



ShockLog® Cellular GL User Manual



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The ShockLog® Cellular GL Impact Recording and Tracking System combines advanced tri-axial piezoelectric accelerometer technology with global connectivity and real-time tracking.

When a programmed impact threshold is exceeded, a detailed event curve is recorded, and the ShockLog Cellular GL module will send a real-time alert to inform stakeholders that a potentially damaging impact has occurred. Access to this information while an asset is en route can enable decisions that will reduce costs and improve efficiencies.

ShockLog Cellular GL Features & Benefits

- Custom, timely alerts when impact, tilt, temperature, or humidity thresholds are breached
- 4G LTE / 3G / 2G / Wi-Fi Connectivity
- Access to information through a secure, dedicated web portal
- Cellular and Wi-Fi Positioning

Configure the ShockLog Cellular GL

The ShockLog Cellular GL module is configured over the air by accessing the SpotSee Cloud. To update ShockLog 298 parameters (including alarm levels), users must connect directly to the ShockLog 298 or use an iButton to update the preferences in the unit software.

Battery Information

The ShockLog Cellular GL utilizes five 1.5V AA batteries and can accept either alkaline or lithium options. Expected battery life for the module ranges from 2.5 months (sending one message an hour) to 37 months (sending 1 message a day) when using Energizer Ultimate Lithium batteries. When necessary, users may easily replace the ShockLog Cellular GL batteries using a Phillips head screwdriver to remove the top of the compartment, exchanging the batteries, and re-attaching the lid.

Battery						
Battery Type	Energizer (Li)		Duracell (No Li)		Saft (Li)	
Battery Temperature	-40°C to 60°C		-40°C to 54°C		-60°C to 85°C	
Number of Wake Up per Day	1	24	1	24	1	24
Battery Life (Months)	37	2.5	27	1.79	21	2.2

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Cellular Connection Impact on Battery Life

The **Shocklog Cellular** device's quoted battery life is calculated based on an average **cellular connection time of 45 seconds** for data transmission.

Impact of Extended Out-of-Range Periods

When the device is unable to establish a cellular connection, such as during long transits in areas with no cellular coverage (e.g., overseas or metal container shipping), the device employs an extended attempt cycle to ensure maximum likelihood of stored data transfer.

- The device will attempt to establish cellular contact for a maximum duration of **160 seconds** before aborting the current transmission cycle.
- This significantly increased connection attempt time, compared to the average successful connection time, results in a proportional decrease in battery life.

Battery Life Reduction Factor

For extended periods where the device is continuously **out of cellular range**, the effective battery life is reduced by a reduction factor calculated as:

$$\text{Reduction Factor} = \frac{\text{Maximum Connect Attempt Time}}{\text{Average Successful Connect Time}}$$

$$\text{Reduction Factor} = \frac{160}{45} = 3.56$$

Therefore, if the Shocklog Cellular device is consistently exposed to operating environments with prolonged periods of no cellular coverage, the expected battery life must be derated by a factor of 3.56. This must be considered in the deployment planning for all logistics chains that incorporate significant periods without cellular communication.

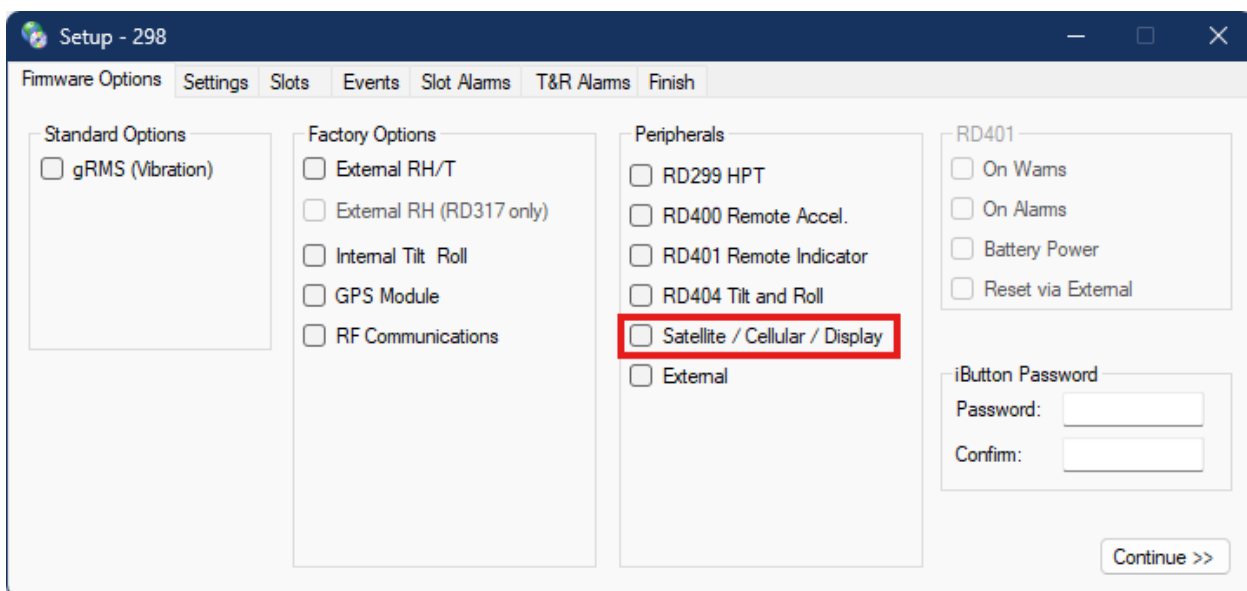
For example, if a transatlantic ocean journey is likely, updates should be limited to once per day, and new Energizer Ultimate Lithium batteries should be deployed in the **ShockLog Cellular** device. This combination of battery and report rate would ensure sufficient remaining battery capacity for devices to connect and upload their stored data once they reach a destination harbor where a cellular connection can be established.

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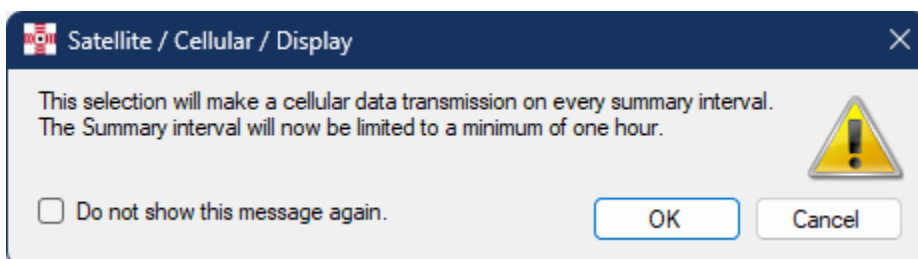
ShockLog Set Up

To enable usage of ShockLog Cellular GL accessory, it must be activated in the ShockLog 298 software. It is also within the ShockLog 298 software where the user will specify the alarm levels that will trigger alerts from the ShockLog Cellular GL device.

When initiating the Setup of the ShockLog 298 software, the user will begin on the “Firmware Options” tab and click the check box next to the Satellite / Cellular / Display Peripheral.



Once the Cellular Peripheral is enabled, the following warning will appear. The user must click “OK” to move forward with the programming process.



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Within the “Settings” tab the user may choose a name for the set up and select the start date for the unit. Once these updates are complete, the user will click the “Continue” button at the bottom of the screen to proceed with the process.

The screenshot shows the 'Setup - 298' window with the 'Settings' tab selected. The 'Setup Name' field contains 'SLC-GL Setup'. The 'Start Date' field shows '09:06:12 - 19 Nov 2024'. The 'Mission Comment' field is a large empty text area. The 'Protocol' dropdown is set to 'Protocol400_Ver2', and the 'Protocol 400' checkbox is checked. A 'Continue >>' button is located at the bottom right.

The user will be taken to the “Slots” tab, where the Slot Interval and the Summary Interval may be adjusted based on the model of ShockLog and the connected Accessories.

The screenshot shows the 'Setup - 298' window with the 'Slots' tab selected. The 'Slot Contents' section has two columns of checkboxes. The first column includes 'Max Peak X', 'Max Peak Y', 'Max Peak Z', 'Min. Peak X', 'Min. Peak Y', and 'Min. Peak Z'. The second column includes 'Internal Temperature', 'External Temperature', 'External Humidity', 'External Dew Point', 'HPT Temperature', 'HPT Humidity', 'HPT Dew Point', 'HPT Pressure', 'Internal Tilt', and 'Internal Roll'. The 'Journey Duration' field is empty. The 'Slot Interval' dropdown is set to '10 Sec'. The 'Max. No. / Run time' field shows '93491' and '10Days'. The 'Summary Interval' dropdown is open, showing options: '1 Hour', '10 Min', '20 Min', '30 Min', '1 Hour' (highlighted), '2 Hour', and '4 Hour'. A 'Continue >>' button is at the bottom right.

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It is important to note that the user selections on the “Firmware Options” tab at the beginning of the process will determine the available Slots/Alarms. For example, by selecting the items highlighted emphasized below:

Setup - 298

Firmware Options Settings Slots Events Slot Alarms T&R Alarms Finish

Standard Options

- ☐ gRMS (Vibration)

Factory Options

- ☒ External RH/T
- ☐ External RH (RD317 only)
- ☒ Internal Tilt Roll
- ☐ GPS Module
- ☐ RF Communications

Peripherals

- ☒ RD299 HPT
- ☐ RD400 Remote Accel.
- ☐ RD401 Remote Indicator
- ☐ RD404 Tilt and Roll
- ☒ Satellite / Cellular / Display
- ☐ External

RD401

- ☐ On Wams
- ☐ On Alarms
- ☐ Battery Power
- ☐ Reset via External

iButton Password

Password:

Confirm:

Continue >>

The following Slot content options will be available:

Setup - 298

Firmware Options Settings Slots Events Slot Alarms T&R Alarms Finish

Slot Contents

- ☒ Max Peak X
- ☒ Max Peak Y
- ☒ Max Peak Z
- ☐ Min. Peak X
- ☐ Min. Peak Y
- ☐ Min. Peak Z
- ☒ Internal Temperature
- ☐ External Temperature
- ☐ External Humidity
- ☐ External Dew Point
- ☐ HPT Temperature
- ☐ HPT Humidity
- ☐ HPT Dew Point
- ☐ HPT Pressure
- ☐ Internal Tilt
- ☐ Internal Roll

Journey Duration

Slot Interval

10 Sec

Max. No. / Run time

93491. 10Days

Summary Interval

1 Hour

Run time

42Days, 16Hours.

Continue >>

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Once the Slot intervals are updated and the “Continue” button is clicked, the user will reach the “Events” tab. This tab is where the impact alarm thresholds are set. Note that both alarm and warning events are reported/transmitted by the ShockLog and the ShockLog Cellular GL device.

Setup - 298

Firmware Options Settings Slots **Events** Slot Alarms T&R Alarms Finish

Record

Length: 32 Kbytes Number Events: 108

Max. Time: 1 Sec Sample Rate: 4096Hz

☒ Always Max. ☐ Event Compression

☒ Ordered Data

Auto Thresholds

☐ Enable Interval: Never

Thresholds

Range 'g' or 'Velocity': 10 g Hardware Filter: 250 Hz

Options: Basic

Wam (%) 40 Alarm (%) 50

Continue >>

The “Slot Alarms” tab is where temperature, humidity, pressure, and dew point slot alarm thresholds are set. Note that all threshold crossings and subsequent above threshold measurements will be reported by the ShockLog.

Setup - 298

Firmware Options Settings Slots Events **Slot Alarms** T&R Alarms Finish

gRMS (Vibration)

gRMS X (%): 75 Enable ☐

gRMS Y (%): 75 Enable ☐

gRMS Z (%): 75 Enable ☐

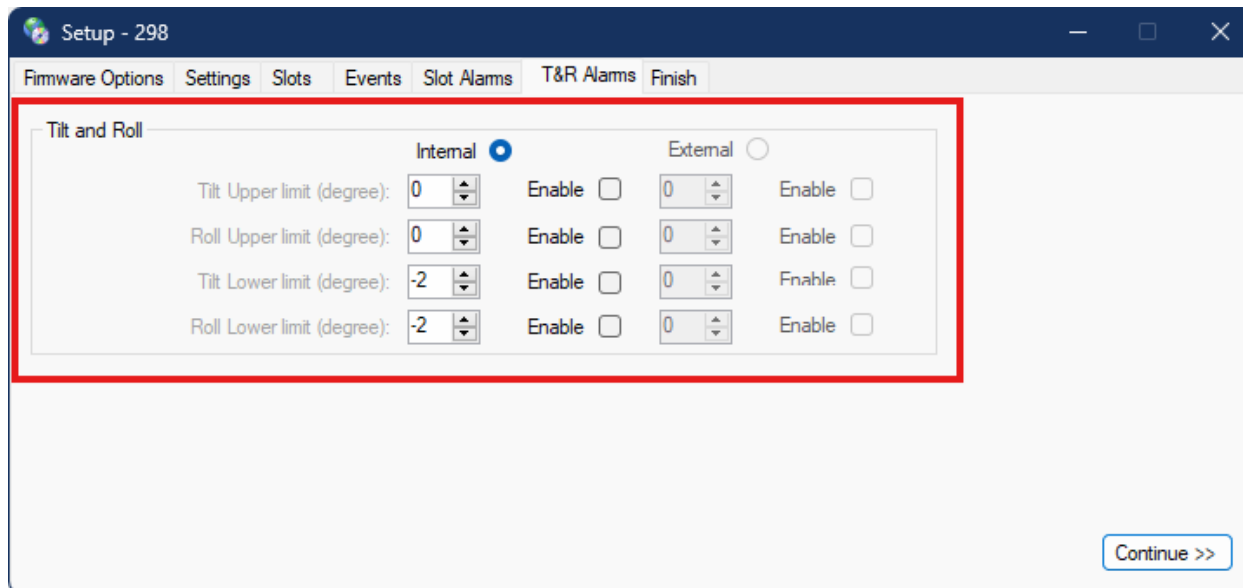
Environment

	Low Limit	External	RD299 HPT	High Limit	External	RD299 HPT
Temperature (°C)	0	Enable ☐	Enable ☐	0	Enable ☐	Enable ☐
Humidity (%)	0	Enable ☐	Enable ☐	0	Enable ☐	Enable ☐
Dew Point (°C)	0	Enable ☐	Enable ☐			
Pressure (millibar)	0	Enable ☐	Enable ☐	0	Enable ☐	Enable ☐

Continue >>

The user must continue to the “T&R Alarms” tab to configure tilt and roll alarms. This option is possible if the ShockLog 298 used has the capable hardware and the Tilt & Roll option is enabled on the “Firmware Options” tab.

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Setup - 298

Firmware Options Settings Slots Events Slot Alarms T&R Alarms Finish

Tilt and Roll

Internal ☒ External ☐

Tilt Upper limit (degree): 0 Enable ☐ 0 Enable ☐

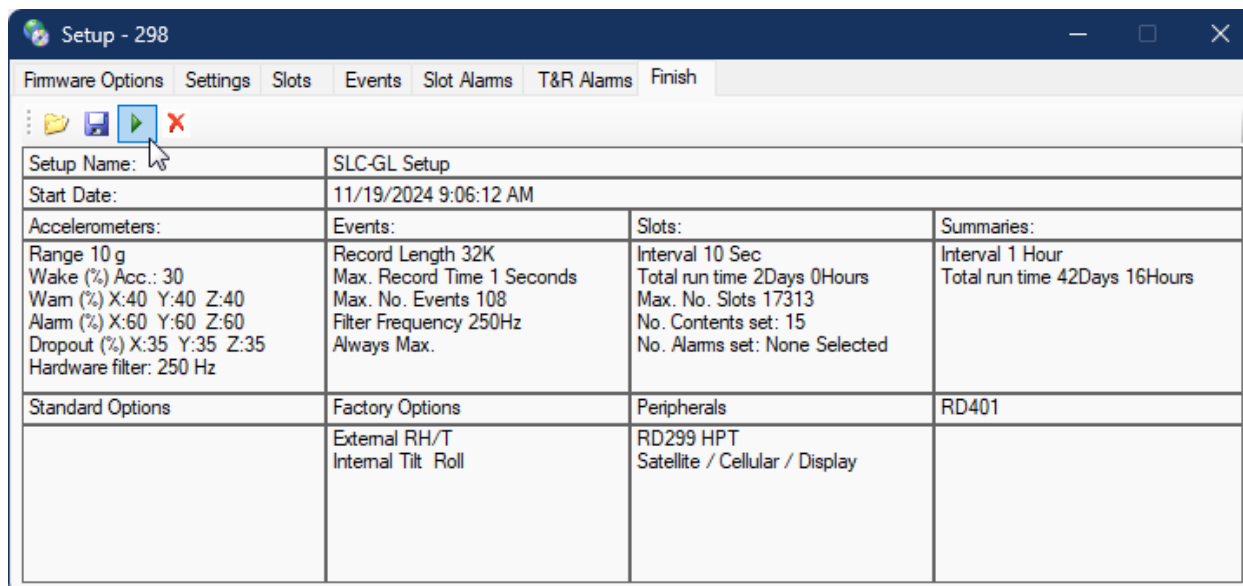
Roll Upper limit (degree): 0 Enable ☐ 0 Enable ☐

Tilt Lower limit (degree): -2 Enable ☐ 0 Enable ☐

Roll Lower limit (degree): -2 Enable ☐ 0 Enable ☐

Continue >>

Finally, the user continues to the “Finish” tab to review a summary of the selections made. If all choices are correct, the user will click the green arrow button to send the setup to the ShockLog.



Setup - 298

Firmware Options Settings Slots Events Slot Alarms T&R Alarms Finish

Setup Name: SLC-GL Setup

Start Date: 11/19/2024 9:06:12 AM

Accelerometers:	Events:	Slots:	Summaries:
Range 10 g Wake (%) Acc.: 30 Wam (%) X:40 Y:40 Z:40 Alarm (%) X:60 Y:60 Z:60 Dropout (%) X:35 Y:35 Z:35 Hardware filter: 250 Hz	Record Length 32K Max. Record Time 1 Seconds Max. No. Events 108 Filter Frequency 250Hz Always Max.	Interval 10 Sec Total run time 2Days 0Hours Max. No. Slots 17313 No. Contents set: 15 No. Alarms set: None Selected	Interval 1 Hour Total run time 42Days 16Hours

Standard Options	Factory Options	Peripherals	RD401
	External RH/T Internal Tilt Roll	RD299 HPT Satellite / Cellular / Display	

Access to Cloud Platform

Each device is shipped with a card containing its “Registration Token.”

Users can either scan the QR code or follow the link to register a new device.

SpotSee®

Scan the QR code or use the link to register your device.



<https://track.spotsee.io/sb4g/SP000000/GP3C87WVCF5WW>

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New User Set Up

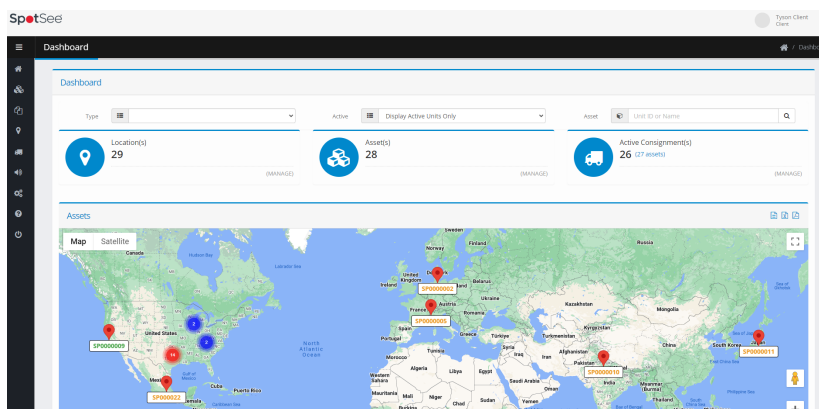
New users will be prompted to set up a user name and password as well as to define some basic preferences.

Returning User Sign On

After a username and password have been established, users can sign in by navigating to track.spotsee.io and signing in.

Dashboard

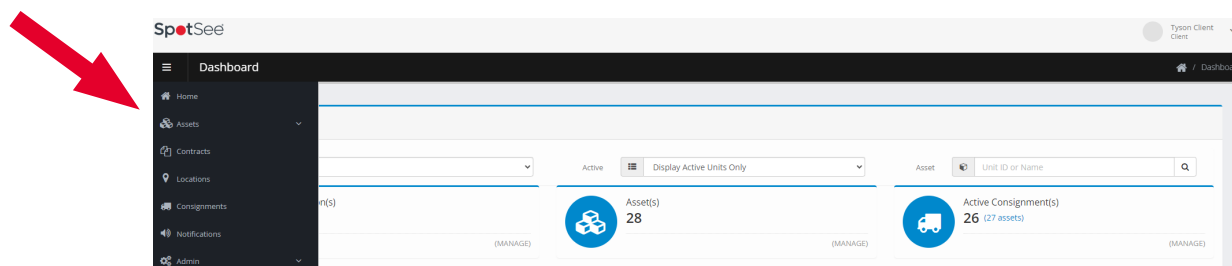
Upon signing in, users will access their Dashboard which provides an overview of the Assets belonging to that user. These items can be filtered by Asset Type and Status. It also enables search for a specific Asset.



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Navigation Bar

When the cursor is positioned over the left side of the DASHBOARD, the NAVIGATION BAR will appear. This menu allows the user to choose the appropriate screens for configuration and visualization of assets and contracts.



Assets Management Screen

By using the Navigation Bar to enter the Asset Management Screen, the user will display summary information for each of their devices.

Client	Asset Type	Unit ID	Name	Contract	Last Contact	Contact Type	Status	Activated	
Mexico test	SLCGL	SC4000189	SC4000189				N/A		
Dallas Demo Client	SLCGL	SC4000019	SC4000019	SLC4CON-12	2024-09-06 18:17:48	Visit		2024-09-06	
Dallas Demo Client	SLCGL	SC4000018	SC4000018	SLC4CON-12	2024-11-07 20:04:23	Visit		2024-09-06	
Dallas Demo Client	SLCGL	SC4000017	SC4000017	SLC4CON-12	2024-11-14 22:15:04	Visit		2024-09-06	
Dallas Demo Client	SLCGL	SC4000016	SC4000016	SLC4CON-12	2024-11-19 22:11:30	Visit		2024-09-06	
Dallas Demo Client	SLCGL	SC4000015	SC4000015	SLC4CON-12	2024-11-07 19:32:56	Visit		2024-09-06	
Dallas Demo Client	SLCGL	SC4000014	SC4000014	SLC4CON-12	2024-11-18 09:27:40	Visit		2024-09-06	
Dallas Demo Client	SLCGL	SC4000013	SC4000013	SLC4CON-12	2024-11-14 22:32:20	Visit		2024-09-06	

Below are definitions for the fields and buttons found on the Asset Management Screen:

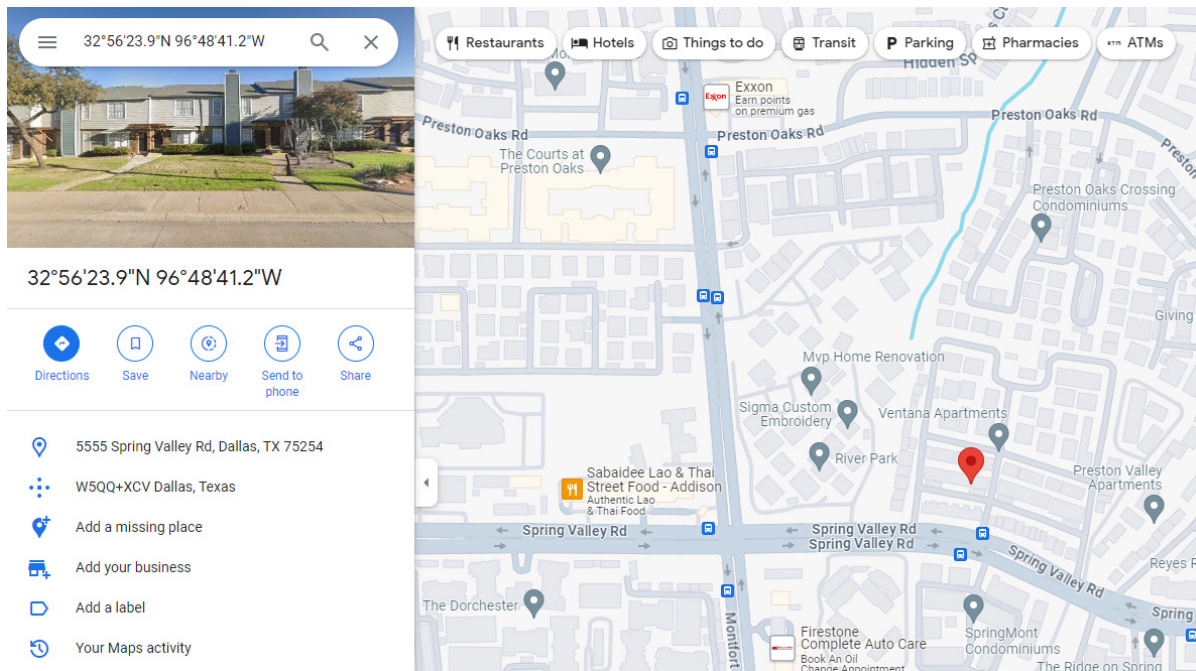
- **Client:** Company name of Client (purchaser) of the connected device.
- **Asset Type:** Type of SpotSee connected asset (SpotBot GL, ShockLog Cellular GL, etc.)
- **Unit ID:** Serial number of the unit (this number can be found on the front label of the device)
- **Contract:** Service contract associated with the device (3 Month, 6 Month, or 12 Month)
- **Last Contact:** Date and time when the unit last reported to the SpotSee Cloud
- **Contact Type:** Methodology used to deliver the most recent position of the unit (Visit = WiFi, Cell = Cellular Network)
- **Status:** Activation status of the device (green icon = active, red icon = inactive, and yellow icon = update pending)
- **Activated:** Date the unit was activated

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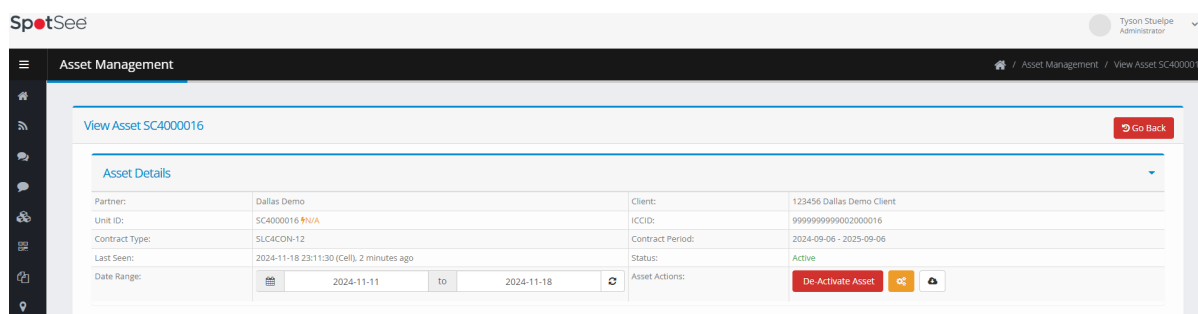
Users can view or edit detailed information for specific devices by clicking on one of the following icons associated with that device.



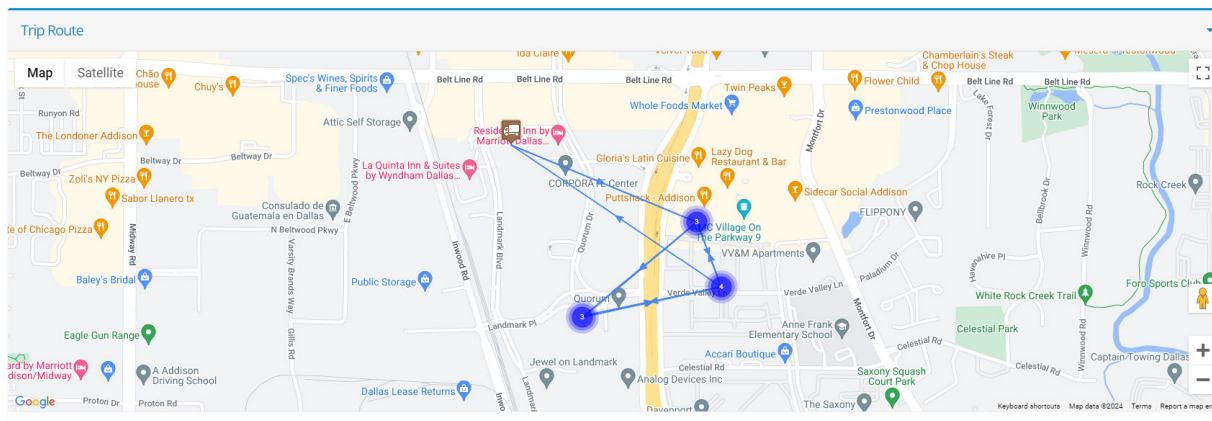
By clicking on the pin icon the user will open a new window with last reported geographic location of the device in google maps.



Clicking on the blue eye icon allows provides access to a screen with Asset Details, the Trip Route, the Trip Communication History, and the Impact Data for that specific device. From this screen the user can change the date range of the data viewed. The user can also deactivate the asset from this screen.



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Trip History					
Unit ID	Activity	Location	Latitude	Longitude	TimeStamp
SC4000016	Summary	View Location	32.948	-96.825	2024-11-18 23:11:30
SC4000016	Summary	View Location	32.948	-96.825	2024-11-18 22:11:30
SC4000016	Summary	View Location	32.948	-96.825	2024-11-18 21:11:30
SC4000016	Summary	View Location	32.948	-96.825	2024-11-18 20:11:30
SC4000016	Summary	View Location	32.949	-96.824	2024-11-18 19:11:30
SC4000016	Summary	View Location	32.949	-96.824	2024-11-18 18:11:30
SC4000016	Summary	View Location	32.949	-96.824	2024-11-18 17:11:30



By clicking on the yellow settings icon, the user will navigate to the configuration screens for that device. The three tabs on this screen display the current unit configuration, notification, and advanced settings and provide the user with the opportunity to adjust these settings using drop-down menus.

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Configure Asset SC4000016

Unit Configuration
Notification Settings
Advanced Configuration

Unit Name

Setup Device
Alarm levels must be set in the [Shocklog 298 Software](#)

Unit Configuration

The Unit Configuration tab allows the user to designate the name for a unit (instead of the assigned serial number). Alarm thresholds are defined within the ShockLog software.

The setting change is done over the air; a cell connection is needed for the configuration to be changed so it may take up to 24 hours for the update to be reflected in the unit. Select SAVE CONFIGURATION when you have completed the changes.

Configure Asset SP100954

Unit Configuration
Notification Settings
Advanced Configuration

Alarm Notifications

Email list to receive impacts notifications (comma, or semi colon separated list)

☐ Tick to Enable Alarm Notifications.

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Notification Settings

To receive impact Alarm Notifications:

- Enter the email addresses of those to receive the alarms (separated by commas or semi-colons)
- Tick the check box to enable the notifications function
- Click the Save Notification Settings button

Unit Configuration
Notification Settings
Advanced Configuration

Wifi Settings

SSID

Requested Value:

WIFI Password

Requested Value:

SSID 2

Requested Value:

WIFI Password 2

Requested Value:

Airplane Mode

☐ Tick to Enable Airplane Mode and apply the settings below

Start Date

i

Requested Value: N/A

Start Time

Select Start Time

▼

i

Requested Value: N/A

Duration

Select Duration

▼

i

Requested Value: N/A

✔ Save Advanced Configuration

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Advanced Configuration

The Advanced Configuration settings allow a user to adjust:

- **Wifi Settings** - known Wifi devices and passwords that the device may communicate with along its journey
- **Airplane Mode** - period when device will be in-flight and should not utilize cellular communication.

Contracts Screen

By using the Navigation Bar to enter the Contracts Screen, users are able to view Available and Allocated Contracts and make edits or changes to this allocation. The Contracts Screen provides a simple view of the contract length associated with each ASSET owned by the CLIENT.

Partner	Client	Unit ID	Unit Name	Contract	Status	Activated
Dallas Demo	Dallas Demo Client	SP100180	SP100180	SB4GCON-3	✓	2023-08-17
Dallas Demo	Dallas Demo Client	SP100146	SP100146	SB4GCON-3	✓	2023-08-17
Dallas Demo	Dallas Demo Client	SP100119	SP100119	SB4GCON-12	✓	2023-07-28
Dallas Demo	Dallas Demo Client	SP100085	SP100085	SB4GCON-12	✓	2023-01-31

- **Contract:** Service contract associated with the device (3 Month, 6 Month, or 12 Month)
- **Status:** The icons in the Status column denote the status of a contract (green check for active and red x for inactive).
- **Activated:** Date the unit/contract was activated.

The user has the ability to Unallocate, Edit, or Remove Contracts by clicking on the appropriate icons in the final column (hover cursor over the icon to determine its function).