



# This is the Smart Tip

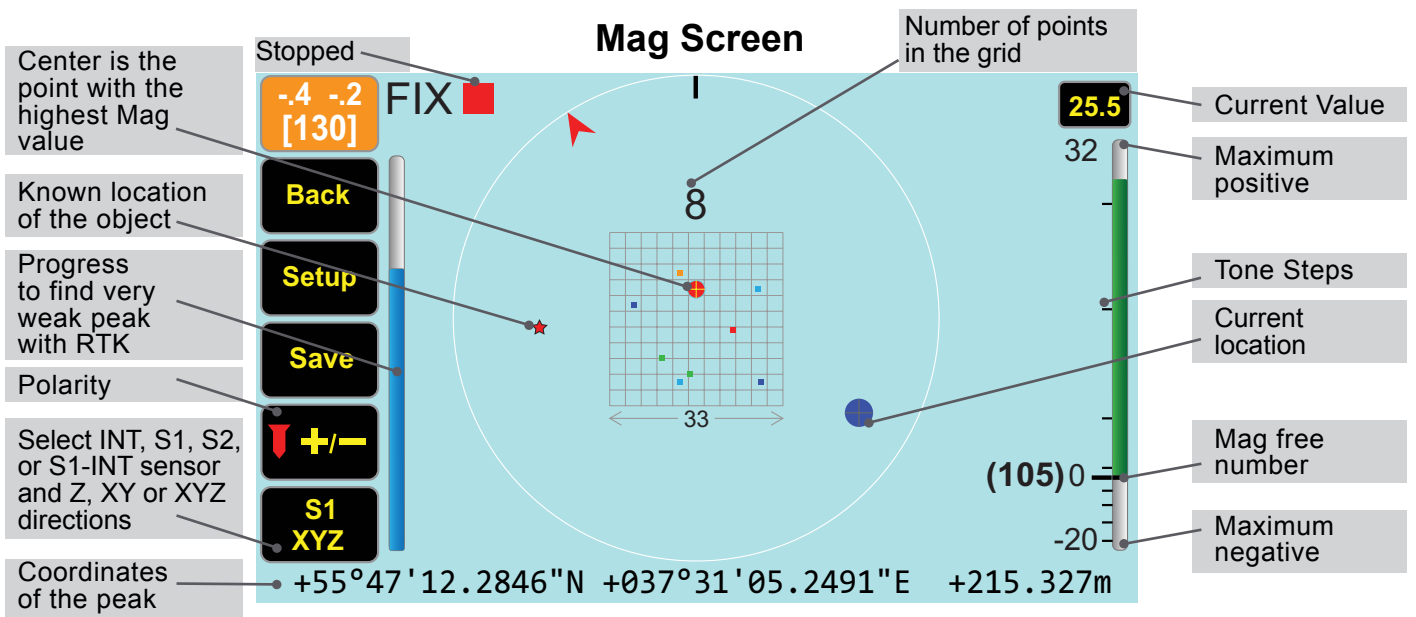


It replaces the tip on the bottom of your rover rod/monopod.


It has two magnetic sensors inside which send magnetic values to the TRIUMPH-LS via Bluetooth 100 times per second.

TRIUMPH-LS scans the field and plots the 2D and 3D magnetic characteristics and the shape and the centre of the objects under the ground and it guides you to it.

Integrated magnetic locator  
in TRIUMPH-LS



To see Mag screens you must first click the A/V hardware button and pair the TRIUMPH-LS with your Smart Tip (and to the Bluetooth headset, if you want to.)

In Action screens of Collect or Stake, click the  icon to get to the Mag screen.

Smart Tip has three search modes of “Positive”, “Negative”, and “Auto”. The search for Positive or Negative objects is fully automatic, for all levels of magnets, and you can start search from anywhere. There is no “Gain” knob to adjust.

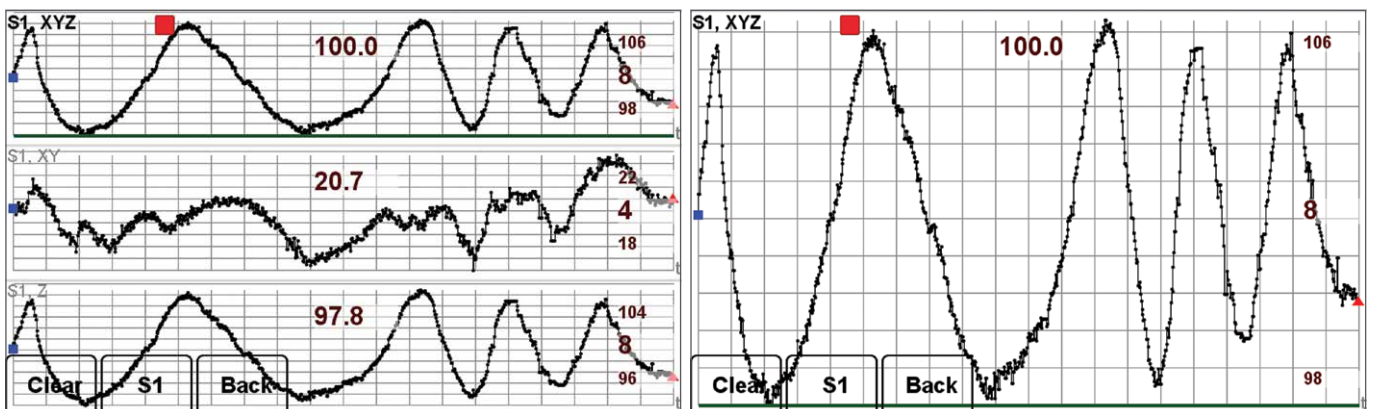
In the “Auto” mode, when you don’t know the polarity of the object, you must Start/Clear scanning away from magnetic objects. This records the mag free condition of the field. Then again, the search is fully automatic. Variations

from the Start condition automatically guide you to any positive or negative polarity object of any magnetic value without needing to play with any gain button or orienting the sensor in any specific direction. You can also view the positive and negative values simultaneously on the same bar which may give an indication of the shape of the object.

You can also alternate between Positive and Negative modes.

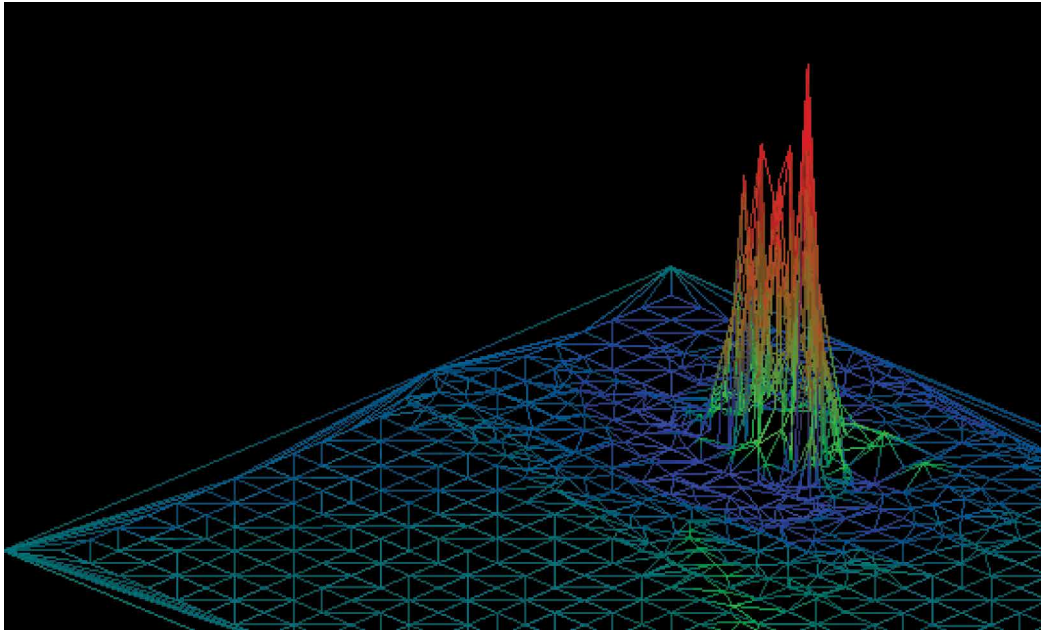
Unlike conventional magnetic detectors which sense magnetic values only in one direction, the Smart Tip has three dimensional magnetic sensors. You can view magnetic values in **XY** (horizontal), **Z** (vertical), and **XYZ** (combined) directions.

In addition to the two three-dimensional



**Time view of S1 XYZ, XY, and Z components for the last 100 seconds. Click on any graph component to see the expanded view.**

## 3D magnetic view of the scanned field



magnetic sensors (**S1 and S2**) in the smart tip, there is also a three-dimensional magnetic sensor inside the TRIUMPH-LS (**INT**).

In addition to the audio notifications, the Smart Tip shows magnetic values in “**Time View**” (always), and in “**Spatial Views**” (**Mag, 2D**, and **3D** views) when you have RTK solutions.

You can view the 2D and 3D graphs by clicking on the top part of the Mag screen. Click the bottom part of the Mag screen to see the Time View.

Scan the area until the spread of mag values are higher than **2\*** (**Start to Beep**). Audio beep rates of **2, 4, 6, 10 Hz** or **tones** are automatically assigned to magnetic values according to the weights assigned in the **Dynamic Beep** Screen and based on Min and Max mag values. There will be no tone when mag value less than **0.5\*** (**No Beep <**)

When you have fixed RTK, hold the monopod vertical (within 5 degrees) to tag mag values with their coordinates. The Smart Tip scans the area 100 times per second and stores the 121 highest mag values and shows them in 11x11 cells of **3\*** cm (**Digitizing Size**) wide. In Spatial Views, the **graphs are centered on the cell**

**with the highest mag value**. Only points that fit in the 11x11 grid will be shown. The number of such points is shown above the progress bar. The “Clear” button restarts the process.

In Mag mode, pole tilts are corrected automatically and RTK is set to extrapolation mode.

When there are enough points in the 11x11 grid (a bar shows progress), it stops and you can save the point. You can also **stop** scanning and then click the “**Save**” button to save point name, the peak magnetic value and the Mag Screenshots.

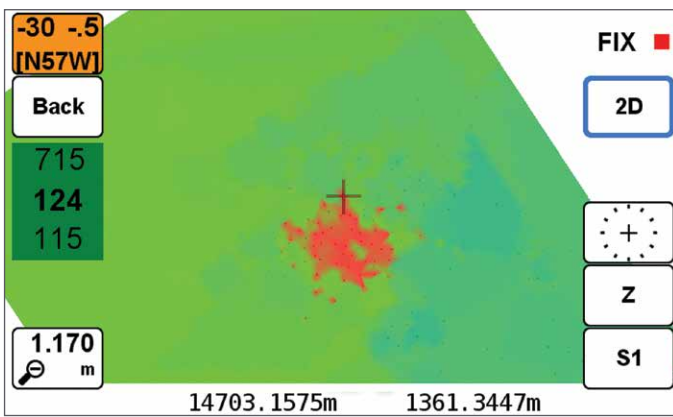
The calculated coordinates of the object is shown in the bottom of the Mag screen.

When pole is tilted less than 5 degrees, solutions will be corrected for pole tilt, otherwise points will be ignored. Time Plots show mag values at all times.

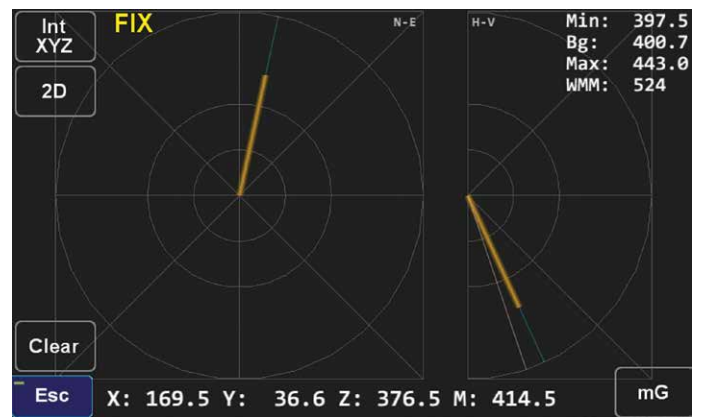
Smart Tip finds the Minimum and the Maximum automatically. If you disturb the normal field scan by exposing the Smart Tip to an external mag object, click the Start button.

The hardware Start and Stop buttons start/reset

**\*Red numbers** are the default values for their respective items (in **bold**) in Setup screen.



**2D magnetic view of the field**



**Horizontal and vertical magnetic vector**

and stop scanning. You can stop scanning, view the results in different screens and settings, and decide the next step.

You can assign gestures (like tilt and shake) for different functions. Tilt-and-back resets.

The known position of the object (entered in the Stakeout screen) is shown on the Mag, 2D and 3D screen if this option is selected.

Time graphs show the magnetic values of the selected sensors in Z, XY and XYZ directions during the past 100 seconds. It also shows the Min and Max values since the Start/Rest. Click on any of the three graph component to expand it.

The Smart Tip is 48 millimeter longer than the metal tip that the monopod is graduated for. Add this to the antenna height offset when in survey mode.

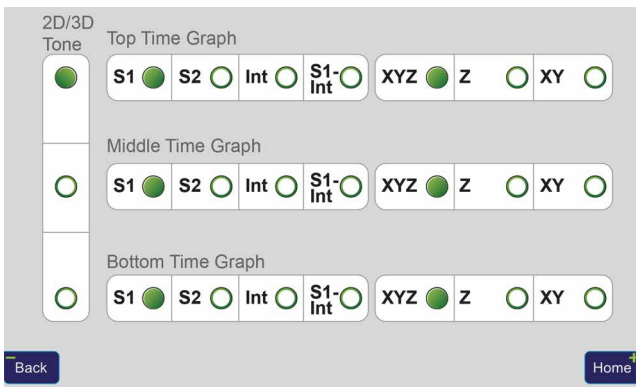
When not "Paired", the Bluetooth LED of the Smart Tip blinks red. When "Paired" it is red. When Paired and Connected, it is blue. The power LED shows charge level with green, yellow, and red colors. Hold the "On/Off" button for three seconds to turn off. Click it 3 times to unpair it from the TRIUMPH-LS.

You can set the Smart Tip to turn itself off after some time of inactivity.

We keep improving the Smart Tip. You can update the firmware of the Smart Tip via TRIUMPH-LS similar to updating the TRIUMPH-LS.

### The Smart Tip advantages:

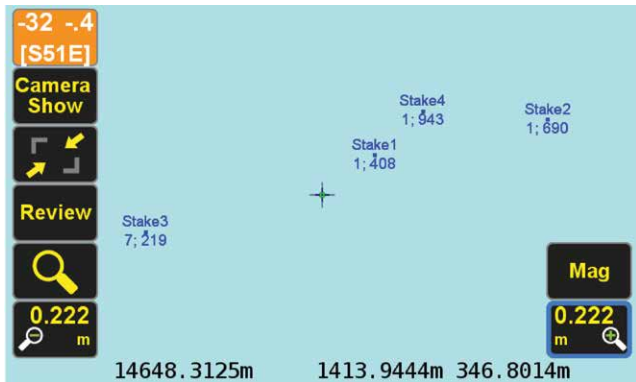
- The Smart Tip does not have "null" points around the peak and will not produce false alarms.
- The Smart Tip is fully automatic for all levels of magnets. There is even no "Gain" button to adjust.
- The Smart Tip senses the mag values in all directions. You don't need to orient it differently in different searches.
- The Smart Tip gives a 2D and 3D view of the field condition when you have RTK and will guide you to the object. You can actually see the shape of buried object.
- The Smart Tip, In Time View, shows positive and negative mag values of the last 100 seconds and the Min and the Max since Start.
- The Smart tip shows the instantaneous magnetic vector in horizontal and vertical directions.
- The Smart Tip works as a remote control for the TRIUMPH-LS
- The Smart Tip weighs 120 grams and replaces the standard pole tip. In balance, it weighs almost nothing.
- The built in camera of the TRIUMPH-LS documents the evidence after digging.
- And... you don't need to carry another bulky device.



Sensor and Direction selection screen allows you to select the type of mag data to be shown in Time View and in 2D/3D and Mag screens and for tones.

All values are recorded in parallel. You can stop the scan and then click to see different sensors or sensor/direction combinations. You can tune the Smart Tip to your preference or for special tasks. Default values work just fine. We show flexibility in examining the internal parameters.

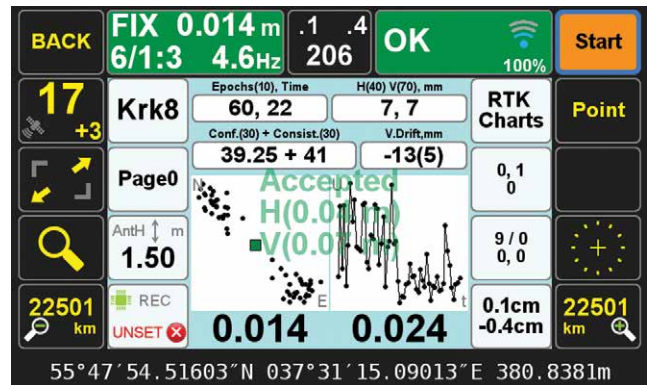
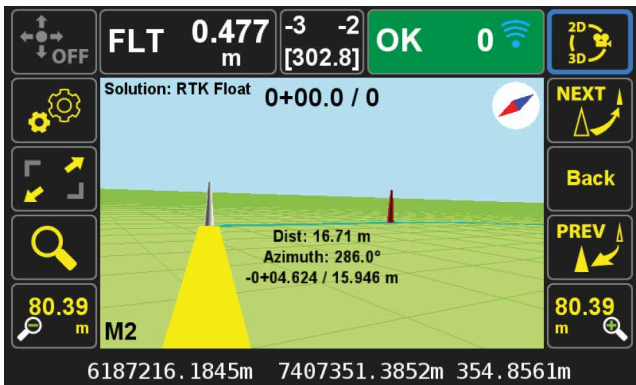
## Field View



When you scan a large area, you can save all possible peak points, view them on the map and select the point with the highest peak to dig.

When you save a point, you can also save all the raw Mag sensor data for future view and research. We also plan to give you the ability to share that data with us by transferring it directly to our server for analysis and improvement.

## Work Flow



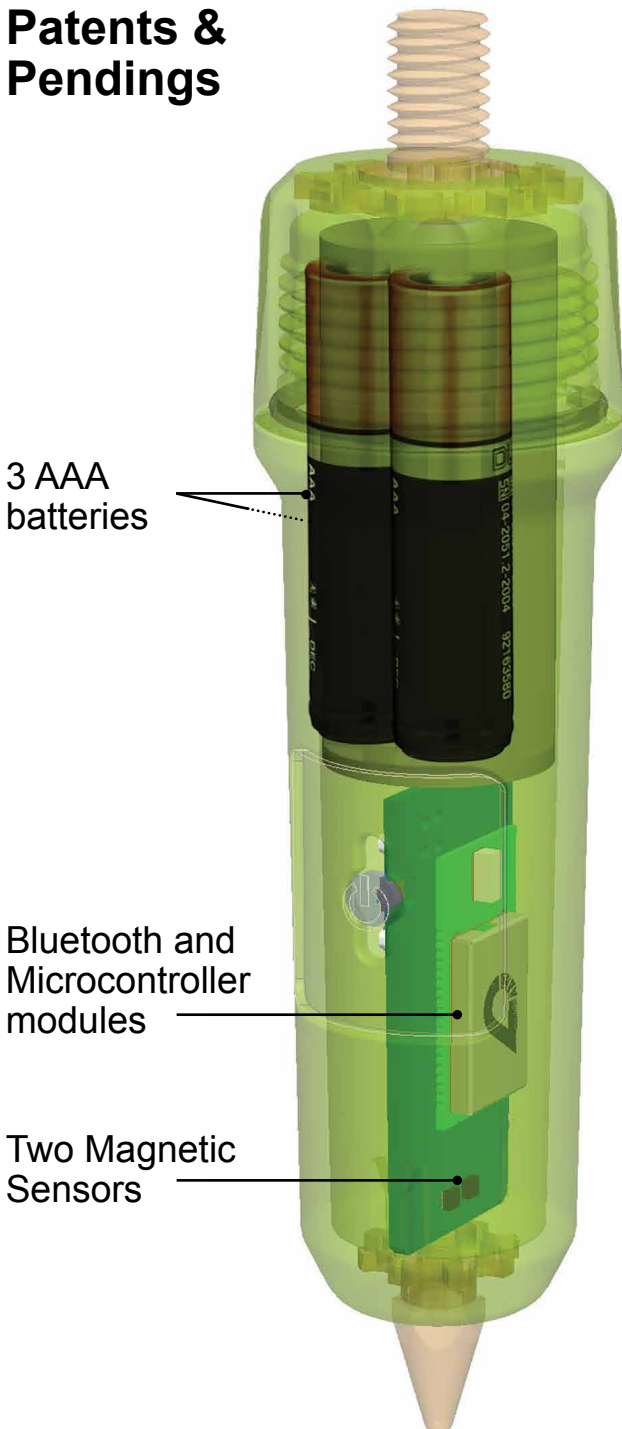
We have not only integrated a sophisticated magnetic locator in the TRIUMPH-LS, but we have also streamlined the whole process. First the “Stakeout” screen will guide you toward the target. Then the “Mag” screen locates your underground target and gives you its estimate of the coordinates of the underground target and a button to save it “as staked”.

And finally in the “Collect” screen you can survey the target point which you have dug up and exposed. This is also the time to use the built in camera of the TRIUMPH-LS to photograph and fully document the evidence which you have recovered.

We have shown many Smart Tip internal details to show the sophistication embedded in it. Its operation is much easier than conventional magnetic locators.

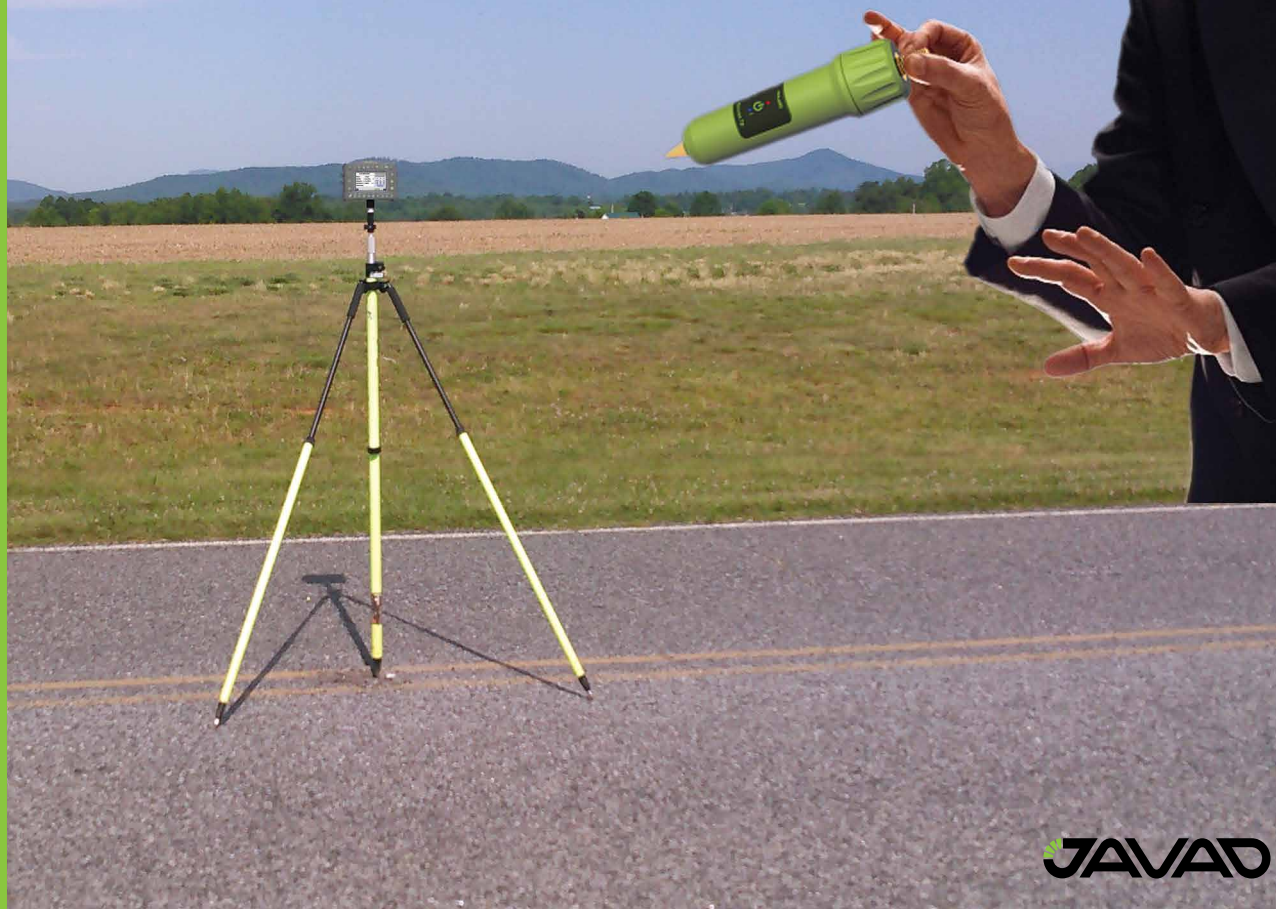
It sends 100 Hz magnetic values to the TRIUMPH-LS via its Bluetooth.

## Patents & Pending



TRIUMPH-LS tags coordinates with magnetic values,  
It also guides you to top of the item to survey it.

# And Now... you are the conductor!



While not in magnetic locator mode, you can use the Smart Tip as a remote control for the TRIUMPH-LS. Shake, move up, move down, single bang, double bang, etc. can perform different functions (like Start and Stop survey) as you assign gestures to different function.



Head-on-Shoulder



Witch-on-Broom



Tango



Baby Hold



The Cane