



Mobile Security Child with enviromental sensors

(ST-900-CE)

User Guide

Manufacturing plant :

Dae Kyung Philippines., Inc.

Lot No. 1-6, Block 20, Phase IV , Main Avenue,
PEZA , Rosario, Cavite 4106, Philippines

Manufacturer :

Savi Technology, Inc.

3601 Eisenhower Avenue, STE 280, Alexandria VA
22304

Tel : (571) 227-7950

Fax : (571) 227-7960

NOTICE

This manual, software and electronic circuitry are copyrighted. All rights reserved. Under the copyright laws, this manual, software and electronic circuitry may not be copied, in whole or in part without written prior consent of Savi Technology, Inc..

All information provided in this document is carefully prepared and offered in good faith as a guide in the installation, use and servicing of our products. Installers must ensure that the final installation operates satisfactorily within the relevant regulatory requirements. Savi Technology, Inc..accepts no responsibility for incorrect installation. Savi Technology, Inc.. reserves the right to change products, specifications and installation data at any time without notice.

Savi Technology, Inc.. makes certain limited warranties with respect to defective diskettes, documentation and electronic circuitry. Please see the associated information contained on this page.

LIMITED WARRANTY

With respect to the physical documentation and physical electronic circuitry enclosed herein, Savi Technology, Inc.. warrants the same to be free of defects in materials and workmanship for a period of one year from the date of purchase. In the event of notification within the warranty period of defects in material or workmanship, Savi Technology, Inc.. will replace the defective diskettes, documentation and electronic circuitry. The remedy for breach of this warranty shall be limited to replacement and shall not encompass any other damages including but not limited to loss of profit and special incidental, consequential, or other similar claims.

Savi Technology, Inc.. specifically disclaims all other warranties, expressed or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose with respect to defects in the documentation and electronic circuitry and the program license granted herein, in particular, and without limiting operation of the program license with respect to any particular application, use or purpose.

IMPORTANT SAFETY INFORMATION

RF EXPOSURE STATEMENT

Your Transmitter contains a radio frequency transmitter. When physical damage or un-lock is the transmitter sends our RF signals. To comply with FCC RF exposure compliance requirements, a separation distance of at least 8 inches (20 cm) must be maintained between the antenna of this transmitter and all persons, during normal operation.

The antenna used for this transmitter must not be collocated or operating in conjunction with any other antenna of transmitter. Unauthorized antennas, modifications, or attachments could damage the transceiver and may violate FCC regulations.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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 installed 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.

NOTE : The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

Table of Contents

About the Savi Security Sensor Family	5
Introduction	5
What's New?	5
Sensor Family and Components	6
Sensor Models	6
Specifications	7
Using the Sensors.....	8
Turning on the Mobile Security Parents and/or Child Sensors	8
Charging the Mobile Security Parent	8
LED Light Patterns	9
Journeys with a Mobile Security Parent Only.....	12
Creating the Journey	12
Arming the Mobile Security Parent	13
Journeys with One or More Mobile Security Child Sensors.....	16
Creating the Journey	16
Arming the Mobile Security Parent and Child.....	17
Troubleshooting	20
Replacing a Child Sensor	20
Maintenance.....	24
Cleaning Instructions.....	24
Replacing a Cable	24
Storing the Sensors.....	24



About the Savi Security Sensor Family

Introduction

The Savi Security Sensor Family provides users security and visibility while tracking high-value assets and cargo throughout their global supply chains. Savi Tracking is designed to provide users a seamless and complete view of the location and security status of in-transit assets and cargo.

With an in-house security sensor system that is purpose-built to integrate directly with Savi Tracking, we are able to provide users a powerful, low-cost, all-in-one tracking and security solution that is complete with encrypted data capabilities and two-way, over-the-air communication.

The Savi Security Sensor Family consists of two types of Parent Security Sensors and Child Security Sensors.

What's New?

The Savi Security Sensor Family features advanced, powerful sensors while being small, light, and convenient to handle. Our new, easy-to-use design features a built-in cable and a lock that secures with the push of a finger. The devices are already pre-configured to work seamlessly with our Savi Tracking software.

Sensor Family and Components

Sensor Models

Mobile Security Child with enviromental sensors

Model No. ST-900-CE



Specifications

Mobile Security Child with enviromental sensors

, ST-900-CE

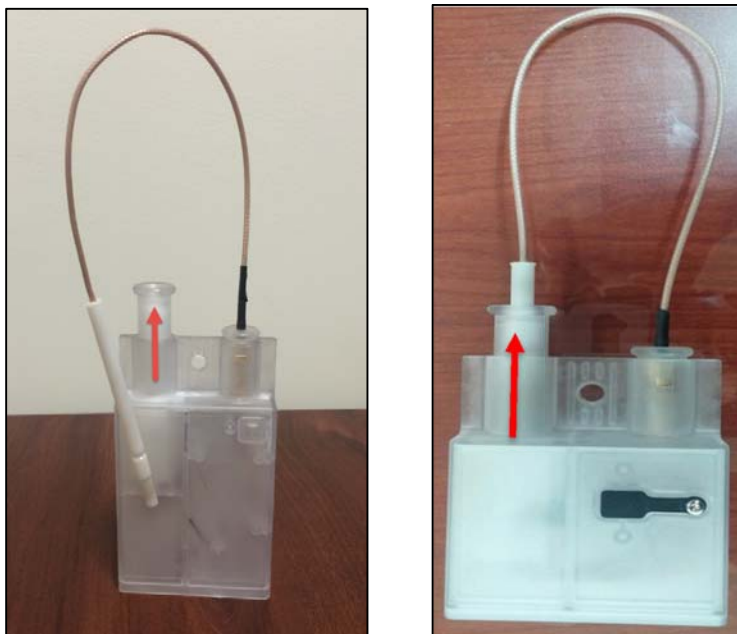
PHYSICAL	
LxWxH	88 mm x 46 mm x 123 mm
Standard Cable Length	300 mm
Weight	0.32 kg
ENVIRONMENTAL	
Temperature	-30°C to +50°C Operating -40°C tp +70°C Non-Operating
Humidity	95% RH @ 50°C Non-Condensing
Vibration and Shock	U.S. Military Standards 202G and 810F, SAE J1455
Weatherproofing	IP67
WIRELESS	
Frequency	433 MHz(UHF) / 123KHz(LF)
Protocol	ISO 18000-7 (Active RFID)
POWER	
Battery	- DC 3.6V / 3400 mAh Li-SOCI2 - Last for up to 3 years on a single battery
REGULATORY APPROVALS	
RoHS Compliant	
EMC/EMI	SAE J1113, FCC-Part 15B, Industry Canada
Global Certifications	FCC, CE, I-SAFE (ATEX, IEC, UL913 Zone 1 Groups A,B,C,D)
SENSORS	
	Optional Temperature
	Humidity
	Light
	Shock

Using the Sensors

Turning on the Mobile Security Parents and/or Child Sensors

For the Mobile Security Parent and Child Sensors:

To turn on the Mobile Security Parent and Child Sensors, pull the plungers up.



For the Vehicle Security Gateway:

Turn on the truck or vehicle ignition to turn on the sensors.

Charging the Mobile Security Parent

The Mobile Security Parent is rechargeable with a USB cable. Charge sensors using the Savi-approved Mini USB cable and charger by plugging it into an outlet that is connected to a power source.

Note: Mobile Security Child is not rechargeable. The Vehicle Security Gateway is recharged automatically once connected to the vehicle power.

TCP Connection Good																					
Communicating with Server																					
Searching for Child																					
Paired Child Located																					
Ready to Arm/No GPS Fix																					
Ready to Arm/GPS Fix																					
Security Tamper																					

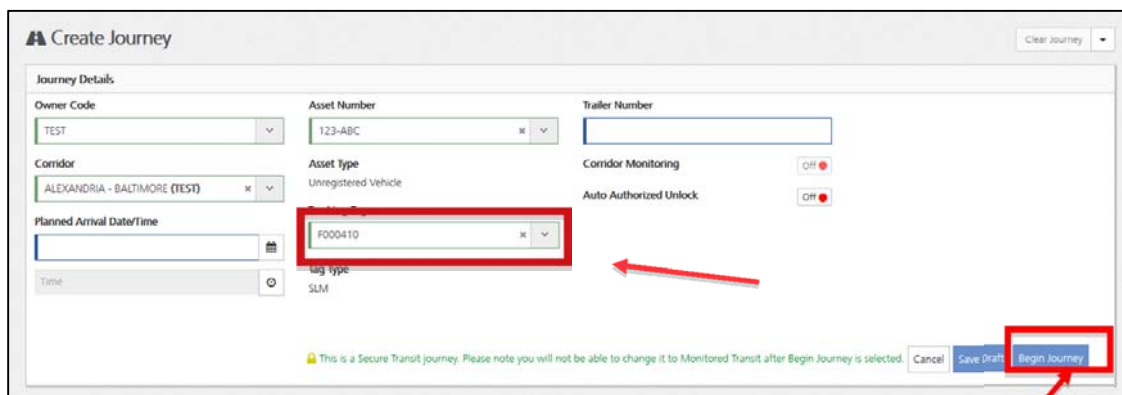
Child Sensor LED Patterns

[illegible]

Journeys with a Mobile Security Parent Only

Creating the Journey

1. Log into Savi Tracking.
2. Create a Journey by performing the following steps:
 - a. Select an Owner and Corridor from the drop-down list.
 - b. Enter the Asset Number.
 - c. Enter the Mobile Security Parent serial number in the “Tracking Tag” field.



Create Journey Clear Journey

Journey Details

Owner Code:

Asset Number:

Trailer Number:

Corridor:

Asset Type:

Corridor Monitoring: ☐

Auto Authorized Unlock: ☐

Planned Arrival Date/Time:

Tracking Tag:

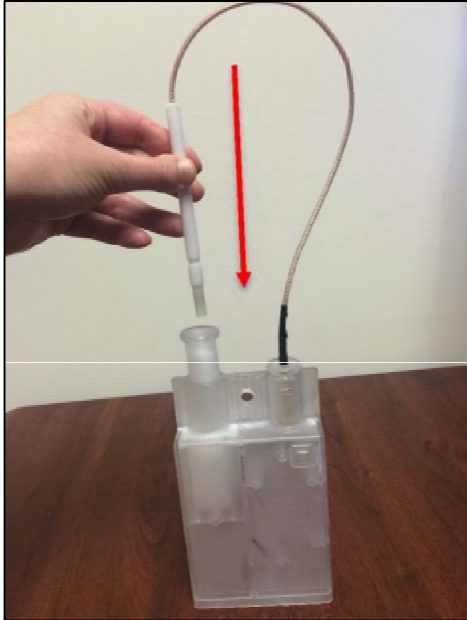
Tag type:

This is a Secure Transit journey. Please note you will not be able to change it to Monitored Transit after Begin Journey is selected.

- d. Click “Begin Journey” to indicate you are ready to arm tags.

Arming the Mobile Security Parent

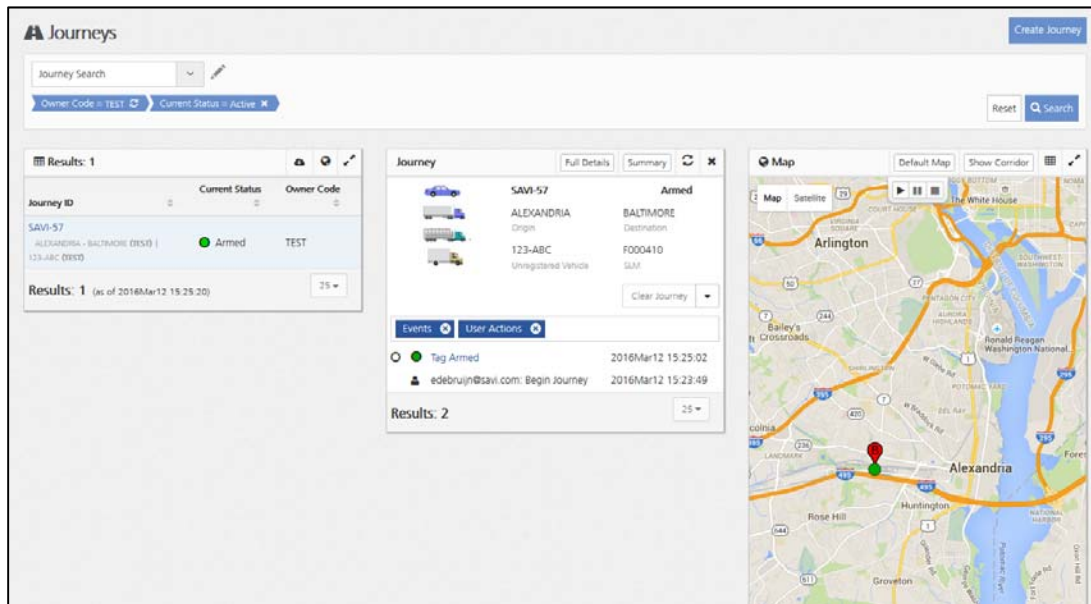
1. Turn on the sensor.
2. Loop the pin and cable through lock or door on container or vehicle.



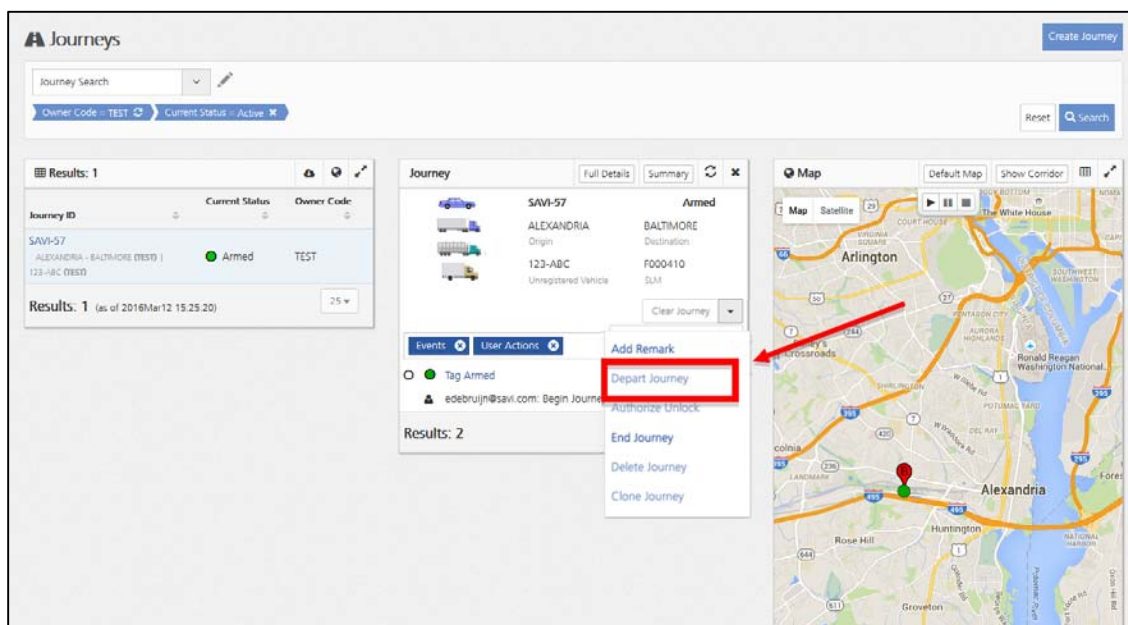
3. Push pin down into the plunger firmly until it clicks into place. Then push the plunger down to arm and lock the sensor.



- The green bullet will display in Savi Tracking to show that the Mobile Security Parent is armed and ready.



- Once the Mobile Security Parent is armed, select "Depart Journey" from the drop-down list.



6. The Current Status of the journey will change to “Secure Transit”.

The screenshot displays the Savi Journeys web application interface. At the top, there is a 'Journey Search' bar and a 'Create Journey' button. Below the search bar, filters for 'Owner Code: TEST' and 'Current Status: Active' are visible. The main content area is divided into three panels:

- Results: 1**: A table showing journey details for 'SAVI-57' (ALEXANDRIA - BALTIMORE (TEST) | 123-ABC (TEST)). The 'Current Status' is 'Secure Transit' and the 'Owner Code' is 'TEST'. Below the table, it says 'Results: 1 (as of 2016Mar12 15:25:20)'.
- Journey**: A detailed view of the journey 'SAVI-57'. It shows the origin 'ALEXANDRIA' and destination 'BALTIMORE'. The vehicle is '123-ABC' (Unregistered Vehicle) with a license plate 'F000410'. The status is 'Secure T...'. Below this, there is a 'Clear Journey' button and a list of events and user actions.
- Map**: A map view showing the journey route from Alexandria to Baltimore. A red pin is located in Alexandria, and a green line indicates the journey path. The map includes labels for 'Arlington', 'Alexandria', and 'Huntington'.

The 'Events' and 'User Actions' list shows the following:

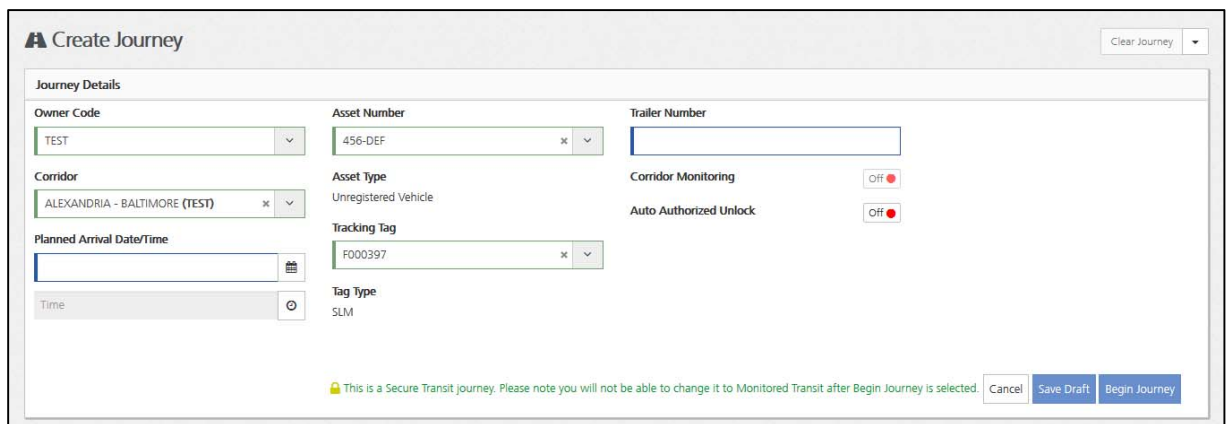
Event	User	Timestamp
Depart Journey	edeburj@savi.com	2016Mar12 15:26:48
Tag Armed	edeburj@savi.com	2016Mar12 15:25:02
Begin Journey	edeburj@savi.com	2016Mar12 15:23:49

Results: 3

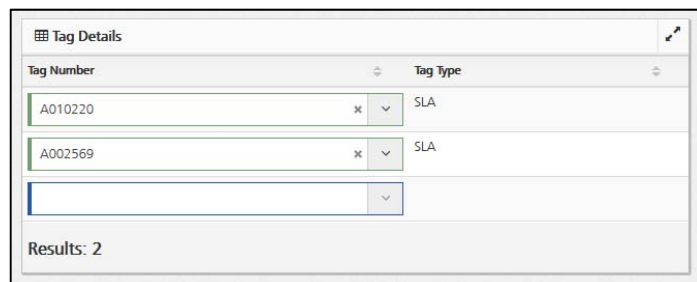
Journeys with One or More Mobile Security Child Sensors

Creating the Journey

1. Log into Savi Tracking.
2. Create a Journey by performing the following steps:
 - a. Select an Owner and Corridor from the list.
 - b. Enter the Asset Number. It is possible to either work with a registered asset or with a non-registered asset. If a registered asset is selected from the drop-down list, then the Tracking Tag field will automatically be filled in with the Vehicle Security Gateway serial number.



- c. When working with a non-registered asset, enter the Mobile Security Parent serial number in the “Tracking Tag” field.
- d. Scroll down to the Tag Details section and enter the Security Child Sensor IDs and Tag Point Names.



- e. When done, click Begin Journey.

Create Journey

Clear Journey

Journey Details

Owner Code: TEST Asset Number: 456-DEF Trailer Number:

Corridor: ALEXANDRIA - BALTIMORE (TEST) Asset Type: Unregistered Vehicle Corridor Monitoring: Off Auto Authorized Unlock: Off

Planned Arrival Date/Time: Time:

Tracking Tag: F000797 Tag Type: SLM

This is a Secure Transit journey. Please note you will not be able to change it to Monitored Transit after Begin Journey is selected. Cancel Save Dis **Begin Journey**

Tag Details

Tag Number	Tag Type
A010220	SLA
A002589	SLA

Documents

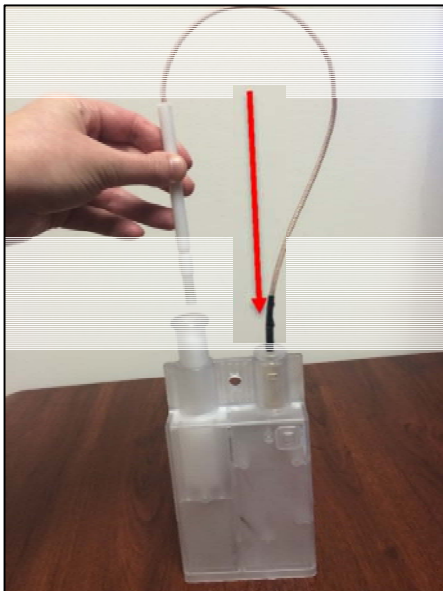
Choose Files Show Deleted

File Name	File Size	Description	Action
Documents cannot be added until the journey is Saved.			

Results: 0

Arming the Mobile Security Parent and Child

1. Turn on the sensors; make sure the Parent and Child are in close proximity to each other. Verify LED lights for successful pairing.
2. To arm the both the Mobile Security Parent and the Mobile Security Child, loop the pin and cable through lock or door on container or vehicle.



3. Push pin down into the plunger firmly until it clicks into place. Then push the plunger down to arm and lock the sensor.



4. The green bullets will display in Savi Tracking to show that the Mobile Security Child Sensors are armed and ready.

Journeys

Journey Search

Owner Code = TEST Journey ID = SAVI-58 Current Status = Active

Reset Search

Results: 1

Journey ID	Current Status	Owner Code
SAVI-58 ALEXANDRIA - BALTIMORE (TEST) 456-DEF (TEST)	Armed	TEST

Results: 1 (as of 2016Mar12 15:44:15)

Journey

SAVI-58 Armed

ALEXANDRIA BALTIMORE
Origin Destination

456-DEF F000397
Unregistered Vehicle SUM

Clear Journey

Events **User Actions**

Tag Armed	2016Mar12 15:43:38
Tag Armed	2016Mar12 15:43:29
Tag Armed	2016Mar12 15:42:28
edebrujn@savi.com: Begin Journey	2016Mar12 15:36:53

Results: 4

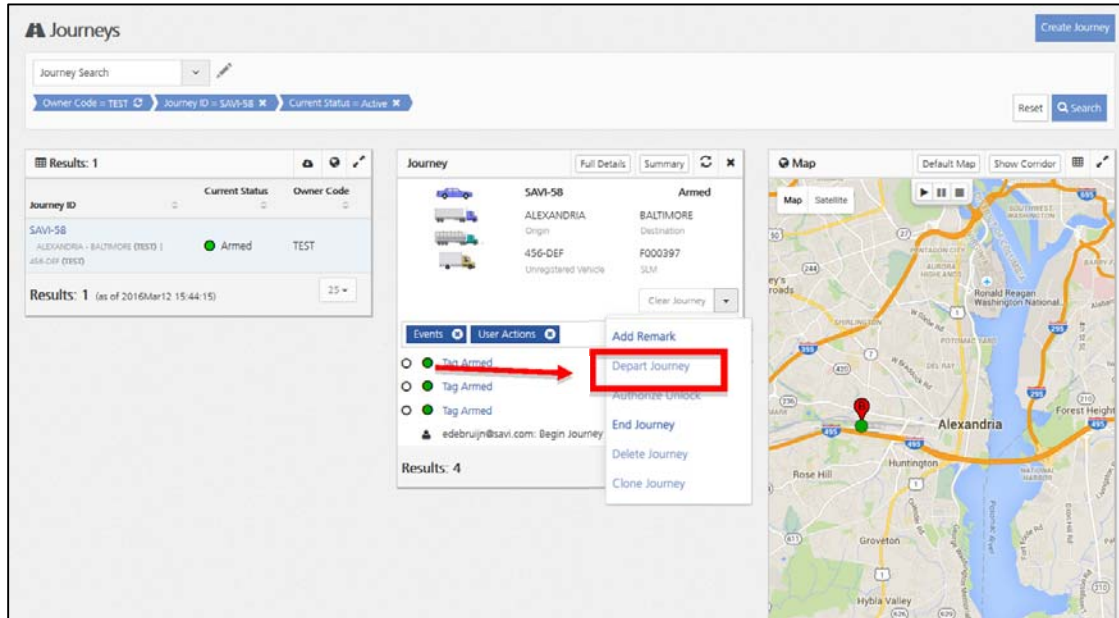
Map

Default Map Show Corridor

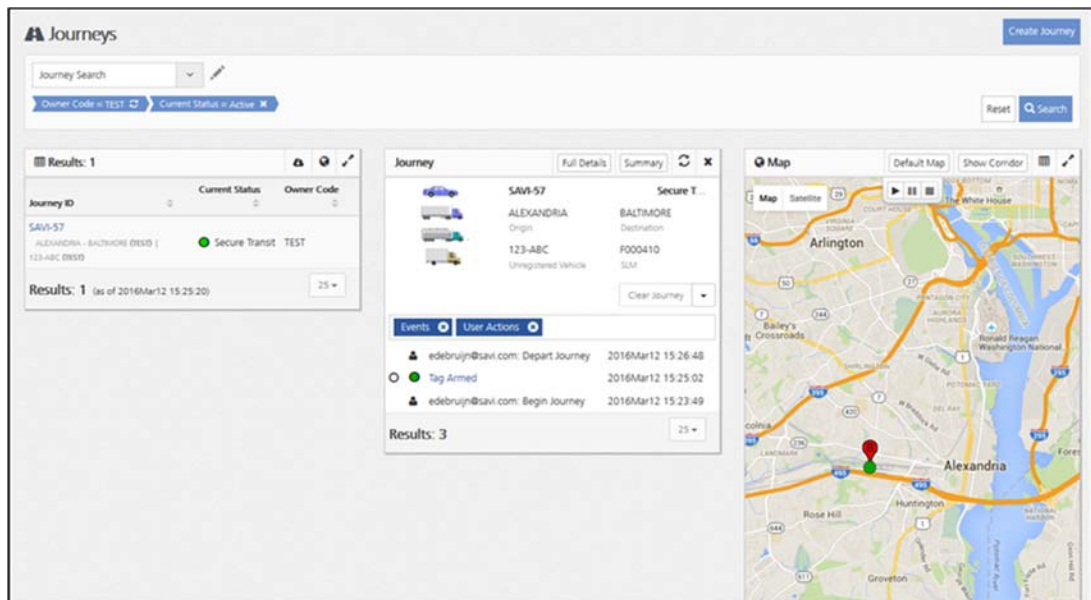
Map Satellite

Alexandria

- Once the Child Sensors are armed, select “Depart Journey” from the drop-down list.



- The Current Status of the journey will change to “Secure Transit.”



Troubleshooting

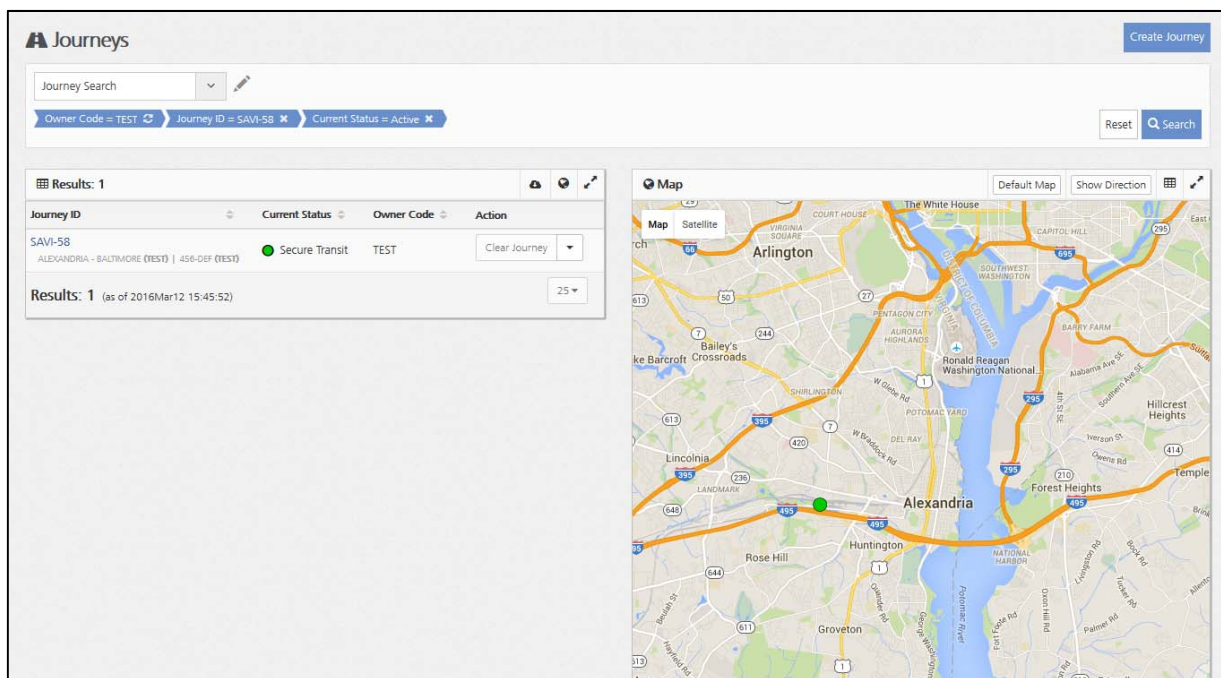
Replacing a Child Sensor

For various reason, it may be necessary to replace a Child Sensor on a journey, for example because:

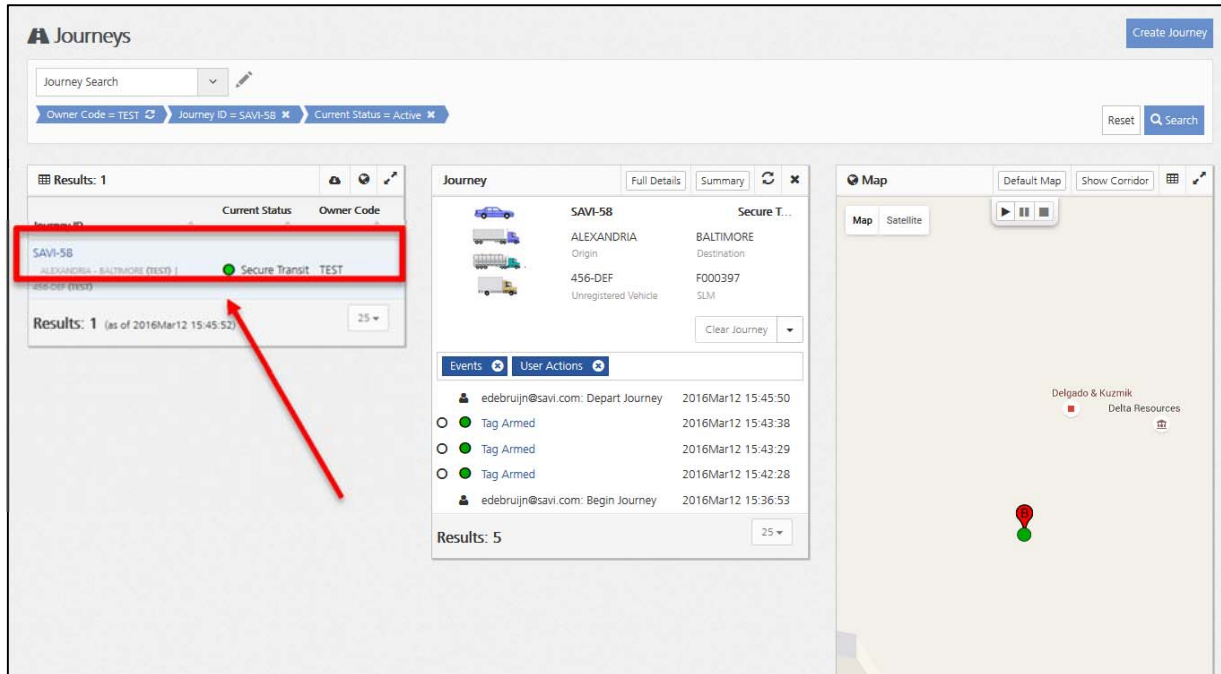
- The child sensor isn't pairing with the parent sensor
- The child sensor isn't arming
- The Child sensor has a low battery

To replace a Child Sensor on a journey, perform the following steps:

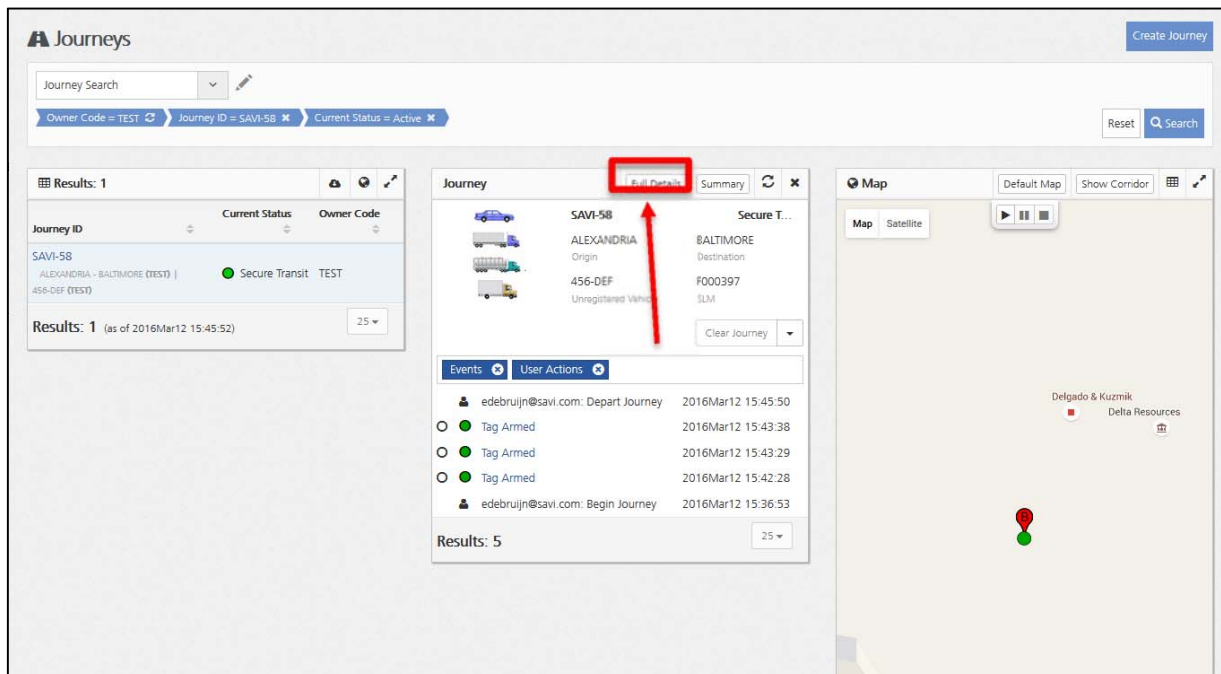
1. Search for the journey using the Journey screen.



2. Click on the journey to display the journey details.



3. Click on Full Details to display the full journey details.



4. Click pencil symbol to edit the journey:

SAVI-58 Secure Transit

Clear Journey Last Search

Journey Details

TEST
Owner Code

456-DEF
Asset Number

-
Trailer Number

ALEXANDRIA to BALTIMORE (TEST)
Corridor

Unregistered Vehicle
Asset Type

OFF
Corridor Monitoring

Planned Arrival Date: 2016Mar12 15:45:50 to BALTIMORE

F000397
Tracking Tag

OFF
Auto Authorized Unlock

SLM
Tag Type

This is a secure journey.

History Tag Details Documents Checkpoints Grants Alert Settings

History

Summary

Events User Actions

edebruijn@savi.com: Depart Journey 2016Mar12 15:45:50

Tag Armed 2016Mar12 15:43:38

Tag Armed 2016Mar12 15:43:29

Tag Armed 2016Mar12 15:42:28

edebruijn@savi.com: Begin Journey 2016Mar12 15:36:53

Results: 5

Map

Map Satellite

Delgado & Kuzmick
Delta Resources

5. Delete the sensor that needs to be replaced by clicking on the “X” symbol next to it.

Tag Details

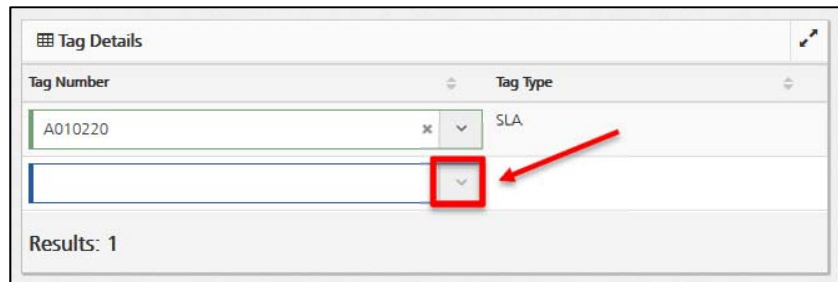
Tag Number Tag Type

A010220 SLA

A002569 SLA

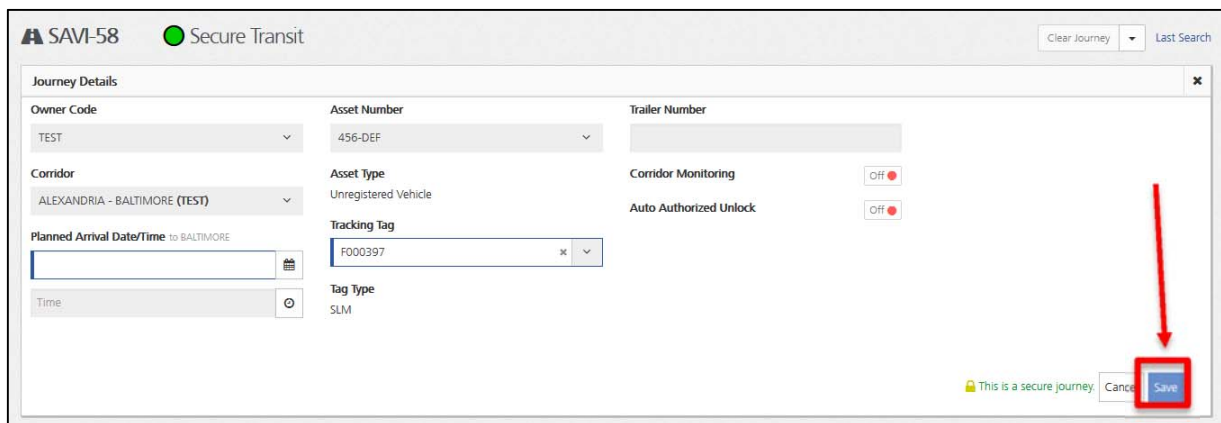
Results: 2

6. Add a new sensor by start typing the Child Sensor ID and selecting it from the drop-down list.



The screenshot shows a 'Tag Details' form. At the top, there are two tabs: 'Tag Number' and 'Tag Type'. Under the 'Tag Number' tab, there is a search bar containing the text 'A010220'. To the right of the search bar is a dropdown arrow. Below the search bar, there is a red box around the dropdown arrow, and a red arrow points to it from the right. Below the search bar, there is a text area with the text 'Results: 1'.

7. When done, click "Save"



The screenshot shows the 'Journey Details' form. The form has a header with 'SAVI-58' and 'Secure Transit'. Below the header, there are several fields: 'Owner Code' (TEST), 'Asset Number' (456-DEF), 'Trailer Number' (empty), 'Corridor' (ALEXANDRIA - BALTIMORE (TEST)), 'Asset Type' (Unregistered Vehicle), 'Corridor Monitoring' (OFF), 'Auto Authorized Unlock' (OFF), 'Planned Arrival Date/Time to BALTIMORE' (empty), 'Tracking Tag' (F000397), and 'Tag Type' (SLM). At the bottom right, there is a green lock icon and the text 'This is a secure journey.' followed by 'Cancel' and 'Save' buttons. The 'Save' button is highlighted with a red box, and a red arrow points to it from the right.

Maintenance

Cleaning Instructions

TBD

Replacing a Cable

TBD

Storing the Sensors

TBD

Copyright © 2016 Savi Technology. All rights reserved.

Printed in the United States of America. All trademarks used are properties of their respective owners. This document is proprietary to Savi Technology. Do not reproduce, use or disclose without permission. We have made every effort to ensure the accuracy of all information contained in this document; however, Savi Technology makes no expressed or implied warranty or representation based upon the enclosed information.

