



Utility Survey Quick-Start

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This document provides a rapid practical set-up guide to test product functionality and begin to learn the methods of precision utility mapping. In this quick-start, you will measure a signal from a transmitter or a sonde right in front of you. This process can be done inside, without the presence of a utility line or a GNSS connection (rover). It requires a single Spar, a transmitter or a sonde, and a data collection device (typically a Trimble TSC3 with Windows Mobile or a Trimble Tablet) with Trimble Access and Utility Survey installed.



Step 1: Construct the Spar apparatus

Affix the spar to a range pole or tripod. The spar's black power button should face away from the pole, defining the "forward" direction. For easy map-reading, face the data collector forward as well.

Step 2: Set up the transmitter or sonde

| Using a Transmitter / Line Mode | Using a Sonde / Sonde Mode |
|---|--|
| <p>Unwind the transmitter's cables. Attach the red end to the black end. Arrange the cables in a circle as shown. Turn on the transmitter and leave it at the default frequency, 512 Hz.</p>  | <p>Insert the battery into the sonde. When on, it should make a barely-audible high tone. Find the frequency of your sonde in its documentation.</p> |

Step 3: Connect the data collector to the Spar

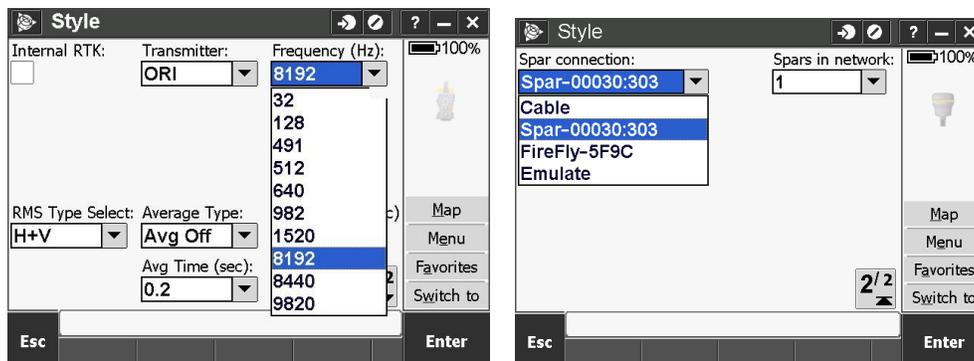
The Tablet or TSC3 may be connected using Bluetooth, or a USB cable if Bluetooth is nonfunctioning or inconvenient (see how to connect using a cable in the User Guide). The Spar will have a Bluetooth ID in the format Firefly-XXXX or Spar-SSSS:PPP. The PIN to add a Spar as a Bluetooth device is always 1234. After pairing you can select this ID in Utility Survey.

Step 4: Create a new Job

Enter "Utility Survey" from the home screen of Trimble Access. Then select "Job" and "New job" to create a new Job with a custom name. Note that you can change the coordinate system and units before accepting.

Step 5: Configure Style settings

Go back to the Utility Survey screen and select "Style." Match the Frequency to what the transmitter or sonde is outputting, which you defined in Step 2. On page 2, select the correct COM port, which you defined in Step 3.



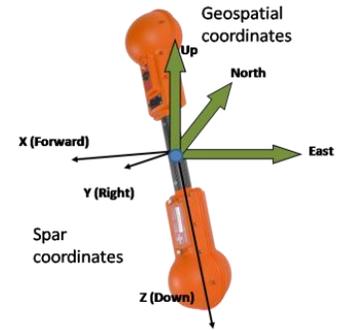
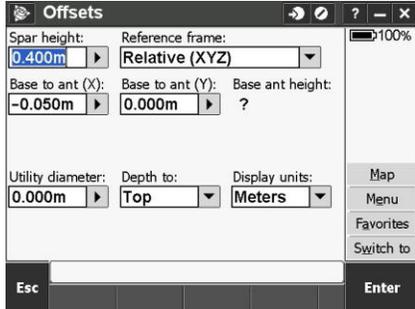
Step 6: Configure Offsets



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Back on the Utility Survey screen, select “Line” mode if you are using a transmitter or “Sonde” if you are using a sonde. Click “Offsets” on the bottom of the screen. Here, measure the height of the Spar from the ground to the middle of the black handle and enter it as “Spar height” with units (can be metric or US system). Ensure you correctly set the power button facing directly away from the pole/tripod, then measure the distance from the mounting pole or tripod to the middle of the Spar’s handle. In the Spar’s coordinate system, forward means positive x, so the measurement you just made will be entered in “Base to antenna (X)” as a *negative* value (metric or US). Since the Spar is facing directly forward, the “Base to antenna (Y)” value will be zero. Click “Enter.” (For more on offsets, see the Offsets video tutorial.)

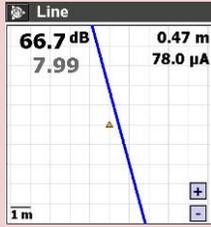
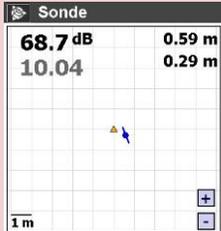


Step 7: [Sonde Mode only] Calibrate Sonde

From the Sonde panel, click “FieldSens” then “Menu”. Then select “Calibrate Sonde,” then “In Front of Spar.” Imagine a circle drawn around the spar, and place the sonde in front of the spar with its side along the tangent of that circle. Change the value for Spar Height if necessary, ensure the spar is upright, then begin calibration and wait until the process completes.

Step 8: View FieldSens

Select “FieldSens” from the Line/Sonde screen. FieldSens will give a visual plot of the utility line (in this case, transmitter circuit) or sonde, both from a top view and a side view (depth). The yellow triangle is the representation of the Spar’s position.

| Using a Transmitter / Line Mode | Using a Sonde / Sonde Mode |
|--|--|
| <p>Pick up the Spar and move it around the <i>outside</i> of the transmitter circuit. The yellow triangle should move and the blue line should shift and move to reflect the change.</p>  | <p>Pick up the sonde and move it, slowly and without changing its vertical tilt, around the vicinity of the Spar. The blue circle should move to reflect the change. You can also move the Spar.</p>  |

Congratulations! All your equipment is working correctly and you have navigated some basic functions of Utility Survey. Two other reference documents are available on the Optimal Ranging website: a User Guide, with full step-by-step instructions on how to operate in all modes, and a Reference Manual, with more detailed technical information about the included hardware and software.