America/New\_York), Alarm SMS Number, Alarm voice Number, TRAXX Role (Admin, User, Manager, Lab Manager, Viewer), Location/Zone (For Lab Manager Role)
- **Alarm Rule Profile** - The columns in this tab are Name, Description, Type (Boundary or Switch), Escalation Holdoff, Boundary Lower Bound, Boundary Upper Bound, Switch Duration

### Sample Date Template:

This template comes pre-filled with example user data, demonstrating the correct format, field names, and expected values. It acts as a reference for administrators, helping them understand how to map and structure their data before upload. Ideal for quick verification to ensure that the data being prepared meets the system's requirements.

- **The Tabs in this Template are same as that of Blank Template, It just contains some valid values for the verification to ensure that data being prepared meets the system requirements.**

### Upload Process:

After successfully preparing and uploading the data in the Bulk Import section, the system initiates a guided validation process that reviews the document and identifies any potential errors for correction before final import.

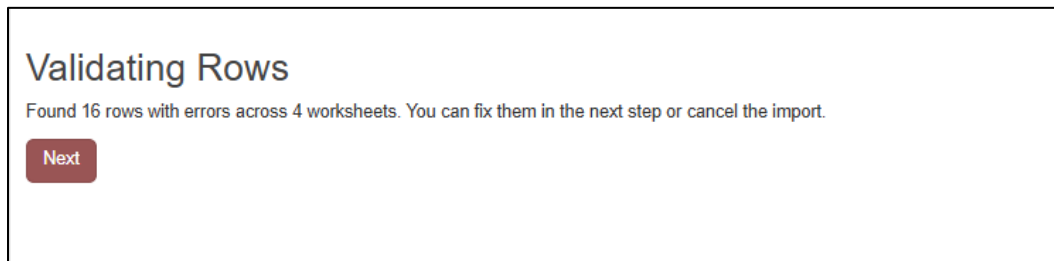


Figure 105 – Verification screen

Clicking on next redirects the user to the sheet displaying the errors occurred or present in the data prepared

**Fix invalid rows**  
After fixing the invalid fields, click next to revalidate the spreadsheet.

**Errors on: Zones**

| Row # | Name                                                               | Description         | Asset Container | Skip?                    |
|-------|--------------------------------------------------------------------|---------------------|-----------------|--------------------------|
| 0     | Bldg C<br><small>is already in use under parent zone</small>       | Covid Testing Lab I | yes             | <input type="checkbox"/> |
| 1     | Building Zc<br><small>is already in use under parent zone</small>  | Secret Lab          | yes             | <input type="checkbox"/> |
| 2     | Building Acc<br><small>is already in use under parent zone</small> | Development Lab I   | yes             | <input type="checkbox"/> |
| 3     | Root Zonec<br><small>is already in use under parent zone</small>   | Starter Lab         | yes             | <input type="checkbox"/> |

**Errors on: TRAXX Cloud Users**

| Row # | First Name | Last Name     | Email                                                                                                                                                        | Mobile Phone | Time Zone (Pacific/Honolulu, America/Los_Angeles, America/Denver, America/Chicago, America/New_York) | Alarm SMS Number                                    | Alarm voice Number                                  | TRAXX Role (Admin, User, Manager, Lab Manager, Viewer)                                                                                                                                                  | Location/Zone (For Lab Manager Role) | Skip?                    |
|-------|------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------|
| 0     | ops        | klatunetworks | ops@klatunetworks.com<br><small>User with this email exists. This user might be disabled, you can enable them from the user management page</small>          |              | America/Los_Angeles                                                                                  | N<br><small>must be a valid US phone number</small> | N<br><small>must be a valid US phone number</small> | Klatu<br><small>Invalid role for client of type 'KLATU'. Valid roles for client are: User, Manager, Lab Manager, Administrator, View Only, Service Provider, Sales Representative, KLATU Admin.</small> | Chris's House 1 / Test               | <input type="checkbox"/> |
| 1     | Mike       | Courtis       | mike.courtis@klatunetworks.com<br><small>User with this email exists. This user might be disabled, you can enable them from the user management page</small> | 5386329325   | America/Los_Angeles                                                                                  | Y<br><small>must be a valid US phone number</small> | Y<br><small>must be a valid US phone number</small> | Klatu<br><small>Invalid role for client of type 'KLATU'. Valid roles for client are: User, Manager, Lab Manager, Administrator, View Only, Service Provider, Sales Representative, KLATU Admin.</small> | New zone Ind / new zone 1 floor      | <input type="checkbox"/> |

Figure 106 – Error display screen

From this screen, users can choose to either 'Skip' the encountered errors or correct them immediately by editing the data before completing the upload process.

**Validating Rows**  
All rows validated successfully. Review the records that will be created below. Click on 'Next' to save them and finish the import wizard.

Zones (4)

| Name         | Description         | Asset Container |
|--------------|---------------------|-----------------|
| Bldg Cc      | Covid Testing Lab I | yes             |
| Building Zc  | Secret Lab          | yes             |
| Building Acc | Development Lab I   | yes             |
| Root Zonec   | Starter Lab         | yes             |

[Next](#)

Figure 107 – Validation Screen

Once all data conflicts have been resolved and no errors remain, the system displays a preview screen showcasing the finalized data that is ready to be imported into the system.

| Import Finished                                                                         |              |                     |                 |
|-----------------------------------------------------------------------------------------|--------------|---------------------|-----------------|
| Import wizard finished successfully. You can check the report for each worksheet below. |              |                     |                 |
| Zones (4)                                                                               |              |                     |                 |
| ID                                                                                      | Name         | Description         | Asset Container |
| 265                                                                                     | Bldg Cc      | Covid Testing Lab I | true            |
| 266                                                                                     | Building Zc  | Secret Lab          | true            |
| 267                                                                                     | Building Acc | Development Lab I   | true            |
| 268                                                                                     | Root Zonec   | Starter Lab         | true            |

Figure 108 – Import Successful Screen

The screen displayed above represents the completion stage of the bulk import process. It confirms that the uploaded data has passed validation, contains no errors, and is now successfully imported into the system. At this point, users may verify the imported data by reviewing it within the respective modules to ensure accuracy and completeness.

## 6.11. Installation Reviews

| Installation reviews                           |                         |                        |            |                                     |           |                     |               |
|------------------------------------------------|-------------------------|------------------------|------------|-------------------------------------|-----------|---------------------|---------------|
| Asset                                          | Location                | Make/Model             | Asset Type | Note(s)                             | # Sensors | # Monitored Sensors | # Subscribers |
| BB Test                                        | Pete's / SD / Office-PL | asf01gh                | Incubator  | 60.8A.10.C7.F0.E6.F8.F0.05.E5.EC.30 | 2         | 2                   | 2             |
| Exline Test Asset                              | Chris's House 1A        | Forma5463              | Freezer    | B8.27.EB.38.C6.40                   | 4         | 1                   | 2             |
| SmartHub Test                                  | Unknown Location        | 06.05.2015d            | Incubator  | E4.5F.01.B1.8D.88                   | 7         | 0                   | 4             |
| Battery Testing RTD                            | Robert's House          | 06.05.2015d            | Incubator  | -                                   | 0         | 0                   | 0             |
| RS485 CO2 Test, placard test                   | Dean's Office           | ad72@ed72@             | Freezer    | E4.5F.01.B1.8D.35                   | 2         | 0                   | 0             |
| SmartRTD V2 Test                               | Unknown Location        | 06.05.2015d            | Incubator  | -                                   | 0         | 0                   | 0             |
| 1 Pete Blackbird (Staging - A4 E4 revB w/ ECO) | Pete's / SD / Office-KK | Room AmbientRoom       | Room       | F8.F0.05.AA.A4.E4                   | 2         | 2                   | 1             |
| 1 Pete Blackbird (Staging - A4 F5 revB w/ ECO) | Pete's / SD / Upstairs  | Room AmbientRoom       | Room       | F8.F0.05.AA.A4.F5                   | 2         | 2                   | 1             |
| 1 Pete Gen3 (Staging - SA.10)                  | Pete's / SD / Office-PL | Revco/ULT-2506-951-D38 | Freezer    | B8.27.EB.64.5A.10                   | 4         | 3                   | 1             |
| 1 Pete Gen3 (Staging P4XS - 74.76)             | Pete's / SD / Office-PL | Room AmbientRoom       | Room       | E4.5F.01.B1.74.76                   | 2         | 2                   | 1             |
| 1 Pete Piper X (Staging - F0.53)               | Pete's / SLC / Office   | Test9dxdcx             | Freezer    | B8.27.EB.73.F0.53                   | 4         | 4                   | 1             |

Figure 109 – Installation Reviews screen

This page provides a comprehensive overview of all installed assets, along with key details such as their locations, technical specifications, associated sensors, and subscriber information. This page is designed to help administrators, technicians, and system owners verify that assets are properly installed, configured, and monitored.

**Each row in the table represents an individual asset, and the columns provide detailed information about it:**

- **Asset** – The name or identifier of the installed asset (e.g., BB Test, Exline Test Asset).
- **Location** – The physical location of the asset, which can include building name, room number, or descriptive notes to help identify where the asset is placed.
- **Make/Model** – The manufacturer and model number of the asset, which helps in identifying its specifications and compatibility.

- **Asset Type** – The category of the asset (e.g., *Incubator, Freezer, Room*), allowing users to quickly understand what kind of equipment is being monitored.
- **Mote(s)** – The unique identifier(s) for the sensors (motes) linked to this asset. These are often hardware IDs or MAC addresses used to track and communicate sensor data.
- **# Sensors** – The total number of sensors connected to the asset.
- **# Monitored Sensors** – The number of sensors that are currently being monitored and are active in data collection.
- **# Subscribers** – The number of users or systems that are subscribed to alerts, notifications, or updates from this asset. This helps ensure that responsible personnel are kept informed of status changes.

### Filters / Search:

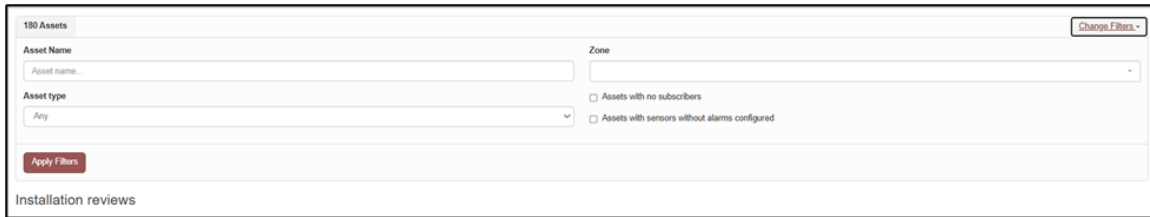
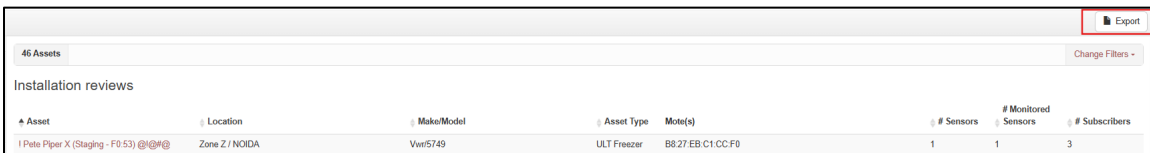


Figure 110 – Filter /Search screen

This section represents the filter panel for reviewing and managing assets. It allows users to quickly search and narrow down the list of assets based on specific criteria before viewing installation details. Users can filter ‘by Asset Name’ to locate a specific device, ‘by Zone’ to focus on assets within a particular location or group, and ‘by Asset Type’ to view only a specific category such as Freezers, Incubators, or Rooms.

In addition to these fields, there are two checkbox options: Assets with no subscribers (which helps identify unmonitored or unsubscribed assets) and Assets with sensors without alarms configured (to find assets that may not have complete alarm configurations and could be at risk of missing alerts). Once the desired filters are set, clicking Apply Filters updates the results below, making it easier to focus only on relevant assets and streamline installation review or troubleshooting activities.

### Export:



| Asset                                  | Location       | Make/Model | Asset Type  | Mote(s)           | # Sensors | # Monitored Sensors | # Subscribers |
|----------------------------------------|----------------|------------|-------------|-------------------|-----------|---------------------|---------------|
| 1 Pete Piper X (Shaging - F9 53) @H@H@ | Zone Z / NOIDA | Vwr5749    | ULT Freezer | B8 27 EB C1 CC F9 | 1         | 1                   | 3             |

Figure 111 – Export

At the top-right corner of the Installation Reviews page, there is an Export button (highlighted in the image).

When the user clicks on this button, the system automatically generates and downloads a CSV file containing the complete Installation Review data currently displayed on the page.

**This exported file typically includes all key fields such as:**

- Asset Name
- Location
- Make/Model
- Asset Type
- Motes
- Number of Sensors
- Number of Monitored Sensors
- Subscribers

This functionality allows users to store, analyse, and share installation review data offline in a standardized format for further reporting or auditing purposes.