

## Multi-Network Tracking, Telemetry, and Sensor Platform



The convergence of cellular, satellite, Wi-Fi, Bluetooth®, and GPS technologies enables intelligent asset monitoring and two-way communication across connected and remote environments. Lasso Technologies, LLC designs rugged industrial tracking and telemetry devices that operate seamlessly across multiple wireless networks to deliver reliable location, status, and sensor data.

The 2x2 supports Cellular (LTE-M), Satellite, Wi-Fi, GPS, and Bluetooth® communications with true two-way messaging. The device automatically selects the most efficient available communication path while maintaining connectivity.

The platform is intended for monitoring fixed and mobile assets such as intermediate bulk containers (IBCs), oil-field equipment, tanks, trailers, generators, vehicles, and remote infrastructure.

Typical applications include:

- Asset tracking and utilization monitoring
- Geofencing, asset utilization, and event detection
- Environmental sensing
- Remote configuration and diagnostics

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### Location, Reporting, and Two-Way Communication

The device reports GPS location, sensor data, and system status on scheduled intervals, during movement, or based on defined events. Reporting intervals and operating modes are configurable via the Lasso cloud platform or Bluetooth® application.

Two-way communication allows remote commands, configuration updates, and acknowledgements through cellular or satellite networks. Parameters such as reporting intervals, and device modes can be modified remotely without physical access.

Satellite communication is typically used for power-efficient location reporting. When needed and available, LTE-M provides efficient low-power data transmission. Wi-Fi scanning enhances location awareness when GPS signals are limited.

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### Bluetooth® Sensor Integration and Expansion

The RM200-based Lasso platform integrates external Bluetooth® Low Energy (BLE) sensors, enabling flexible sensing without physical wiring. Distributed sensors communicate with a single rugged communications gateway.

Supported sensor types include:

- Temperature and humidity
- Motion, vibration, movement, and tilt
- Magnetic and proximity sensors
- Discrete digital inputs
- Analog input sensors

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### Important Notices

- Not intended for applications where failure could result in injury, death, or significant loss.
- GPS features are not intended for theft recovery or loss prevention.
- Use subject to Terms and Conditions: <https://www.lasso.com/terms>
- Technical support: support@lasso.com | 866-392-0923
- Patent 10,290,203

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### Task Handler

The Task Handler is the internal control system that manages data collection, location determination, network communication, and remote command processing. It coordinates system functions to maximize reliability and battery efficiency without user intervention.

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### Core Functions

- Controls when data is collected and transmitted
- Selects optimal location method
- Chooses best communication path
- Manages two-way communication
- Applies remote configuration updates
- Sends confirmation and status responses
- Optimizes power usage
- Engine hours and external power option (this option is not Atex or IECEx)
- All decisions are performed automatically during operation.

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### Location Determination (GPS and Wi-Fi)

- GPS provides high-accuracy outdoor positioning.
- Wi-Fi location supports indoor or obstructed environments.

The Task Handler selects the most appropriate method based on environmental conditions and power considerations.

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### Communication Methods (Cellular and Satellite)

- Cellular two-way communication is preferred when available.
- Satellite two-way communication provides global fallback coverage.

Automatic path selection ensures reliable connectivity.

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### Remote Commands

Incoming messages from the web site are validated and applied automatically:

- Reporting intervals and thresholds updated remotely
- Operating modes adjusted without reboot
- Commands executed and acknowledged

**Device Responses and Feedback**

After processing commands, the device:

- Generates confirmation or status messages
- Sends responses via the active communication path
- Provides visibility into device state and execution results

**Intelligent Fallback and Reliability**

- Alternate communication or location methods are used
- Retry and backoff logic conserve power
- Successful paths are prioritized

**Power-Efficient Operation**

- Tasks run only when required
- Communication systems activate on demand
- Low-power states are used when idle

**Summary**

The Task Handler integrates GPS, Wi-Fi, cellular, and satellite communication into a single intelligent system that enables remote configuration, reliable connectivity, and efficient power management across challenging deployment environments.



## Operation, Installation, Maintenance

### Marking & Equipment Information

The equipment is marked in accordance with applicable ATEX and IECEx certification requirements. Markings include the explosion protection marking, temperature class, equipment protection level (EPL), and certification numbers. Markings shall remain legible and shall not be altered, removed, or obscured.



### On-site Installation

- ☐ Use two customer-supplied 1/4-20 or bolts, screws, or equivalent fastening hardware to securely attach the 2X2 to the asset. The mounting hardware shall be suitable for the installation environment and provide secure mechanical retention during normal operation.
- ☐ Mount the 2X2 so that the label side faces away from the mounting surface and the antenna side has reasonable visibility to the sky for optimum GPS and satellite performance.
- ☐ The installer shall verify that mounting hardware does not compromise the equipment enclosure, environmental protection, or hazardous-location integrity.
- ☐ Remove the on-off magnet from the 2X2 to power the unit ON. Retain the magnet in

a safe location for future shutdown or reset operations.

- ☐ Recommended fastener

| Fastener Size | Typical Hole Size | Common Material/Grade   | Suggested Torque | Suggested Torque |
|---------------|-------------------|-------------------------|------------------|------------------|
| 1/4"-20 UNC   | 0.281"–0.312"     | Stainless Steel         | 6–8 N·m          | 55–70 in-lb      |
| 1/4"-20 UNC   | 0.281"–0.312"     | Grade 5 Steel           | 8–10 N·m         | 70–90 in-lb      |
| M6 x 1.0      | 6.6–7.0 mm        | Stainless Steel (A2-70) | 5–7 N·m          | 45–62 in-lb      |
| M6 x 1.0      | 6.6–7.0 mm        | Class 8.8 Steel         | 7–9 N·m          | 62–80 in-lb      |

- ☐ Tighten mounting hardware securely using an appropriate screwdriver, wrench, or nut driver.
- ☐ Use the Bluetooth application or the Lasso.com interface to configure the GPS reporting interval and other operating parameters as described later in this manual.
- ☐ Verify proper operation and reporting through the Lasso.com web interface after installation.

## **Important**

### **Maintain enclosure integrity and sealing (IP rating)**

- Avoid mechanical damage
- Ensure proper mounting and orientation
- Prevent electrostatic charge accumulation

**Only approved installation practices for hazardous locations shall be followed.**

### **Parameter Setting & Configuration**

The device GPS reporting intervals may be configured using Smartphone via Bluetooth interface or over the air using cellular or satellite commands as described later in this document.

### **Use & Safe Operation**

- The equipment shall be used only within the specified electrical, environmental, and temperature limits defined in the certification.
- The device is certified for use in hazardous areas under the protection concept and shall not be operated outside these conditions.

### **Do not:**

- Modify the equipment
- Substitute components
- Operate outside rated parameters
- Failure to comply may invalidate certification and create a hazardous condition.

### **Maintenance**

- Inspection and maintenance shall be carried out in accordance with IEC 60079-17. Discontinue use if the housing is damaged.
- Repairs affecting explosion protection shall only be performed by the manufacturer or in accordance with IEC 60079-19.

### **Decommissioning**

- Before removal, ensure the equipment is de-energized and isolated by re-installing the magnet and moving the device out of the hazardous environment.
- Removal shall be conducted in accordance with site hazardous area procedures to prevent ignition risks.
- Contains Lithium batteries so Special shipping considerations are required.

### **Warnings & Misuse**

- Do not modify or alter the equipment

- Enclosure is potted and is not user serviceable and should not be opened.
- Avoid conditions that may generate electrostatic charge

**Improper use may result in loss of explosion protection.**

## Core Concepts

Key terms used in this manual:

### Assets & devices

- **Asset** — What you monitor in the Web Site (tank, vehicle, equipment). It has a name, optional identifier, and is linked to a device by ESN (Electronic Serial Number).
- **ESN (Electronic Serial Number)** — Unique ID for the device. Used in search, Asset Details, and Create Asset. Identified by ESN which starts with 0-xxxxxx.

### Organization

- **Organization Unit (OU)** — Part of your company hierarchy. Scopes assets, users, and alerts. Used in Groups and filters.
- **Sub-Organization (sub-OU)** — A child OU. Used when moving assets or browsing the Groups page.
- **Group** — A collection of assets. Used to organize, scope alerts, and search by group on the map.

### Data & measurements

- **Breadcrumbs** — On the Locations tab, the path of positions over time showing where the asset has been.

### Map & alerts

- **Geofence** — A polygon on the map. Used for location alerts (enter/leave) and to mark Home Yard.
- **Home Yard** — A geofence type for company-owned locations (e.g. off-rent, non-billable).
- **Alert** — A rule that sends notifications (e.g. email) when a condition is met (threshold, geofence). Scoped to an asset or group.

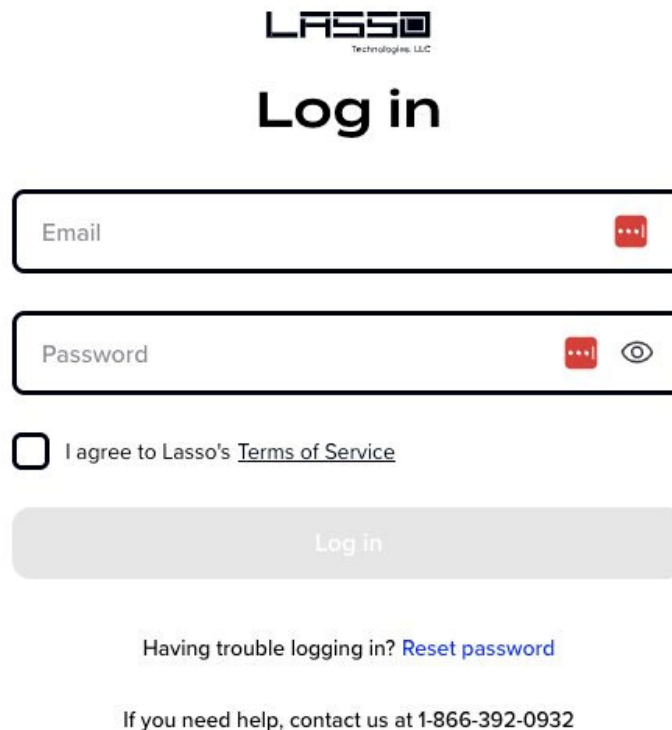
### Communication

- **Two-Way Communication** — Send commands to the device and get a response. This is done to alter GPS reporting intervals.

## Web and Authentication

Access the Cloud Web Site at <https://cloud.lasso.com> or <https://staging.lasso.com/> by signing in with your email and password. The following flows are available: **sign in**, **forgot password**, **reset password**, and **change password** (when required after first login).

1. Open the Cloud Web Site in your browser.
2. Enter your email and password on the sign-in screen.
3. Click **Sign in**. If your password must be changed, you will be prompted to set a new one.



**LASSO**  
Technologies, LLC

## Log in

Email

Password

☐ I agree to Lasso's [Terms of Service](#)

Log in

Having trouble logging in? [Reset password](#)

If you need help, contact us at 1-866-392-0932

*Sign-in screen with email and password fields*

If you forgot your password, use the **Forgot password** link on the sign-in page. You will receive an email with a link to reset your password.



## Reset your password

We'll email you a code to reset your password.



[Back to login](#)

*Forgot/Reset password screen*

After requesting a password reset, you will receive a verification code by email. Enter the code along with your new password and confirm it to complete the reset. If you did not receive the code, you can click [Resend code](#) to have it sent again.



## Reset your password

Enter the code sent to your email.





[Resend code](#)

*Reset password verification – enter the code sent to your email and set a new password*

Some organizations may use Single Sign-On (SSO). If your company has **SSO** enabled, you will see an SSO login option on the sign-in page.



# Log in

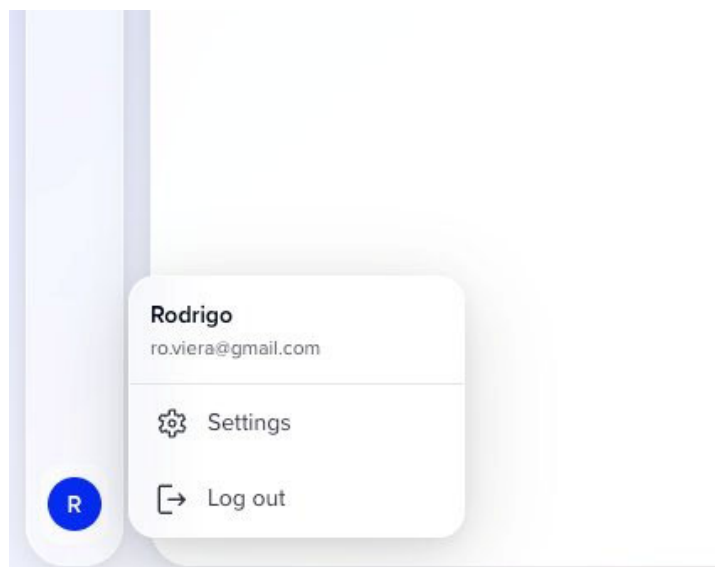


Murphy Single Sign-On

If you need help, contact us at 1-866-392-0932

*SSO login page*

**Security:** [Do not share your password.](#) Use the official password reset flow if you need to change it.



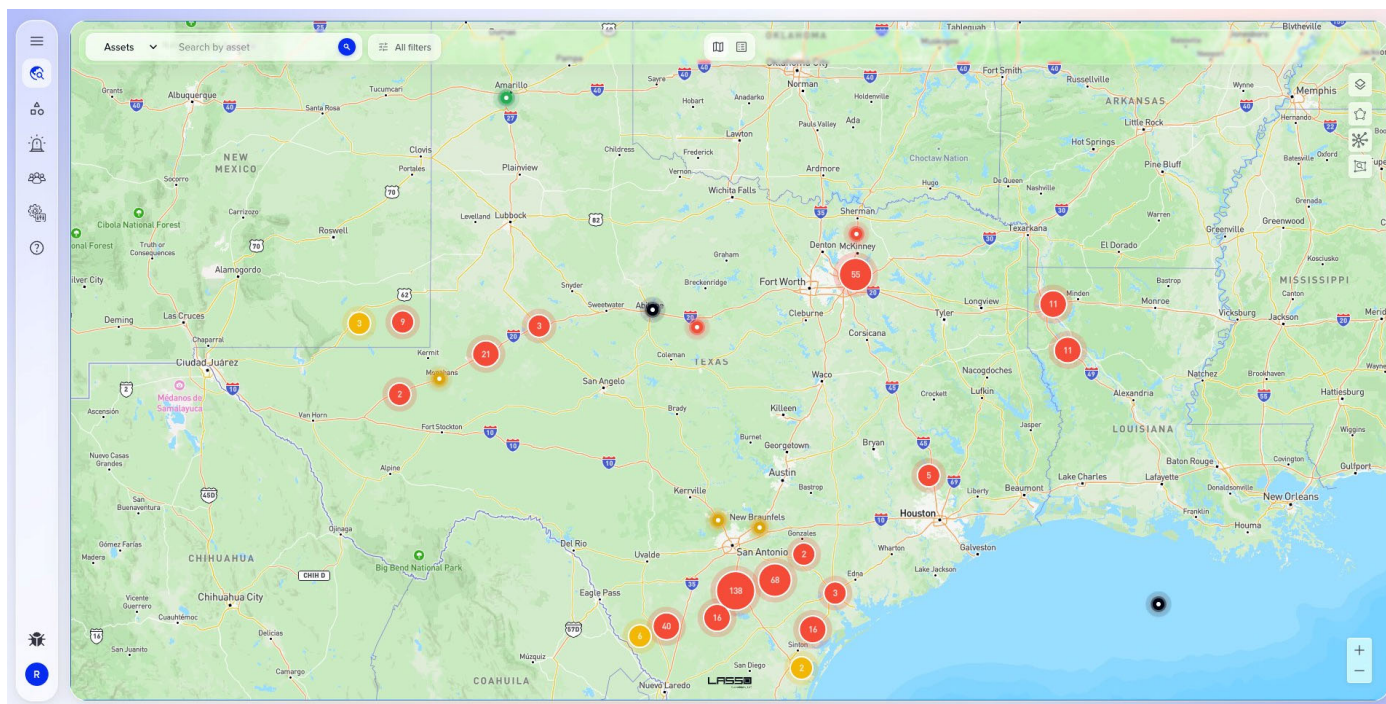
If you have access to more than one company or account, you can switch between them by clicking your profile avatar at the bottom-left of the sidebar, then selecting **Settings** from the menu to access the account and organization management pages where you can change the company or account.

*User profile menu showing Settings and Sign out options*

## Getting Started

After signing in, you land on the main application. The left sidebar provides navigation to **Assets** (Map or List), **Groups**, **Alerts**, **Users**, and **User Manual**. Use the profile area at the bottom of the sidebar to open **Settings** or **sign out**.

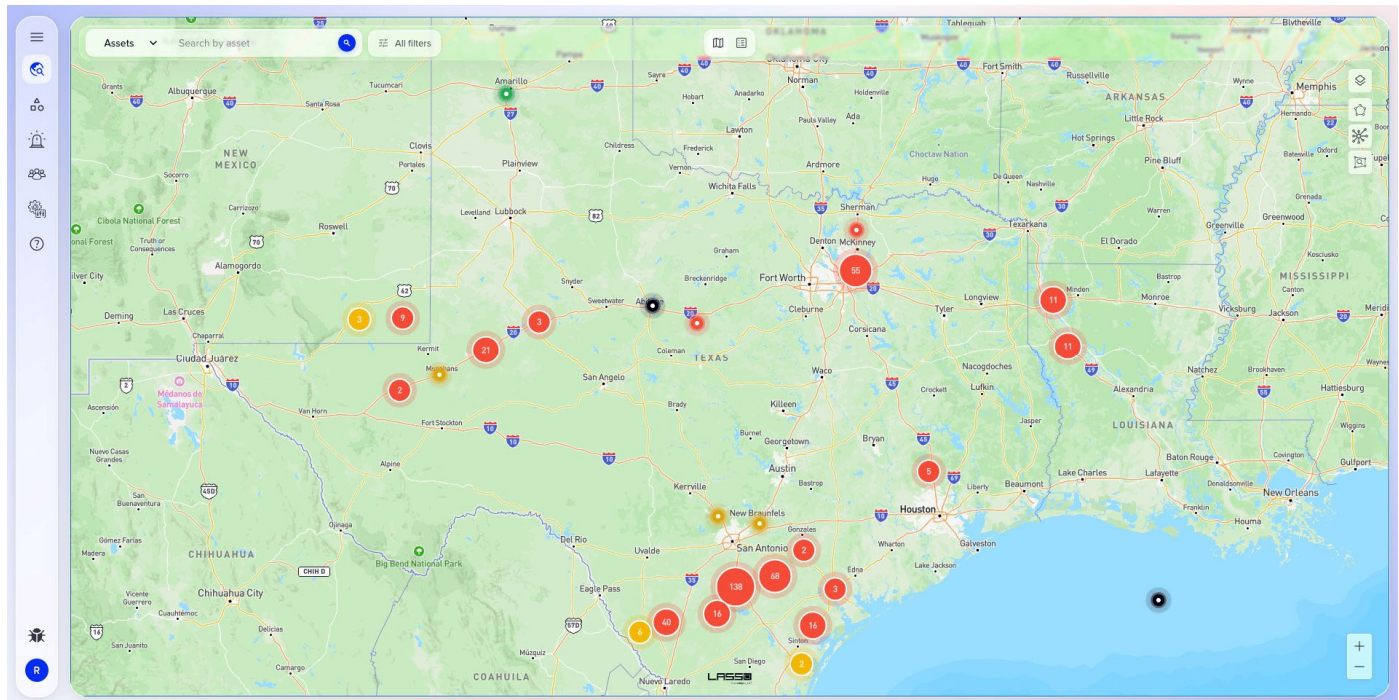
- **Assets (Map):** view assets on a map with search and filters. You can also view, create, edit, and delete geofences.
- **Assets (List):** view assets in a table with search, filters, sortable columns, export options, and the ability to add new assets.
- **Groups:** organize assets into groups and manage membership.
- **Alerts:** create and manage alert rules.
- **Users:** manage users and roles (admin/manager only).
- **Settings:** account, notification alerts, and organization management (where permitted).



*Main application with sidebar navigation and Map view visible*

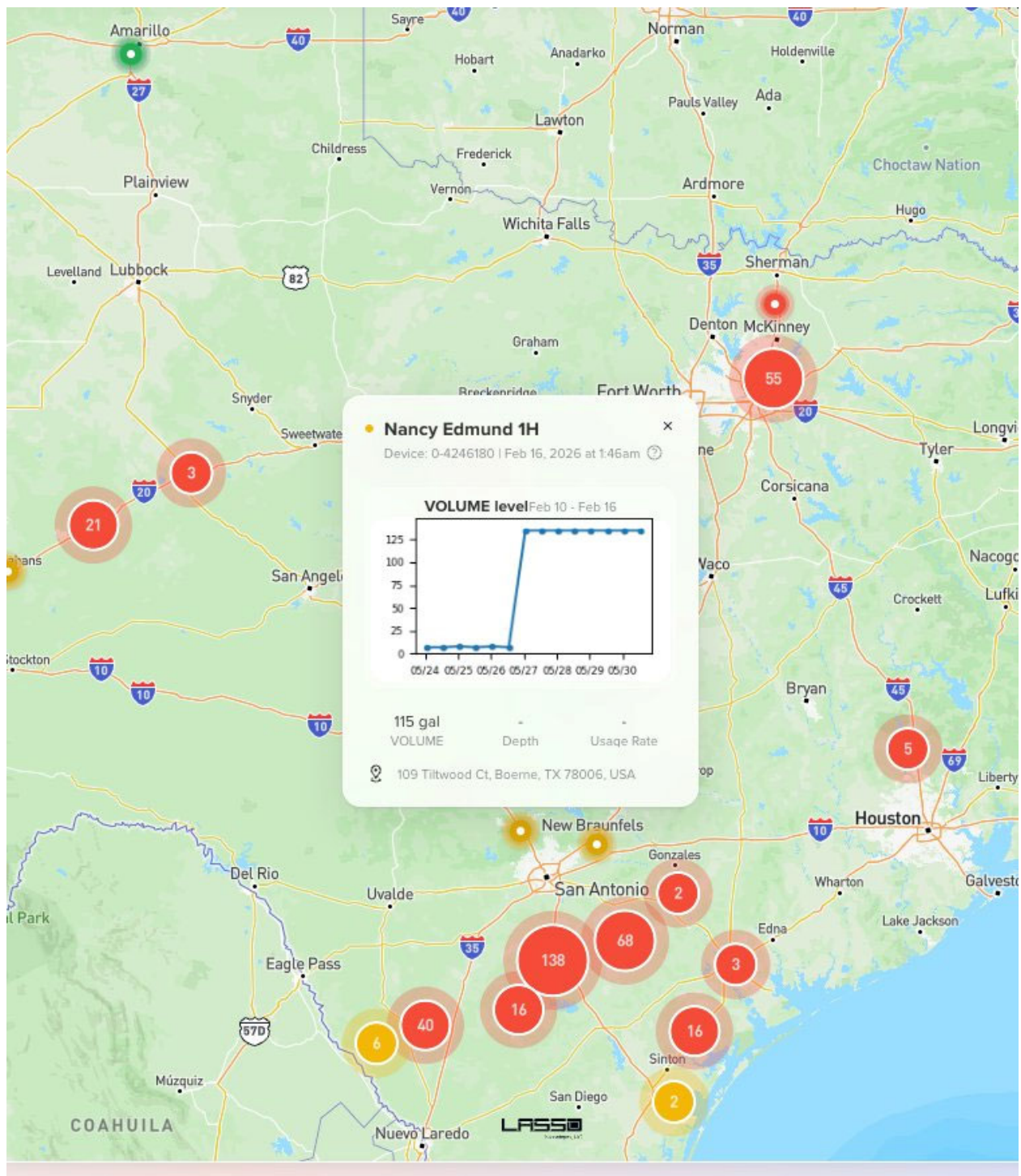
## Map View

The Map view (/assets/map) shows your assets on an interactive map. Assets and asset clusters are displayed as markers with color-coded status indicators: **green** (Ok), **yellow** (Warning), **red** (Alert/Issue), and **black** (No data or offline). **Clusters** show the number of assets grouped in that area — zoom in to see individual markers.



*Map view – full screen showing assets and clusters with color-coded status markers (green = Ok, yellow = Warning, red = Alert, black = Offline)*

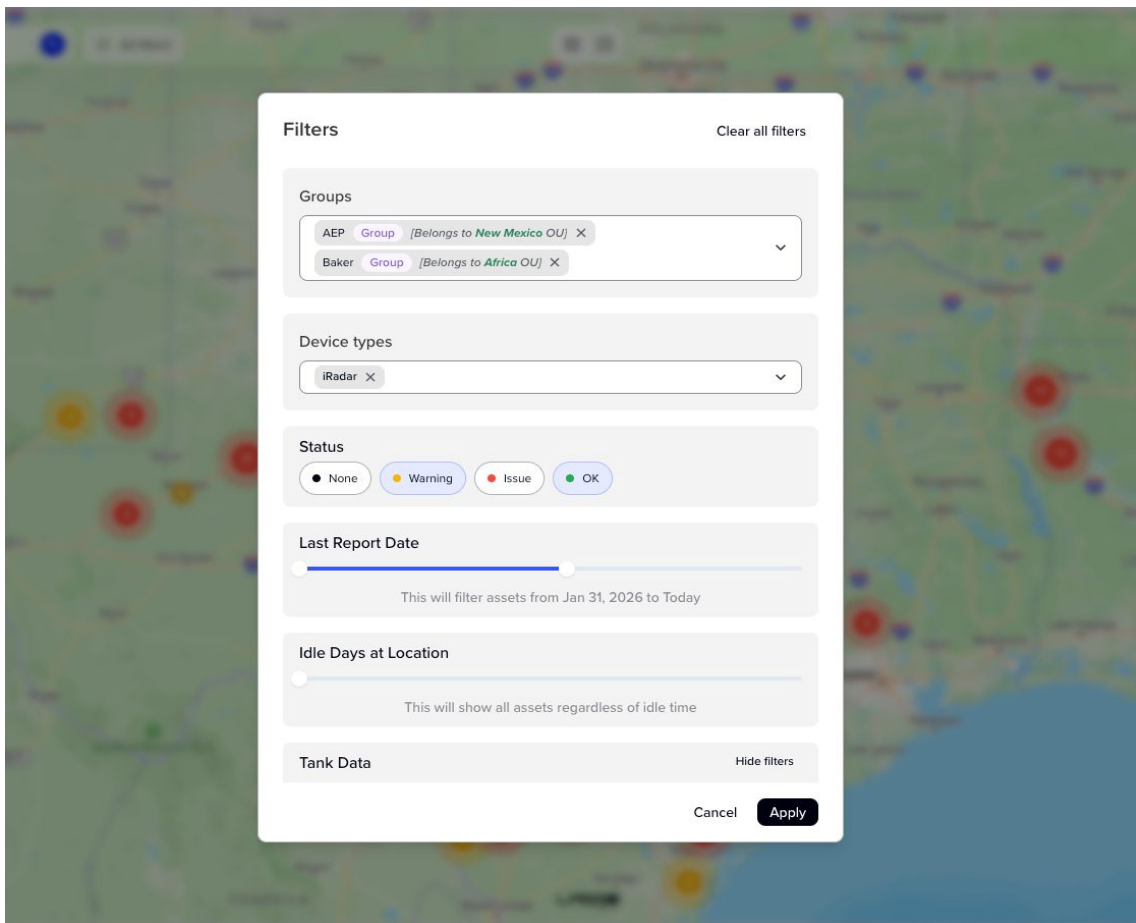
Click on an asset marker to open a popup showing relevant information about the asset, including its name, device ESN, status, last known location, and days at location. Click on the popup to navigate to the full Asset Details page where you can view detailed information, configuration, metrics, locations, and more.



*Asset popup – click a marker to see asset name, device, status, location, and days at location.*

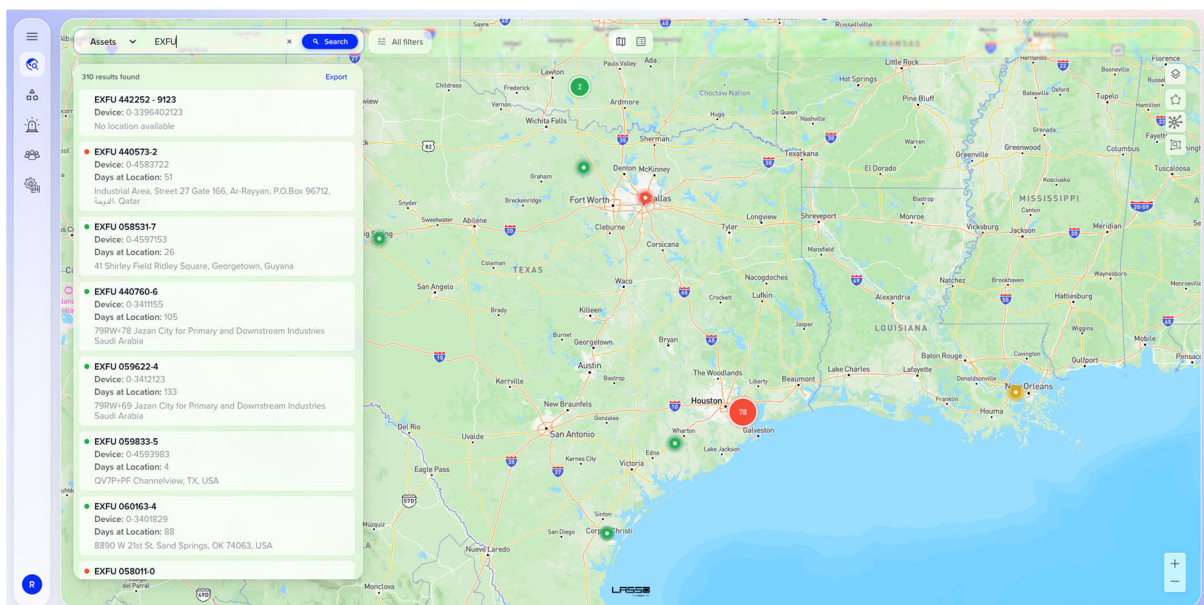
*Click the popup to open full Asset Details.*

Use the **All filters** button to open the filters panel. You can filter assets by status, organization unit, group, asset type, and other criteria to narrow down the assets displayed on the map.



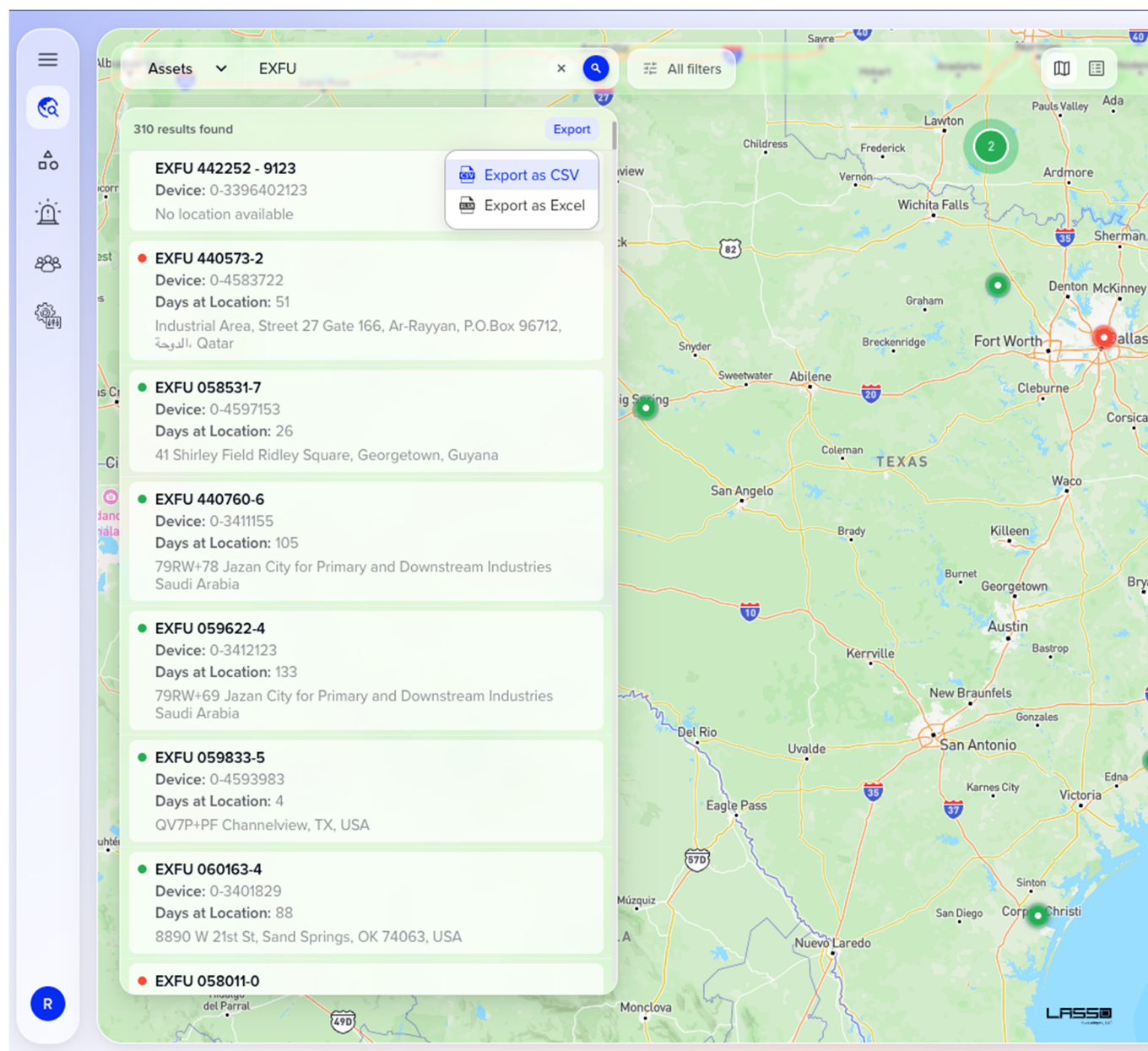
*Filters panel – filter assets by status, organization, group, type, and other criteria on the map view*

The **search bar** supports searching by **asset name** or **identifier**. Type a search term and press Search to find matching assets. The results are displayed in a list on the left side showing asset name, device ESN, days at location, and address. The map automatically updates to show only the matching results.



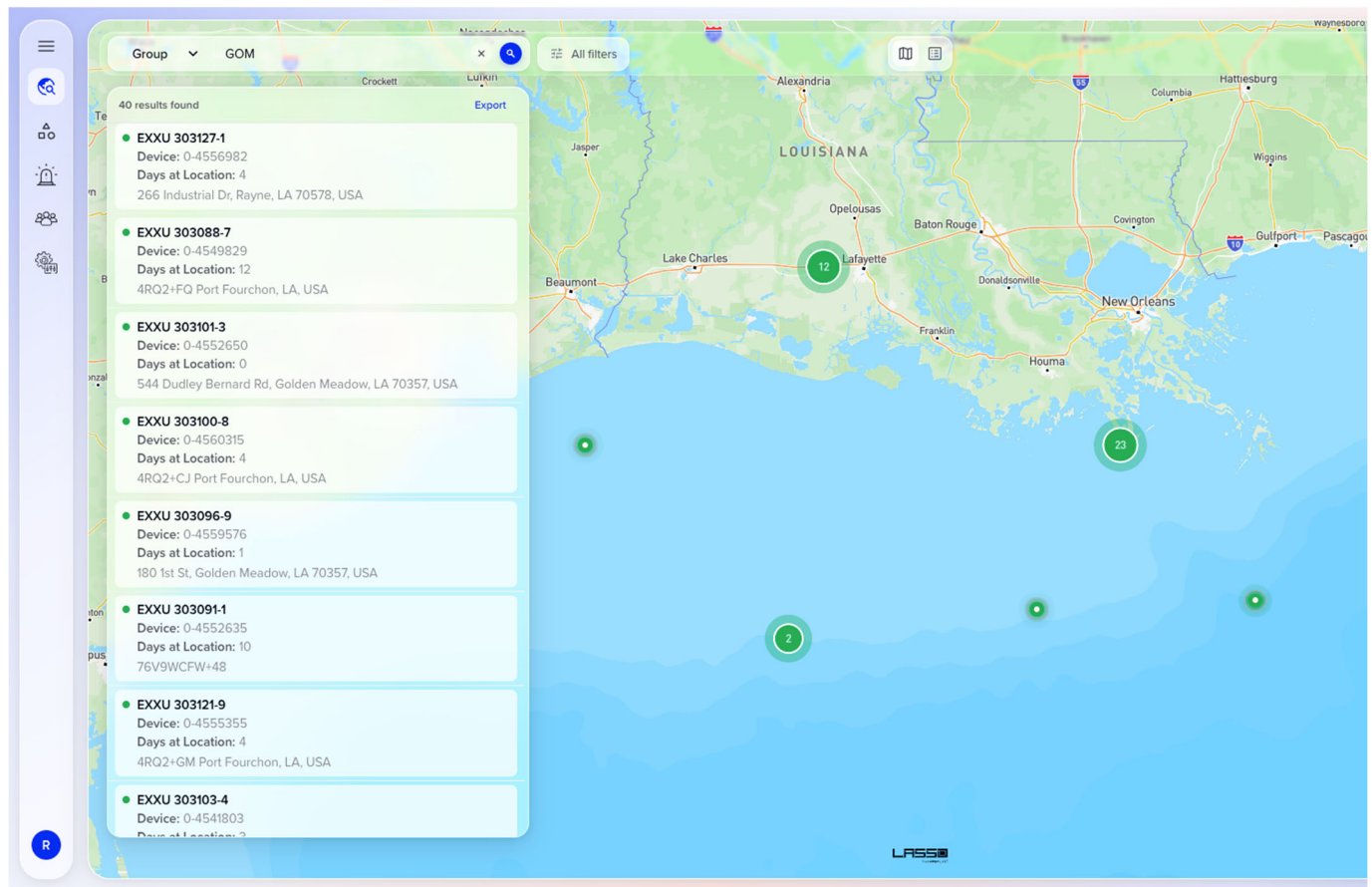
*Search by Assets – results list showing matching assets with name, device, days at location, and address. The map filters to display only the search results.*

The search results list includes an **Export** option that allows you to download the results as CSV or Excel. This is useful for generating reports of specific asset subsets.



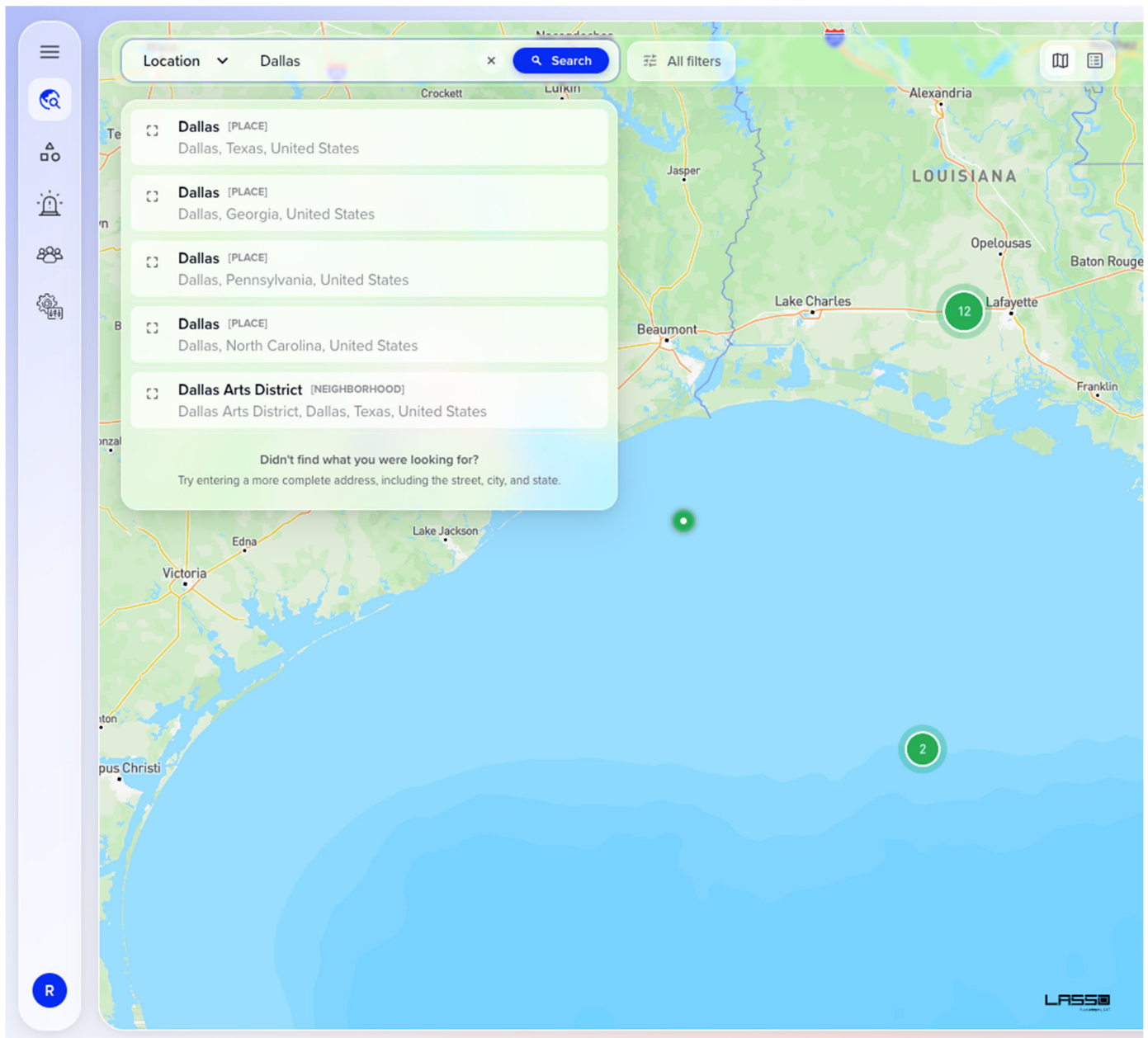
*Export search results – click Export to download the asset search results as CSV or Excel*

You can also search by Group. Switch the search dropdown to **Group** mode and type a group name. The results will show all assets belonging to that group, and the map will zoom to display them.



*Search by Group – type a group name to find and display all assets in that group on the map*

The **Location** search mode lets you search for geographic locations on the map. Type a city, state, zip code, address, country, or place name, and a dropdown will show matching results. Select a location to center the map on that area. This helps you quickly navigate to a specific region to see nearby assets.



*Search by Location – type a city, state, zip code, or address to navigate the map to that area. Results show matching places with type labels.*

## Map Tools

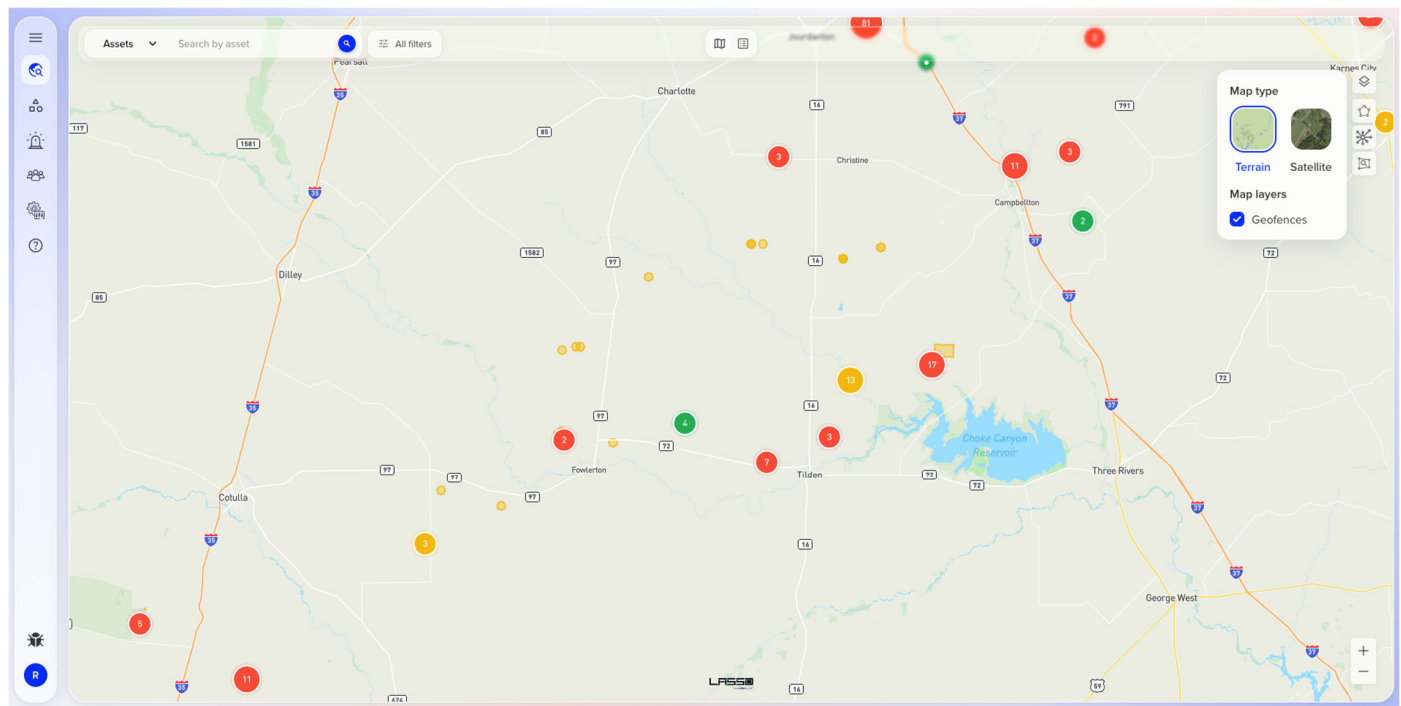
The map controls in the **top-right corner** provide tools to customize the map display and interact with assets and geofences. Click the **layers icon** to open the Map type and Map layers panel.

**Map type:** Switch between **Terrain** (street map) and **Satellite** (aerial imagery with labels).

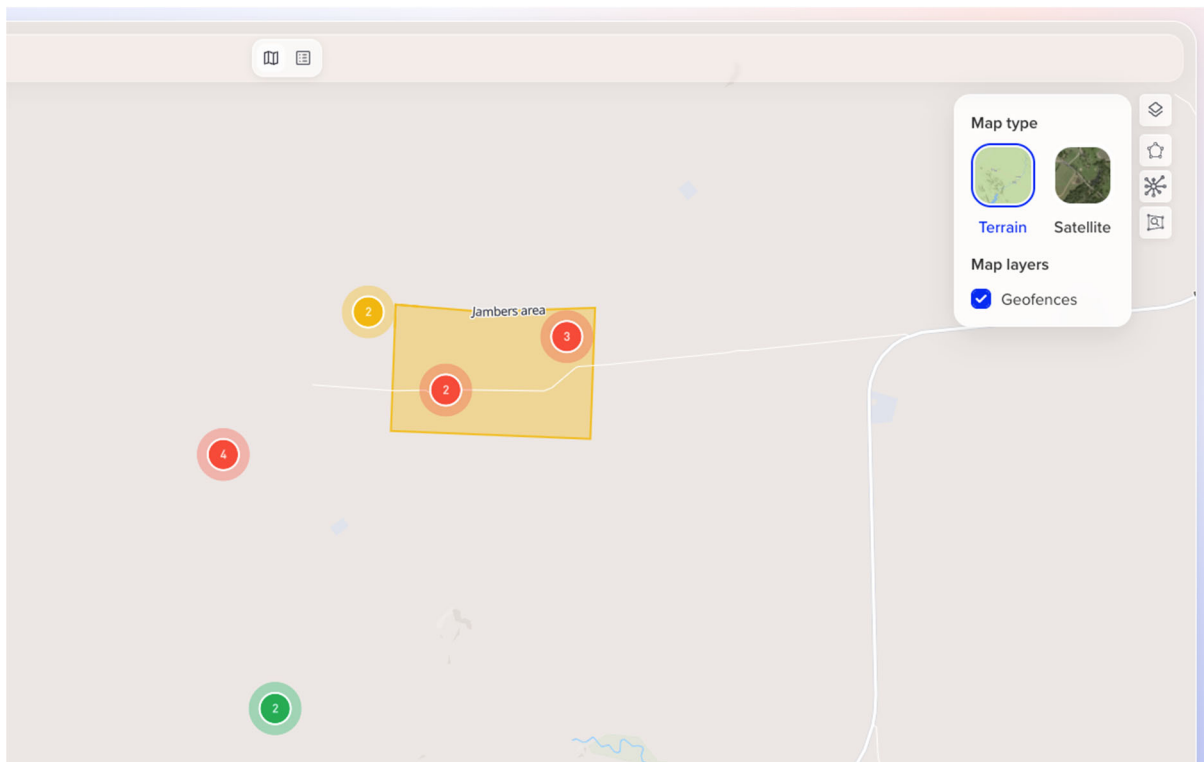
**Map layers:** Use the **Geofences** checkbox to show or hide geofence polygons. Below the layers panel: **Draw Geofence**, **Find Nearest**, and **Find in Box**. Cancel any active mode with **Escape** or the **Cancel** button.

## Geofences

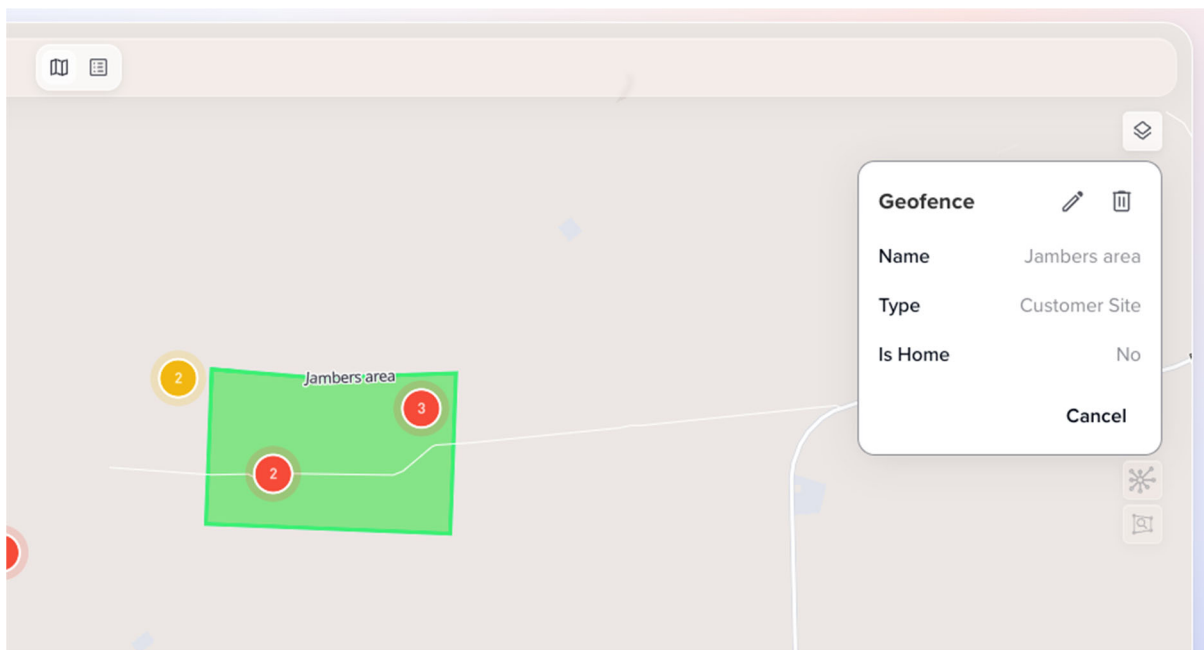
**Geofences** are geographic boundaries shown as polygon overlays. Enable the Geofences layer in the Map type dropdown to see them. Each geofence has **Name** (required), **Type**, and **Home Yard** (marks company-owned locations). Click a geofence to select it (turns green) and open a dialog to edit properties, reshape geometry, or delete.



*Map with geofences displayed as colored polygon overlays*



*Geofences on the map – boundaries and labels*



*Selected geofence in green with edit/delete dialog*

**Permissions:** Creating geofences requires the **Draw Geofence** permission. Editing and deleting require the appropriate geofence permissions.

## Draw Geofence

The **Draw Geofence** tool (polygon icon) creates new geofences by drawing a polygon. Requires **Draw Geofence** permission. Click the polygon icon, click on the map to add vertices, **double-click** the final vertex to complete, then fill Name (required) and optional Type/Home Yard and click **Save**. Press **Escape** or **Cancel** to abort.

## Find Nearest

**Find Nearest** (map point icon) finds assets closest to a point. Click the icon, then click a spot on the map. A marker appears and the asset list on the left shows nearest assets sorted by distance. Click an asset to view details or fly to it. Press **Escape** or **Cancel** to exit.

## Find in Box

**Find in Box** (map search icon) finds all assets inside a rectangle. Click the icon, click to set the first corner, move the mouse to expand, then click to set the opposite corner. The asset list updates with assets in the box. Press **Escape** or **Cancel** to exit.



Table actions dropdown – Add Asset, Manage Columns, Export as CSV, and Export as Excel options

Selecting Add Asset from the actions menu opens the New Asset dialog (Step 1 of 2), where you enter asset details including Organization Unit, Device ESN, Asset type, Asset name, Internal identifier, Comments, and optional Customer Properties.

**New Asset**  
Step 1 of 2: Asset details  
Create an asset and assign a device to start monitoring.

**Main Properties**

Organization Unit \*  
Baker Radar Change

Device ESN \* Select device ESN Asset type Select asset type

Asset name \* Asset name Internal identifier \* Internal identifier

Comments  
Comments

**Customer Properties**  
Add properties and values to track additional information

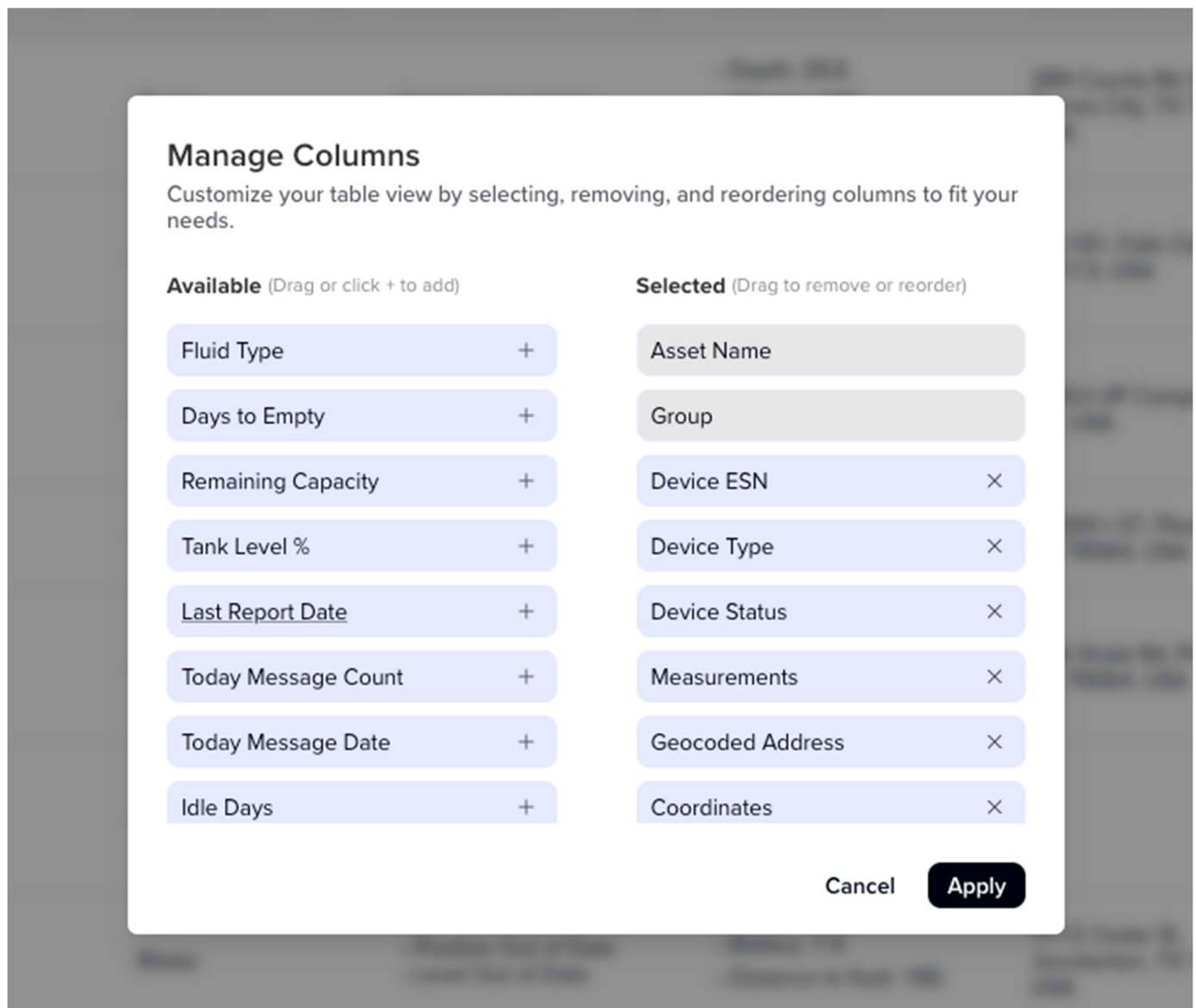
Name  
Value 🗑️

+ Add new property

Cancel Continue

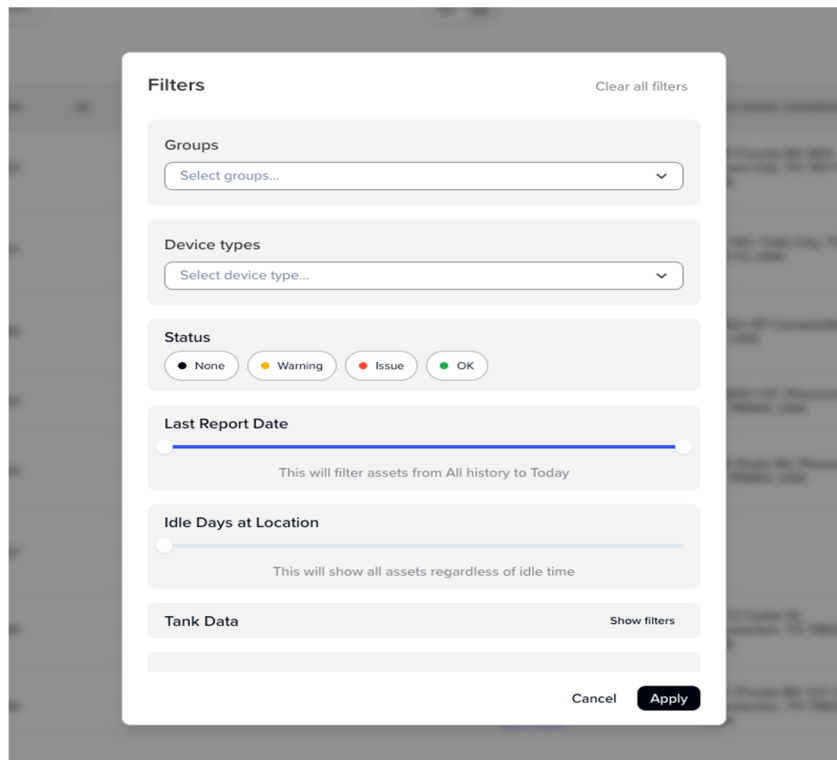
New Asset dialog (Step 1 of 2) – configure Main Properties and Customer Properties to create a new asset

Selecting Manage Columns lets you customize which columns are visible in the table. Toggle columns on or off to show only the information relevant to your workflow.



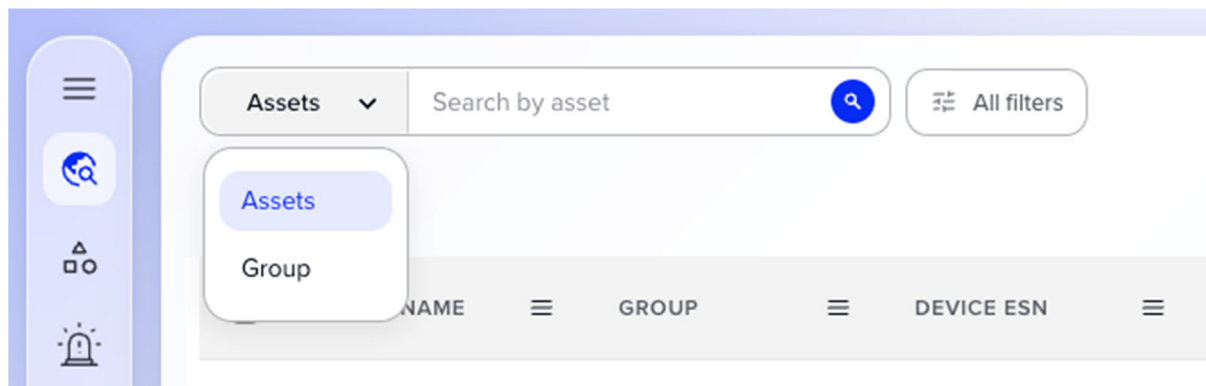
*Manage Columns modal – toggle visibility for each column in the assets table*

Use the All filters button to open the filters panel. You can filter assets by status, organization unit, group, asset type, and other criteria to narrow down the displayed results.

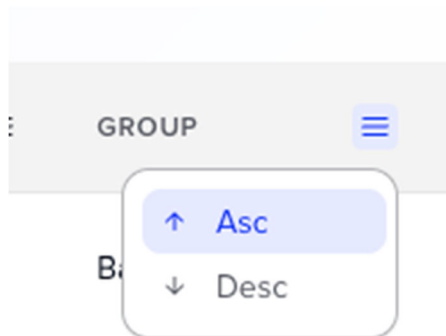


*Filters modal – filter assets by status, organization, group, type, and other criteria*

The search bar allows you to search for assets by name or by group. Click the dropdown next to the search field to switch between Assets and Group search modes.



*Search dropdown – switch between searching by Assets (name) or by Group*



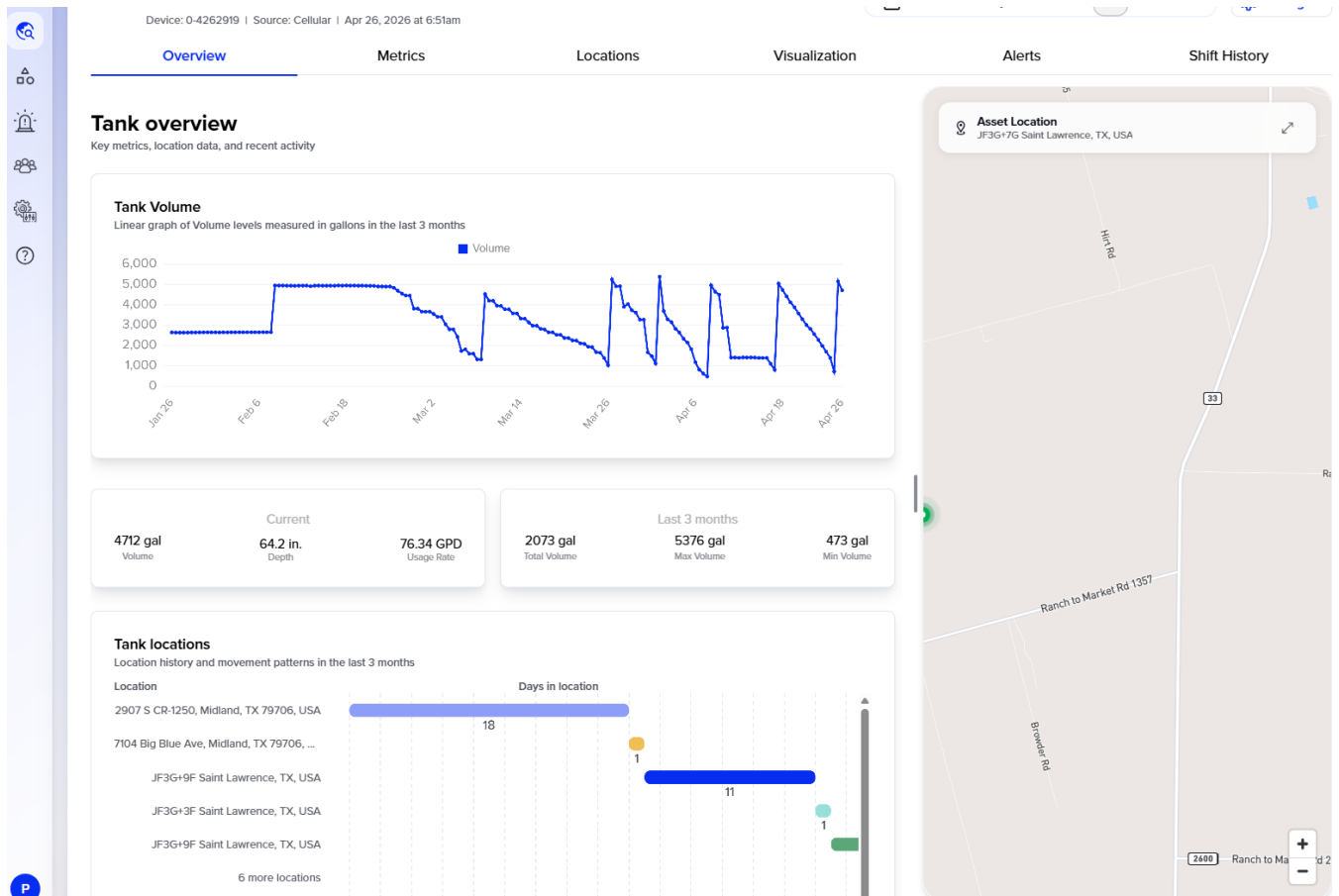
Each column header has a sort menu that allows you to sort the table in ascending (Asc) or descending (Desc) order. Click the column header icon to open the sort options.

*Column sort dropdown – sort in Ascending or Descending order*

## Overview

When you open an asset from the map or list, the **Asset Details** view appears. The **header** displays: the **status indicator** (color-coded, to the left of the asset name), **asset name**, **Device ESN**, **measurement source** (Satellite or Cellular), and **last report date**. The **timeframe selector** (calendar bar) on the right lets you choose the date range (e.g. last 7 days, 30 days, or custom) to filter all tab data.

The **Overview** tab summarizes the asset for the selected period. It shows a metrics chart (primary measurement over time) and a locations chart (dwell time by location). For some layouts, a map panel may appear. Click the Metrics or Locations chart to jump to those tabs.

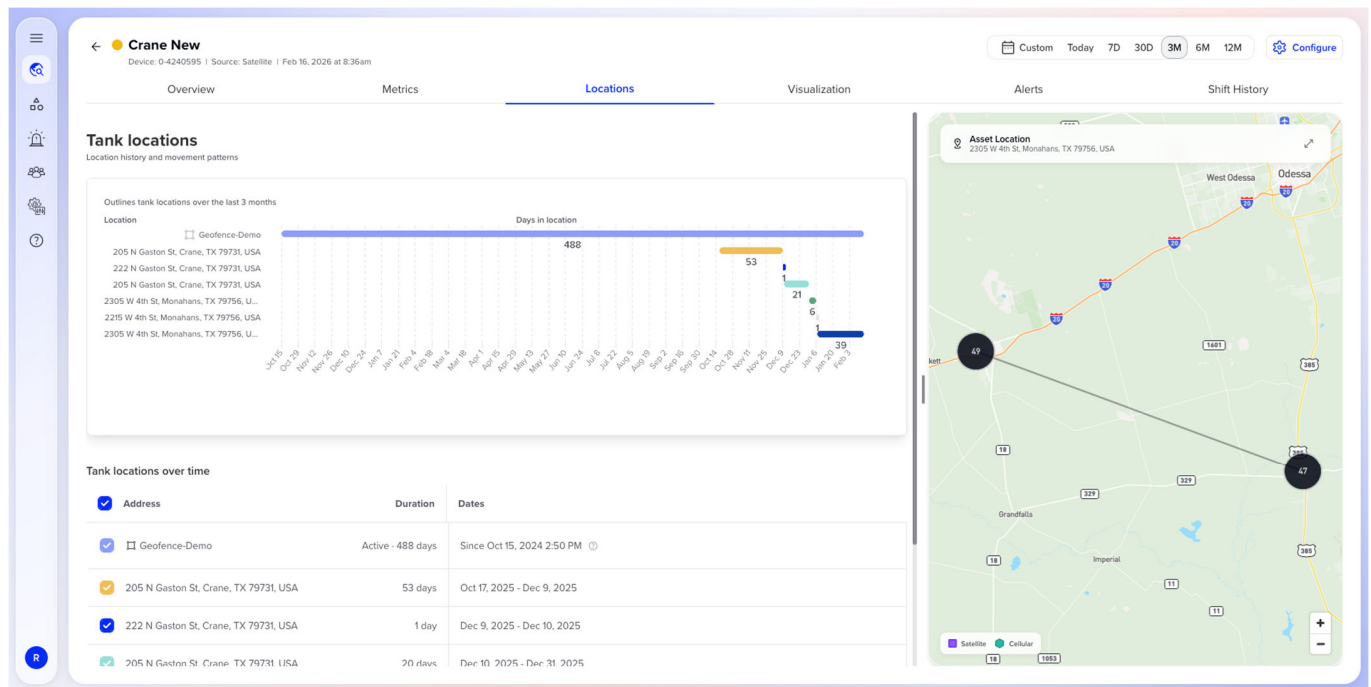


Asset Details – Overview tab with metrics chart, locations chart, and header showing status, ESN, source, date, and timeframe selector

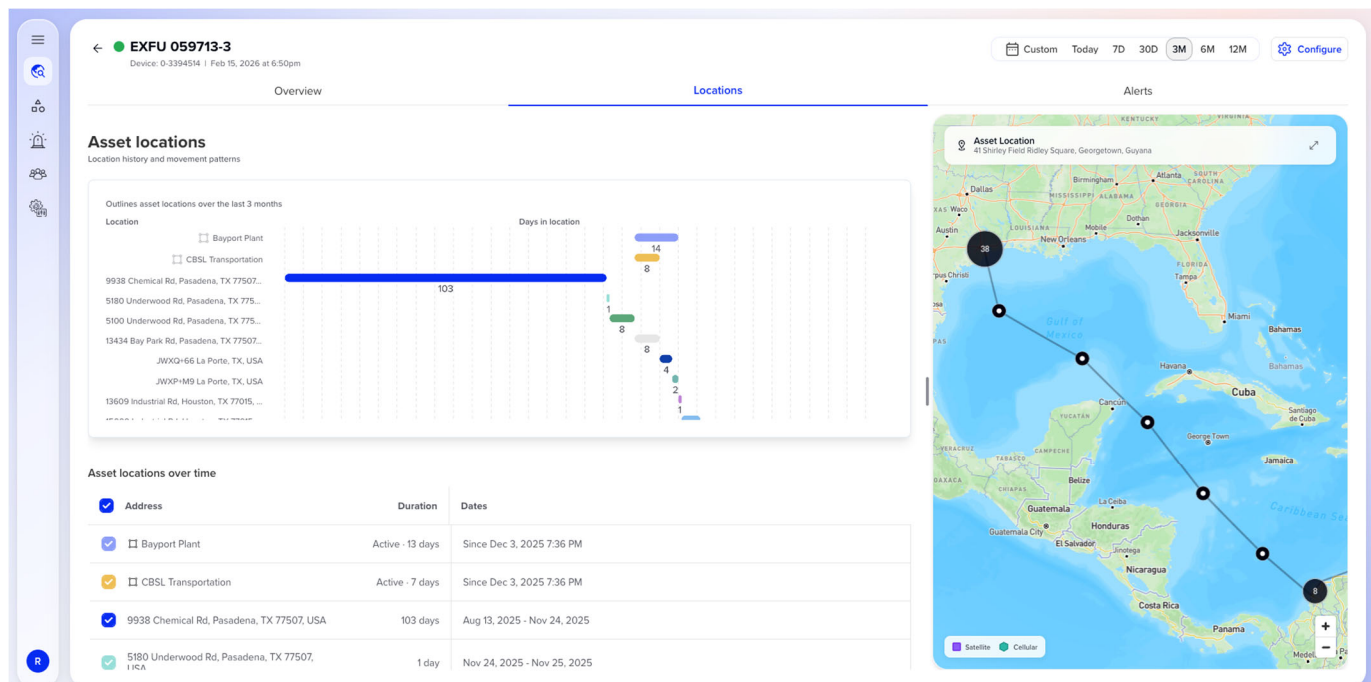
## Locations

The **Locations** tab shows where the asset has been over the selected period. On the left, a bar chart and table list locations by dwell time (days at each stop). On the right, a map displays **breadcrumbs** — the sequence of **location positions over time** as a path. You can **open the map to full screen** for better visibility. **Click markers** on the map to view details for that

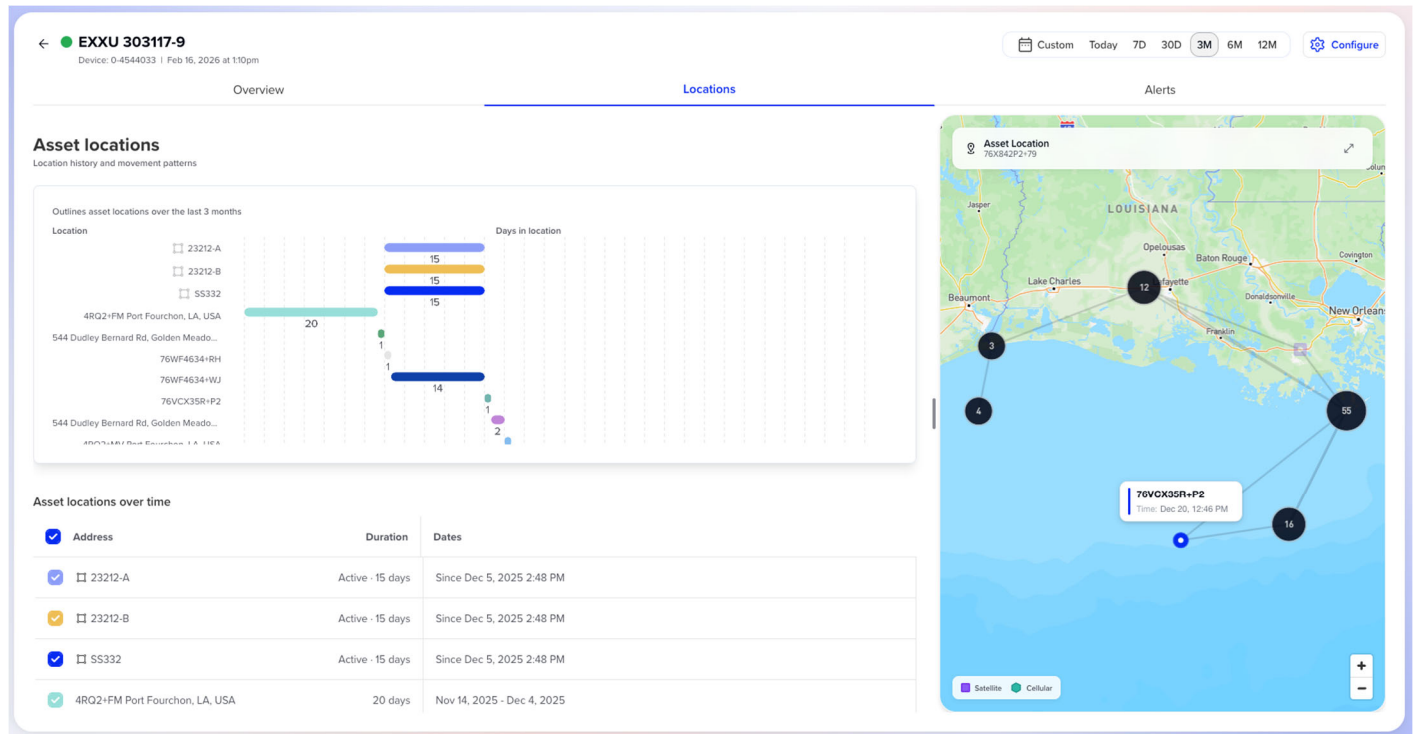
location (address, date, dwell time). The  just to the top left of the map allows you to export.



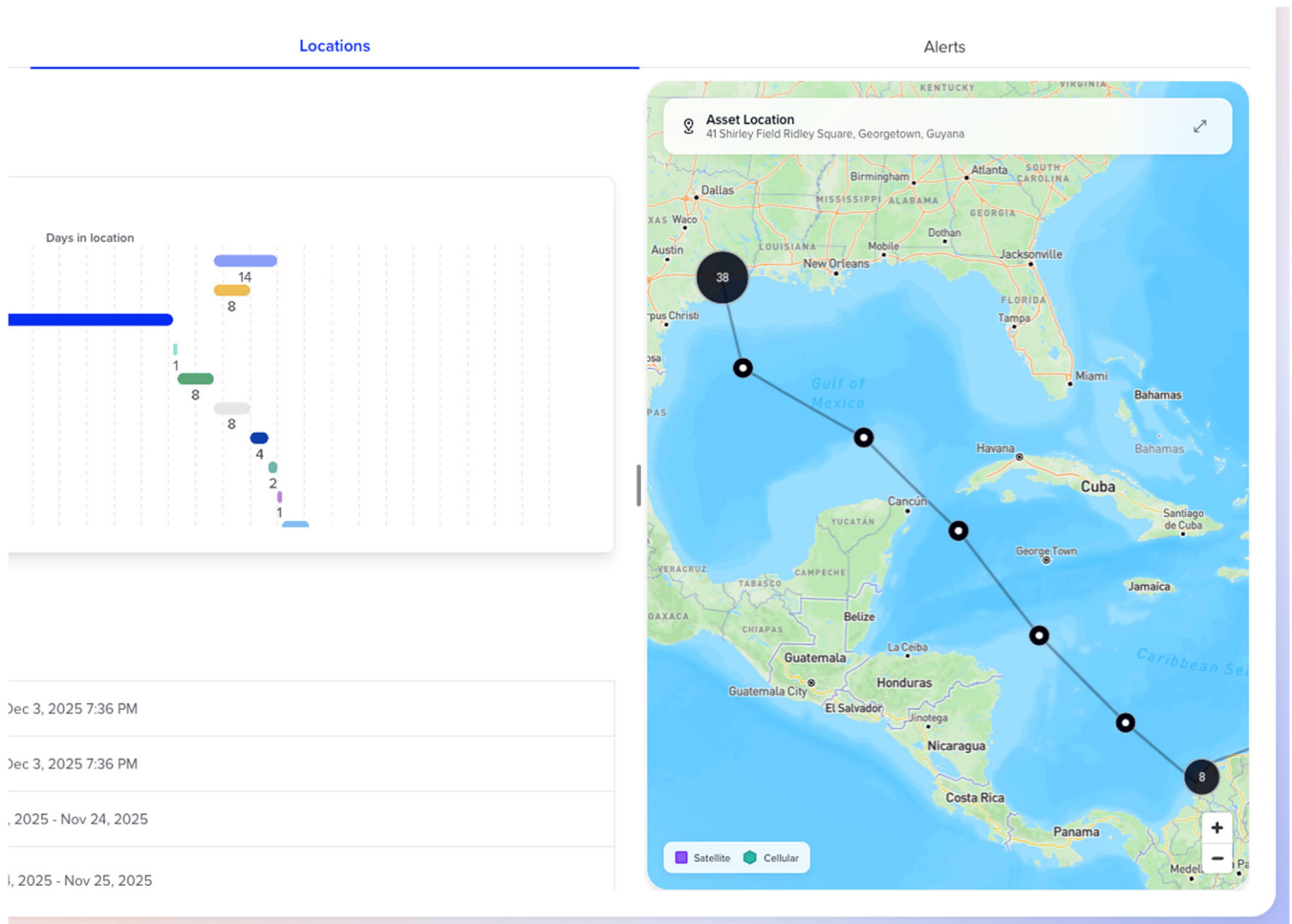
Asset Details – Locations tab with locations chart, table, and map



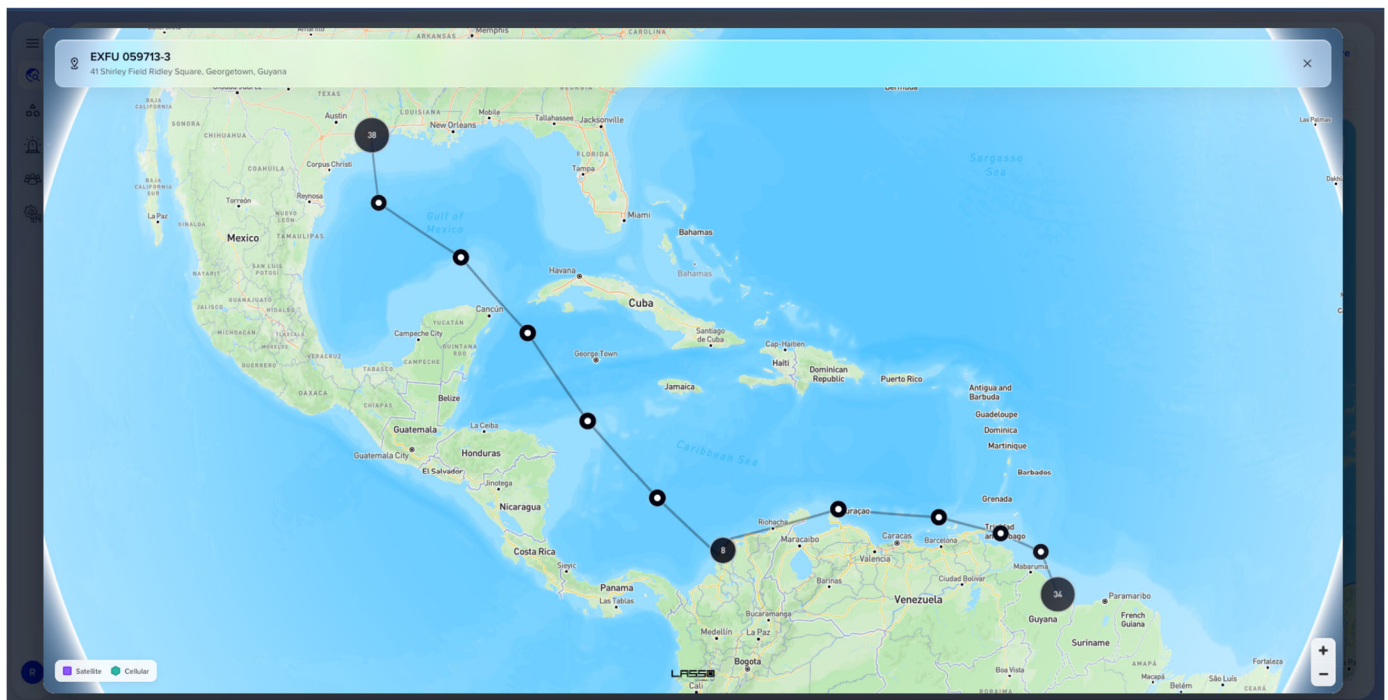
Locations tab – alternate layout with chart and map



Locations tab – view with location list and map panel



*Locations map with breadcrumbs showing the path of location positions over time*



*Locations map in full screen with breadcrumbs*



## Alerts

The **Alerts** tab lists alert rules that apply to this asset. For each alert you can see its name, type, status (enabled or disabled), schedule, and scope (group or asset). Use this tab to review which alerts are active for the asset. To create or edit alerts globally, use the main **Alerts** page.

## Shift History

The **Shift History** tab appears when an asset has been moved between organizational units. It shows each shift with date, source OU, destination OU, and who performed the move. Use this for auditing and tracking asset reassignments.

| DATE                 | FROM          | TO            | MEASUREMENTS                                                      | LOCATION                               | LAST REPORT         |
|----------------------|---------------|---------------|-------------------------------------------------------------------|----------------------------------------|---------------------|
| Jan 25, 2024 10:27am | DELETED       | North Permian | Depth: 6.8<br>Volume: 312<br>Battery: 7<br>Distance_To_Fluid: 191 | 205 N Gaston St, Crane, TX 79731, USA  | Jan 25, 2024 8:22am |
| Jan 25, 2024 10:27am | North Permian | N/A           | Depth: 2.4<br>Volume: 113<br>Battery: 7<br>Distance_To_Fluid: 195 | 2305 W 4th St, Monahans, TX 79756, USA | Feb 16, 2026 8:36am |
| Jan 25, 2024 10:27am | DELETED       | N/A           | Depth: 6.8<br>Volume: 312<br>Battery: 7<br>Distance_To_Fluid: 191 | 205 N Gaston St, Crane, TX 79731, USA  | Jan 25, 2024 8:22am |
| Jan 25, 2024 10:27am | North Permian | N/A           | Depth: 2.4<br>Volume: 113<br>Battery: 7<br>Distance_To_Fluid: 195 | 2305 W 4th St, Monahans, TX 79756, USA | Feb 16, 2026 8:36am |
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| Jan 25, 2024 10:27am | DELETED       | N/A           | Depth: 6.8<br>Volume: 312<br>Battery: 7<br>Distance_To_Fluid: 191 | 205 N Gaston St, Crane, TX 79731, USA  | Jan 25, 2024 8:22am |

Asset Details – Shift History tab with shift records

## Two-Way Communication

You can **send commands** and **view communication logs** from the Two-Way Communication view. Open an asset and navigate to Two-Way (or use the commands link in the asset header).

### 3 commands can be sent to the 2X2.

- **Transmit on the Hour.**
  - **Transmit on an interval.**
  - **Transmit on a change of location with varying reporting intervals when in motion.**
  - Only one of these 3 methods can be used at a time.
  - More complex GPS and motion based responses are possible. Contact Lasso.
- 
- Open an asset that has two-way communication enabled.
  - Go to the Two-Way Communication view
  - Select a command and fill in any parameters as required.
  - Send the command and check the communication log for status and responses. Responses may take several hours to respond as the device wakes.

The screenshot displays the 'Two-Way Communication' interface. On the left, under 'AVAILABLE COMMANDS', the 'GPS' command is selected. Its description is 'Configures a fixed GPS reporting interval.' The format is 'GPS,day,hour,minute'. Parameters are set to 0 days, 24 hours, and 0 minutes. A 'Send' button is at the bottom. On the right, the 'COMMUNICATION LOG' shows a list of messages from the device, including timestamps, CDT status, and the received data.

**AVAILABLE COMMANDS**  
Select a command, configure parameters if needed, and send it.

**GPS**

**DESCRIPTION**  
Configures a fixed GPS reporting interval.

**Format:**  
GPS,day,hour,minute

Hour must be between 0-24.  
Minute must be between 0-60.

**Example:**  
GPS,0,4,10

**COMMAND FORMAT**  
GPS,day,hour,minute

**PARAMETERS**

| Days | Hours | Minutes |
|------|-------|---------|
| 0    | 24    | 0       |

**PREVIEW**  
>GPS,,,[ ] [Send]

**COMMUNICATION LOG**  
Real-time messages from device.

**DEVICE LOGS**

|       |                         |                                  |
|-------|-------------------------|----------------------------------|
| [IN]  | 2026-05-25 07:50:56 CDT | USER GS : GPS=0day 0hr 8min 4.0V |
| [OUT] | 2026-05-28 21:50:48 CDT | >GPS,,,[ ]                       |
| [IN]  | 2026-05-29 21:30:28 CDT | USER : GPS0day 0hr 16min 4.2V    |
| [IN]  | 2026-05-29 21:30:35 CDT | USER : GPS0day 0hr 17min 4.2V    |
| [IN]  | 2026-05-29 21:30:51 CDT | USER : GPS0day 0hr 17min 4.2V    |
| [IN]  | 2026-05-29 21:31:11 CDT | USER : GPS0day 0hr 6min 4.2V     |
| [IN]  | 2026-05-29 22:25:51 CDT | USER GS : GPS=0day 0hr 7min 4.1V |
| [IN]  | 2026-05-29 22:53:50 CDT | USER GS : GPS=0day 0hr 7min 4.1V |
| [IN]  | 2026-05-29 22:58:06 CDT | USER GS : GPS=0day 0hr 7min 4.1V |
| [IN]  | 2026-05-29 22:58:34 CDT | USER GS : GPS=0day 0hr 7min 4.1V |
| [OUT] | 2026-06-07 21:24:52 CDT | >GPS,,,[ ]                       |
| [IN]  | 2026-06-07 21:45:50 CDT | USER GS : GPS=0day 0hr 7min 4.1V |
| [IN]  | 2026-06-08 09:49:35 CDT | USER GS : GPS=0day 0hr 7min 3.0V |
| [IN]  | 2026-06-08 11:18:02 CDT | USER GS : GPS=0day 0hr 7min 3.9V |
| [IN]  | 2026-06-08 13:01:38 CDT | USER GS : GPS=0day 0hr 7min 3.9V |
| [OUT] | 2026-06-08 21:35:34 CDT | >GPS,,,[ ]                       |
| [OUT] | 2026-06-09 15:08:01 CDT | >GPS,,,[ ]                       |
| [IN]  | 2026-06-09 18:06:25 CDT | USER : GPS0day 0hr 10min 4.0V    |
| [IN]  | 2026-06-09 18:06:38 CDT | USER : GPS0day 0hr 7min 4.0V     |
| [IN]  | 2026-06-09 18:06:54 CDT | USER : GPS0day 0hr 8min 4.0V     |
| [OUT] | 2026-06-09 19:57:03 CDT | >GPS,,,[ ]                       |
| [IN]  | 2026-06-09 19:59:10 CDT | USER : GPS0day 0hr 9min 4.0V     |
| [OUT] | 2026-06-09 20:37:27 CDT | >GPS,,,[ ]                       |
| [IN]  | 2026-06-09 20:46:28 CDT | USER : GPS0day 0hr 11min 4.0V    |

Two-Way Communication Configuration – list of all configured commands with name, description, and command syntax

## ← Two-Way Communication

2X2 Coi

### AVAILABLE COMMANDS

Select a command, configure parameters if needed, and send it.

**GPSHOUR**

**DESCRIPTION**  
Schedules GPS wake-up times during the day (24h format).  
Times are in GMT (approximately local time +6 hours).  
  
Up to 10 hours can be configured.  
Use 0 for unused hours.  
  
Format:  
GPSHOUR,hr1,hr2,hr3,hr4,hr5,hr6,hr7,hr8,hr9,hr10  
  
Example:  
GPSHOUR,3,6,14,18,0,0,0,0,0,0  
  
**COMMAND FORMAT**  

GPSHOUR, hr1, hr2, hr3, hr4, hr5, hr6, hr7, hr8, hr9, hr10

  
**PARAMETERS**  

|                                   |                                   |                                   |                                   |                                    |
|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|------------------------------------|
| Hour 1 ?<br>...<br>Min: 0 Max: 24 | Hour 2 ?<br>...<br>Min: 0 Max: 24 | Hour 3 ?<br>...<br>Min: 0 Max: 24 | Hour 4 ?<br>...<br>Min: 0 Max: 24 | Hour 5 ?<br>...<br>Min: 0 Max: 24  |
| Hour 6 ?<br>...<br>Min: 0 Max: 24 | Hour 7 ?<br>...<br>Min: 0 Max: 24 | Hour 8 ?<br>...<br>Min: 0 Max: 24 | Hour 9 ?<br>...<br>Min: 0 Max: 24 | Hour 10 ?<br>...<br>Min: 0 Max: 24 |

**PREVIEW**  

>GPSHOUR,,,,,,,,,]

Send

```
[OUT] 2026-06-23 17:57:30 CDT | >TRACK,1,15,16]
[IN] 2026-06-23 17:59:26 CDT | USER : TRACK=Normal Rest:15 Moving:16 3.8V
[IN] 2026-06-23 17:59:27 CDT | USER : TRACK=Normal Rest:15 Moving:16 3.8V
[OUT] 2026-06-23 18:01:46 CDT | >GPSHOUR,10,11,12,13,14,15,16,17,18,19]
[IN] 2026-06-23 18:03:45 CDT | USER : GPSHOUR=10,11,12,13,14,15,16,17,18,19 3.8V
```

TRACK

DESCRIPTION

Configures GPS tracking behavior.

Mode:  
1 = Normal (different update intervals when stationary and moving)  
2 = Change of Location

Format:  
TRACK,<mode>,<rest\_minutes>,<moving\_minutes>

Example:  
TRACK,1,360,10

COMMAND FORMAT

TRACK,mode,min,max

PARAMETERS

Tracking Mode ?

Select... ▼

Normal

Change of Location

Rest Update Interval (minutes) ?

...

Min: 10 Max: 65535

Moving Update Interval (minutes) ?

...

Min: 10 Max: 65535

Send

```
[OUT] 2026-06-23 12:18:44 CDT | >TRACK,1,10,10]
[IN] 2026-06-23 13:03:26 CDT | USER : GPS0day 0hr 4min 3.7V
[IN] 2026-06-23 13:03:40 CDT | USER : GPS0day 0hr 5min 3.7V
[OUT] 2026-06-23 16:24:42 CDT | >TRACK,1,10,10]
[OUT] 2026-06-23 17:25:36 CDT | >TRACK,1,11,11]
[IN] 2026-06-23 17:27:59 CDT | USER : TRACK=Normal 11to11 3.8V
[OUT] 2026-06-23 17:29:53 CDT | >TRACK,1,12,12]
[IN] 2026-06-23 17:39:09 CDT | USER : TRACK=Normal 12to12 3.7V
[OUT] 2026-06-23 17:44:24 CDT | >TRACK,1,11,11]
[IN] 2026-06-23 17:53:18 CDT | USER : TRACK=Normal 11to11 3.7V
[OUT] 2026-06-23 17:57:30 CDT | >TRACK,1,15,16]
[IN] 2026-06-23 17:59:26 CDT | USER : TRACK=Normal Rest:15 Moving:16 3.8V
[IN] 2026-06-23 17:59:27 CDT | USER : TRACK=Normal Rest:15 Moving:16 3.8V
```

## Two-Way Communication – GPS CONFIRMATION

- A confirmation will be sent to you.
- You should do satellite testing with the device outside. Cellular will work inside.
- The Black [OUT] is the message sent by the 2X2 back to the web.
- The Blue [IN] is incoming messages by cell or GS satellite.
- Blue is an incoming message sent via cell or satellite.
- Messages are only checked when the device wakes and will use cellular or satellite depending upon what appears to be the better method at the time.
- The returned message confirms that your GPS interval change has been made.
- Change GPS configuration commands expire after 24 hours if not handled.
- USER:.....is an acknowledgement of your command.

```
[IN] 2026-01-08 08:04:00 | USER : GPSHOUR=7,8,9,10,11,12,13,14,15,
[IN] 2026-01-08 08:04:01 | USER : GPS7day 10hr 11min 4.1V
[IN] 2026-01-08 08:04:04 | USER : TRACK=mode1 22to33 4.0V>USER,10.
[IN] 2026-01-08 08:04:07 | USER : GPS0day 0hr 5min 4.1V
[OUT] 2026-01-08 14:57:18 | >TRACK,1,60,11]
[OUT] 2026-01-08 14:57:36 | >GPSHOUR,1,2,3,4,5,6,7,8,9,10]
[OUT] 2026-01-08 14:57:45 | >GPS,0,0,5]
[IN] 2026-01-08 15:02:10 | USER : TRACK=mode1 60to11 4.3V>USER,10.
[IN] 2026-01-08 15:02:24 | USER : GPS0day 0hr 5min 4.3V
[OUT] 2026-01-09 21:04:46 | >TRACK,1,10,111]
[OUT] 2026-01-09 21:04:52 | >GPSHOUR,7,8,9,10,11,12,13,14,15,16]
[OUT] 2026-01-09 21:05:05 | >GPS,0,0,15]
[IN] 2026-01-12 10:13:38 | USER : GPS0day 0hr 15min 4.1V
[OUT] 2026-01-12 10:14:18 | >TRACK,1,20,30]
[OUT] 2026-01-12 10:14:33 | >GPSHOUR,1,2,3,4,5,6,7,8,9,10]
[OUT] 2026-01-12 10:14:41 | >GPS,1,22,222]
[OUT] 2026-01-12 10:14:59 | >GPSHOUR,7,8,9,10,11,12,13,14,15,16]
[OUT] 2026-01-12 10:15:09 | >TRACK,3,10,11]
[OUT] 2026-01-12 10:15:35 | >TRACK,1,10,12]
[OUT] 2026-01-12 10:15:46 | >GPSHOUR,8,9,10,11,12,13,14,15,16,17]
[IN] 2026-01-12 10:16:07 | USER : TRACK=mode1 20to30 4.1V>LASSO5,1
[IN] 2026-01-12 10:16:59 | USER : GPS1day 22hr 22min 4.1V
[IN] 2026-01-12 10:18:06 | USER : GPSHOUR=7,8,9,10,11,12,13,14,15,
```

## Two-Way Communication

You can configure new commands for advanced features. It is Not advisable that you change this default below. Contact Lasso to add more commands for your specific needs.

The Two-Way Communication Configuration page lists all available command definitions. From here, administrators can **view**, **create**, **edit**, or **delete** command configurations that will be available for sending to assets.

[← Configure](#)

+ Create command

| NAME    | COMMAND                                            | PARAMETERS                                                                                 | DESCRIPTION                                                |
|---------|----------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------|
| GPSHOUR | >GPSHOUR,hr1,hr2,hr3,hr4,hr5,hr6,hr7,hr8,hr9,hr10] | <div>HR1HR2</div> <div>HR3HR4</div> <div>HR5HR6</div> <div>HR7HR8</div> <div>HR9HR10</div> | Schedules GPS wake-up times during the day (24h format)... |
| GPS     | >GPS,day,hour,minute]                              | <div>DAYHOUR</div> <div>MINUTE</div>                                                       | Configures a fixed GPS reporting interval.<br>...          |
| TRACK   | >TRACK,mode,min,max]                               | <div>MODEMIN</div> <div>MAX</div>                                                          | Configures GPS tracking behavior.<br>...                   |

Two-Way Communication view showing command history and communication logs

No need to alter this page

## Create Asset

Typically this is done at Lasso. Creating a new asset is done from the Add Asset flow. The process consists of two steps. In Step 1, you configure the asset details including **Main Properties** (Device ESN, Asset type, Asset name, Internal identifier, and Comments) and optional **Customer Properties** for tracking additional information.

- Open the Add Asset flow from the Groups page or the List view actions menu.
- Step 1 – Asset Details: Select the Device ESN, choose an Asset type, enter the Asset name and Internal identifier. Optionally add comments and customer properties.
- Click Continue to proceed to Step 2.
- Step 2 – Asset Properties: Configure properties specific to the selected asset type (Tank, Engine, or Equipment).
- Click Create to finish. The new asset will appear on the map and list views.

Step 1

### Asset details

Create an asset and assign a device to start monitoring.

**Main Properties**

Device ESN \*

Select device ESN

Asset type

Select asset type

Asset name \* Internal identifier \*

Asset name Internal identifier

Comments

Comments

**Customer Properties**

Add properties and values to track additional information

+ Add new property

Continue

Step 2 **Asset properties**

Configure properties based on asset type.

Create Asset – Step 1: Asset Details form showing Main Properties (Device ESN, Asset type, Asset name, Internal identifier, Comments) and Customer Properties section

- **Equipment (GPS-only) type:** Configure basic GPS tracking properties.

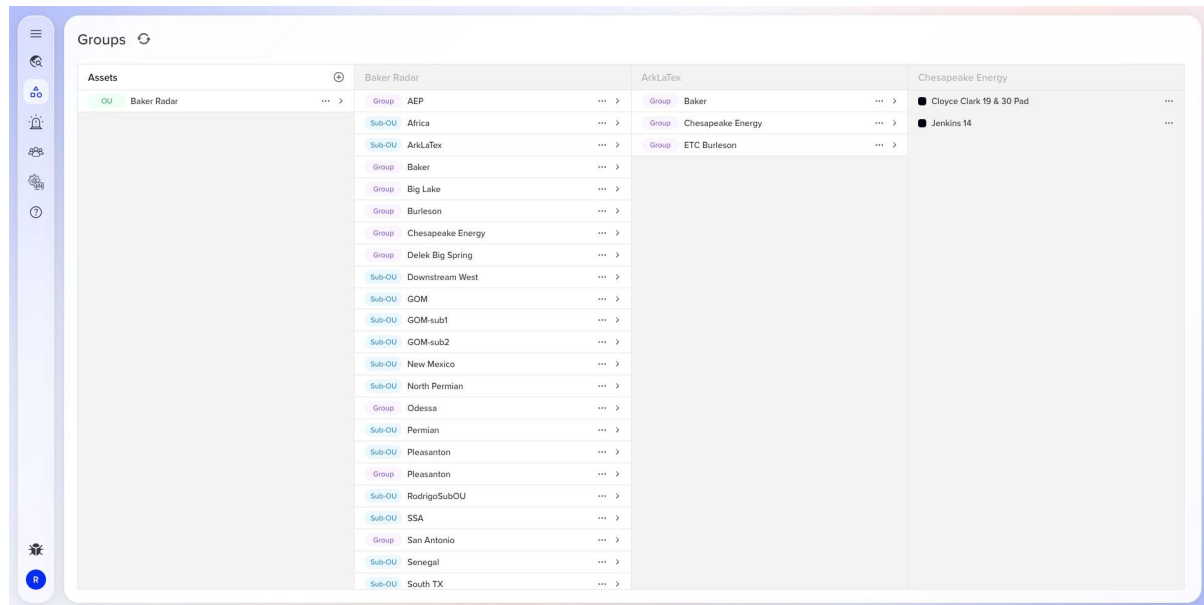
Create Asset – Step 2 for Tank type: Tank Configuration, Measurements Configuration, and Status Calculation Configuration

The screenshot displays the 'Equipment properties' configuration interface. At the top, a summary box for 'Step 1: Asset details' indicates the initial step is complete. The current step, 'Step 2: Equipment properties', is highlighted with a blue border. Below the title, a subtitle reads 'Additional information to monitor tank levels with accuracy.' The main configuration area, titled 'Equipment Configuration', contains a grey box stating: 'This is a GPS-only device. Location tracking is the main metric. No additional properties need to be configured for Equipment assets.' Below this, a 'Primary Measurement' section features a dropdown menu with the placeholder text 'Select primary measurement'. A note below the dropdown states: 'Channels configured for the selected asset type are listed here.' At the bottom of the configuration area, there are 'Back' and 'Add' buttons.

Create Asset – Step 2 for Equipment (GPS-only) type: basic GPS tracking properties configuration

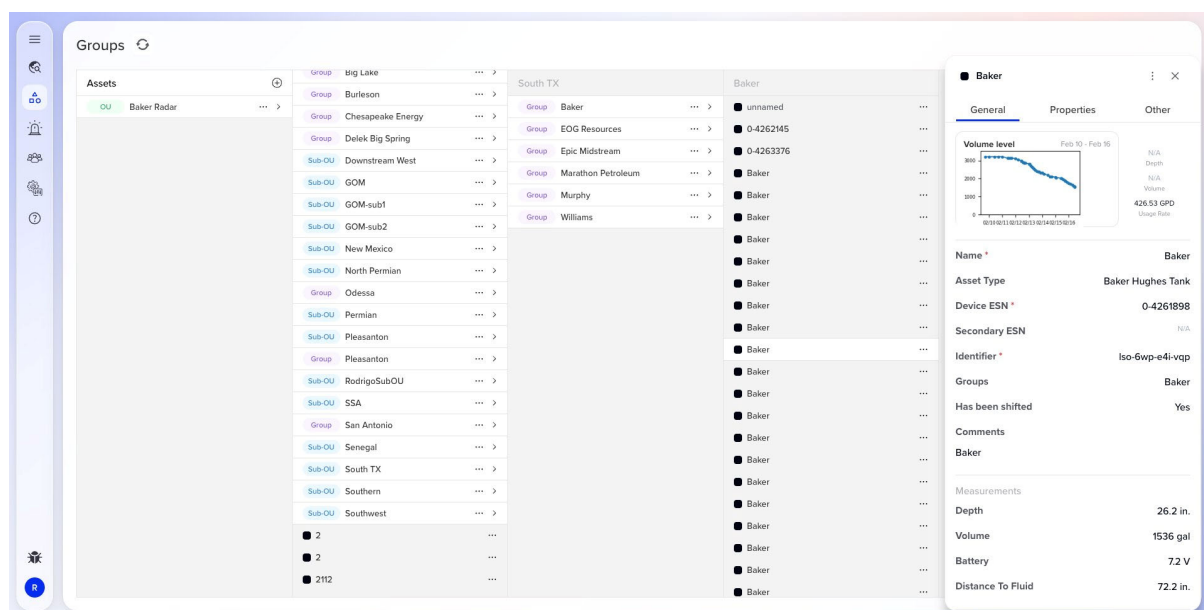
## Groups

Groups let you organize assets into logical collections within your organization hierarchy. The Groups page displays a **multi-column browser** where you can navigate through **Organization Units (OUs)**, **Sub-OUs**, and **Groups** to find and manage your assets.



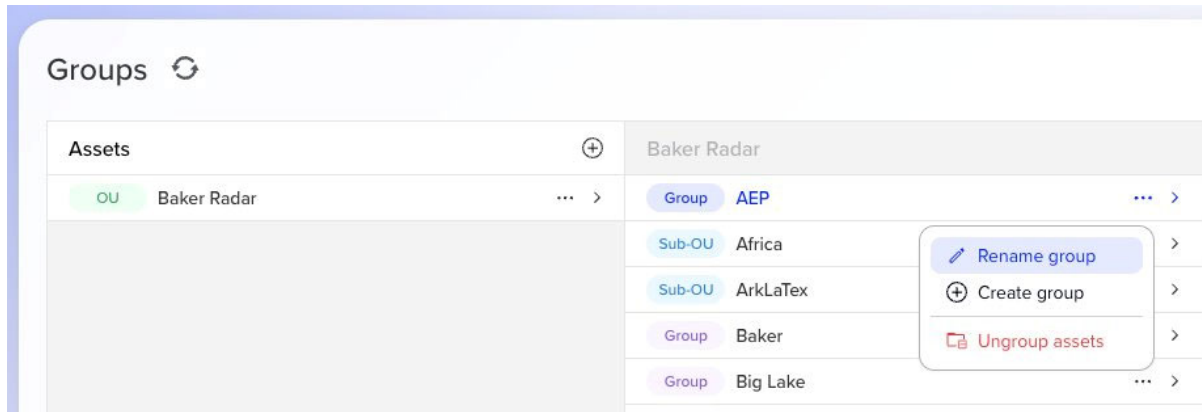
Groups page – multi-column browser showing Organization Units, Sub-OUs, Groups, and assets organized in a hierarchical structure

When you select an asset in the Groups view, a **details drawer** opens on the right side showing the asset's general information, including name, asset type, device ESN, identifier, group assignment.



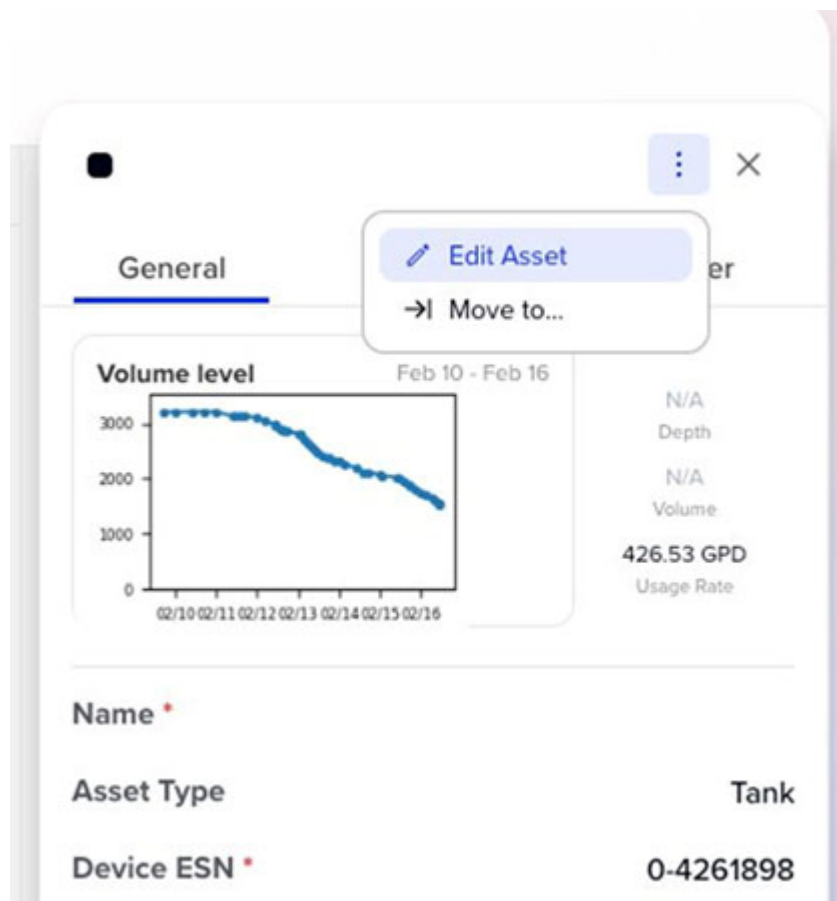
Asset details drawer – shows general information (name, type, ESN, identifier, group), a volume level chart, and current measurements for the selected asset

Each group and Sub-OU has a context menu (accessible via the ... button) with actions to manage the group structure. You can **rename a group**, **create a new nested group** inside it, or **ungroup all assets** contained in the group.



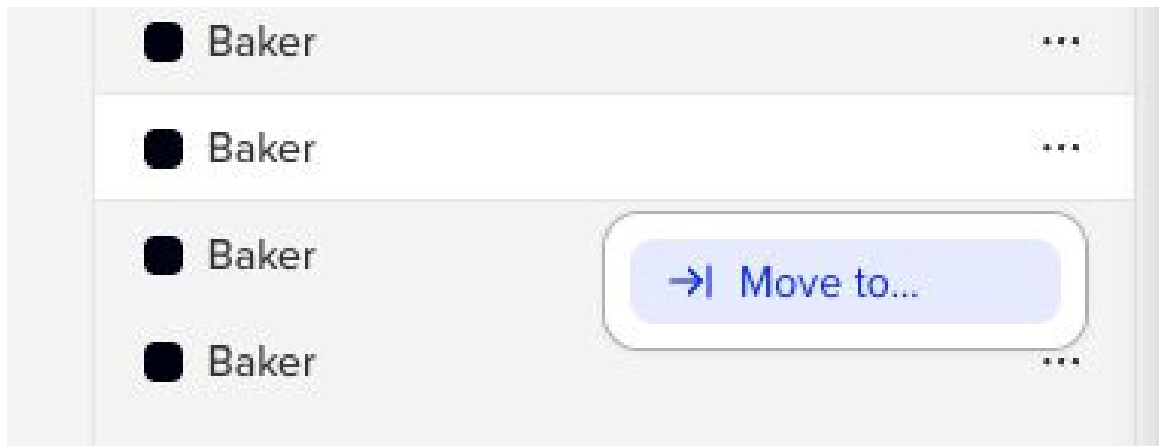
*Group context menu – options to Rename group, Create group (nested), and Ungroup assets*

From the asset details drawer, you can perform actions on the selected asset by clicking the three-dot menu at the top-right corner. The available actions include **Edit Asset** to update the asset information, and **Move to...** to transfer the asset to a different group or sub-organization.



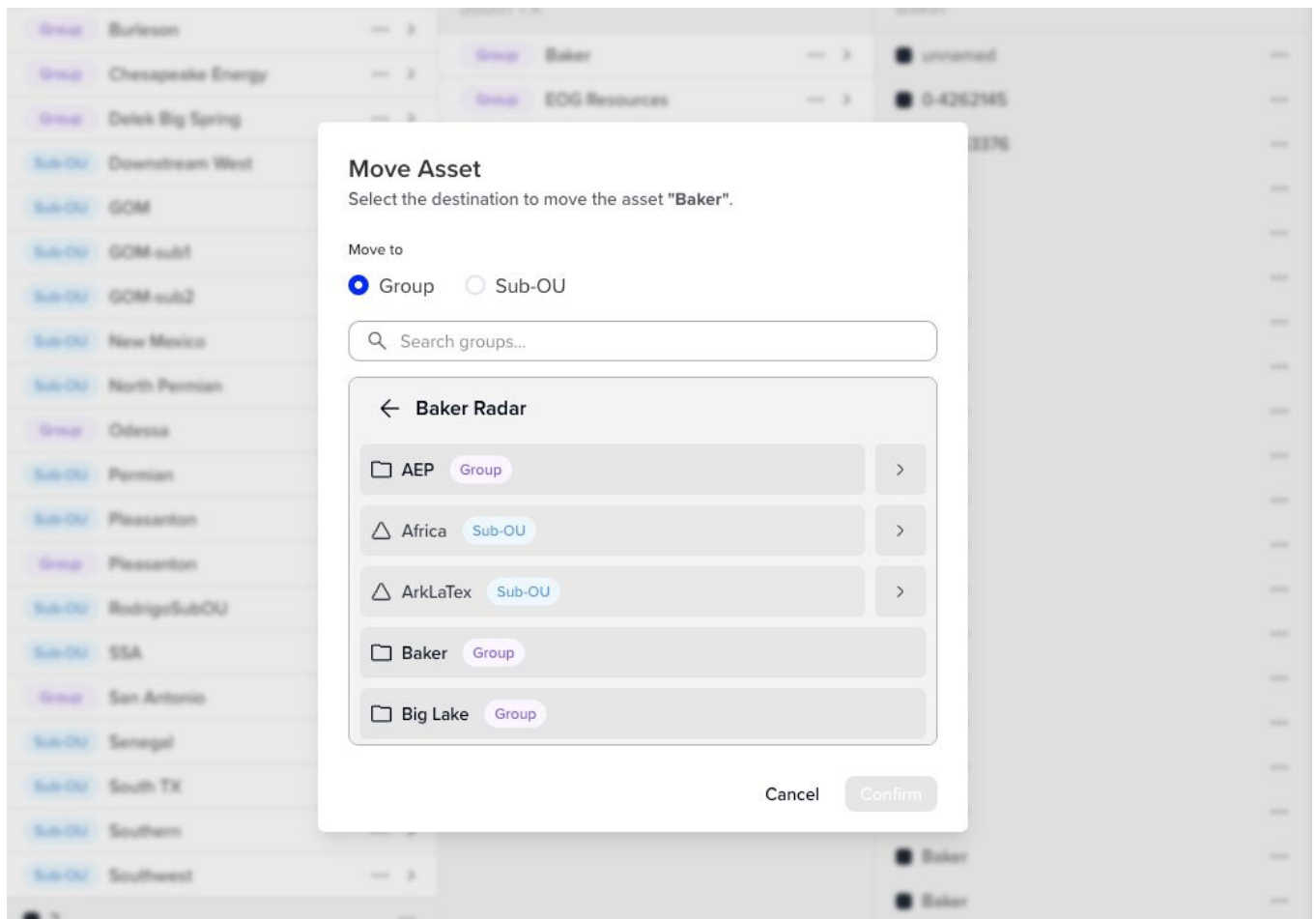
*Asset details drawer – three-dot menu showing Edit Asset and Move to... actions for the selected asset*

You can also move assets directly from the list view. Click the ... menu on an asset row to access the Move to... option without opening the details drawer.

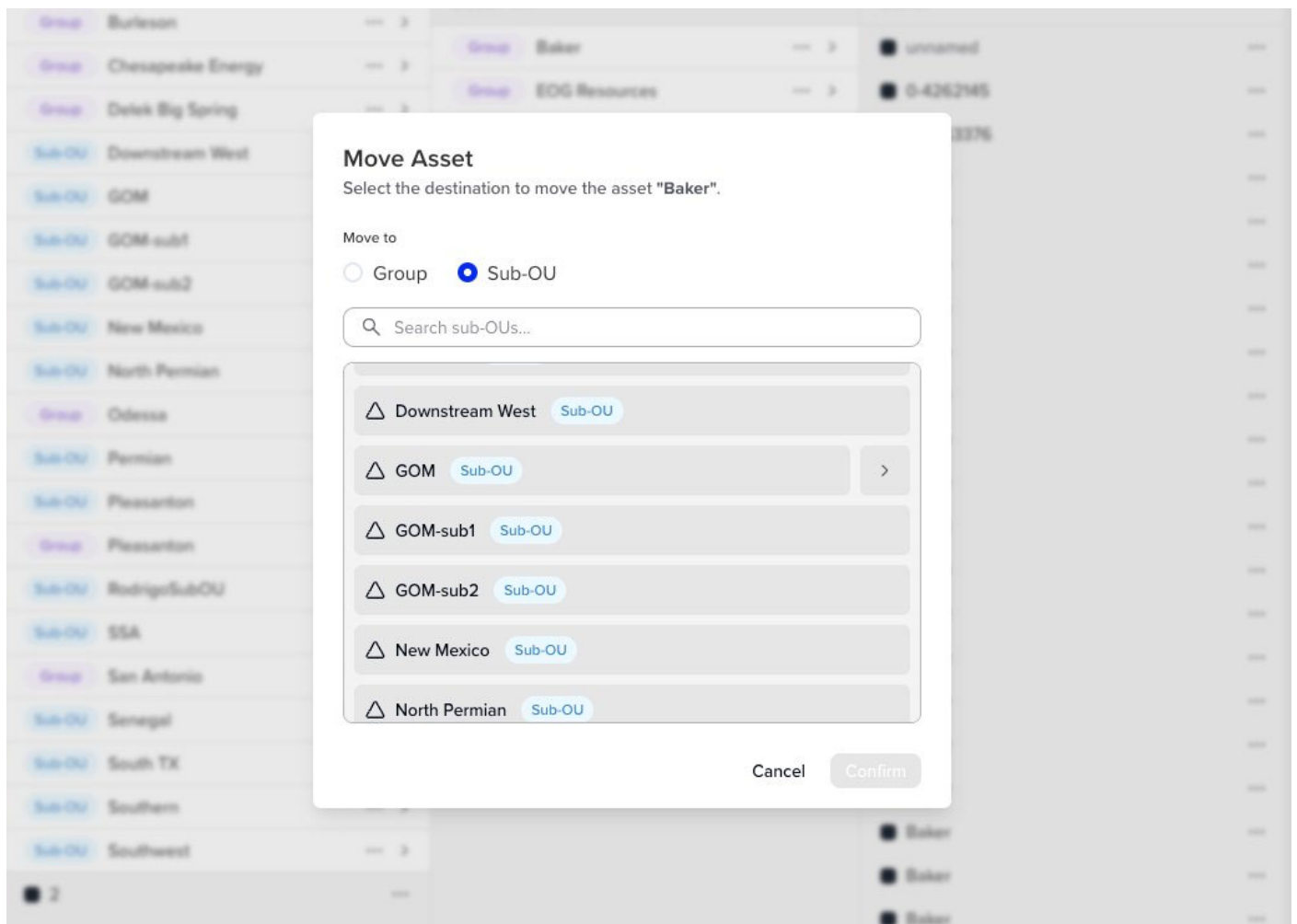


*Asset context menu in list view – Move to... option to transfer the asset to another location*

The Move Asset dialog allows you to choose whether to move the asset to a **Group** or a **Sub-OU**. When moving to a Group, you can search and browse available groups within your organization. When moving to a Sub-OU, the dialog shows the Sub-OU hierarchy for you to select the destination.



*Move Asset dialog – select destination Group or Sub-OU with search and hierarchical navigation*



*Move Asset dialog (Sub-OU mode) – browse and select a Sub-OU destination from the organization hierarchy*

## Alerts

The Alerts page lists alert rules for your organization. You can create, edit, and delete alerts. Alert types include **days idle**. Each alert can be scoped to groups or assets and can send notifications (e.g. email).

*Alerts page – list of all configured alerts showing name, type, asset/group scope, schedule, status (Enabled/Disabled), and action icons*

To create a new alert, click the **Create Alert** button. Choose the alert type and configure conditions, schedule, recipients, and the assets or groups the alert applies to.

### New Asset Alert

It will send an email alert using the following criteria.

**Alert Type**

Threshold Breach

**Metric Type**

Measurement

**Measurement**      **Operator**      **Value**

Volume (BakerHughes ...      Less than      10

**Group / Asset**

Baker Radar

 This alert will only be applied if the selected group contains assets of type "BakerHughes Tank". Otherwise, the alert will have no effect.

**Alert Schedule**

Weekly

**Weekly Schedule**

☐ Sun ☒ Mon ☐ Tue ☒ Wed ☐ Thu ☒ Fri ☐ Sat

**Schedule Timing**

Start Time      End Time

--:-- --      --:-- --

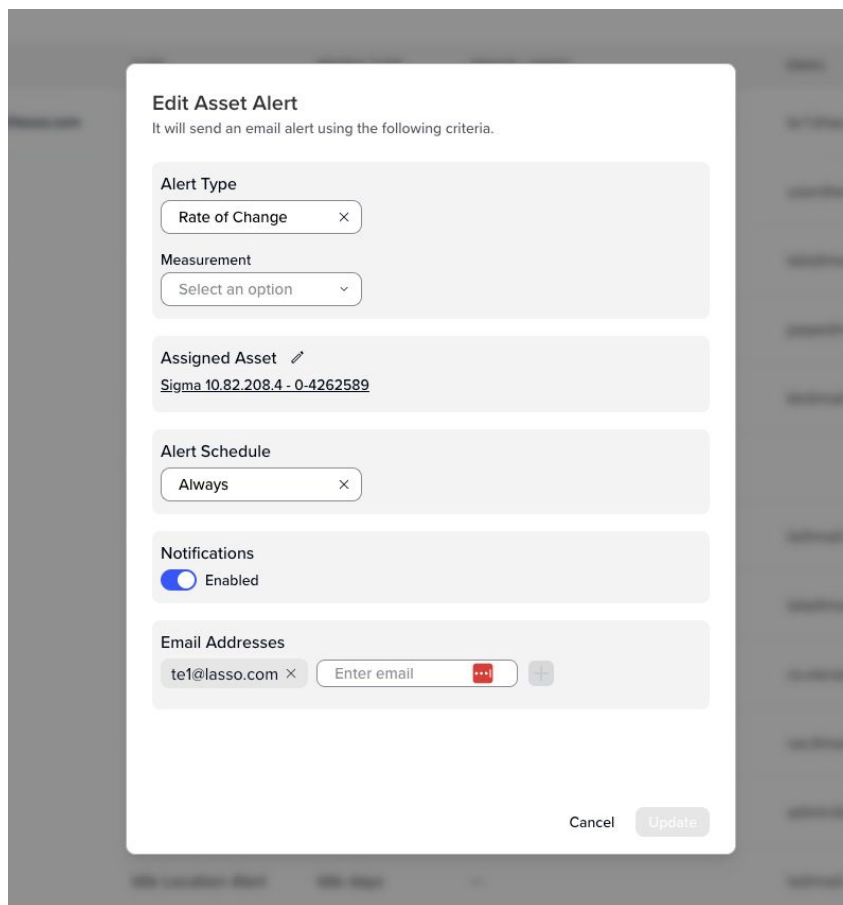
**Email Addresses**

Enter email  

Cancel      Create

Create Alert dialog – select alert type, configure conditions, schedule, and recipients

To edit an existing alert, click the **edit** (pencil) icon on the alert row. The edit dialog allows you to update all alert parameters including type, conditions, schedule, and recipients.



**Edit Asset Alert**  
It will send an email alert using the following criteria.

**Alert Type**  
Rate of Change ×

**Measurement**  
Select an option ▾

**Assigned Asset** ✎  
Sigma 10.82.208.4 - 0-4262589

**Alert Schedule**  
Always ×

**Notifications**  
☒ Enabled

**Email Addresses**  
te1@lasso.com × Enter email [redacted] +

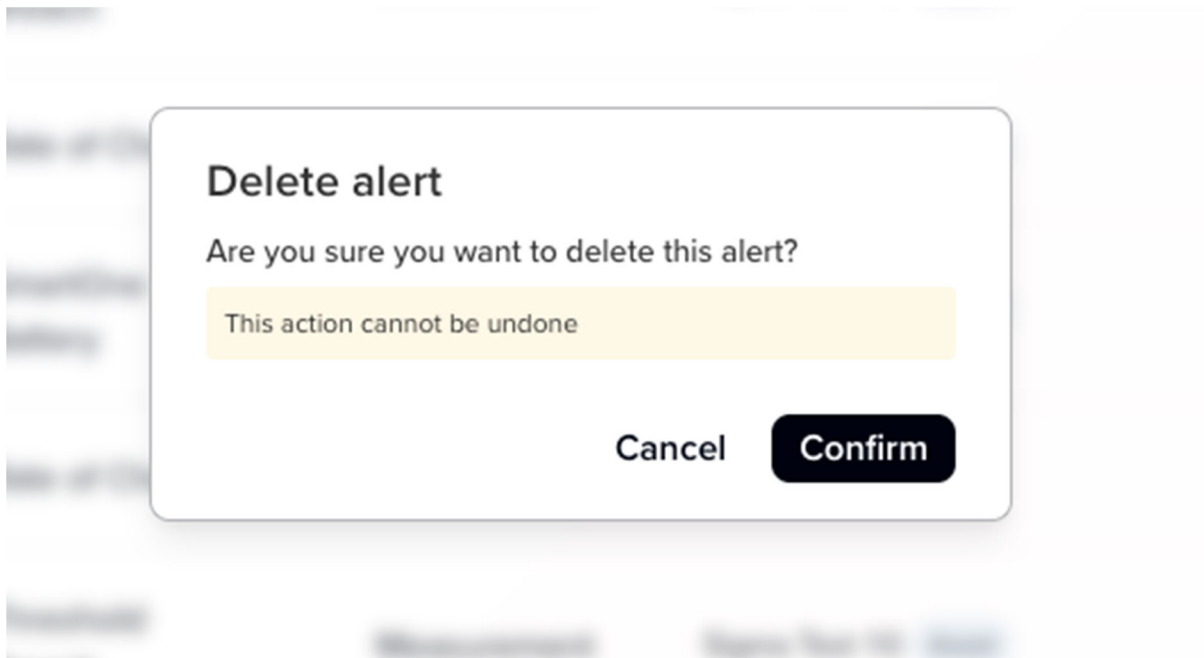
Cancel Update

*Edit Alert dialog – update alert configuration for an existing alert rule*

To delete an alert, click the **delete** (trash) icon on the alert row. A confirmation dialog will appear warning that this action cannot be undone. You must confirm the deletion before the alert rule is permanently removed.

|         |        |            |   |   |
|---------|--------|------------|---|---|
| ail.com | Always | ● Enabled  | ✎ | 🗑 |
| com     | Always | ● Enabled  | ✎ | 🗑 |
| ail.com | Always | ● Disabled | ✎ | 🗑 |

*Delete alert action – click the trash icon on an alert row to initiate deletion*

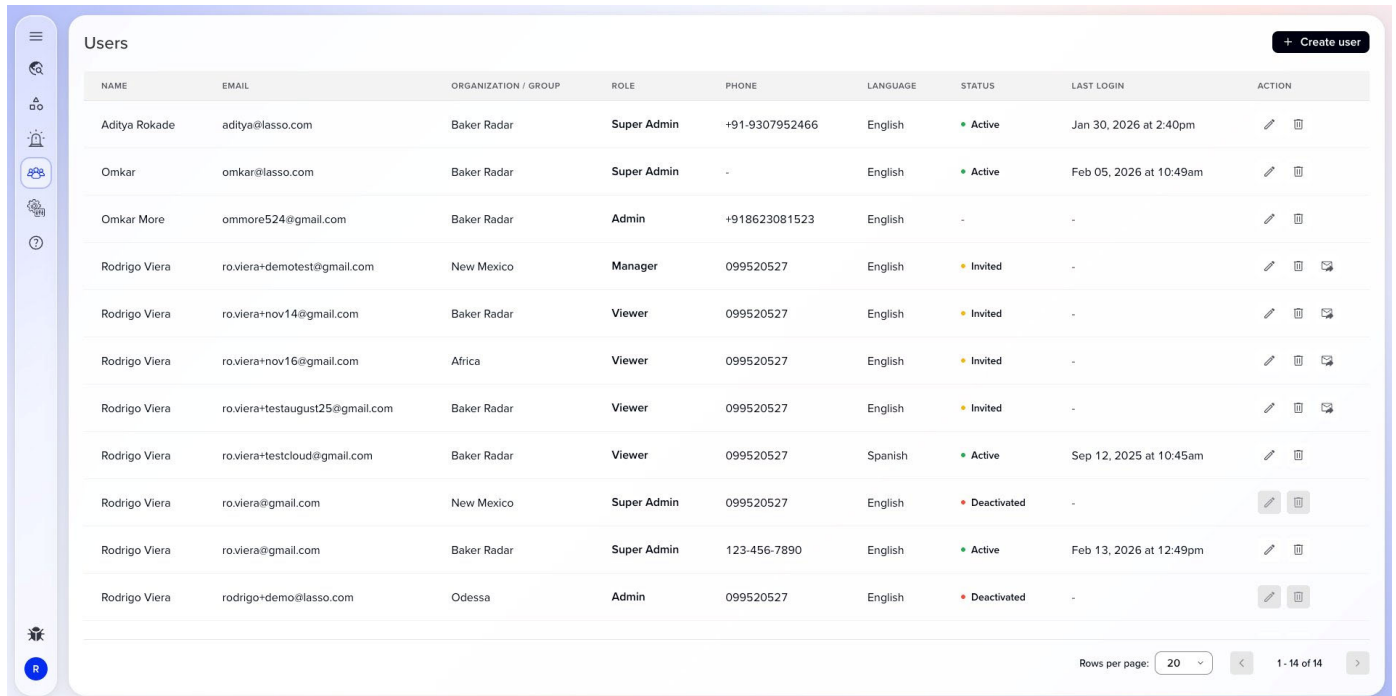


*Delete alert confirmation – warning that the action cannot be undone with Cancel and Confirm options*

## Users and Roles

The Users page allows admins to manage users and their roles. Roles include **Viewer**, **Manager**, and **Admin**. Each role has different permissions (e.g. view only, edit assets, manage users). Additional roles may exist depending on your organization configuration. Users can be assigned to organization units to scope their access.

- **Viewer:** view assets, groups, alerts, and users (read-only). Can list triggers and geofences, view assets and devices, list and receive notifications and reports.
- **Manager:** view and edit assets, groups, and alerts; limited user management.
- **Admin:** full access within their organization unit.



The screenshot shows the 'Users' page in the LASSO interface. It features a table with 12 users. The table has columns for Name, Email, Organization / Group, Role, Phone, Language, Status, Last Login, and Action. A '+ Create user' button is in the top right. A sidebar on the left contains navigation icons. At the bottom right, there is a 'Rows per page' dropdown set to 20 and a pagination indicator '1 - 14 of 14'.

| NAME          | EMAIL                           | ORGANIZATION / GROUP | ROLE        | PHONE          | LANGUAGE | STATUS      | LAST LOGIN              | ACTION                   |
|---------------|---------------------------------|----------------------|-------------|----------------|----------|-------------|-------------------------|--------------------------|
| Aditya Rokade | aditya@lasso.com                | Baker Radar          | Super Admin | +91-9307952466 | English  | Active      | Jan 30, 2026 at 2:40pm  | [Edit] [Delete]          |
| Omkar         | omkar@lasso.com                 | Baker Radar          | Super Admin | -              | English  | Active      | Feb 05, 2026 at 10:49am | [Edit] [Delete]          |
| Omkar More    | ommor524@gmail.com              | Baker Radar          | Admin       | +918623081523  | English  | -           | -                       | [Edit] [Delete]          |
| Rodrigo Viera | ro.viera+demotest@gmail.com     | New Mexico           | Manager     | 099520527      | English  | Invited     | -                       | [Edit] [Delete] [Invite] |
| Rodrigo Viera | ro.viera+nov14@gmail.com        | Baker Radar          | Viewer      | 099520527      | English  | Invited     | -                       | [Edit] [Delete] [Invite] |
| Rodrigo Viera | ro.viera+nov16@gmail.com        | Africa               | Viewer      | 099520527      | English  | Invited     | -                       | [Edit] [Delete] [Invite] |
| Rodrigo Viera | ro.viera+testaugust25@gmail.com | Baker Radar          | Viewer      | 099520527      | English  | Invited     | -                       | [Edit] [Delete] [Invite] |
| Rodrigo Viera | ro.viera+testcloud@gmail.com    | Baker Radar          | Viewer      | 099520527      | Spanish  | Active      | Sep 12, 2025 at 10:45am | [Edit] [Delete]          |
| Rodrigo Viera | ro.viera@gmail.com              | New Mexico           | Super Admin | 099520527      | English  | Deactivated | -                       | [Edit] [Delete]          |
| Rodrigo Viera | ro.viera@gmail.com              | Baker Radar          | Super Admin | 123-456-7890   | English  | Active      | Feb 13, 2026 at 12:49pm | [Edit] [Delete]          |
| Rodrigo Viera | rodrigo+demo@lasso.com          | Odessa               | Admin       | 099520527      | English  | Deactivated | -                       | [Edit] [Delete]          |

*Users page – list of all users showing name, email, phone, role, organization unit, status, and last activity date*

To create a new user, click the **Create User** button. Fill in the user details (first name, last name, email, phone, language), select a role, and assign the user to an organization unit. The role description shows what permissions the user will have.

**New User**  
An invitation will be sent to the user's email after creation.

**User details**

First name ... Last Name

Email Phone Number

English ×

**Role**

Viewer ×

- List triggers and geofences.
- View assets and devices.
- List notifications.
- Receive notifications and reports.

**Organization Unit**

Select Organization Unit

Cancel Create

*Create User dialog – enter user details, select role and organization unit*

To edit an existing user, click the edit (pencil) icon on the user row. The edit dialog allows you to update user details, change the role, and reassign the organization unit.

**Edit User**  
Currently editing user Rodrigo Viera

**User details**

**Role**

- List triggers and geofences.
- View assets and devices.
- List notifications.
- Receive notifications and reports.

**Organization Unit**

Cancel **Edit**

*Edit User dialog – update user details, role, and organization unit for an existing user*

To delete a user, click the delete (trash) icon on the user row. A confirmation dialog will appear warning that this action cannot be undone. You must confirm the deletion before the user is permanently removed.

|          |                         |                                                                                                                                                                                               |
|----------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| • Active | Jan 22, 2026 at 1:52am  |                     |
| • Active | Feb 15, 2026 at 6:59pm  |                     |
| • Active | Feb 13, 2026 at 12:49pm |   <div>Delete</div> |

*Delete user action – click the trash icon on a user row to initiate deletion*

Super Admin

123-456-7890

Super

## Delete user

Are you sure you want to delete this user?

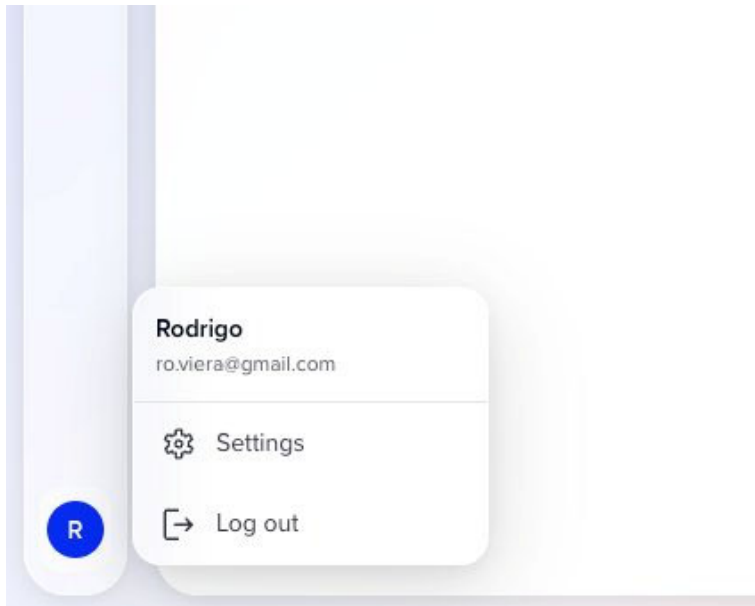
This action cannot be undone

Cancel

Confirm

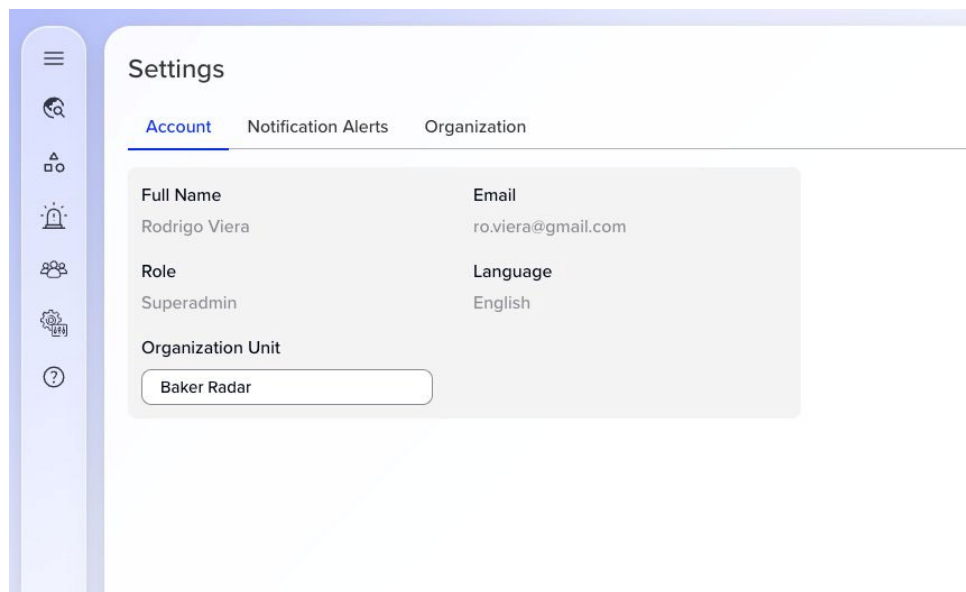
*Delete user confirmation – warning that the action cannot be undone with Cancel and Confirm options*

## Settings – Account



To access Settings, click your profile avatar at the bottom-left of the sidebar. A menu will appear with options to open Settings or Sign out. Click **Settings** to navigate to the account and organization management pages.

*User profile menu showing Settings and Sign out options*



Under Settings, the **Account** tab lets you view and update your profile (e.g. name, language). Password change may also be available from here or after sign-in when required.

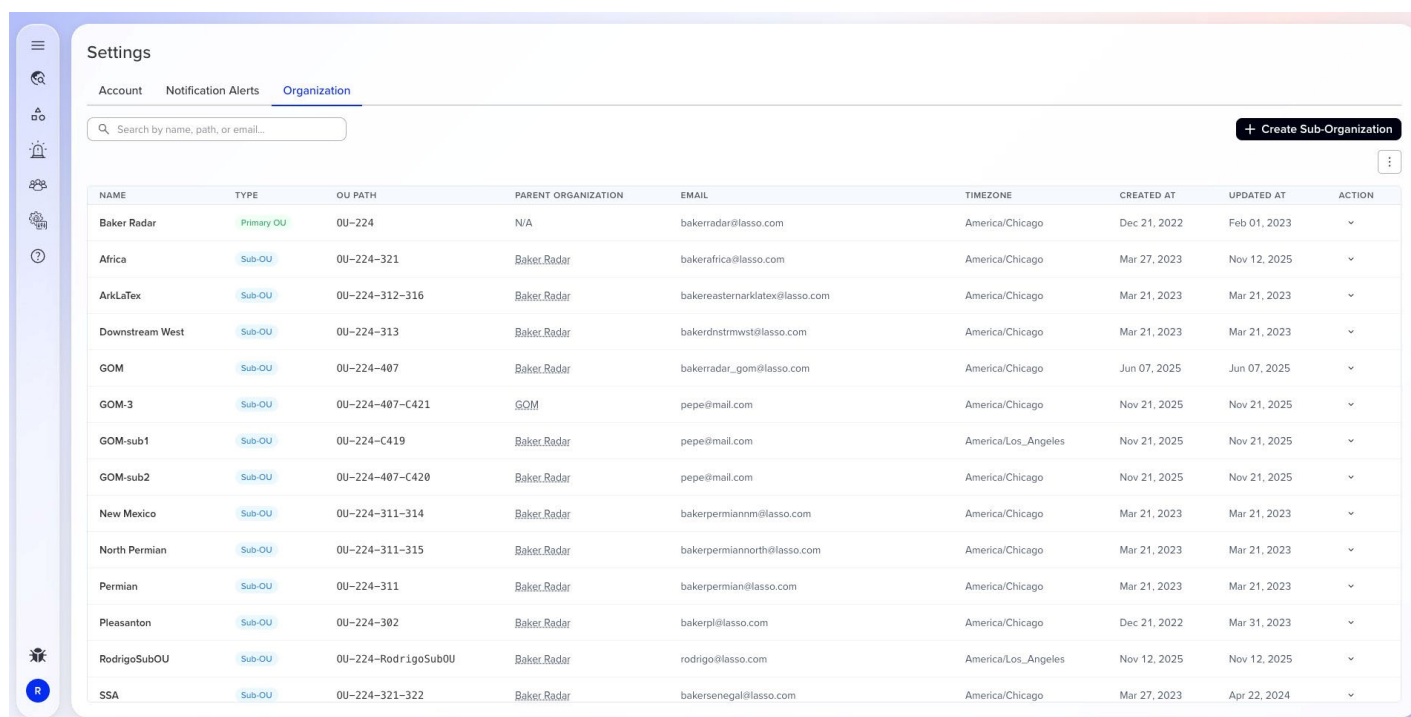
*Settings – Account tab with user details*

## Settings – Notification Alerts

The **Notification Alerts** section in Settings lets you manage how you receive alert notifications (e.g. email addresses, preferences). This is where you configure where system alerts are sent for your account or group.

## Settings – Organization Management

Users with organization management permission can view and manage **organization units (OUs)** and their hierarchy. You can create sub-organizations and assign users or assets to OUs. This is typically used by admins.



| NAME            | TYPE       | OU PATH             | PARENT ORGANIZATION | EMAIL                        | TIMEZONE            | CREATED AT   | UPDATED AT   | ACTION |
|-----------------|------------|---------------------|---------------------|------------------------------|---------------------|--------------|--------------|--------|
| Baker Radar     | Primary OU | OU-224              | N/A                 | bakerradar@lasso.com         | America/Chicago     | Dec 21, 2022 | Feb 01, 2023 | ⌵      |
| Africa          | Sub-OU     | OU-224-321          | Baker Radar         | bakerafrica@lasso.com        | America/Chicago     | Mar 27, 2023 | Nov 12, 2025 | ⌵      |
| ArkLaTex        | Sub-OU     | OU-224-312-316      | Baker Radar         | bakereastmarklatex@lasso.com | America/Chicago     | Mar 21, 2023 | Mar 21, 2023 | ⌵      |
| Downstream West | Sub-OU     | OU-224-313          | Baker Radar         | bakerdnstmrwest@lasso.com    | America/Chicago     | Mar 21, 2023 | Mar 21, 2023 | ⌵      |
| GOM             | Sub-OU     | OU-224-407          | Baker Radar         | bakerradar_gom@lasso.com     | America/Chicago     | Jun 07, 2025 | Jun 07, 2025 | ⌵      |
| GOM-3           | Sub-OU     | OU-224-407-C421     | GOM                 | pepe@mail.com                | America/Chicago     | Nov 21, 2025 | Nov 21, 2025 | ⌵      |
| GOM-sub1        | Sub-OU     | OU-224-C419         | Baker Radar         | pepe@mail.com                | America/Los_Angeles | Nov 21, 2025 | Nov 21, 2025 | ⌵      |
| GOM-sub2        | Sub-OU     | OU-224-407-C420     | Baker Radar         | pepe@mail.com                | America/Chicago     | Nov 21, 2025 | Nov 21, 2025 | ⌵      |
| New Mexico      | Sub-OU     | OU-224-311-314      | Baker Radar         | bakerpermiannm@lasso.com     | America/Chicago     | Mar 21, 2023 | Mar 21, 2023 | ⌵      |
| North Permian   | Sub-OU     | OU-224-311-315      | Baker Radar         | bakerpermiannorth@lasso.com  | America/Chicago     | Mar 21, 2023 | Mar 21, 2023 | ⌵      |
| Permian         | Sub-OU     | OU-224-311          | Baker Radar         | bakerpermian@lasso.com       | America/Chicago     | Mar 21, 2023 | Mar 21, 2023 | ⌵      |
| Pleasanton      | Sub-OU     | OU-224-302          | Baker Radar         | bakerpl@lasso.com            | America/Chicago     | Dec 21, 2022 | Mar 31, 2023 | ⌵      |
| RodrigoSubOU    | Sub-OU     | OU-224-RodrigoSubOU | Baker Radar         | rodrigo@lasso.com            | America/Los_Angeles | Nov 12, 2025 | Nov 12, 2025 | ⌵      |
| SSA             | Sub-OU     | OU-224-321-322      | Baker Radar         | bakersenegal@lasso.com       | America/Chicago     | Mar 27, 2023 | Apr 22, 2024 | ⌵      |

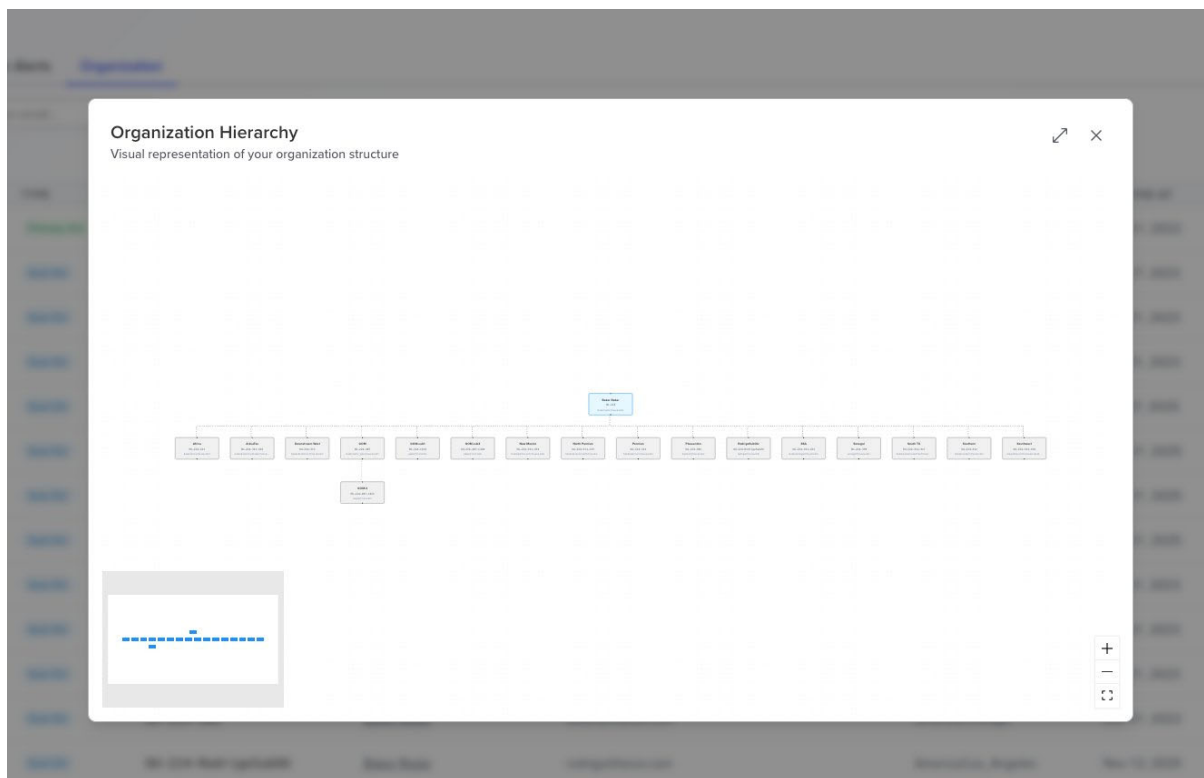
Organization list – full view showing all organizations with their parent, email, timezone, and creation date

From the organization list, you can export the data or view the organization hierarchy. Click the options menu to access export formats (CSV, Excel) or switch to the hierarchy view.

| <a href="#">+ Create Sub-Organization</a> |              |              |   |
|-------------------------------------------|--------------|--------------|---|
| TIMEZONE                                  | CREATED AT   | UPDATED AT   |   |
| America/Chicago                           | Dec 21, 2022 | Feb 01, 2023 | ⋮ |
| America/Chicago                           | Mar 27, 2023 | Nov 12, 2023 | ⋮ |
| America/Chicago                           | Mar 21, 2023 | Mar 21, 2023 | ▼ |
| America/Chicago                           | Mar 21, 2023 | Mar 21, 2023 | ▼ |

Organization export options menu – export the list or switch to hierarchy view

The hierarchy view displays the organization structure as a tree, showing parent-child relationships between organizations and sub-organizations.



Organization hierarchy view – tree structure showing parent-child relationships

To create a new sub-organization, click the **Create Sub-Organization** button. Fill in the organization details including name, email, and timezone, then select the parent organization.

*Create Sub-Organization dialog – enter name, email, timezone, and select parent organization*

To edit an existing organization, click the edit action on the organization row. You can update the name, email, and timezone. The parent and root organization are shown for reference.

*Edit Organization dialog – update name, email, and timezone for an existing organization*

## Troubleshooting & FAQ

This section links device-level conditions and Web Site behavior.

### 1. Asset shows Offline or No data (black status)

- **Web Site:** Asset marker or list row shows **black** status (No data or offline). Last report date may be old or missing.
- **Check on the device:** Ensure lid faces the sky for reliable transmission; power on and wiring secure.
- **Check on the Web Site:** Confirm the correct asset and device (ESN) are selected; check that you are in the right organization or sub-company if you have multiple; try a different date range in Asset Details.

### 2. No GPS positions / Breadcrumbs missing on Locations tab

- **Web Site:** Locations tab shows no or few points; breadcrumbs path is empty or very short for the selected period.
- **Check on the device:** GPS is motion-activated—moving the unit (e.g. in car windshield for a day) can help confirm. Ensure antenna has clear access to sky; satellite signal blocked by metal can prevent messages entirely. Lid must face the sky
- **Check on the Web Site:** Verify the date range includes when the asset was expected to move.

### 3. Alert not received (email)

- **Web Site:** You expected an alert (e.g. threshold, geofence) but did not get an email.
- **Check on the device:** No device check required for notification delivery; alert triggering depends on data reaching the Web Site,
- **Check on the Web Site: Alerts** page: confirm the alert **Status** is Enabled (not Disabled). **Settings** → **Notification Alerts:** ensure email addresses are entered and that the alert is enabled for your account. Ensure accurate email addresses are configured to avoid missed notifications; Alerts with a Disabled status will not trigger. Confirm the alert rule (type, threshold, schedule) matches when you expect the condition to occur.

### 4. Two-way command failed or no response

- **Web Site:** Command sent from Two-Way Communication view shows failed or no acknowledgment in the communication log.
- **Check on the device:** All communication is sent by Cell and Satellite for redundancy. Allow more time if you do not see a confirmation. Cellular data should be confirmed within a minute. Satellite confirmation can take hours since check in times can vary.
- **Check on the Web Site:** Confirm correct sub-company/account selected; check last report date and status for the asset.
- **Satellite messages are checked at least once per day.** Also, they are checked every time the 2X2 wakes up. Sent Messages expire after 1 day. Cellular messages are checked only if there has not been a good GPS lock in the last day.

## Specifications Summary

### General Description

Multi-network industrial telemetry and tracking device supporting satellite, cellular (LTE-M), Wi-Fi, GPS, and Bluetooth® communications with two-way messaging capability. Designed for operation in hazardous (Zone 0 / Class I Div 1) and non-hazardous environments.

---

### Electrical Specifications

- Supply: 3.6 VDC lithium-thionyl chloride battery
  - Battery: Non-replaceable
  - Current Consumption:
    - Max: 0.3 A
  - Model: 70500
- 

### Mechanical Specifications

- Enclosure: Rugged sealed industrial, potted, enclosure
  - Ingress Protection: IP68
  - Dimensions: 3.8 X 1.8 X 8.8 *Refer to mechanical drawing*
  - Installation Height: Use < 2000 m
- 

### Operating Environment

- Ambient Temperature Range:  $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$
  - Suitable for fixed and mobile industrial assets
- 

- Integrated 3-axis accelerometer with motion/orientation detection
- Extensive I/O interfaces (UART, USB, I2C, SPI, GPIO, analog inputs)
- Realm Cloud for device management and data monitoring

### Communication & Frequencies

#### Satellite

- Network: Globalstar LEO
- Bands: L-band / S-band

#### Cellular

- Technology: LTE-M (Cat-M1)

#### GNSS / GPS

- Multi-constellation (GPS, GLONASS, Galileo, BeiDou)

#### Wi-Fi

- 2.4 GHz band

#### Bluetooth®

- Bluetooth Low Energy (BLE) up to 10 sensor nodes

## Certifications & Compliance

### Explosion Protection (ATEX / IECEx)

- IECEx / Ex Marking: Ex ia IIB T4 Ga
- ATEX: II 1 G Ex ia IIB T4 Ga
- Equipment Protection Level (EPL): Ga
- Temperature Class: T4
- Ambient: -40°C to +50°C

### North America (UL / CSA Equivalent)

- Class I Zone 0 AEx ia IIB Ga T4
- Class I Division 1 Groups C & D T4

### Radio Compliance

- Contains FCC ID: L2V-RX200M
- Contains FCC ID: 2ATUB-WIZFI360PA
- Contains FCC ID: A8TBM78
- FCC Part 15 Compliant

## Functional Capabilities

- Automatic network selection (satellite / cellular)
- Two-way communication and remote configuration
- Event-based, scheduled, and motion-based reporting
- Bluetooth sensor integration
- Power-optimized operation

## Important Notes

- Battery is not field replaceable
- Device shall not be modified
- Installation and operation must comply with hazardous area requirements]

**Battery Life is calculated and can vary depending upon environment.**

**Life depends upon if Satellite or Cellular methods are used.**

| BATTERY LIFE       | UNITS | 4 CALL/DAY | 4 CELL WIFI /DAY | 1 CALL /DAY | 1 CELL WIFI /DAY | 12 CALL/DAY | 12 CELL WIFI /DAY |
|--------------------|-------|------------|------------------|-------------|------------------|-------------|-------------------|
| Operating lifetime | days  | 2703       | 2677             | 4821        | 4800             | 1245        | 1228              |
| Operating lifetime | years | 7.4        | 7.3              | 13.2        | 13.2             | 3.4         | 3.4               |
| Hits in Lifetime   | hits  | 10812      | 10708            | 4821        | 4800             | 14938       | 14739             |

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## AI Thinking logic

- ☐ The 2X2 normally operates in low-power satellite mode and wakes periodically based on its configured reporting schedule.
- ☐ When the modem wake signal becomes active, the firmware enters the production state machine and begins a new wake cycle.
- ☐ The system first attempts to obtain a fresh GPS position for accurate outdoor tracking.
- ☐ During GPS acquisition, the firmware periodically checks GPS status and requests updated position data.
- ☐ If a valid GPS position is obtained, the latitude and longitude are stored and prepared for transmission.
- ☐ GPS acquisition attempts are intentionally limited to reduce battery consumption.
- ☐ The firmware contains an adaptive “likely indoors” algorithm that remembers repeated GPS failures.
- ☐ After multiple failed GPS attempts, the unit assumes it may be indoors and shortens future GPS search times to conserve battery life.
- ☐ Even while in indoor mode, the firmware periodically performs a full GPS retry to determine whether the asset has moved outdoors again.
- ☐ If GPS remains unavailable, the firmware automatically falls back to Wi-Fi geolocation mode.
- ☐ In Wi-Fi mode, nearby access point MAC addresses and signal strengths are collected using the onboard Wi-Fi radio.
- ☐ The collected Wi-Fi information is transmitted through the LTE cellular modem to the Lasso server for indoor location.
- ☐ Cellular communication is used for high-speed transfer of GPS data, Wi-Fi geolocation data, telemetry, and remote commands.
- ☐ Satellite communication remains available for low-power messaging, configuration updates, and scheduled wake-up control even when cellular coverage is unavailable.
- ☐ After GPS, Wi-Fi, cellular, and satellite tasks are completed, the firmware powers down unused hardware, stores critical state variables in flash memory, and returns the unit to deep sleep for maximum battery life.

## **MATERIAL SAFETY DATA SHEET (MSDS) / SAFETY DATA SHEET (SDS)**

### **SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION**

#### **Product Name**

Lasso 2X2 Industrial Telemetry Device

#### **Product Description**

Industrial IoT / Telemetry Tracking Device with:

- Globalstar RM200 satellite modem
- LTE-M cellular communications
- GPS
- Bluetooth / Wi-Fi
- Internal Lithium Thionyl Chloride Battery
- Internal Ultra Pulse Capacitor

#### **Internal Energy Storage Components**

- ER34615 3.6V Lithium Thionyl Chloride Battery
- UPC1550 Ultra Pulse Capacitor

#### **Manufacturer**

Lasso Technologies, LLC  
8150 N Central Expy, Suite 2000  
Dallas, Texas 75206 USA

#### **Emergency Contact**

Contact Lasso Technologies for technical support and emergency information. TEL 866-392-0923

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### **SECTION 2 – HAZARD IDENTIFICATION**

#### **Product Classification**

The 2X2 device is considered an “article” under OSHA Hazard Communication standards when intact and used as intended.

#### **Main Hazards**

- Contains sealed lithium metal battery.
- Risk of thermal runaway if damaged, crushed, short-circuited, incinerated, or improperly charged.
- Internal battery contains lithium-thionyl chloride chemistry.
- Internal capacitor stores electrical energy.

#### **Potential Hazards if Damaged**

- Electrolyte leakage
- Fire hazard
- Skin or eye irritation
- Toxic fumes during fire conditions

#### **Precautionary Statements**

- Do not open enclosure.
- Do not short-circuit battery terminals.
- Do not incinerate.
- Do not crush or puncture.
- Do not expose to temperatures above 100°C.
- Do not recharge primary lithium battery.

Battery warnings are consistent with manufacturer guidance.

### SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

| Component         | Description                           | Approximate Content |
|-------------------|---------------------------------------|---------------------|
| ER34615 Battery   | Lithium Thionyl Chloride Primary Cell | Internal            |
| UPC1550 Capacitor | Ultra Pulse Capacitor                 | Internal            |
| Electronics       | PCB, semiconductors, antennas         | Internal            |
| Enclosure         | Industrial polymer housing            | External            |

#### Battery Details

##### ER34615 Battery

- Chemistry: Lithium Thionyl Chloride (Li-SOCl<sub>2</sub>)
- Nominal Voltage: 3.6V
- Capacity: 38 Ah nominal
- Lithium Metal Content: 5.3g

#### Capacitor Details

##### UPC1550

- Maximum Charge Voltage: 3.95V
- Maximum Pulse Current: .4A

#### Encapsulation / Potting Compound

The 2X2 contains internal electronic assemblies encapsulated using a two-part silicone elastomer potting compound for environmental protection and hazardous-location safety enhancement.

- The encapsulation material is factory applied and is not user serviceable.
- Do not drill, machine, cut, puncture, or otherwise modify the enclosure or encapsulated electronics.
- Damage to the encapsulation or enclosure may impair environmental protection and hazardous-location certification compliance.
- No field repair of encapsulated assemblies is permitted.
- Replacement shall only be performed by the manufacturer or authorized service personnel

### SECTION 4 – FIRST AID MEASURES

**Eye Contact** If electrolyte contacts eyes:

- Flush immediately with water for at least 15 minutes.
- Seek medical attention immediately.

**Skin Contact** Wash affected area with soap and water.

- Remove contaminated clothing.

**Inhalation** If exposed to fumes from damaged battery:

- Move to fresh air immediately.
- Seek medical attention if symptoms persist.

**Ingestion** Do not induce vomiting.

- Seek immediate medical attention.

---

## **SECTION 5 – FIRE FIGHTING MEASURES**

### **Suitable Extinguishing Media**

- Dry chemical
- CO<sub>2</sub>
- Foam
- Class D extinguishing agent for lithium battery fires

### **Unsuitable Extinguishing Media**

- Direct high-pressure water stream on burning lithium battery

### **Special Hazards** Damaged lithium batteries may release:

- Hydrogen chloride
- Sulfur oxides
- Lithium compounds
- Toxic and corrosive vapors

### **Protective Equipment** Firefighters should wear:

- Self-contained breathing apparatus (SCBA)
- Full protective clothing

---

## **SECTION 6 – ACCIDENTAL RELEASE MEASURES**

### **If Device is Damaged**

- Avoid contact with leaking materials.
- Ventilate area.
- Use non-sparking tools.
- Place damaged device in non-combustible container.

### **Cleanup**

Absorb leaked electrolyte with:

- Dry sand
- Vermiculite
- Inert absorbent material

Dispose according to local regulations.

---

## **SECTION 7 – HANDLING AND STORAGE**

### **Handling**

- Do not open enclosure.
- Avoid impact and crushing.
- Do not short-circuit terminals.
- Use only as intended.

### **Storage**

- Store in cool, dry environment.
- Recommended storage temperature: below 30°C for battery storage.
- Keep away from heat sources and open flame.

---

## **SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION**

### **Under Normal Use**

No special PPE required.

### **If Device is Damaged**

Recommended PPE:

- Safety glasses
- Chemical-resistant gloves
- Protective clothing

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES 2X2 Device

| Property   | Value                        |
|------------|------------------------------|
| Appearance | Industrial electronic device |
| Color      | White / industrial enclosure |
| Odor       | None                         |
| State      | Solid                        |

### ER34615 Battery Characteristics

| Property       | Value                |
|----------------|----------------------|
| Chemistry      | Li-SOCl <sub>2</sub> |
| Voltage        | 3.6V                 |
| Weight         | 105g                 |
| Operating Temp | -55°C to +85°C       |

Battery values from manufacturer documentation.

## SECTION 10 – STABILITY AND REACTIVITY

### Stability

Stable under normal operating conditions.

### Conditions to Avoid

- Excessive heat
- Open flame
- Short circuit
- Crushing
- Puncture
- Overheating above 100°C

### Hazardous Decomposition

Possible release of:

- Corrosive gases
- Toxic fumes
- Lithium compounds

## SECTION 11 – TOXICOLOGICAL INFORMATION

Under normal conditions of use, no toxicological hazard exists because battery and capacitor are sealed within the product.

Exposure may occur only if:

- Device is physically damaged
  - Battery leaks
  - Device burns in fire
- 

**SECTION 12 – ECOLOGICAL INFORMATION**

- Do not dispose in waterways.
  - Avoid uncontrolled release to environment.
  - Dispose according to applicable regulations.
- 

**SECTION 13 – DISPOSAL CONSIDERATIONS**

Dispose in accordance with:

- Federal regulations
- State regulations
- Local regulations

Do not:

- Incinerate
- Crush
- Place in household trash where prohibited

Lithium batteries should be recycled through approved recycling facilities.

---

**SECTION 14 – TRANSPORT INFORMATION**

**UN Classification** UN3091 – Lithium Metal Batteries Contained in Equipment

**Transport Notes** contains lithium metal batteries and must be transported in accordance with:

- UN38.3
- IATA
- ICAO
- IMDG
- DOT regulations

The ER34615 battery is identified as UN38.3 certified.

- UN38.3
- 

**SECTION 16 – OTHER INFORMATION**

This MSDS/SDS is intended for guidance regarding safe handling, transport, storage, and disposal of the Lasso 2X2 product.

The information is believed to be accurate but is provided without warranty.

Supporting component documents:

- ER34615 Battery Datasheet
- UPC1550 Capacitor Datasheet
- ATEX Battery/Capacitor Test Documentation

# Configuration APP

BLUETOOTH PROGRAMMING ONLY. No Login Required.

<https://play.google.com/store/apps/details?id=com.lasso.programmer>

<https://apps.apple.com/pk/app/lasso-technologies-programmer/id6745929475>

OR Search for **Lasso Technologies** in the APP store

Refer to the Bluetooth list of commands in the appendix

The screenshot displays the Lasso Technologies Configuration APP interface. At the top, the status bar shows the time as 3:26 and various connectivity icons. The app header features the LASSO Technologies, LLC logo and a back arrow. Below the header, the interface is split into two main sections. On the left, the 'Device List' section contains a Bluetooth toggle switch and a list of devices. Each device entry includes a unique ID (e.g., 'gst-010008610932') and a MAC address (e.g., 'FAD9A7A1-5A5F-0837-3691-BED32F4886E7'). A text box highlights that '2x2 devices start with gst-xxxxxxx' and instructs the user to 'Click on yours'. At the bottom of the device list is a 'RESCAN' button. On the right, the 'Chat Terminal' section shows a 'DISCONNECT' button and a text input field labeled 'Enter Text'. Below this is a red 'SEND DATA' button. The chat terminal window displays a series of commands and responses: '+URC: Configuration Commit to Flash is Success', 'OK', 'Sent: at+commit', 'OK', 'Sent: AT+AIM=0,0,0,0,0,11,0', 'OK', 'Sent: at+dlistall', 'Sent: at+dlistall', and '+URC: Configuration Commit to Flash is Success'. A 'Clear' button is located in the top right corner of the chat terminal window.

3:26

3:26

3:26

LASSO Technologies, LLC

LASSO Technologies, LLC

Device List

Bluetooth toggle switch

gst-010008610932  
FAD9A7A1-5A5F-0837-3691-BED32F4886E7

gst-010008609678  
384EA449-9C9A-DA8E-9627-D6F0D0499743

gst-010008609710  
D71EDF0E-CD17-7329-1476-F08B4A5012DF

2x2 devices start with gst-xxxxxxx  
Click on yours

Nutale\_FMN  
2923587A-6FCE-DBBC-933A-3FED90A3325A

Star254202106887  
ACFOC28B-6A98-FA62-D109-CE51FAB5309F

gst-010008611039

RESCAN

Chat Terminal

DISCONNECT

Enter Text

SEND DATA

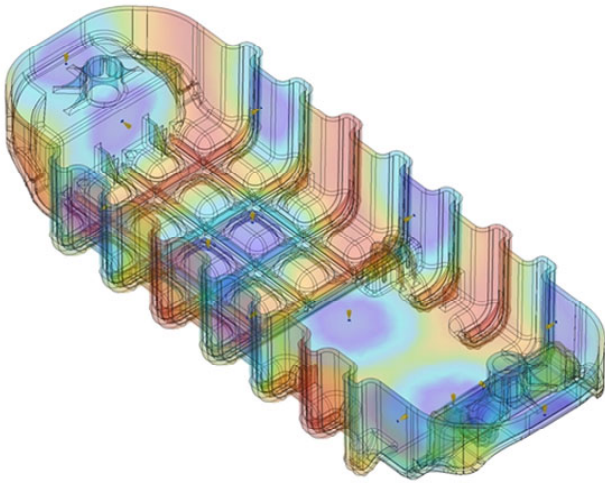
Clear

Oldest command at bottom  
DLISTALL command sent  
AT+AIM command sent  
AT+COMMIT puts it into flash

+URC: Configuration Commit to Flash is Success  
OK  
Sent: at+commit  
OK  
Sent: AT+AIM=0,0,0,0,0,11,0  
OK  
Sent: at+dlistall  
Sent: at+dlistall  
+URC: Configuration Commit to Flash is Success

2X2 Bluetooth Command Reference

| Category       | Command / Syntax                                           | Query Form         | Purpose                                                             | Example Command                  | Example Response                                                       | Response Meaning                                                           | Notes                                                                               |
|----------------|------------------------------------------------------------|--------------------|---------------------------------------------------------------------|----------------------------------|------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Scheduling     | AT+DLISTALL                                                | N/A                | Delete all active tracking and interval rules                       | AT+DLISTALL                      | N/A                                                                    | Stops all interval modes immediately                                       | Use before issuing a new AT+ATODM or AT+AIM command.                                |
| Tracking       | AT+CTrack                                                  | N/A                | Cancel all active tracking                                          | AT+CTrack                        | OK                                                                     | Stops all tracking modes immediately                                       | Use before issuing a new AT+TRACK command.                                          |
| Tracking       | AT+TRACK=1,msg_type,1,at_rest_min,1440,in_motion_min,0,0,0 | AT+TRACK?          | Configure tracking behavior — Mode 1 normal tracking                | AT+TRACK=1,1,1,720,1440,30,0,0,0 | TRACK: 1,1,1,720,1440,30,0,0,0                                         | At rest = 720 min; low-battery/report field = 1440 min; in motion = 30 min | Only one of interval, time-of-day, or tracking modes should be active at a time.    |
| Tracking       | AT+TRACK=1,msg_type,1,at_rest_min,1440,in_motion_min,0,0,0 | AT+TRACK?          | Configure tracking behavior — Mode 2 change of location / dock mode | AT+TRACK=1,2,1,720,1440,30,0,0,0 | TRACK: 1,2,1,720,1440,30,0,0,0                                         | Mode 2 transmits when the device exits a 30-meter radius while in motion   | Used for containers or assets leaving a known area.                                 |
| Scheduling     | AT+AIM=0,0,0,day,hour,minute,second                        | AT+AIM? or AT+IML? | Configure interval messaging                                        | AT+AIM=0,0,0,1,4,30,12           | 0,0,0,0,1,4,30,12                                                      | Interval = 1 day, 4 hours, 30 minutes, 12 seconds                          | Standalone periodic reporting without motion logic.                                 |
| Scheduling     | AT+ATODM=0,0,0,hour,minute,second                          | AT+TODML?          | Add a fixed GMT time-of-day reporting schedule                      | AT+ATODM=0,0,0,12,15,0           | 1,0,0,0,12,15,0                                                        | Schedules a report at 12:15 GMT                                            | Enter multiple commands for multiple daily times; cancel all with AT+DLISTALL.      |
| Identification | AT+GSN?                                                    | AT+GSN?            | Read Globalstar Electronic Serial Number                            | AT+GSN?                          | +GSN: 0-4982019<br>OK                                                  | Returns the unique ESN                                                     | Used for provisioning, onboarding, and fleet mapping.                               |
| Identification | AT+GUID?                                                   | AT+GUID?           | Read Globalstar User ID                                             | AT+GUID?                         | +GUID: 010008609413                                                    | Returns the Globalstar user ID                                             | Used for provisioning and Globalstar backend mapping.                               |
| Storage        | AT+COMMIT                                                  | N/A                | Store settings in flash memory                                      | AT+COMMIT                        | OK                                                                     | Commits configuration changes                                              | many changes may already store automatically, but COMMIT always saves new values.   |
| GPS            | AT+GPSLPOS=n                                               | AT+GPSLPOS?        | Set GPS history depth / request recent stored GPS positions         | AT+GPSLPOS=6                     | +GPSLPOS: 6<br>OK                                                      | Retriev the last 6 GPS positions                                           | Get positions with UTC times.                                                       |
| GPS            | AT+GPSFIX?                                                 | AT+GPSFIX?         | Check whether GPS has a lock                                        | AT+GPSFIX?                       | GPSFIX:0                                                               | Returns GPS fix status                                                     |                                                                                     |
| GPS            | AT+GPSFAILS?                                               | AT+GPSFAILS?       | Read total GPS fix failures                                         | AT+GPSFAILS?                     | GPSFAILS: 8                                                            | Returns accumulated fix failures                                           | Diagnostic counter.                                                                 |
| GPS            | AT+GPSFTIMESTATS=0                                         | AT+GPSFTIMESTATS=0 | Read average historical GPS acquisition time                        | AT+GPSFTIMESTATS=0               | GPSFTIMESTATS: 23                                                      | Example average is 23 seconds                                              |                                                                                     |
| GPS            | AT+GPSFTO?                                                 | AT+GPSFTO?         | Source variant for average GPS acquisition time                     | AT+GPSFTO?                       | +GPSFTO: 23                                                            | Example average is 23 seconds                                              | Included because it appears in the comprehensive workbook; verify firmware version. |
| GPS            | AT+GPSTPOS                                                 | N/A                | Return the most recent GPS position                                 | AT+GPSTPOS                       | +GPSTPOS:<br>year,month,day,hour,minute,second<br>,millisecond,lat,lon | Returns most recent position; source notes error 8 means GPS invalid       | Diagnostic / latest-position command.                                               |



Remove magnet to turn on 2X2.  
Keep in safe place if needed.  
Re-insert to reboot.



**NORDIC COMPUTER**

**WIFI**

**BLUETOOTH** 

**GPS**

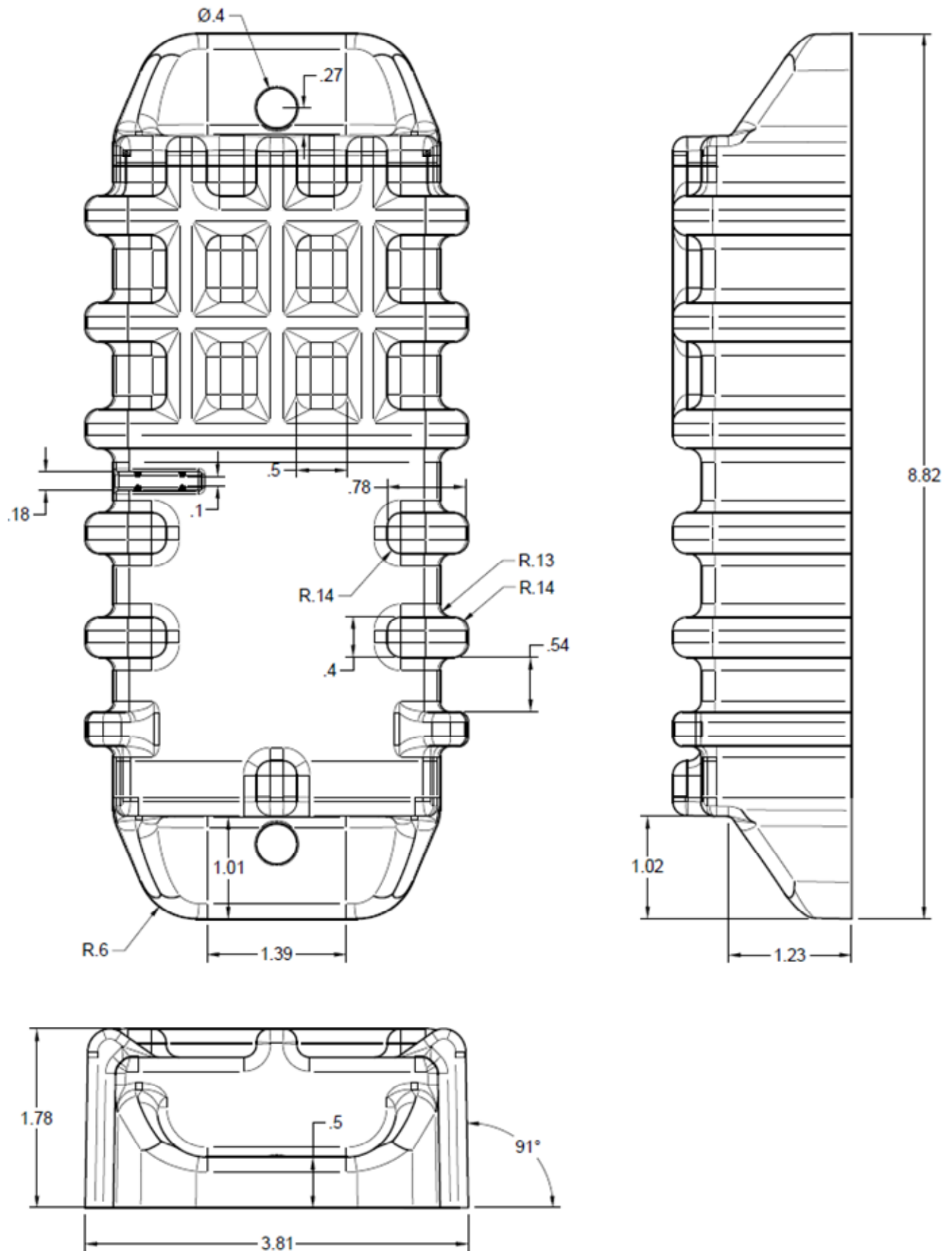
**2 WAY SATELLITE  
MODEM**

**2 WAY LTE CELL  
MODEM**

**38AHr Battery. 3.4V**

**ACCELEROMETER**

- Mechanical skeletal design eliminates need for expensive protective metal cover.
- Internally potted for environmental and shock resistance.



# 2X2 Cellular, Satellite, GPS, WiFi, Bluetooth

## Dual Communication Paths

- LTE and Satellite connectivity via Globalstar RM200 for true off-grid coverage
- Two-way programming and communication over Bluetooth®, Cellular, or Satellite

**Zero-Touch Provisioning** for automated, streamlined IoT device configuration

## Precision GPS Tracking

- Indoor/outdoor GPS using Google Location Services
- Integrated GNSS for highly accurate location reporting
- Flexible: configurable reporting intervals or event-driven updates

## Flexible Power Options

- Battery-powered for mobile deployments
- External power input (9–24V) for continuous operation or frequent reporting.

## Built-In Accelerometer

- 3-axis MEMS sensor
- $\pm 2g$ ,  $\pm 4g$ ,  $\pm 8g$ ,  $\pm 16g$  selectable ranges
- 6D orientation detection

## Third-Party Sensor Integration (Bluetooth®)

- BLE interface for connecting external sensors (e.g., tank levels, equipment status)
- Collects multi-sensor data from Bluetooth® beacons
- Supports custom data parsing for partner protocols

## Global Coverage & Rugged Design

- Connectivity via Globalstar satellites plus AT&T or Verizon cellular networks
- Compact, Mil-Spec rated enclosure for harsh environments
- Full software platform: reporting, alerts, geofencing, days-on-site, list views
- Integration into API, SCADA, ERP, or IoT dashboards with custom messaging support

## Long Battery Life

- 26,000 calls in lifetime if satellite only
- 13,000 calls in lifetime if cellular only

## Reading Bluetooth Wireless Sensors

- Automatically scans for nearby BLE sensor beacons
- Reads broadcasted sensor data packets without pairing requirements
- Supports secure connections for authenticated data exchange when required
- Aggregates data from multiple sensors into unified telemetry reports

# Markets

- **Industrial & Energy**

- Oil & Gas (tanks, compressors, generators, tubulars, trailers)
- Utilities & Power (transformers, reclosers, mobile substations)
- Mining & Quarry (light vehicles, pumps, explosives lockers)
- Renewables (wind spares, solar skids, battery containers)

- **Transportation & Logistics**

- Intermodal & Rail (reefers, chassis, boxcars)
- Trucking & Trailer Fleets (dry van, flatbed, tanker, LTL)
- Maritime & Ports (containers on barges, workboats, moorings)

- **Construction & Rental**

- Heavy Equipment & Yellow Iron (excavators, dozers, cranes)
- Small & Mid Equipment Rental (boom lifts, generators, compressors, light towers)

- **Agriculture & Environmental**

- Farm Equipment (tractors, sprayers, grain carts)
- Livestock & Range Assets (trailers, portable waterers)
- Environmental Monitoring (remote stations, pumps, hazmat bins)

- **Public Sector & Safety**

- Municipal Assets (snowplows, salt spreaders, signage trailers)
- Emergency Management (portable comms, field shelters, gensets)
- Defense & Homeland (deployable kits, secure containers)

- **Consumer/Prosumer & Specialty**

- Hybrid positioning with GPS + cell/wifi assists; last-known-location indoors.
- Lost / Under-Utilized Asset Recovery
- Geofencing, dwell-time alerts, inventory audits, yard checks, asset right-sizing.
- Customer Usage Billing (When In Use)
- Engine-on/IGN sense, motion hours, bill-by-use contracts.
- Operations & Maintenance (PM scheduling, uptime)

## **Condition & Health Monitoring**

- Battery status, temperature, vibration/shock, run hours for maintenance.
- Jobsite & Route Compliance
- Proof-of-service, arrival/departure times, detours, restricted-zone alerts.
- Remote/Off-Grid Operations



\*Serial number shall start at 4000 and be unique for each label

**SGS STAMP** size minimum of 5mmX5mm

Cut to size Polyester

-40F to 302F

Red, blue, black ink

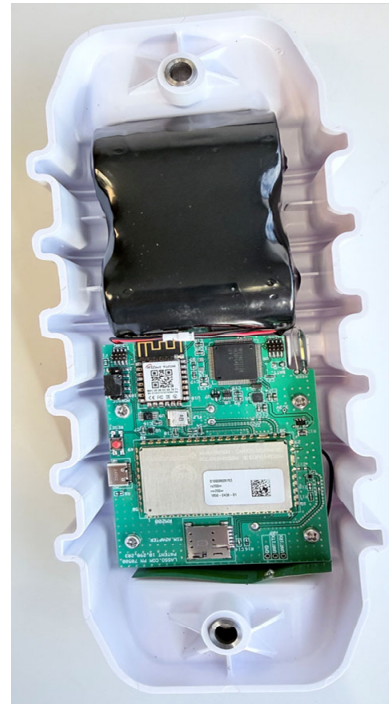
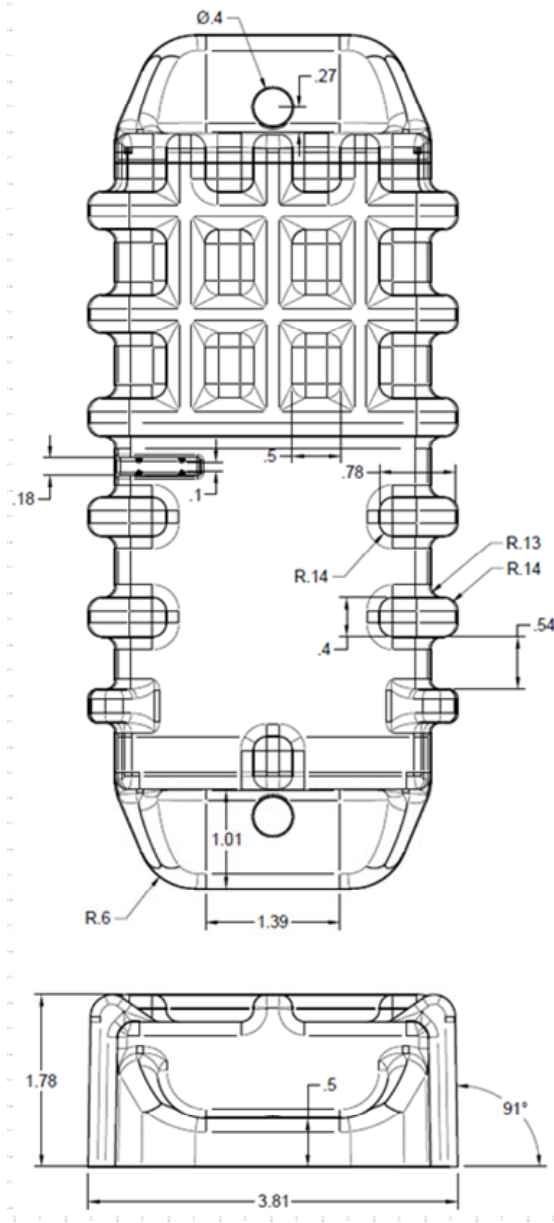
2 mil white polyester, permanent adhesive, clear poly UV laminate.

SEND PROOF BEFORE PRINTING.

**LASSO.COM 8150 N. Central Expy, Suite 2000 Dallas, TX 75206 TEL: 866-392-0923**

April 25,2026

## 2X2 POTTING REQUIREMENTS



**Fill to a depth of at least 1.6" so that  
All components are covered with at least 1mm of encapsulant**

## **2X2 Encapsulation (Potting) of 2X2 Enclosure Using SYLGARD™ 170**

### **1. Purpose**

To define the controlled method for mixing, dispensing, and curing a two-part silicone encapsulant within the 2X2 enclosure to ensure compliance with intrinsic safety and explosion protection requirements.

### **2. Scope**

This procedure applies to all production and service personnel performing encapsulation of the 2X2 hazardous-location-rated device.

### **3. References**

SYLGARD™ 170 Technical Data Sheet

Mix ratio: 1:1      Pot life: ~15 minutes at 25°C      Cure time: 24 hours at 25°C

IEC 60079-0, IEC 60079-11 (Intrinsic Safety)      ATEX Directive 2014/34/EU

### **4. Personnel Requirements**

Installation and encapsulation shall be performed by personnel with:

Basic mechanical skills      Understanding of hazardous area practices

### **5. Tools & Materials**      SYLGARD™ 170 Part A and Part B

Clean mixing container      Precision dispensing tool (syringe or metered dispenser)

Stirring tool (non-sparking)      PPE (gloves, eye protection)

Approved epoxy adhesive for enclosure sealing

### **6. Environmental Conditions**      Ambient temperature: 20–25°C

Dry, clean, dust-free environment      No ignition sources present

#### **7.1 Surface Preparation**

Ensure enclosure interior is: Clean      Dry      Free of oils, dust, and contaminants

If adhesion is required, surfaces shall be properly cleaned (primer optional per application).

#### **7.2 Mixing**

Dispense equal parts (1:1 ratio) of Part A and Part B.

Mix thoroughly until: Uniform color is achieved      No visible streaks remain

Mixing shall be completed quickly to remain within ~15-minute pot life.

#### **7.3 Dispensing / Filling**

Immediately after mixing, dispense material into the enclosure.

Target fill volume: Approximately 0.3 L per enclosure

Fill level: Fill almost to the top of the enclosure, avoiding overflow

Minimize air entrapment: Slow, controlled dispensing      Avoid turbulence or splashing

#### **7.4 Curing**

Allow the assembly to cure at Room temperature (≈25°C)

Minimum cure time: 24 hours

Do not disturb or move the unit during curing. No post-cure is required.

#### **7.5 Enclosure Sealing**

After encapsulant placement: Apply approved epoxy adhesive to secure the enclosure back

Ensure: Full mechanical seal      No gaps or pathways for ingress

### **8. Inspection & Acceptance Criteria**

Encapsulant fully cured (non-tacky surface) Fill level consistent (near top, no voids)

No visible air pockets or contamination      No damage to internal components

### **9. ATEX / IECEx Safety Considerations**

Encapsulation must: Maintain intrinsic safety barriers, Prevent spark propagation

Eliminate internal voids that could allow ignition, Only approved materials shall be used

### **10. Warnings**

Do not mix incorrect ratios (may inhibit cure) Do not exceed pot life

Do not perform in hazardous atmosphere unless area is safe