

This is the Smart Tip

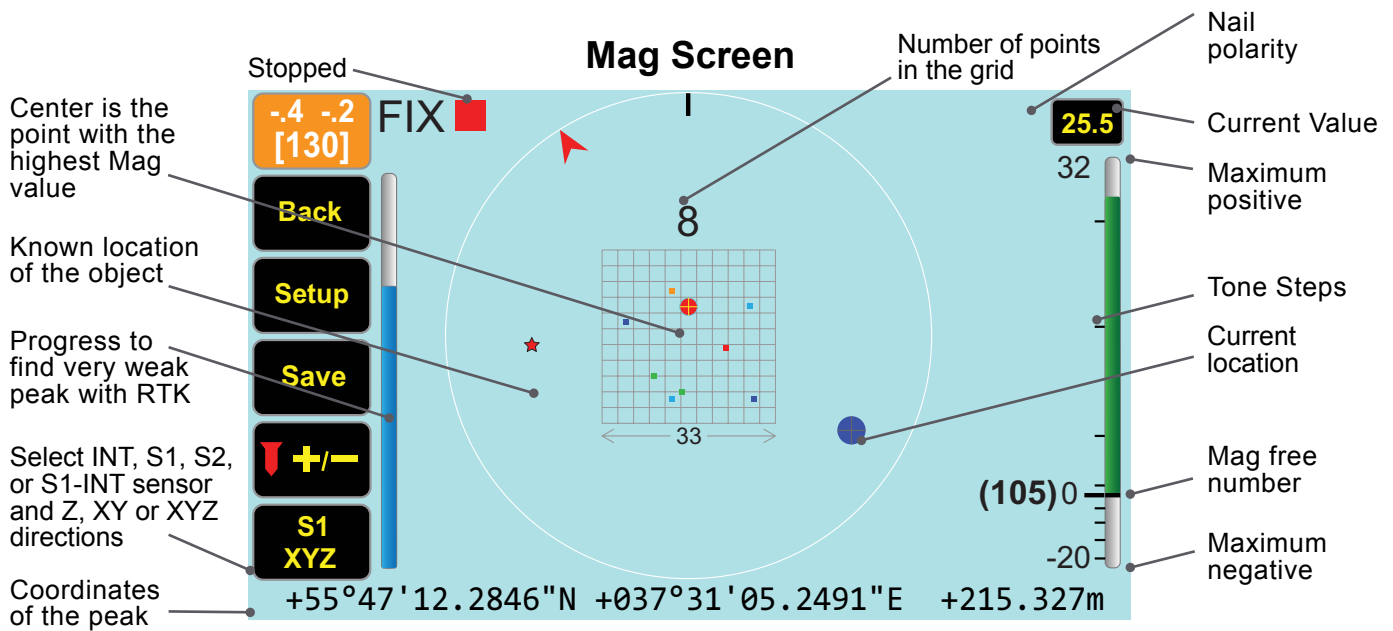


It replaces the tip on the bottom of your rover rod/monopod.


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

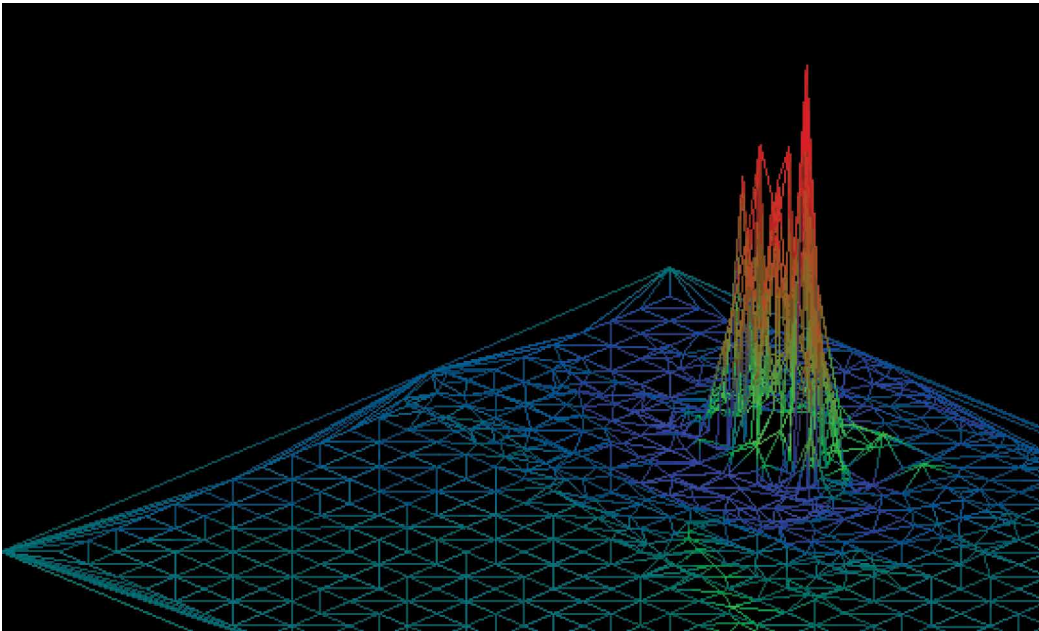
polarity of the object, you must Start/Clear scanning away from magnetic objects. This records the mag free condition of the field. Then again, the search is fully automatic. Variations from the Start condition automatically guide you to any positive or negative polarity object of any magnetic value 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.



Time view of S1 XYZ, XY, and Z components for the last 100 seconds.

3D magnetic view of the scanned field



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 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.

Scan the area until the spread of mag values are higher than **5*** (**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.

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.

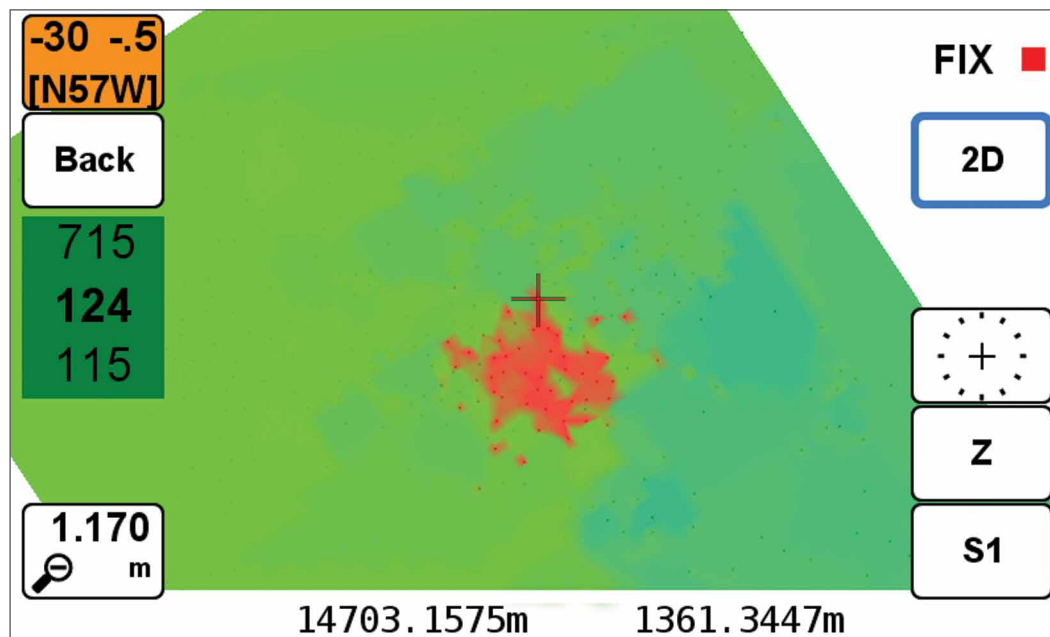
You can view the 2D and 3D graphs by clicking on the top part of the Mag screen. Click the bottom part of the Mag screen to see the Time View.

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

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

2D magnetic view of the scanned field



automatically. If you disturb the normal field scan by exposing the Smart Tip to an external mag object, click the Clear button.

The hardware Start and Stop buttons start and stop scanning. You can stop scanning, view the results in different screens and settings, and decide the next step.

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.

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.

Comparing to conventional locators, Smart Tip has the following advantages:

The Smart Tip does not have "null" points around the peak and will not produce false alarms.

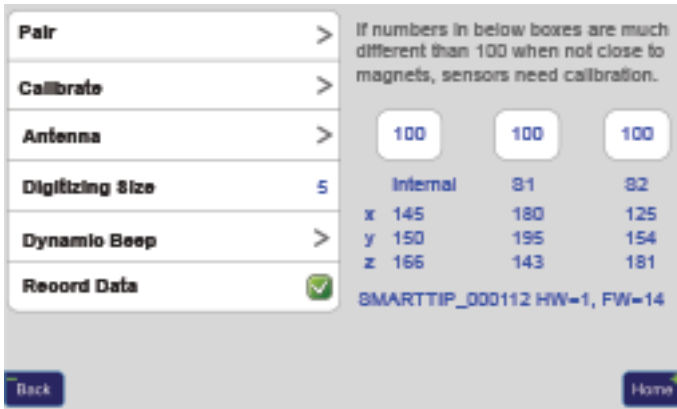
The Smart Tip is fully automatic for all levels of magnets. There is no "Gain" button to adjust.

The Smart Tip senses the mag values in all directions. You don't need to orient it differently in different searches.

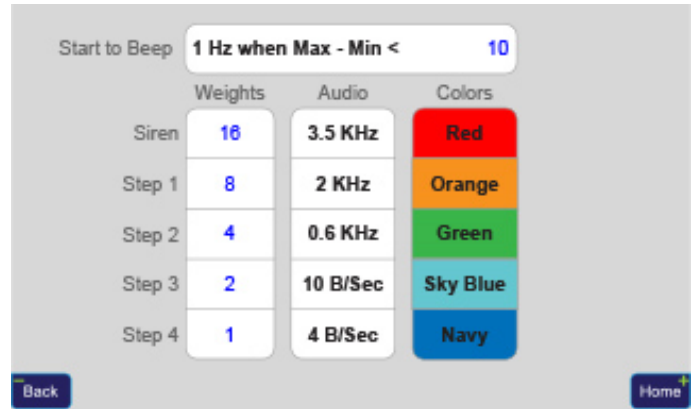
The Smart Tip gives a 2D and 3D view of the field condition when you have RTK and will guide you to the object. You can actually see the shape of buried object.

The Smart Tip, In Time View, shows you positive and negative mag values of the last 100 seconds and the Min and the Max since Start/Reset. You can see the search history and decide on the shape and size of the object.

The Smart Tip is integrated with the TRIUMPH-LS. You don't need to carry another bulky device.

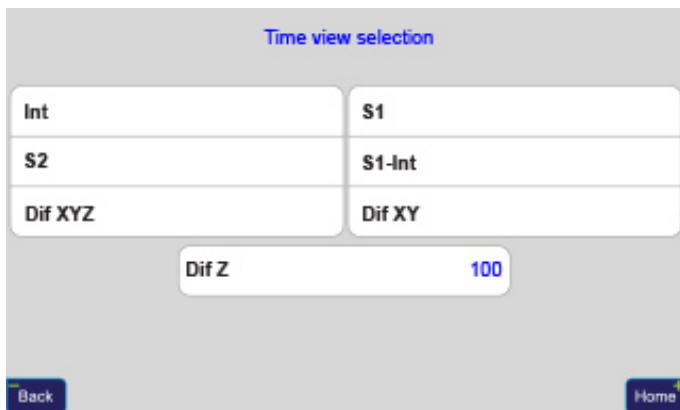


Setup Screen: It is critical to calibrate the Smart Tip and the TRIUMPH-LS sensors. Click Calibrate and keep rotating the Smart Tip around its three axis until the successful calibration message is displayed. You can also record data of a large field for post processing and image processing.



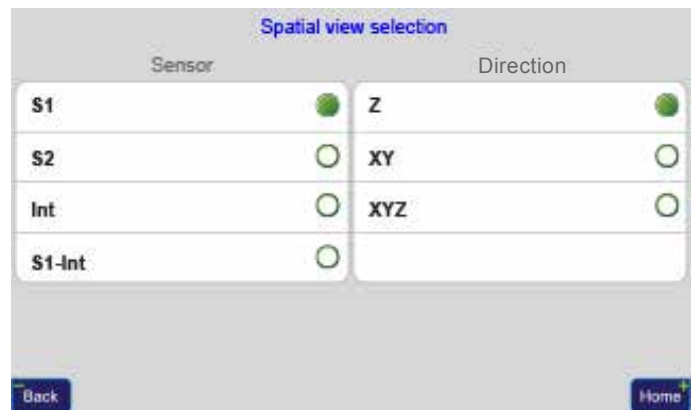
Dynamic Beep Screen: Tune the system to tones that you like. Assign a higher weight to the "Siren" so a wider range of mag values close to the peak generate a siren. Similarly, for other steps. For each step you can select beep-per-second, or a tone.

You can assign colors to points according to their magnetic values.



The type of mag data to be shown in Time View.

All values are recorded in parallel. You can stop the scan and then click to see different sensors or sensor/direction combinations.



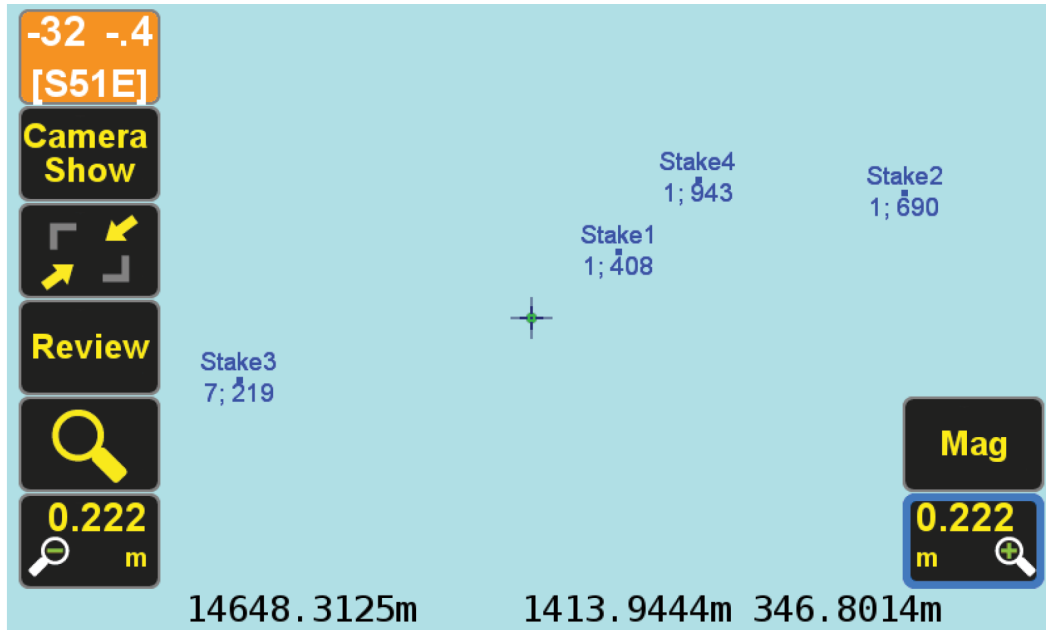
Sensor and Direction selection screen:

You can assign all settings at once to tailor the TRIUMPH-LS to your preference or for special tasks.

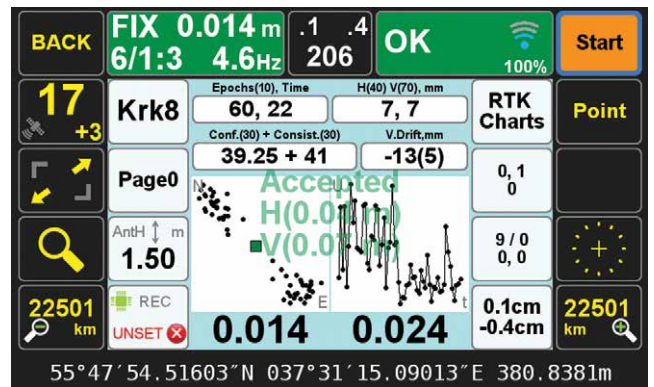
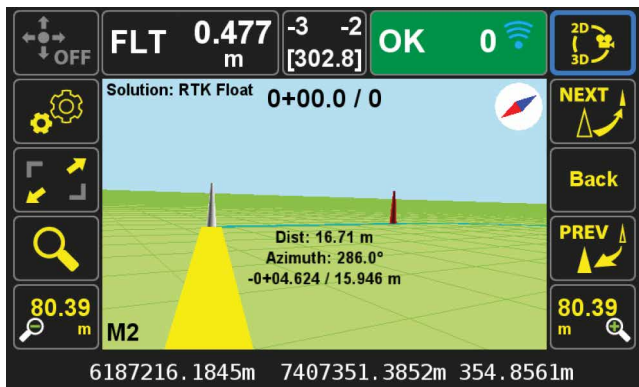
Default values work just fine. We show flexibility in examining the internal parameters.

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

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 data of all sensor 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.



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.



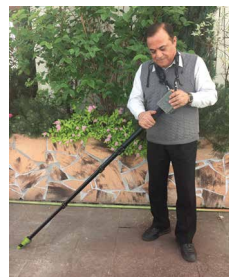
Head-on-Shoulder



Witch-on-Broom



Tango



Baby Hold



The Cane