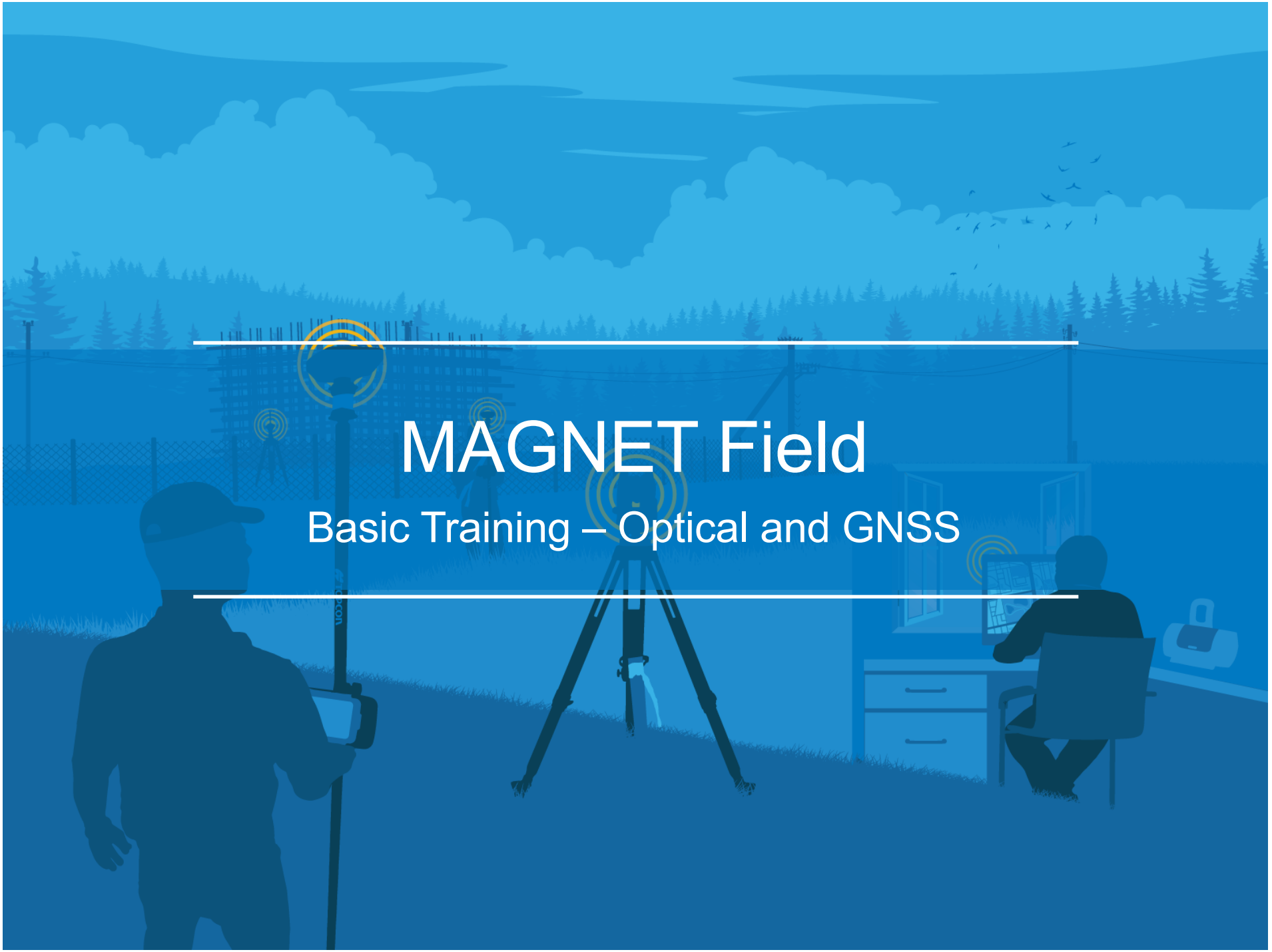


MAGNET Field

Basic Training – Optical and GNSS

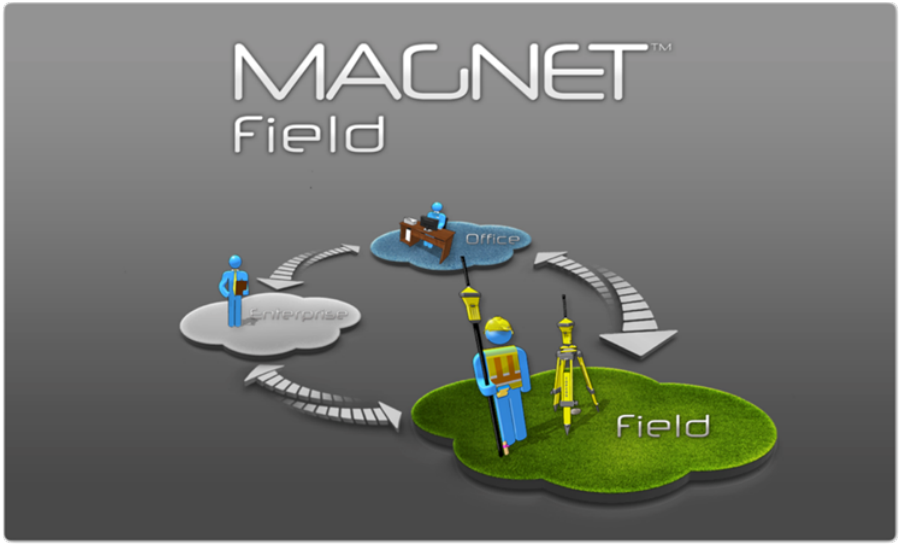
TOPCON

MAGNET Field Basic Training

1	**Prerequisites**
2	Configuration
3	Create new job
4	Establish connections
5	Import data
6	Setup
7	Survey
8	Stake
9	Export data
10	Troubleshoot

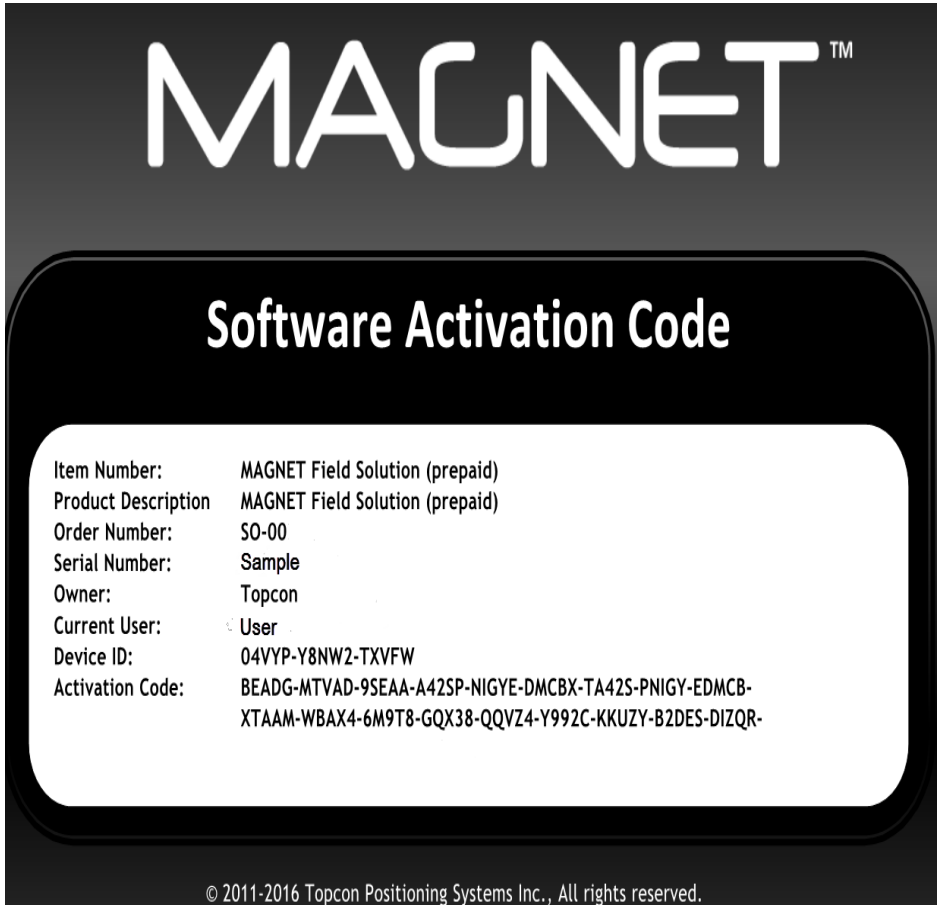
Prerequisites

- MAGNET Field serial number
- MAGNET Enterprise account and login
- Data collector internet connection
- MAGNET Field download and install
- MAGNET Field online activation



MAGNET Field Serial Number

This sheet will be provided by either the Dealer or emailed to the customer.

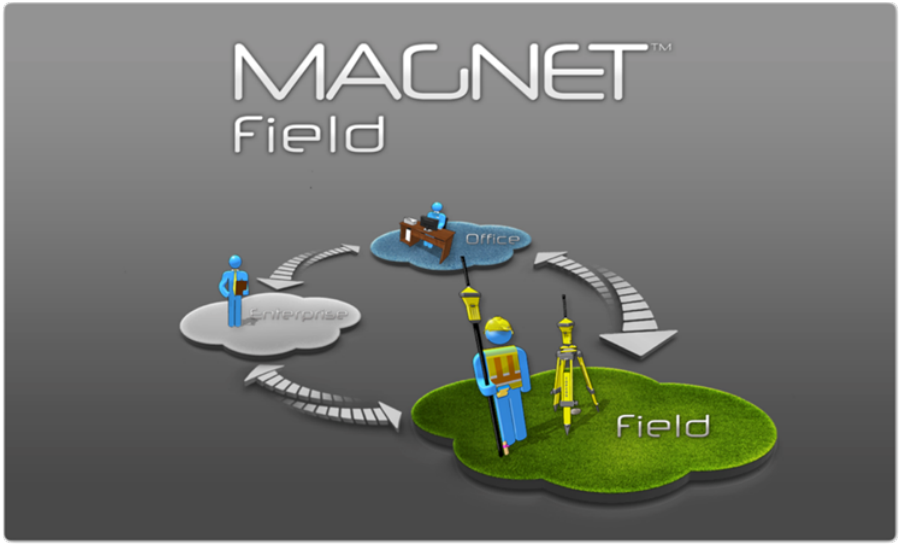


MAGNET Enterprise Account

MAGNET Enterprise simplifies the management of field and office data. It provides asset tracking and communication on projects for total collaboration. This service is included with the purchase of MAGNET.

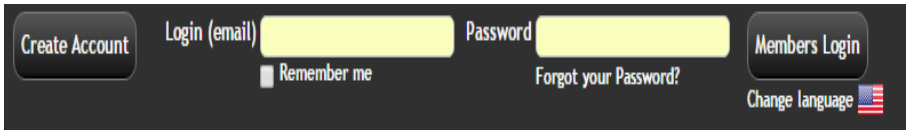
Create a free company account by visiting www.magnet-enterprise.com.

- Web browser access
- Map view of field data
- Live data exchange
- Data secure backup
- Chat and communicate to-do items



MAGNET Enterprise Account

- New account
  - Press “Create Account”
  - Provide required information
  - Follow suggested steps
- Existing accounts
  - Click “Members Login”
  - Enter login email address and password



Data Collector Internet Connection

An internet connection is required to perform the following;

- Login to MAGNET Enterprise account
- Activate MAGNET Field
- Check for software updates

To establish an internet connection use one of the following methods:

- Internal cell modem of data collector
- WiFi to personal cell phone Hotspot

FC-5000

Software Updates

- Launch MAGNET Field
- Click the at the top left
- Click **Check**
- Click **Install**

FC-5000

MAGNET Field Basic Training

1	Prerequisites
2	**Configuration**
3	Create new job
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7	Survey
8	Stake
9	Export data
10	Troubleshoot

GNSS Configuration

Access Survey Configuration

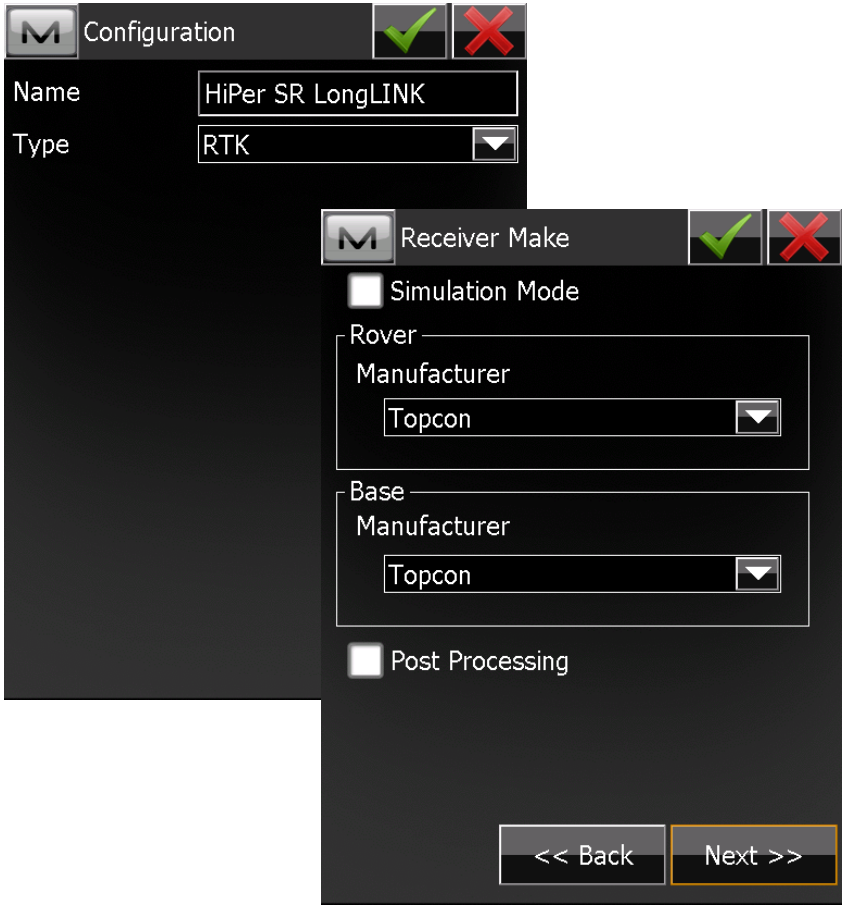
- Click **Configure|Survey**

Equipment Configuration Library

- GPS+ configuration click Select from Library
- Click Add

Create GNSS Configuration

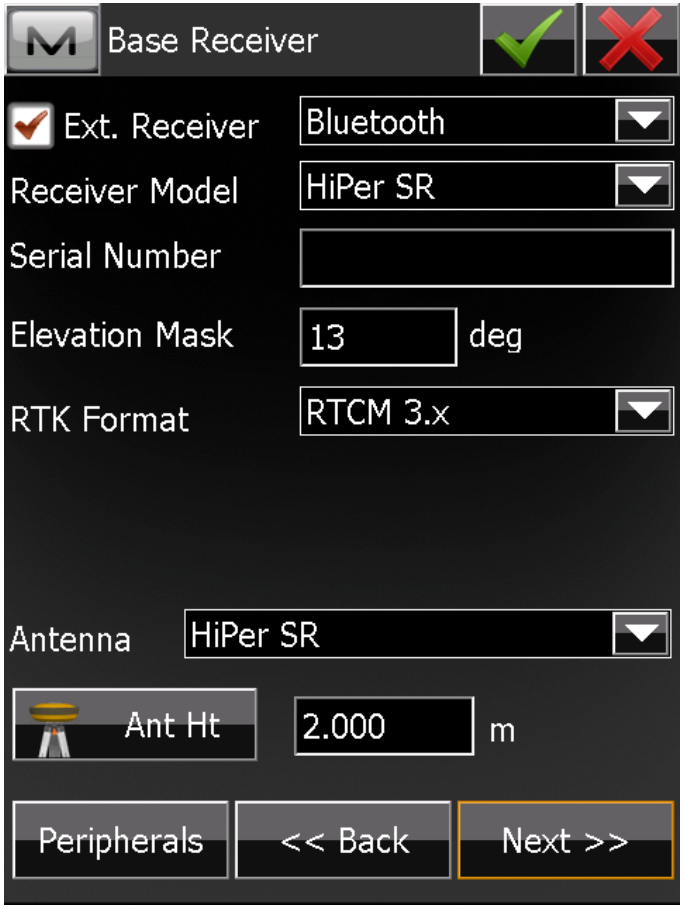
- Give the configuration a name such as HiPer SR LongLink RTK
- Choose RTK for the type and click Next >>
- Choose Topcon for both rover and base and click Next >>



GNSS Configuration – Base Equipment

Base Receiver

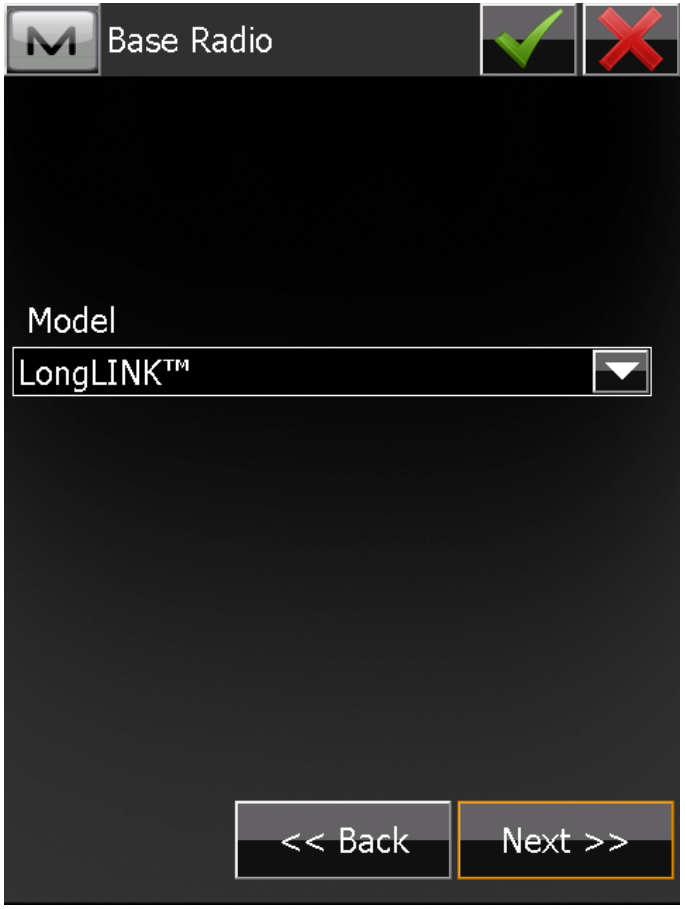
- Check **external receiver** and choose **Bluetooth** as the communication method
- Choose the desired receiver model such as HiPer SR
- Enter the serial number of the base receiver
- Leave the default elevation mask set to 13 degrees
- Choose **RTCM 3.x** as the RTK Format
- The correct antenna will be automatically selected based on the receiver model
- Enter in the correct base antenna height, if using a fixed height tripod enter 2m
- Click



GNSS Configuration – Base Communication

Base Radio

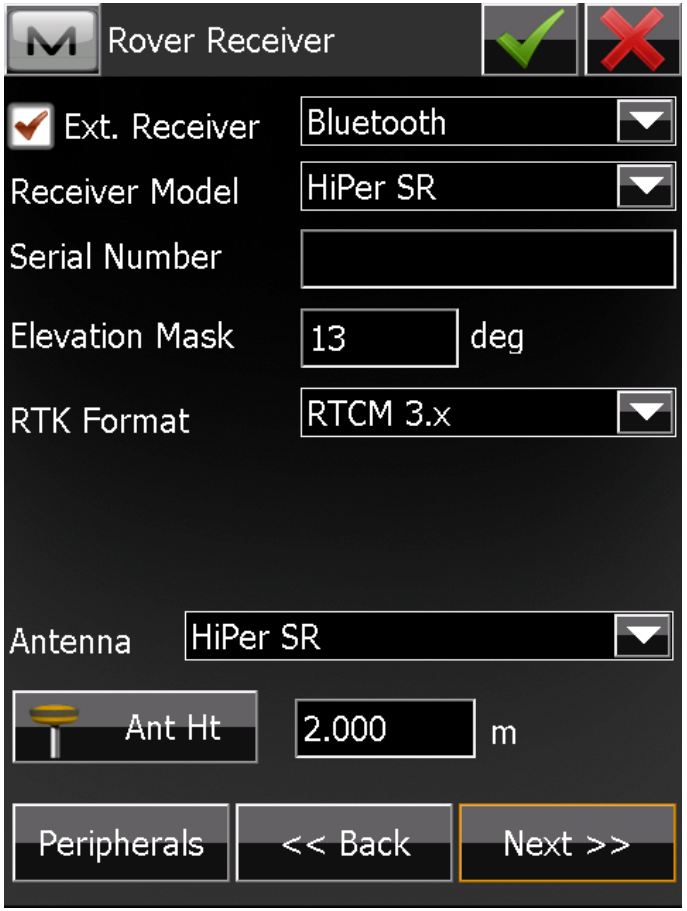
- Choose **LongLink™** for the model
- Click Next >>



GNSS Configuration – Rover Equipment

Rover Receiver

- Check external receiver and choose Bluetooth as the communication method
- Choose the desired receiver model such as HiPer SR
- Enter the serial number of the base receiver
- Leave the default elevation mask set to 13 degrees
- Choose RTCM 3.x as the RTK Format
- The correct antenna will be automatically selected based on the receiver model
- Enter in the correct rover antenna height, if using a fixed height tripod enter 2m
- Click Next >>



GNSS Configuration – Rover Communication

Rover Radio

- Choose **receiver** for connect to
- Choose **LongLink™** for the model
- Click Next >>

At this point the main configuration settings have been established. Click the ✓ three times in a row to finish

*Base/Rover receivers with different internal radios, such as Digital UHF II, see additional documents

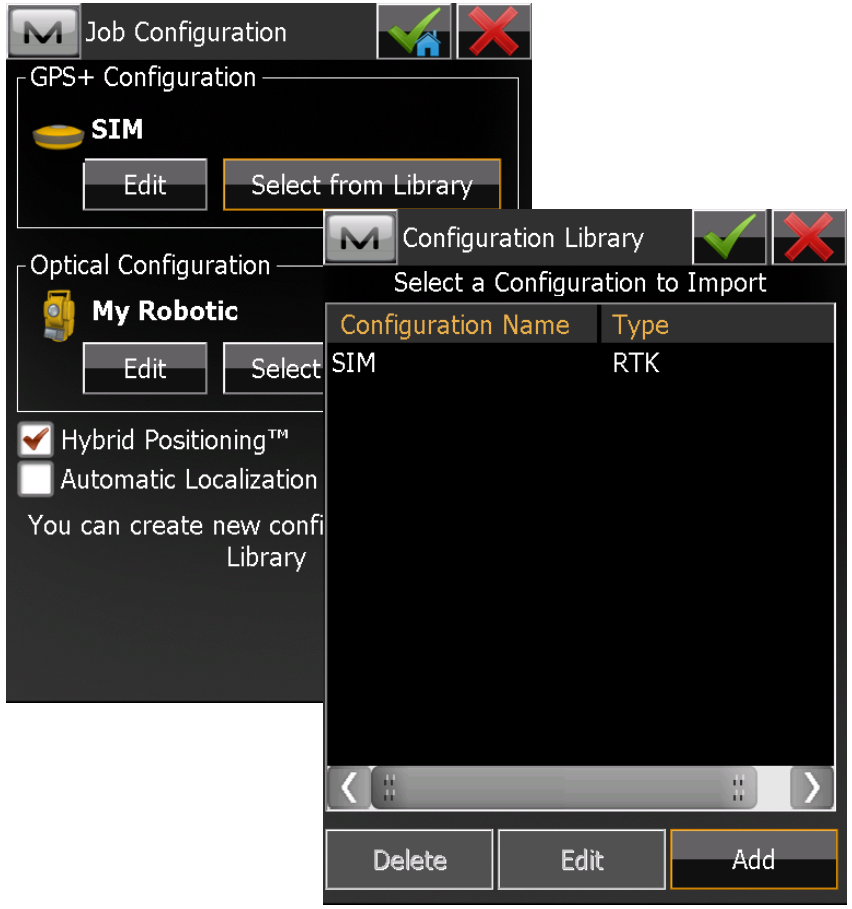
Robotic Configuration

Access Survey Configuration

- Click **Configure|Survey**

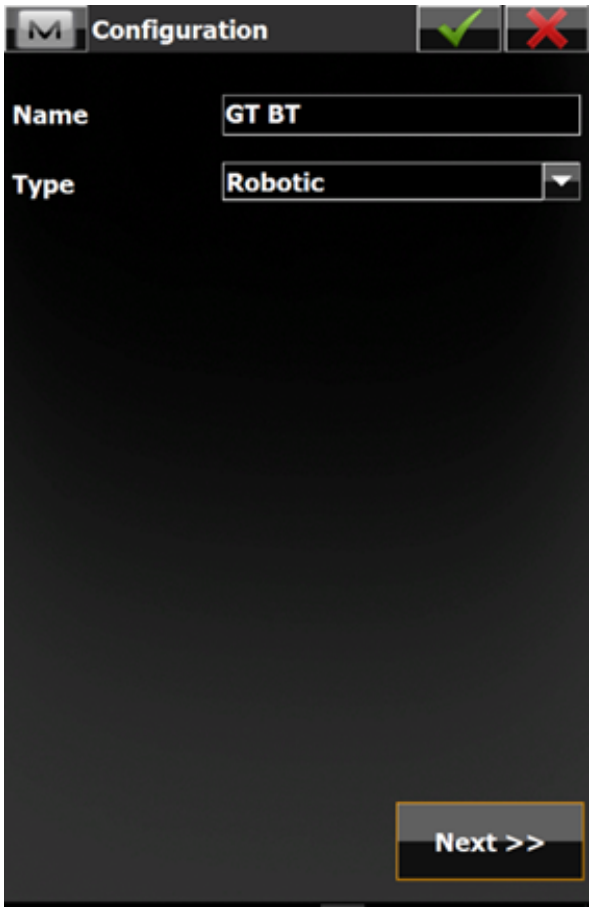
Create Robotic Configuration

- GPS+ configuration click Select from Library
- Click Add



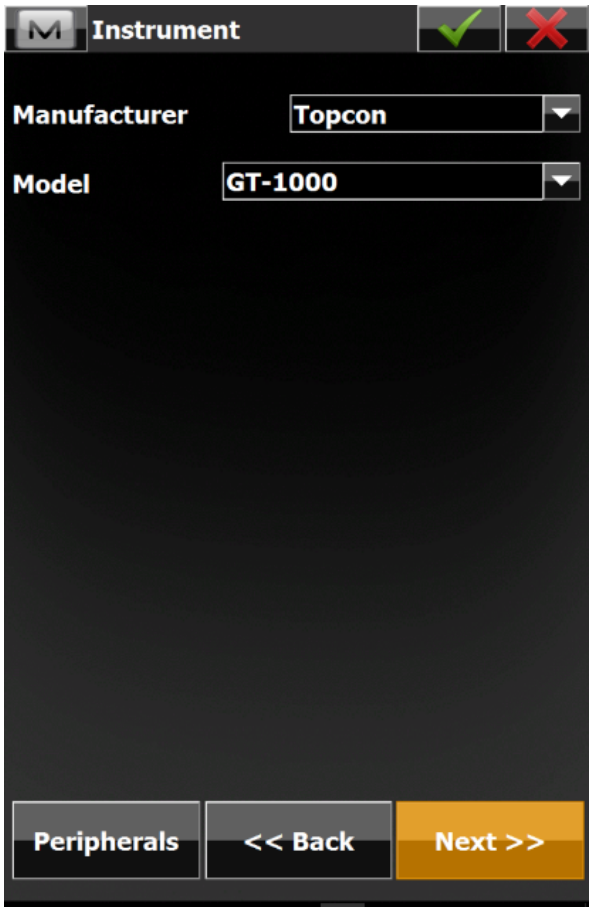
Robotic Configuration – Hardware Type

- Give the configuration a name such as **GT BT**
- Choose **Robotic** for the type
- Click Next >>



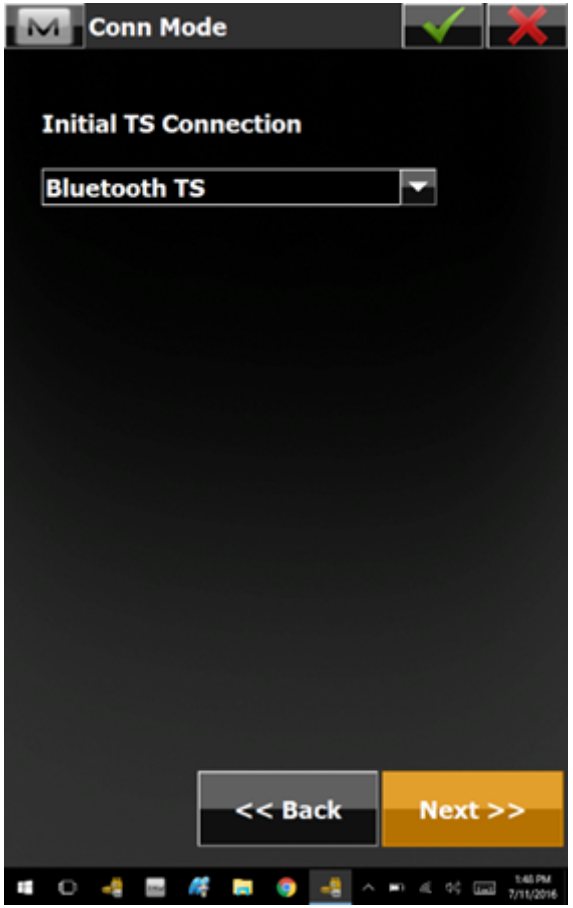
Robotic Configuration – Hardware Model

- Select **Topcon** for manufacturer
- Choose the **model** such as GT-1000
- Click Next >>



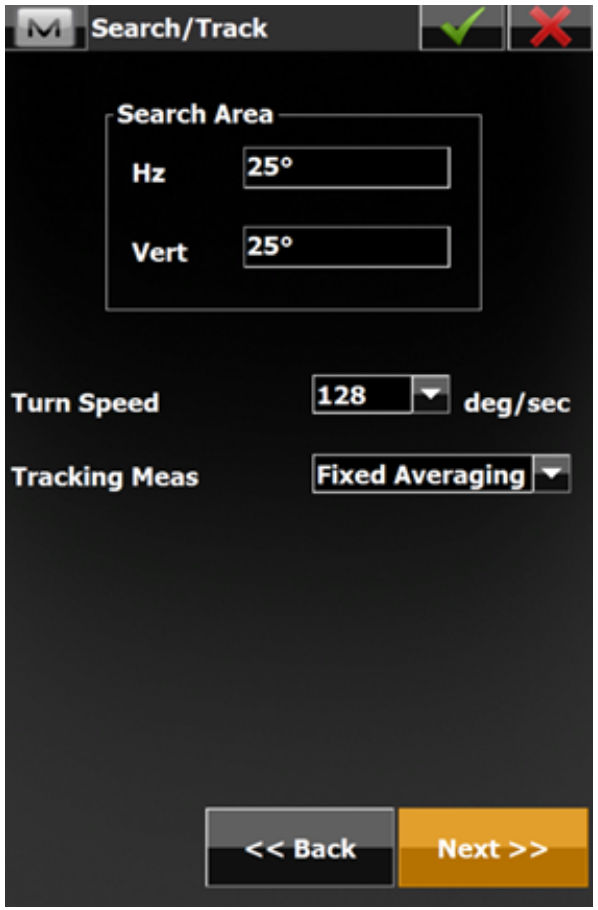
Robotic Configuration - Communication

- Choose the initial TS connection as **Bluetooth TS**
- Click Next >>



Robotic Configuration – Search settings

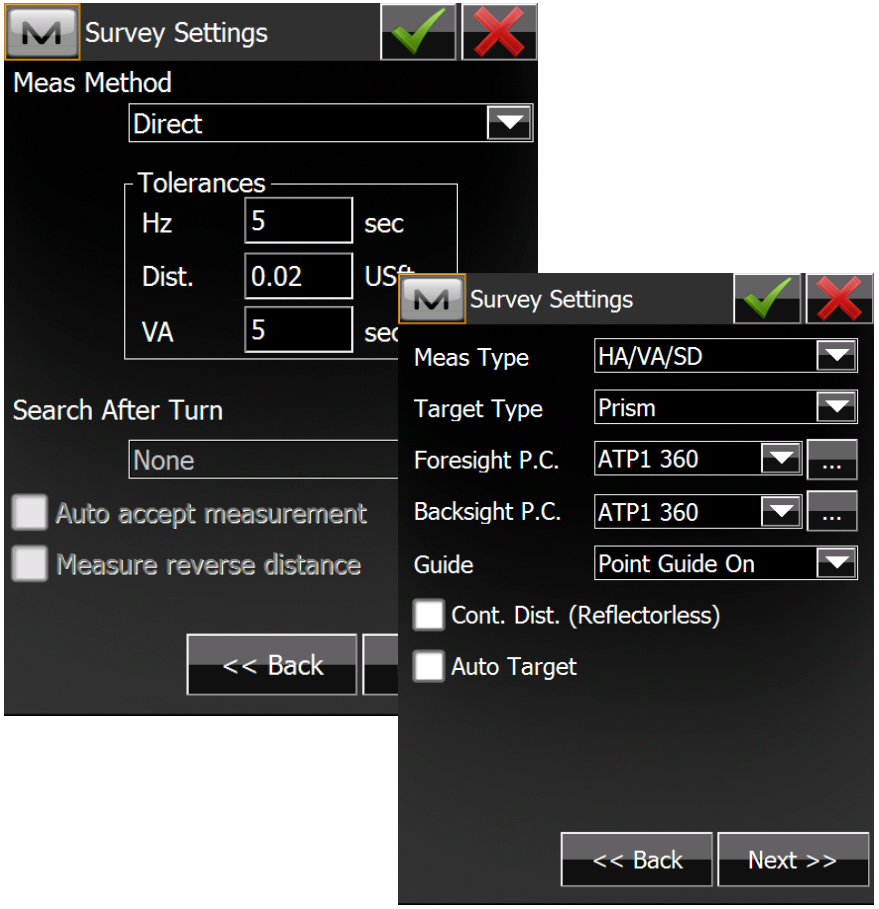
- Choose the **search/track option**
- Click Next >>



Robotic Configuration – Preferences

- Choose the **measure method** and **tolerances**
- Click

- Choose the **measure type**, **target type** and select the proper **prism**
- Click to save the configuration



Magnet Field Basic Training

1	Prerequisites
2	Configuration
3	**Create new job**
4	Establish connections
5	Import data
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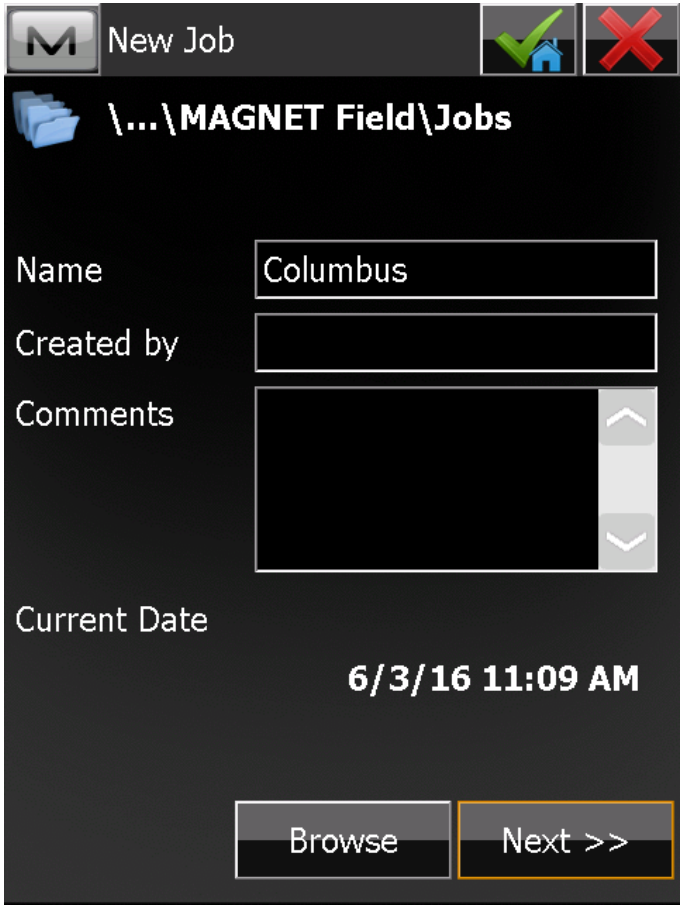
10	Troubleshoot

Create New Job

- Click **Job|New Job**

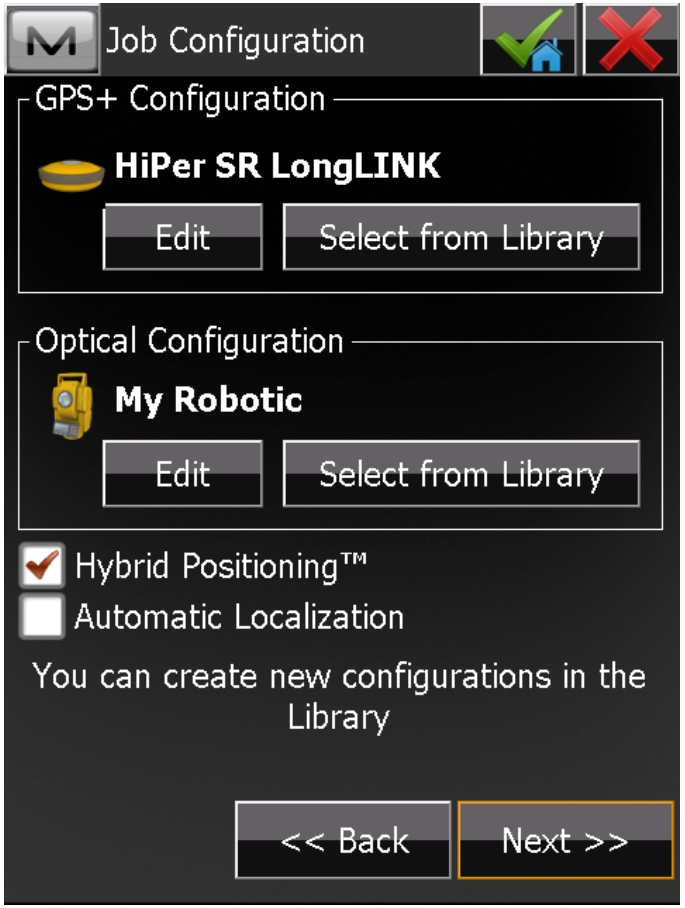
Name New Job

- Give the job a name and click Next >>



Select Job Configuration

- Make sure to select the proper GPS+ configuration and click Next >>



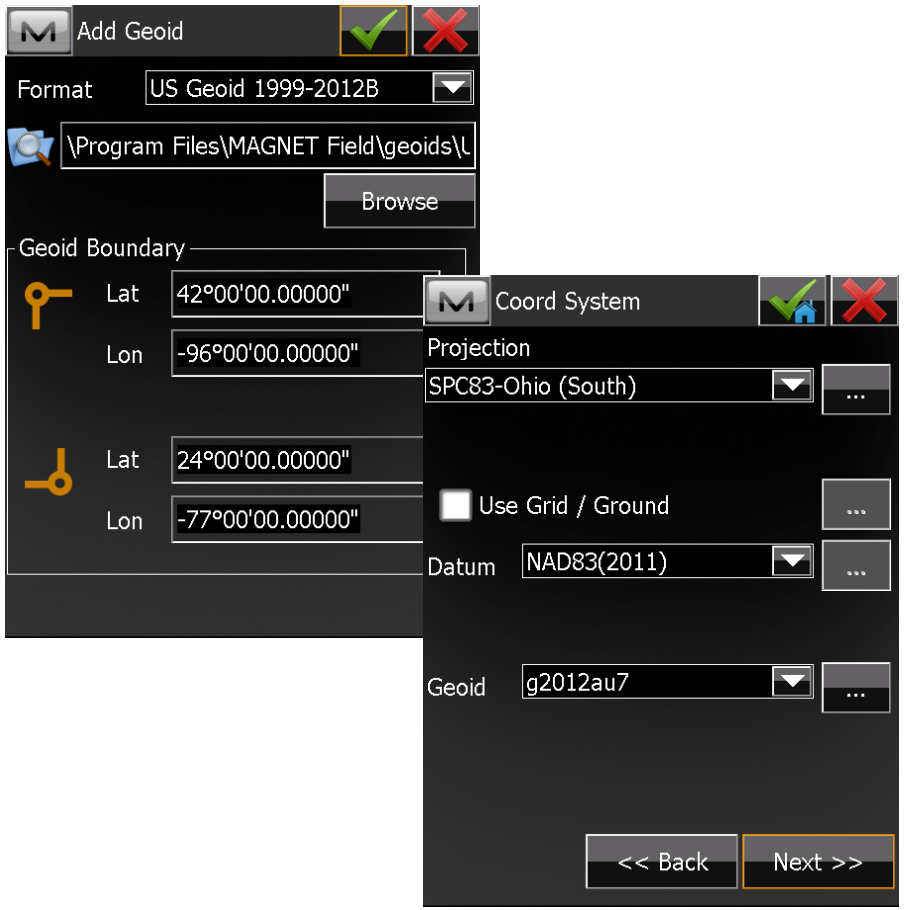
Select Job Coordinate Sytems

This exercise is going to use a projection and geoid for the coordinate system.

- To add a projection to the drop down click ...
- Under the pre-defined window navigate to the desired projection and select
- Click to move the selected projection to the active window
- Click to save
- Choose the projection from the drop down
- Choose the desired datum

Load/Select Job Geoid

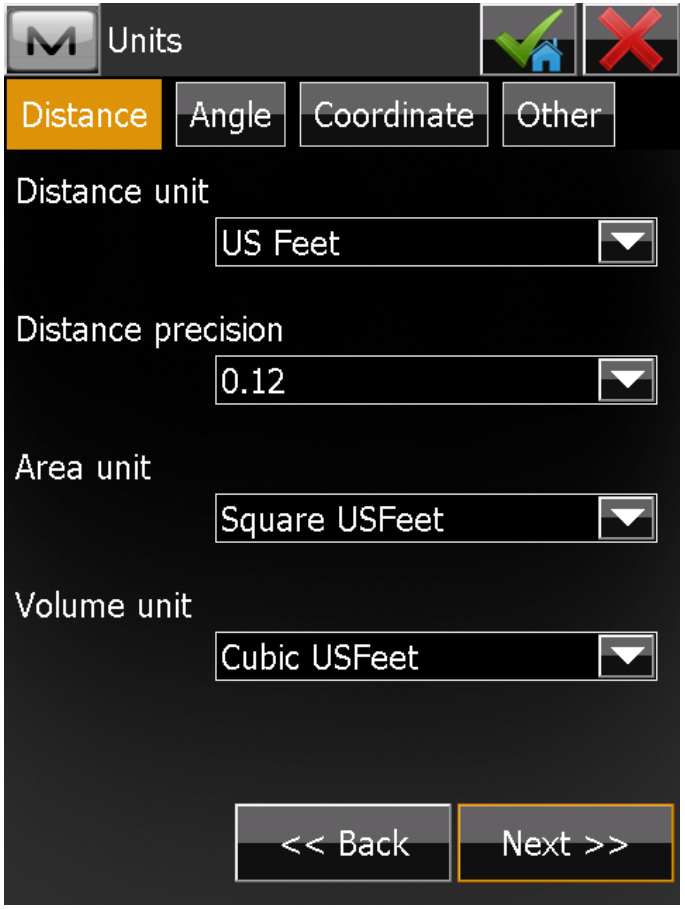
- Click [...] to add a geoid model to the drop down list
- Click [Add]
- Choose the format for the geoid file
- Click [Browse] to navigate to the geoid files
- Choose the geoid file and click [✓]
- Click [✓] twice
- Choose the added geoid model from the drop down list
- Click [Next >>]



Select Job Units

Units

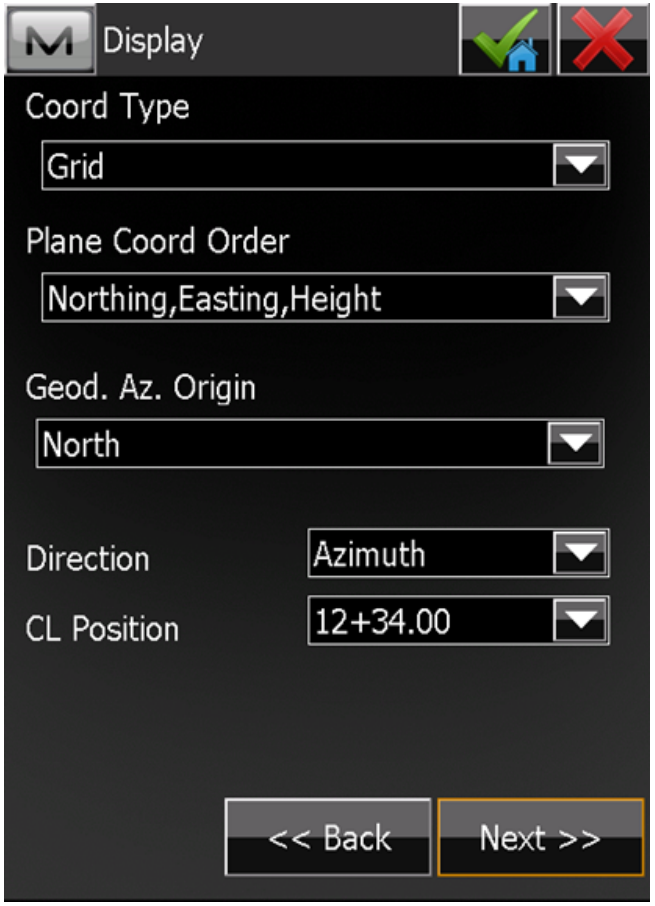
- Define the desired units for distance, angle, coordinate
- Click Next >>



Select Job Coordinate Display Values

Display

- Choose Grid for the coordinate type
- Define the other display settings as desired
- Click to finish and open the created job



TOPCON

Magnet Field Basic Training

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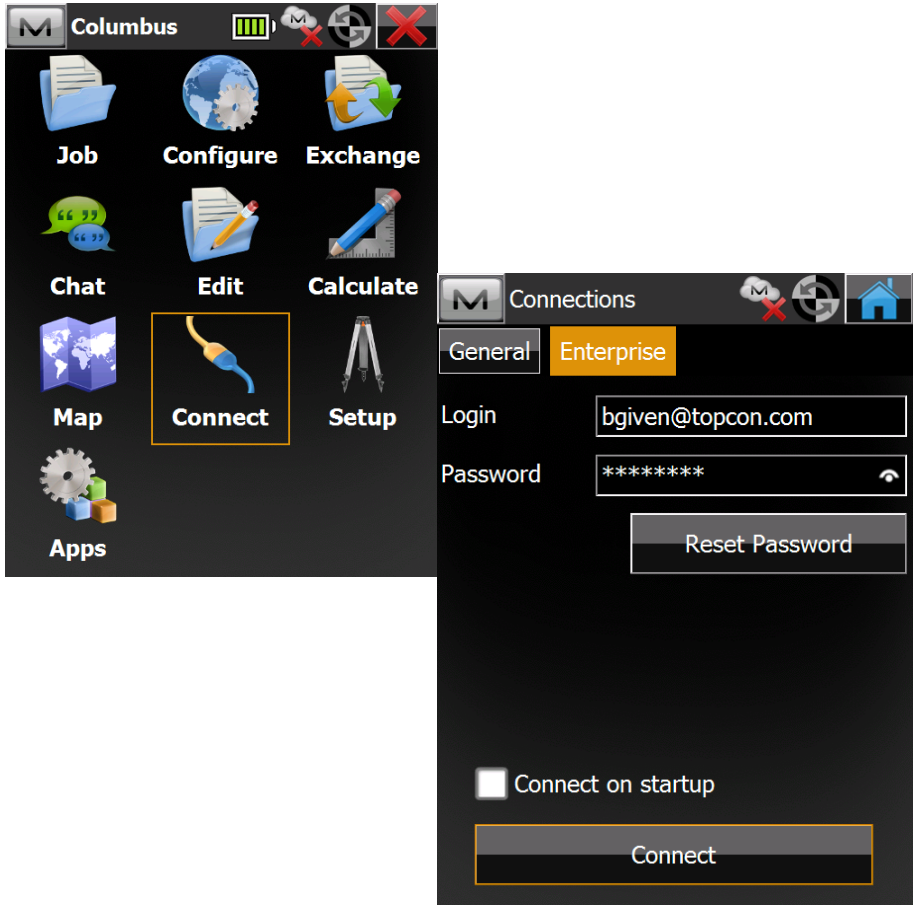
Connect to MAGNET Enterprise

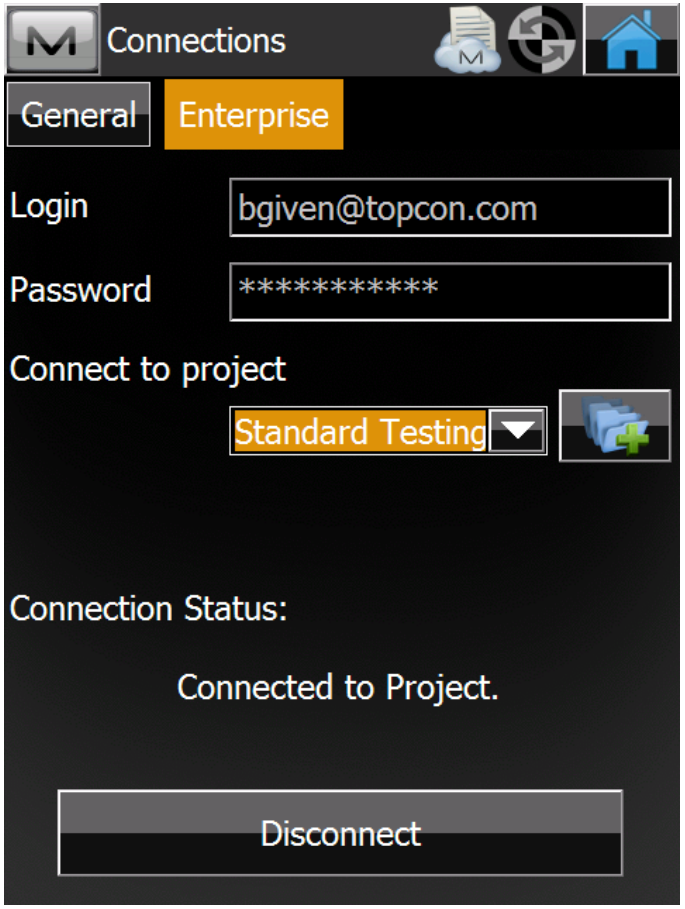
- Click **Connect**
- Choose the Enterprise tab
- Enter in login and password for Enterprise
- Click Connect



* An active internet connection is required to connect to Enterprise.

Select MAGNET Enterprise Project

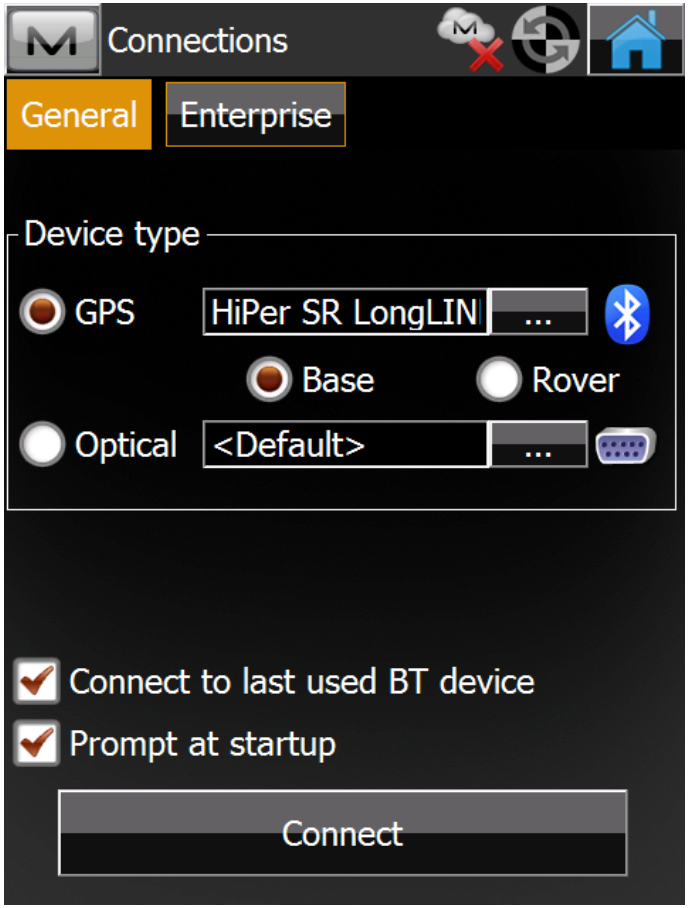
- Choose the “Connect to project” by either the drop down or click to create a new project



* An active internet connection is required to connect to Enterprise.

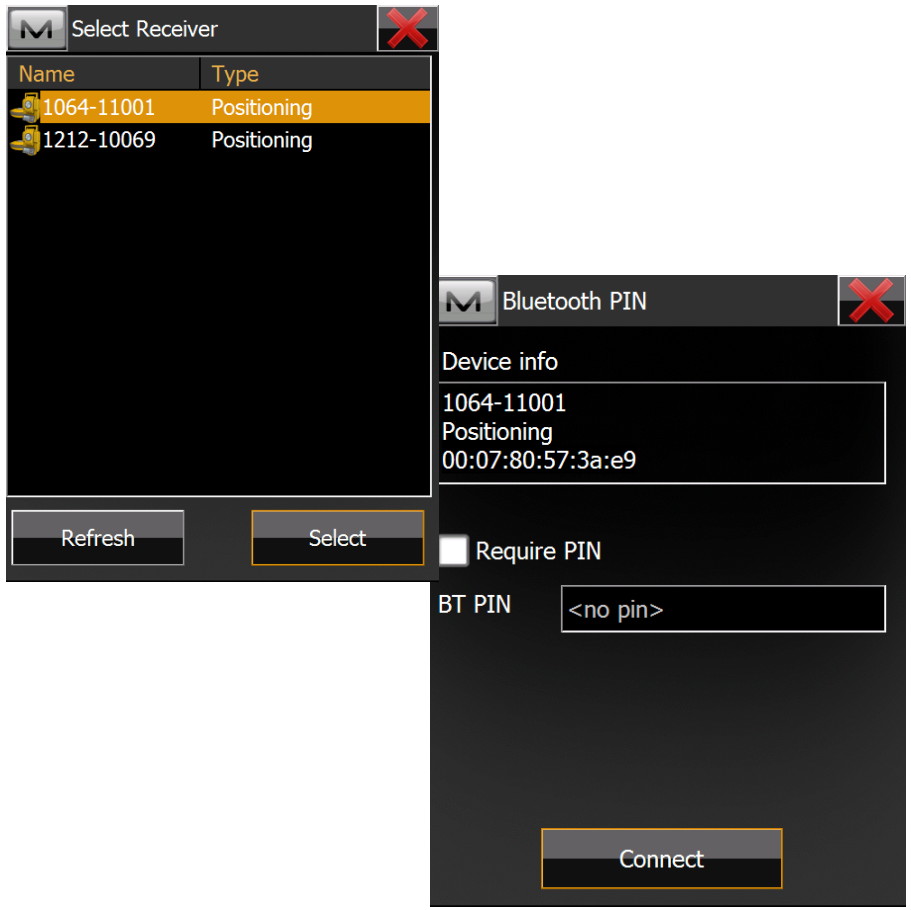
Connect to GNSS – Base Receiver

- Click General tab to now connect to the base receiver
- Choose base for the device type
- Click Connect



Connect to GNSS – Bluetooth Connection

- Choose the base receiver's serial number
- Click Select
- Click Connect



Connect to Optical Instrument

- Click **Connect**
- Choose the Optical and the GT BT configuration
- Click

Connect to Optical – Bluetooth Connection

- Choose the instrument from the list to connect to
- Click Select
- Enter **PIN** if enabled. If not, simply click Connect

TOPCON

Magnet Field Basic Training

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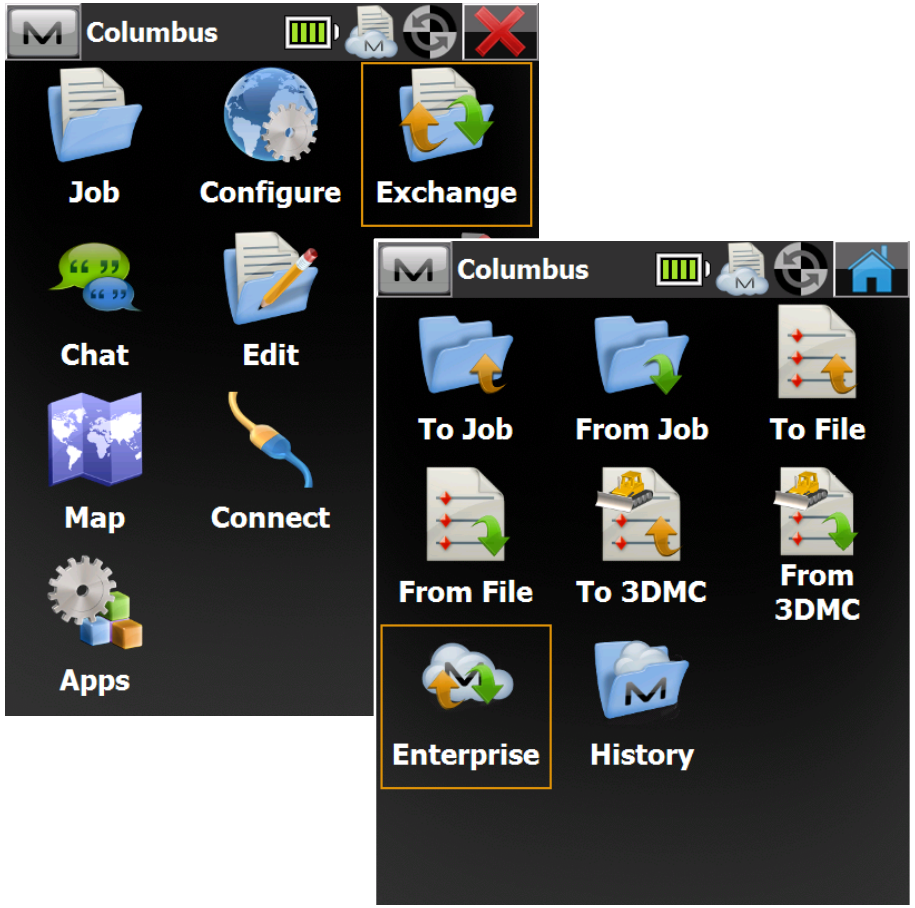
Connect to MAGNET Enterprise

- Click **Exchange|Enterprise**



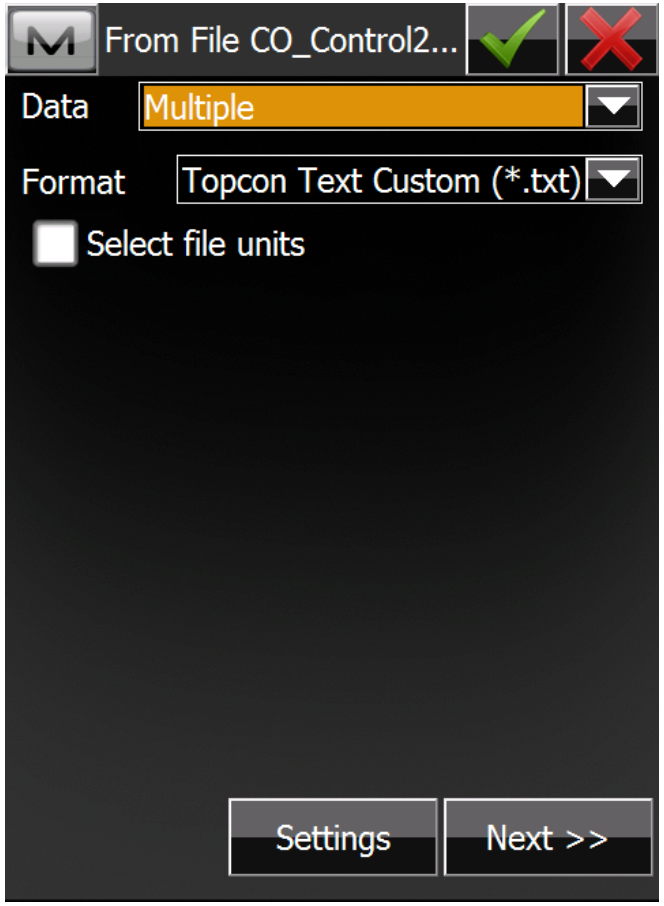
* To import files locally using a USB drive, choose exchange from file.

Select File for Import

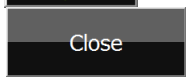
- Select the desired files and click **Download**
- Click Yes to import to current job

Define File Contents

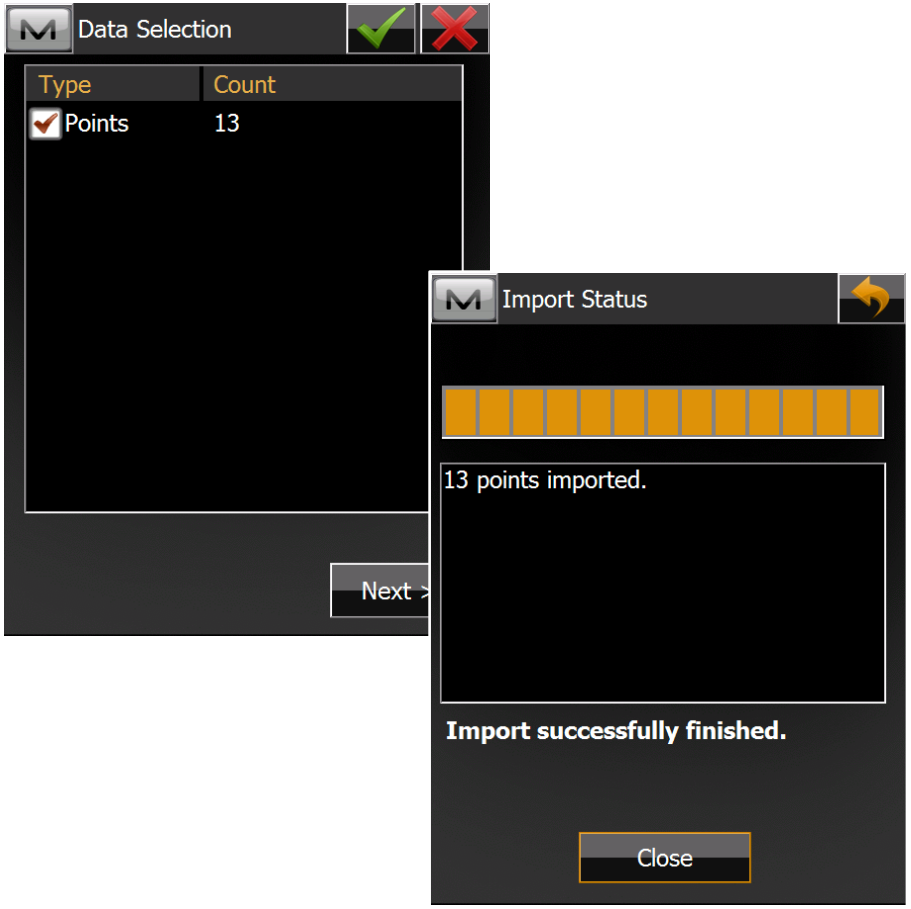
- Choose the data type and format
- Click Next >>



Finish Data Import

- Choose the desired data to import
- Click to finish import
- Click 

to finish



Magnet Field Basic Training

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Setup GNSS Equipment

Start GNSS Base

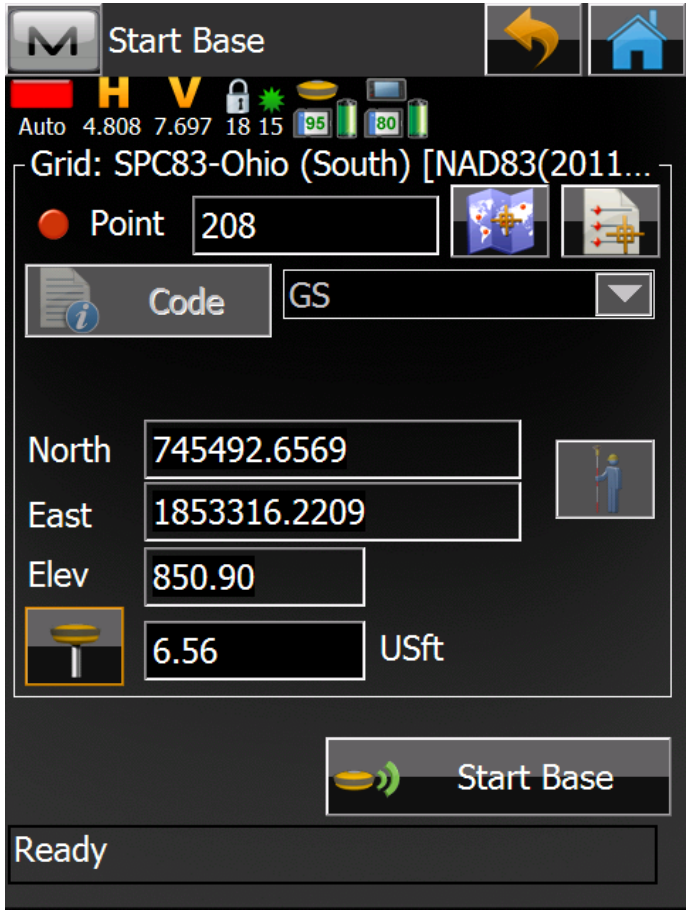
Setup – Start Base Station

Base setup

- Set the base up over a known point using a tripod and set level
- Click **Setup|Start Base**

Define Base Location

- Select or enter the point
  - Click to pick point from map
  - Click to pick point from a list
- Enter the **antenna height**
- Click



Switch to GNSS Rover

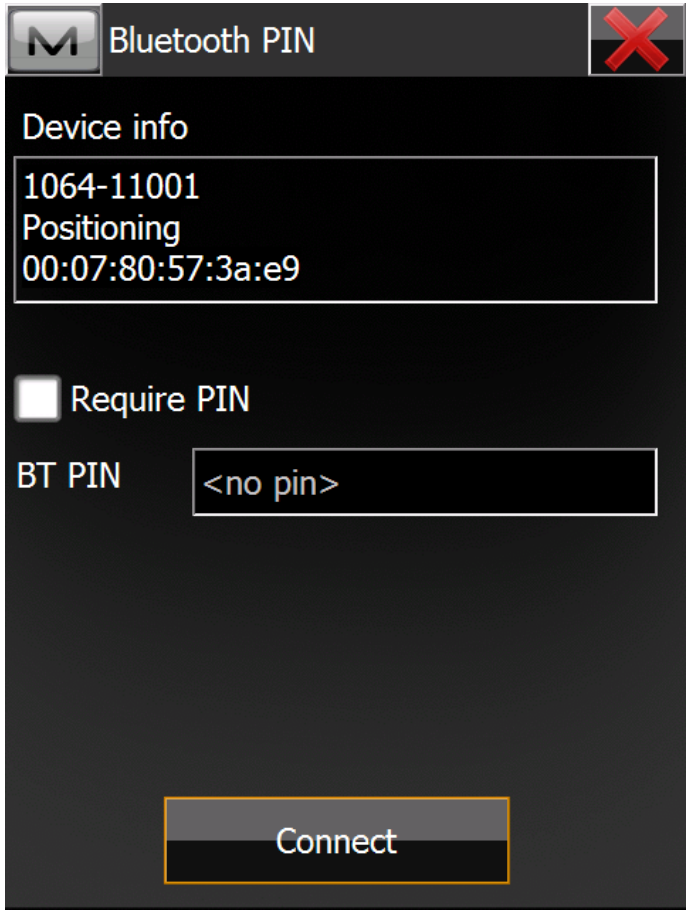
- Click Yes to go to rover connection

Establish Rover Connection

- Click Connect
- Choose the rover receiver's **serial number**
- Click Select

Establish Rover Connection Continued

- Click Connect



Setup Optical Equipment

Define Robotic Instrument Location/Orientation

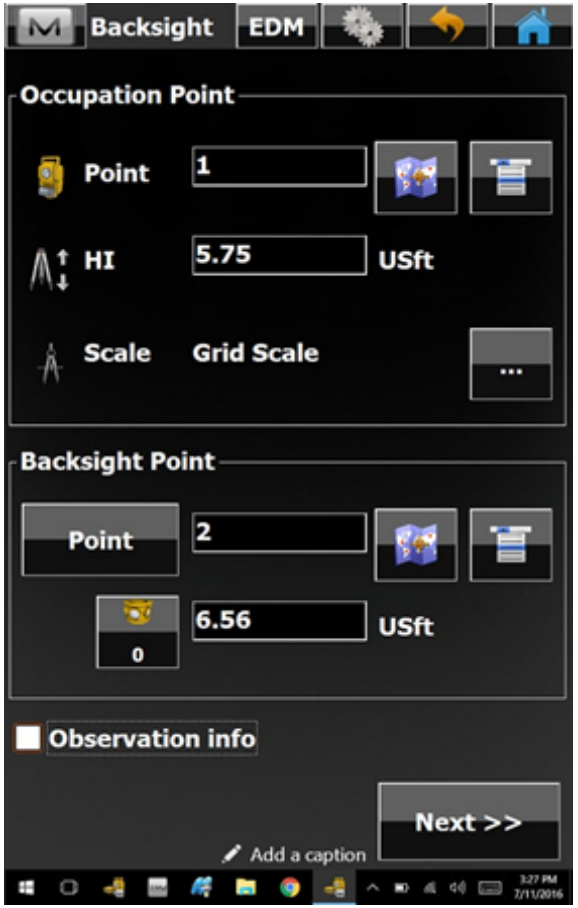
Backsight Setup

- Click **Setup|Backsight**

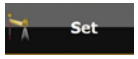
Occupation Location

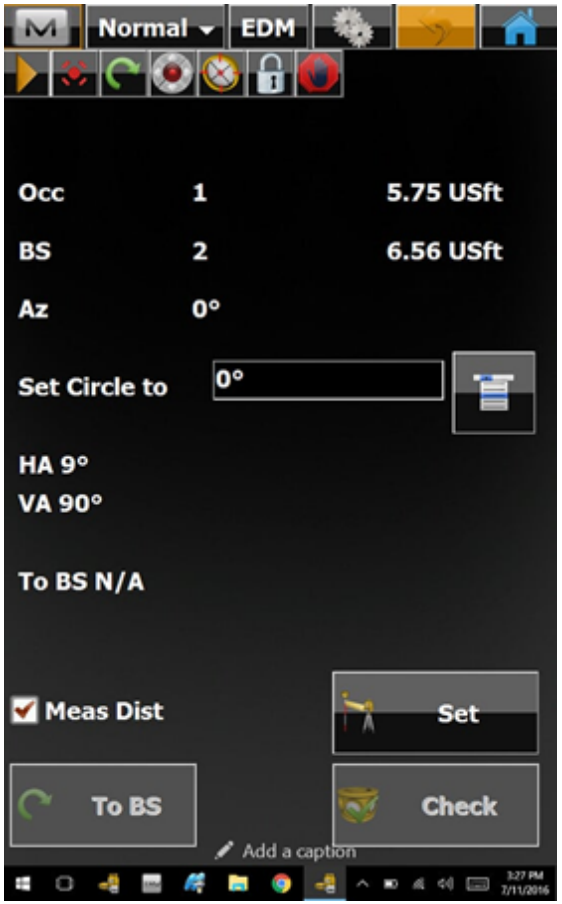
Backsight: Requires two known points (or one known point and a known direction)

- Input **backsight data**
  - Point number/name
  - Instrument height
  - Backsight point (or direction)
  - Prism height
- **Click** Next >>



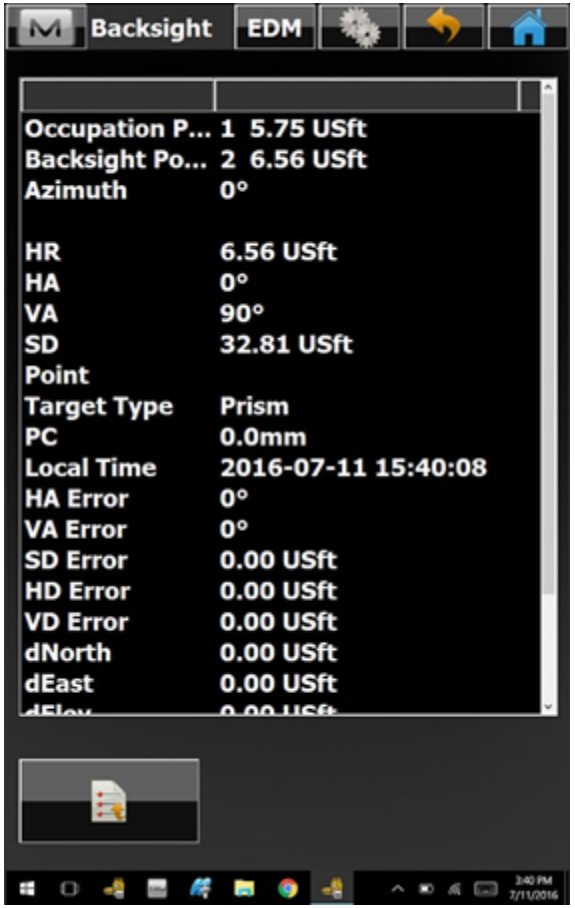
Measure/Check Backsight Orientation

- Aim instrument to center of prism
- Press 



Backsight Check Results

- *Results screen will show errors*
- Click to return to main screen



TOPCON

Magnet Field Basic Training

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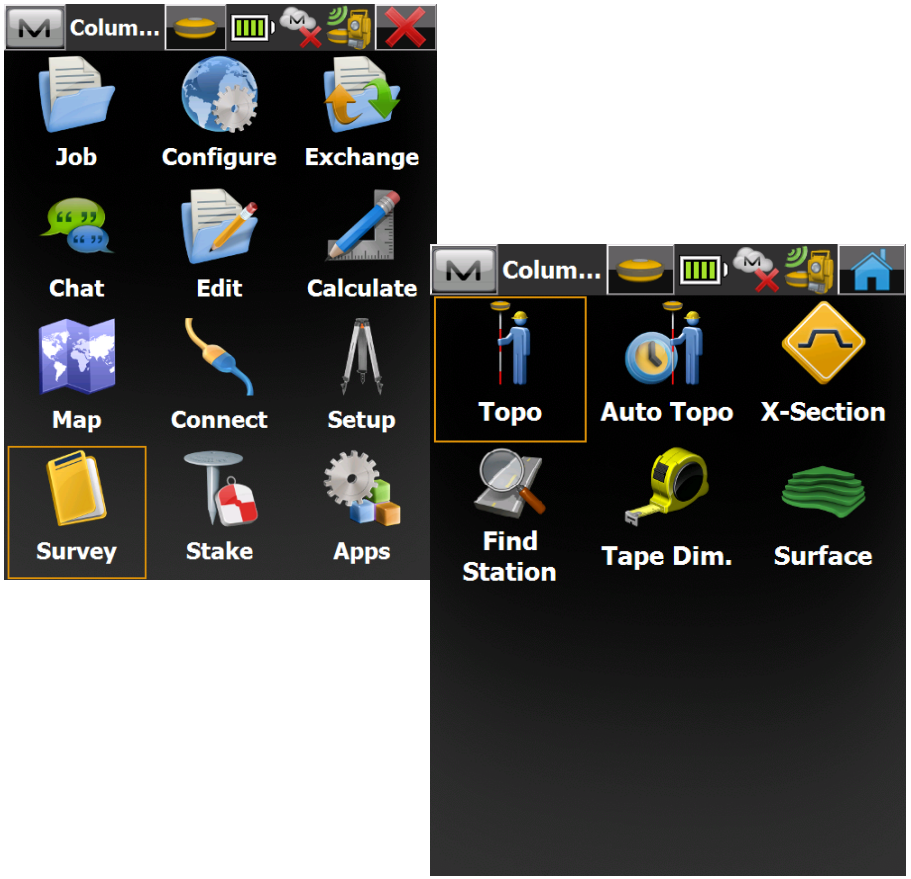
GNSS RTK Topo

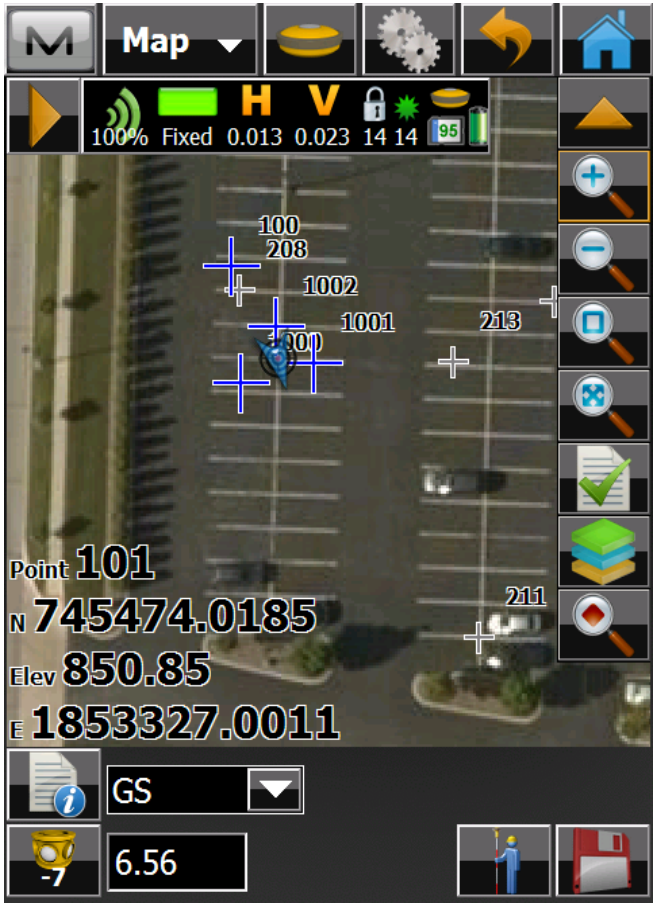
Collect RTK Data – Topo

- Click **Survey|Topo**
  - Topo will be used to collect points



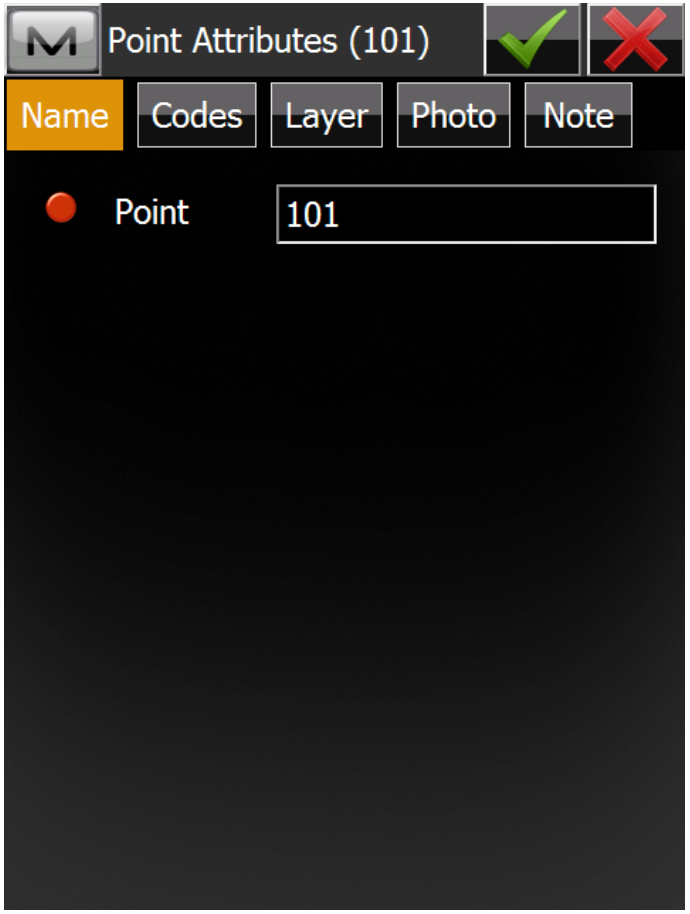
Survey – Topo

- Use to change the point attributes such as point number, code, and layer



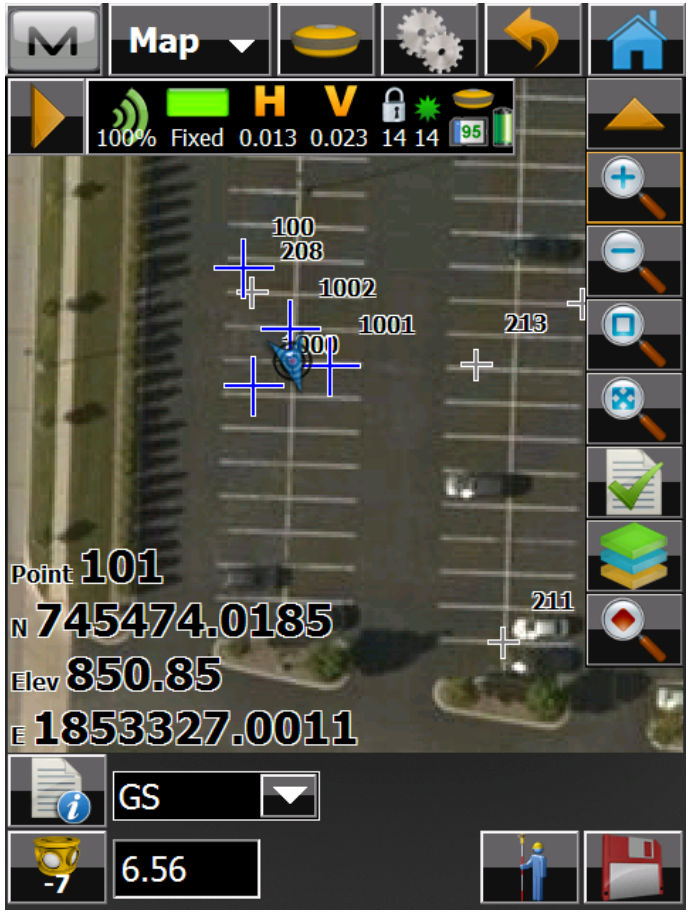
Survey Point Attributes

- Edit the point attributes as desired
- Click to save and go back to the topo screen



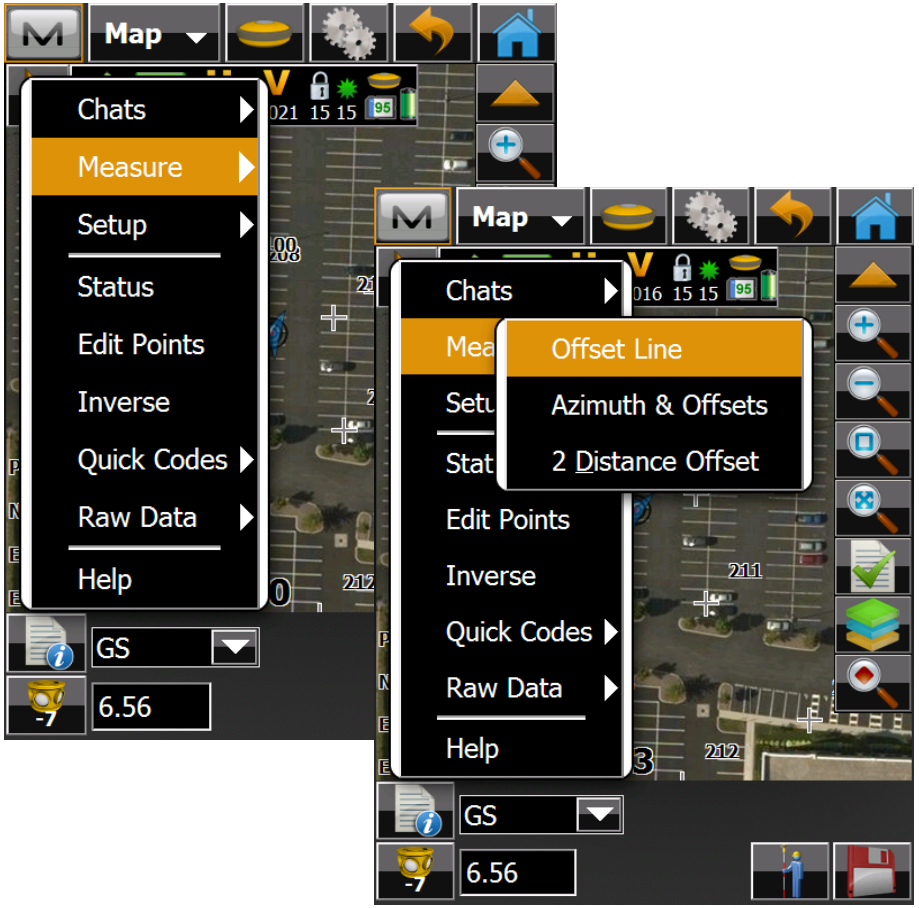
Store Topo Point

- At the bottom right of the screen two icons are used to collect points
  - is used to collect a point using the precise measurement settings
  - is used to collect a point using the rapid measurement settings
- Click either measure button to record a point



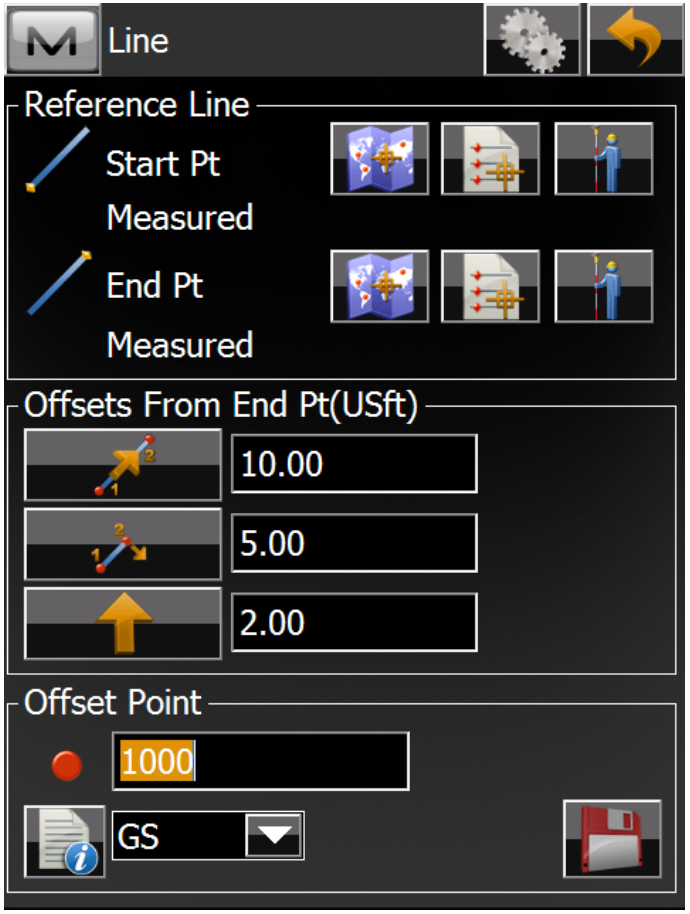
Measure GNSS Offsets

- To access offset measurement options click within the topo map screen
- Click **Measure**
- Measure offsets has three options for GPS topo
  - **Offset line**: using two measured points and additional offsets to define point location ***[Preferred method]***
  - **Azimuth and Offsets**: *see contextual help within software for details*
  - **Distance Offset**: *see contextual help within software for details*



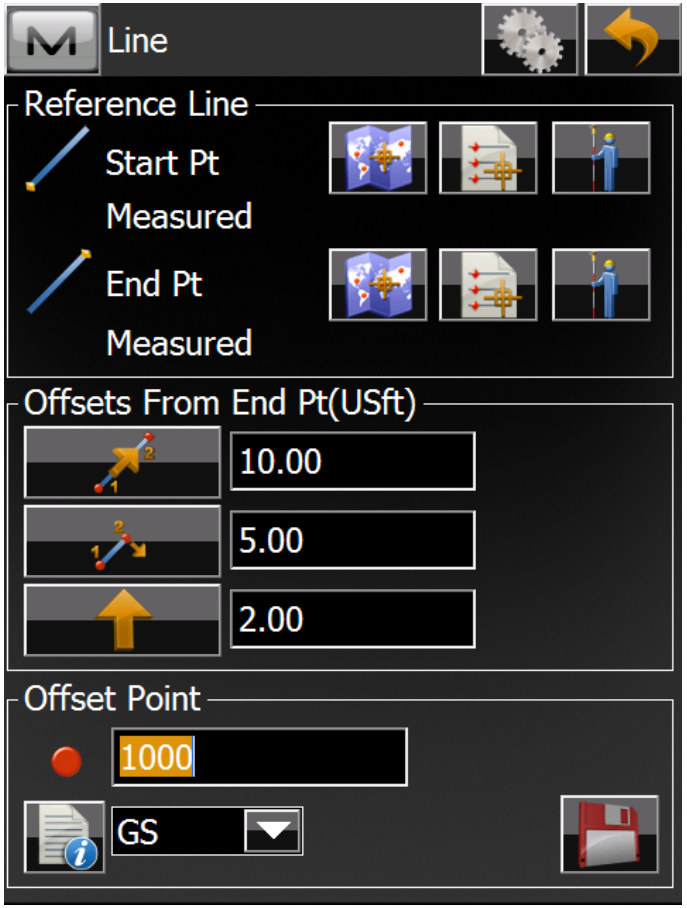
Define the Offset Line

- Reference line
  - Defines the start and ending points of reference line
  - Click to pick the start and/or end points from the map screen
  - Click to pick the start and/or end points from a list of points
  - Click to measure the start and/or ends points



Measure from Offset Line

- Offsets from end point
  - Click to toggle forward or backward for distance from endpoint to desired offset point
  - Click to toggle left or right of reference line for distance to desired offset point
  - Click to toggle elevation up or down from reference line end point to desired offset point
- Offset point
  - Enter in the point number
  - Choose a code
  - Click to save the created offset point



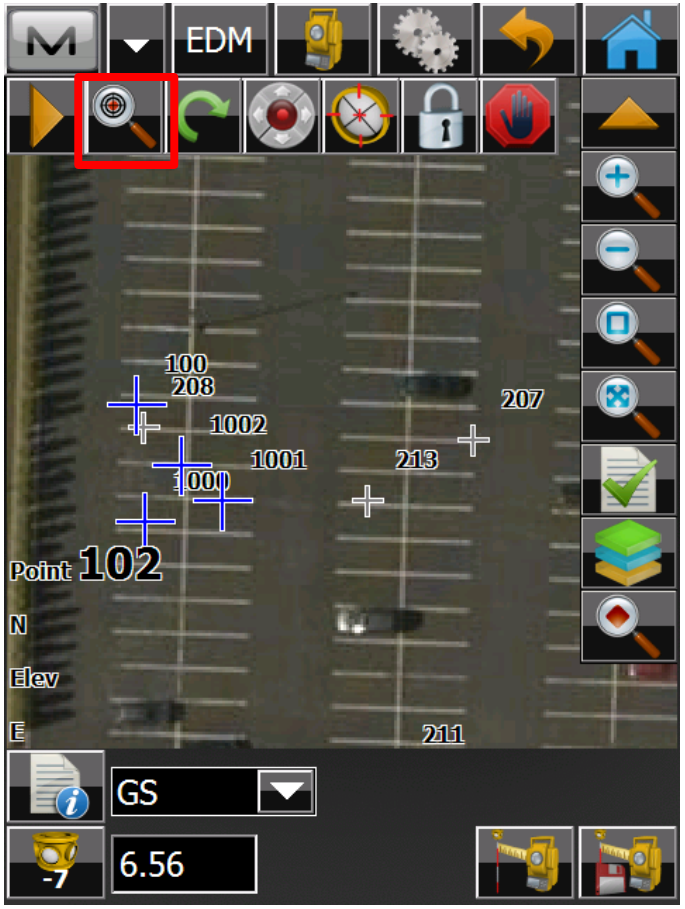
Robotic Topo

Hybrid Switch

- Select the Hybrid Switch button in the top row of the screen to switch from GNSS mode to Optical mode

Hybrid Search/Lock

- Click hybrid lock to have the instrument automatically turn to the prism
- Proceed with robotic topo following previously mentioned procedures

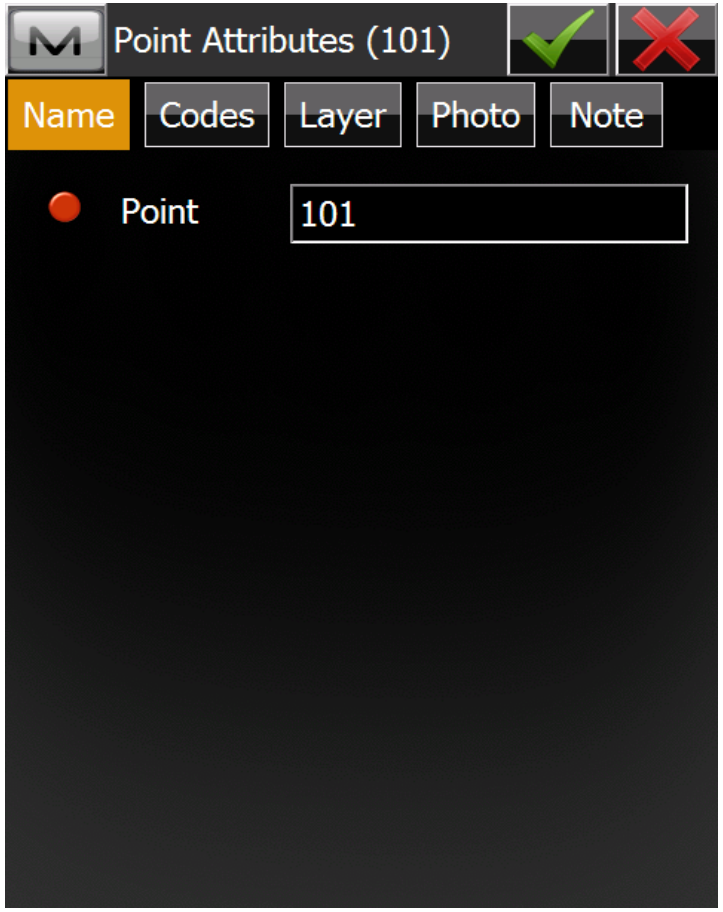


Robotic Survey Topo Continued

- Use to change the point attributes such as point number, code, and layer

Robotic Survey Topo Continued

- Edit the point attributes as desired
- Click to save and go back to the topo screen



Robotic Survey Topo Continued

- At the bottom right of the screen there two icons used to collect points
  - is used to collect a point using the precise measure settings
  - is used to collect a point using the rapid measure settings
- Click either measure button to record a point

MAGNET Field Basic Training

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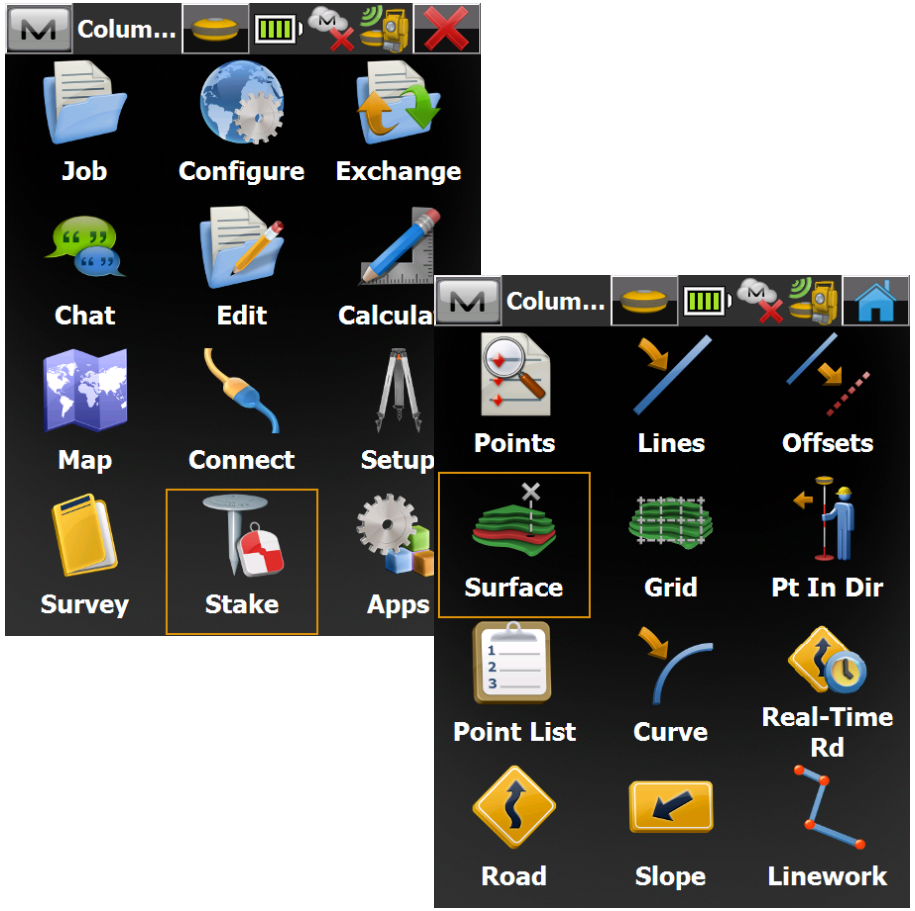
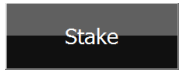
GNSS RTK Stakeout

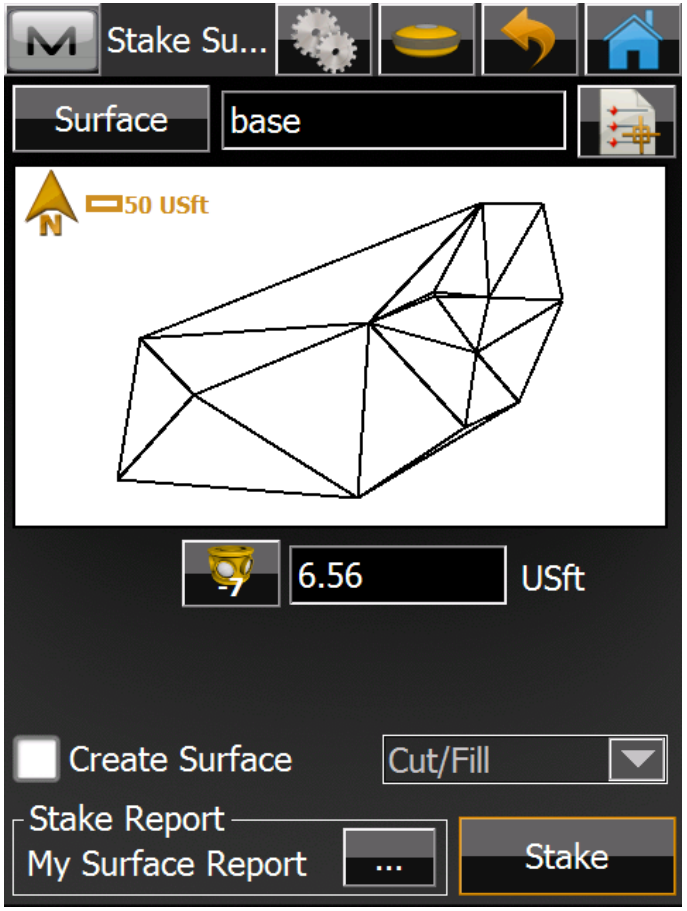
RTK Stakeout – Surface

- Click **Stake|Surface**



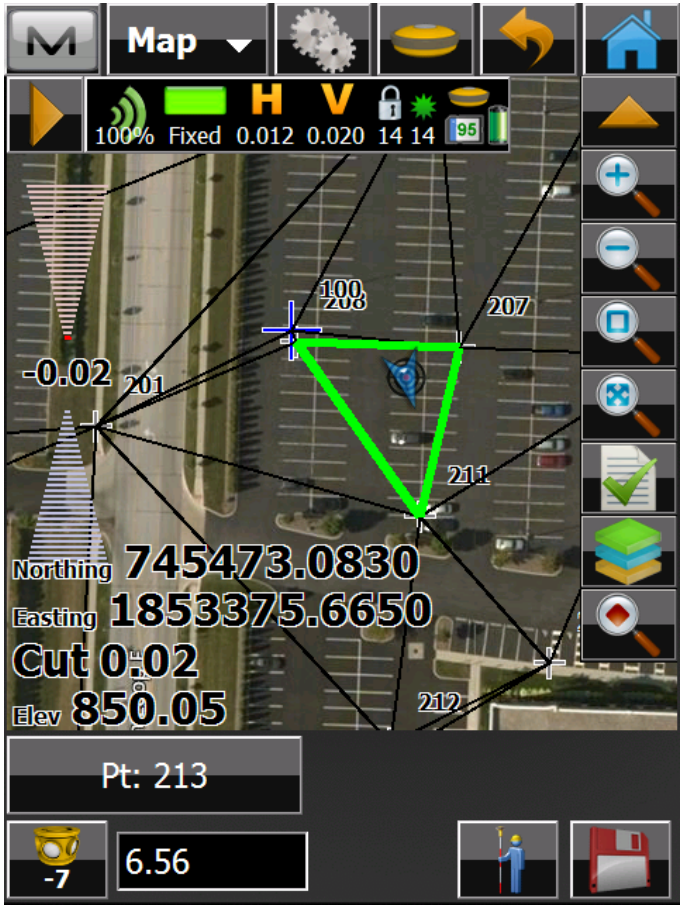
Select Surface to be Staked

- **Type** in the surface name or click to choose a surface from the list
- **Click** 



Store Staked Surface Location

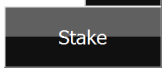
- To record a surface measurement :
  - Click to measure a precise stake point
  - Or Click to measure a rapid stake point

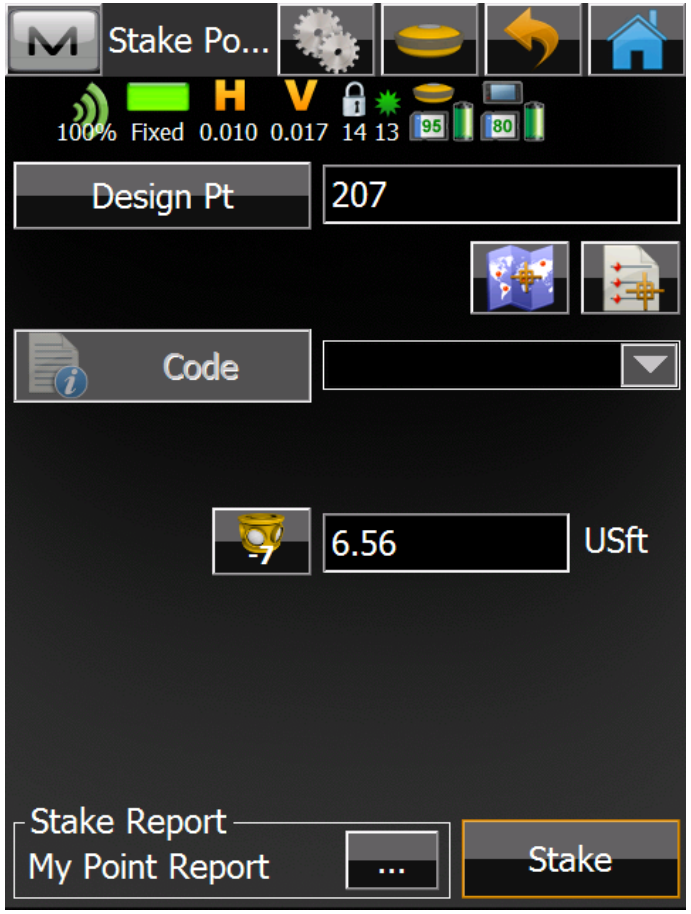


RTK Stakeout – Points

- Click **Stake|Points**

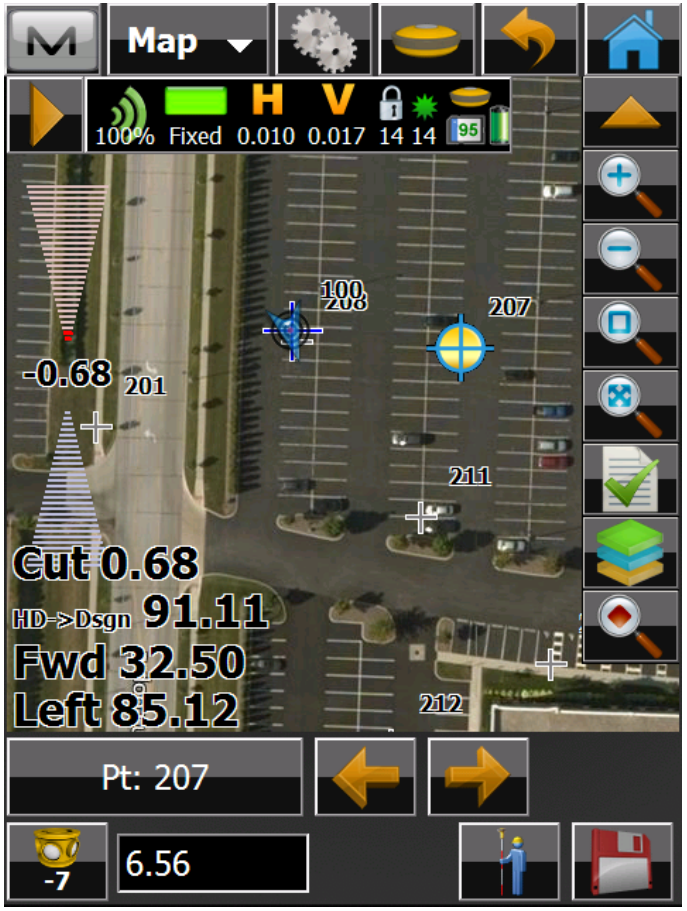
Select Design Point

- Enter in the point number to be staked
  - Click to pick point from map
  - Click to pick point from a list
- Click 



Store Staked Point

- Follow on-screen directions and distances to design point
- Once acceptable tolerances achieved, store point
- To record the stake point click either:
  - Click to measure a precise stake point
  - Click to measure a rapid stake point



TOPCON

Robotic Stakeout

Hybrid Switch

- Select the Hybrid Switch button in the top row of the screen to switch from GNSS mode to Optical mode

Hybrid Search/Lock

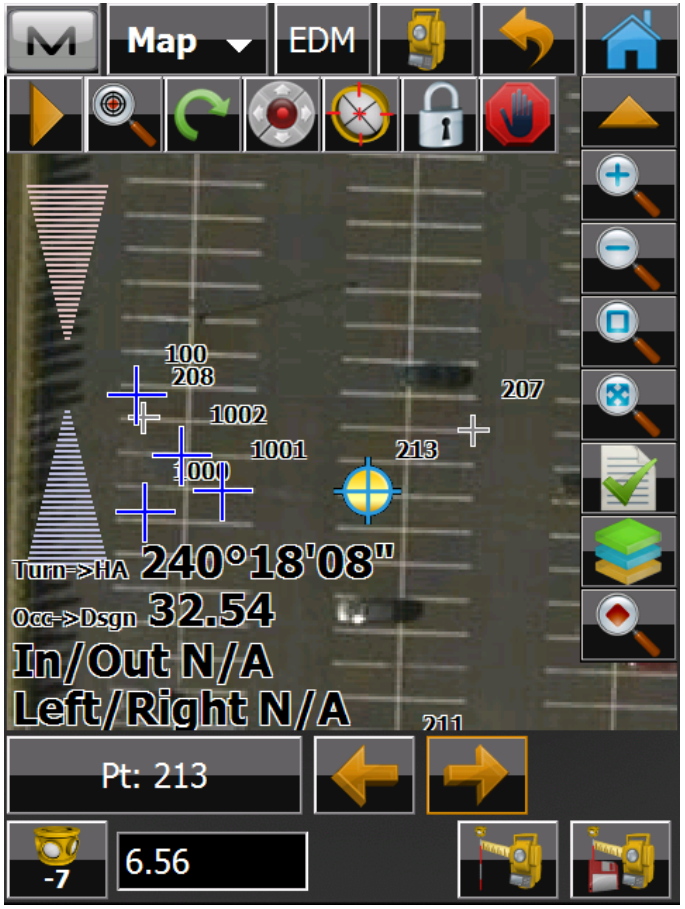
- Click hybrid lock to have the instrument automatically turn to the prism
- Proceed with robotic topo following previously mentioned procedures

Robotic Stake Points

- After Hybrid switch, follow on-screen directions and distance to design point location
- Once acceptable tolerances achieved, store point
- To record the stake point:
  - Click to measure a precise stake point, or
  - Click to measure a rapid stake point

Robotic Stake Surface

- To record a surface measurement either:
  - Click to measure a precise stake point, or
  - Click to measure a rapid stake point



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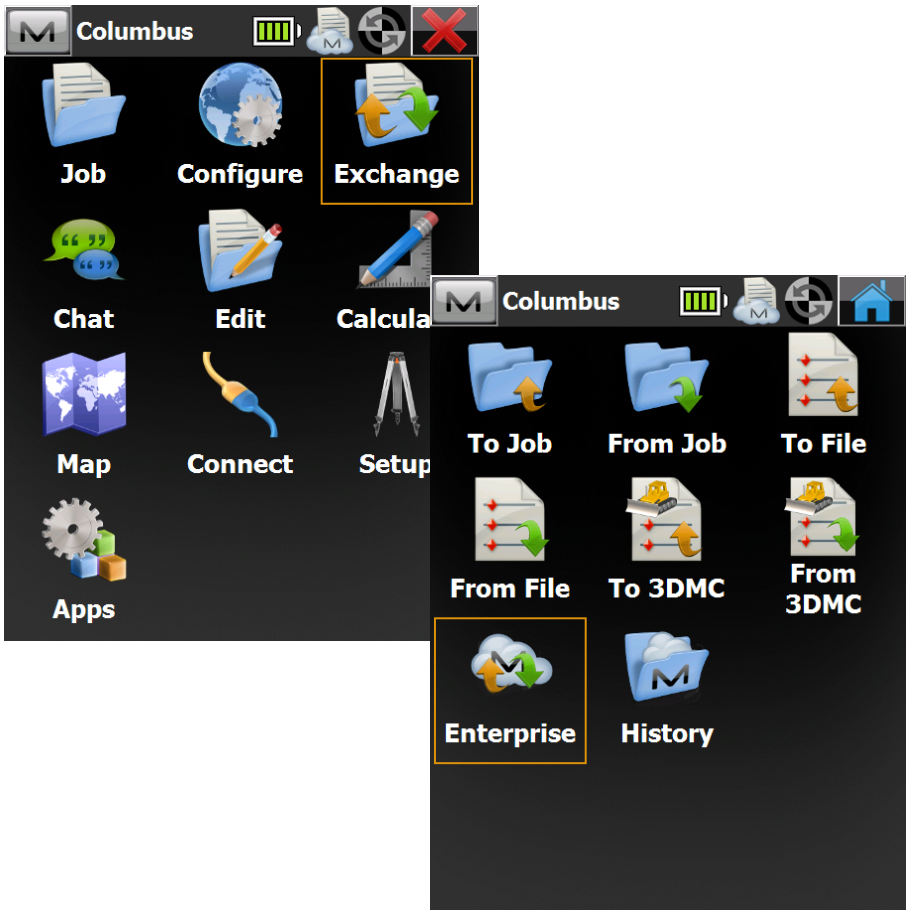
Connect to MAGNET Enterprise Data Manager

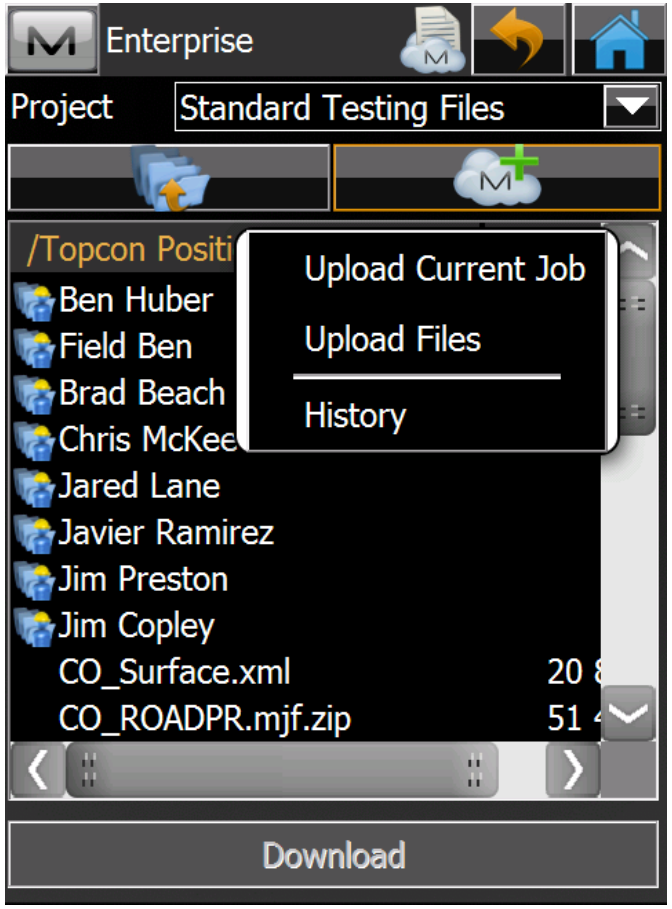
- Click **Exchange|Enterprise**



* To export files locally using a USB drive, choose exchange from file.

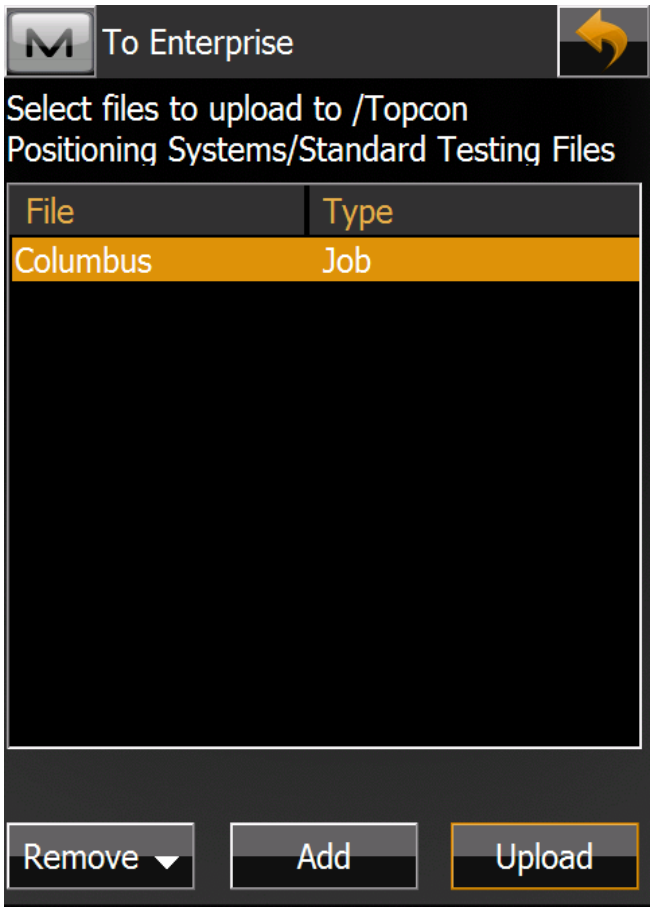
Browse Project Structure

- Click MAGNET cloud icon
- Click **Upload Current Job**



Upload File(s)

- Choose the file to be uploaded to Enterprise
- Click Upload



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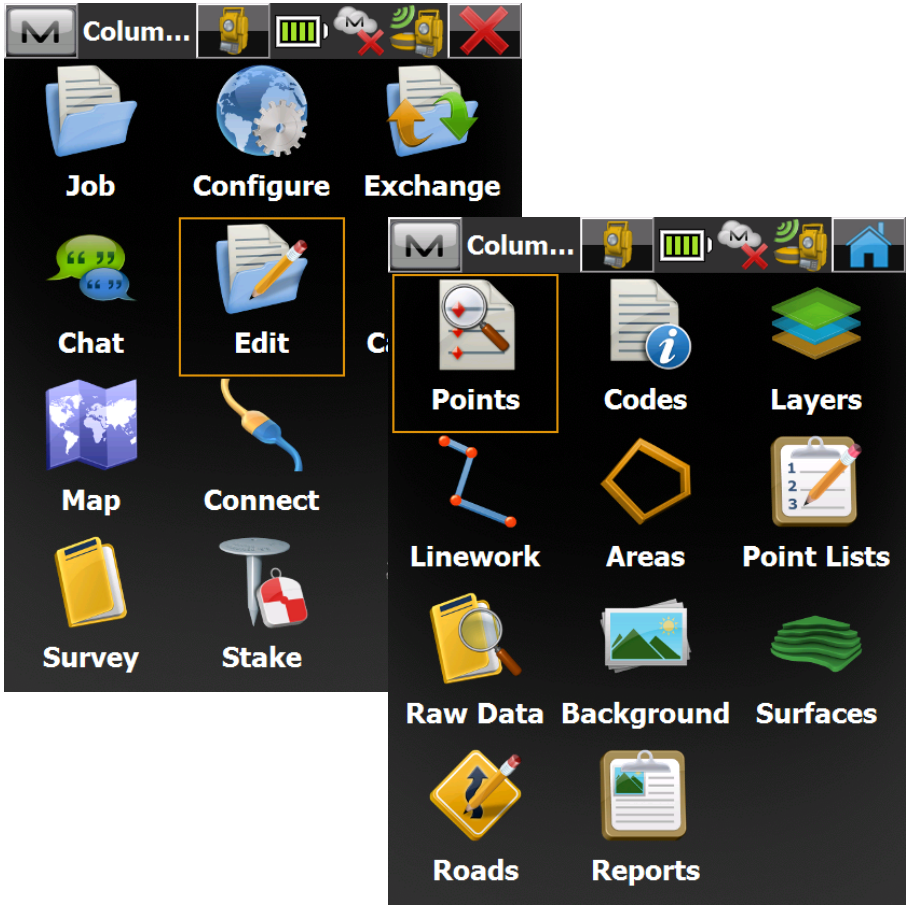
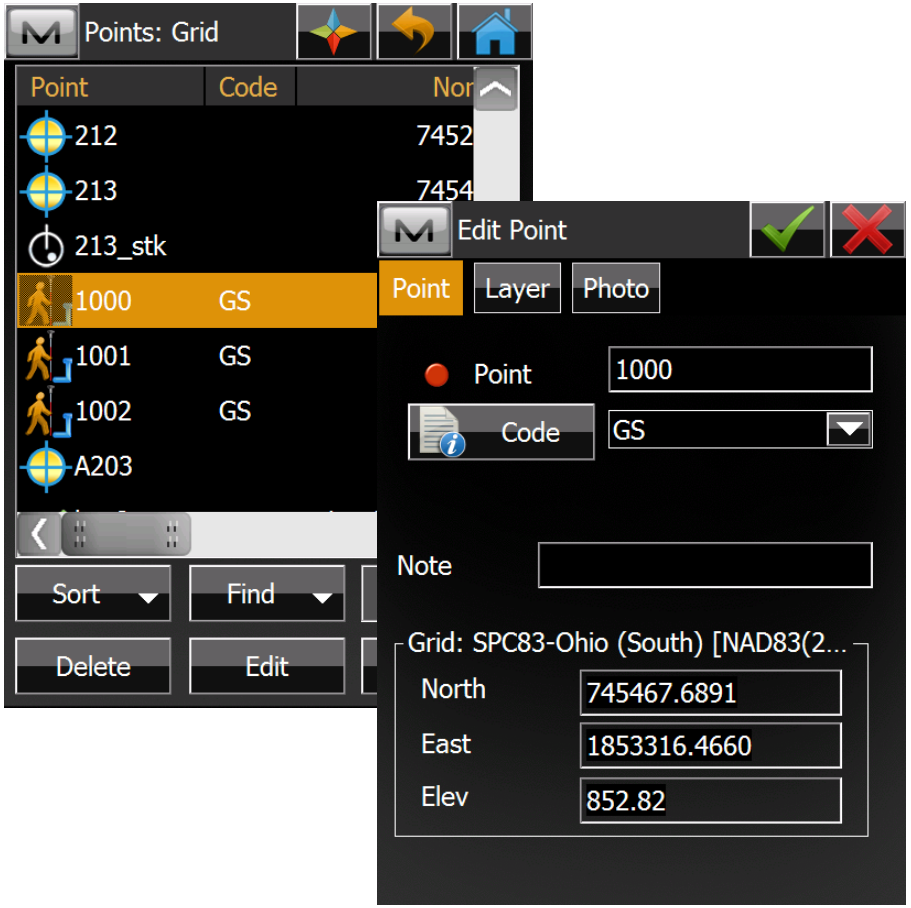
Edit Points

- Click **Edit|Points**
- Use this feature to change any error in point number, layer or code



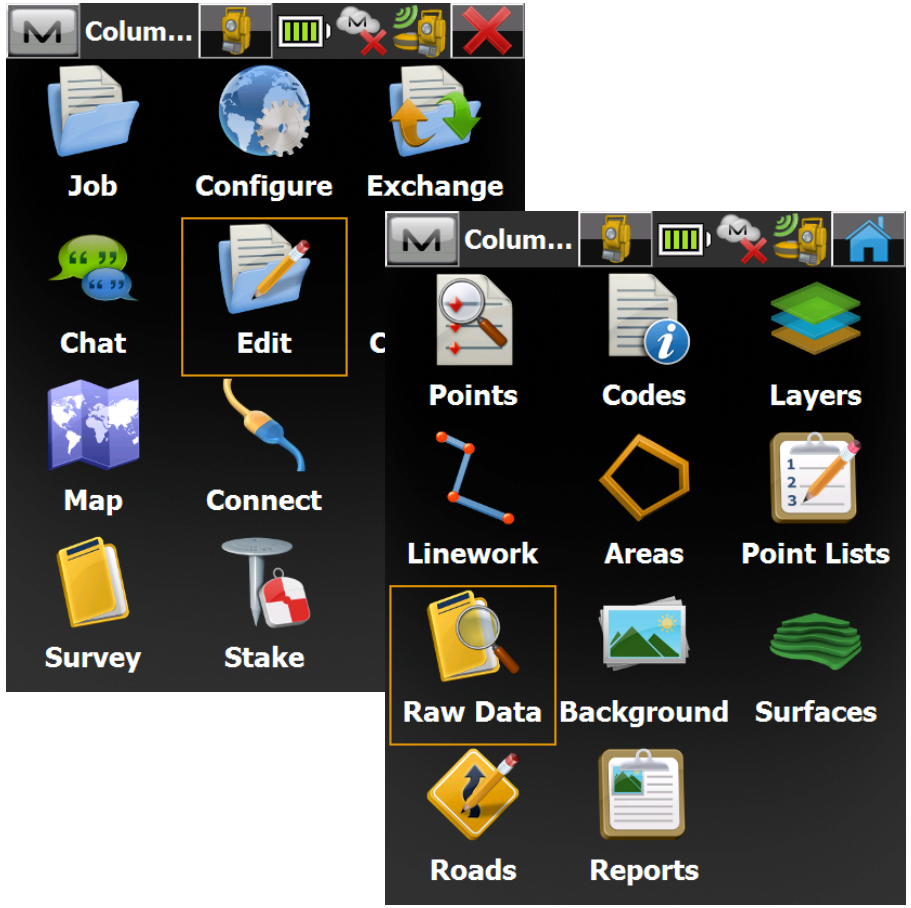
Edit Points Continued

- Choose the desired point
- Click Edit
- Make any desired changes such as point number and code
- Click ✓ to save the changes



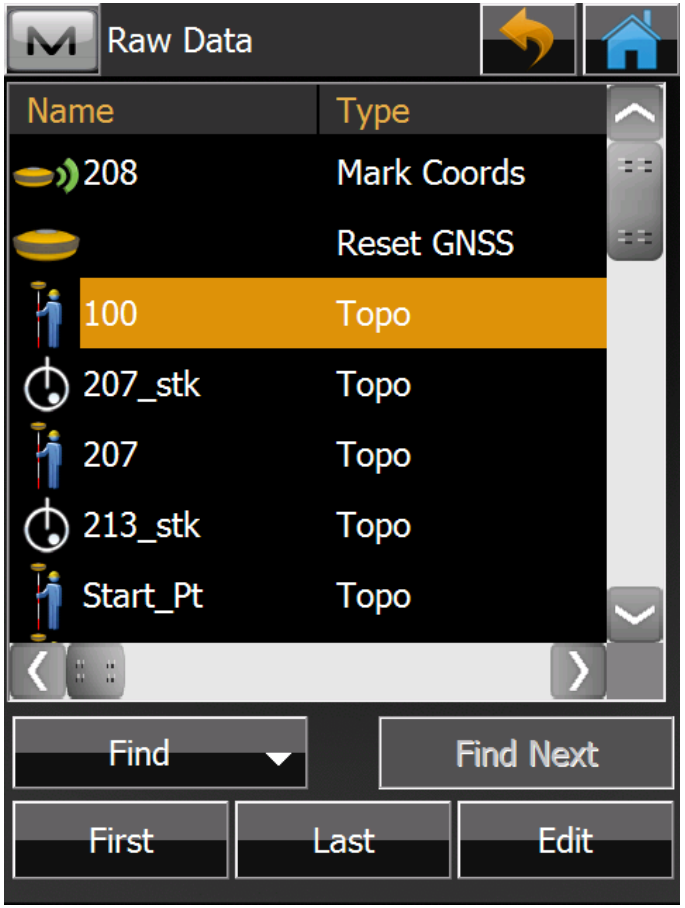
Edit Raw Data

- Click **Edit|Raw Data**
- Use this function to change instrument type, instrument height, prism type, rod height



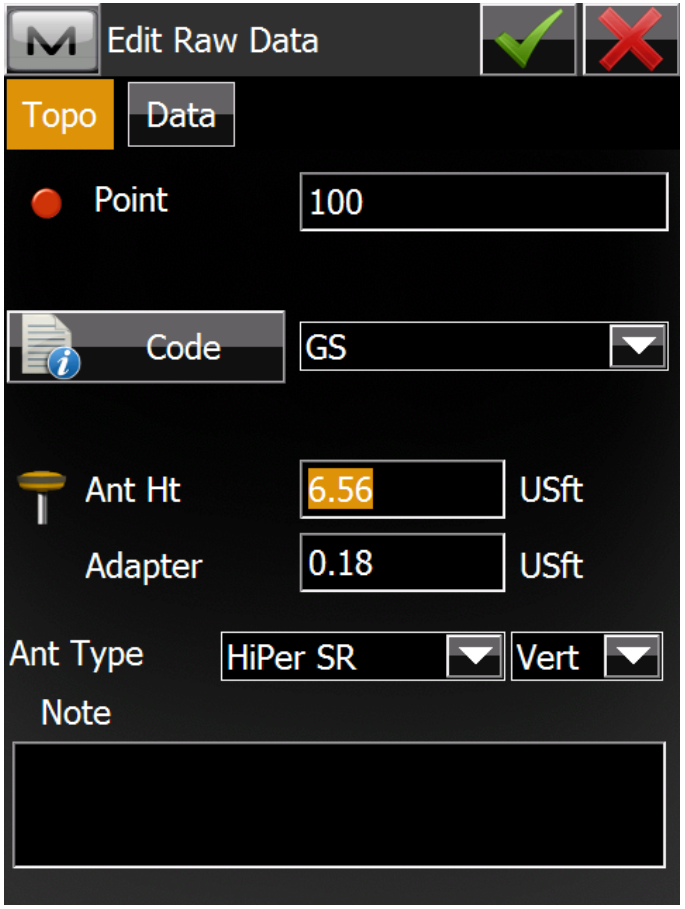
Edit Raw Data Continued

- Choose the desired point or instrument setup
- Click Edit



Edit Raw Data Continued

- Make the desired changes
- Click to save



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