Quiskers

Powered by Telemetry Solutions

Quantum 4000 Enhanced Iridium with Humidity & Temperature Sensor

User Manual

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1. Default Interval Settings

1.1 Iridium Interval

The default interval for your Iridium 2-way communication is every 15 minutes. This means every 15 minutes the unit will try to send and receive messages. You may use the Iridium Web Portal to change the Iridium interval remotely. See Reprogram an Iridium unit by satellite for instructions on how to do this

1.1 GPS Interval

The default interval for your GPS data recording is every 10 minutes. This means every 10 minutes the unit will attempt to record the current GPS position. You may use the Iridium Web Portal to change the Iridium interval remotely. See **Reprogram an Iridium unit by satellite** for instructions on how to do this.

1.2 Humidity & Temperature Sensor Interval

The default interval for your Humidity & Temperature Sensor is every 5 minutes. This means every 5 minutes the unit will attempt to record the current humidity & temperature. You may use the Iridium Web Portal to change the Iridium interval remotely. See **Reprogram an Iridium unit by satellite** for instructions on how to do this.

2. Tips for Success

2.1 Humidity & Temperature Sensor Location

Please do not cover the humidity and temperature sensor with anything. This sensor needs to have contact with the air to receive correct readings. Please see the location of the sensor in the picture below.

3. Features

3.1 Standard Features

- User programmable GPS data logger with dedicated battery
- GPS Timeout
- GPS Additional Time
- Iridium LIFO email alerts
- Humidity & Temperature Sensor
- On/Off Switch
- 2 way Iridium communication

3.1a User Programmability

Your GPS unit will attempt to acquire locations based upon a user determined fixed interval of up to 48 hours.

3.1b GPS Timeout

The GPS timeout is the user programmed period of time that the GPS will remain on. Once this time period has been reached the GPS will turn off even if it has yet to acquire a location. You can program the GPS timeout to 60, 90 or 120 seconds. The timeout you set has a direct correlation to the success rate of your GPS location attempts.

3.1c GPS Additional Time

While the GPS receiver can turn off shortly after it acquires a satellite, programming it to stay on longer will allow it to find more satellites and acquire a more precise fix. The setting which allows this is called GPS Additional Time, and can be programmed by the user to any number up to the GPS Timeout. The GPS Timeout is still the limit that the GPS will remain on and will not be extended by GPS Additional Time. This setting may be changed on the **Commands** page of the **Iridium Web Portal.**

3.1d Humidity & Temperature Sensor

Your unit is equipped with a humidity & temperature sensor. This data is recorded into the memory and will appear on the H&T messages tab in the **Iridium Web Portal**. This is a user-determined setting. This setting may also be changed on the **Commands** page of the **Iridium**
Web Portal.

3.1e On/Off Switch

The GPS data logger is controlled by a magnetically operated on/off switch. Remove the magnet to turn the GPS data logger on. Please note that removing the magnet from the GPS will reset its time and it will begin attempting to acquire the time from a satellite every 20 minutes until it succeeds. Therefore, the magnet should only be removed in an area with a clear view of the sky and should remain that way for approximately 3 minutes to allow the unit to gain access to satellites and set its time.

3.1f Iridium 2-Way Communication

This enables the GPS to transmit its recorded data directly to our server where you can easily access it online. You also may also send commands to your GPS to achieve the following:

- Change the GPS additional time
- Change the GPS timeout
- Change the GPS repeat interval
- Change how often the GPS sends data by the Iridium network
- Change the interval humidity and temperature are recorded

3.1g Iridium LIFO Email Alerts

LIFO means “last in, first out” as in the most recent data will be transferred first if the Iridium unit does not have a chance to transfer all of its data during a given Iridium data transferring session. With this ‘LIFO’ unit, you will receive emails every time new data has been uploaded during an Iridium data transfer session.

4. Iridium Data Transfer

4.1 Data Transfer Explained

Data is transferred from a GPS unit to the Telemetry Solutions's server during an Iridium session. The sessions occur at a predefined interval. The default setting in this unit has been set to every 15 minutes based on previous discussions. You may change this interval using the Iridium Terminal software. See **Setting the Iridium Communication Interval** for instructions on changing the Iridium interval.

Once the data has been transferred to the Telemetry Solutions's server, you may access it online through the Iridium Web Portal. See **Iridium Web Portal** for information on that system.

4.2 Key Terms and Concepts

Sessions

An Iridium session lasts from when the unit first connects to the Iridium network until all data is sent or it loses the network connection. Every session will try to send all data that has not yet been sent. If a session ends before all data is sent, the unsent data will be sent in the next session. However, newest data is always sent first. The units are programmed to attempt the connection to the Iridium network a total of ten times.

Sequence of Events

Whenever the GPS takes any fixes, those data are added to a buffer. Whenever a session opens, the unit compiles up to 12 fixes from the buffer into a message and sends that message to the Iridium Network, after which those data are removed from the buffer and put into long-term memory. The next 12 lines are then compiled into a message and sent. This sequence repeats until either the buffer is empty or the connection fails. If an Iridium session is somehow terminated before all messages can be sent, the lines remaining in the buffer are sent the next time an Iridium session opens. The newest data in the buffer will always be sent first.

Messages

A message contains no more than 12 lines of data, which is 340 bytes. The Iridium data plan for you is 12kB per month. This means you are able to send 36 messages before you will begin to accrue overage charges. Since each message consists of 12 positions, that amounts to 432 positions a month, though note that error messages, mortality events, and activity data will all take one line as well. Regardless of the soft limit of your data plan, the GPS can be programmed to any number of fixes and it will all be transferred over the Iridium network.

4.3 Session Success Rate

Iridium data transfer sessions are very similar to GPS positioning in that they depend on satellites to transfer data. If the Iridium unit does not have a line of sight to an Iridium satellite, the session may not be successful. If a session terminates, any unsent data are sent in the next session, with the newest data transmitted first.

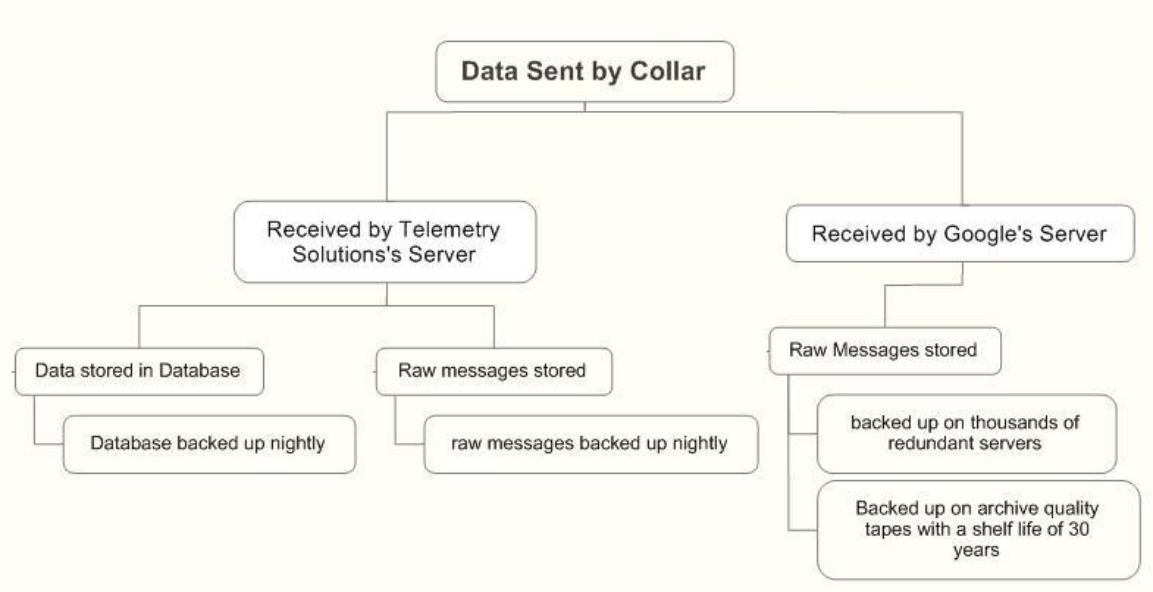
5. Iridium Web Portal

5.1 Summary

The Iridium Web Portal is your interface with a deployed Iridium GPS unit. Through the web portal you may view the most recent GPS positions, download the data in various formats, alter the unit programming, trigger a drop off, and view the history of commands.

5.2 Data Backup

The security of the acquired GPS data is just as important as acquiring the data to begin with. That is why Telemetry Solutions has taken much care to insure that the information is safe and secure. Your GPS data is backed up in many different ways. This flow chart outlines the data backup:



In the unlikely event that data are lost, contact support@telemetrysolutions.com for assistance in restoring lost data.

5.3 Logging into the System

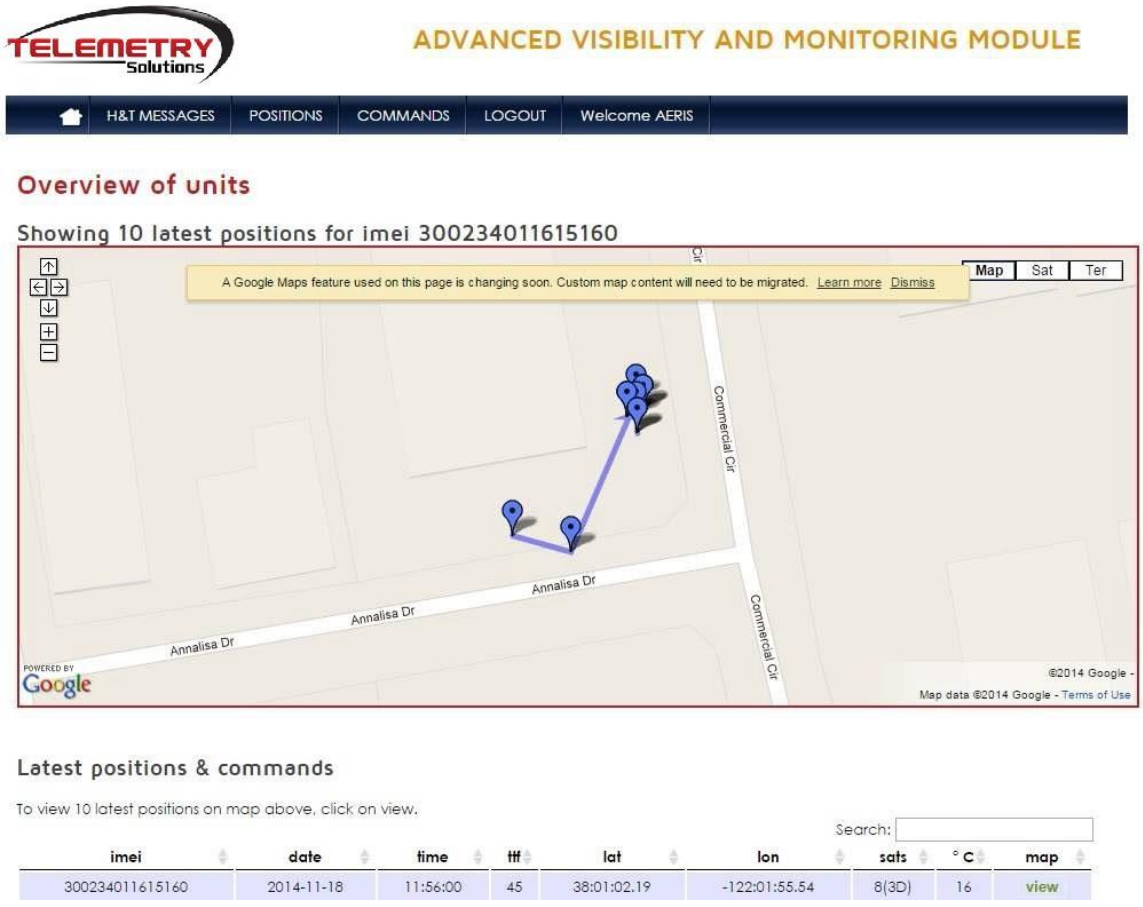
At the time we ship your order your customer support representative will provide you with your username and password to this system. Once you have this information you may login to the web portal here:

http://www.telemetrysolutions.com/satellite-data/satellite-data-login.php

After you have logged in you will be redirected to the overview page.

5.4 Overview Page

The overview page contains a map that initially displays the most recent 10 positions from the unit that has most recently send data. Below is a screenshot of the overview page.

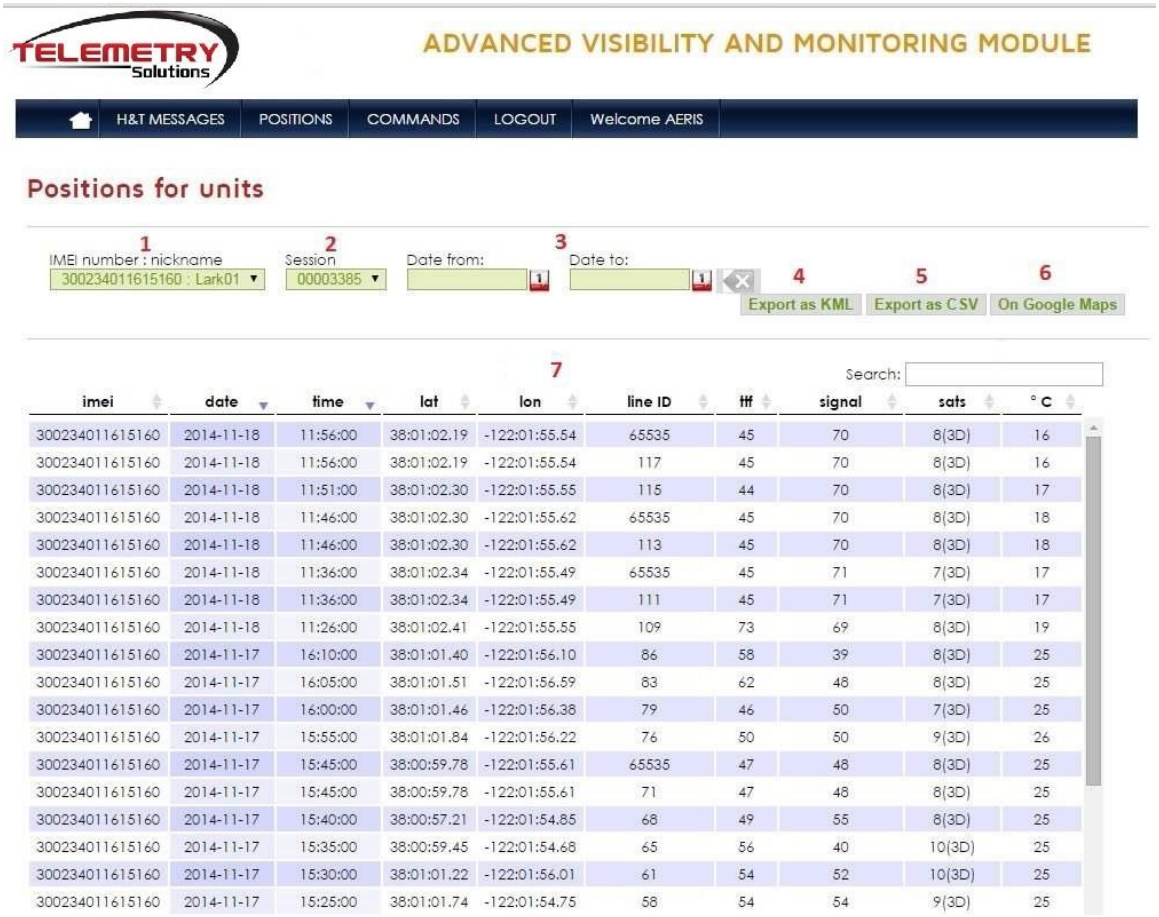


The page also displays a table of the most recent positions from all units. You may click on the view button for a specific line of data to display the 10 most recent

positions for that particular unit on the map.

5.5 View Your GPS Data

You may view your data by following the link labeled **POSITIONS**. Once there the page will look like this:



In the above screenshot each feature is labeled:

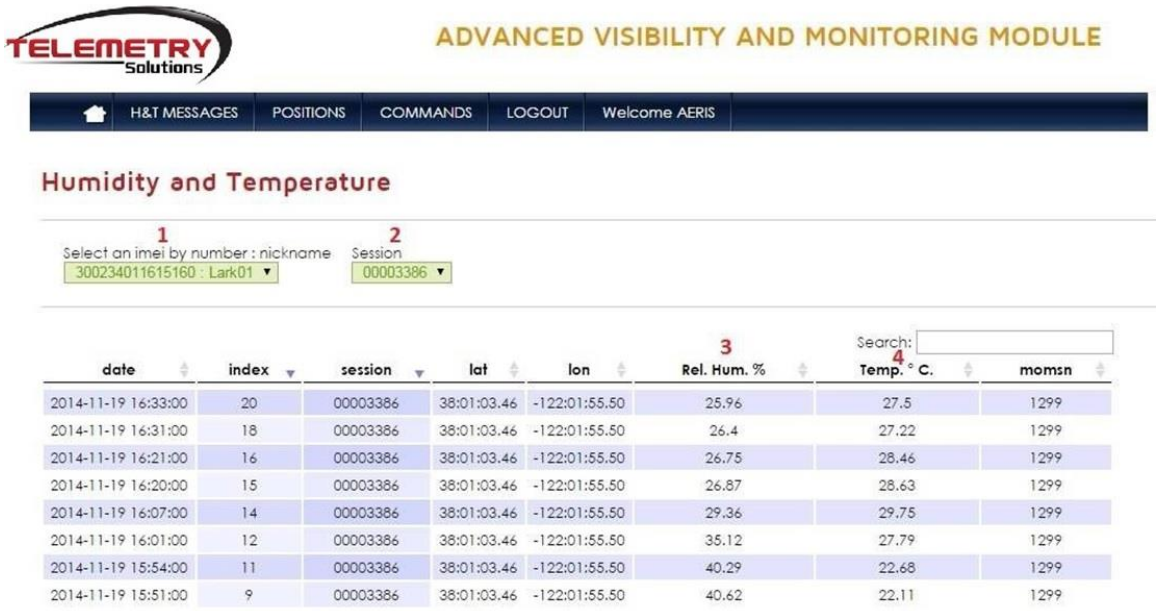
1. Use this drop down menu to select the unit you will like to see the data for. The units are identified by IMEI number. Once you select the IMEI number the table will automatically update with the appropriate data.
2. The **Session** box appears and will sometimes have different batches of data.
3. Use the **Date from** and **Date to** boxes to narrow down the days that you would like to be displayed in the table.
4. Click this button to download the data from the selected date range as a KML file

to view in Google Earth.

5. Click this button to download the data from the selected date range as a CSV file. A CSV file can be opened by programs such as Microsoft Excel, LibreOffice Calc, and OpenOffice Calc. Sometimes these programs will try and format the data inappropriately which may result in jumbled data. Check the settings of the program to ensure that the data is not formatted incorrectly.
6. This button displays the data from the selected date range in Google Maps.
7. The data table. It displays the date and time of each fix as well as the, time to fix, the session ID, the latitude, the longitude, the number of satellites found, and the temperature in Celsius.

5.6 View Your Humidity & Temperature Data

You may view your data by following the link labeled **H&T MESSAGES**. Once there the page will look like this:



In the above screenshot each feature is labeled:

1. Use this drop down menu to select the unit you will like to see the data for. The units are identified by IMEI number. Once you select the IMEI number the table will automatically update with the appropriate data.
2. The **Session** box appears and will sometimes have different batches of data.

3. Humidity Output
4. Temperature Output

5.7 Reprogram an Iridium Unit by Satellite

5.7a Features

It is possible to change some aspects of your GPS units programming through the Iridium web portal. You may alter the following settings through the web portal:

- The interval at which the GPS sends data by Iridium
- The minutes in between GPS locations
- The minutes in between humidity and temperature readings
- The GPS timeout
- The GPS additional time

5.7b Timeline for Sending Commands

Sending a command to your Iridium GPS unit does not mean the unit will receive the command instantly. This timeline will explain the process.

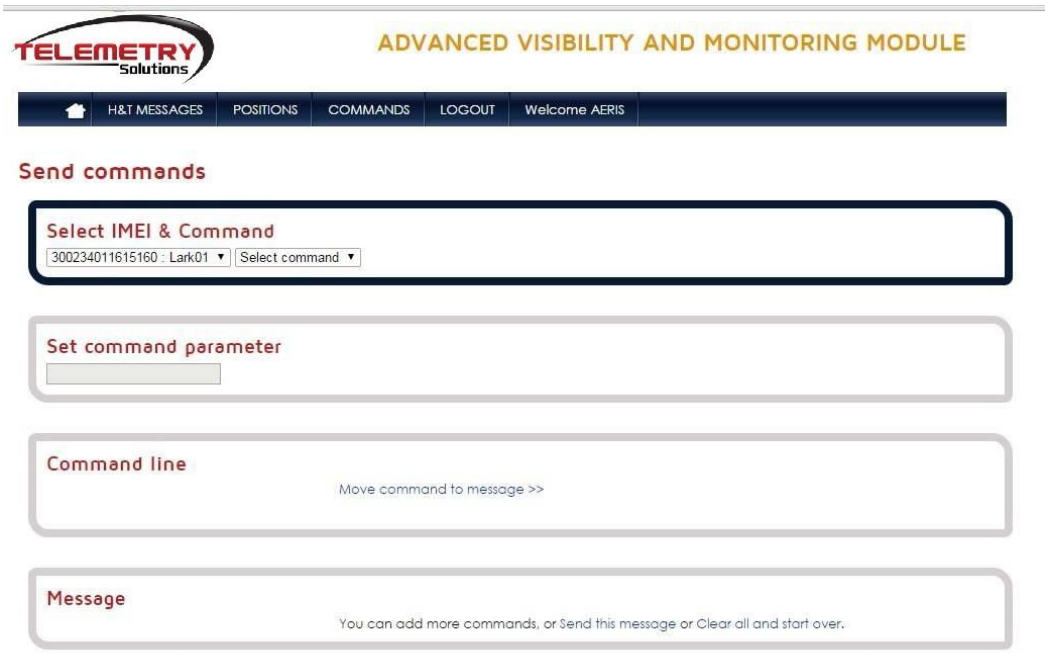
1. You send the command using the web portal.
2. Iridium receives the command and routes it to the correct queue. This could take up to 15 minutes.
3. The message remains in the queue until the GPS unit turns on to send data. The interval at which the GPS turns on to send data is programmed by the user. The factory default on this unit is 15 minutes.
4. Once the GPS unit turns on and connects to the Iridium satellites it receives the command and sends a confirmation message to our server.
5. The confirmation message could take 15 minutes to reach our server.
6. Once the message has reached our server the web portal is updated to reflect

that the message was received by the unit.

Depending on the conditions, it may take some time for this process to complete. Iridium data transmission requires a good view of the sky.

5.7c Sending a Command

To send a command you will need to navigate to the **COMMANDS** page by following the link on the blue bar. Once there, the page will look like this:



Most commands can be sent with these five steps:

1. Select the unit to send the command to.
2. Select the command you would like to send.
3. Enter in the Command parameter. The parameter will vary depending on the command.
4. Press the **Move to command message** link.
5. Press the **Send this message** link. A window will pop up to notify you that the message has been sent.

Commands and parameters

This table lists the commands from the **Select command** drop down menu.

command	*description*	*parameter*
setirmin	Sets the interval between Iridium communications	minutes between 15 and 11520
setdropoff	Sets the drop off date and time	Not relevant to your unit
dropnow	Forces the drop off to trigger	Not relevant to your unit
setgpsmin	Sets the interval between GPS location attempts	minutes between 3 and 1440
setgpstim	Sets the GPS timeout	60, 90, or 120 seconds
setgpsadd	Sets the GPS additional time	seconds between 5 and 120
sht15set	Sets the temp/humidity recording interval	minutes between 3 and 1440

5.7d Viewing History of Commands

After a command has been sent you may check on its status by navigating to the **HISTORY** page. You will find the link to the history page in the **COMMANDS** menu. Once you navigate to the **HISTORY** page you will see a list of all the send commands for a particular unit.

The page includes this section:

1. Use this drop down menu to select the unit you would like to see the command history for.
2. The **Session** box appears and will sometimes have different batches of data.
3. Select the data range to limit the commands displayed on the table
4. This is the table that displays the command history. It includes the following

information:

- IMEI number for the unit
- The data the command was sent through the web portal
- The ID of the command
- The command text
- The data and time the command was queued formatted in UTC.
- The date and time the unit received the command formatted in the unit's local time. For instance, if the unit's GMT offset is set to -8 the time displayed here will be GMT-8.

6. Iridium LIFO Email Alerts

LIFO means “last in, first out” as in the most recent data will be transferred first if the Iridium unit does not have a chance to transfer all of its data during a given Iridium data transferring session. With this ‘LIFO’ unit, you will receive emails every time new data has been uploaded during an Iridium data transfer session.

6.1 LIFO Email Alerts

When you receive a LIFO email alert, this is the unit letting you know it has uploaded new data to the **Positions** page. These emails come with an attachment which you are to open and view. The contents will show you the most recent position which has been received, the date & time and the ability to click on a link to view a map. The map shows the last 10 GPS positions the unit has gotten. Examples of this are below.

Note: that this link will always show the most recent ten GPS positions. If you look at a LIFO email from a week ago, it will still show the most up to date map from today.

A new last known position has been received.

LAT: 38:01:02.50

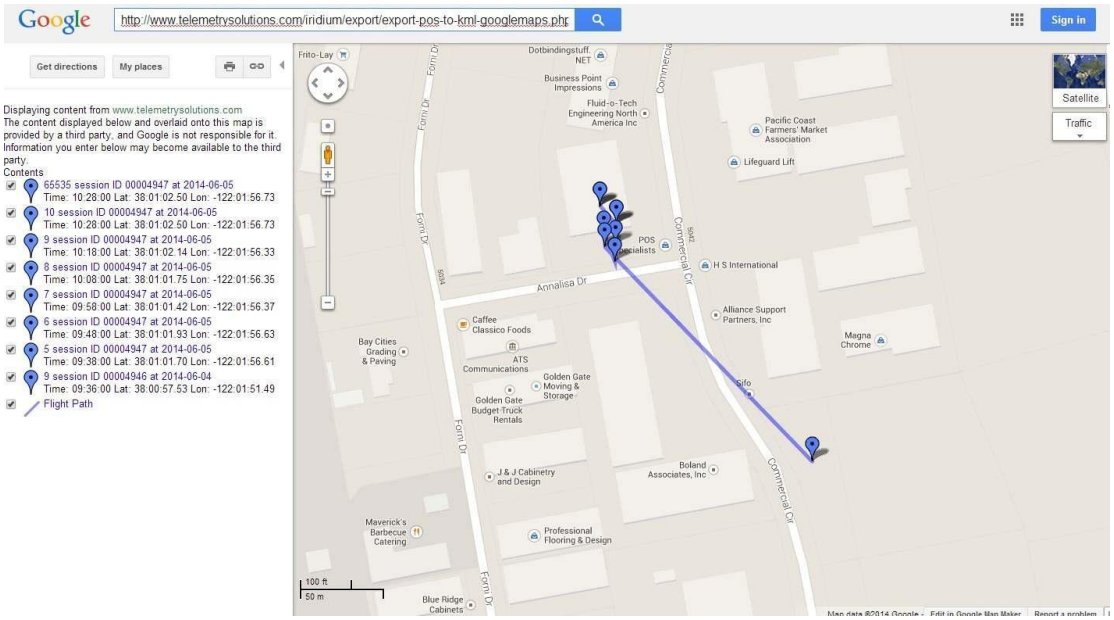
LON: -122:01:56.73

Date and time: 2014-06-05 10:28

This position is 1 km from previous known position and taken 1 hours later.

Please follow the link to see it on a map: See map here

You can contact Telemetry Solutions (atran@telemetrysolutions.com) for additional information.



Note: Which email addresses receive Iridium LIFO emails is decided by the customer. However, email addresses may only be added, edited or deleted by a Telemetry Support representative. Please email support@telemetrysolutions.com and let us know of the changes you are requesting.

6.2 LIFO Email Alert Filters

These filters are set so you only receive the Iridium emails if certain user pre-set filters are met. There are two types of filters:

6.2a Distance

The unit will only send an email if the unit has traveled X km from where the last position was recorded. For example, if you set the distance filter to 2km, you will only receive an email update if the unit has travelled 2+km since the unit's last location.

6.2b Time

You may set a time filter to only send you an email if it has not sent you one for X amount of time. For example, if you set the hours filter at 24, you will only receive one Iridium confirmation email per day, even if the unit uploaded data to the **Positions** page every few hours.
Note: Settings for these filters are decided by the customer. However, these settings can only be altered by a Telemetry Solutions representative. Please email support@telemetrysolutions.com and let us know of the changes you are requesting.

7. Maintenance

7.1 Turning Off Your Iridium GPS Unit

Attach the magnet provided onto the same location that it was when you received your unit. The placement should be the opposite side of from the antenna and a bit to the left. You can see this location in the screenshot below.

To know if the unit is off, simply place the magnet on the unit while the unit is still attempting GPS and sending the data via Iridium. If the magnet is placed on the correct spot, those emails with GPS data updates will stop coming and no more data will be placed onto the web. This means that you have placed the magnet successfully and the unit is off.

Warranty

Do not void your Warranty

- Do not attempt to gain access to the inside of the unit or the electronics housings or the drop off mechanism (if equipped)
- Do not make any modifications to this product.
- Do not penetrate the unit material.

This product has been designed to perform the tasks for which you have purchased it. Any modifications to the product without the written agreement of the manufacturer will result in a voided warranty. Modifications to the product without the written agreement of the manufacturer may also result in the product becoming non-serviceable. Using the product in a manner other than that for which it was sold results in a voided warranty.