# OPTIMAL RANGING UTILITY SURVEY

TRIMBLE ACCESS PARTNER APPLICATION

## STREAMLINED WORKFLOW

The Utility Survey application by Optimal Ranging adds a powerful application into the Trimble® Access™ list of tools with the goal to detect 3D positions of utility lines in real time.

The Spar solution, combining a Spar 300 receiver utilizing model based signal detection principles as well as the corresponding software packages, a user can locate geospatial positions of utility lines with similar quality metrics as for corresponding aboveground assets.

## LINE MODE

In line mode a known frequency gets applied to any kind of conductive material.

The radiated signal of the utility gets received by the Spar 300 and visualized in Trimble Access Utility Survey (3D position) as well as FieldSens View (signal strength and confidence).

Feature codes can be measured while walking close to the utility; the map will visualize Spar 300 position, utility position as well as measured feature codes.

## SONDE MODE

The sonde mode is another approach to detect utility lines if no conductive material is available (e.g. with plastic- or concrete pipes).

A sonde transmits a signal while being pushed/ pulled through any kind of pipe; a 3D geospatial position can be estimate without moving the Spar 300.
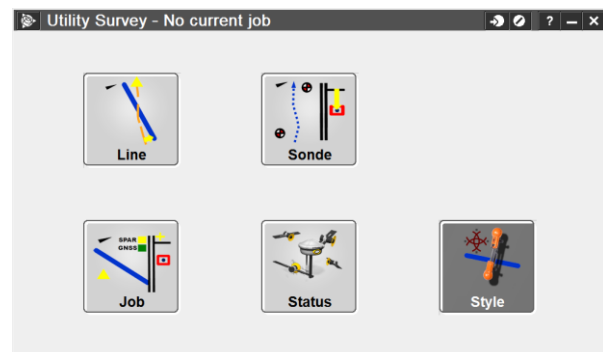
## DUAL SPAR

If the range of a single Spar 300 is not enough there is the possibility to combine spars to a network.

With the dual spar approach the vectoring capabilities can be increased meaning the rather fixed distance of 0.5m separation of the magnetic field sensors for a single Spar 300 can be pushed up to 10m or 15m.

## OUTPUT AND REPORTS

Next to the Trimble Access jxl format to visualize data in Trimble Business Centre (TBC) it's also possible to export dxf and ASCII csv files to e.g. process data in AutoCAD.



**Optimal Ranging Utility Survey:**

Measure utility lines in realtime

Estimate a 3D geospatial position with confidence cloud around the target

Collect feature codes while measuring the utility and export them to TBC

## LINE & SONDE MODE

| FEATURE | DETAILS |
|---|---|
| Line | • Apply a signal taken from a frequency generator to a conductive material<br>• Measure the 3D geospatial position of the utility<br>• Visualize both Spar 300 and utility position in the Trimble Access map |
| Sonde | • Push/ pull a sonde through a pipe<br>• Measure the 3D geospatial position of the sonde without moving the Spar 300<br>• Visualize the sonde in the Trimble Access map |
| Dual Spar | • Increase the range of a single Spar<br>  ○ In line mode up to 15m radius around the utility<br>  ○ In sonde mode up to 24m (depending on the used sonde) |

## SPAR SPEZIFICATIONS

| FEATURE | DETAILS |
|---|---|
| Frequency | • 32, 50, 60, 98, 100, 120, 128, 491, 512, 577, 640, 982, 1520, 8192, 8440, 9820 Hz |
| Sensitivity | • 500 µA to 10 A at 1 meter<br>• 25 µA to 500 mA at 1 meter |
| Depth | • 3 meters (single-spar)<br>• 15 meters (dual-spar) |
| Depth Accuracy (1-σ) | • 5% of radial distance relative to spar (typical) |
| Geographic Accuracy (3-D) | • ≤ 5cm RTK Fix, depending on reported depth and centerline accuracy |

## TYPICAL USE CASES

| FEATURE | DETAILS |
|---|---|
| Localization companies | • Companies that to a lot of localization work and that are used to signal strength based positioning system |
| Surveyors | • Surveyors that want to grow into the localization market and that are familiar with General Survey and the workflows<br>• Surveyors who already have Trimble Access and GNSS receivers and want to grow business |
| Utility dependant users, cities and communes | • Power- and gas companies as well as cities and communes that have own survey crews to localize and map their utility lines |

## REQUIREMENTS

| FEATURE | DETAILS |
|---|---|
| Controller | • Supported controllers:<br>  ○ TSC3,<br>  ○ GeoXR,<br>  ○ Trimble Tablet 1 + 2 |
| Languages | • Supported languages:<br>  ○ English<br>  ○ German<br>  ○ … on request |