# TrackPack
# Users Manual

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# Revision Log

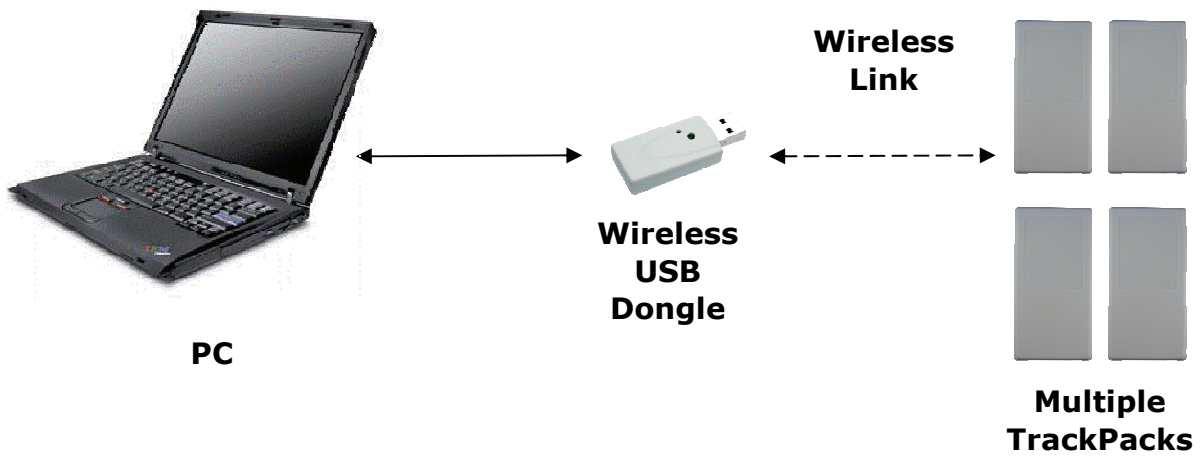| REVISION HISTORY | | | |
|---|---|---|---|
| **Revision** | **Date** | **Change Description** | **Section Affected** |
| A | 03/17/09 | Initial Release | ALL |
| B | 05/01/09 | Added Passkey instructions | 2.2 |
| C | 05/27/09 | Regulatory Notices | Appendix C |
| D | 06/10/09 | Regulatory Notices | Appendix C |

# Table of Contents

# 1. TRACKPACK

TrackPack is a fully self contained, highly reliable and environmentally hardened global satellite based tracking device capable of determining location using GPS and reporting that location over a low earth orbit (LEO) satellite network using the AeroAstro patented SENS CPDMA™ satellite communications system to provide a robust, easy to use asset tracking solution.
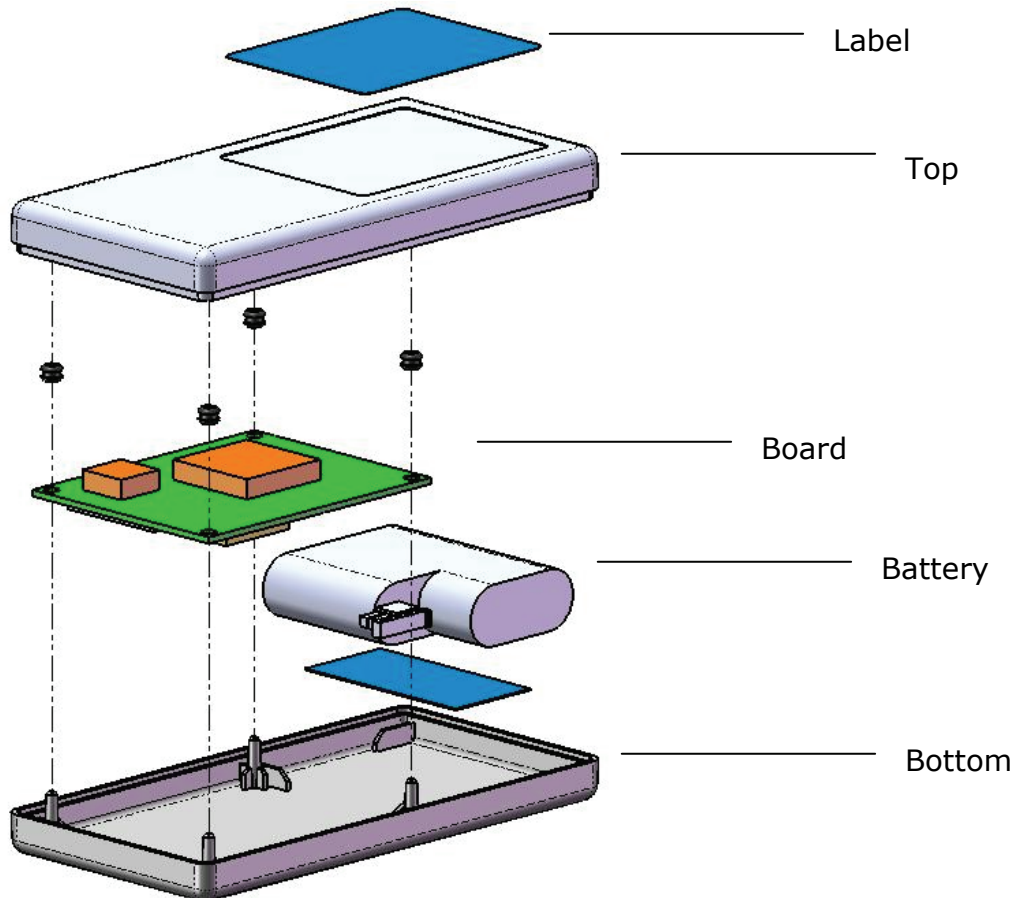
The TrackPack is powered by internal primary batteries and require no wires or harnesses for use. The TrackPack features a wireless configuration system using a simple Graphical User Interface (GUI) application and a wireless USB Dongle.  Users can configure TrackPack without cables or lengthy connection procedures.   The Wireless USB Dongle can communicate with multiple TrackPacks at the same time thus allowing users to configure more than one TrackPack simultaneously.

The TrackPack communicates data via the Globalstar Simplex Data Service. This satellite service utilizes low power, one-way transmitters to relay data from locations globally to a back office server accessible over the internet through a secure connection. The use of one-way, simplex satellite communications is a proven, reliable method. This feature is augmented by a rich configuration capability that enables the TrackPack to automatically detect situations where a data update is desired, such as start and stop or while in motion.

This Users Manual describes how the TrackPack is configured and the protocol for on-air data payload and internet XML packets. This document provides a generalized overview only. Consult Comtech AeroAstro for more details and options of relaying data.

**Wireless Link**

**Wireless USB Dongle**

**PC**

**Multiple TrackPacks**

## 1.1 TrackPack Basics



Label

Top

Board

Battery

Bottom

## 1.2  Mechanical

The TrackPack is a compact assembly containing a GPS receiver, satellite transmitter, antennae and batteries.  The device is a small outline and low profile.   The TrackPack is a fully contained tracking  device suitable for extended exposure to outdoor and industrial environments.  It is 5 inches length, 1.7 inches wide,  and 0.82 inches in height.  The TrackPack device is fully enclosed and hermetically sealed to ensure no moisture ingress.

## 1.3  Electrical

The TrackPack operates using a series of lithium iron disulfide batteries.  The Device uses 4.5V for all battery powered operation.

# 2. GETTING STARTED

TrackPack is designed to allow users to easily deploy a single or multiple devices. The TrackPack supports over-the-air configuration provided that the devices are within 60 ft from the wireless configuration dongle. Simply attach the Wireless USB configuration dongle and scan for TrackPacks that are in the range of the configuration tool.

## 2.1 Configuration Software Installation

TrackPak is wirelessly configured using a USB dongle and a Simple Graphical User Interface (GUI) software. The Configuration Kit includes a the USB dongle and a CD-ROM which contains the TrackPack configuration software and the drivers needed for the USB dongle. Installation instructions are described below:

**Wireless USB Communicator:**

1. Insert the TrackPack Configuration CD. You can also download the drivers ahead of time using the CD-ROM or through the Customer Support Center.

2. Insert USB dongle, the Hardware Wizard will pop up and you will have the option to install the Drivers automatically or install from a specific location. Select the "Install software
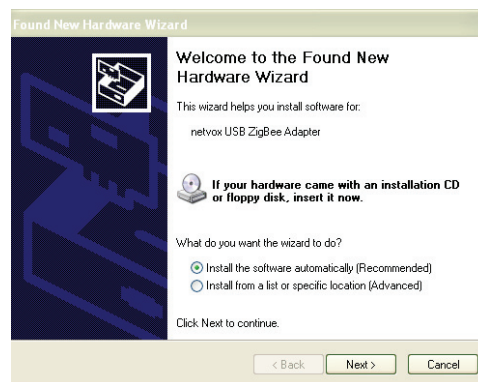
automatically" option.  The Wizard will detect where the Drivers are located (in CD-ROM or Saved in Hard drive).

**NOTE**

If this option does not work, you can select the "Install from Specific location" and point the wizard to the CD-ROM or the location where the driver has been saved.

**GUI Installation:**

1. Download the latest TrackPack Configuration software from the CD-ROM

2. Run by double-clicking the TrackPack configuration software.

TpGui2
Executable Jar File
356 KB

The Configuration Software and drivers can be downloaded via the Customer Resource center ([www.sensservice.com/senssupport](www.sensservice.com/senssupport)).  You will need to login using your AssetView administrative credentials.

## 2.2  Connecting the Device

Insert your wireless USB Dongle and run the TrackPack Configuration Tool. The USB Dongle  LED will provide feedback when the Dongle is active.  The Dongle LED is a steady green light when the Dongle is connected to a PC and will blink when it is actively searching or communicating with a TrackPack.[1]
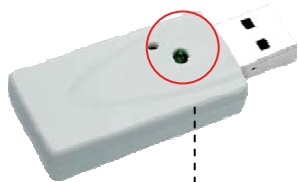
LED Feedback

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[1] *Note: Satcom and wireless radio and  are not capable of transmitting simultaneous*

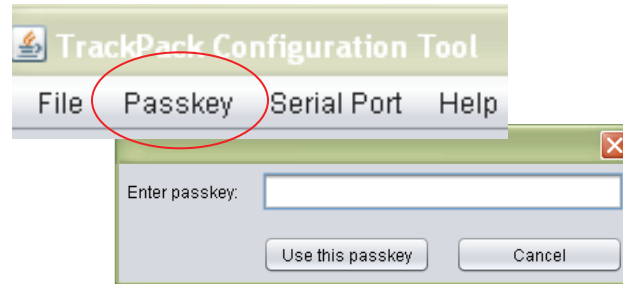The TrackPack unit and the USB Dongle communicate securely using a passkey. Pre-configured units will only communicate with the USB dongle if the appropriate passkey has been entered.

Using the Configuration Tool, Select the "Passkey" option located in the tool bar.



Enter the passkey that is assigned to your account and press the "Use this passkey" button.

**To communicate with New Units (no Passkey)**

Click the "Search for New Units" button.  This will retrieve all units that do not have a passkey assigned.

*\* Once you Press the Program Button.  The Passkey entered in the Passkey screen will be programmed in the unit.*

**To communicate with previously configured units:**

Click the "Search for Units" button.  This will retrieve units that have the matching passkey.

# 3. TRACKPACK CONFIGURATION TOOL

The TackPack Configuration Tool is a Java based software program designed to access and configure TrackPack devices.  The program can simply be copied to a directory on the host computer.

The TrackPack Configuration Tool is grouped in 3 sections.

Unit List

Configuration Section
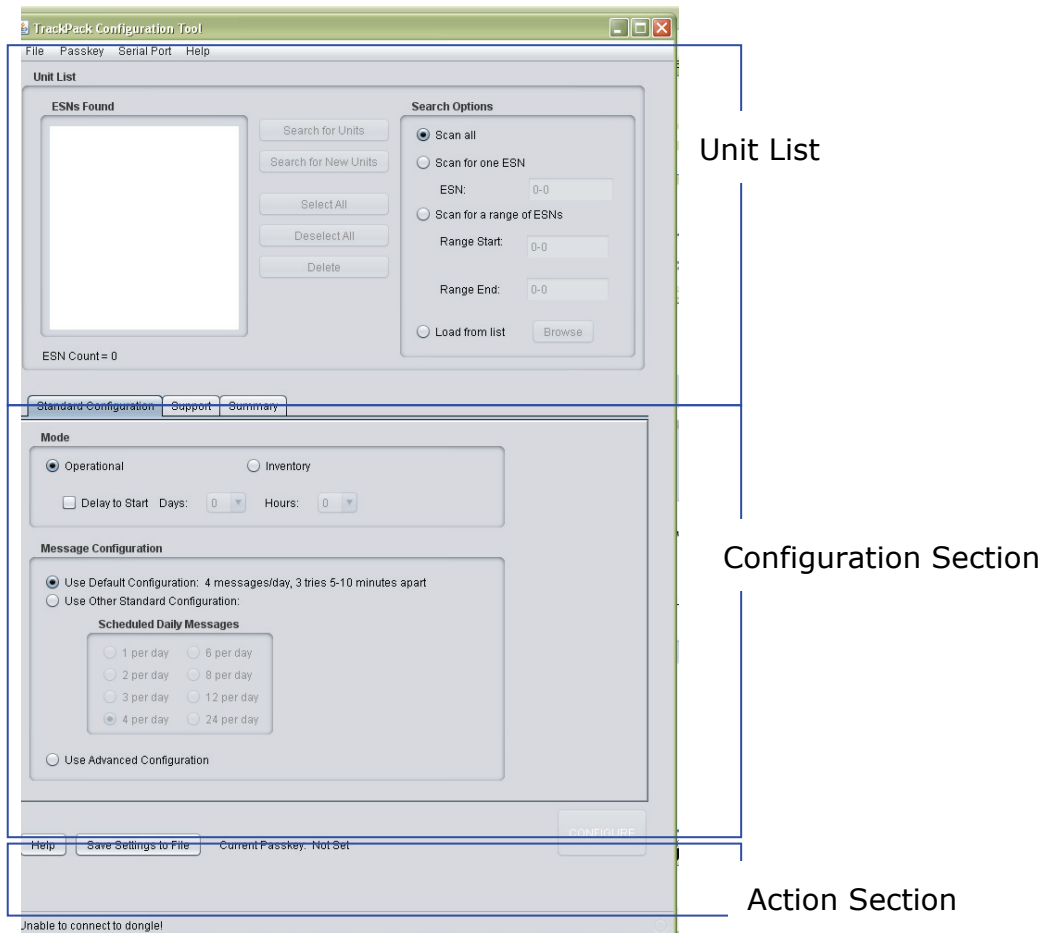
Action Section

## 3.1  Unit List

The Unit List section is the first place you will need to go once the TrackPack Configuration Tool is Open.  This section is used to connect the TrackPack to the Wireless USB Dongle.   This section has several option to use to connect the TrackPack.  You may choose which option is best for your operation.

The Electronic Serial Number (ESN) uniquely identifies each TrackPack Device. This Number appears on the TrackPack Label and inside the TrackPack.
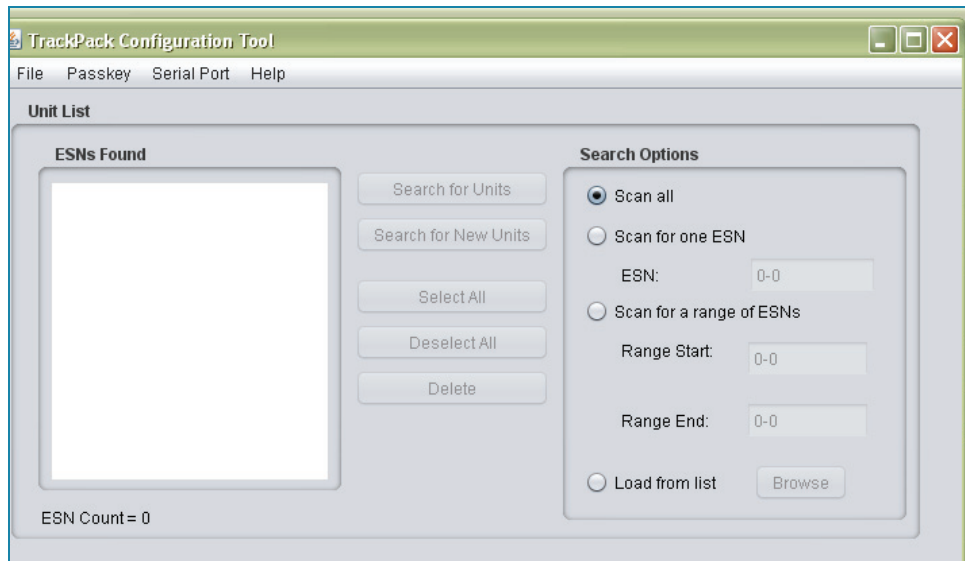
The Search Option Section brings flexibility in searching for TrackPacks.

1. Scan All:  This scans for all TrackPacks within configuration range
2. Scan for one ESN:  Once this radio button is selected, the ESN Field will be available for the user to enter the ESN that they would like to program.
3. Scan for a Range of ESNs:  This allows the user to scan for a range of ESNs
4. Load from List:  This allows the user to load a formatted list of ESNs.
5. Search for New Units Button:  By pressing this button, the Wireless USB Dongle will scan for all TrackPacks that are within range that do not have a passkey assigned. All TrackPacks scanned will be displayed in the ESN Found Screen.
6. Search for Units Button:  By pressing this button, the Wireless USB Dongle will scan for all TrackPacks that are within range that have a matching passkey. All TrackPacks scanned will be displayed in the ESN Found Screen.
7. Select All:  By pressing this button, ESNs displayed in the ESN Found Screen will be selected.
8. Deselect All: By pressing this button, selected ESNs displayed in the ESN Found Screen will be deselected.
9. Delete:  By Pressing this button the, ESNs displayed in the ESN Found Screen will be deleted.

During the scan process, the Feedback window located at the bottom of the Configuration Tool will display status of the scan.



1. Select all, Deselect All and Delete buttons allows the user to manipulate the ESN list that the Wireless Dongle found.
2. ESN Count:  Displays the number of ESNs the Wireless Dongle found.

Once you have selected the TrackPack or multiple TrackPacks, you can now begin configuration.

## 3.2  Unit Configuration

The Configuration section displays the following Tabs as a default Standard Configuration, Support, and Summary. These tabs allows the user to quickly configure basic configuration for the selected TrackPacks from the Unit List.

| Standard Configuration | Support | Summary |
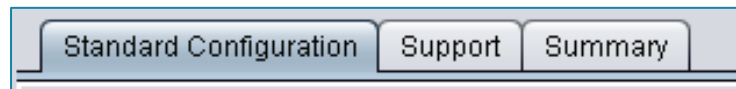
### 3.2.1  Standard Configuration

The Standard Configuration tab displays a list of basic configurations that the user can choose from.

### 3.2.1.1 Modes

Select Between Operational or Inventory.  While in Operational mode the unit attempts to acquire and report position. While in Inventory mode, the unit is in a battery saving state.

The Delay to Start Section allows the users to set a delay of Days or Hours before the unit will begin to operate using it's configuration.

### 3.2.1.2   *Message Configuration*

The Message Configuration section allows the user to quickly select from pre-configured profiles.  The User Advanced Configuration will take you to a more advanced and detailed configuration options.

### 3.2.2 Support

The Support Section allows the user and Technical support staff to upgrade TrackPack firmware by using the Firmware upload section.

The Display Unit Information displays information about the TrackPack Device that can be used for troubleshooting the unit.
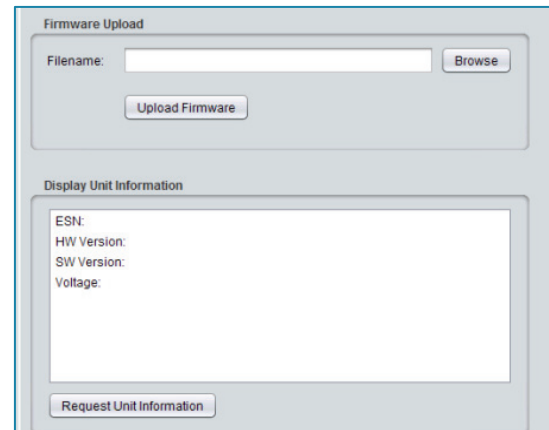
### 3.2.3 Summary

Once the TrackPack or TrackPacks have been configured, the Summary section will display configuration parameters for each TrackPack configured.

In this section, you can Save this settings to a file for easy configuration in the future.  You may also Download settings from a unit and view the configuration settings or load settings from a file.
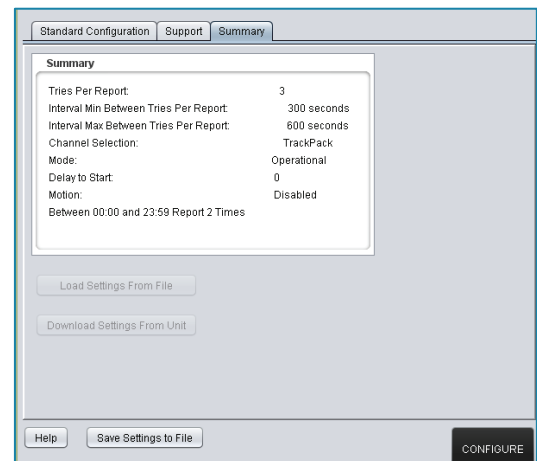
### 3.2.4 Advanced Configuration

Selecting the Advanced Configuration displays additional tabs that are required for a more advanced set of configurations.
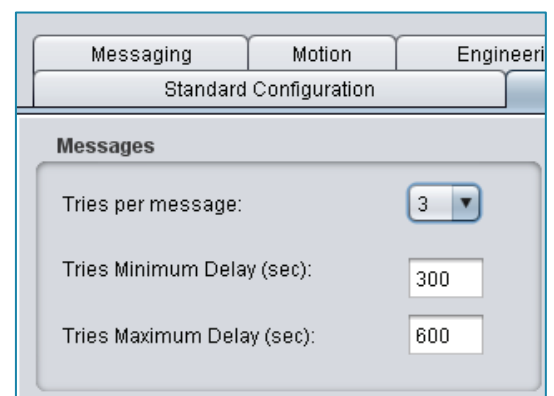
The Advanced Configuration begins by selecting the Message Parameters located in the Messages Section.

These Messaging parameters control the number of repeat messages to be sent within the selected minimum and maximum seconds for each unique message. The Default parameter is set to 3 Tries for unique message between 300 seconds to 600 seconds to ensure reliability of message success rate. Given that not all applications require the same reliability or requirements to send messages more quickly, this setting is user configurable to suit several applications.

Users may select their Tries per message from 1 through 15. The Tries minimum and maximum is also user configurable but will provide feedback with the appropriate calculations.
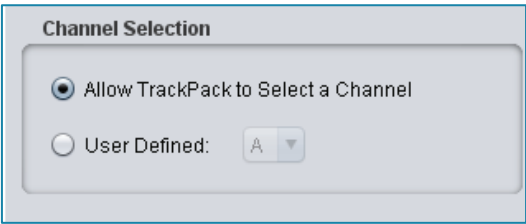


The Channel Selection allows the user to select which operating channel the TrackPack will be. It is best to select the "Allow TrackPack to Select a Channel" radio button. The TrackPack comes with Radio Astronomy Site (RAS) Detection and will switch Channels once a RAS is detected.

### 3.2.4.1    *Messaging*

The Messaging Tab is where Location Messages and Status messages are set. This tab allows users to configure from a Location Message Interval or a Location Message Schedule.
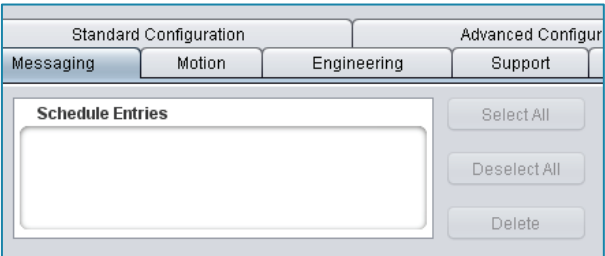


The Schedule Entries window displays the Message Scheduled selected by the user. Use the Select All, Deselect All or Delete to manipulate the schedule entered.

## Interval Message Setting

Select the Number of Message per day radio button and select the number of messages the TrackPack will send within the 24 hour period.  Select from 1 to 8 messages per day.   Using this option the TrackPack will send a user specified number of message per day beginning from the 1$^{st}$ message the TrackPack sends and spread evenly.

e.g:    User Configured 8 Messages per day.    The Trackpack sends it's 1$^{st}$ day.    The Trackpack sends it's 1$^{st}$ message on 01:00 (EST), the next 8 message will be spread evenly within the next 24 hours as shown below:

| Message | Estimated Time |
|---------|----------------|
| 1 | 01:00  - 01:15 |
| 2 | 04:00  - 04:15 |
| 3 | 07:00 – 07:15 |
| 4 | 10:00  - 10:15 |
| 5 | 13:00  - 13:15 |
| 6 | 16:00 – 16:15 |
| 7 | 19:00 – 19:15 |
| 8 | 22:00 – 22:15 |

## Message Schedule Settings



The Message schedule setting allows the user to set a number of messages in a schedule Window.    The Schedule can hold up to 7 schedule windows and up 1,440 messages in 1 schedule window.   The TrackPack Configuration Tool will calculate if the number of messages  entered in the window is not permitted based on the

Messaging Parameters set in the Messages Section of the Advanced Configuration Tab.

**NOTE**

This amount of messages will have an adverse effect on battery life.

**Adding a Schedule Window in a Schedule:**

1. Start by Selecting the number of message in the schedule
2. Select the Start and End of the schedule
3. Select the Add Schedule button to populate the Schedule Entries window above.

**Status Message Setting**

Set the TrackPack's Status Message by selecting the Check box and selecting the number of days for each Status message.

**Status Message Setting**

☐ Send Status Messages     Days:     30 ▼
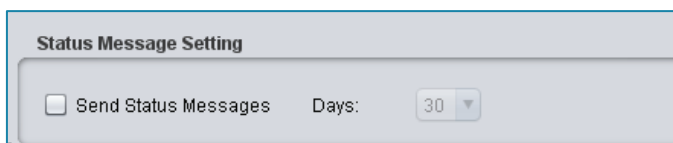
Battery life is determined in AssetView by using the information contained in the status message. (see AssetView Users Manual for more details).

### 3.2.4.2    *Motion*

The Motion Tab enables the user to turn on or off and configure the Motion Sensor of the TrackPack or TrackPacks. Turn the Motion Sensor on or off by selecting the appropriate radio button.

◉ Disable Motion Sensor

○ Enable Motion Sensor
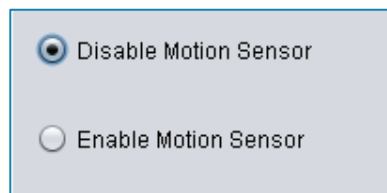
**Motion Settings**

Configure the Motion Settings by selecting the motion sensitivity. This setting ranges from one (1) to ten (10), one (1) represents the least sensitive and ten (10) which will be the most sensitive.

**Motion Settings**

Motion Sensitivity:

0    5    10

Motion Attack (minutes):    5 ▼

Motion Decay (minutes):    10 ▼
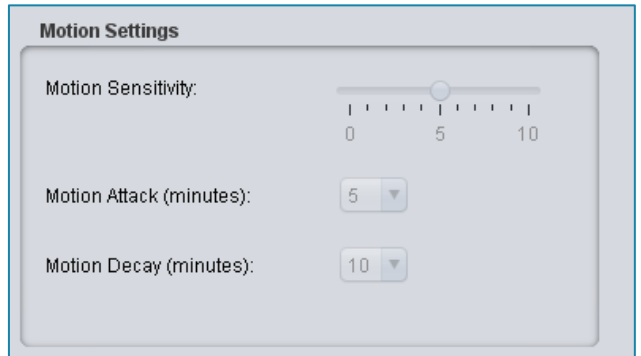
**Motion Attack:** Select the number of minutes of continuous motion between 5 and 60 before the TrackPack is triggered to send a message.

**Motion Decay:**  Select the number of minutes absent of motion between 5 and 60 before the TrackPack is triggered to send a message.

### 3.2.4.3    *Engineering*

The Engineering tab allows the users to force several message types from the TrackPack for test purposes.

Select the radio button for the type of message and press the "Send Message" button.

Standard Configuration

Messaging    Motion    Engineering

**Message Types**

◉ Send Location Message    [ Send Message ]

○ Send Status Message

○ Send Configuration Message

○ Send Raw Payload Message

Payload:    0x000000000000000000

**Acquire GPS**

[ Start GPS Acquisition ]

Latitude:    0

Longitude:    0

- Location Message:  This option will force the TrackPack to send a location message along with all the data included in a location message.

- Status Message:  This option forces the TrackPack to send a Status message along with all the data included in a status message.

- Configuration Message:   This option forces the TrackPack to send a Configuration Message along with all the data included in a status message.
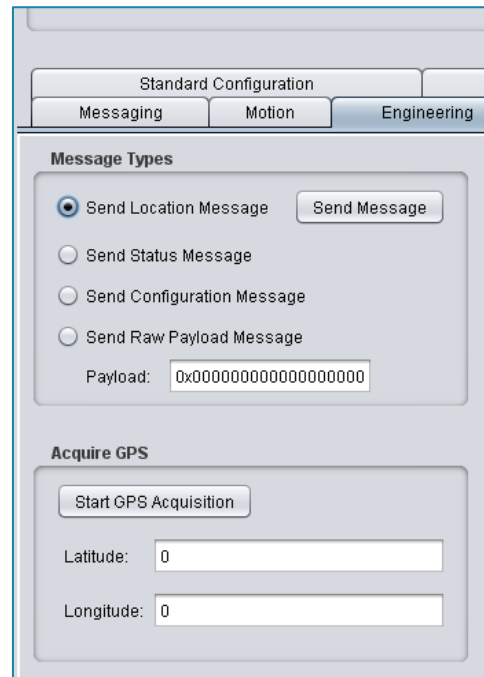
- Send Raw Payload Message: This option allows the user to send any raw payload data through the TrackPack.

The Acquire GPS Section allows the user to acquire current GPS position of the TrackPack. The GPS Coordinates will be displayed in the Latitude and Longitude fields.

## 3.3 Action Button and Feedback Section

The Action button section consist of the "Help", "Save Settings to File" and most importantly the "Configure Button". The section below the button is also called the Feedback section. This section displays feedback when the Wireless Dongle is configuring a unit.
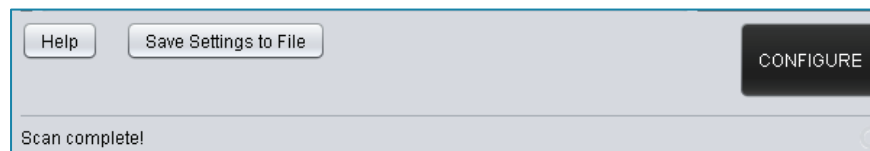


1. **Help:** The Help button contains a number of help instructions
2. **Save Settings to File:** Use this button to save the current configuration profile for future use.
3. **Configure:** Use this button to configure TrackPack or TrackPacks.

During the configuration process, the Unit List will display the ESNs of each TrackPack that are being configured, The Wireless USB dongle will blink until all units have been configured. The Feedback section will display the number of units that have been successfully configured. The Following icons are displayed beside each ESN to provide a graphical feedback of the configuration process.

 - Successfully Configured

 - Processing

 - Incomplete configuration

 - Not Configured

 - Need to check the unit

Once the TrackPack (s) have been configured, select the Summary tab to view the configuration (s)  see the Summary Tab description in 3.2.2

# 4. DEVICE INSTALLATION

The **TrackPack** is designed to be mounted to an asset using double-sided Very High Bond (VHB) adhesive tape.   Refer to the VHB installation instructions to ensure proper installation.
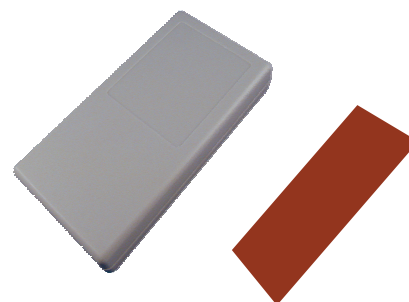
Another option is using the mounting sled.

**Secures TrackPack in sled and**
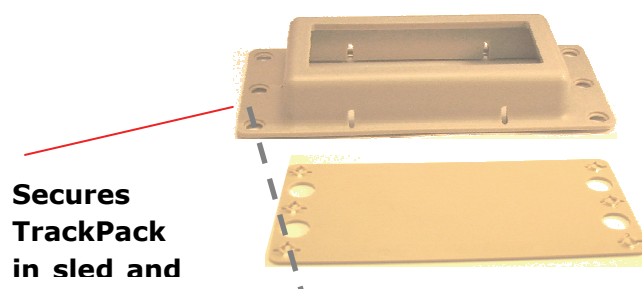
Make sure you mount the TrackPack label side up.   TrackPack works best when there is a clear, unobstructed path to the sky.

# 5. MESSAGING PRIORITY

The TrackPack has 2 types of Location Message. These messages are Standard Location message which is configured by the user to send in an interval or a schedule mode and a Motion message which is configured by the user to be sent based on motion sensitivity, attack and decay settings.

The Messaging priority is set to the Motion Message when this function is enabled. The TrackPack will send standard location message (s) as configured even with the motion sensor enabled. Once motion is detected, the TrackPack will send the Motion message as a priority and will resume Standard location message configuration.

# 6. SPECIFICIATIONS

| | |
|---|---|
| **Enclosure:** | 5"x2.7"x0.82" (127x69x21mm) |
| **Mass:** | 5.9 oz (167g) |
| **Volume** | 11.07 cubic inches |
| **Temperature:** | -40C (-40 F) to +85 C (+158 F) Operating |
| **Humidity:**<br>**Vibration/Shock:**<br>**Water:** | 100% at 50 C, Salt, Fog Testing per MIL STD 810 MIL STD 810, SAE J1455 and EIC 60521<br><br>Waterproof, Full immersion at 1m depth |
| **Battery:**<br><br>**Life Expectancy** | Internal (primary), Ultrasonically Welded<br>Li/FeS2  pack-3000mA-hr, 4.5VDC<br>>5 Years at 2 messages per day<br> >10 Year Storage Life (sleep mode) |
| **Provision / Setup:**<br>**Mounting:** | 802.15.4 Wireless Interface for TrackPack Setup<br>Tape, Magnet, Mounting Plate, Screw, Velcro |
| **Certifications:** | FCC part 15 and part 25, CFR<br>Industry Canada<br>ETSI EN 304 489-1, and ETSI EN 301 489-3 (CE Mark)<br>EN61000-4-2 |

| | |
|---|---|
| | U.S. UL913, Class 1, division 1<br><br>(Group A,B,C,D)<br><br>INTRINSIC SAFE OPERATION |
| **Communications:** | Direct Sequence Spread Spectrum (DSSS)<br><br>1610-1626 MHz in 4 Factory Assigned Channels<br><br>2.5MHz bandwidth per Channel<br><br>22dBm EIRP (max) for 1.4s Transmit Time<br><br>9 byte User Payload per Message<br><br>Multiple Message Concatenation Available<br><br>Unique Serial Number (ESN) embedded in Each Transmission<br><br>CPDMA™ Simplex Transmission via the Globalstar LEO Constellation |
| **GPS:** | Acquisition and Tracking Sensitivity – 160dBm<br><br>Operational to 1000 Knots (515 m/s)<br><br>Horizontal Position Accuracy < 5m<br><br>(50% CEP, 24 hrs, static, -130dBm) |

# 7. GLOSSARY

ESN – Electronic Serial Number, a unique number assigned to each TrackPack.

Report – A unique tracking message sent by TrackPack.  For each report, there may be one or multiple transmission attempt or tries.

Status Message – An infrequent message detailing TrackPack status.  By default status messages are sent every 30 days.

Configuration Message  -- Message detailing TrackPack's configuration.  Sent any time there is a configuration modification, or when TrackPack shifts from inventory to operational mode.

Tracking Message – A message showing location and time.  TrackPack sends based on configured schedule or enabled motion detection.  Also referred as location message.

Try – A transmission attempt for each report.  The more tries per report, the higher probability of successful reception at the expense of shorter battery life.

Tries Minimum Interval – Minimum time elapsed between tries, default 5 minutes.

Tries Maximum Interval – Maximum time elapsed between tries, default 10 minutes.

Message Scheduled – A time range where TrackPack sends a specific number of reports.  Specified by Start Interval, End Interval and number of reports. By default, TrackPack sends two reports per day.

# APPENDIX A: TECHNICAL SUPPORT

Comtech AeroAstro is committed to customer care and takes great pride in offering high quality technical and customer support services to all our customers. Should you need additional assistance, our dedicated team of Technical and Customer Support group stands ready to answer your questions quickly and thoroughly.

You may contact us at help@sensservice.com or via phone at (866) 631.6010, +1 (703) 723.9800

# APPENDIX B: RF RADIATION EXPOSURE STATEMENT

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

# APPENDIX C:   REGULATORY NOTICES

The FCC Requires the following notification for the device in compliance with 47CFR 15.105 for this Class B digital device.

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

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

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à  la norme NMB-003 du Canada.

TrackPack contains an 802.15.4 transceiver and a SATCOM transmitter.
The two transmitters are prevented in firmware from simultaneous transmissions.

FCC ID: XGS-6014901

IC : 8262A-6014901

Contains FCC ID : L2V-STX2-1

Contains IC ID : 3989A-STX21

# APPENDIX D: ENVIRONMENTAL SPECIFICATIONS

The following table is a summary of the environmental requirements for TrackPack. Contact

Comtech AeroAstro for more detailed information related to environmental specifications or test.

| TEST | STANDARD |
|---|---|
| Temperature | SAE J1455 4.1.3.1 |
| Storage Temperature | MIL810F 4.5.2 |
| Thermal Shock | SAEJ1455 4.1.3.2 |
| Humidity | MIL810F 507.4 |
| Vibration | SAEJ1455 4.10 |
| Mechanical Shock | SAE J1455 4.11 |
| Dust & Sand, Gravel | SAE J1455 4.7 |
| Immersion/Splash | IEC 60529 |
| Salt Fog | MIL810F 509.4 |

# Appendix E: Message Format

TrackPack sends messages over the Globalstar satellite network in 16-btye packets.   Nine of the sixteen bytes are reserved for variable user data. TrackPack employs three different message types: tracking (location) message, configuration message, and status message.  The user data format for each message is listed as follows:

## 1. Tracking Message

The tracking message is used to report location that is transmitted on a schedule or interval.  This type of message is also used to indicate if the message was triggered by the Motion sensor.  The Message Trigger will indicate the following:

Schedule – Location messages

Motion Start – indicates that motion has started

Motion Stop – indicates that motion has seized.

| BYTE | BITS | NAME | DESCRIPTION | ENUMERATION |
|---|---|---|---|---|
| 1 | 7:5 | Message Type | Tracking Message - Always 0b000 | |
| | 4:3 | Message Trigger | Event Triggering the Transmission | {3...0} = {Undefined, Motion Stop, Motion Start, Schedule} |
| | 2:1 | GPS Acquisition Attempts | Number Required to Acquire GPS Lock | {3…0} = {3, 2, 1, No Acquisition} |
| | 0 | GPS Accuracy | Fix Quality Indicator | {1,0} = {3D Fix, 2D Fix} |
| 2 | 7:0 | Latitude [2] | MSB of Latitude Indicator | |

| 3 | 7:0 | Latitude [1] | Center Byte of Latitude Indicator | |
|---|-----|--------------|-----------------------------------|---|
| 4 | 7:0 | Latitude [0] | LSB of Latitude Indicator | |
| 5 | 7:0 | Longitude [2] | MSB of Longitude Indicator | |
| 6 | 7:0 | Longitude [1] | Center Byte of Longitude Indicator | |
| 7 | 7:0 | Longitude [0] | LSB of Longitude Indicator | |
| 8 | 7:0 | GPS Acquisition Time [1] | MSB of Acquisition Time | |
| 9 | 7:0 | GPS Acquisition Time [0] | LSB of Acquisition Time | |

## 1.1 Decoded Tracking Message Sample

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE stuMessages >
<stuMessages timeStamp="20/02/2009 15:17:32 GMT" pack-
etID="16deee05-372a-4a6a-91ee-113b36c3ac76">
<stuMessage>
<Type>tracking_message</Type>
        <SeqNo></SeqNo>
        <ESN>333148</ESN>
        <UnitName>INI Inc TP</UnitName>
        <MessageTimeGMT>2009/02/19 21:12:30</MessageTimeGMT>
        <Longitude>12.482314</Longitude>
        <Latitude>41.895461</Latitude>
        <MessageTrigger>Schedule</MessageTrigger>
        <GPSAcquisitionAttempts>1</GPSAcquisitionAttempts>
        <GPSAccuracy>3D Fix</GPSAccuracy>
        <GPSAcquisitionTime>05:26:18</GPSAcquisitionTime>
</stuMessage>
```

## 2. CONFIGURATION MESSAGE

The configuration message is sent when a unit has been configured or reconfigured.

| BYTE | BITS | NAME | DESCRIPTION | ENUMERATION |
|---|---|---|---|---|
| 1 | 7:5 | Message Type | Configuration Message - Always 0b001 | |
| | 4 | Reconfiguration Flag | Toggles Each Time Unit is Reconfigured | |
| | 3:0 | Transmission Tries | STU Transmissions per Message | |
| 2 | 7:0 | Minimum TX Interval | 5 Second Resolution | |
| 3 | 7:0 | Maximum TX Interval | 5 Second Resolution | |
| 4 | 7:0 | Motion Attack | Minutes of Continuous Motion Before Motion Alert | |
| 5 | 7:0 | Motion Decay | Minutes Without Motion Before Motion Stop Alert | |
| 6 | 7:0 | Motion Enabled | Notes the Motion Enable State | {1,0} = {Enabled, Disabled} |
| | 7:0 | Undefined | Not Used | |
| 7 | 7:0 | Undefined | Not Used | |

## 2.1 Decoded Configuration Message Sample

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE stuMessages >
<stuMessages timeStamp="20/02/2009 15:17:32 GMT" pack-
etID="16deee05-372a-4a6a-91ee-113b36c3ac76">
<stuMessage>
<Type>configuration_message</Type>
      <SeqNo></SeqNo>
      <ESN>333148</ESN>
      <UnitName>INI Inc TP</UnitName>
      <MessageTimeGMT>2009/02/19 21:12:48</MessageTimeGMT>
      <Reconfiguration>1</Reconfiguration>
      <TransmissionTries>1</TransmissionTries>
      <MinTxIntervalsec>300</MinTxIntervalsec>
      <MaxTxIntervalsec>600</MaxTxIntervalsec>
      <MotionAttack>60</MotionAttack>
      <MotionDecay>75</MotionDecay>
      <MotionEnabled>Disabled</MotionEnabled>
</stuMessage>
```

# 3. STATUS MESSAGE

The Status message provides information regarding the state of the unit. The Message trigger of "Reset" indicates that the unit has been reset due to configuration and "Time" indicates that the unit has been scheduled to send a status message.

| BYTE | BITS | NAME | DESCRIPTION | ENUMERATION |
|------|------|------|-------------|-------------|
| 1 | 7:5 | Message Type | Status Message - Always 0b010 | |
| | 4:3 | Message Trigger | Event Triggering the Transmission | {3...0} = {Undefined, Undefined, Reset, Time} |
| | 2 | Power Reset | Toggled on Every Power Reset | |

| | 1:0 | Watchdog Reset | Incremented Each WDT Reset | |
|---|---|---|---|---|
| 2 | 7:0 | Transmissions [1] | MSB of Number of Transmissions | |
| 3 | 7:0 | Transmissions [0] | LSB of Number of Transmissions | |
| 4 | 7:0 | GPS On Time [2] | MSB of Total Seconds GPS is On | |
| 5 | 7:0 | GPS On Time [1] | Center Byte of Total Seconds GPS is On | |
| 6 | 7:0 | GPS On Time [0] | LSB of Total Seconds GPS is On | |
| 7 | 7:0 | Mean GPS Acquisition Time | Average of Last 10 Successful Attempts | |
| 8 | 7:0 | Failed GPS Acquisition Attempts | Number Since Last Status Message | |
| 9 | 7:0 | Undefined | Not Used | |

## 3.1 Decoded Status Message Sample

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE stuMessages >
<stuMessages timeStamp="20/02/2009 15:17:32 GMT" packetID="16deee05-372a-4a6a-91ee-113b36c3ac76">
<stuMessage>
<Type>status_message</Type>
        <ESN>333148</ESN>
        <UnitName>INI Inc TP</UnitName>
        <MessageTimeGMT>2009/02/19 21:12:37</MessageTimeGMT>
        <MessageTrigger>Reset</MessageTrigger>
        <PowerReset>1</PowerReset>
        <TotalTransmissions>360</TotalTransmissions>
        <TotalGPSOnTimesec>30</TotalGPSOnTimesec>
        <MeanGPSAquisitionTimesec>30</MeanGPSAquisitionTimesec>
        <FailedGPSAquisitionAttempts>18</FailedGPSAquisitionAttempts>
</stuMessage>
```

**NOTES:**