Trimble FieldLink™

User Guide

Version 2025.2.0
Revision A
June 2025

Trimble

Contents

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Trimble FieldLink

Trimble FieldLink software provides a single solution for your field layout and scanning tasks:

- Use a robotic total station or GNSS receiver to precisely layout directly from the model or created lines.
- Quickly and effectively collect points, lines and curves to create your own 3D project as-built or surface analysis.
- Quickly and easily collect as-built points with FieldLink and the Trimble Ri or Trimble RTS series Robotic Total Stations. Ensure accuracy with your model in real time.
- Leave the jobsite with a registered point cloud aligned to your constructable model which you can easily export to your preferred CAD program.

Work Modes

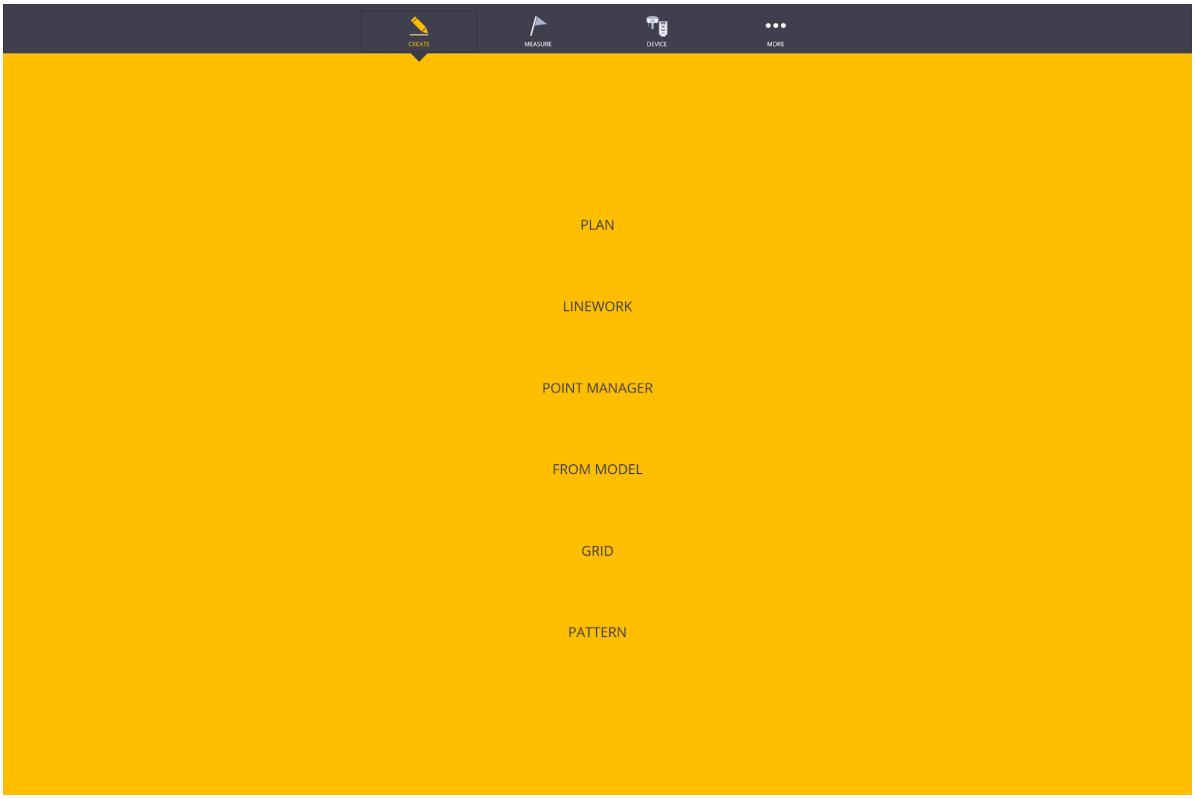
The **FieldLink** home screen opens with the **Work Mode** icons across the top of the screen.

The **Work Modes** are a logical division of work features within the software. Tap the required work mode icon at any time to enter that work mode.

Create

Tap **Create** 

to create, modify or delete project data including a plan view of a project, linework, points, points from a model, grid points or point patterns.

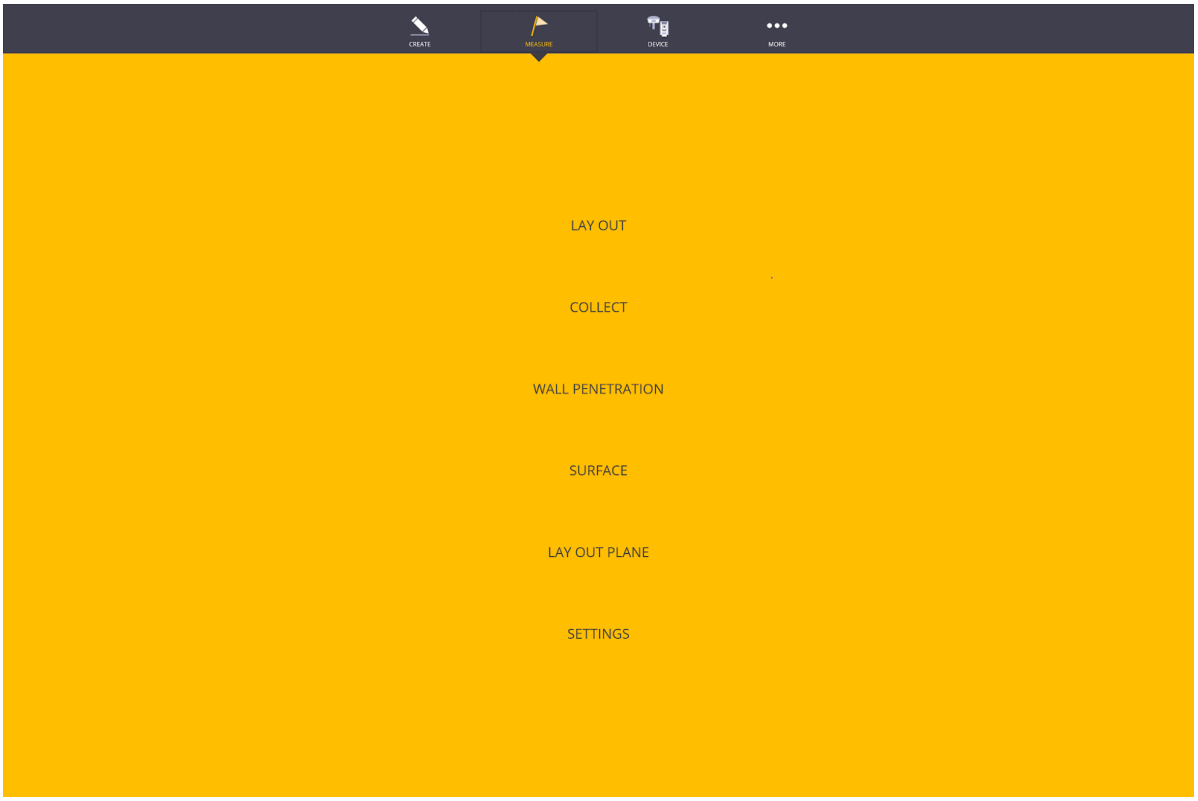


Measure

Tap **Measure** 

to:

- Lay out points, lines, offsets, arcs
- Collect points, lines, arcs or to auto collect square cateye control points
- Lay out wall penetrations
- Lay out planes
- Collect and lay out surfaces
- Change measurement settings such as tolerances, next or nearest points, Visual Layout or Standard Laser mode, and High Precision or Fast Precision.

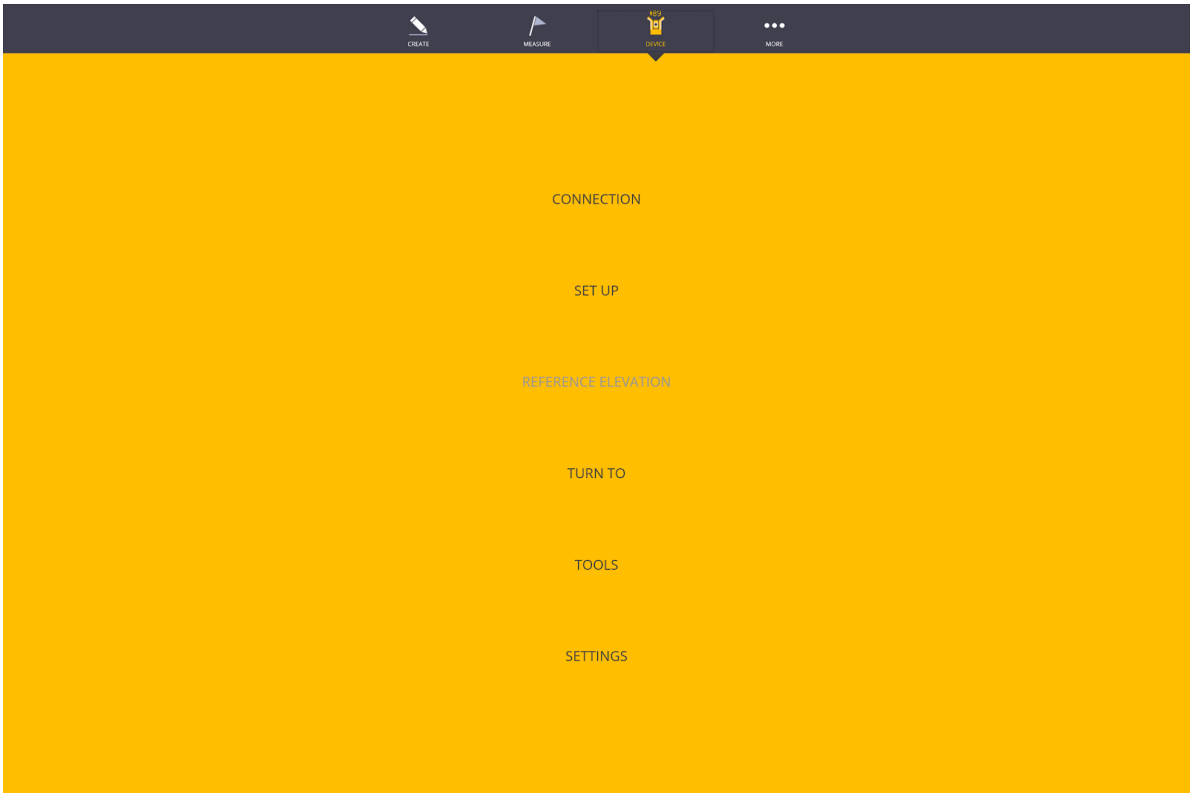


Device

Tap **Device**  to connect to GNSS, total station, or scanning equipment, set up the instrument location, and change instrument and target settings.

If you have purchased GNSS equipment, you can connect to Trimble R8s GNSS receivers and VRS or RTX networks depending on your license type.

If you have a Trimble Tablet with a built-in radio or optional external radio, you can connect to various Trimble Robotic Total Stations and the Trimble X7 or X9 3D Laser Scanner.



Map

Tap **More** MORE and then tap **Map** to go to the map view of your model.

You can also move, scale, or rotate models and background files in FieldLink Office under Map.

Projects

Tap **More** MORE and then tap **Projects** to open or create job files, import and export data, and to change job settings such as displayed units, coordinate type, language & clearing layout flags for previously laid out points.

You can also download projects from Trimble Connect and send the projects back to Trimble Connect in the Projects screen.

Trimble Connect allows the project team to view, transform drawings and BIM data in your web browser without running design software. Upload and share 3D and 2D documentation with the entire team including SKP, DWG, DXF, PDF, Word, Excel, pictures, and videos with auto-archiving of all previous versions. You can measure, create model clash reports, save markups and screenshots, and assign tasks to collaborators.

Reports

Tap **More**  and then tap **Reports** to create and view a daily layout summary, layout deviation, field report or report on surfaces collected.

Status Sharing

To show the progress of the various model components, Tap **More**  and then tap **Status Sharing**.

The Status Sharing tool can push progress information to Trimble Connect Desktop or Tekla software with the installation of the Status Sharing extensions from those applications.

The Trimble Connect Sync Tool helps you keep a local copy of all your critical project data right on your computer or automatically upload it to the cloud for safe storage. Once connected, you can upload or download FieldLink jobs, models, point files, and reports from your Trimble Connect project when you have Wi-Fi service. You may also be able to use your cell phone to create a Wi-Fi hotspot while out in the field, depending on available cellular signal.

Creating a Trimble Connect project is quick, easy and free for a personal project with up to 10GB of data storage. Training documentation, help files and more information can be found at connect.trimble.com.

System Information

In the **FieldLink** home screen, tap **More**  to access system information including software license information and software version.

Account Details

Tap **More**  and then tap **Account Details** to:

- see the licenses that are assigned to you
- see how long until you must sign into the application again
- see when the licenses expire
- sign out from the application

About

Tap **More**  and then tap **About** to access software information such as FieldLink Versions and Modules installed, Device Firmware Version (when connected), Legal Notices, Tablet Serial Number, and Software Support Expiration.

Minimize

Tap **More**  and then tap **Minimize** to minimize the software to the taskbar.

Exit

Tap **More**  and then tap **Exit** to close the FieldLink software.

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Map

Tap **More**  and then tap **Map** to go to the map view of your model.

You can also move, scale, or rotate models and background files in FieldLink Office under Map.

Map Controls

The Map Control icons are shown along the right-hand side of the screen and allow you to navigate within the existing project. Tap these icons once to activate the Map Control and tap again to disable the Map Control option.

Zoom Extents and Preset Views

The **Zoom Extents and Preset Views** icon is used to set the map extent to include all objects in the job, get a plan view, side view, or isometric view.

1. Tap the **Arrow Button** to the left of the **Zoom Extents** icon.
2. Select **Zoom Extents**, **Isometric**, **Side View** or **Plan View** button to change the project view to the desired position.

Pan/Orbit

1. Tap the **Pan** icon  to change to the Orbit icon and mode. You can then rotate around the center of your pen or finger.
2. Tap the **Orbit** icon  to change back to the Pan icon and mode. You can then hold the existing view and move around the project in a fixed view.

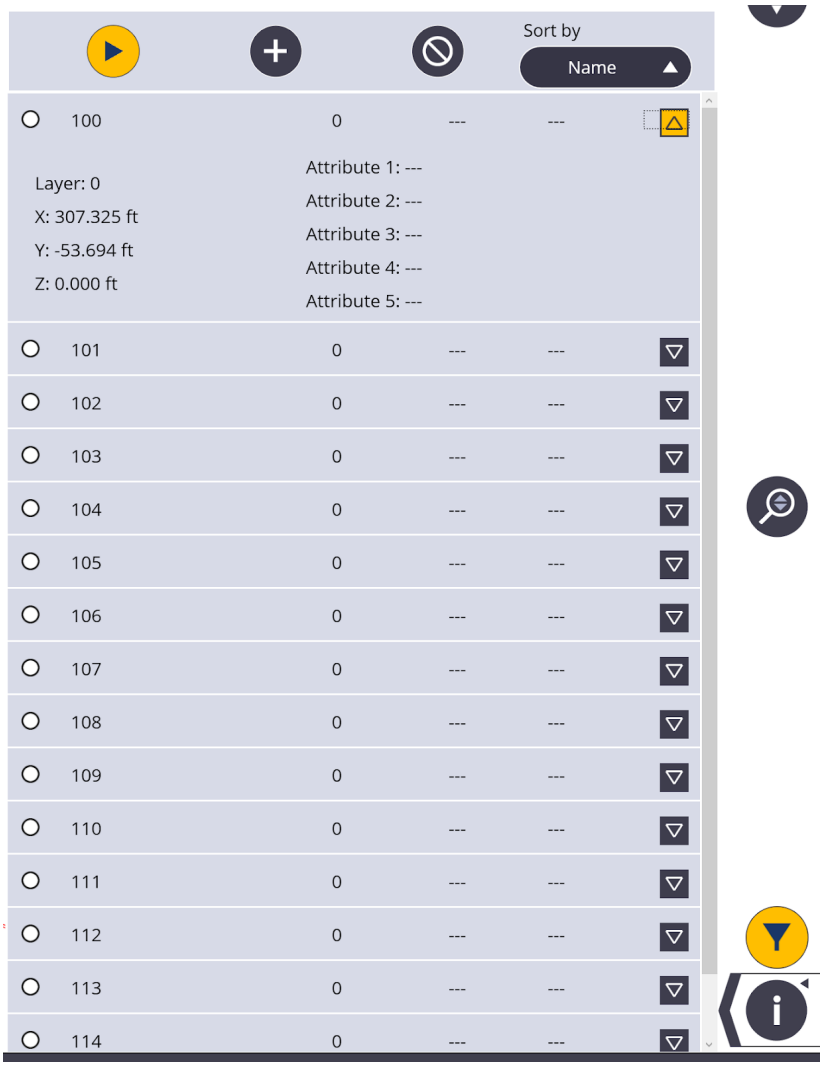
Zoom

1. Tap/hold/slide the **Zoom** icon  up or down to zoom in or out of the view.
2. Alternatively, use two fingers to pinch together or in/out figure gesture to zoom in/out.

Point List

Tap the **Point List** icon  to create a point list for export, editing or layout sessions. You can add points to the list by selecting them individually on the screen, using the Window or All Visible selection tools. The point list can be created quickly by tapping on the **Plus** icon to filter by Name, Description or Layer. To edit the list, tap the X icon to the right to delete points from the list, or select new points to add to the list. To clear the list, tap the **Clear** icon. This icon is found under the **Measure** > **Lay Out** tool.

Tap the Left Arrow icon to expand the point list and be able to review each point's information including layer, coordinates, staked information and attributes. This also allows you to sort the point list by **Name**, **Layer**, **Description**, **Delta Horizontally** or **Delta Vertically** for staked points.



Tap the **Information Zipper** icon to access the **Information** icon , **Map Settings** icon , **Layer** icon, and the **Section View** icon .

Information

Tap the **Information**icon to see information about a selected point such as **Name**, **Description**, **Layer**, and **Coordinate Values**. You can also press on straight linework to see the length and slope angle information as well as arc information such as length, diameter and slope angle. If you have an IFC model, you can also see the attached object information such as component name, size, volume or other information attached to the model object in software such as Tekla or other BIM applications.

1. Tap arrow to the left of the **Information** icon.
2. Select a point, line, arc, or object on the map.
3. Information is displayed on the map.
4. To close the **Information Zipper**, tap the **Information** icon .

Map Settings

Tap the **Information**icon and then tap the **Map Settings** icon to make point information such as **Name**, **Description** or **Elevation** visible on the screen.

The **Map Settings** panel includes the following options:

- **Laid Out Points**: Clear this check box to remove points from view once they have been laid out.
- **Travel Direction Up**: Select this check box to set the travel direction to up in layout mode.
- **Scale Bar**: Select this check box to add a scale bar to the map.
- **Corner Bullseye**: Select this check box to use corner bullseye mode.
- **Solid Model**: Select this check box to view solid models. Clear this check box to view wireframe models.

You can also change the background color to white or black or you can make all linework blue for better visibility in certain conditions.

Map Display Options

1. Tap the **Arrow** next to the **Information** icon .
2. Tap the **Map Settings**icon .
3. Make selections to display **Point Name, Point Description, Point Elevation, Laid Out Points** (If unselected, points will disappear off the screen once they have been laid out), **Travel Direction Up** (map rotates and updates as you walk to the point - Blue Diamond indicates travel direction), **Scale Bar**, and **Corner Bullseye** (Shows a corner bullseye option and full map screen while laying out points, lines or arcs).
4. You can also change from **Wireframe** to **Solid Model**, and various levels of **transparency** for the solid models.
5. Change the **Background Color** to Black, White, White with all blue line work, or the arrow button to cycle between various other color backgrounds.

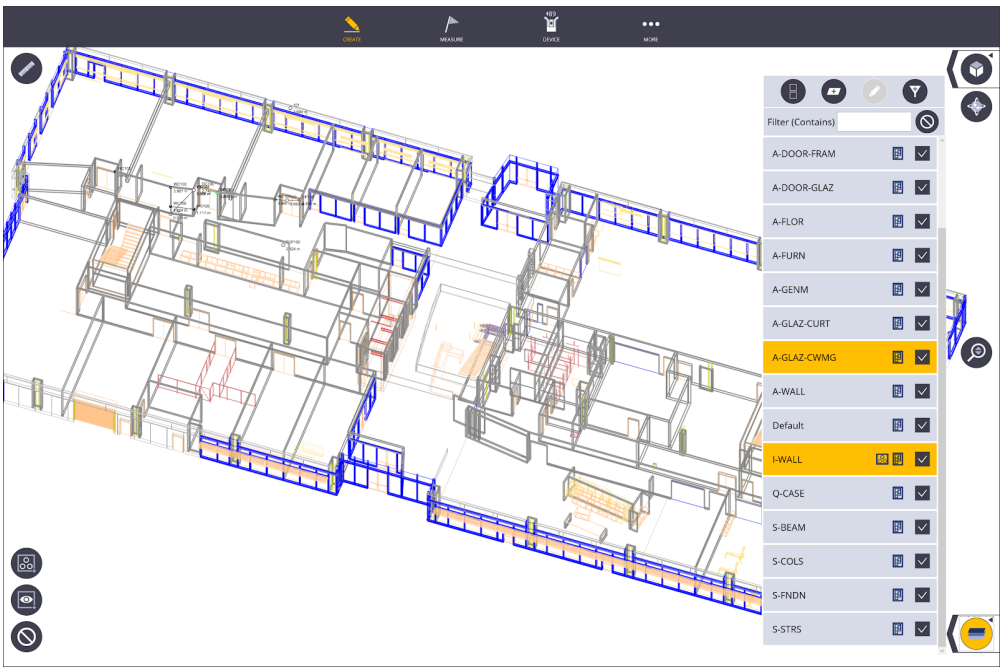
6. The **Points** and **Model icons** allow you to toggle these options on or off. Yellow being on, white being off.
7. To close the menu, tap the **Map Settings** icon .

Layer

Tap the **Layer**icon to view the list of available layers within the project and to display or hide individual layers. When the layers list is visible, when you tap on the displayed linework or points in the plan view then the associated layer name is highlighted in the layer list.

Layer Control

1. Tap the arrow next to the **Information** icon .
2. Tap the **Layer**icon .
3. Select **Layers** to be displayed. You can tap on a line or item in the project to highlight a layer in the list view, or tap on a layer in the list view to highlight a layer in the map view.
4. **Filter** can be used to find layers containing specific text.
5. Tap the plus icon to create a new layer directly in the list view.
6. Tap the **Filter** icon to create custom layers with several layers displayed automatically.
7. To close the menu, tap the **Layer** icon .



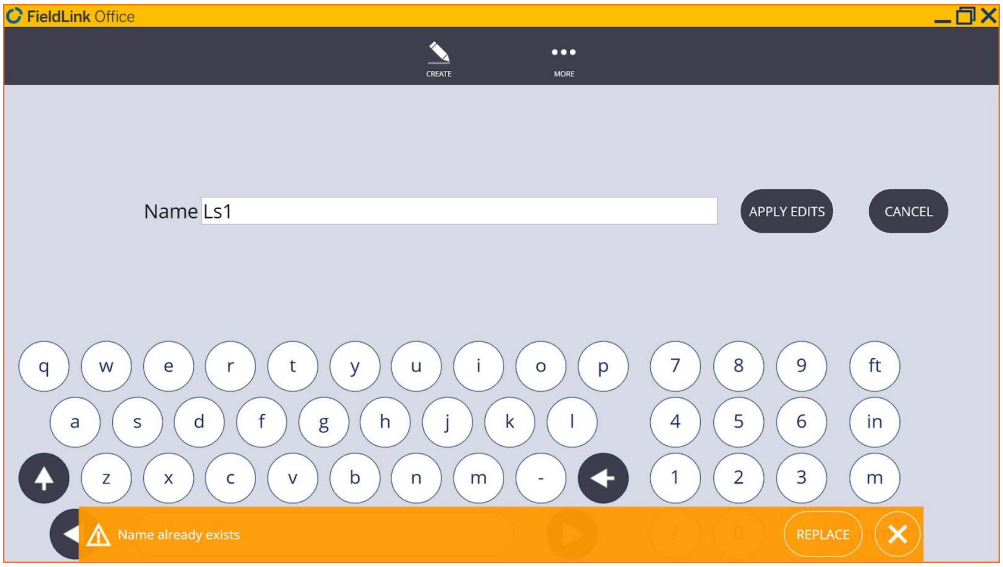
Save Layer View

To create a view that has specific layers turned on that you might use later:

1. Select the layers you want to view.
2. Tap the **Layer View**icon .
3. Enter a name for the view and tap **Create**.

The view is now available in the layer filter list for selection.

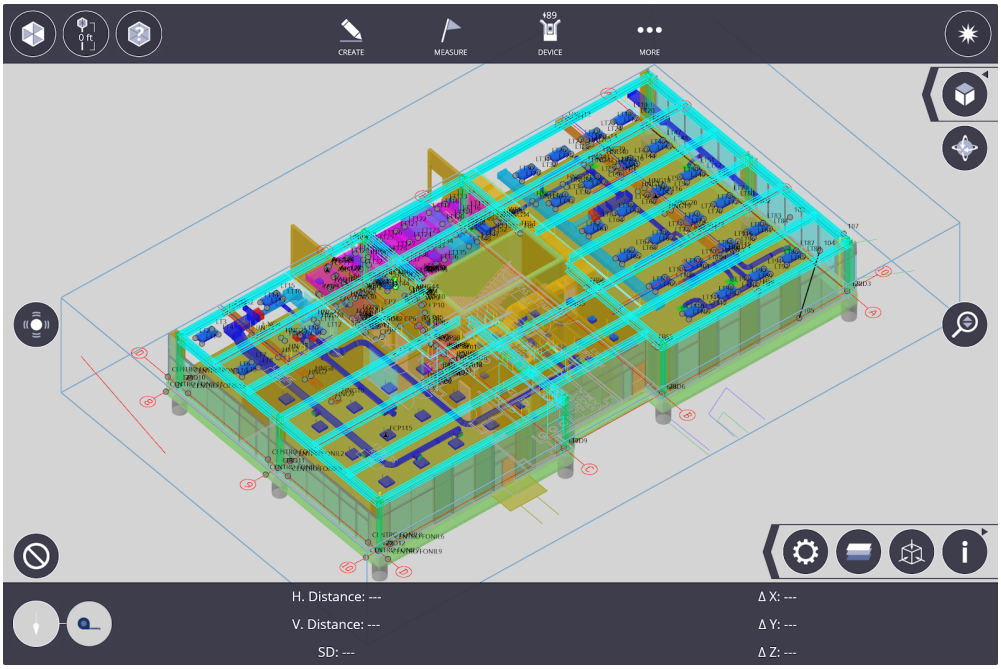
NOTE – You can replace existing Layer Views by creating a new Layer View and giving it the same name as an existing Layer View with 6.0 release.

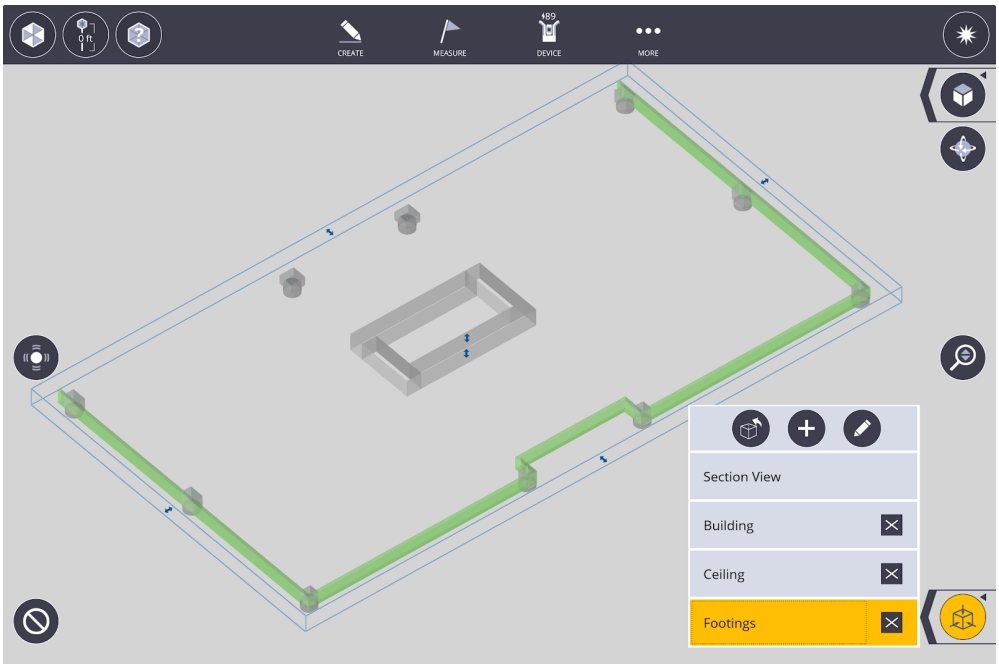


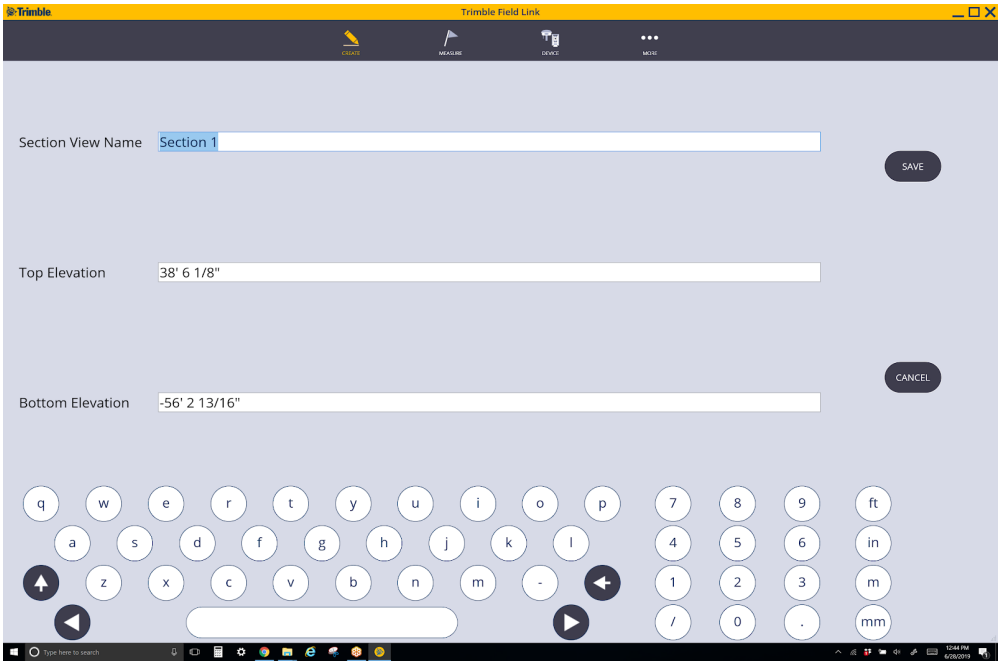
Section View

Tap the **Section View**icon to set a six-sided view cube to focus on a certain area, and also save those section views.

1. Select the **Section Box** icon to activate the Section Creation box.
2. Tap the plus icon and then name the view.
3. Select the plus icon to activate the six-sided section box around the model.
4. Tap and hold on any of the six side arrows to push or pull the section pane to a certain area. This section box will limit points created to the area within the box only.
5. Tap the **Reset** icon to take the Section cube to the original size.
6. Tap the **Edit** icon to change the name or input Top and Bottom Elevations directly.
7. Tap the Section View layer or press the **Plus** icon to create a new section.
8. To close this feature, tap the activated yellow section and then tap the **Section View** icon .


CREATE
MEASURE
DEVICE
MORE
H. Distance: ---
V. Distance: ---
SD: ---
Δ X: ---
Δ Y: ---
Δ Z: ---


CREATE
MEASURE
DEVICE
MORE
Section View
Building
Ceiling
Footings

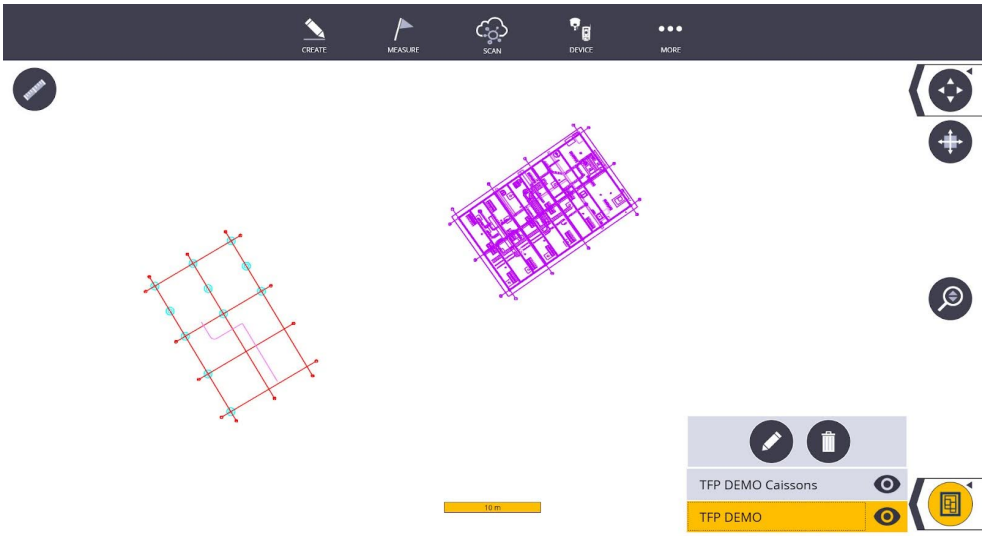


Model Management

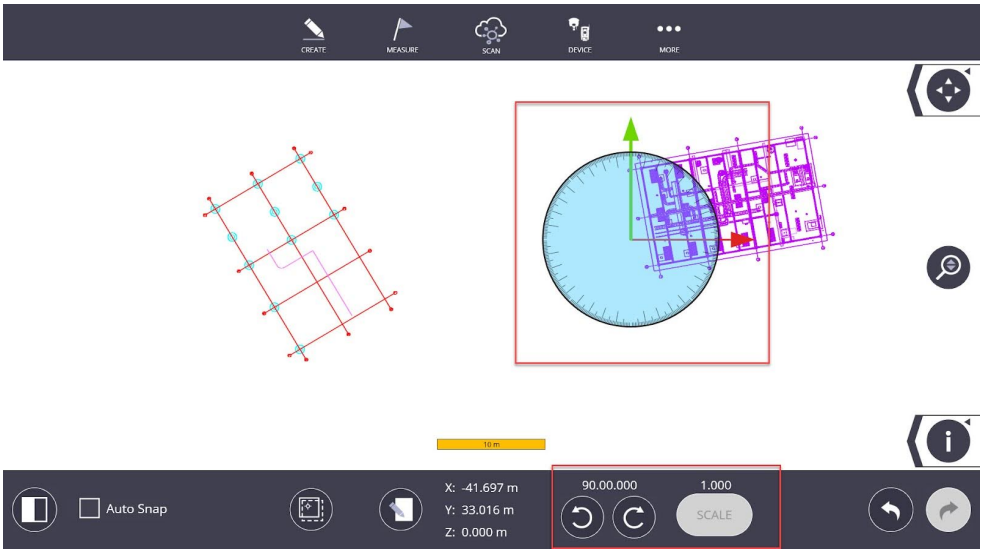
Unzip the **Information Zipper** and then tap the **Model Management** icon  to bring up a list of all available models or background files within the project where you can display or hide these models. The Model Management tool also allows you to transform, rotate and scale models and background files to fit another model or background file with common points. This is possible with both FieldLink Office and Field versions.

From the **Model Management** tool you can also delete models/backgrounds files and edit, transform, and rotate and scale models or background files.

1. After selecting the Model Management icon, selecting one of the models from the list highlights that model in the project. Select the pencil/edit icon to edit that model.

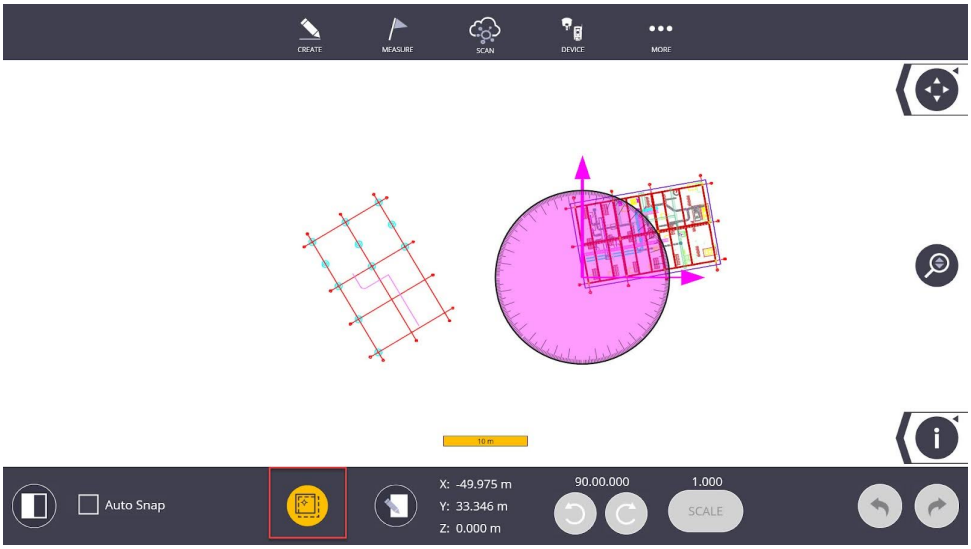


2. Edit tools are shown that allow you to edit the selected model. You can rotate the highlighted model with defined values or rotate and move the model anywhere in the project with the circular angle tool and mouse wheel.

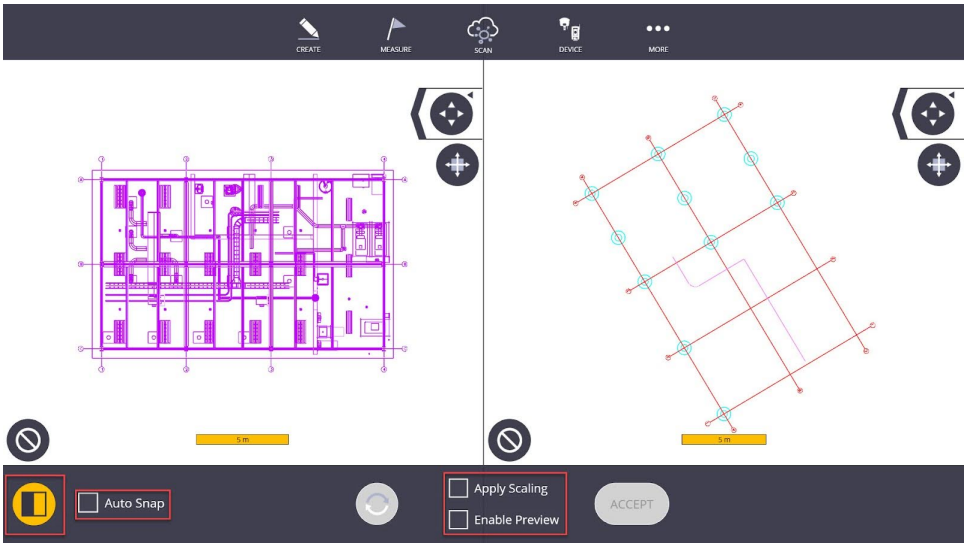


3. In the same page, there is an edit button that allows you to select a basepoint for the selected model if desired. This edit button also allows you to change the angle incrementation and the scale factor if desired.

4. Back at the first edit page, there is also a button that allows you to lock both models and move them simultaneously. This function doesn't allow for rotation.

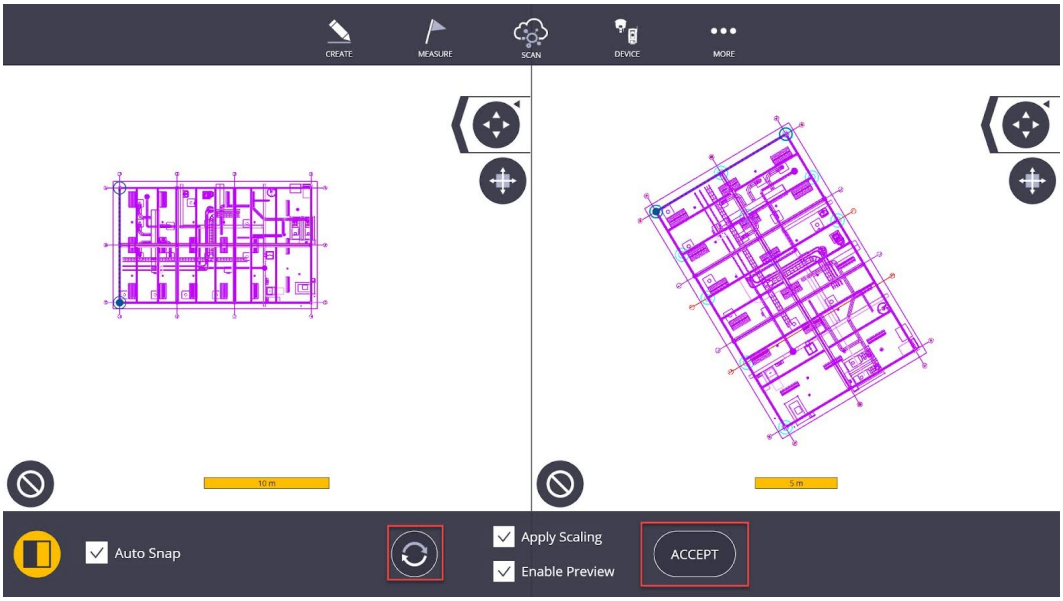


5. The final functionality is the button that allows you to fit your model to another model using common points in both models. Selecting the black/white icon brings you to a split screen with your selected model and the secondary model. At the bottom of this page there are three check boxes. One for auto snap which allows you to snap to points in both models, one for model scaling and finally, one to enable preview of the model fitting. There is also a rotation button that only becomes active after the 2 points have been selected in both models.



Transform, Rotate, and Scale a Model to Another Model using 2/3 Points (Office and Field)

To perform the model fitting from the split screen, select all three check boxes. For 2D model transformation, select two common points between the models by selecting two points in your selected model, then selecting the same two points in the second model. If the model appears to fit but is off by 180 degrees, apply the rotate button at the bottom to rotate the model onto the other one. Once you are happy with the preview, select Accept which will fit your model to the other one. If you wish to redo the model fitting, before you select Accept, use the clear button in both models. For 3D model transformation, the same steps are applied as mentioned above with the exception of selecting 3 common points between the models rather than two.



Workslate Area

The **Workslate** is the portion of the screen containing user interface elements unique to the current **Work Mode**.

The **Input Form**  is the area of the software where you enter in any numeric, alphabetic, or layer information for the software to use. Input forms contain all variables that are used in the current **Work Mode**. Each **Work Mode** has its own individual input form.

The **Undo** icon  allows you to undo the last action taken such as creating, deleting or modifying points or linework.

The **Delete** icon  allows the user to delete any type of point, or to delete linework created within FieldLink.

The **Create**icon 

, available in specific **Job** and **Create Work Modes**, allows you to finalize the creation of items.

Map Tools

Tap the **Clear All** tool  to clear all selected points, lines, and arcs from the map view.

Tap the **Window Selection** tool  to drag and draw a boundary, which selects everything inside the boundary for the current **Work Mode**.

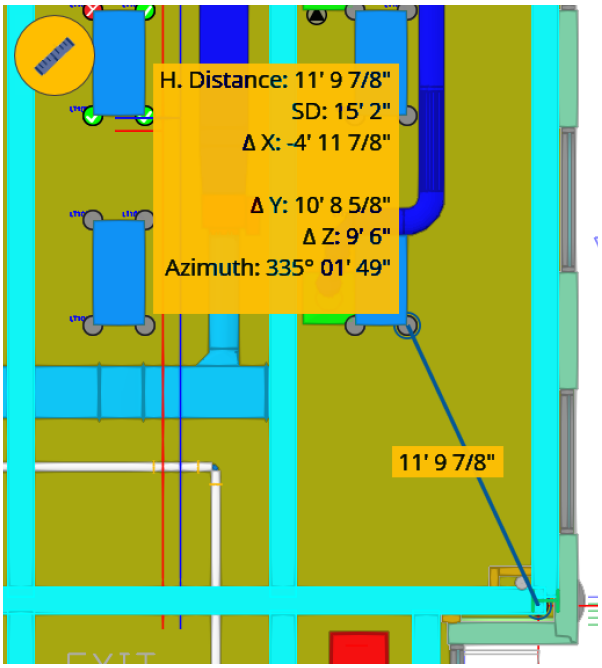
The **Current View** tool  is similar to the **Window Selection** tool, but you can use it to select everything currently in view on the screen instead of drawing a boundary.

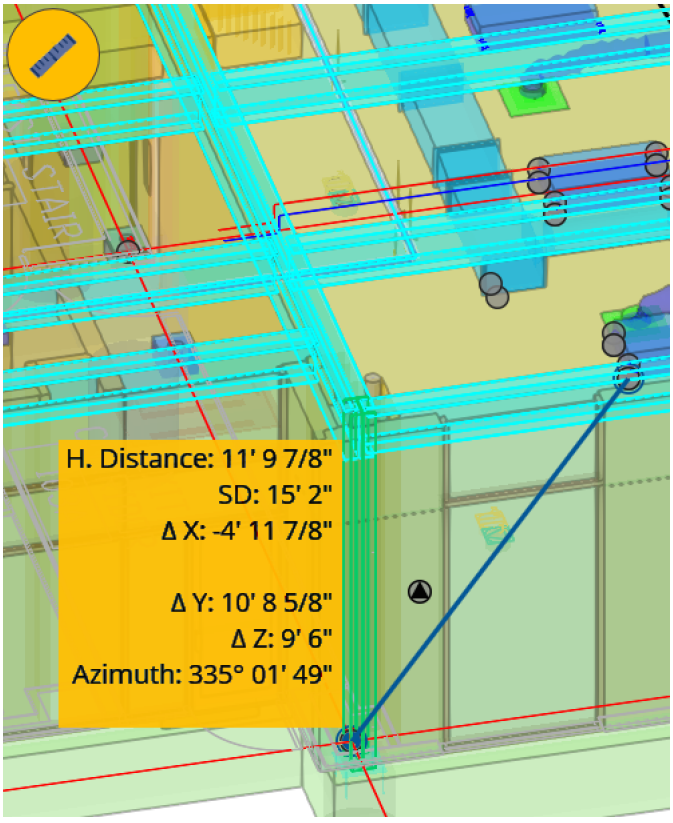
Compute Tools

Tap the **Compute** icon  to access the distance, angle, area/volume, and down/out features. The **Compute** mode is designed to assist you by providing easy access to basic tools to compute geometry information from existing points.

Compute Distance

1. Tap the **Compute** icon in the upper left corner.
2. Tap on the **Distance** icon.
3. Tap on the first point you need a measurement from. The first point you select is the starting point (indicated by a solid blue circle).
4. Tap on the second point for the measurement. The second point you select is the end point (indicated by an open blue circle).
5. The measurement details between the two points are displayed in a yellow text box.
6. Select another endpoint. The original start point remains.





1. To measure between two new points or to measure a new line segment distance, tap the **Clear** icon.
2. To measure continuous line segments, you can select a third point and more after to obtain individual and total line distances.

Individual and total line segments information will be displayed as follows:

Single Line Segment

- H. Distance
- SD
- ΔX
- ΔY
- ΔZ
- Azimuth

Multiple Line Segments

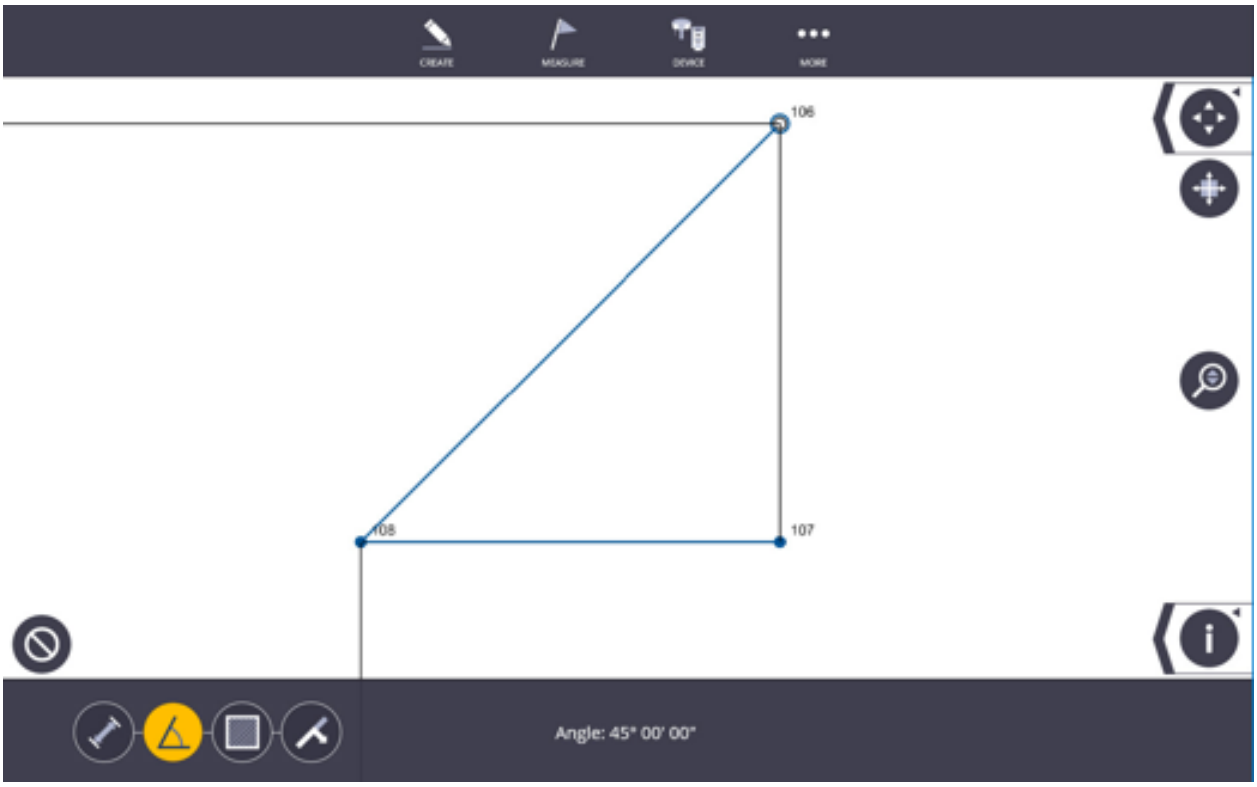
- Total H. Distance
- Total Slope SD
- ΔX
- ΔY
- ΔZ

Compute Angle

1. Tap the **Compute** icon  in the upper left corner.
2. Tap the **Angle** icon.
3. Tap the first point you need an angle measurement from. The first point you select is the starting point (indicated by a solid blue circle).
4. Tap the second point for the measurement. The second point you select is the angle point (indicated by a solid blue circle).
5. Tap the third point for the angle measurement. The third point you select is the end point (indicated by an open blue circle).

   The angle measurement between the three points appears in the lower message bar.
6. Select another endpoint. The original start point and angle point remains.

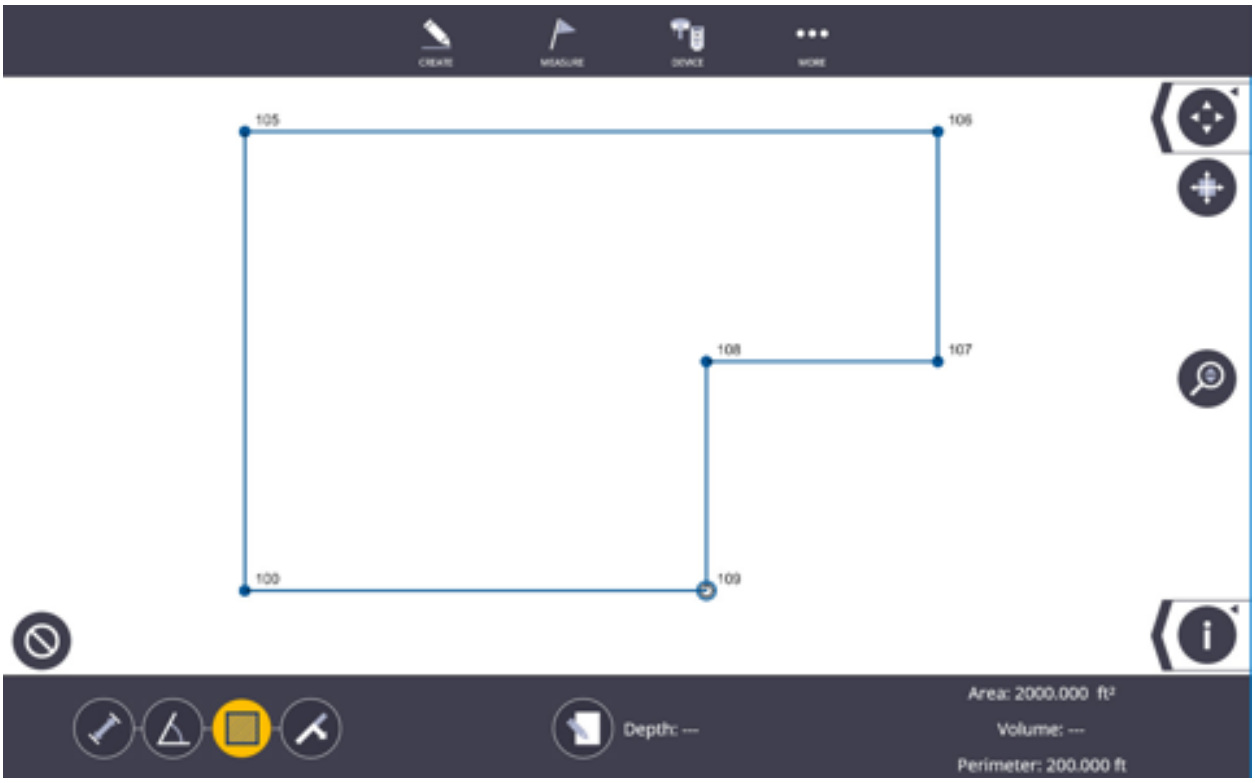
7. To measure between three new points, tap the **Clear** icon.



Compute Area & Volume

1. Tap the **Compute** icon in the upper left corner.
2. Tap the **Area** icon.
3. Tap the first point to outline the area you want to compute.
4. Tap the second point to outline the area you want to compute.
5. Tap the third point to outline the area you want to compute. The third point you select causes a dotted blue line to be created between the start point and the third point and defines an area. Once a three-point boundary has been established, the area and perimeter is shown in the lower message bar.
6. Continue to tap on the additional points to outline the area you want to compute. Each point you select causes a dotted blue line to be created between the start point and the last point selected.
7. If you accidentally select a point, tap on the point again to deselect the point. The last selected point appears as an open blue circle. You can deselect as many points as necessary.
8. Tap the **Input Form** icon and enter a depth dimension.
9. The Area, Volume and Perimeter calculations are shown in the lower message bar.

10. To start a new area calculation, tap the **Clear** icon.



Down and Out Calculation

1. Tap the **Compute** icon in the upper left corner.
2. Tap the **Down & Out** icon.
3. Tap the first point of the line you need a measurement from. The first point you select is the starting point of the line, and down measurement.
4. Tap the second point of the line you need a measurement from. The second point you select defines the line for the out measurement.
5. Tap the third point to calculate the down and out measurement. The third point is indicated by an open blue circle and attached to the main line with a perpendicular line.
6. If you accidentally select a point, tap on the point again to deselect the point. The last selected point appears as an open blue circle. You can deselect as many points as necessary.
7. The down and out measurement between the three points appears in the lower message bar.
8. Select another point. The original line start point and end point remain.
9. To measure between three new points, tap the **Clear** icon.

Projects

Tap **More**  and then tap **Projects** to open or create job files, import and export data, and to change job settings such as displayed units, coordinate type, language & clearing layout flags for previously laid out points.

You can also download projects from Trimble Connect and send the projects back to Trimble Connect in the Projects screen.

Trimble Connect allows the project team to view, transform drawings and BIM data in your web browser without running design software. Upload and share 3D and 2D documentation with the entire team including SKP, DWG, DXF, PDF, Word, Excel, pictures, and videos with auto-archiving of all previous versions. You can measure, create model clash reports, save markups and screenshots, and assign tasks to collaborators.

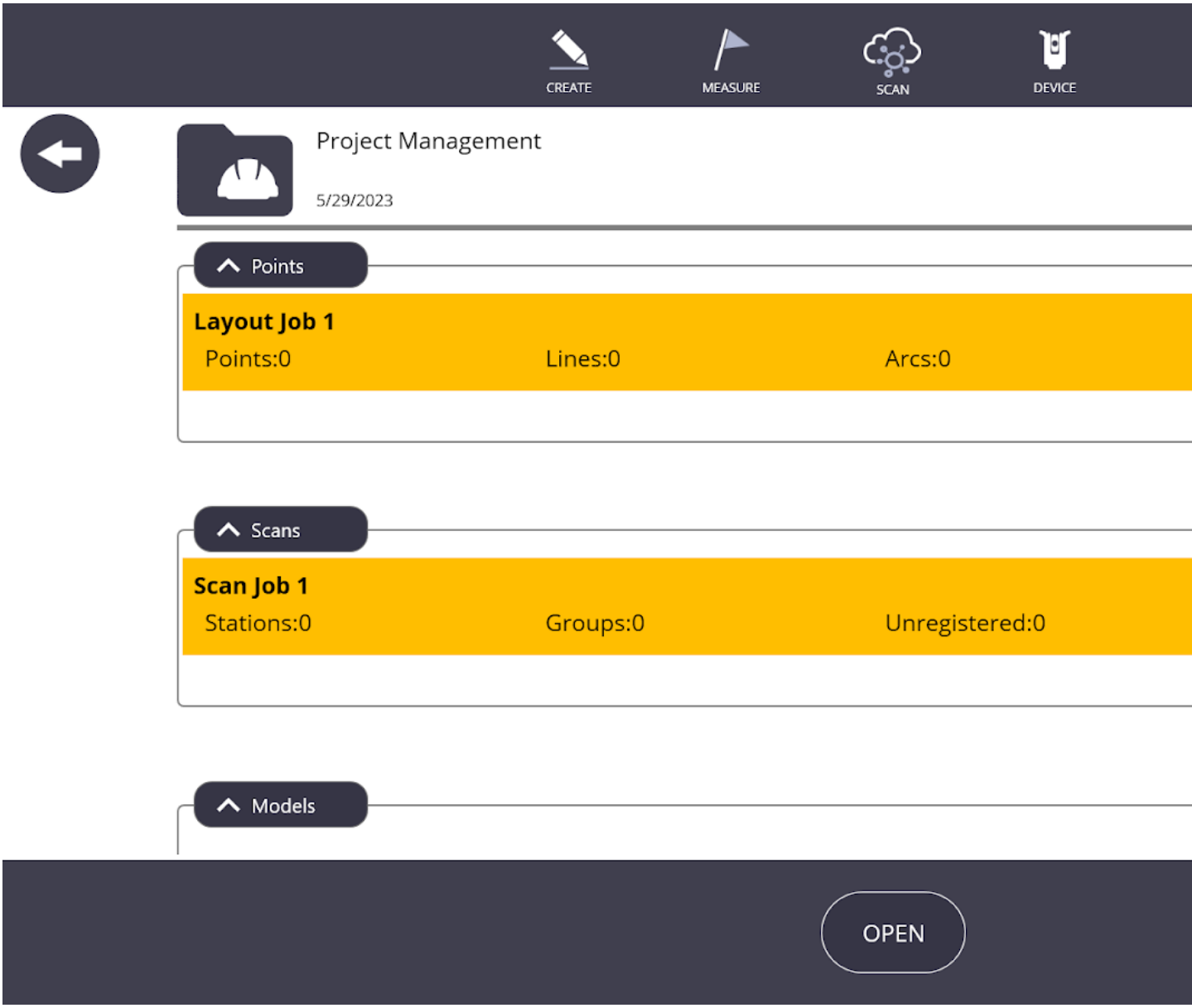
Create a New Project

1. Tap **More**  and then tap **Projects**.
2. Tap **Manage**.
3. Tap **Create New**  .
    1. Enter the **Name**.
    2. Enter the **Description** (optional).
    3. Add **Layout Job** and/or **Scan Job** (if enabled).

       Layout Jobs and **Scan Jobs** are automatically generated based on the type of license you have.

       You can edit job names and delete jobs as you wish using the pencil and trash can icons next to the job name.
4. Tap **Open**. The map opens.

   Go to the **Tree** button to see file structure.



Create a TFLX File

Steps to create a TFLX file:

1. Use the **Create** tools in FieldLink to create points.
2. Convert an existing TFL file to TFLX.
3. Import a CSV or TXT file.

Converting Existing TFL Files from Previous FieldLink Versions

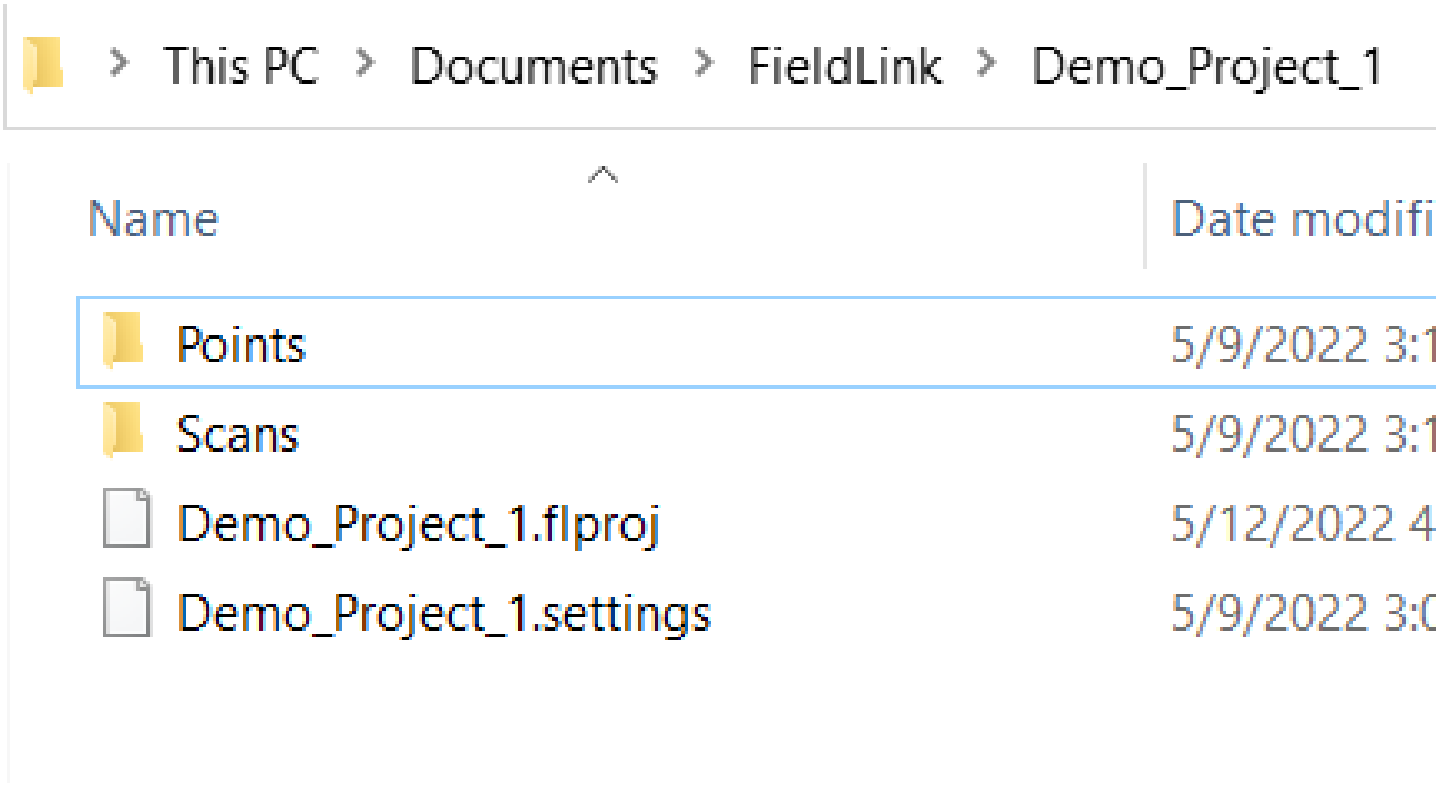
1. Tap **More** and then tap **Projects**.
2. Tap **CONVERT** .
3. Navigate to and select the desired TFL file.
4. Tap **CONVERT** .
5. A TFLX project is created and opened.

   Layout Jobs and **Scan Jobs** are automatically generated based on the type of license you have.

Importing Files

1. Tap **More** icon .
2. Tap **Projects** and then tap **Imports**.
3. Navigate to and select the desired file.

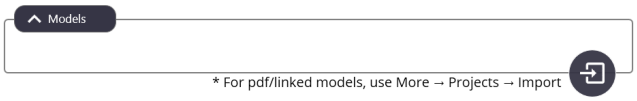
NOTE – The File Explorer structure is different from previous versions of FieldLink. Projects have their own folder within the FieldLink folder.



Alternative Workflow

When opening a new layout job or managing their jobs from the job management screen, you have the opportunity to import a CSV, TXT or a TFLX file directly from this screen.

1. Tap the **More** icon MORE.
2. Tap **Projects** and then tap **Manage**.
3. Under the current project, tap the **Edit** icon.
4. Tap the **Import** icon under the **Models** section.
5. Follow steps above for the regular workflow.
6. Tap **Apply**.

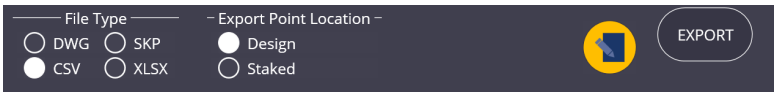


Exporting Data

1. Open the project.
2. Select the points on the map that you wish to export.
3. Tap **More** 

and then tap **Projects**.
4. Tap **Export**.
5. Select the file type and export location.
6. Tap **Export**.

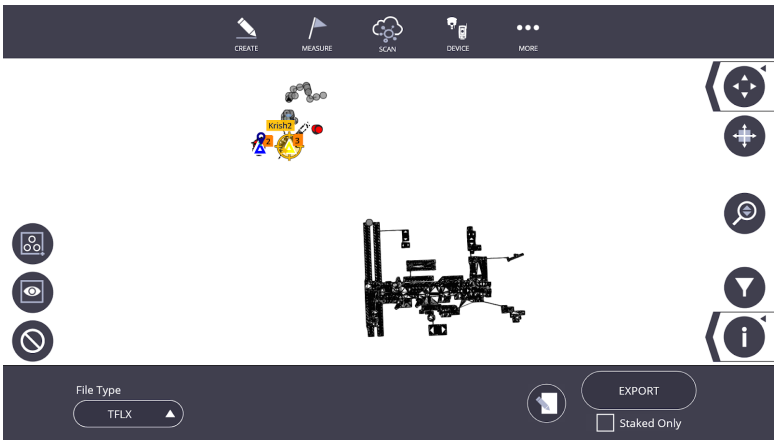
NOTE – When exporting points and lines in DWG format, the layer structure is retained.

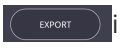


Export TFLX

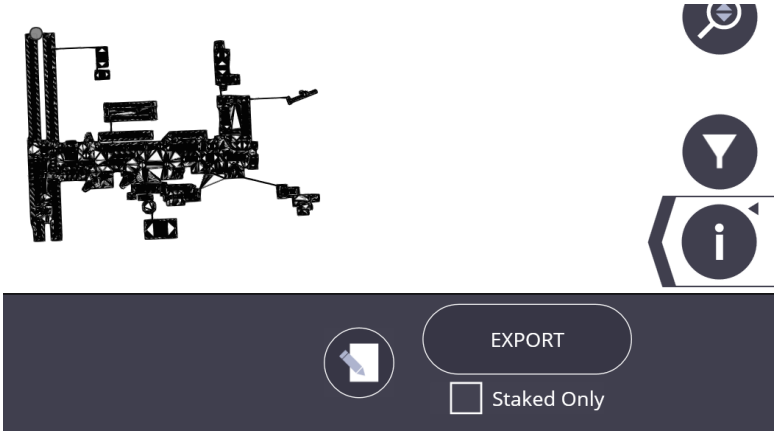
You can export TFLX files from the export screen or from the project management screen.

Export TFLX from the Export screen



1. In the Export screen, select TFLX from the drop-down list on the left.
2. Select the **Staked Only** checkbox to export only staked point locations. To export both staked and design locations, clear the **Staked Only** checkbox.
3. Tap the **Edit** icon, and then select the export location.
4. Tap the **Export** button 

in the bottom right corner of the screen to export the TFLX file.

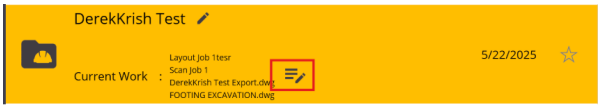


Once you have selected the desired export format and point locations, you may then tap the **Edit** icon to select a desired export location.

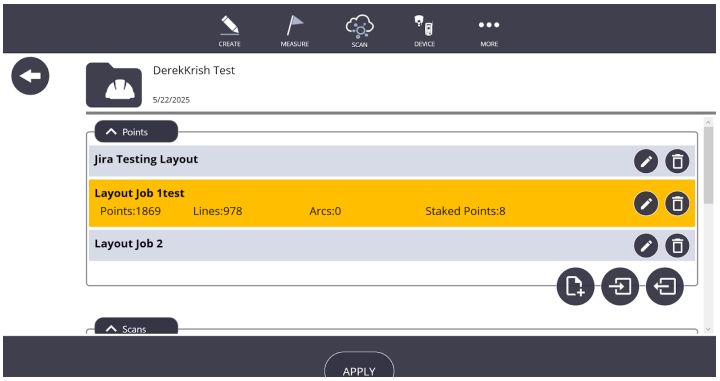
Finally once a location has been selected, you can now tap the **Export** button EXPORT on the bottom right hand side of the screen to export the TLFX file.

Export TFLX from the Project Management screen

1. Open your project.
2. Tap the points on the map that you wish to export.
3. Tap **More**, and then tap **Projects**.
4. Tap **Manage**.
5. Select the project that has the TFLX file you wish to export and tap the Edit icon to begin.



6. The project edit window opens.



7. Tap the TFLX point job that you want to export and tap the **Export** icon.
8. Select the desired location and tap **Save**.

Export Staked vs Design (CSV/XLSX)

1. Open your project.
2. Select the points on the map that you wish to export.
3. Tap **More**, and then tap **Projects**.
4. Tap **Export**.
5. Select the CSV or the XLSX file type. The following options appear when CSV or XLSX file types are chosen from the drop down menu.

Select what to export from the following options:

- **Design** - Selected Design Locations will be exported.
- **Staked** - Selected Staked Point Locations will be exported.
- **Legacy (Staked over Design)**:
    - If not staked, the design location will be exported.
    - If staked, the staked location will be exported.
    - If control, the design location will be exported regardless of stake status.

Tap the **Edit** icon to select the export file location.

Tap the **Export** button on the bottom right hand side of the screen to export the CSV or XLSX file.

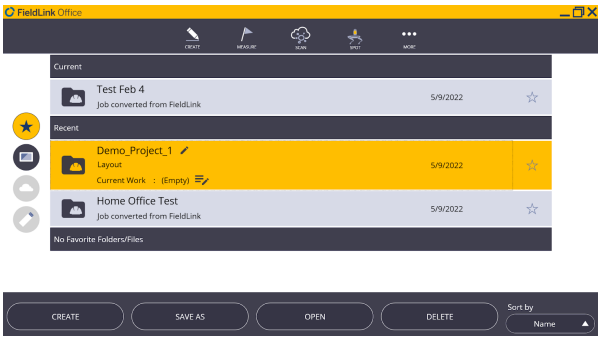
Supported Files for Export

- dwg
- skp
- csv
- xlsx
- tzf/tcf
- tdx
- pod
- las
- laz
- rcp - structured
- rcp - non structured

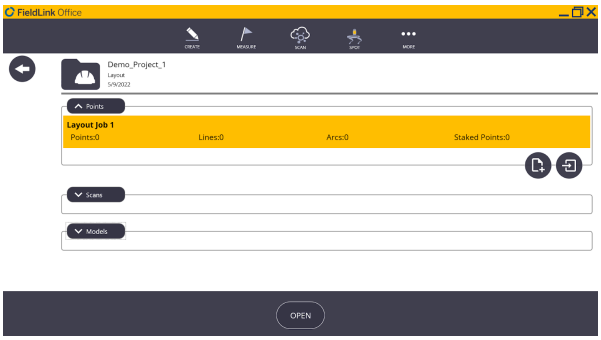
- e57 - structured
- e57 - non structured

Managing a Project

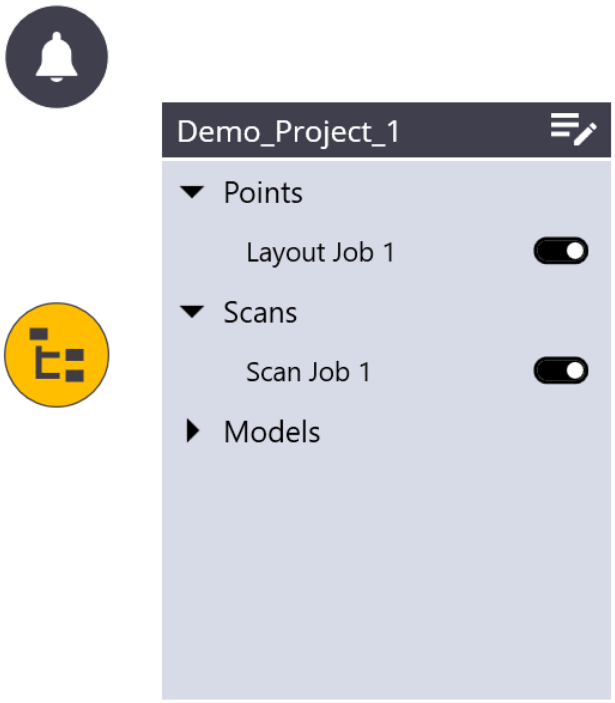
1. Tap **More** MORE and then tap **Projects**.
2. Tap **Manage**.
3. Select a project and tap **Open**.



4. Create or add point, scan, and model job files.



5. To **Create** or **Import** a points file, select the appropriate icon.
6. The created points file is a .tflx and can be found in the project's Points folder (see Importing Files, page 31).
7. Once files are added, tap **Open**.
8. Points, scans, and models can be accessed using the **Tree** icon on the left side of the screen.



Deleting Job Files

To delete either a points, scans, or models job file, make sure the job is not highlighted yellow (meaning it is not active in the project) and once grayed out, a trash can will appear on the far right side of the job file. Tap the **Delete** icon and then tap **Yes** to confirm.

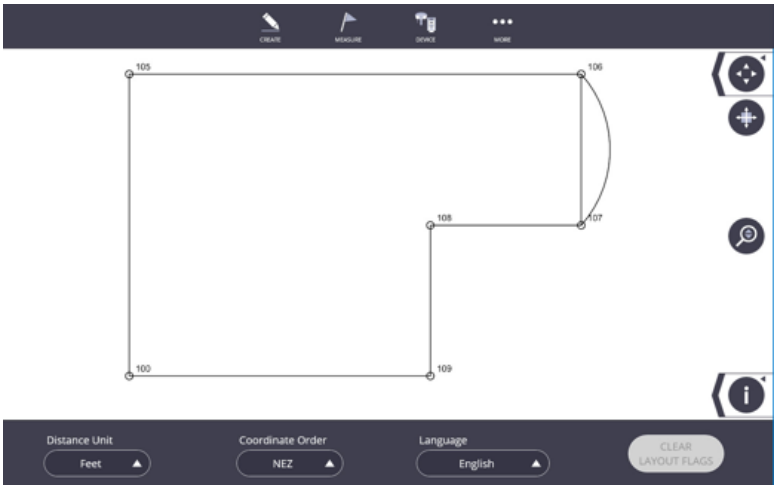
Job Settings

Setting of the project including the **Distance Units**, **Coordinate Order**, **Language** and **Clear Layout Flags** can be modified under Projects.

1. Tap the **More** icon.
2. Tap **Project** and then tap **Settings**.
3. Select the **Distance Units**:
   - Select **Meters** to show distances using metric units.
   - Select **Feet** to show measurements in decimal feet.
   - Select **Feet-Inch** (1/16”) to show measurements to the closest 1/16”.
4. Select the **Coordinate Order** to define how points are imported or exported. Depending on the type of software used to create or import points, the points may need to be in (X,Y,Z) or (N,E,Z)= (Northing

(Y), Easting (X), Elevation (Z).

5. Several different languages are also available including English, Spanish, French, Dutch, German, Italian, Portuguese, Japanese, Korean and Simplified Chinese.
6. To reuse the layout point locations without the attributed detail of the already positioned data then you can tap on the **Clear Layout Flags** button.

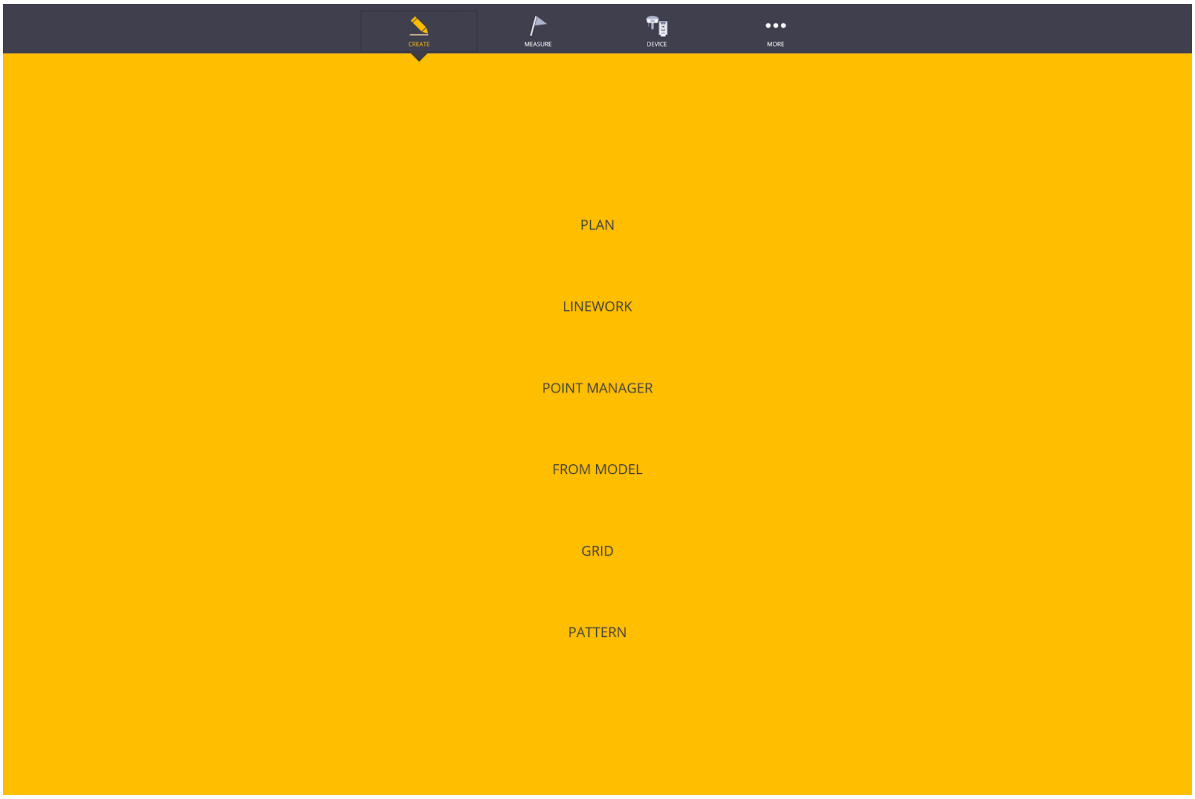


4

Create Mode

Tap **Create** 

to create, modify or delete project data including a plan view of a project, linework, points, points from a model, grid points or point patterns.



Pointwork

In Pointwork mode, you can view point information, add, edit or delete points, or specify select points as control points. You also can create points along a line or arc, or offset points along a line or arc to either or both sides of the line or arc.

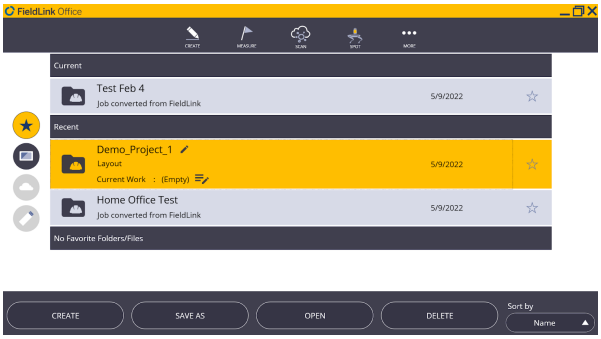
In Pointwork mode, you can:

- Input Point, page 40
- Create Point Anywhere, page 41

- Single Point Offset, page 41
- Create Multiple Offset Points - Line, page 42
- Create Multiple Offset Points - Arc, page 42
- Create Point - In Wall, page 43
- Point Manager, page 44

Input Point

1. Tap the **Create** icon .
2. Select **Point Manager**.
3. Tap the **Input Form** icon .
4. Input the **Name**, **Description**, **Layer**, **X (Easting)**, **Y (Northing)**, and **Z (Elevation)** of the point that will be created. Place the points on a specific layer by tapping the Layer drop-down menu, or type in a new **Layer** to create a new layer name.
5. Checking the box next to **Control Point** will mark the point with a triangle in the middle of the point to signify it is a **Control Point**.
6. Tap the **Create** icon .

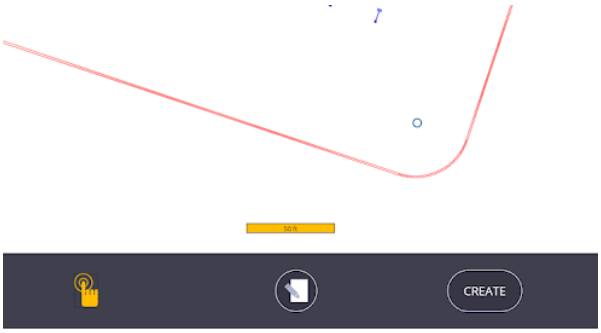


7. To edit a single point or multiple points, tap on one of the existing points to highlight it in blue or use the **Window Selection** tool.
8. Use the **Map Tools** to zoom in on an area, zoom extents, turn on/off layers, or otherwise define a single or group of points to edit simultaneously.
9. Unselect the point by tapping it again or tap the **Clear All** icon to unselect all points.
10. Tap the Input Form icon. You can change the **Description**, **Layer**, **Z(Elevation)**, or make them **Control Points**. You can change the **X(Easting)**, **Y(Northing)** only for single points at a time.
11. If you edit the **Name** of an existing point, the **Name** reverts to the next number available in the sequence and the position values, layer and description are the same as the selected point. This process is similar to a “Save As” function.
12. Tap the **Apply Edits** icon.

13. You can delete single or multiple points by selecting the point and tapping the **Delete** icon.
14. To undo the last creation, edit or delete process, tap the **Undo Arrow**

Create Point Anywhere

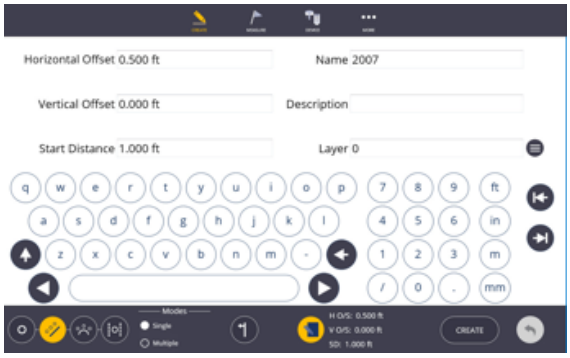
1. Tap the **Create Point Anywhere** icon and then tap the screen where you want to place the point. You should only use this option when no background option will work or for temporary points.
2. You can then edit this point using the **Input Form** .



TIP – Use the **Create Point Anywhere** tool along with the scanning module to create layout points along building corners, wall lines or other recognizable scanned objects.

Single Point Offset

1. Tap the **Line Offset Point** icon and select the start and end point of the line you want to offset or create points along.
2. Select the **Single Mode** option.
3. Select two points to define the direction.
4. Tap the **Input Form** icon and enter values for **Horizontal Offset, Vertical Offset**, **Start Distance**, **Name**, **Description** and **Select or Enter Layer**. Tap the **Input Form** icon to return to map to check the location of point that will be created.
5. Tap **Create**.



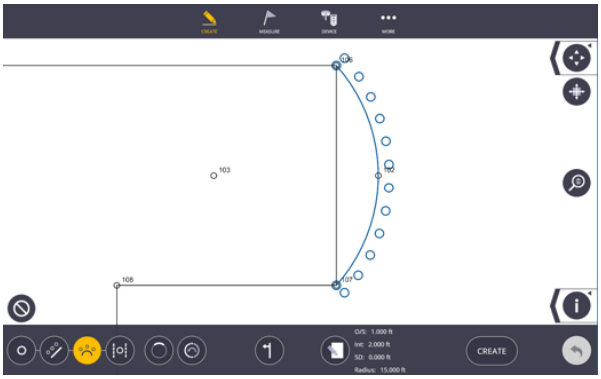
Create Multiple Offset Points - Line

1. Tap the **Line Offset Point** icon and select the start and end point of the line you want to offset or create points along.
2. Select the **Multiple Mode** option.
3. Tap the **Input Form** icon . Input the **Name**, **Description**, **Layer**, **Offset Distance** (Can be “0” if you want points along the line), **Interval** (Distance between points along the line), and **Start Distance** (First point off the first point you selected). The elevation of the offset points will be determined by the Z(Elevation) of the points selected for the start and end points of the line. Place the points on a specific layer by tapping the **Layer** drop-down menu, or type in a new **Layer** to create a new layer name.
4. Tap the **Offset Direction** icon to toggle from right, left or both sides of the line before creating points.
5. Tap **Create**.

Create Multiple Offset Points - Arc

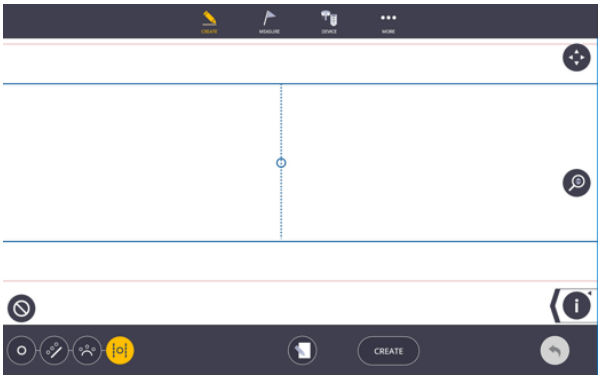
1. Tap the **Arc Offset Point** icon and select the start and end point of the arc you want to offset or create points along.
2. Tap the **Input Form** icon. Input the **Name**, **Description**, **Layer**, **Offset Distance** (Can be “0” if you want points along the arc), **Interval** (Distance between points along the arc), and **Start Distance**

(First point off the first point you selected). The elevation of the offset points will be determined by the Z(Elevation) of the points selected for the start and end points of the arc. Place the points on a specific layer by tapping the Layer drop-down menu, or type in a new **Layer** to create a new layer name.

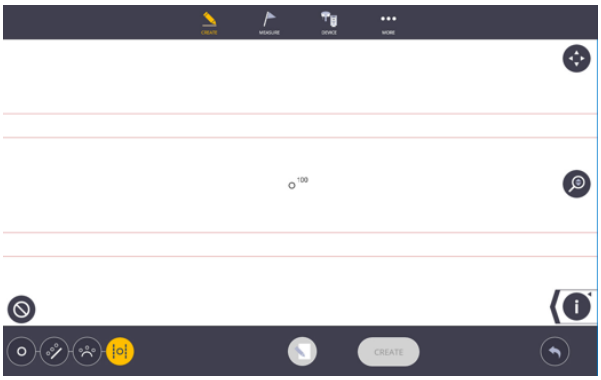
3. Tap the **Short Arc/Long Arc** icon to switch the new arc from the short arc solution to the long arc solution.
4. Tap the **Flip Arc** icon to switch the direction of the arc.
5. Tap the **Offset Direction** icon to toggle from right, left or both sides of the line before creating points.
6. Tap **Create**.
7. To undo the last creation, edit or delete process, tap the **Undo Arrow**
8. 

Create Point - In Wall

1. Tap the **Create Point in Wall** icon.
2. Select the two lines that define the wall.
3. Tap the location between the lines where you want to create the point.
4. Tap the **Input Form** icon  . Input the **Name**, **Description**, **Layer** (Place the points on a specific layer by tapping the Layer drop-down menu, or type in a new **Layer** to create a new layer name).



5. Tap **Create**.



Point Manager

For location, review and editing of point data, the FieldLink Point Manager enables you to create a list based on map selection or by specific filter fields. A selected point in list is highlighted in the map view.

1. Tap the **Point Filter** icon.
2. To populate the list either select points individually on the map area, multi-select points using the multi-select tool, or tap on the plus icon to populate the list by a filter selection (name, description, layer, design points, control points).
3. To review details of a point, tap on the left face arrow to expand the list.
4. You can arrange the order of the list by selecting the **Sort By** drop-down. Sort by name, description, layer, delta H and delta V.
5. To review the details of a point, tap the down arrow.
6. You can make edits to points by using the **Enter Form**. If you want to change a point name, you need to select the point, enter the new name, then tap **Create**. FieldLink will keep the original point, or you can delete it if no longer needed.
7. If you select a point in the list, it is highlighted in the map area.
8. To clear the list, tap the **Clear** icon.

> **NOTE –** If you have more than a single point in the list or selected on the screen, then edits are made to all the selected points. When editing multiple points, you can only change the elevation, description, layer, and attributes.

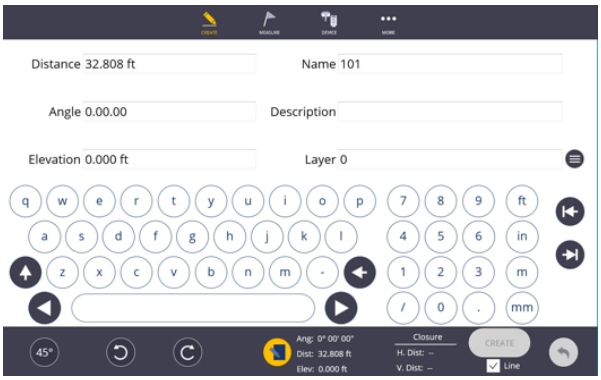
Plan

Use **Plan** mode to create a series of points and linework to draw out the desired floor plan, add linework to an existing 2D plan or 3D model, or create offset points and linework to any existing points or linework.

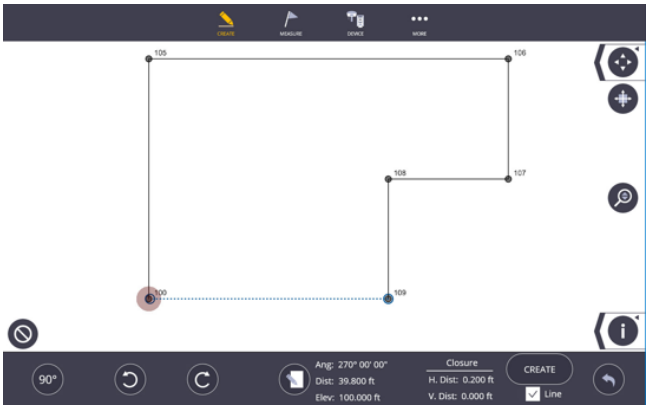
1. Tap the **Create** icon and then tap **Plan**.
2. Tap the **Input Form** icon .
3. Input the **Name**, **Description**, and **Layer** for the first point. Also input the **Distance**, **Angle** and **Elevation** of the line from the first point.

   NOTE – The default coordinates for the first point will be 100 (X), 100 (Y), and 10 (Z). The default distance from the first point is 10 m (32.808') and the angle is 0.00.00 degrees from plan North. If you want to designate a different origin point, see Linework, page 47, and create the origin point using the Input Form under the Points workslate.

4. If you created an alternate origin point, set that point as the beginning of the linework by tapping the **Input Form** icon again and returning to the map view and selecting the point.
5. Tap **Create**.



6. To create the next line, tap the **Angle** icon to toggle between the three preset angles, 30, 45 and 90 degrees to quickly draw your plan.
7. Use the **Left** or **Right** toggle icons to move the next point and linework to the selected angle from plan North.
8. If you do not want a line created between the points, you can uncheck the box next to **Line** as you draw the plan to create only points.
9. Using the **Input Form**, you can input any **Angle**, **Distance**, **Point Name**, **Description**, **Elevation** or **Layer** for the new points and linework.
10. Tap **CREATE** if the selected point and linework is in the correct location.
11. To undo any point or line work creation, tap the **Undo Arrow**.
12. You can always add, edit or delete points or linework in **Point Mode** or **Linework Mode** created or needed within the plan.



Linework

The **Linework** workslate enables you to create lines or arcs between design or as-built points. You can also edit or delete collected or created linework using this tool.

To use the Linework workslate, tap **Create** and then tap **Linework**.

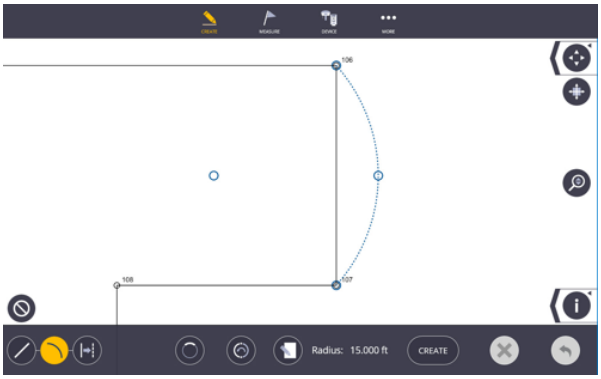
- If you need to delete a line or arc, tap the linework on the screen and tap the **Delete** icon.
- To undo the creation or deletion of linework, tap the **Undo Arrow**.

In Linework mode, you can:

- Create a Straight Line, page 48
- Create an Arc, page 48
- Create a Segment, page 49
- Offset a Line, page 49

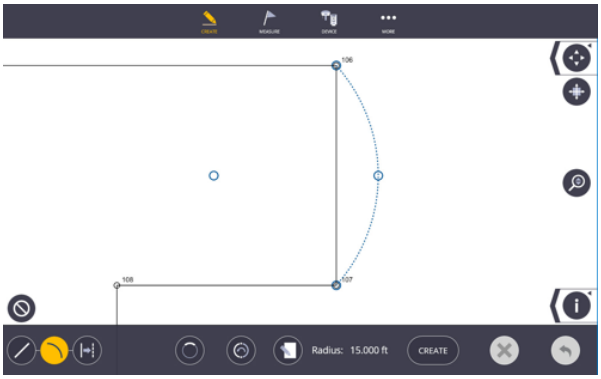
Create a Straight Line

1. Tap the **Line** icon to create a straight line.
2. Tap the points to connect with linework. You can select multiple points in sequence to draw a straight polyline through the points as selected.
3. Tap **Create** .



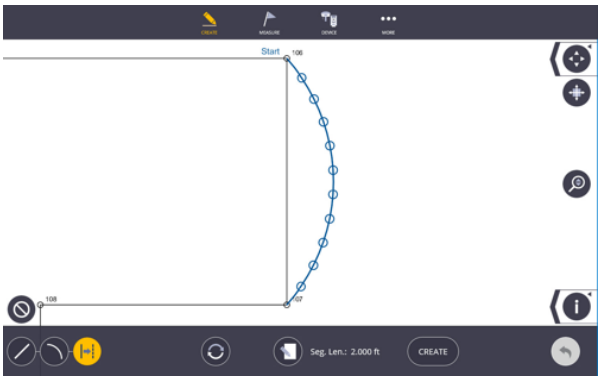
Create an Arc

1. Tap the **Arc** icon.
2. Select two points to be linked with the arc. The arc, center point, and radius point are shown on the screen.
3. Tap the **Input Form** icon to type in a **Radius Length**. The current radius is displayed next to the **Input Form** icon.
4. Tap the **Short Arc/Long Arc** toggle icon to change the radial length.
5. Tap the **Flip Arc** icon to change the radius point to the opposite side.
6. Tap **Create**. The arc, center point and radius point are created using the point name, description and layer as the two arc points originally selected.



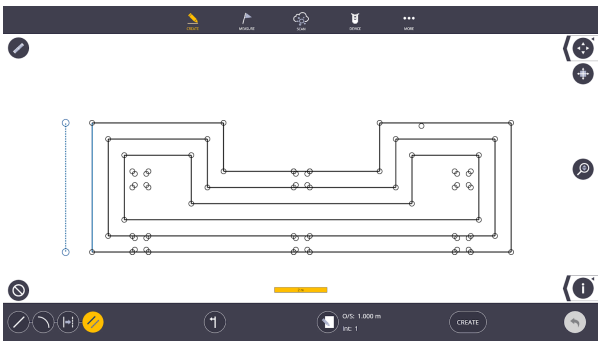
Create a Segment

1. Tap the **Segment** icon.
2. Select the newly created or imported line or arc you would like to segment with points.
3. Tap the **Input Form** icon to type in the segment points **Name**, **Description**, **Layer**, and **Segment Length**. The current segment length is displayed next to the **Input Form** icon.
4. Tap on the **Flip Start** icon to change the start point for the segment points.
5. Tap **Create** . The arc, center point, and radius point are created using the point name, description and layer as the two arc points originally selected.
6. To undo the segment points, tap the **Undo Arrow**.



Offset a Line

1. Tap the **Line Offset** icon.
2. Tap the line you would like to offset.
3. If you want to change the offset value, select the **Input Form** and apply the change.
4. Select the **Offset Direction** icon to change the side on which the offset line will lie from the original line.
5. Tap **Create** to create the offset line.



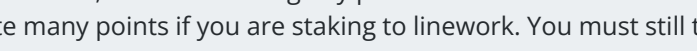
From Model

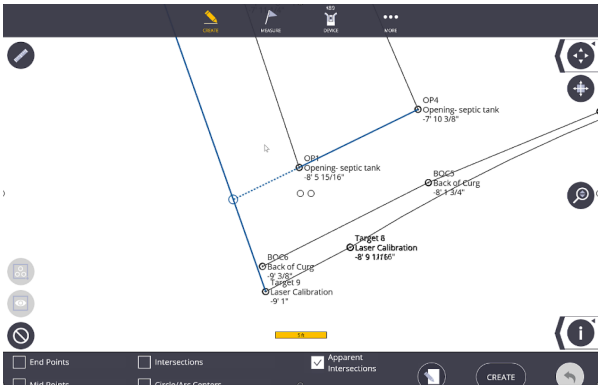
Use the Create **From Model** tool to create points from a 2D plan, 3D model or linework created in TFL, using the predefined snap options after importing the model (see Create a TFLX File, page 30).

NOTE – For FieldLink version 4.x, you can layout directly from imported or created linework by tapping on the linework, without creating any points on the line. This functionality may greatly reduce the need to create many points if you are staking to linework. You must still tap the stake icon to store the point for future reference, QA and documentation processes.

1. Tap the **Create**icon and then tap **From Model**.
2. Tap the Layer icon and then tap any of the linework you would like to isolate. The selected layer is highlighted in the map view and layer list so that you can tap the **None** icon, then check next to the single or multiple layers you want to create points upon.
3. Select the required snaps by tapping in the open selection box. Current options are **End Point**, **Mid Point**, **Circle/Arc Center**, **Intersection**, **Center From 3 Points** or **Apparent Intersections**.

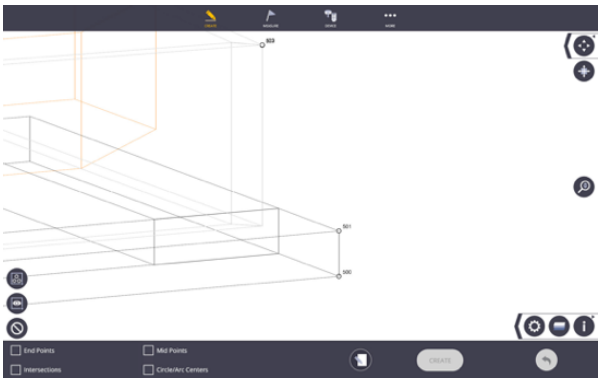
   NOTE – If using Apparent Intersections **Drag** and **Current View** options are disabled.

4. Tap the **Input Form** icon . Input the **Point Name**, **Description**, and **Layer** for the first point. Tap the **Input Form** icon again to view the points on the map view before creation.
5. Tap on each location you would like to create a point using the selected snap, or use the **Map Tools** icons including **Selection Box** or **Current View** tools to create multiple points quickly.
6. Tap the **Clear All** icon to clear the selected points if you made any mistakes in your selections.
7. The number of points to be created is shown under the **Create** button. Tap **Create** to finalize the points.
8. To undo the creation, tap the **Undo Arrow**.
9. Once points are created, you can delete or edit the points within the **Points Workslate** (See

Pointwork, page 39).



NOTE – If you are creating points with a 3D model, you may end up with multiple points on top of each other in a 2D view (e.g. if you are looking at a column structure from above you will create 2 points instead of one for upper and lower corners).

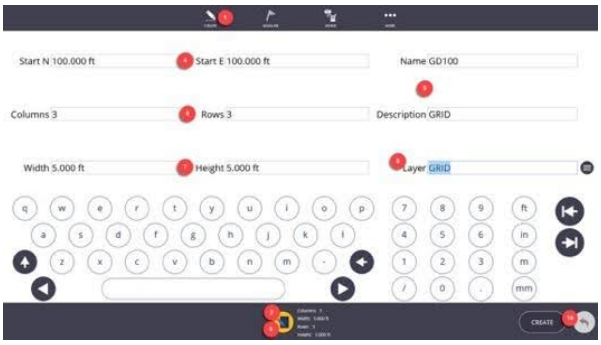
TIP – Use letters, numbering, descriptions and layers when creating points to help filter or sort points for easy viewing during layout, or exporting/importing field data into or from the office.

Grid

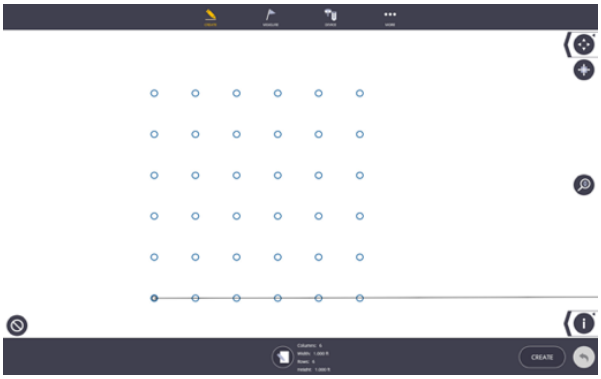
In the **Grid** work mode, you can create points on a specified grid pattern with defined point names, descriptions and layers.

1. Tap the **Create**icon and then tap **Grid**.
2. Tap the **Input Form** icon .
3. Input the values for each of the fields. The **Start N(X)** and **Start E(Y)** will position the first grid point at that location and defaults to 100(X), 100(Y), or select the starting point from the map view.
4. Input the **Point Name** and **Description**.
5. Input the number of grid **Columns** and **Rows**.
6. Input the **Width** (distance between the grid **Columns**), and the **Height** (distance between the grid **Rows**).
7. Place the points on a specific layer by tapping the **Layer** drop-down menu, or type in a new layer to create a new layer name.
8. Tap the **Input Form** icon again to view the points on the map view before creation if desired.
9. Tap **Create** to finalize the grid points.

10. To modify the values or undo the creation, tap the **Undo Arrow**.



11. Use the **Map Controls** icons including the **Zoom Extents**, **Zoom Slider Bar**, **Point Information**, **Map Settings** and **Layer** icons to isolate an area or layer for viewing, or to show the point layer, description, and elevation information.

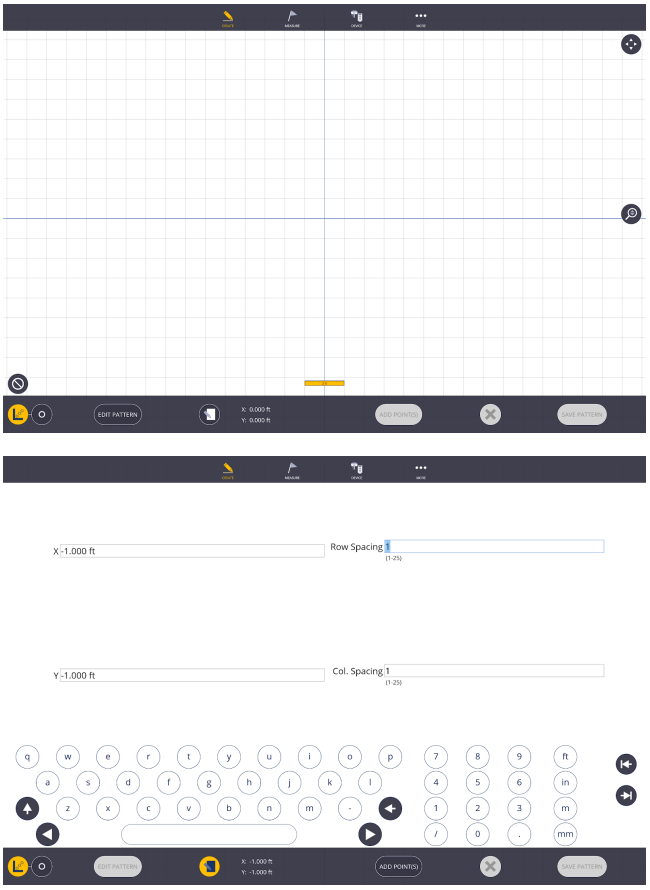


Pattern

Point patterns help with the creation of points that repeat numerous times and can be centered around another point such as anchor bolts, offsets, hangers, etc. You can also share these point patterns with other FieldLink users.

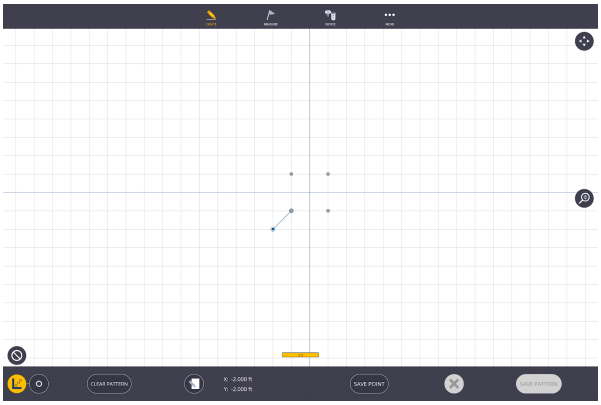
For a New Pattern

1. Tap **Create** and then tap **Pattern**.
2. Tap the **Input Form** icon and enter the X and Y values.
3. You can also enter the grid spacing to be able to select background grid intersections directly on the screen.
4. To view the location of the point on the map screen, tap the **Input Form** icon again.
5. Tap directly on the grid intersections to temporarily create additional points.
6. Tap **Add Point(s)**. Repeat to add more points to the pattern.
7. To save the pattern, tap **Save Pattern**, enter name and tap **Save Pattern**.



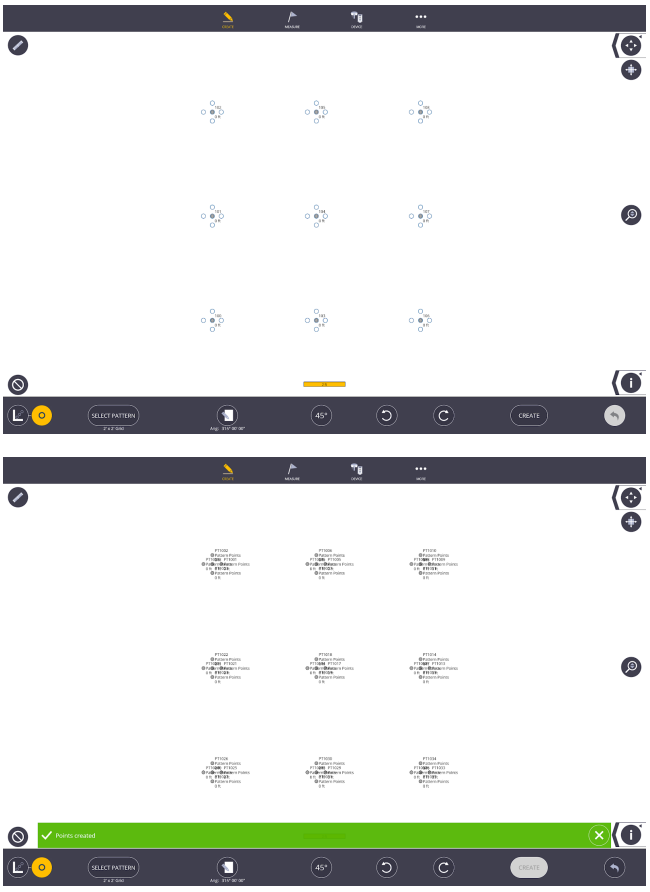
For an Existing Pattern

1. Tap **Edit Pattern**. You may have to tap **Clear Pattern** if you don't see the pattern you wish to edit.
2. Select the pattern from the file location. Tap **Load Pattern**.
3. To edit the pattern, tap a point in the pattern and then tap the **Input Form** icon to change the X and Y values. Tap **Save Point**.
4. Tap **Save Pattern**.



To Place the Pattern

1. Tap the **Point** icon and then tap **Select Pattern**.
2. Select the pattern from the file list and then tap **Load Pattern**.
3. Select the center point(s) on the map screen where you want the pattern to be created.
4. To rotate the pattern, select from the **Preset Angles** or tap the **Input Form** icon to type in a specific angle. Also, you can enter the starting point name, description and select/enter the model layer.
5. Tap **Create**.



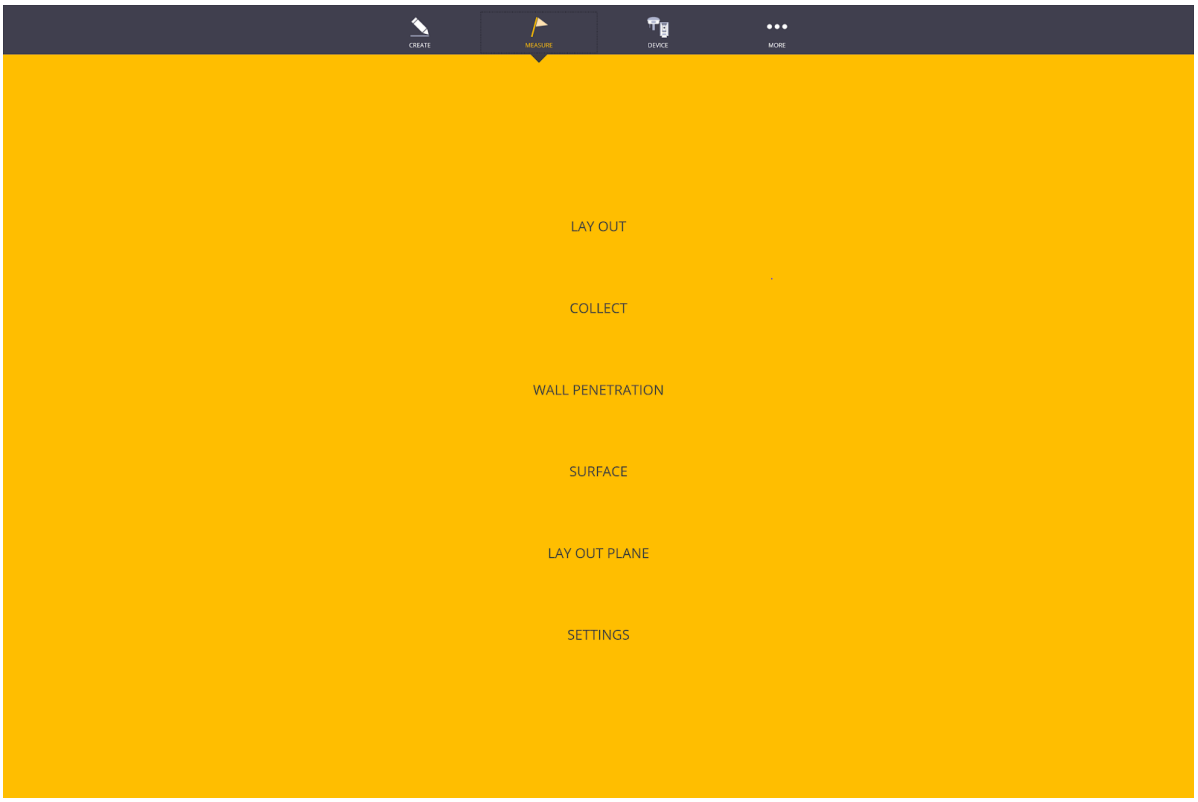
5

Measure Mode

Tap **Measure** 

to:

- Lay out points, lines, offsets, arcs
- Collect points, lines, arcs or to auto collect square cateye control points
- Lay out wall penetrations
- Lay out planes
- Collect and lay out surfaces
- Change measurement settings such as tolerances, next or nearest points, Visual Layout or Standard Laser mode, and High Precision or Fast Precision.

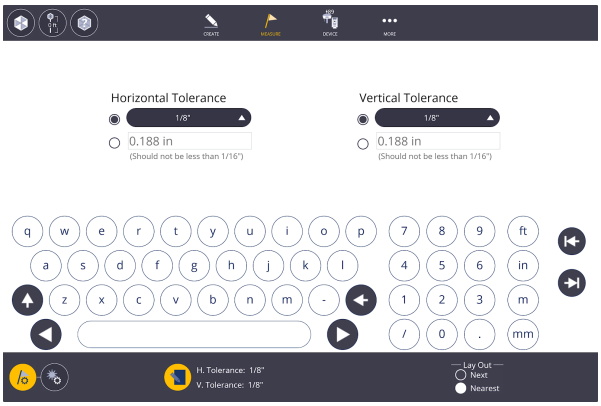


Measure Settings

1. Tap **Measure** and then tap **Settings**. The layout settings icon is highlighted.
2. Tap the **H. (Horizontal) Tolerance** arrow to select from 1”, ½”, ¼”, 1/8” or 1/16”, or 25, 12, 6, 3, 1.5mm. Alternatively, you can choose the **Custom Tolerance** option and enter the desired measurement.

   Points measured in the field that are outside this tolerance setting have a red lay out flag on the screen indicating the point was out of tolerance.
3. Tap the **V. (Vertical) Tolerance** arrow to select from 1”, ½”, ¼”, 1/8”, 1/16”, or **Ignore**, or 25, 12, 6, 3, 1.5mm. Alternatively you can choose the **Custom Tolerance** option and enter in your desired measurement.

   Points measured in the field that are outside this tolerance setting have a red lay out flag on the screen indicating the point was out of tolerance. If you select **Ignore**, vertical elevation measurements are used for tolerance flags.



4. Select on the **Next** or **Nearest** layout selection box to automatically select the next sequential point (ex. 100, 101, 102, 103) or the Nearest point to the prism or LASER measurement. The **Nearest** setting is usually the most efficient.
5. Tap the **Measure Settings** button.
   a. Select **Standard** or **Visual Layout** for Laser Aiming.

      Standard mode aims the laser beam at the X, Y, Z location and gives correction distances. **Visual Layout** mode moves the laser beam to the correct X, Y location based upon the adjusted elevation.

   b. Select **High Precision** or **Fast Precision** Measure Mode.

      High Precision takes an average of the measurements over a few seconds. **Fast Precision** takes an instant measurement.

Collect

Once the **Instrument Set Up** has been completed, you can collect and/or lay out without performing another **Instrument Set Up**. See Connection, page 77for instructions on Instrument Set Up.

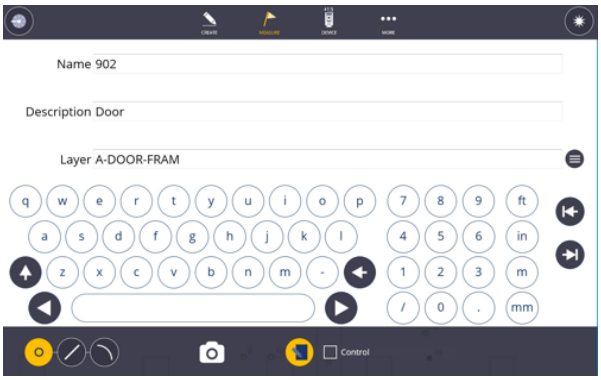
Use the **Collect Points** process to save project information such as existing utilities, foundations, anchor bolts, or any other type of project information. Use the **Collect Linework** process to save information such as ceiling or floor lines, inside and outside building corners, doorways, windows, utilities or any other type of linework information to help save time by creating drawings or 3D model information automatically in the field.

You can use FieldLink to:

Collect Points

1. Tap **Measure** and then tap **Collect**. The point icon is automatically selected.
2. Tap the **Input Form** icon . Input the **Point Name** and **Description**. Place the points on a specific layer by tapping the Layer drop down menu, or type in a new layer to create a new layer name.
3. If you are measuring a control point, select the **Control Point** check box.
4. Tap the **Camera** icon to capture and store image with the point.
5. Use the **Joystick** or **Vision** modes to aim at the item or prism.
6. Place the prism rod on the point or aim the laser directly at the item to measure and tap the **Shoot** icon. The prism or laser position is displayed with the " " symbol in Map View.
7. When ready to collect square cateye targets to be used for autostationing, make sure the control point is selected and tap **Auto Collect**. This is only available when using a RPT600. To manually

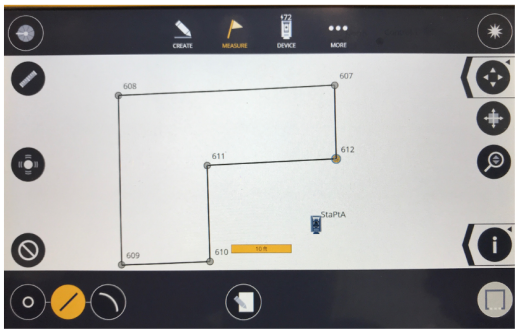
change points to control points, see Linework, page 47.



Collect Line

1. Tap the **Line** icon to measure points and create lines between each point as you measure.
2. Tap the **Input Form** icon . Input the **Point Name** and **Description**. Place the points on a specific layer by tapping the **Layer** drop down menu, or type in a new **Layer** to create a new layer name.
3. Select the points and lines to be collected as **Measured**, **Design**, or **Control**. **Measured** points and lines are indicated with a solid dark circle and cannot be laid out without saving the point under a different name. **Design** points are indicated with an open circle and can be laid out again immediately. **Control** points are indicated with a triangle inside an open circle.
4. Use the **Joystick** or **Vision** modes to aim at the item or prism.
5. Place the prism rod on the point or aim the laser directly at the item to measure and tap the **Shoot** icon.
6. Tap the **Close Line** icon on the screen to automatically create a line to close the line segments.
7. Points or lines that have been collected as **Design** points can be connected to other points or

connected with linework using the **Create Linework** mode.



Collect Arc

1. Tap on the **Arc** icon.
2. Tap the **Input Form** icon. Input the **Point Name** and **Description**. Place the points on a specific layer by tapping the **Layer** drop down menu, or type in a new **Layer** to create a new layer name.
3. Measure three points that define the arc. You will see the arc being constructed as you capture the first two points then when the final point is captured the arc is finalized and shown on the map display. The **Arc Diameter** and **Arc Angle** are indicated during collection.

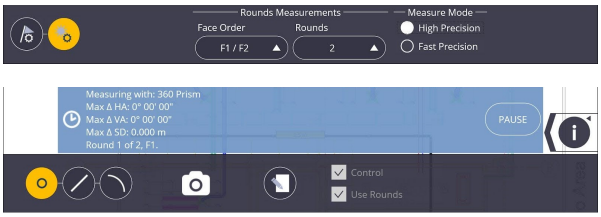
Collect Circle

1. Tap on the **Arc** icon and then tap the **Circle** option box.
2. Tap the **Input Form** icon. Input the **Point Name** and **Description**. Place the points on a specific layer by tapping the **Layer** drop down menu, or type in a new **Layer** to create a new layer name.
3. Measure three points that define the arc. You will see the arc being constructed as you capture the first two points then when the final point is captured the arc is finalized and shown on the map display. The **Arc Diameter** and **Arc Angle** are indicated during collection.

Collect Points Using Rounds (optional)

To use Rounds you must have purchased the **Site Control Module**.

1. Tap **Measure** and then tap **Collect**. The point icon is automatically selected.
2. Select the **Rounds** boxes and the **Face Order**, **Number of Rounds**, and **Measure Mode**. Also select the **Control** box before running the **Rounds** routine.
3. The results of the **Rounds** process is shown in the bottom of the screen.



Layout

You can use FieldLink to lay out points created with office software and transferred to the field. You can also lay out points you create in the field, or lay out lines by selecting points.

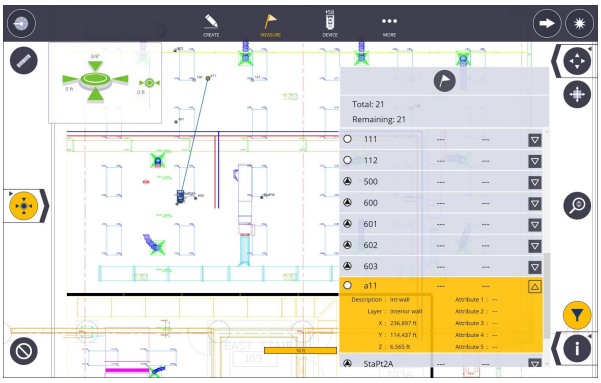
- Layout, page 60
- Lay Out Line, page 64
- Lay Out to a Line, page 65
- Lay Out Arc, page 65
- 3D Perspective Model View, page 67
- Create Points - Lay Out Line, page 67

Lay Out Points

Points can be created within FieldLink or with office software such as Vico, Tekla, SketchUp, Trimble Business Center, Trimble Field Points for AutoCAD or Revit, or even other non-Trimble software. The points measured

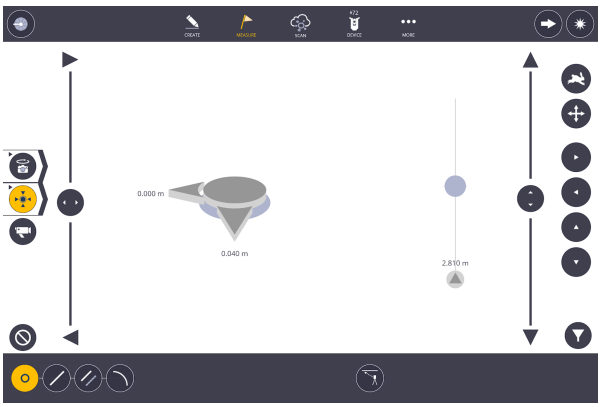
should be compared to the model to ensure any deviations, changes or issues are documented in the as-built model or drawings.

1. Tap **Measure** and then tap **Lay Out**. The **Point** icon is automatically selected.
2. You can isolate points by selecting the appropriate layer under the **Layer** icon or by pressing the **Point List** icon in the lower left and using the **Point Filter** options to create a point list for your layout session.
3. Tap on the first point you need to lay out. If there are multiple points on top of one another or close together, a point selection box appears in the lower left corner and you can select the correct point.
4. The **Direction Bar** at the top indicates back or forward to the RTS, left or right as you are looking at the RTS, and up or down to the correct elevation. You can toggle the direction bar to give horizontal/vertical changes or the **Back/Forward**, **Left/Right**, **Up/Down** bar.



5. You also now have the option to select the **Corner Bullseye** to display on the screen under **Map Options**. If you have a point list created, you can also look at point information including position, layer and attributes for each point.
6. If you are in laser mode, the RTS automatically aims at the point as soon as you tap on the point. If using **Visual Layout** as checked in the **Measurement Settings**, the laser beam moves to the correct X, Y position and shows any vertical deviation in the lower dialogue bar.
7. Once you are within approximately 3’ (1 meter) from the point, the screen automatically changes to a bullseye mode. You can change back to the plan view by tapping the **Bullseye** icon.

8. If the laser fails to measure after three attempts, but is very close, you have the option to maneuver the laser manually with the joystick features and or the nudge buttons.



9. Tap the **Next** arrow icon to advance to the next point if you do not want to store the as-built information for future use and quality assurance.
10. Tap the **Shoot** icon to collect the as-built information and store this information for future use and quality assurance.
11. Tap the **Next** arrow icon to advance to the next or nearest point as selected in the Measure Settings, page 56.
12. The lower message bar appears giving the staked point information. Points measured within the tolerance settings appear as green check marks. Points outside of tolerance settings appear as a red X.

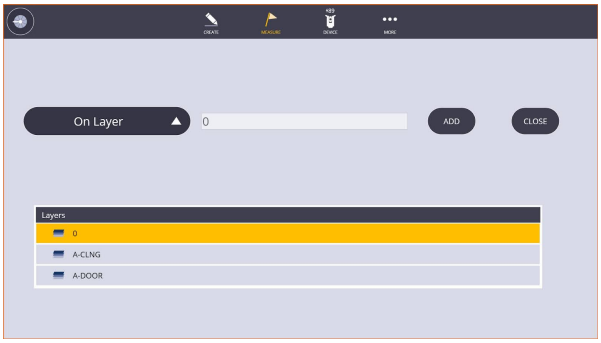
Point Layout List

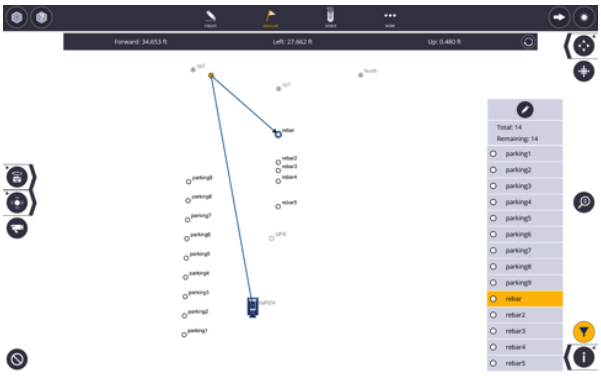
If you have the 3D Feature Pack then you can generate a point layout list. The list can be populated by selecting individual points on the screen, multiple selections with a window or using a filter by name, description or layer.

NOTE – When using the functionality filter layer with points, only layers that include points are visible.

To create a point layout list:

1. Tap the **Point Layout List** icon.
2. Populate list via:
    - Point selection on map
    - Multiple selection with window selection
    - Tap **Add** icon enter by **Name**, **Description**, or **Layer**
3. To clear the list, tap the **Cancel** icon.
4. To layout with list, tap the **Layout** icon.
5. To advance to next in list, use **Arrow**.





Point Transfer

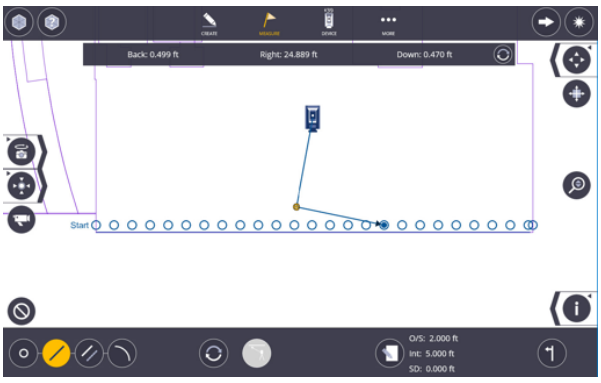
There may be times when you are unable to lay out on the floor because there are obstacles in the way. This feature allows you to switch between layout on the floor and the ceiling.

1. Tap **Measure** and then tap **Lay Out**.
2. Tap the **Transfer** icon  at the lower part of the screen.
3. Follow the prompt to aim at either the floor or ceiling for a reference elevation. Then you can layout the point you want to transfer.
4. You can then keep tapping on the **Transfer** icon to switch between floor and ceiling.

Lay Out Line

FieldLink provides the ability to layout linework by selecting 2 points to define a line segment or multiple points to define a polyline. Any temporary offset or interval points created in this section will not remain in the database until they are actually measured.

1. Tap the **Measure** icon and then tap **Lay Out**.
2. Tap the **Line** icon at the lower left of the screen.
3. Tap the **Clear Selection** icon to select new points.
4. Tap on two points to create the blue line to be staked. You can tap on additional points to offset a polyline around a building or utility run.
5. Tap the **Input Form** to create an **Offset Distance**, **Interval Distance**, **Start Distance**, **Name**, **Description** and **Layer** of the points to be laid out along the line. You can enter “0” for the **Interval Distance** to take measurements along the line or offset line directly.
6. Tap the **Input Form** again to see the temporarily created points represented as open blue circles on the plan view to ensure the correct locations.
7. Tap the **Left/Right/Both** Sides icon to toggle the offset points on either or both sides of the line.
8. Tap on the first point to be measured if you entered an Interval Distance.
9. The **Direction Bar** at the top indicates back or forward to the RTS, left or right as you are looking at the RTS, and up or down to the correct elevation. You can toggle the direction bar to give down and offset positions or the **Back/Forward**, **Left/Right**, **Up/Down** bar.
10. If you are in laser mode, the RTS automatically aims at the point as soon as you tap on the point. If using **Visual Layout**, as checked in the Measure Settings, page 56, the laser beam moves to the correct X, Y position and shows any vertical deviation on the right-hand side of the screen.



11. Once you are within approximately 3’ (1 meter) from the point, the screen automatically changes to a bullseye mode. You can change back to the plan view by tapping the **Bullseye** icon.
12. Tap the **Shoot** icon to collect the as-built information and store this information for future use and quality assurance.
13. Tap the **Next** arrow icon to advance to the next or nearest point as selected in the Measure Settings, page 56.
14. The lower message bar appears giving the staked point information.

Lay Out to a Line

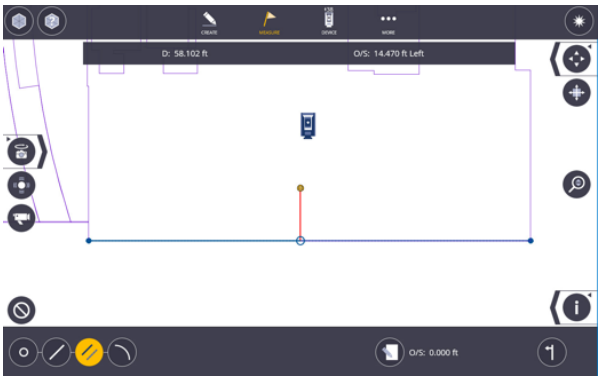
FieldLink provides the ability to layout linework and offset lines with Down and Out measurements by selecting only two points to define the line. This method is a quick and easy way to stake a continuous line anywhere on the line.

1. Tap **Measure** and then tap **Select Lay Out**.
2. Tap the **Offset Line** icon at the lower left of the screen.
3. Tap the **Clear Selection** icon to select new points.
4. Tap on two points to create the blue line to be staked.
5. Tap the **Input Form** to create an **Offset Distance**, **Name**, **Description** and **Layer** of any points to be laid out along the line. You can enter “0” for the Offset Distance and take measures along the line directly.
6. Tap the Input Form again to see the temporarily created line represented as a solid blue line on the plan view to ensure the correct location.
7. Tap the **Left/Right/Both Sides** icon to toggle the offset line on either or both sides of the line.
8. The **Direction Bar** at the top indicates down and offset positions. The down dimension is from the first point you selected to create the line, the offset distance is given as a right or left if you were standing at the first point you selected and are looking towards the line end point.
9. Tap the **Measure** icon to collect the as-built information and store this information for future use and quality assurance.
10. The lower message bar appears giving the staked point information. Points measured within the tolerance settings appear as green check marks. Points outside of tolerance settings appear as a red X.

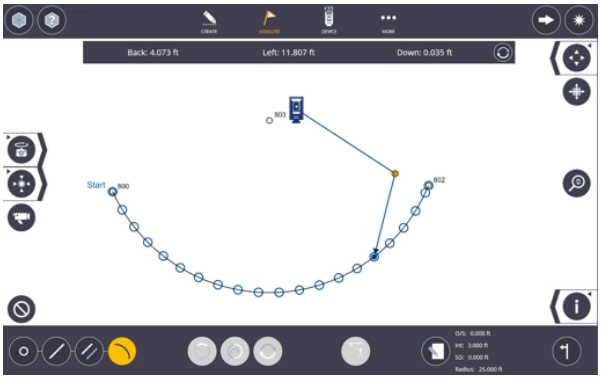
Lay Out Arc

1. Tap **Measure** and then select **Lay Out**.
2. Tap the **Arc** icon at the lower left of the screen.
3. Tap on two points to create the blue arc to be staked.
4. To select new points, tap the **Clear Selection** icon.
5. Tap the **Input Form** to create an **Offset Distance**, **Interval Distance**, **Start Distance**, **Radius**, **Name**, **Description** and **Layer** of any points to be laid out along the arc. You can enter “0” for the **Interval Distance** to take measures along the arc or offset arc directly.
6. Tap the **Input Form** again to see the temporarily created arc represented as a solid blue line on the plan view to ensure the correct location.
7. Tap on the **Short Arc/Long Arc** toggle icon to change the arc from the shortest distance along the arc to the longest distance along the arc.
8. Tap on the **Reverse Arc** icon to change the direction of the arc.

9. Tap the **Left/Right/Both Sides** icon to toggle the offset line on either or both sides of the line.

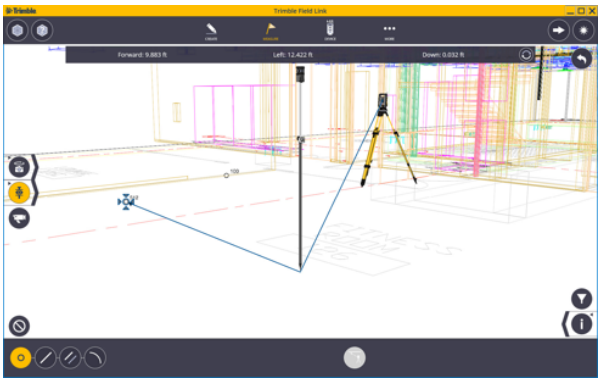


10. If you entered an **Interval Distance**, tap on the first point to be measured.
11. The **Direction Bar** at the top indicate back or forward to the RTS, left or right as you are looking at the RTS, and up or down to the correct elevation. You can toggle the direction bar to give down and offset positions or the **Back/Forward, Left/Right, Up/Down** bar.
12. If you are in laser mode, the RTS automatically aims at the point as soon as you tap on the point. If using **Visual Layout** as checked in the Measurement Settings, the laser beam moves to the correct X, Y position and shows any vertical deviation on the right-hand side of the screen.
13. Once you are within approximately 3' (1 meter) from the point, the screen automatically changes to a bullseye mode. You can change back to the plan view by tapping the **Bullseye** icon.
14. Tap the **Shoot** icon to collect the as-built information and store this information for future use and quality assurance.
15. The lower message bar appears giving the staked point information. Points measured within the tolerance settings appear as green check marks. Points outside of tolerance settings appear as a red X.
16. Tap the **Next** arrow icon to advance to the **Next** or **Nearest point** as selected in the Measure Settings, page 56.



3D Perspective Model View

1. Tap the arrow next to the **Bullseye** icon.
2. Tap the **Prism** icon.
3. The **3D Perspective Model View** is displayed, as viewed within the model showing the position of the prism on pole or laser point if in **Laser** mode, the instrument location and relationship to the point being laid out.
4. Directions are displayed, view & directions update as you move to the point selected.



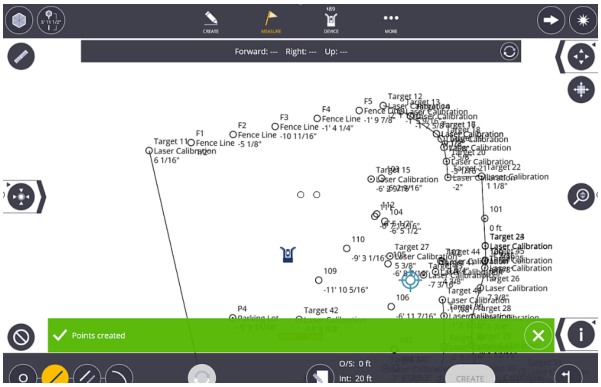
TIP – Use of Feature Codes sets such as AB for Anchor Bolts, TR for Tree, TBC for Top Back of Curb, can help the field and office team understand collected and lay out items faster and easier. Feature Codes can also help save time in the office by automatically creating drawings or 3D model information in certain software.

NOTE – Make sure to check the backsight or stake control points periodically to ensure the instrument has not shifted locations due to settlement, thermal changes, or interference.

Create Points - Lay Out Line

1. Tap **Measure** and then tap **Lay Out**.
2. Select two points that define the line.
3. Tap the **Input Form** icon.
4. Input **Offset**, **Interval**, **Start Distance**, **Name**, **Description** and **Layer**.

5. Tap **Create** to add points.

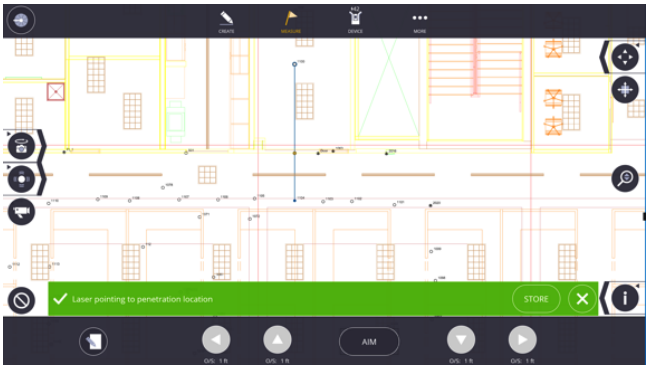


Wall Penetration

FieldLink will accurately locate wall penetrations.

1. Tap the **Measure** icon and then tap **Wall Penetrations**.
2. Select two points that define the object to penetrate the wall or, select an existing line.
3. Tap the **Aim** icon.
4. The laser points to the location on the vector between the two points that intersects the wall.
5. You can use the **Input Form** icon to define offsets for left, right, up and down.
6. You can then apply these offsets to the penetration.

NOTE – When selecting an existing line or two points to define a line, FieldLink automatically extends the line .5 of a meter in both directions to ensure that the selected line penetrates through the wall to ensure use of the feature.



Surface (Optional Module)

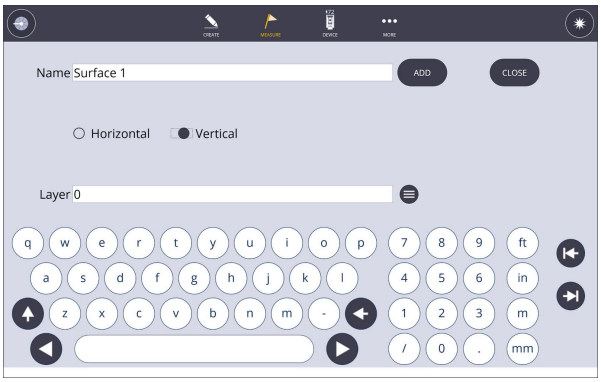
FieldLink can accurately define the low and high areas of a horizontal or vertical surface whether it is the floor, ceiling or wall via the use of the Surface Module. The first step is to define and measure the surface, then, FieldLink can calculate the low and high contours based on a reference elevation and a tolerance. You are then able to layout the location of these contours. You can generate a report based the information collected.

NOTE –

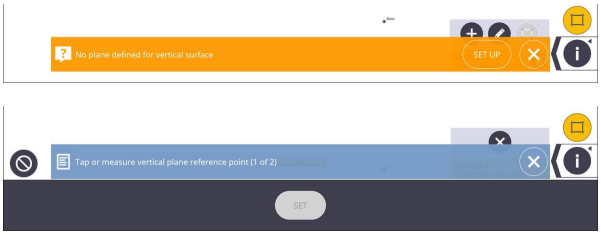
- The Surface module works with .xml files only.
- The Surface module is included with FieldLink Core Subscriptions.

Define and Measure the Surface Area

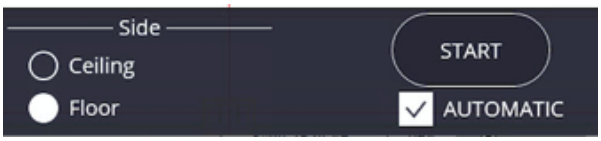
1. Tap the **Measure** icon and then tap **Surface**.
2. Tap the **Fence** icon on the right of the screen to add a new surface.
3. Tap the plus icon to enter and select the details of the surface: name, horizontal or vertical surface, and layer.
4. To return to the model view, tap the **Close** button.



5. Tap the **Fence** icon to edit the boundary of the surface. If you have existing points around the edges of the surface, grab and drag the corner manipulators to the desired location to define the boundary of the surface area. You can also define the surface by measuring new points.
6. To close out of the editing boundary, tap the **Fence** icon.



7. Tap on **Input Form** . Enter **Number of Points** or **Grid Spacing** by tapping the **Circle** icon to switch between options.
8. If you are using the **Horizontal Surface**, tap **Ceiling** or **Floor**.



9. For automated **Laser** data collect, select the **Automation** option.
10. Tap **Start** to capture data.
11. You are prompted to point the instrument at the surface to be measured, then tap **Yes** or **No**.
12. If collecting the Floor Surface manually, walk with the prism pole and navigate to the point to start collecting data. If automatic, the instrument will use the laser mode to collect data and indicate progress.

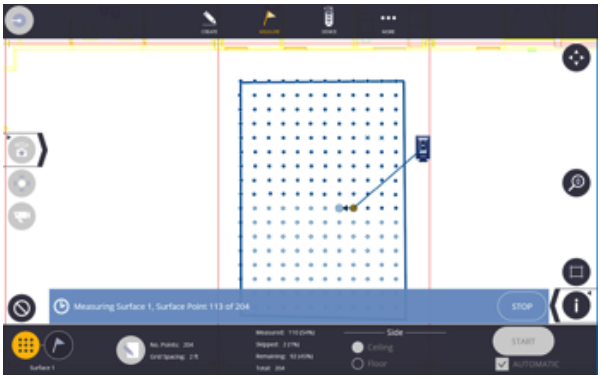
Calculate High & Low Areas

1. Tap on the **Layout Flag** icon .
2. Tap the**Input Form** icon.
3. Enter **Elevation** and **Tolerance**, and then close **Input Form**.
4. The **High** (shown in red), **Low** (shown in blue), and **In-Tolerance** (shown in green) contours are

calculated and displayed on the screen.

Lay Out a Contour

1. Select a **Node** on the contour.
2. If in **Laser Mode**, tap **Aim**. The instrument points to the location with the laser pointer. If in **Prism Mode**, you will receive navigation to the point.
3. Tap **Store** to record the point.



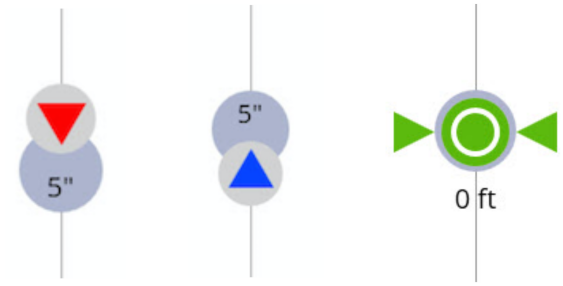
Layout Plane

The **Layout Plane** feature enables you to specify a flat plane, tilted plane, or sloping plane which can be used similar to a rotating or sloping line laser. The **Layout Plane** feature also has audible sounds to help with grading in loud environments to indicate high, low, or on-grade measurements.

Flat Plane

To define a flat plane, type in an elevation or pick a point on the screen. You can then lay out that flat plane.

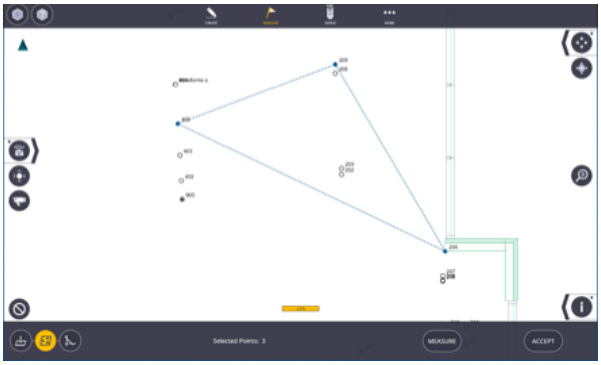
1. Tap the Measure icon and then tap **Layout Plane**.
2. Either select a point on the screen or tap the **Input Form** and type in or measure an elevation.
3. Move to where you want to layout.
4. The software shows **Cut** (high), **Fill** (low) or **In Tolerance** (level). Points are recorded on the screen: green for in tolerance, red for cut and blue for fill.
5. Tap the **Shoot** icon to collect as-built information and store this information for future use and quality assurance.



Tilted Plane

To define a tilted plane, you can type select three points on the screen.

1. Tap the **Measure** icon and then tap **Layout Plane**.
2. Tap the **3-Point Tilted Plane** icon .
3. Either tap three points on the map screen or measure three points.

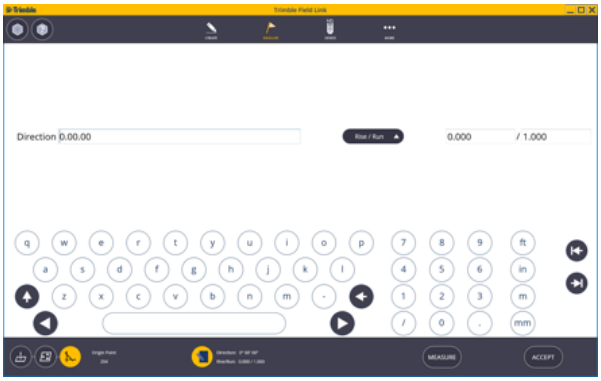


4. Tap **Accept**.
5. Move to where you want to lay out. The software shows cut, fill, and in tolerance.
6. Tap the **Shoot** icon to collect the as-built information and store this information for future use and quality assurance.
7. To measure a new tilted plane, tap **Configure** and repeat steps above.

Sloping Plane

To define a sloping plane, you can type select three points on the screen.

1. Tap **Measure** and then tap **Lay Out Plane**.
2. Tap the **Sloping Plane** icon .
3. Either select a point on the map screen or measure a point.
4. Tap **Input Form** to enter: **Direction of Slope** and either **Slope Percentage (%)** or **Rise/Run**.



5. Move to where you want to lay out. The software shows cut, fill, and in tolerance.
6. Tap the **Shoot** icon to collect the as-built information and store this information for future use and quality assurance.
7. To measure a new tilted plane, tap **Configure** and repeat steps above.

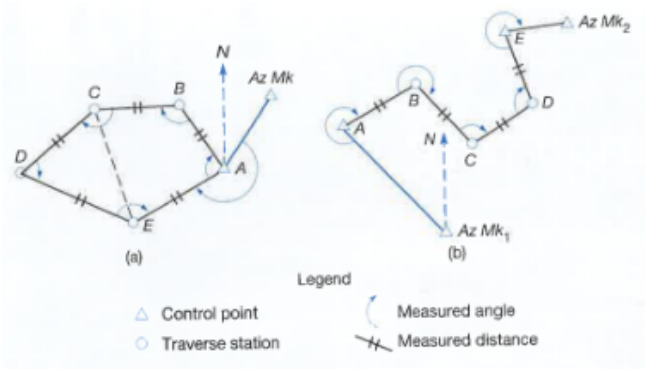
Traverse (Optional Module)

Use the optional Traverse module to check control points, add control points, or to establish benchmarks around the project. The Traverse feature requires you set up on a known point and have at least one other known control point. These points must be established as control points with the triangle symbol under the **Point Manager** tool. This option is not available with the **Rapid Positioning Tool (RPT)**.

There are two types of mathematically closed Traverse that are supported in FieldLink, **Polygon** and **Link**.

In the **Polygon** traverse, as shown in Figure (a), the lines return to the starting point, thus forming a closed figure that is both geometrically and mathematically closed.

Link traverses finish upon another station that should have a positional accuracy equal to or greater than that of the starting point. The link type (geometrically open, mathematically closed), is illustrated in Figure (b).



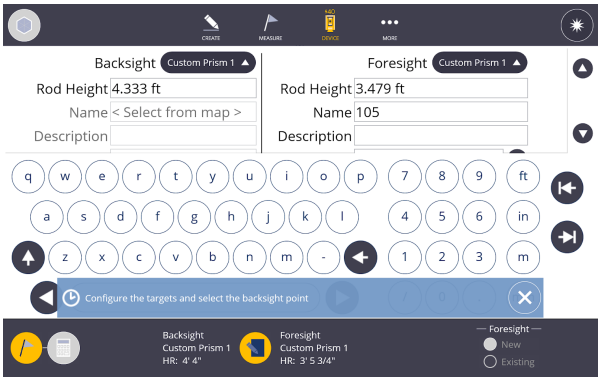
To conduct a traverse:

1. Tap the **Device** icon and then tap **Traverse**. A message will appear telling you to “Select and position the instrument over a known control point”.

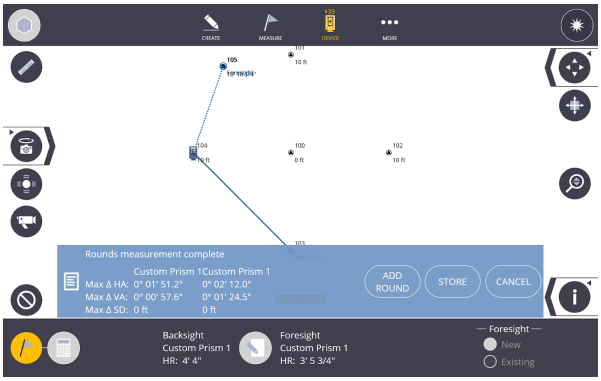
2. Tap on the point for the desired instrument location.

3. A message will then appear telling you to “Configure the targets and select the backsight point”.

4. Tap the **Input Form** icon to enter the **Backsight Prism Type**, **Rod Height**, and select the Backsight from the map view when done. Enter the **Foresight Prism Type**, **Rod Height**, **Point Name**, **Point Description** and **Layer** (**Create New** or **Enter Known Point**).



5. To return to the map view, tap the **Input Form** icon again . Make sure the instrument location has been selected, then aim at the backsight point and tap **Measure**.
6. Aim at the foresight location and tap **Measure** again.
7. The instrument will then go through a series of Face 1, Face 2 and/or backsight/foresight measurements based upon the settings for rounds.
8. Once the rounds measurements are complete, you can add a round to that set of measurements, or store the point.



9. Place the instrument over the foresight location, configure the targets using the Input Form, and place the actual prisms over the new backsight and foresight location.
10. Aim the instrument at the first location, which is now set to the backsight, and tap **Measure**.
11. Aim the instrument at the new foresight location and tap **Measure**.
12. Repeat this process for the remaining control points.

Traverse Calculations and Report

Calculation Definitions:

Adjustment

- **Transit** - In this adjustment method, it is assumed that directions are measured with higher precision than distances.
- **Compass/Bowditch** - In this adjustment method, it is assumed that distances and directions are measured with consistent precision.

Tolerance

- **Horizontal Precision** - Defines the lower limit for horizontal precision. Precision is the ratio of traverse length to horizontal misclosure.
- **Vertical Precision** - Defines the lower limit for vertical precision. Precision is the ratio of traverse length to vertical misclosure.

Error Distribution - Angular

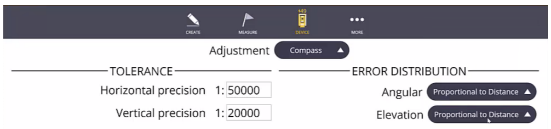
- Proportional to distance - adjustments are weighted more heavily for angles with shorter traverse lines than angles with longer traverse lines.
- Equal proportions - angle adjustments are weighted equally regardless of the length of the traverse lines.
- None - no angle adjustment is performed.

Error Distribution - Elevation

- Proportional to distance - adjustments are weighted more heavily for elevations with longer traverse lines than elevations with shorter traverse lines.
- Equal proportions - elevation adjustments are weighted equally regardless of the length of the traverse lines.
- None - no elevation adjustment is performed.

To Execute a Calculate and Save a Report

1. Tap on the **Calculation** icon .
2. You can review the **Traverse Result** information.
    - Summary
    - Station information
    - Distance adjustments (four difference sets of data can be review)
    - Horizontal distances before adjustment
    - Horizontal adjustments
    - Vertical distances before adjustment
    - Vertical adjustment
3. Tap **Accept** and then tap **Save**, OR
    1. Tap the **Input Form** icon .
    2. Select the **Adjustment Type** (compass or transit).
    3. Input the horizontal and vertical precision.
    4. Select the angular and elevation distribution (proportional to **Distance**, **Equal Proportions** or **None**)



The Traverse results are automatically recalculated.

5. Tap **Accept** and then tap **Save**.

You will have the option to open the report in a browser page. From here you can right click the report and save the .html report to a folder of your choosing. You can also right click and print the report as a PDF to a folder of your choosing.

6

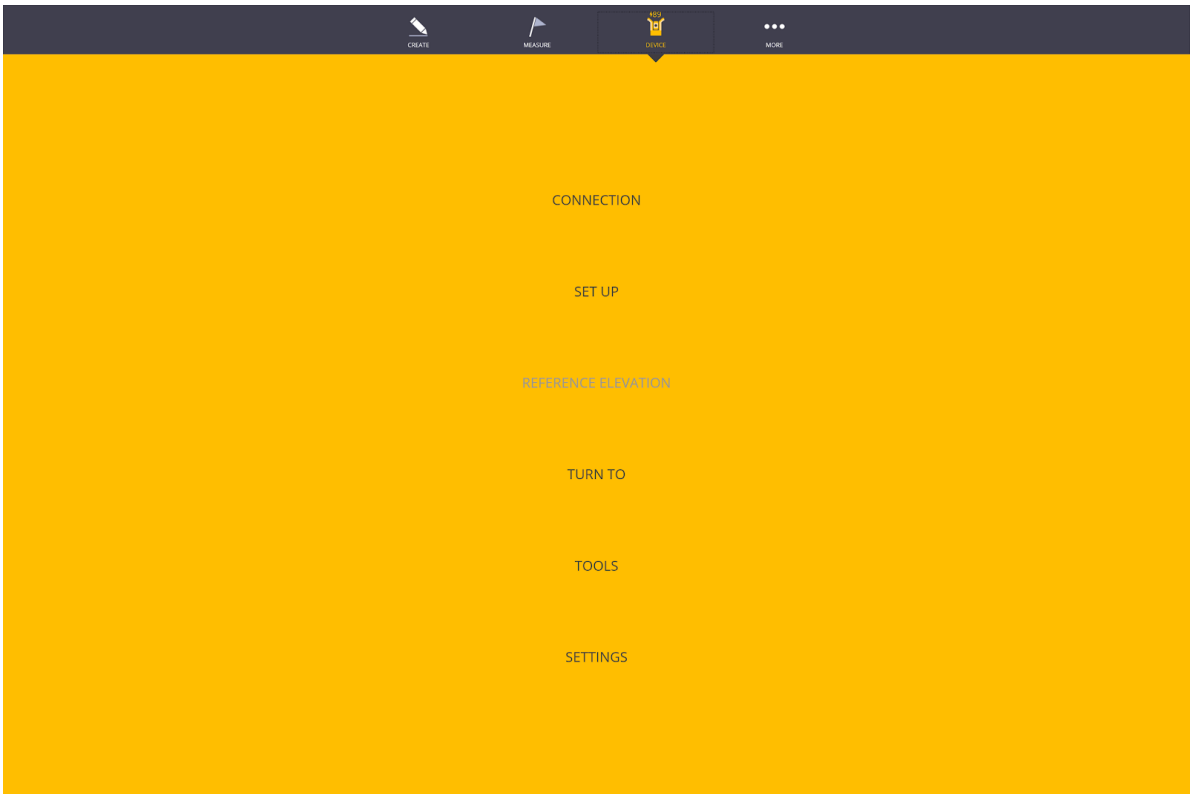
Device Mode

Tap **Device** 

to connect to GNSS, total station, or scanning equipment, set up the instrument location, and change instrument and target settings.

If you have purchased GNSS equipment, you can connect to Trimble R8s GNSS receivers and VRS or RTX networks depending on your license type.

If you have a Trimble Tablet with a built-in radio or optional external radio, you can connect to various Trimble Robotic Total Stations and the Trimble X7 or X9 3D Laser Scanner.



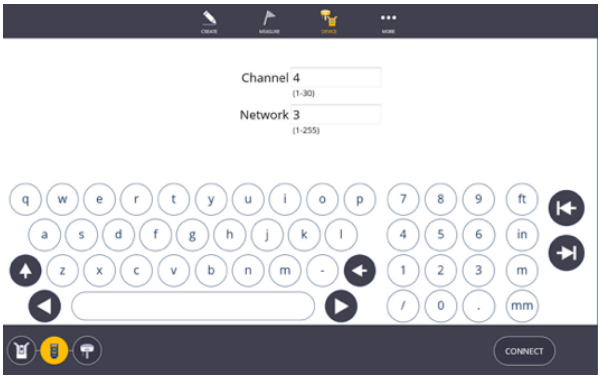
Connection

Before you can collect or lay out data, you must first connect a Robotic Total Station, Rapid Positioning Tool or GNSS Receiver, make sure the prism and instrument settings are correct, and then set up the instrument for its position on the project. The instrument and prism tasks are all accomplished in the Device Mode.

Robotic Total Stations (RTS)

To connect to the instrument, make sure the RTS is turned on with a fully charged battery.

1. Tap the **Device** icon.
2. The connection window opens. Make sure to select the RTS icon from the row of instrument types.
3. Place the battery into the RTS with the battery indicator down and the charging ports facing the inside of the RTS.
4. Press the power button on the RTS.
5. Enter the **Channel** and **Network ID** that matches those in the Face 2 display on the RTS.
6. Tap **Connect**.
7. Once completed with the layout or collection process, tap the **Disconnect** icon in the connection window before turning off the RTS. Tapping the **Disconnect** icon helps ensure a proper shutdown and later reconnection.



Trimble TDL2.4 Data Link Radio

NOTE – When connecting to an RTS using a **Trimble Data Link Radio**, the radio must be paired before first use.

Pairing Instructions

While in the **Connection** window, after setting the correct Channel and ID, press and hold the “radio” button on the Trimble Data Link radio before pressing the **Connect** button in the Connection window.

Once the Trimble Data Link Radio is successfully paired, the radio's Bluetooth name is shown in the FieldLink workslate.

Rapid Positioning System (RPS)

To connect to the instrument, make sure the RPT is turned on with a fully charged battery.

1. Tap the **Device** icon.
2. The connection window opens. Make sure to select the RPT icon from the row of instrument types.
3. Place the battery into the RPT with the battery indicator up and the charging ports facing the inside of the RPT.
4. Press the power button on the RPT.
5. Select the correct RPT serial number from the list of available instruments or press the **Find** button if your device is not shown.
6. Tap **Connect**.

Once completed with the layout or collection process, tap the Disconnect icon in the Connection window before turning off the RPT. Tapping the Disconnect icon helps ensure a proper shutdown and later reconnection.

TIP – Make sure your tablet is disconnected from other WiFi sources to ensure a clear connection to the instrument.

Trimble Ri

Upon powering on the instrument, the Ri automatically performs a tilt detection and a field calibration. The instrument rotates horizontally during tilt calibration. It is important to know that the instrument even if not physically leveled. Instead the instrument calculates the tilt plane and during measurements applies a correction based on the amount of tilt.

During field calibration, the instrument moves side-to-side and up and down. Field calibration focuses the mirrors, calibrates the instrument to infinity, and adjusts the instrument to environmental conditions. Thanks to the self-calibration of the instrument, it does not have to be sent in for service annually like other total stations need to.

Avoid touching the instrument during its calibration process. The Ri is gear-driven and interfering with its movements is not advised.

The full autostart process takes around three minutes. After the instrument is calibrated to its environment, it can connect to a data controller. A connection cannot be made while the instrument is still in calibration mode. Note that level detection and tilt compensation is performed during the calibration and connection stage, so there is no need to auto-level again.

Once the instrument has performed the calibration, you can select the Vibration Sensitivity to be High, Low, or Off. Vibration sensitivity does not actually detect vibrations, rather it measures changes in its surroundings. High considers all environmental factors, and low considers all except for changes in temperature and timeout. Setting it to Off is only appropriate for demonstrations in extreme conditions such as set up on a meeting room table as this ignores all environmental factors, except for the instrument being off level by more than 5 degrees.

To connect to the Ri

1. Select the correct Ri serial number from the list of available instruments or press the **Find** button if your device is not shown.
2. Tap **Connect**.
3. Once completed with the layout or collection process, tap the **Disconnect** icon in the Connection window before turning off the Ri. Tapping the **Disconnect** icon helps ensure a proper shutdown and later reconnection.

To change the WiFi Band

1. Tap **Device** and then tap **Settings**.
2. Click on the **Wi-Fi Band** arrow.
3. Select **Band Automatic**, **Automatic24GHzOnly** or **Automatic5GHzOnly**.
4. Reboot of Ri is required for the new Band to be in effect.

Global Navigation Satellite System (GNSS)

1. Tap the **Device** icon.
2. The connection window opens. Make sure to select the GNSS icon from the row of instrument types.
3. Place the battery into the GNSS receiver with the charging ports facing the inside of the GNSS receiver mating charging ports.
4. Press the power button on the GNSS receiver.
5. Enter the **Channel** and **Network ID** that matches those in the Face 2 display on the RTS.
6. Tap **Connect**.
7. Once completed with the layout or collection process, tap the **Disconnect** icon in the Connection window before turning off the RPT. Tapping the **Disconnect** icon helps ensure a proper shutdown and later reconnection.

US-2013 - 12.5KHz		
TrimMark3		
LINK RATE (bps)	9600	
TrimTalk450S		
LINK RATE (bps)	4800, 8000	
Satel		
Forward Error Correction (FEC)	ON	OFF
Scrambling	ON	OFF
LINK RATE (bps)	9600	
TransparentFST		
Forward Error Correction (FEC)	ON	OFF
Scrambling	ON	OFF
LINK RATE (bps)	9600	
Transparent		
Forward Error Correction (FEC)	ON	OFF
Scrambling	ON	OFF
LINK RATE (bps)	4800	

US-2013 - 25.0KHz		
TrimMark3		
LINK RATE (bps)	9600*, 19200	
TrimTalk450S		
LINK RATE (bps)	4800*, 8000*	
Satel		
Forward Error Correction (FEC)	ON	OFF
Scrambling	ON	OFF
LINK RATE (bps)	9600*, 19200	
TransparentFST		
Forward Error Correction (FEC)	ON	OFF
Scrambling	ON	OFF
LINK RATE (bps)	9600*, 19200	
Transparent		
Forward Error Correction (FEC)	ON	OFF
Scrambling	ON	OFF
LINK RATE (bps)	4800*	

WARNING – Link rates marked with an asterisk (*) indicate a wireless mode that is illegal within the US as of January 1, 2013 (https://www.fcc.gov/narrowbanding-overview)

Prism Settings

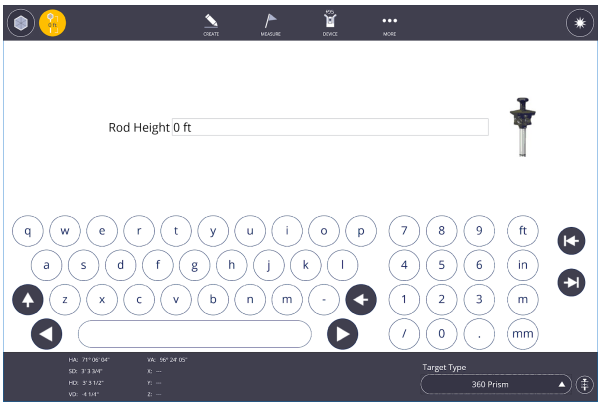
To take correct measurements, you must first select the correct prism type, prism height, and rotate the RTS to the correct measurement point. To do this you must be connected to an instrument.

Prism Quick Access

The **Prism Quick Access** button allows you to access the prism quickly from the main map screen.

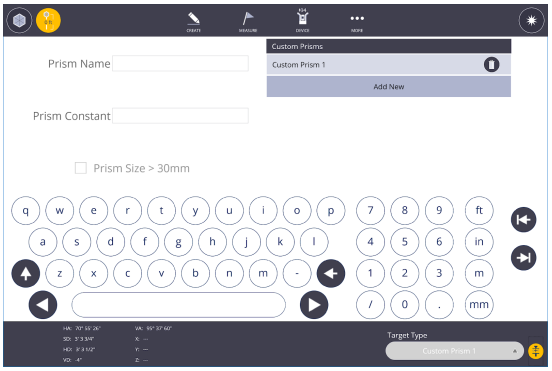
1. Tap the **Prism Quick Access** button.
2. Select the desired target type from the **Target Type** selection list. Options include the 360 Prism, MT1000, AT360, Reflective Foil (with the Ri instrument, autolock can be disabled if desired) or Custom

Prism.



The **Custom Prism** icon allows you to add, name, configure and save commonly used prisms on your job site.

- Tap the **Custom Prism** icon and populate the fields including prism name, prism constant, and check the box if the prism is wider than 30 mm (1-3/16”).



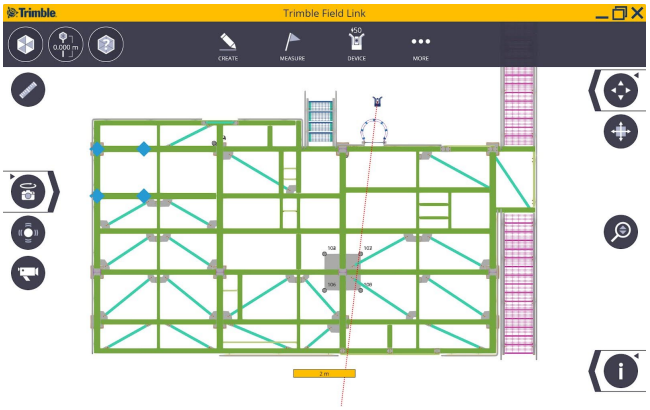
3. Type in the correct height of rod (HR). Measure to the center of the prism to the tip of the rod for the 360, MT1000 and AT360 prisms. If you have an **Inverted Layout Rod** you can use the value displayed on preset positions.
4. If you want to shoot the control points utilizing the EDM laser beam (also known as laser mode), tap the **Prism** icon in the upper left to toggle between prism and laser mode.
5. Tap the **Vision** icon to turn on the live video camera within the RTS. In Trimble Vision mode, you can tap on the video image to rotate the RTS to a specific point or use the Joystick icons as well. There are zoom controls on the right side of the screen to zoom the video feed in or out.
6. Slide out the () and tap the Joystick icon to activate the horizontal (left hand side) and vertical (right hand side) movement bars. Tap the **Joystick** icon again to close the tool.
7. Tap on the **Search** icon to lock onto a prism. The search mode closes Vision mode and opens the plan view in order to lock onto the prism. The prism icon appears to be rotating if the RTS is not locked onto a prism, and is solid once locked onto the prism.

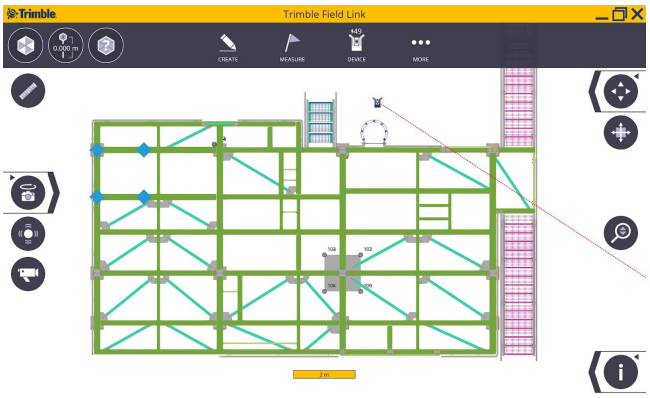
8. While locked onto a prism or aiming in laser mode, this screen provides the HA (Horizontal Angle), VA (Vertical Angle), SD (Slope Distance), HD (Horizontal Distance), VD (Vertical Distance), X, Y and Z coordinates.

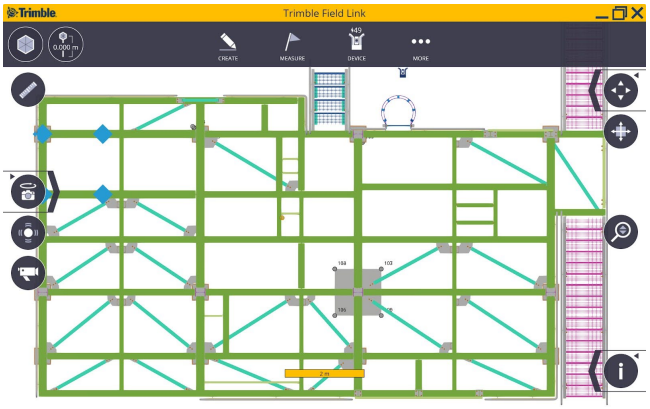
Tap to Search

If you are not locked onto the prism, the prism icon in the upper left corner appears to be rotating and not a solid icon. A question mark icon appears in the upper left corner next to the prism icon which you can tap to start a localized search in an 11 degree tall by 15 degrees wide window for RTS series, 25 degrees tall and wide for the RPT.

1. If the prism is not locked, a line will appear where the instrument is pointed.
2. Tap on the screen roughly on the location of the prism. The instrument should automatically point to the tapped location and start the search process for the selected prism.
3. If the prism is not found automatically, tap in another location on the plan view or use Trimble Vision to isolate the search area.



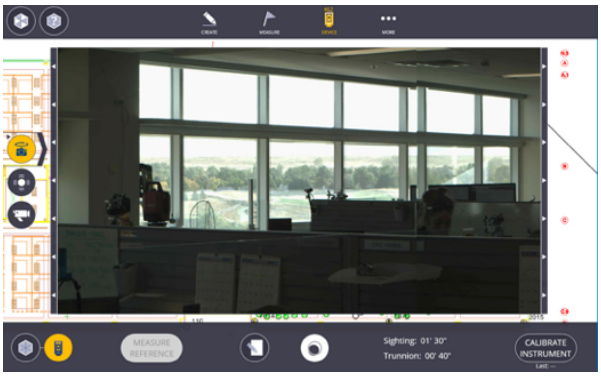




Pano-Search

By clicking on a panoramic Image generated by the field instrument, you can quickly lock onto the prism at your location thus eliminating lengthy aiming of the instrument. The pano-image can also be used for quick aiming in laser measurement mode.

1. Tap **Pano** icon to collect panorama image (2-10 minutes).
2. If a panorama already exists on the tablet, you can use the stored one or take a new one. Only use the stored one if the instrument has not been moved.
3. Pan image, then tap/double tap on image that you see behind RTS to initiate the search for a prism. (Single tap for Windows 10 tablet or double tap for Windows 7 tablet).
4. In laser mode, tap on the image to aim to location.



Trimble Ri Vision and Joystick Controls

The table below describes the icons/controls available for the Trimble Ri .

Icon	Description	Function
	Maximum Zoom Level (Prism Mode)	Targets may auto-lock if in view.
	Maximum Zoom Level (Laser Mode)	Precise aiming to natural target or feature.
	Detail Zoom Level (Prism Mode)	Targets may auto-lock if in view.
	Detail Zoom Level (Laser Mode)	Improved aiming to natural target or feature.
	Overview Zoom Level	Prism Mode: Initial aiming, targets will ***not*** lock automatically. Laser Mode: Initial aiming to natural target or feature.
	Prism Search Lock	This button appears in the VISION and joystick screens. When pressed, the instrument cycles through lens positions in an attempt to lock onto a target.
	Laser AutoFocus	This button appears in the VISION and joystick screens. When pressed, the instrument attempts to focus the laser and sharpen the video image. This process requires an adequate reflective surface.
	Target Search (Horizontal)	Performs a side to side search for targets. It does not adjust the focus distance of the lenses. For that, use the Search Lock button described above.

	Ri Camera Exposure Settings	Depending on how bright the environment is, select low, medium, standard or high exposure settings for the camera.

Device Settings

Before taking any measurements, ensure the RTS is calculating the correct Reference Elevation, Temperature, Pressure.

1. Tap the **Device** icon and then tap **Settings**.
2. FieldLink automatically opens the prism settings mode.
3. Tap the **Device** icon to modify the instrument settings and access other functions.
4. Tap the **Input Form** icon to type in the **Reference Elevation**, **Temperature**, **Pressure**.
5. The temperature should be input within 10 degrees Fahrenheit (5 degrees Celsius) to ensure the accuracy of the electronic distance measurement.
6. The pressure should be input utilizing local weather reporting to ensure the accuracy of the electronic distance measurement. The standard atmosphere is 29.92 inHg for imperial or 760 mmHg for metric, but the barometric pressure will vary depending on weather conditions and altitude.

To change the WiFi band with the Ri:

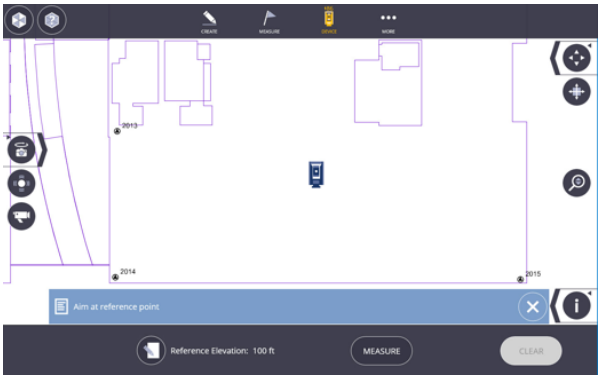
1. Tap the **Device** icon and then tap **Settings**.
2. Click on the Wi-Fi Band arrow.
3. Tap **Band Automatic** or **Automatic24GHzOnly** or **Automatic5GHzOnly**.
4. A reboot of Ri is required for the new band to be in effect.

To change the scanner settings and format SD card:

1. Tap the **Device** icon and then tap **Settings**.
2. Tap the **Format SD Card** option.

Measure Reference Elevation

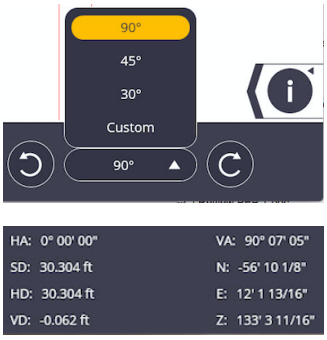
1. Tap the **Device** icon and then tap **Reference Elevation**.
2. Tap **Input Form** to enter reference elevation.
3. Point instrument at the surface you wish to assign reference elevation.
4. Tap **Measure**. A message confirms the reference elevation has been measured.
5. You also have options to clear or re-measure the reference elevation.



Turn To (Theodolite type option)

Use this feature to set the instrument angle to specific degrees/minutes/seconds, turn the instrument by a set horizontal angle, or basic distance and angle measurements.

1. Tap the **Device** icon and then tap **Turn To**.
2. Aim the instrument towards the reference and tap **Zero HA**.
3. Tap **Input Form** to enter a custom angle or use the preset angles of 90, 45 or 30 degrees.
4. Tap the **Rotate** buttons to turn the instrument.
5. Measurement information is displayed to the new location such as **Horizontal Angle**, **Vertical Angle**, **Slope Distance**, **Horizontal Distance**, **Vertical Distance** and **Coordinate Values**.

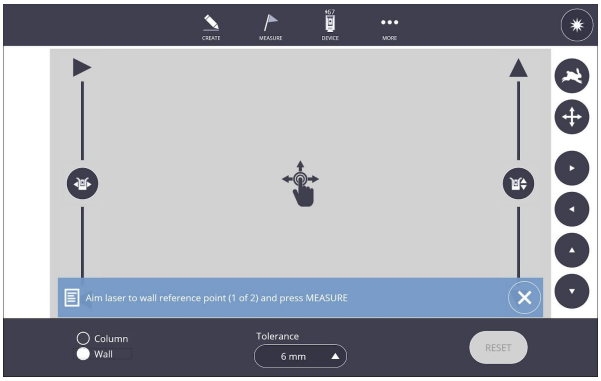


Tools

The **Tools** function has been added to quickly access measurement options using the instrument. These tools can be used without completing an instrument set up or having any project information. Simply connect to the instrument and then begin taking measurements.

Quick Vertical Alignment Check Tool

1. Tap the **Device** icon and then **Tools** menu.
2. Select if you are working on a **Column** or **Wall**. You will see a message below giving instructions on how to aim the instrument. Columns require one single point shot at the base, and you should be perpendicular to the column. Walls require two points shot along the base to give an angle of reference.
3. Use the **Horizontal/Vertical Tools** and the **Bump Tools** along the right hand side of the screen to get the laser exactly pointed to the correct location(s), or tap the center of the screen to move the laser directly.
4. Tap the **Measure** icon in the upper right corner, one location at the base of the column, or two locations along the base of a wall.
5. Set the **Tolerance** distance at the base of the screen to the desired accuracy.
6. Aim the instrument at the top of the column or wall.
7. The screen will show the direction the column or wall should be placed for plumb and will go green once the item is within tolerance.



TIP – The plumb tool within FieldLink offers you the ability to use the Vision tool. This uses the devices camera to ensure this tool can be used in environments where the laser may be difficult to see.

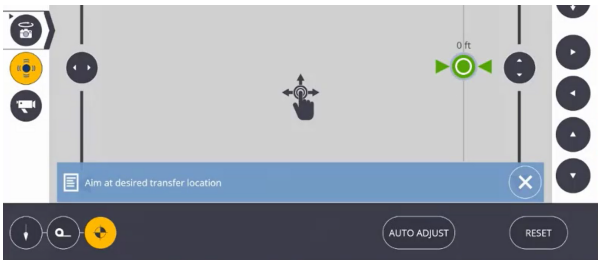
Tape Measure Tool

1. Tap the **Device** icon and then tap the **Tools** menu.
2. Tap the **Tape Measure** icon.
3. Tap the **Measure** icon at the upper right corner when the prism is over the first point or aiming with the laser.

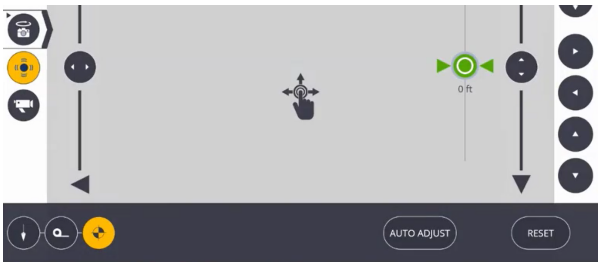
4. Tap the **Measure** icon at the upper right corner when the prism is over the second point or aiming with the laser.
5. The **Horizontal Distance**, **Vertical Distance** and **Slope Distance** will automatically be displayed after the second shot.
6. If you have a station set up, the distances will also be given in an XYZ or NEZ format.

Benchmark Transfer Tool

1. Tap the **Device** icon and then tap the **Tools** menu.
2. Tap the **Bullseye** icon.
3. Tap the **Measure** icon at the upper right corner when the prism is over the benchmark point or aiming with the laser.
4. This position will be represented by a vertical tolerance bar displaying the collected benchmark position at 0’ elevation.



5. With the prism over the new elevation point to check for cut or fill. When aiming with the laser, move the laser to the correct vertical position and click **Auto Adjust** to move the laser to the correct elevation.



Total Station Setup

This section covers setting up the total station before you start. Depending on your requirements, you can set up the total station using one of the following methods:

Set Up - No Data

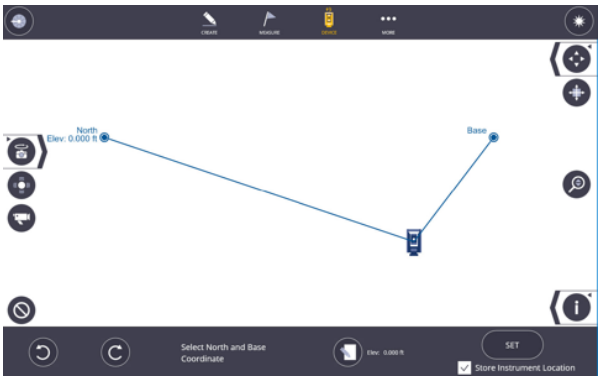
When you are starting a job with no reference data or points you can create your own arbitrary reference for instrument setup. FieldLink offers two ways to do this, north facing setup and two points with elevation setup.

North Facing Setup

1. Point the device in the desired direction.
2. Tap **Set**.

North Facing 2 Point Setup

1. Create a new job.
2. Tap the **Device** icon and then tap **Setup**.
3. Measure two points.
4. Use **Input Form** to enter **Elevation**.
5. Select **North** and **Base** coordinates.
6. Use **Rotation** icons to orientate coordinates.
7. Tap **Set**.

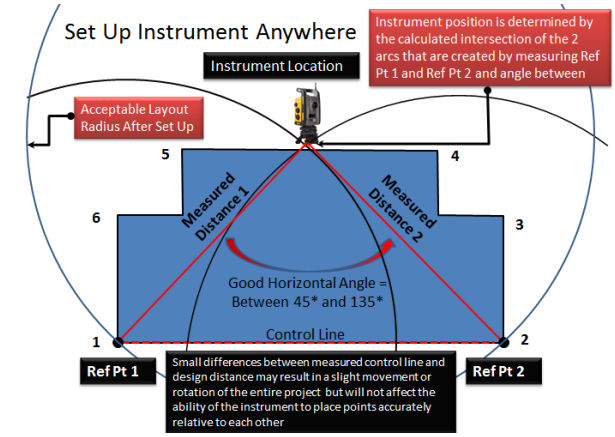


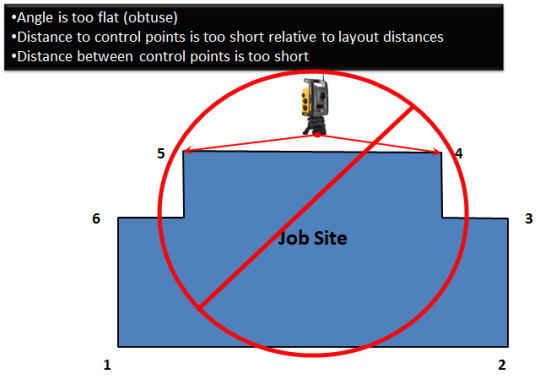
Set Up - Unknown Location (Resection)

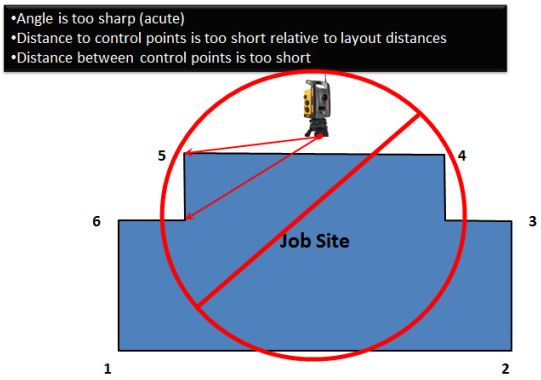
The RTS can be placed in a convenient location as long as there are at least two control points with a known location in the field of view. It is best practice to have the angle between the control points be within 45 and 135 degrees. The angle requirements help to ensure a more accurate calculation of the instrument position. If two control points are not between 45 and 135 degrees, or for a more refined set up, measure 3 or more control points and select the best measurements.

FieldLink uses a least square algorithm and computes the mean to determine station locations. The software computes the mean error for both horizontal and vertical calculations and display the horizontal error in the application. An unknown location (resection) requires a minimum of two measured locations preferably at 90 degrees to each other. Using more points improves the calculation. To get the best results, it is desirable that each point used is equally spaced from each other around the total station at ranges that are greater or equal to the furthest expected layout/collection point.

You can accept “unreliable” instrument setups if two control points within the 45 to 135 degree triangle are not available. You can tap **Set** even with the unreliable set up, but be cautious about laying out new points and be sure to check back to previously laid out points if possible. The best practice is to add a third or fourth control point to the instrument set up to ensure accuracy and proper angular measurements.



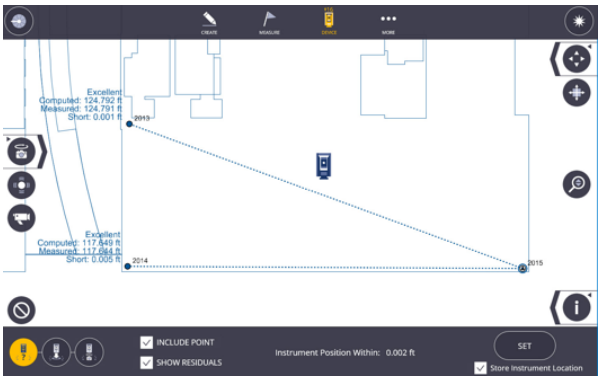




1. Tap the **Device** icon and then tap the **Set Up** icon.
2. Tap on the first control point to be measured so it is highlighted with a blue circle. Make sure the rod height and prism type are correct in the **Prism Settings**, and the RTS is locked onto the prism at the correct point location (or pointed at the control point target directly in laser mode).
3. Tap the **Shoot** icon in the upper right corner.

4. Once the point has been measured, it is shown as a solid blue circle.
5. You can now uncheck the **Include** box for each measured point if you do not want the point included in the Set Up calculations.
6. Tap on the second control point to be measured so it is highlighted with a blue circle. Make sure the rod height and prism type are correct in the **Prism Settings**, and the RTS is locked onto the prism at the correct point location (or pointed at the control point target directly in laser mode).
7. Tap the **Shoot** icon.
    - If the two points are within the 45 to 135 degree triangle, the **Instrument Position Within** calculation shows a measurement.
    - If the two points are under 45 degrees or outside 135 degrees apart, the software labels the set up as “unreliable”. You can tap the **Set** icon to accept this set up or measure another point to add it to the calculations.
8. If necessary, tap on the third control point to be measured so it is highlighted with a blue circle.
9. Tap the **Shoot** icon. Repeat this process for additional control points as needed.

10. If you shoot more than 2 control points, you can tap on each measured point and uncheck the **Include** box in the lower message bar and see how it affects the calculated position next to **Instrument Position Within** dialogue box.
11. You can reshoot each point at any time by tapping on the measured point and tapping the **Shoot** icon.
12. Tap **Set** once you are satisfied with the results. Alternatively, tap the **Clear** icon to clear all measurements and start over.



Set Up - Unknown Location (Resection) - Angles Only

Angles Only Resection Setup is performed the exact same way as a traditional resection, except a traditional resection takes into account the angles and distances from the instrument position to the control points while an angles only setup ONLY takes into consideration the angles from the instrument to the control points. This setup type is useful when you need to use control points with permanent prisms that have been placed on a job site beforehand, and you may not know the type of prism or the prism constant to input for the prism type.

Set Up - Known Point

On the jobsite, it may be convenient to set up the RTS on a known point to conduct the layout. Another known reference point is required to complete the setup.

1. Tap the **Device** icon and then tap **Setup**.
2. Tap **Known Location** icon.
3. Tap **Instrument Location** point on map then select & measure reference point.

4. Tap **Set**.

Known Point Setup - Ri Laser Plummet

You can use the Ri laser as a plummet for station setup.

1. Set up the Ri roughly above the point on which you would like the Ri to be located.
2. Tap the **Device** icon and then tap **Setup**.
3. Tap **Known Location** icon.
4. Tap the **Plummet** icon.

5. If the laser is +6” away from the desired point, gently move the tripod legs and instrument until the laser is within 6” of the point.
6. Level the instrument by adjusting the tripod legs and tribrach adjustment screws.

   Adjusting the level of the instrument, whether with the tripod legs or the tribrach adjustment screws, moves the laser on the ground. If after leveling the instrument the laser is beyond 6” from the point of interest, move the instrument again until the laser is within 6” and adjust the instrument level again.
7. The laser will still not be above the point after leveling the instrument. To fine tune its position, slide

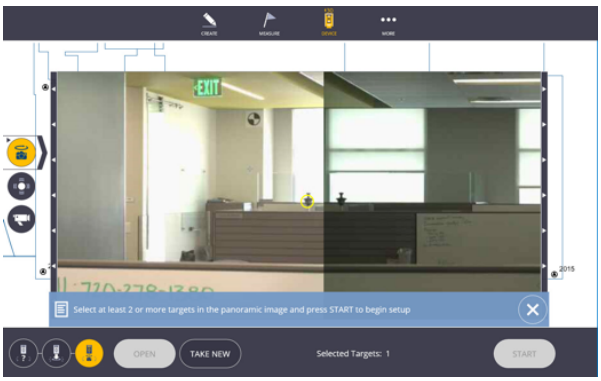
the tribrach on the top plate of the tripod legs until the laser is above the desired point.

8. If this instrument goes out of level with this last step, redo steps 6 and 7.

Set Up - Panorama

By using the panorama picture taken with the RTS or RPT device you have the option to use the panorama to select targets and have the instrument automatically measure the targets and assign them to execute a station setup. Here are the steps to complete a panorama setup:

1. Tap the **Device** icon and then tap **Setup**.
2. Tap the **Panorama Setup** icon .
3. If you have a panorama that you have just taken it is displayed on the screen, if you have a saved panorama from the existing station tap **Open** and select the panorama or tap **Take New** to capture a new panorama.
4. You are prompted to select at least 2 targets in the panorama. Scroll around the panorama and select the targets.



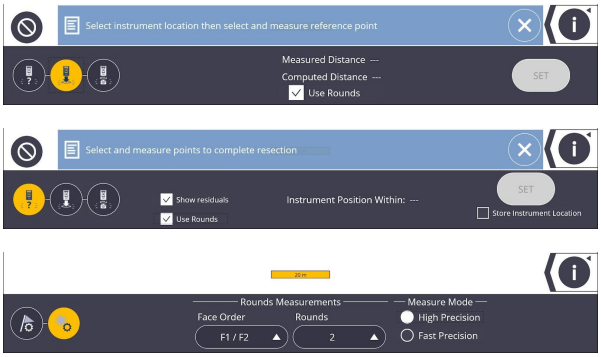
5. Tap **Start**. The instrument automatically turns, locks onto and measures each target.
6. A toast message will appear stating "Unable to resolve instrument position" and asking you to select a point on the map that the instrument is currently aiming at. Select a point on the map screen and tap **Assign**. The instrument will then point to the next target, repeat the process for each target.
7. Select option to **Store Instrument Location** if desired.
8. Tap **Set**.

Set Up - Use Rounds (Optional Module)

If you have purchased the optional Site Control Module, you can choose the **Use Rounds** option for both the Known and Unknown Location Set Up.

1. Tap the **Device** icon and then tap **Setup**.
2. Tap the **Known** or **Unknown Setup** icon.
3. Check the **Use Rounds** box.

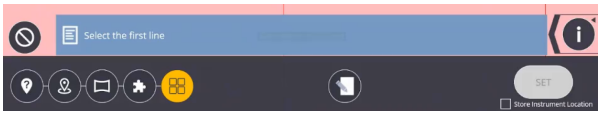
4. You will then be prompted to set the Face Order (F1/F2, F2/F1, or F1 only), the number of rounds (shoot each point 1 - 10 times), and measure mode (high or fast precision).
5. Press the **Shoot** icon to start the rounds collection process.



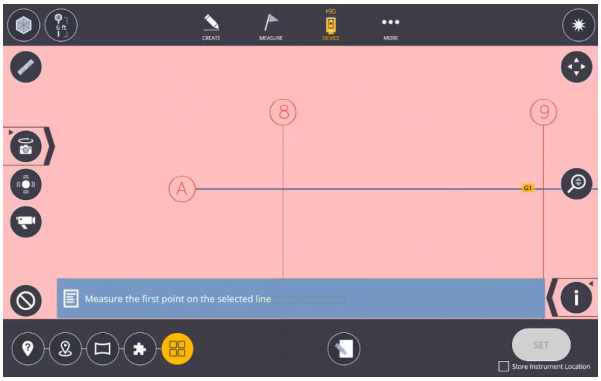
Set Up - Grid Lines

NOTE – For absolute best accuracy setup, Trimble recommends using a standard resection instead of grid line setup. Only use a grid line setup as a last resort.

1. Tap the **Device** icon and then tap **Setup**.
2. Tap the **Grid Line Setup** icon.

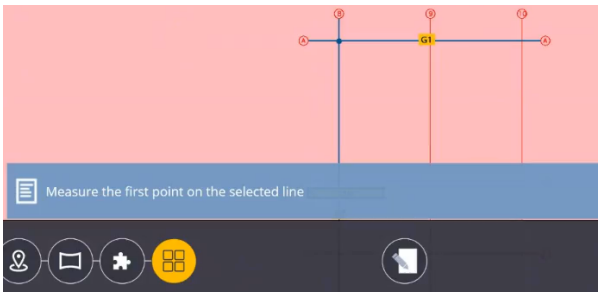


3. Tap the first grid line.
4. Measure the first point on the selected grid line.

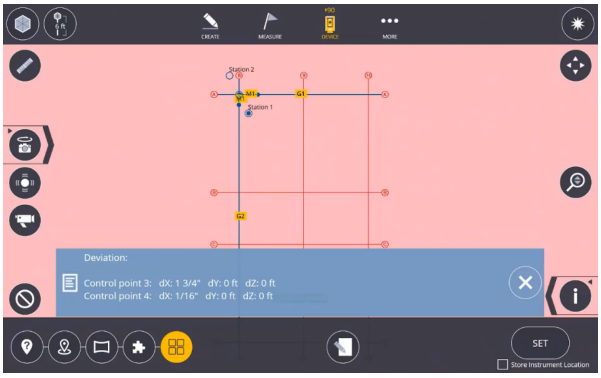


5. Measure the second point along the same grid line.

6. Tap the second grid line.



7. Measure the first point along the grid line.
8. Measure the second point along the grid line.
9. Select the station to position the instrument.
10. If the **Deviation** is acceptable and then tap **Set**.



11. Once **Set** is selected, a message indicates that a reference elevation is recommended for the setup. Select the **Reference Elevation** button to aim the instrument to a feature, take a measurement and input the elevation of choice to use as reference for the rest of the setup.

Component Based Set Up

This feature enablea you to set up on an unlevelled surface to help with fabrication items and ensure accuracy to the modeled item.

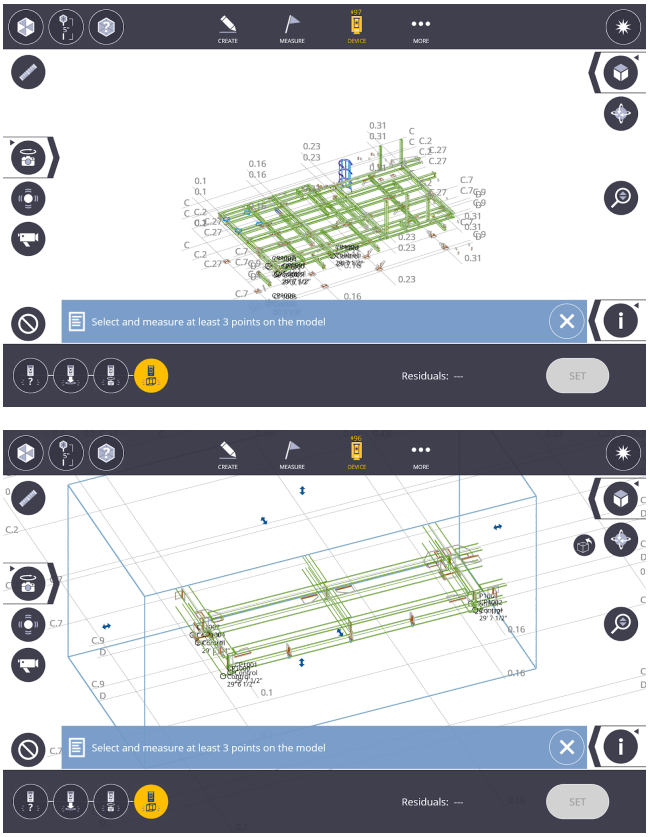
NOTE – When using a scanner Trimble recommends using only one scan.

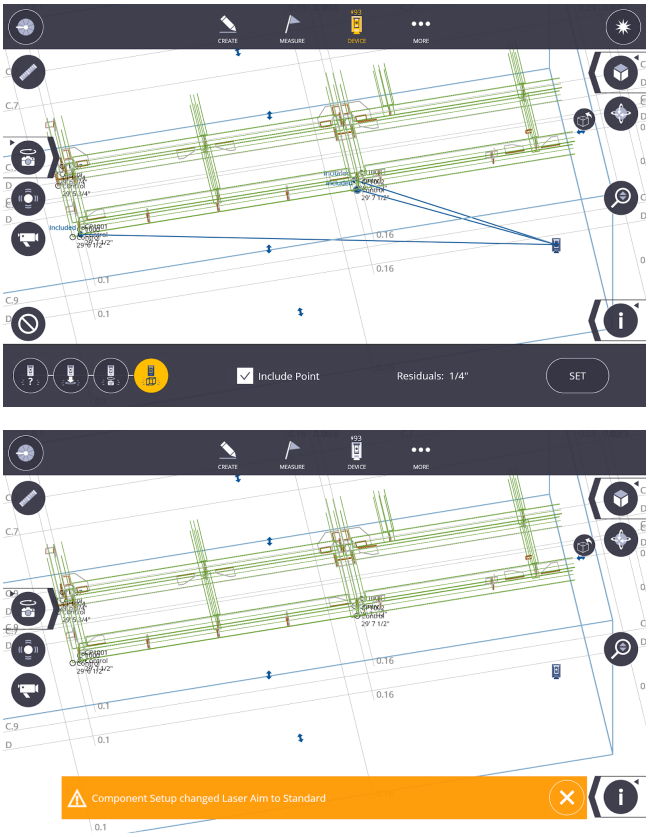
With the Component Based Set Up, a rigid transformation of the model is performed, requiring at least three points. When there are more than three points, a least squares solution is obtained. The centroids of the map data and the measurement data is calculated. This allows the software to calculate optimal rotation and translation matrices that are used to find the setup location. Error is the square distance error between the points in the two datasets.

1. Tap the **Device** icon and then tap **Setup**.
2. Tap the **Component Based Set Up** icon.
3. Select and measure at least 3 points on the component to set the new level for the component. Use the **Layer** and/or **Section Box Tools** to isolate a specific component to use for set up and layout.

   NOTE – Points do not need to be created before using the tool. You have the ability to create necessary points on the model for use in their component based setup.

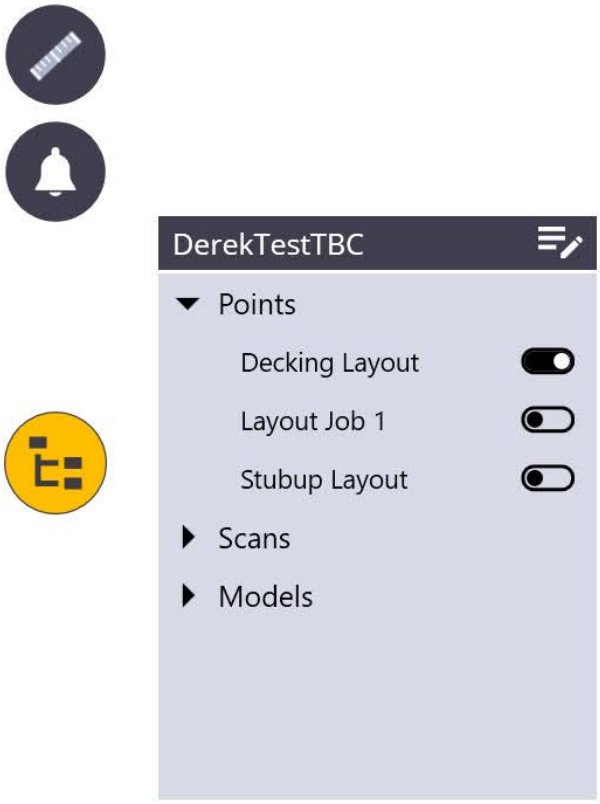
4. Once you measure at least 3 points, the position of the instrument and a residual setup error is shown. Tap **Set** to complete the setup and start laying out additional component connection points.
5. To process the new component level, the software changes the laser to standard aim instead of visual layout.





Retain Station Setup

If you have performed a station setup (total Station, GNSS or scanner setup), you can retain that setup and the control points used for the setup when changing jobs within one project. This means you can navigate efficiently between layout jobs in one project without having to re-setup the instrument.


DerekTestTBC
Points
Decking Layout
Layout Job 1
Stubup Layout
Scans
Models

7

Reports Mode and Status Sharing

To create and view a daily layout summary, layout deviation, field report or report on surfaces collected, tap **More** and then tap **Reports**.

To show the progress of the various model components, Tap **More** and then tap **Status Sharing**.

The Status Sharing tool can push progress information to Trimble Connect Desktop or Tekla software with the installation of the Status Sharing extensions from those applications.

The Trimble Connect Sync Tool helps you keep a local copy of all your critical project data right on your computer or automatically upload it to the cloud for safe storage. Once connected, you can upload or download FieldLink jobs, models, point files, and reports from your Trimble Connect project when you have Wi-Fi service. You may also be able to use your cell phone to create a Wi-Fi hotspot while out in the field, depending on available cellular signal.

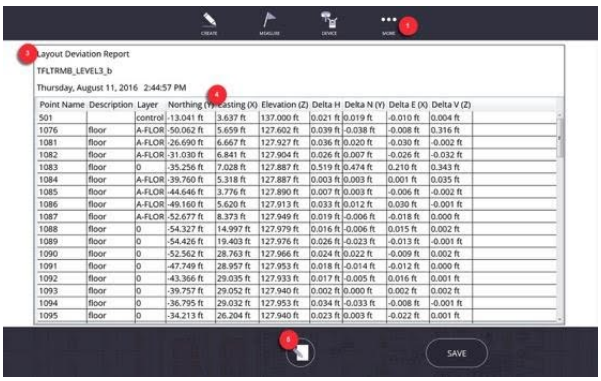
Creating a Trimble Connect project is quick, easy and free for a personal project with up to 10GB of data storage. Training documentation, help files and more information can be found at connect.trimble.com.

Layout Deviation Report

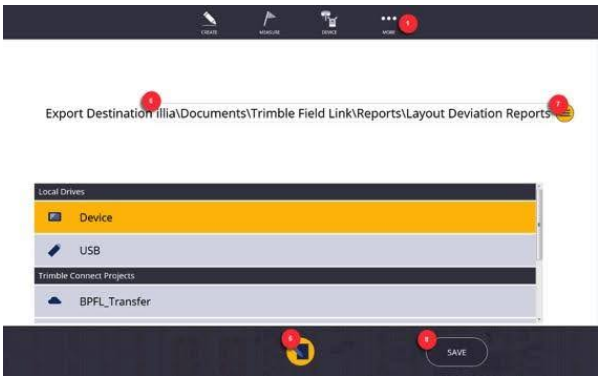
The **Layout Deviation** report allows you to create spreadsheet style layout data for the entire project, including project information, point information, and delta values (in XYZ and NEZ), for points that were laid out in the range of dates defined in a .csv format.

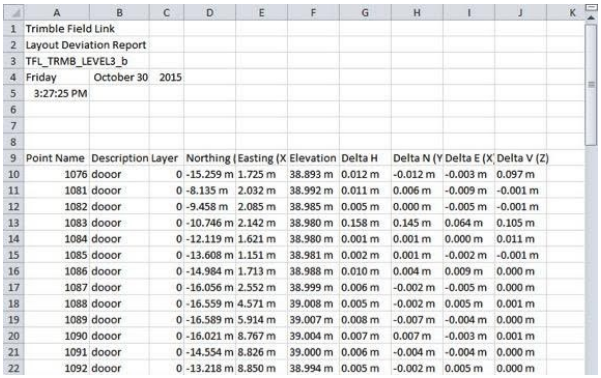
1. Tap on the **More** icon , tap **Reports**, and then tap **Layout Deviation Report**. A preview of the report appears on the screen.
2. Tap on one of the column headers to sort by point name, description, layer, northing (Y), easting (X), elevation (Z), or by deltas. Tap again to sort by ascending or descending order.

3. Tap on the **Input Form** icon to designate where you want the report saved.



4. The report default saved location is under the **C:\Users\xxxx\Documents\FieldLink\Reports\Layout Deviation Reports** folder.
5. Tap on the **Layer** icon to save the report to your computer, a USB drive, or Trimble Connect. You will need to disconnect from the RTS and sign into Trimble Connect for it to be an option. The USB option is only available when a USB memory device is plugged into the computer.
6. Tap the **Save** icon.



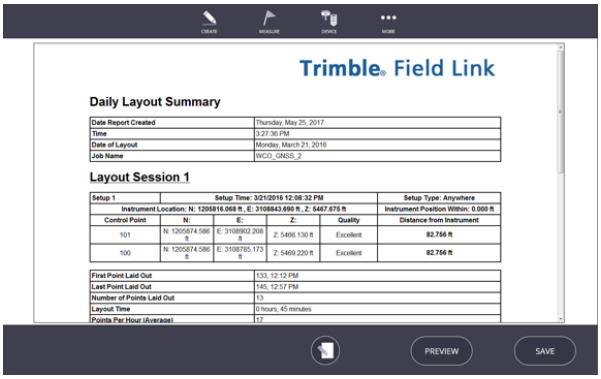


	A	B	C	D	E	F	G	H	I	J	K
1	Trimble Field Link										
2	Layout Deviation Report										
3	TFL_TRMB_LEVEL3_b										
4	Friday	October 30	2015								
5	3:27:25 PM										
6											
7											
8											
9	Point Name	Description	Layer	Northing (	Easting (X	Elevation	Delta H	Delta N (Y	Delta E (X	Delta V (Z)	
10	1076	dooor	0	-15.259 m	1.725 m	38.893 m	0.012 m	-0.012 m	-0.003 m	0.097 m	
11	1081	dooor	0	-8.135 m	2.032 m	38.992 m	0.011 m	0.006 m	-0.009 m	-0.001 m	
12	1082	dooor	0	-9.458 m	2.085 m	38.985 m	0.005 m	0.000 m	-0.005 m	-0.001 m	
13	1083	dooor	0	-10.746 m	2.142 m	38.980 m	0.158 m	0.145 m	0.064 m	0.105 m	
14	1084	dooor	0	-12.119 m	1.621 m	38.980 m	0.001 m	0.001 m	0.000 m	0.011 m	
15	1085	dooor	0	-13.608 m	1.151 m	38.981 m	0.002 m	0.001 m	-0.002 m	-0.001 m	
16	1086	dooor	0	-14.984 m	1.713 m	38.988 m	0.010 m	0.004 m	0.009 m	0.000 m	
17	1087	dooor	0	-16.056 m	2.552 m	38.999 m	0.006 m	-0.002 m	-0.005 m	0.000 m	
18	1088	dooor	0	-16.559 m	4.571 m	39.008 m	0.005 m	-0.002 m	0.005 m	0.001 m	
19	1089	dooor	0	-16.589 m	5.914 m	39.007 m	0.008 m	-0.007 m	-0.004 m	0.000 m	
20	1090	dooor	0	-16.021 m	8.767 m	39.004 m	0.007 m	0.007 m	-0.003 m	0.001 m	
21	1091	dooor	0	-14.554 m	8.826 m	39.000 m	0.006 m	-0.004 m	-0.004 m	0.000 m	
22	1092	dooor	0	-13.218 m	8.850 m	38.994 m	0.005 m	-0.002 m	0.005 m	0.000 m	

Daily Layout Summary

To create a **Daily Layout Summary** report:

1. Tap the **More** icon, tap **Reports** and then tap **Daily Layout Summary**.
2. Select **Date**, **Destination**, and enter **Notes**.
3. Tap **Preview**.
4. Selecting **Preview** opens up a browser page with the **Field Report**. Right-click the report to save the .html report or to print the report as a PDF to a folder of your choosing.

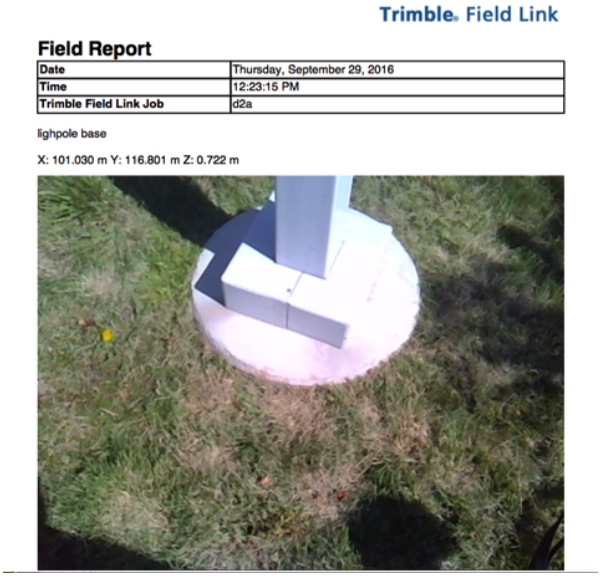


Field Report

To create a **Field Report**:

1. Tap the **More** icon, tap **Reports**, and then tap **Field Report**.
2. Enter **Name**, **Destination**, **Notes**, capture **Pictures**, and measure **Location** (pictures can be collected via tablet of RTS).
3. Tap **Preview**.
4. Selecting **Preview** opens up a browser page with the **Field Report**. Right-click the report to save the

.html report or to print the report as a PDF to a folder of your choosing.



Trimble Field Link

Field Report

Date	Thursday, September 29, 2016
Time	12:23:15 PM
Trimble Field Link Job	d2a

lighpole base

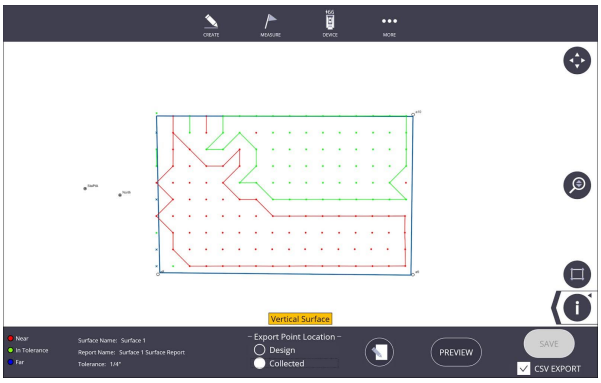
X: 101.030 m Y: 116.801 m Z: 0.722 m

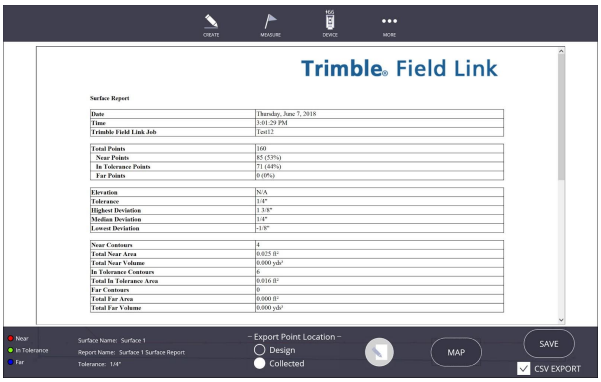
Surface Report

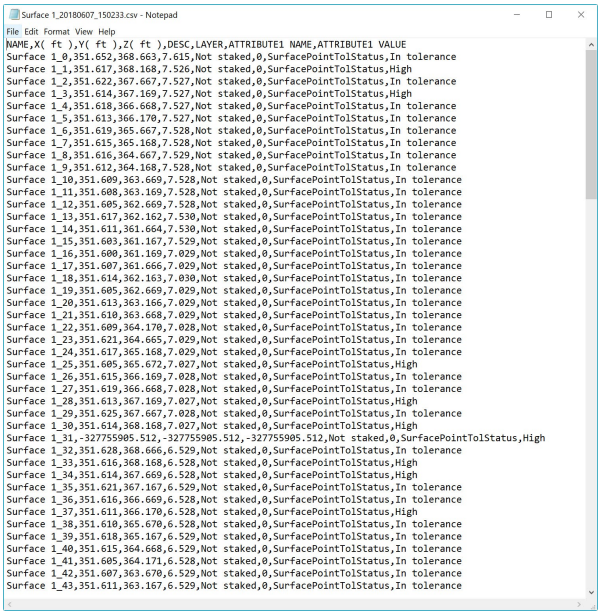
To create a **Surface Report**:

1. Tap the **More** icon, tap **Reports**, and then tap **Surface Report**.
2. Tap the **Fence** icon to select the surface.
3. Select surface by either tapping on the display or by entering the surface name in the bottom right of the screen.
4. Tap the **Fence** icon to close selection.
5. Tap the **Input Form** icon .
6. Enter **Report Name**.
7. Tap **Preview** to open up a browser page with the report. Right-click the report to save the .html report or to print the report as a PDF to a folder of your choosing.
8. Check the **CSV Export** box to also export the collect points list.

9. Tap **Save**.


CREATE
MEASURE
DEVICE
MORE
Vertical Surface
Near
In Tolerance
Far
Surface Name: Surface 1
Report Name: Surface 1 Surface Report
Tolerance: 1/4"
Export Point Location
Design
Collected
PREVIEW
SAVE
CSV EXPORT


CREATE
MEASURE
DEVICE
MORE
Trimble Field Link
Surface Report
Date
Thursday, June 7, 2018
Time
3:01:29 PM
Trimble Field Link Job
Test12
Total Points
160
Near Points
85 (53%)
In Tolerance Points
71 (44%)
Far Points
0 (0%)
Elevation
N/A
Tolerance
1/4"
Highest Deviation
1 3/8"
Median Deviation
1/4"
Lowest Deviation
-1/8"
Near Contours
4
Total Near Area
0.025 ft²
Total Near Volume
0.000 yds³
In Tolerance Contours
6
Total In Tolerance Area
0.016 ft²
Far Contours
0
Total Far Area
0.000 ft²
Total Far Volume
0.000 yds³
Near
In Tolerance
Far
Surface Name: Surface 1
Report Name: Surface 1 Surface Report
Tolerance: 1/4"
Export Point Location
Design
Collected
MAP
SAVE
CSV EXPORT

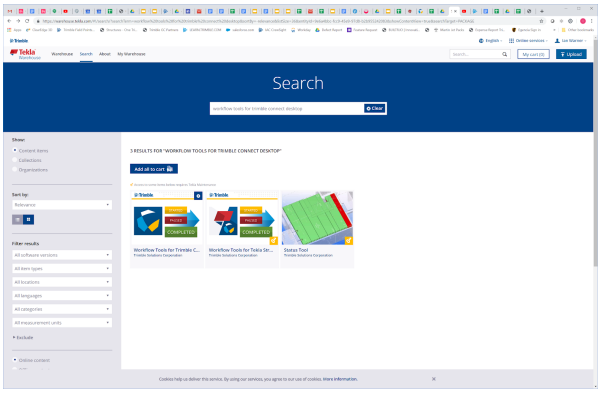

Surface 1_20180607_150233.csv - Notepad
File Edit Format View Help
NAME,X(ft),Y(ft),Z(ft),DESC,LAYER,ATTRIBUTE1 NAME,ATTRIBUTE1 VALUE
Surface 1_0,351.652,368.663,7.615,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_1,351.617,368.168,7.526,Not staked,0,SurfacePointTolStatus,High
Surface 1_2,351.622,367.667,7.527,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_3,351.614,367.169,7.527,Not staked,0,SurfacePointTolStatus,High
Surface 1_4,351.618,366.668,7.527,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_5,351.613,366.170,7.527,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_6,351.619,365.667,7.528,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_7,351.615,365.168,7.528,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_8,351.616,364.667,7.529,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_9,351.612,364.168,7.528,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_10,351.609,363.669,7.528,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_11,351.608,363.169,7.528,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_12,351.605,362.669,7.528,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_13,351.617,362.162,7.530,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_14,351.611,361.664,7.530,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_15,351.603,361.167,7.529,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_16,351.600,361.169,7.029,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_17,351.607,361.666,7.029,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_18,351.614,362.163,7.030,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_19,351.605,362.669,7.029,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_20,351.613,363.166,7.029,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_21,351.610,363.668,7.029,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_22,351.609,364.170,7.028,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_23,351.621,364.665,7.029,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_24,351.617,365.168,7.029,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_25,351.605,365.672,7.027,Not staked,0,SurfacePointTolStatus,High
Surface 1_26,351.615,366.169,7.028,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_27,351.619,366.668,7.028,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_28,351.613,367.169,7.027,Not staked,0,SurfacePointTolStatus,High
Surface 1_29,351.625,367.667,7.028,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_30,351.614,368.168,7.027,Not staked,0,SurfacePointTolStatus,High
Surface 1_31,-327755905.512,-327755905.512,-327755905.512,Not staked,0,SurfacePointTolStatus,High
Surface 1_32,351.628,368.666,6.529,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_33,351.616,368.168,6.528,Not staked,0,SurfacePointTolStatus,High
Surface 1_34,351.614,367.669,6.528,Not staked,0,SurfacePointTolStatus,High
Surface 1_35,351.621,367.167,6.529,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_36,351.616,366.669,6.528,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_37,351.611,366.170,6.528,Not staked,0,SurfacePointTolStatus,High
Surface 1_38,351.610,365.670,6.528,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_39,351.618,365.167,6.529,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_40,351.615,364.668,6.529,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_41,351.605,364.171,6.528,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_42,351.607,363.670,6.529,Not staked,0,SurfacePointTolStatus,In tolerance
Surface 1_43,351.611,363.167,6.529,Not staked,0,SurfacePointTolStatus,In tolerance

Status Sharing (Trimble Connect or Tekla Structures)

You can use FieldLink to download and upload status of model components with Trimble Connect Desktop and/or Tekla Structures.

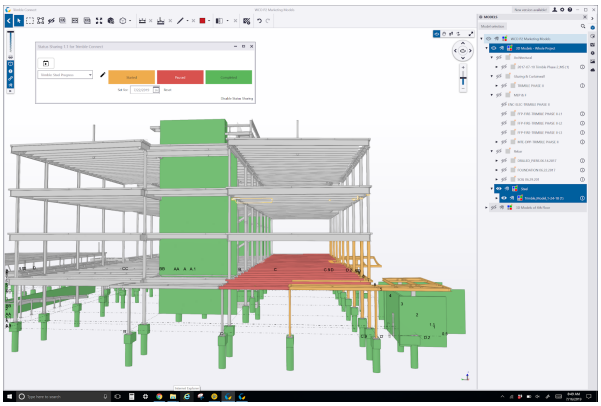
To access the Trimble Status Sharing applications for Trimble Connect Desktop or Tekla Structures, you will need to download the application from the Tekla Warehouse. If using the Status Tool with Trimble Connect Desktop, you will need to have a Pro-license of Trimble Connect and/or have an active subscription to Tekla Structures.

1. Go to warehouse.tekla.com, search for **Workflow Tools** and select the optional download for **Workflow Tools for Trimble Connect Desktop** and/or **Workflow Tools for Tekla Structures**.
2. Select the appropriate application and install the executable file with Trimble Connect Desktop or Tekla Structures.
3. Once installed, the Status Sharing Tool for Tekla Structures can launch from within Tekla Structures.



4. Open **Trimble Connect Desktop**, select the project and the appropriate models and then launch the **Status Sharing Application**.
5. In the **Status Sharing Application**, click the drop down on the left side and select **Create New Status Action**, give the status a name, select the status values to include, and tap **Create**.
6. Select the correct date in the lower center area, then select the model components in **Trimble Connect Desktop** view, and finally select on the appropriate status for the components. Select a new date before changing status for additional model components.
7. You can reset the entire model to the original status by pressing the **Reset** button, or change individual components status with the **Date** and **Status** buttons.
8. Change the date in the upper left corner and press the play button to show the sequence of

component status by date.

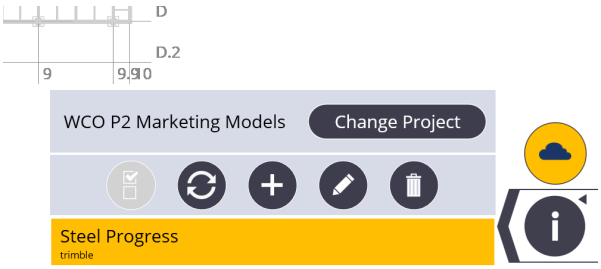


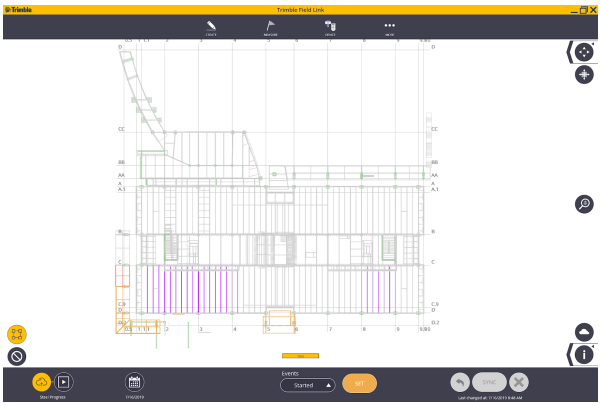
Status Sharing (FieldLink)

You can use FieldLink to download and upload status of model components with Trimble Connect Desktop and/or Tekla Structures.

To access the Trimble Status Sharing application for FieldLink, you will need to order the Project Management Module through your BuildingPoint or Trimble representative.

1. In FieldLink, tap **More** , and then tap the **Status Sharing** button. Make sure you have the correct model imported from Trimble Connect or already open in FieldLink.
2. Press on the **Cloud** icon in the lower right corner to select the correct project from Trimble Connect. Any previously created **Status Action** names are displayed below.
3. Once a **Status Action** has been selected, you will have options to **Update**, **Add New**, **Edit**, or **Delete**the Status Action. If no previous Status Action is available, you can create a **New Status**.
4. Press on the **Cloud** icon again to retrieve the status colorization that were already created in previous status action.
5. Once the status colorizations have been downloaded or a new **Status Action** has been created, you can then add or edit status colorizations and dates for individual model components.
6. Press the **Sync** button to make the FieldLink Status Actions available for viewing or editing in Trimble Connect Desktop or Tekla Structures.


D
D.2
9
9.5
10
WCO P2 Marketing Models
Change Project
Steel Progress
trimble



8

Scanning

If you have a Trimble Tablet with a built-in radio or optional external radio, you can connect to the Trimble X7 or X9 3D Laser Scanner.

Use the FieldLink Scan Module to combine point clouds with FieldLink projects, overlay on 3D models and PDF files, register and refine scans, and view 3D scans immediately after scanning.

NOTE – Trimble recommends limiting the number of visible scans on any one project to 50 scans. The number of visible scans can be changed using the station manager and pressing the eye button for individual or groups of scans.

Connect to the X7/X9 Scanner

FieldLink allows you to connect to several different types of instruments. Make sure you are connected to the X7/X9 by executing the following procedure:

1. Tap the **Device** icon and then tap **Connection**. The connection window opens.
2. Place the battery into the X7/X9 with the battery indicator up and the charging ports facing the inside of the X7/X9.
3. Press the power button on the X7/X9.
4. Wait until the lights flash green, and then tap the X7/X9 device icon in the **Connection** menu.
5. Select the Wi-Fi or cable connection option.
6. If the Wi-Fi option is selected, a list of available X7/X9 Wi-Fi networks available is shown. Make sure you have disconnected from any other Wi-Fi networks. Tap on the correct X7/X9 device (eg: TRIMBLE-X7/X9-XXXXX). If you do not see your device listed, tap the **Find** button.
7. Tap **Connect** on the correct device.
8. Once the layout or collection process is complete and you wish to disconnect from the instrument, tap the **Disconnect** icon in the Connection window before turning off the X7/X9. Tapping the **Disconnect** icon helps ensure a proper shutdown and later reconnection.
9. Remove the X7/X9 battery. Though it is not required, it is best practice to store the X7/X9 with the battery out of the instrument for storage and shipping.

Establish X7/X9 Device Location

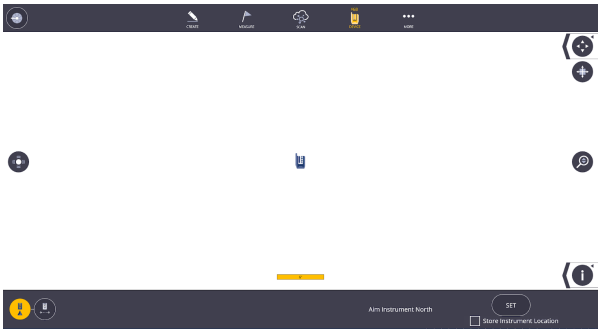
Before taking any laser scans, you can shoot two known points (resection) from the PDF, plan, or model to place the X7/X9 scanner at the correct location on the project. If you do not have a PDF, plan, or model, you can also orient the instrument to its true north direction, an arbitrary plan north towards the top of the screen, or gridline setup.

Plan North Set Up

NOTE – To do a Plan North set up you must not have a model or PDF loaded into your project.

To perform a Plan North set up:

1. Tap the **Device** icon and then tap **Set Up**. If this is your first set up, the instrument rotates to automatically calibrate itself for level measurements.
2. Select the **Aim Instrument North** icon on the bottom left hand side of the screen. The visible laser turns on and levels out at 90 degrees. Use the joysticks to aim the X7/X9 in the North direction (either plan north or the actual direction north).
3. Use the joysticks to aim the X7/X9 in the North direction (either Plan North or the actual direction North).
4. Once the instrument is pointing in the right direction, tap **Set**. You will now be able to see which direction the laser is pointed and now when you collect scans, the instrument knows its location based on the direction it was facing during set up.



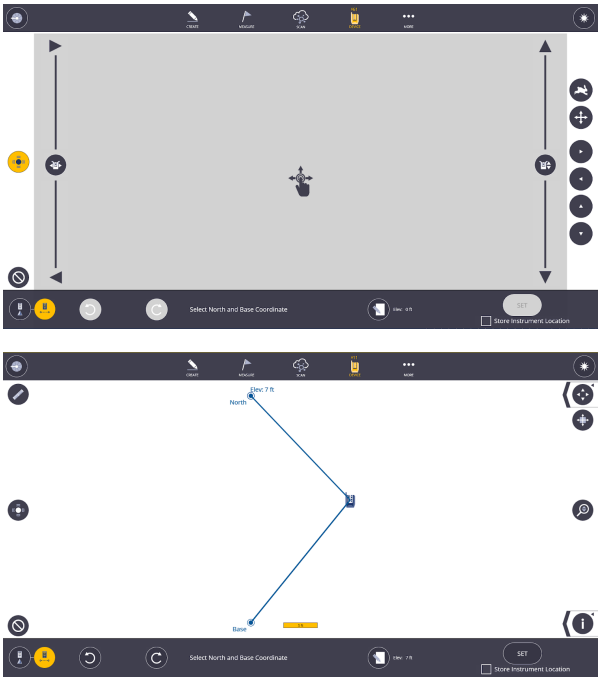
No Data Set Up

The second form of set-up without any data, uses a North and a base control point for set up. You may want to use this setup method to create control points on a new project that you can tie into later.

To complete the No Data Set Up:

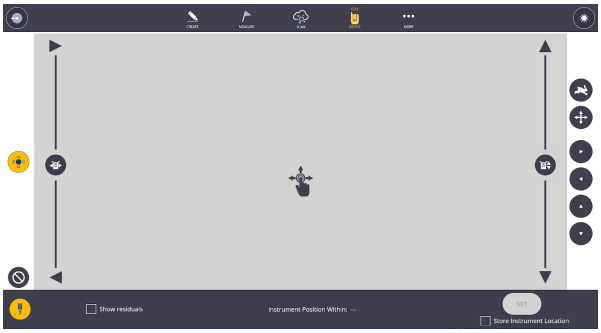
1. Tap the **Device** icon and then tap **Set Up**. If this is your first set up, the instrument rotates automatically to calibrate itself for level measurements.
2. Tap the **North and Base Coordinate** set up icon .

3. Ensure that the X7/X9's laser pointer is on and use the joystick to point the laser to your desired North and base targets (be sure to use the 45 to 135-degree triangle rule for these targets). If the instrument laser pointer is not on, tap the **Laser** icon at the top of the left hand side of the screen.
4. Tap the **Shoot** icon in the upper right corner of the screen to capture each point.
5. Tap on the points you have collected and choose which will be the North and which is the Base. A blue circle appears around the point when the point has been selected. You can rotate the screen to place the points orientated for plan North similar to Quick Vertical Alignment Check Tool, page 88.
6. Tap the **Set** button. Both coordinates are shown in the **Map** view.



Background Plan or Model Set Up (Resection)

1. Tap the **Device** icon and select **Set Up**. If this is your first set up, the instrument rotates to automatically calibrate itself for level measurements.
2. If you have a PDF plan, model, or drawing, tap the first control point to be measured so it is highlighted with a blue circle on the screen.
3. Rotate the laser pointer on the X7/X9 to point at the correct control point location using the joystick control screen.



4. Tap the **Shoot** icon in the upper right corner. Once the point has been measured, it appears as a solid blue circle on the screen.
5. Tap the second control point to be measured so it is highlighted with a blue circle on the screen.
6. Rotate the laser pointer on the X7/X9 to point at the correct second control point location using the joystick control screen.
7. Tap the **Shoot** icon in the upper right corner. If the two points are:
    - Within the 45 to 135-degree triangle, the **Instrument Position Within** calculation shows a measurement of accuracy for placement within your project.
    - Under 45 degrees or outside 135 degrees apart, the software labels the set up as “unreliable”. You can tap the **Set** icon to accept this setup or recheck and re-measure the control points.

    You can reshoot each point at any time by tapping on the measured point and tapping the **Shoot** icon.
8. Tap **Set** once you are satisfied with the location results. To clear all measurements and start over, tap the **Clear** icon in the lower left corner.

Component Based Set Up

See Component Based Set Up, page 98.

Gridline Setup

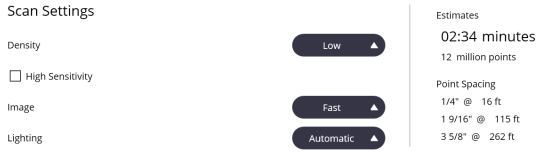
See Set Up - Grid Lines, page 97

X7/X9 Scan Settings

Before taking any laser scans, ensure the scanner is using the correct settings for the type of scan you wish to capture. You have the option to choose how many points you want to collect, if you want to collect photos, and if the points need to be colorized or not. You may not want to collect photos or have the scans colorized automatically as this slows the scanning and processing time. You can collect panoramas and complete the process of colorizing the scans at a later time once complete with the project or at the end of the day.

X7 Scan Settings

1. Tap the **Scan** icon.
2. Select **Collect**.
3. Tap the **Scanner Settings** icon in the lower portion of the screen.
4. You can change the scan density, sensitivity, image capture settings, turn off auto-level and set the lighting options using each drop-down next to each option. You can also view how each option will affect the scan time, number of points captured, and the point cloud spacing with the display on the right side of the screen.



5. Tap the **Scanner Settings** icon again to close the screen and return to the **Collect** screen.

To begin the scan process, tap the **Start** button . You can also quickly press the power button on the scanner to start the scan process as well.

- A blue message bar shows that a pre-scan calibration has begun. You can cancel if needed.
- A message shows the percentage complete. This message also gives you the option to pause or cancel the scan.
- If you have not already established the X7 location, you are given the option to manually place the scan once it is complete and loaded onto the tablet.

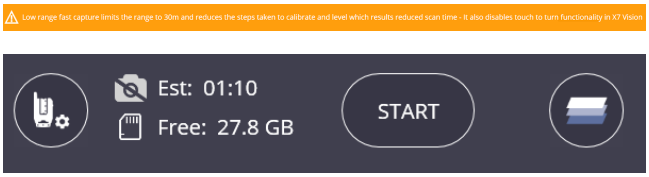
Fast Capture Mode

Fast Capture Mode allows you to capture scans without having the X7/X9 instrument self calibrate every time. This saves an average of 60 seconds per scan. To initiate this setting:

1. Tap **Scan** and then tap **Collect**.
2. Tap **Scan Settings**.
3. In **Scan Settings**, select **Low** in the density field and select the **Low Range Fast Capture** option.

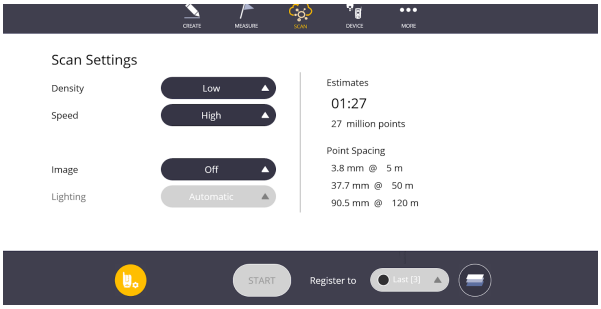
NOTE – There are many caveats to using this mode, including:

- The range is no longer 80 meters but limited to 30 meters
- You must have the latest firmware version on the X7/X9 for this mode to properly function (reference the release notes for the latest version of FieldLink for firmware version required)
- The scanner must run a calibration routine every 60 minutes. It will do this automatically.
- If the instrument detects a temperature change of greater than 15°C it will run a full calibration routine
- The accuracy of registration may deteriorate the further you get from the leveled and calibrated scan so please adapt your scanning methods to accommodate for this.
- This mode disables touch to turn functionality inside of X7/X9 vision



X9 Scan Settings

1. Tap the **Scan** icon.
2. Select **Collect**.
3. Tap the **Scanner Settings** icon in the lower portion of the screen.
4. You can change the scan density, speed (standard = 500k pts/s, high = 1M pts/s), sensitivity, image capture settings and set the lighting options using each drop-down next to each option. You can also view how each option will affect the scan time, number of points captured, and the point cloud spacing with the display on the right side of the screen.



5. Tap the **Scanner Settings** icon again to close the screen and return to the Collect screen.
6. Tap the **Start** button to begin the scan process. You can also quickly press the power button on the scanner to start the scan process as well.
    - A blue message bar shows that a pre-scan calibration has begun. You will have the option to cancel. For more information on the need to run a calibration routine see Atmospheric

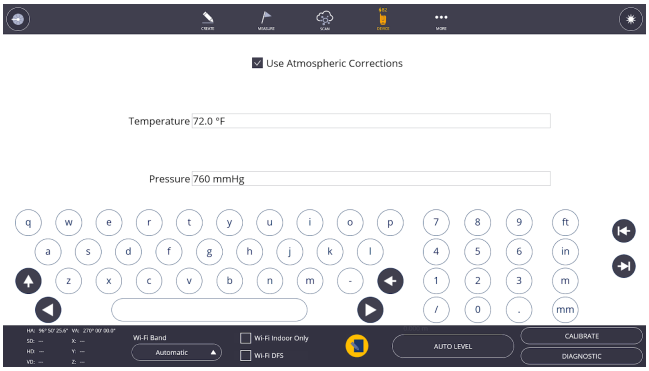
Corrections - X9, page 116.

- A message shows the percentage complete. This message also gives you the option to pause or cancel the scan.

7. If you have not already established the X9 location, you can manually place the scan once it is complete and loaded onto the tablet.

Atmospheric Corrections - X9

The X9 laser scanner is a powerful instrument with the ability to capture 1 million points per second, an extended range of 150 meters and an angular accuracy of 16". Atmospheric corrections settings allow the software to account for atmospheric effects of the captured points in a point cloud ensuring that point clouds are as accurate as possible. These settings are particularly useful when using the maximum range of the X9. The X9 automatically adjusts these corrections over time so manual inputs are not necessary. However, if you choose to manually change these settings based on the capture environment, you can access these settings by tapping **Device** and then tapping **Settings**.



Auto Calibration and Self-Leveling

Both the X7 and X9 have built-in self leveling and auto calibration capabilities.

X7: At the start of each scan the X7 runs a calibration routine and then will automatically self-level adjust (the instrument itself won't move as this change is all internally). The instrument lights will flash blue indicating that it is working on these routines. The X7 will then begin slowly rotating which means it is scanning. The lights will then turn white (only if images are turned on) and this means that the X7 is taking photos. Once the instrument lights turn green, only then can you move the instrument.

X9: At the start of the first few scans the X9 runs a calibration routine and then will automatically self-level adjust. Once the X9 reaches its optimal internal operating temperature, it no longer runs the calibration routine. Typically the X9 reaches its optimum internal operating temperature after several scans (it may need 3 or it may need 7 - it really depends on the environment). After that the X9 runs a calibration routine every 30 minutes or when the internal temperature changes by 2°. This features saves up to 30 seconds per scan as this routine typically takes around that time to properly calibrate.

The X7/X9 has lights on the side of the instrument. When the instrument is on and is being moved into position, you may see the lights changing colors rapidly between blue, red, and green. The X7/X9 (when not

scanning) have these lights flashing to show if the instrument is level or not and even shows which side of the instrument is high or low.

The diagram below explains these lights and what the difference colors indicate:

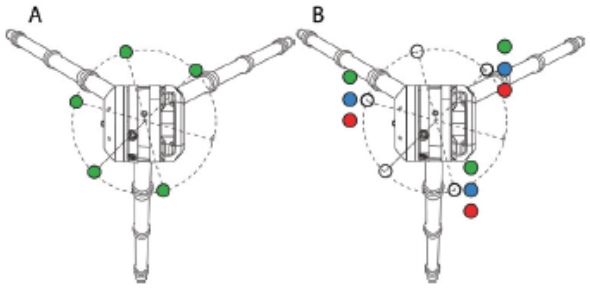


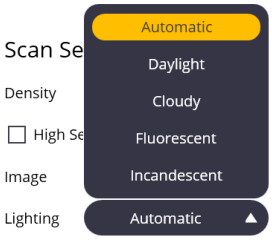
Fig A: All five LED's are green, the instrument is properly leveled.

Fig B: Three LED's are flashing, the instrument is not leveled.

- Green flashing = tripod leg near the LED does not need adjusting.
- Blue flashing = tripod leg near the LED is too low.
- Red flashing = tripod leg near the LED is too high.

Camera Settings

When selecting camera settings to capture images while scanning, the dropdown menu provides several options depending on your environment. While **Automatic** is recommended for most situations, if you are exposed to direct sunlight and notice the instrument is in a direct stream of light, switching to **Daylight** may assist the instrument in correcting the image settings to the situation.



If the environment is too dark, an error message may appear indicating that image collection may take longer than usual due to the instrument being in a dark environment.

High Quality vs **Fast**: selecting **High Quality** image capture will cause the collection process to be longer because the instrument will be taking more photos than during the **Fast** capture process.

HDR: Allows the instrument to collect HDR (high dynamic range) images which will assist in bringing out the highlights and contrasts in the photo. This process increases the amount of time it takes to capture images.

Auto Zero Floor Elevation

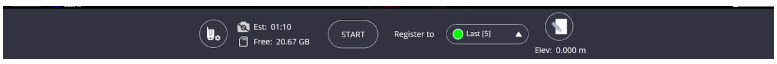
When you collect a first scan or an unregistered scan, you can default to the extracted scanned floor as zero elevation. This means that any point clouds above the floor have positive elevation and any points below the floor have negative elevations. If you are unhappy with the extracted floor elevation, you can select another point anywhere on the point cloud and define this point as the zero elevation. Therefore, the elevation heat map and inspection reports will reference the elevation point defined in the steps above.

If you decide not to use the extracted floor as zero elevation, then the instrument will be the zero elevation and any point clouds above the scanners have positive elevation and point clouds below the scanner have negative elevation.

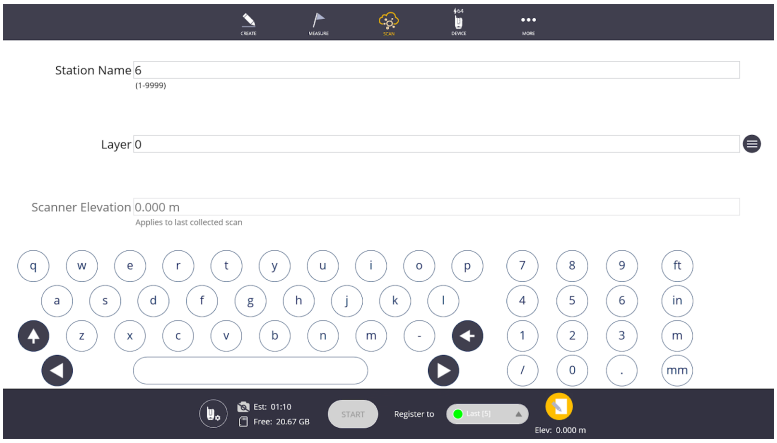
Station Numbering

When collecting scans, you can set scan station numbers at the start of the collection and the number for the scan will auto increment going forward.

Once an instrument is connected, you can navigate to the **Collect** tab for scanning and select the **Edit** tab.

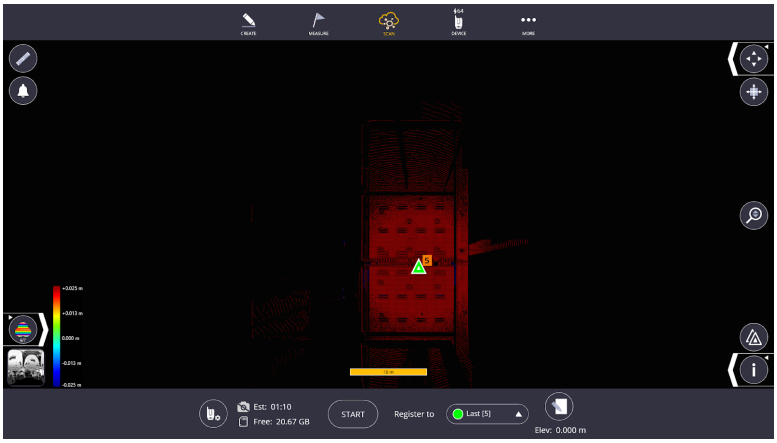


Within the edit menu, you can set a scan station. Now the scan station can only be numeric from 1-1000 and will automatically increment upward with each scan.



For greater organization, every scan job can start at a new scan station number. Within the same scan job, you can increase or decrease the scan station number using the edit form. Once the number is changed within the same scan job, all scans collected after the change will begin incrementing upward from the newly changed value.

TIP – To avoid confusion, ensure the scan station numbers are not overlapping while incrementing.



Viewing Scans in FieldLink

After scanning an area, you can view the scan three different ways - plan view, station view and perspective view. Each of these views offers unique features that can help you access information immediately.

Viewing Options Ribbon

The ribbon on the bottom left of the screen holds several different options for viewing scan data. This includes station color options, point size, station markers and numbers, and cloud view options.

Scan Data Colors

Station Color shows each scan station as a different color. The colors are automatically assigned during the scanning process.

Intensity shows the reflectivity of the surfaces or objects in the scan. Blue and darker areas on a scan mean the area is more reflective from the scanner perspective. Red means the area had more absorptive surfaces from the scanner perspective. Highly absorptive or reflective surfaces may cause loss of point data or less dense scans.

Grayscale shows the scans in grayscale. Grayscale is useful to view data even if there is no ambient light available during the scanning process.

Truecolor shows the scan as it's true color. The software overlays the colorized photos from the instrument and matches it point by point with the data to show the point cloud in its real colors. This option is only available if you have colorized the scans.

Elevation shows elevation lines to represent where each part of the scan is along the Z-axis. You can use these to align scans that are not registering along the Z-axis.

Registered Groups shows each registered group as a different color. You can group scans by different areas, floors, or regions for easier registration, viewing, or exporting.

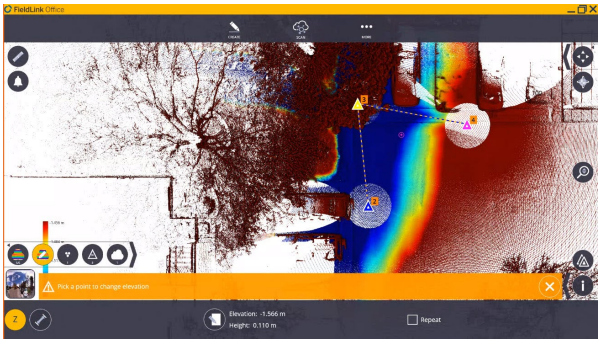
Changing Scan Elevation Settings

When selecting the “Elevation” color option, you can set the distance between color repetition or choose to turn off the repeating color pattern in order to customize the elevation data. To do this:

1. Open the **Viewing Options Ribbon** and select the colors icon until it cycles to **Elevation** view. The elevation settings icon appears in the ribbon.
2. Tap on the Elevation Settings icon.
3. A purple crosshair appears on screen. This is setting the lowest elevation mark for the customizable elevation bar. This is by default at 0. To edit the lowest elevation mark, you must tap on the crosshair. A message saying “Please pick the starting point” appears.
4. Once a lowest point has been established, select an endpoint by tapping on the screen.

   NOTE – If you want to lock the Z axis, select the Z axis lock icon in the bottom left corner

5. If you do not want the elevation colors to repeat, you can uncheck the **Repeat** checkbox.
6. The edit icon in the center of the bottom toolbar allows you to manually enter elevations.



Point Size

You can select from three different point sizes .1 pixel is the smallest point while 3 pixels is a larger point.

Station Markers

You can turn on and turn off the station markers and numbers to better view the scan data.

Station Markers OFF

Station Markers ON . The color of the triangle relates to the automatically assigned scan color.

Station Markers and Station Numbers ON

Point Cloud View Options

The default option on a point cloud is to have all the points visible so that you can navigate in and around those points. There are three options under this icon.

Full Cloud is the default option that allows you to see the point cloud in its entirety.

Look Inside allows you to remove the data from the ceiling/roof/walls in order to see a floor plan view of scan data without having to create a section box or go to the station view.

Outline only shows the outline of walls, structural steel, pipe, or other features, allowing for easy visualization of the floor plan and edges.

Plan View

Plan view allows you to see a top-down view of the scan.

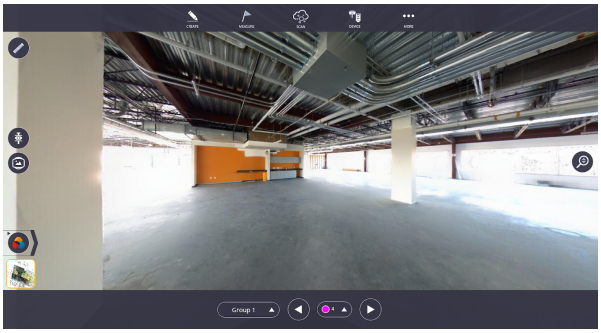
1. Tap the **More** icon .
2. Select **Map**.
3. To recenter scans on the screen, press the four-arrow icon in the top right ribbon.

4. This ribbon also contains multiple views including plan view, two elevation views (front and right), isometric view, and the plan view, or switch between parallel and perspective views.
5. You can also use the **Orbit** button to navigate freely through the data in 3D.

Station View

Station View allows you to view the point cloud or images from the X7/X9 perspective. This view includes an almost 365° panoramic view of the area around the instrument. You can also access the perspective and panorama views from the **Station View**.

1. Select the station view window located at the bottom left of the Map. By default it shows Station 1 in Group 1.
2. Once inside of the station view, there are two dropdown menus - one to select the group and one to select the station number inside of that group. You can also cycle through stations using the arrow icons.



3. You can now use the **View Options Ribbon** to change the color of the scan. You can cycle between four options - grayscale, true color, unmeasured points, and scan intensity.

Using Station View to Control Laser Pointer

In the Trimble X7/X9 firmware version R2.1.4 and later, the built-in laser pointer on the Trimble X7/X9 can be controlled by tapping on the screen inside of a station view format. To control the laser pointer by tapping on the screen:

1. Collect a scan with the Trimble X7/X9 by tapping **Scan** and then tapping **Collect**.

   > **WARNING –** Once the scan is complete, do not move the scanner. If you move the scanner then the camera icon will not appear.

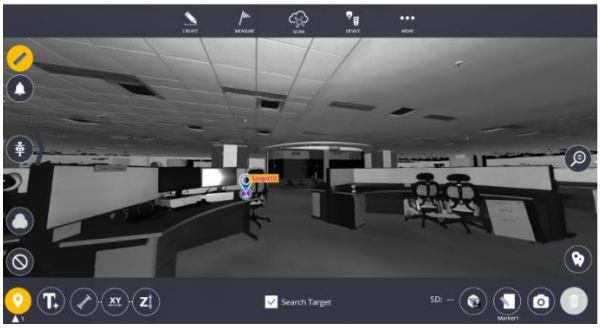
2. Tap **Measure** in the top menu.
3. Tap either **Lay Out** or **Collect**.
4. The Trimble X7/X9 automatically levels itself and a message appears saying “Setup has not been completed”. You can set up the instrument on two known points at this time but it is not required to use the station view as a controller for the laser pointer.
5. Once this is complete, the **Camera** icon appears. Tap the Camera icon.
6. The software opens station view. A message appears along the bottom of the screen advising you to “Tap anywhere in the scan to point the laser”.
7. Once you tap on the screen, the laser pointer on the Trimble X7/X9 moves and points to that spot.
8. To increase accuracy, zoom in on the screen or walk to where you would like the laser pointer to appear and use the Dynamic Joystick to nudge the laser into place.

Tap and Search for Targets in Station View

After scanning an area with targets placed around the site, FieldLink can search and automatically identify targets by using the “Search for Target” feature. To search and automatically identify targets:

1. Open **Station View**.
2. Tap a target in view then select the check box titled **Search Target**. If a target cannot be found, try using a different station view to search for the target.

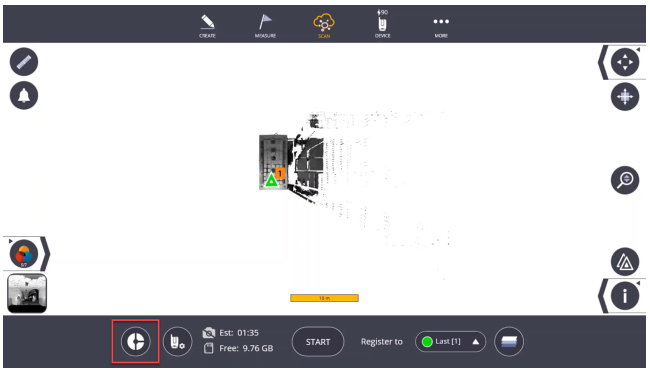
3. Use the edit icon to edit the marker name and description.
4. Perform this step for all the targets in view of the scan.
5. Once these points are selected, then you can perform a regular resection or measurement.

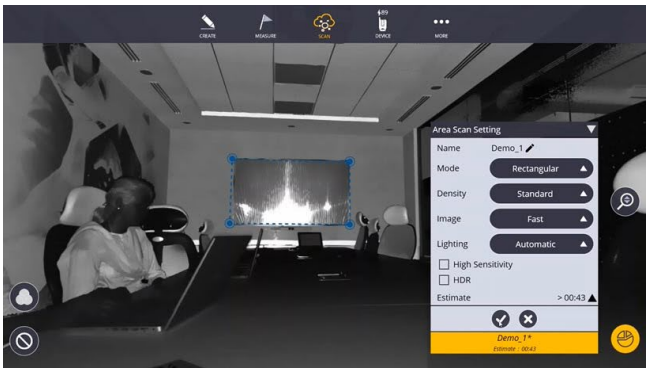


Area Scan in Station View

After an initial scan has been completed, you have the option to perform an Area Scan inside of **Station View**. Area Scan allows you to select a window or area inside of a Station View and perform a scan of only the selected area. This is useful for easily exporting scans if you wants to export/analyze only a small section of a scan and not the entire scan.

Once a scan is completed, the **Area Scan** icon populates the **Collect** workscreen. After the **Area Scan** option is selected, the **Station View** is shown where you can select the area for the Area Scan.





Perspective View

You can find **Perspective View** and **Panorama View** on the left side of the screen inside of Station View. In Perspective View, you are still viewing from the instrument perspective but now you can see the point clouds and any background PDF files, plans, or models loaded into the project.

1. Inside of Station View, select the Perspective Icon.
2. On the bottom of the screen, you can navigate between stations and groups.
3. The **Zoom Slider** on the right side of the screen can assist in zooming in on the point clouds. You can also use pinch to zoom.
4. **Perspective View** also has the **Viewing Options Ribbon** to change the appearance of the point cloud. See Viewing Options Ribbon, page 119 for more information.
5. To exit Perspective View, either select the Perspective View icon again or select the map on the bottom left corner.

Viewing Panorama Images

Once you have generated a panoramic image (to learn how to create panoramic images see Creating Panorama, page 126), to view them :

1. Open **Perspective View** .
2. Tap the ribbon arrow next to the **Perspective View** icon .
3. Tap the **Panorama** icon .
4. If you have created a High Quality panorama, tap on the **Panorama Type** icon in the lower left hand corner.
5. By tapping on this icon, you can cycle through HD panoramas and preview or SD panoramas. Also, by opening this ribbon, you can also toggle the station markers on or off.

NOTE – To learn the difference between a High Quality and Preview panorama, seeDifferences between High Quality Panorama and Preview Panorama, page 126.

To access these images, make sure to **Save As** your project after creating panoramas and open File Explorer where they are located under **This PC** > **Documents** > **Trimble FieldLink** > **Jobs** > **Job Name.dat** > **Scans** > **Images** > **HighResolution**.

Station Manager

Station Manager allows you to hide and unhide scans, colorize scans, create panoramic images, check to see what station each scan is registered too, check the size of each point cloud, delete scans, and select and highlight individual or groups of scans.

Select/Deselect All

Panorama and Colorization

Layer Assignment

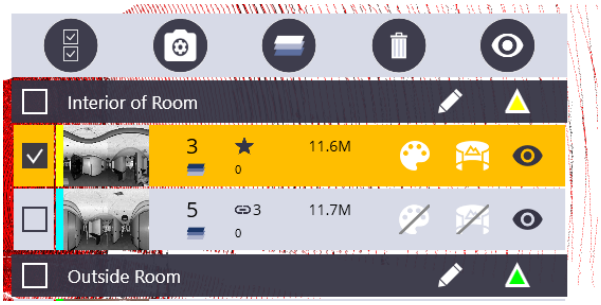
Delete Scan

Hide/Unhide All

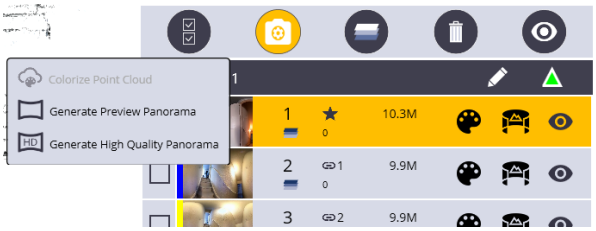
Colorizing a Scan

To colorize a scan:

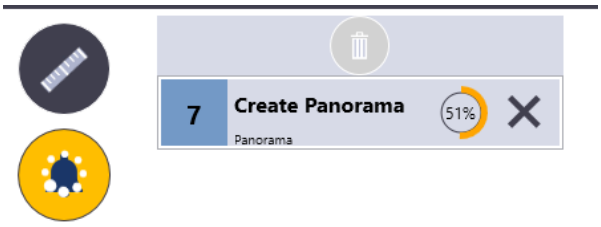
1. Tap either the group or individual scan you would like to colorize.



2. Tap the **Panorama and Colorization** icon .
3. When the settings menu opens you can now use either the **Colorize Point Cloud**, the **Generate Preview Panorama** or the **Generate High Quality Panorama** tools. In this case, select **Colorize Point Cloud**.



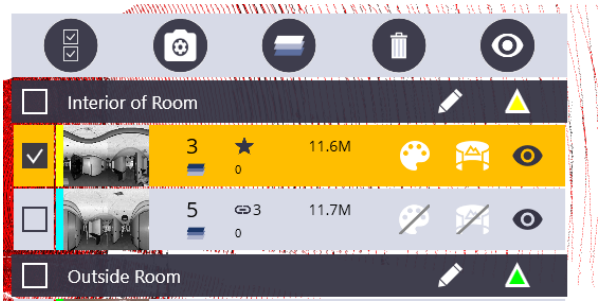
4. Once you tap on that, the **Art Palette** icon begins to spin. This means the software is working on colorizing this point cloud in the background. You can check the status of this process by tapping on the notification bell in the top left corner.



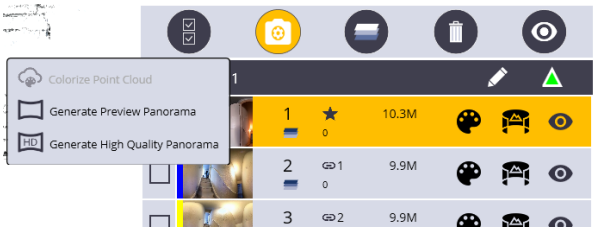
Creating Panorama

To create a panorama:

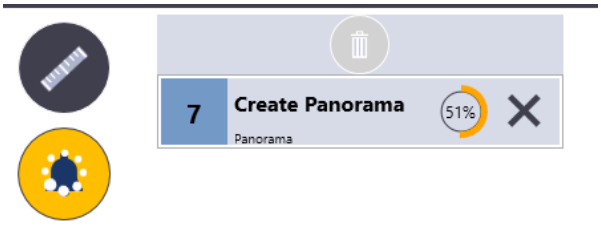
1. Tap either the group or individual scan you would like to generate a panoramic image for.



2. Tap on the **Panorama and Colorization** icon .
3. When the settings menu opens you can now use either the **Colorize Point Cloud**, the **Generate Preview Panorama** or the **Generate High Quality Panorama** tools. In this case, select **Generate Preview Panorama** (see Differences between High Quality Panorama and Preview Panorama, page 126 to learn about the differences between these methods).



4. Once you tap on that, the **Art Palette** icon begins to spin. This means the software is working on colorizing this point cloud in the background. You can check the status of this process by tapping on the notification bell in the top left corner.



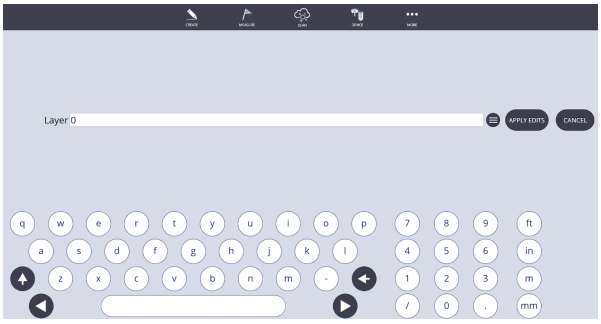
Differences between High Quality Panorama and Preview Panorama

The differences between a “High Quality” generated panorama and a “Preview” panorama is that the High Quality image that is generated smoothes out the stitched edges between each of the images in the panorama and creates a seamless image. However, in doing so, it diminishes the visibility of items in each of the photos. So, for example, if you had text in one of the pieces of the panorama, it would become a bit blurry and hard to read. The “Preview” panorama looks more cut together and blocky because it keeps the full resolution of each individual image in the final stitched panorama. This allows you to zoom in on a part of the image and be able to interpret items that are shown in the image such as text. See examples below:

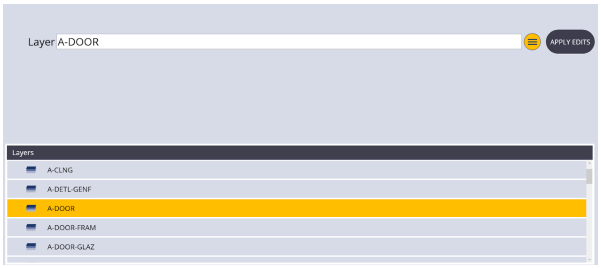
Assigning Scans to Layers

When you have a model in a FieldLink job, along with several scans, annotations, markers, layout points, etc. it can become difficult to navigate around the project. Assigning a scan to a layer inside the model once everything has been aligned can greatly assist you in the process of hiding and isolating areas where you want to focus your attention. To assign a scan to a layer:

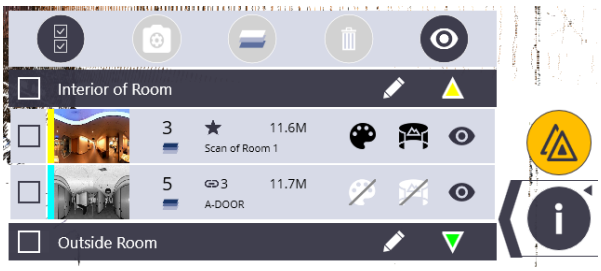
1. Open Station Manager .
2. Tap the station/scan you would like to assign to a layer.
3. Tap the **Layer Assignment** icon .
4. The Layer Assignment menu appears and you can either create a new layer or open the layers panel to assign it to an existing layer.



5. To assign to an existing layer click on the **Menu** icon to the right of the text box.
6. Select which layer you want to assign the scan to and then tap on the **Apply Edits** button to close the menu.



7. Now when you open the **Station Manager** you will see next to the station number that the scan has been assigned to a layer. When you manipulate this layer through the settings menu, this scan will be affected as well.

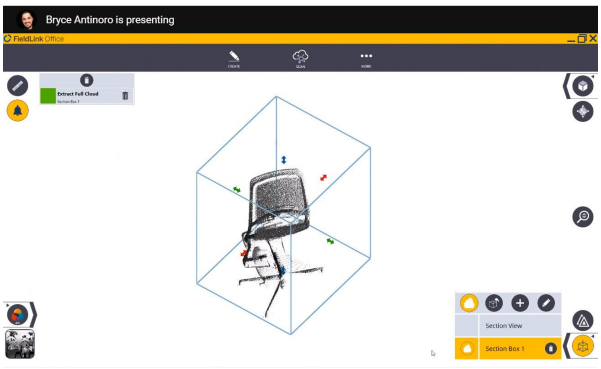


Extract Detail/Density from Region Within Scans

When viewing point clouds in FieldLink, only a percentage of the points in the point cloud are displayed. To view all of the points in a desired area of the scan, you will need to extract the extra points:

1. Tap on the information ribbon and select the **Section View** icon. If the model has many independent sections, you can shrink the section view with the arrows to encompass the only section of interest. If the model is a 3D model, you can select the 3D icon in the top right to be able to shrink the model in the 3 axis if desired.
2. In the section view, select the + sign to create a new section view. You can select the pencil icon to rename the new section view and give it dimensions if desired.
3. Once the new section view is created, select the cloud icon next to the section view you would like to increase the point density on.
4. Once FieldLink has processed the extra points, you can toggle this dense section on and off by

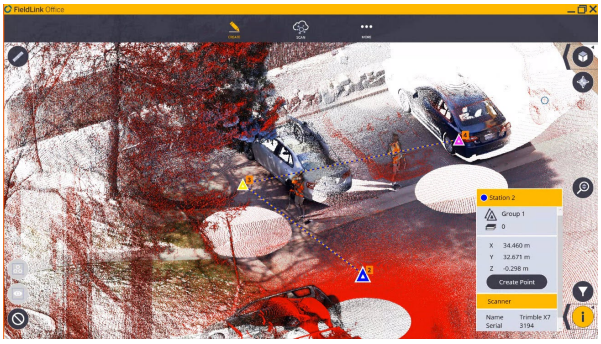
tapping on the cloud icon again.



Create TFL Points from Scanned Data

In most cases, a field point is required in a project in order to layout a point using an instrument. Creating a field point can also help when measuring between a model and point cloud. To create a point from scan data:

1. Tap the **Info** icon ⓘ in the bottom right corner .
2. Tap a point on the point cloud. A circle appears around where you selected.
3. Tap the **Create Point** button under the Info button.



Turn Instrument Laser to Selected Scanned Point

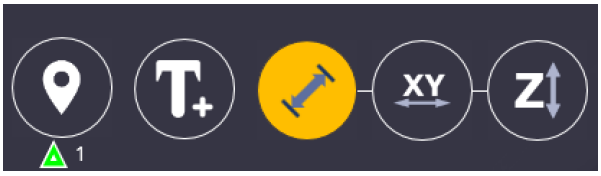
You can turn the instrument laser to a selected scanned point from the Info icon. To do this:

1. Tap the **Info** icon ⓘ in the bottom right corner .
2. Tap a point on the point cloud. A circle appears around where you selected.
3. Tap the **Turn to Point** icon under the **Info** icon.

Measuring & Calculations

When viewing the point cloud on the map and inside **Station View**, you can measure between points in the point cloud. You can also measure between the model and the point cloud using **Create** > **From Model** (see From Model, page 50) and creating points on the model that the measure tool can reference from the point cloud.

1. Once in **Station View**, select the **Measure/Calculation** icon .
2. You can lock the measuring tool either to the XY-axis, Z-axis, or leave it unrestricted. The following bar appears:



3. Once you select the type of measurement you want, click on two separate points on the screen.

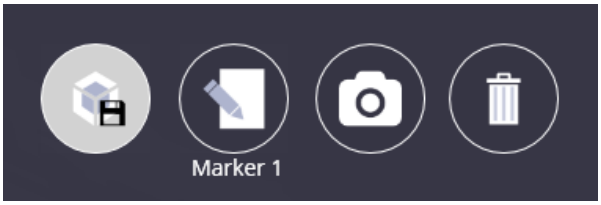
This is an example if you are using the Z-axis lock. Once you select a point on the ground or ceiling, the software automatically follows the z-axis on your next click. The measuring tool measures parallel distances between walls on an XY-axis lock.

Screen Capture/Screenshot

To save the calculations you have made on the screen, use the **Screen Capture** feature to save a screenshot of the current view in the station view directly on your device.

To take a screenshot:

1. Go to station view by selecting **More** > **Map** and tapping the bottom left-hand corner. This also works in plan view after selecting **More** > **Map**.
2. Select the **Calculation** tool in the upper left corner.
3. Once you have completed your measurements, a camera icon appears in the bottom right corner of the screen. Make sure you have everything you want to capture is in your current viewing window because that is what will be saved once you tap on this icon.



4. Tap the **Camera** icon. The confirmation message appears:

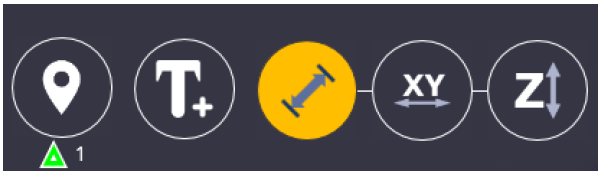
5. By default images are saved to **This PC** > **Documents** > **Trimble FieldLink** > **Images** in a folder with the current project name. To change this file location, tap the **Edit** icon next to the **Camera** icon and then tap the **Folder** icon and use the File Explorer to select the folder to save screenshots to.

Annotations & Markers

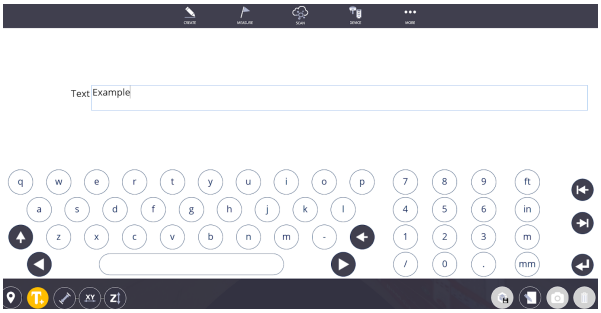
When scanning complicated projects, it may be difficult to identify objects of importance or of interest. By adding an annotation or marker, this can call attention to things that need to be fixed, changed, replaced, or generally highlighted.

Adding an Annotation

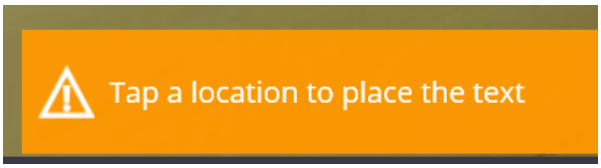
1. Tap **More** > **Map** and then tap **Station View** in the bottom left corner.
2. Tap the **Calculation** icon.
3. The marker and annotation icons appear next to the XY and Z lock measurement icons on the bottom left corner of the screen.



4. Tap the **Annotation** icon.
5. Once the annotation menu appears, you can enter text using the built-in keyboard and then tap the **Annotation** icon that is highlighted yellow to close this menu.



6. Now you can tap where you would like the annotation to appear.



7. To move the annotation to another location, click the pink arrows and drag to where you would like to relocate the text.
8. To change the text, tap the **Edit Text** icon .
9. To delete an annotation, tap the annotation you would like to delete and select the **Delete** icon in the bottom right corner .

Adding a Marker

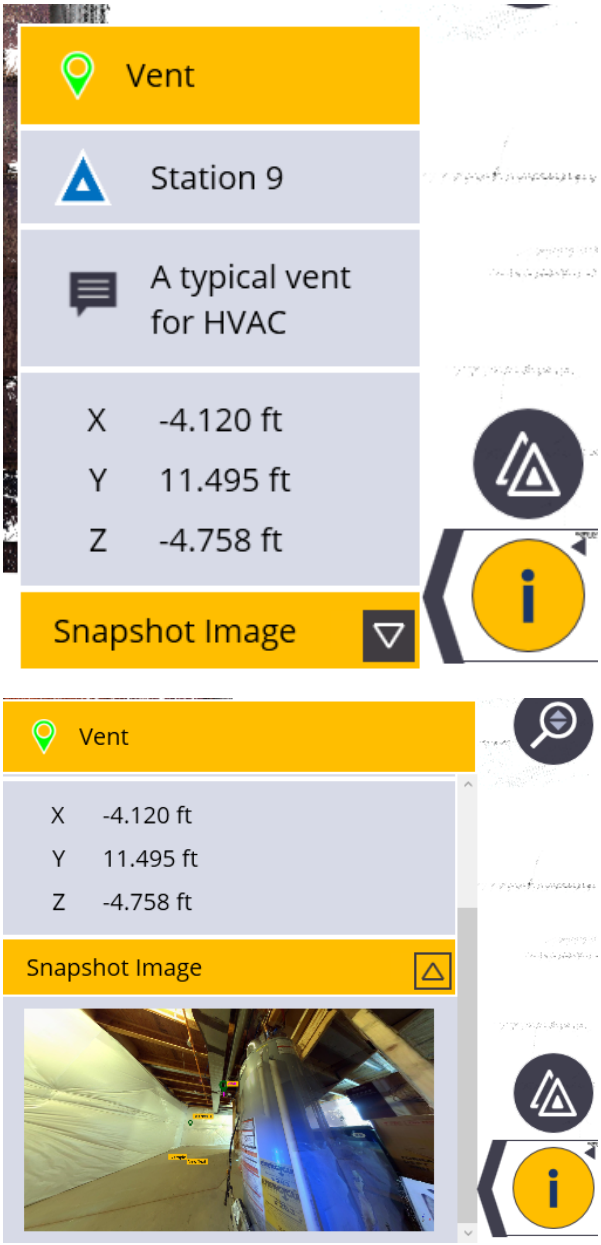
1. Open **Station View**.
2. Tap on the **Marker** icon . The marker icon shows a small triangle with a number next to it. This represents which station view you are in.
3. Tap where you would like to place the marker. You can move the marker to another position using the pink arrows next to the marker.
4. To edit the marker, tap the **Edit Marker** icon .
5. Once in the edit menu, you have the option to change the name of the marker, the marker description and the marker color.

6. To attach a photo to the marker, tap the **Camera** icon to open the device camera to capture a photo or tap on the **File** icon to upload an existing photo from your device.
7. Once your edits are complete, tap the yellow edit marker icon to exit the edit menu.
8. To delete a marker, tap the marker you would like to delete and tap the **Delete** button in the bottom right corner.

Another feature of the markers is the ability to save a view based on the markers you add. To do this:

1. After creating a marker, the **Save View** icon appears. Tap this icon. A message pops up saying that the “current view has been saved”.
2. To see this view again, exit station view (or select **More** > **Map**) and tap the **Info** icon in the bottom right corner.

3. When the info button is yellow, tap the marker where you just saved the view. A menu appears next to the information ribbon.
4. Tap the arrow next to **Snapshot Image** to view the marker name, station number, description, XYZ coordinates, and a thumbnail image of the view you saved.



5. To exit this view, tap the **Info** icon.

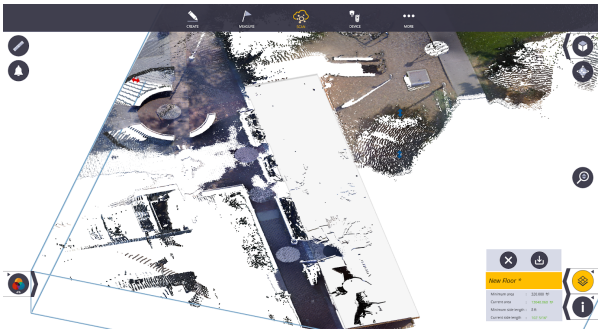
Floor Analysis

The floor analysis feature allows you to create a floor flatness and floor levelness report based on scan data. It also allows you to create contour lines and a grid of points that can be used to aim the instrument at the high and low points.

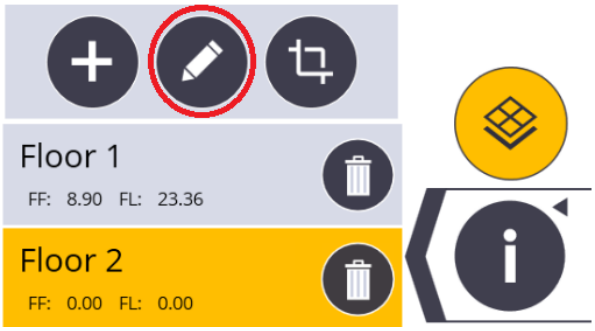
Floor Flatness and Floor Levelness

To create a floor flatness and floor levelness report:

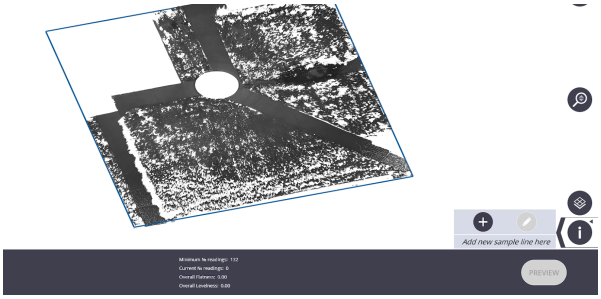
1. Tap the **Scan** icon in the menu bar and then tap **Floor Analysis** towards the bottom of the menu.
2. Make sure the **Floor Flatness/Floor Levelness** icon is selected in the bottom left-hand corner.
3. Tap the **Floor Selection** tool located above the information ribbon to open the menu.
4. Tap the **+** icon to add a new floor.
5. Use the red, green and blue arrows to move the limit box to show only the floor of the area you would like to analyze, being sure to adjust the Z-axis as well.



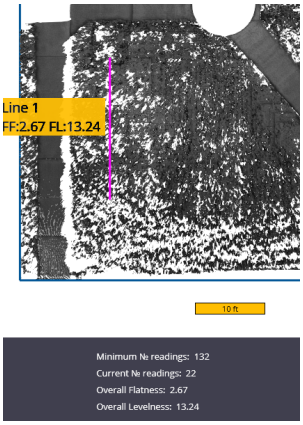
6. Once you have selected the region you want to analyze, tap the **Confirm** icon. The floor is extracted with the selected points.
7. Tap the **Save** icon to save the extracted floor.
8. You can select the **Edit** icon at any point to change the name or assigned layer of this extracted floor.



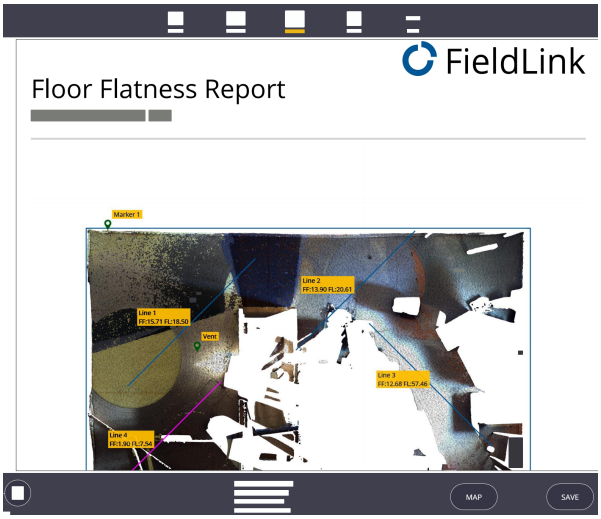
9. To readjust the selected floor from the current extracted points, tap the **Crop** icon next to the edit icon. This will delete the current saved floor.
10. Once you are satisfied with the extracted floor, close the floor selection tool by tapping the floor selection icon.
11. The software prompts you to add sample lines to the floor. Based on the minimum number of reading requirements that is generated based on the size and density of the point cloud, you may have to create several lines to meet this requirement. Select the + icon to create a line. The minimum line length is 11ft.



12. To create a line, tap one point on the floor and then drag your finger across the floor a short distance away from the first point to determine the length of line you would like to use. You can adjust this line by tapping and dragging the endpoints or by tapping and dragging the complete line.
13. When you are satisfied with the length and location of the line, tap **Accept**.
14. Repeat this process until you have met the minimum number of reading requirements. You can alternate the direction of the lines as well as overlap them. When you have met the minimum number of readings, the **Preview** button appears.



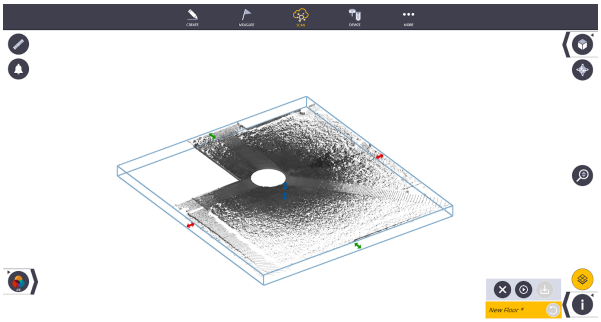
15. In the preview menu, you can edit the minimum local value and specified overall value for both the floor flatness and floor levelness. Once complete, tap the preview button to view the report. To go back to the map, tap the **Map** icon.
16. The **Floor Flatness Report** is automatically generated in a browser link and presented to you once it finishes processing.
17. Right-click the report to save the .html report or to print the report as a PDF to a folder of your choosing.



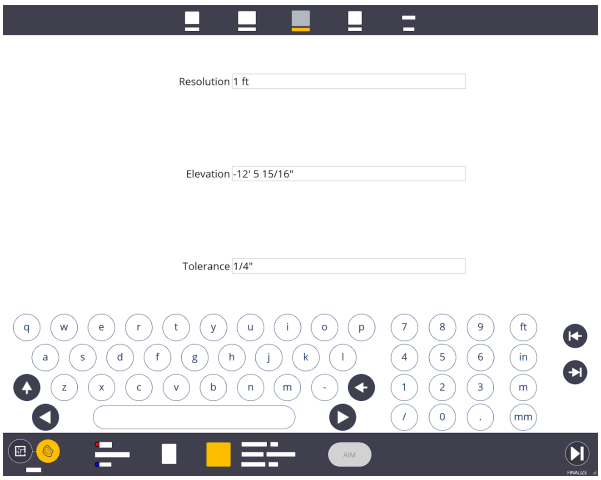
Contour and Point Creation

To create contour lines and points that allow the instrument to aim to:

1. Tap the **Scan** icon in the menu bar and select the **Floor Analysis** option near the bottom of the menu.
2. Make sure the **Floor Contours** icon is selected in the bottom left-hand corner.
3. Select the **Floor Selection** tool located above the information ribbon to open the menu.
4. Tap the **+** icon to add a new floor. If you have already extracted a floor, select which one you would like to analyze and skip to step 9.
5. Use the red, green and blue arrows to move the limit box to show only the floor of the area you would like to analyze.
6. Once you have selected the region you want to analyze, tap the **Confirm** icon. The floor is extracted with the selected points
7. Once the extraction is successful, tap the **Save** icon to save the extracted floor. You can select the **Edit** icon at any point to change the name or assigned layer of the extracted floor.
8. To readjust the selected floor from the current extracted points, select the **Crop** icon next to the edit icon. This will delete the current saved floor.



9. Once you are satisfied with the extracted floor, exit the floor selection tool by tapping on the **Floor Selection** icon again.
10. The contour lines along with the high, in tolerance, and low points are automatically generated based on the tolerance specifications you set in the edit menu. To change the resolution (distance between points), elevation and tolerance, tap the **Edit** icon in the bottom center of the screen.

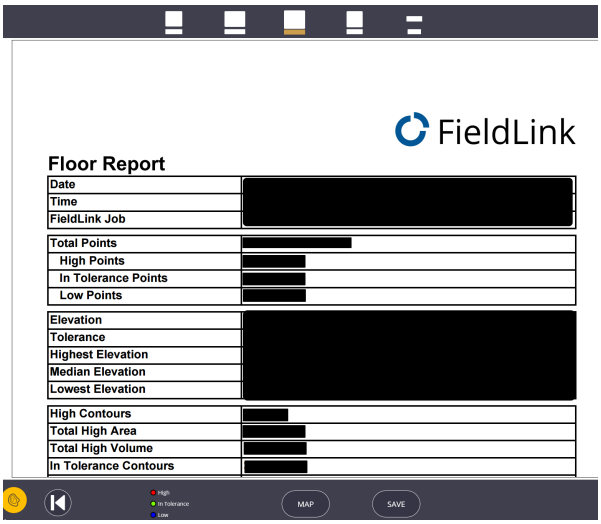


11. Once your tolerance settings are adjusted, tap the **Edit** icon again to reprocess the grid.
12. To change the floor elevation outside of the edit menu, use the **Touch Scan Point** icon and select the individual scan point you would like to change the elevation to.

13. Once you are satisfied with the contours, select the **Finalize** button on the right hand side of the screen.
14. The individual points are generated and shown on screen. Tap the **Edit** icon on the bottom of the screen to edit the name, description and layer to save the points under. Once complete, select the edit icon again to close this screen.

> **TIP –** If you plan to export the generated points as a CSV file, provide a unique description or layer to easily separate these points from other points created in the project. The points extracted from the floor analysis are automatically added to a default layer named “Floor X”

15. To view the Floor Report, tap the **Report** button REPORT on the bottom of the screen.



16. Once in the report preview screen, you can either return to the map view or save the report to your desired location.

17. To view the generated points report as a CSV file, navigate to **More > Projects > Export** and filter out the floor points you would like to export. Select CSV as the file type and the press **Export**.

	A	B	C	D	E	F	G	H	I
1	NAME	X(ft)	Y(ft)	Z(ft)	DESC	LAYER	ATTRIBUTI	ATTRIBUTE1	VALUE
2	Floor 1_0	-29.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
3	Floor 1_1	-28.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
4	Floor 1_2	-27.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
5	Floor 1_3	-26.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
6	Floor 1_4	-25.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
7	Floor 1_5	-24.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
8	Floor 1_6	-23.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
9	Floor 1_7	-22.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
10	Floor 1_8	-21.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
11	Floor 1_9	-20.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
12	Floor 1_10	-19.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
13	Floor 1_11	-18.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
14	Floor 1_12	-17.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
15	Floor 1_13	-16.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
16	Floor 1_14	-15.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
17	Floor 1_15	-14.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
18	Floor 1_16	-13.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
19	Floor 1_17	-12.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
20	Floor 1_18	-11.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	
21	Floor 1_19	-10.19	26.811	-5.845	Not staked	0	SurfacePo	Not calculated	

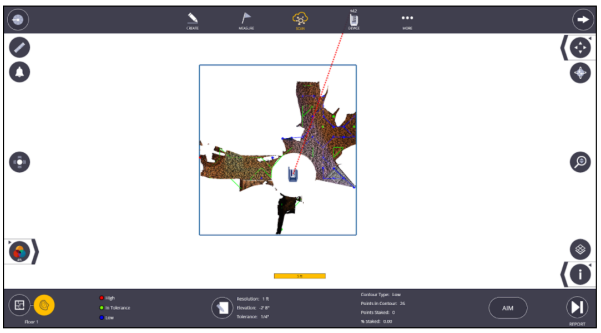
18. The default save location for the reports is **User > Documents > FieldLink > Reports > Floor Reports** and the default location for CSV exports is **User > Documents > FieldLink > Exports**.

Contour and Point Layout

Once you have collected a scan of the area around you, generated the contour lines and have set-up the instrument on two points, you can now use the instrument to aim at the high and low points on the contour

lines. To do this:

1. Ensure the instrument is set up by tapping **Device** and then tapping **Set Up**.
2. Go to the Floor Inspection contour creating menu by tapping **Scan > Floor Analysis > Contour Creation**.
3. Once the contour lines have been created and the instrument is leveled and set up, select the contour line to layout. The individual points that make up that line appear.
4. Tap the point you would like to aim the laser pointer at.
5. The **Aim** button should appear solid. Tap the **Aim** button.



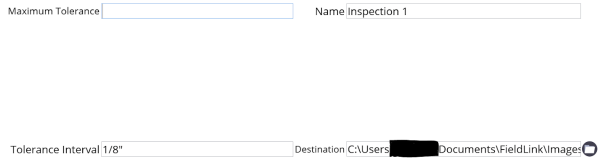
Inspection

The inspection feature enables you to compare the model to the collected scan to check for any discrepancies. To complete an inspection, the 3D model must be imported into your FieldLink project and the points must be aligned with the model.

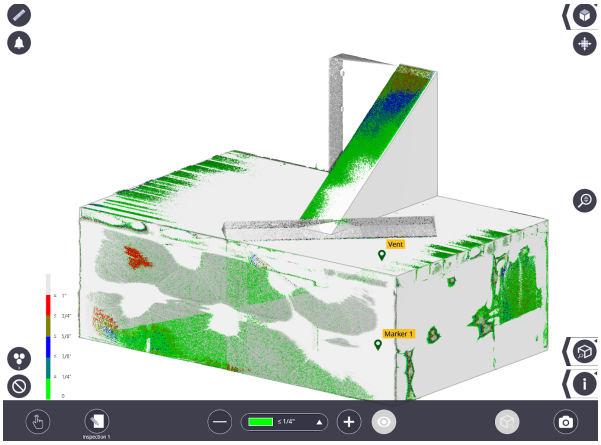
NOTE – The most accurate way of aligning scan data with a 3D model is by creating points on the model and performing a resection based on those created points. See Background Plan or Model Set Up (Resection), page 112 for more.

To use the inspection feature with 3D model and scan data:

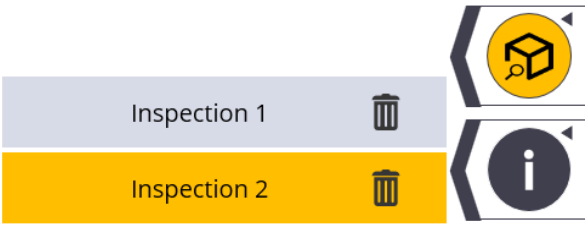
1. Ensure the 3D model and point cloud are aligned.
2. Tap the **Scan** icon .
3. Tap **Inspection**.
4. Tap the **Edit Inspection** icon on the bottom of the screen.
5. The **Inspection** menu appears allowing you to set the maximum tolerance and tolerance interval, save destination for images and the inspection name.



6. Once these parameters have been set, tap the **Edit Inspection** icon again to exit.
7. Tap the **Inspection** icon on the lower right side of the screen to begin the model inspection.
8. Once the inspection process is complete, an array of colors appears on the 3D model showing where the data is within tolerance based on the interval set in the **Inspection Editor**.



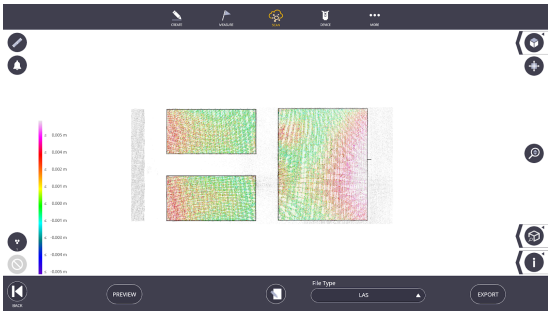
9. You can produce several model inspections with different tolerances within the same project. Tap **More > Map** to return to Map view and then go back into the **Scan > Inspection** menu and conduct a new inspection.
10. To toggle between the different inspections, tap the **Inspection** ribbon and select the inspection you would like to see.



11. You can change the tolerance by the increment you set by using the **+** and **-** buttons on either side of the tolerance menu in the middle of the screen This affect only the color range that is selected and changes by the increment you set in the inspection editor.
12. You can turn off intervals and colors by selecting a color/range in the menu and then tapping on the eye icon.

13. Tap the camera icon in the bottom right corner to save screenshots to the default images folder under **Documents > FieldLink > Images**.
14. You can also export the colored inspection clouds in LAS, LAZ and e57 formats.

15. To create an **Inspection Report**, and save it locally, to a thumb drive or to Trimble Connect.
    1. Once the Inspection is created, tap the **Next** icon.
    2. Tap the **Preview** icon.

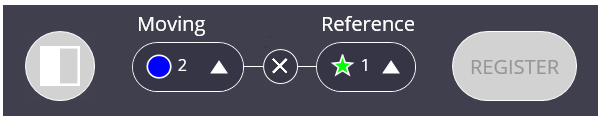


    3. Tap **Save** to save the report. To change the location of the report, tap the **Input Form** icon .

X7/X9 Scan Registration

If the scanner has at least two scans loaded in the active project, you can manually move and register the scans directly in FieldLink if they do not automatically register. There are two options to register scans manually. You can rotate the scan to a different orientation to better match the orientation of the reference scan or move it to an area where more overlap occurs with the reference scan. An alternative is to use **Split View** to select two visible surface planes that are shared between the two stations.

1. Tap the **Scan** icon and then tap **Register**.
2. In the dropdown menu on the bottom bar of the screen, select which station you want to move under the **Moving** dropdown. A blue circle with red and green arrows appears around the station icon that you are now moving.



3. Select which station you would like this station to register to by selecting it under the **Reference** dropdown.
4. Using the blue circle and red and green arrows, move and rotate the scan data to match the orientation of the scan you are referencing in both plan and elevation views.
5. When the scan is in the same orientation as the reference scan, tap the **Register** button to register the scans together.
6. The two scans are now linked together. To unlink these scans and move them separately, tap the X between the two station numbers in the bottom menu.
7. If the registration refinement fails, you are prompted with the red pop-up below. If this continues, try

the **Split View** option.

To use **Split View**:

1. Tap the Split View icon .
2. Once Split View opens, select which station you are moving and which station you are referencing in the dropdown menus on the bottom of the screen (moving station view is on the left side of the screen and the reference station view is on the right side of the screen).
3. Tap a surface that is visible from both stations. Once you select a surface, a white circle appears. On the other screen, select the same surface. A white dot appears.
4. Tap a different surface visible from both stations on both screens. These points should be blue. See the example below:

> **TIP –** Choosing flat, bright-colored, non-reflective surfaces produces the best results when using Split View as these areas have more accurate scan data.

5. Once both points have been selected on both screens, tap **Register**.
6. Repeat these steps if the scan fails to register again. If the scans still do not register successfully, you may want to scan the area in between these two stations to better stitch together the data.
7. To have the most accurate scans and registration, Trimble recommends that you refine the scans once you have finalized the registration process.

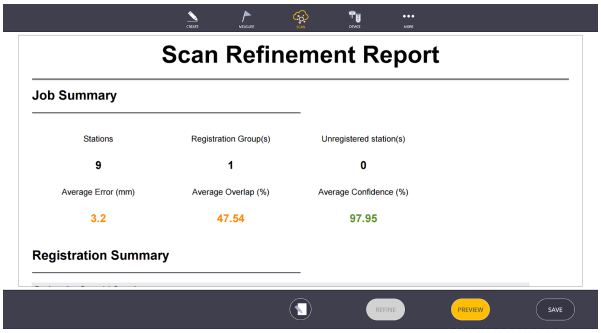
X7/X9 Refining Scans

1. Tap the **Scan** icon.
2. Tap the **Refine** button.
3. On the bottom of the screen, a menu appears. Tap the **Refine** button to begin the refining process.
4. Once the refining process is complete, the **Report** tab is available.

   Tap **Preview** to open the report in a browser page. The report tells you how well the scans are refined and registered by giving you the average error in millimeters, the confidence percentage, and

the average overlap. Right-click the report and save the .html report to a folder of your choosing. You can also right-click and print the report as a PDF to a folder of your choosing.

NOTE – The tolerance settings for the scan refine report are adjustable.

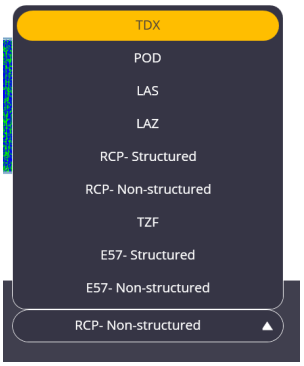


X7/X9 Scan Export and Diagnostics Report

Export

Once you have finished scanning, you can export scans to view later in FieldLink Office, Trimble Realworks, SketchUp and other supported CAD software. To export scans:

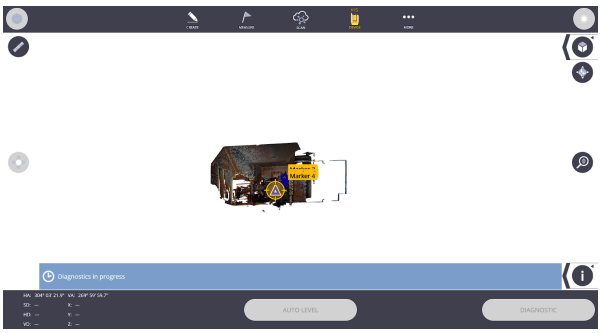
1. Tap the **Scan** icon and then tap **Export**.
2. On the bottom bar, tap the dropdown menu and select the file type to export. The options are TDX, POD, LAS, Structured RCP, Non-Structured RCP, TZF, Structured E57 and Non-Structured E57.
3. Click the **Export** button.
4. Choose where to export the file to on your device (use the up arrow to navigate between save folders). You can also select whether to either refine or colorize the points during export. If you have already colorized and refined the points, the checkboxes are selected and grayed out.
5. Click the **Export** button again to begin the export process. Export time depends on how many scans you have, whether the points have been colorized whether the file has been refined.



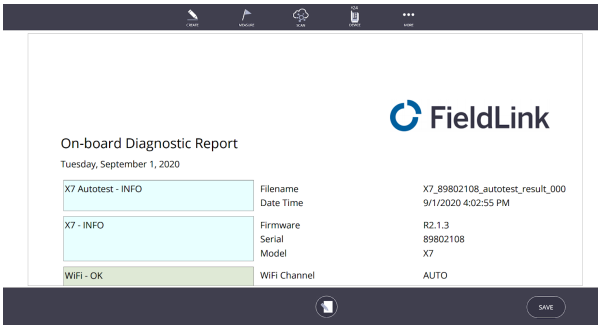
Two Diagnostics Report

If you encounter an issue with the X7/X9 or to check the instrument health, use the built-in diagnostics report function. To create a diagnostics report:

1. Ensure the software is connected to the Trimble X7/X9 laser scanner.
2. Tap on **Device > Settings > Diagnostic**.
3. Once you tap the **Diagnostic** button, the Trimble X7/X9 begins spinning and the yellow lights flash. Make sure to not touch or move the X7/X9 while it is moving.



4. The diagnostics report appears once it has finished and the lights on the Trimble X7/X9 turn green.

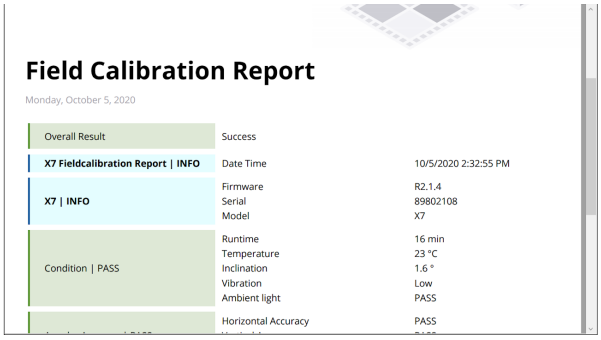


5. Once you have viewed the report, tap the **Preview** button to open up a browser page. Right-click the report and save the .html report to a folder of your choosing. You can also right-click and print the report as a PDF to a folder of your choosing.

Calibration Report

To access the X7/X9 instruments Calibration Report:

1. Ensure the software is connected to the Trimble X7/X9.
2. Tap **Device** and then tap **Settings**.
3. Tap **Calibrate Instrument**.



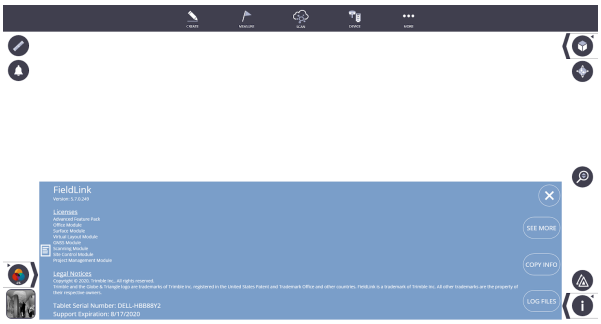
You have the option to open the report in a browser page. Right-click the report and save the .html report to a folder of your choosing. You can also right-click and print the report as a PDF to a folder of your choosing.

Log Files

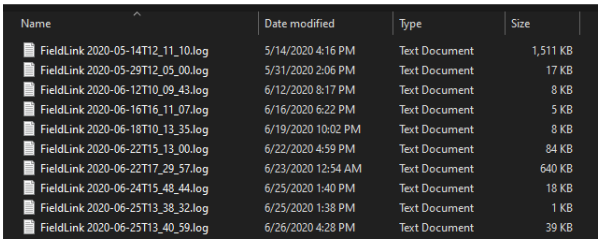
If FieldLink encounters an error or crash, Trimble Support may ask for the log files in order to better understand what caused the issue. To access these log files:

Through FieldLink

1. Tap **More** and then tap **About**.

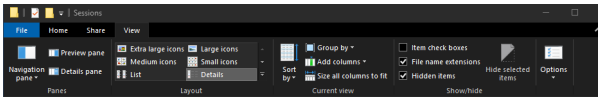


2. The **About** menu appears. Tap **Log Files** in the bottom right hand corner. The file explorer opens, revealing the save location of the FieldLink log files.
3. Select the **Sessions** folder and find the most recently saved file from your project.



Through File Explorer

1. Open the File Explorer.
2. Make sure that **Hidden Items** is checked under the view ribbon. You will need to see the **AppData** folder.



3. The save location for log files is **Users > Username > AppData > Local > FieldLink > LogFiles > Sessions**.

9

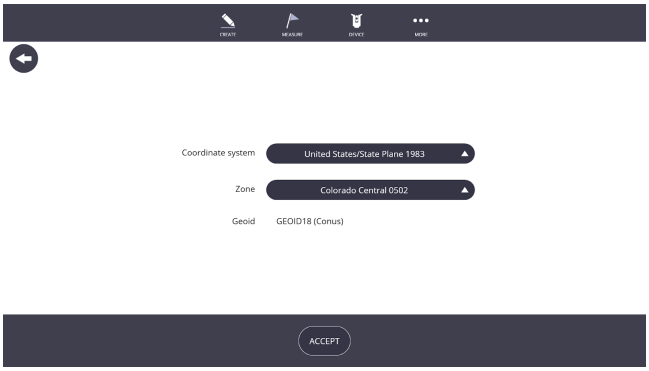
GNSS Module

You can use GNSS when connected to a Trimble GNSS receiver. For a list of supported receivers, see Supported Hardware, Firmware and Operating System.

GNSS Coordinate Systems

If you have purchased FieldLink Advanced and the GNSS module you can select the coordinate system and zone for your projects to ensure that collected and staked data is in the correct reference coordinate system.

You can select the coordinate system and zone when you create the project.



If required, you can change the coordinate system and zone once a project is created by going to **More > Projects > Manage** and selecting the pencil icon next to the project name.

GNSS Setup

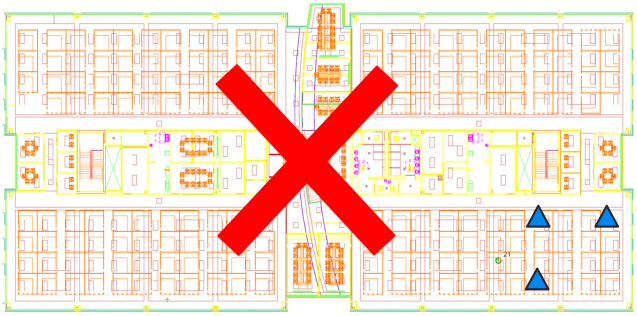
This section covers setting up the GNSS receiver before you start. Depending on your requirements, you can set up the receiver using one of the following methods:

- Unknown Location - Base & Rover, page 149
- Known Location - Base & Rover, page 150
- No Data in the Job, page 151
- Retain Station Setup, page 152

Unknown Location - Base & Rover

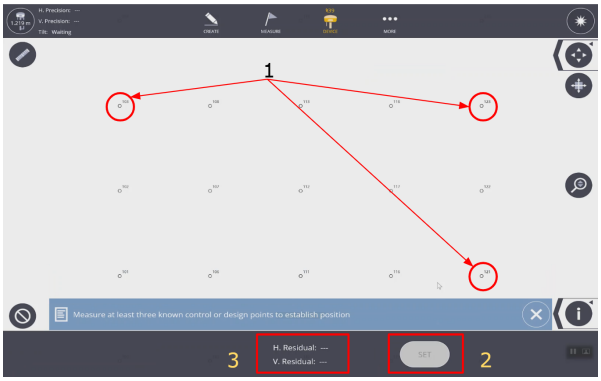
The Base Station can be placed in a convenient location as long as there are at least three control points with a known location in the field of view. It is important to place control points with good geometry balance around the job site.

TIP – Avoid setting the control in only one area of the site.



WARNING – Performing this setup creates a calibration file. If a calibration file existed from a previous setup, the new setup rewrites the old calibration files.

1. Select a point from the map, set the rover with pole at that location on the job site, and select measure. Repeat step 1 for all three control points.
2. After you measure all 3 points the horizontal and vertical residuals populate in the bottom taskbar and you can tap the **Set** button. To create a point where the base is located, tap **Store Base Location**.

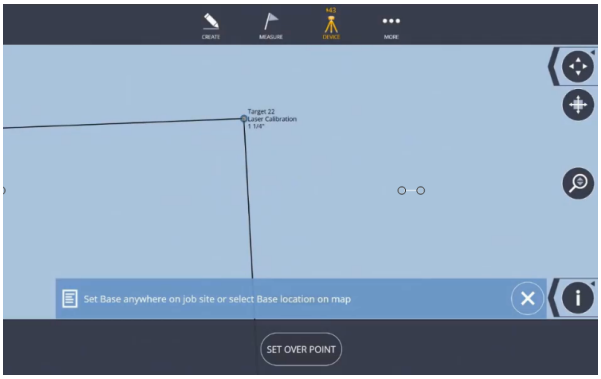


3. The **Setup Successful** toast appears.

Known Location - Base & Rover

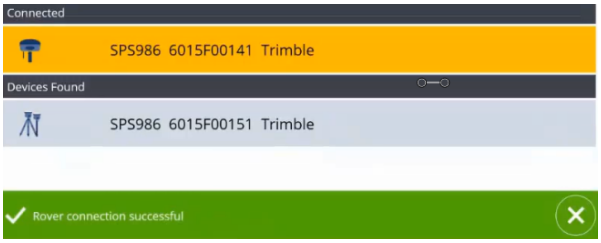
On the jobsite, it may be convenient to setup the base station on a known point to conduct your layout. It is recommended to verify the quality of the set up by shooting another known reference point before layout. Use the following procedure to complete the known point setup.

1. Tap base point location on map.
2. Tap **Set Over Point**.

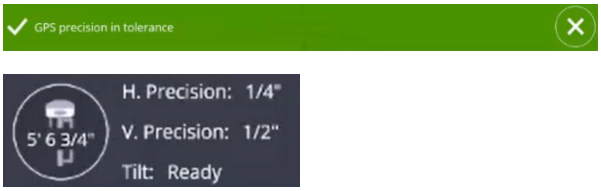


3. Once Base Station in established, tap **Find Rover**.

4. Tap **Rover** and wait to see the Rover connection successful.



5. Once the Rover is connected and receives corrections, GPS precision will be in tolerance.

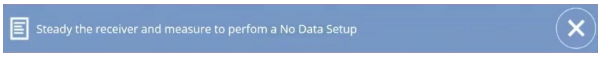


No Data in the Job

Can be performed in a job with no imported points or model data.

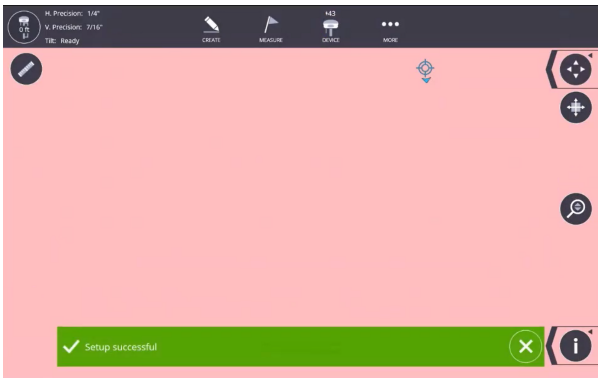
1. Tap **More** and then tap **Projects**.
2. Tap **Manage** and then tap **Create**.
3. Name the job and then tap **Create**.

4. Tap **Device** and then tap **Set Up**.



5. Steady the receiver and select **Measure** to complete setup. To create a point where the base is

located, tap **Store Base Location**.



GNSS Set Up - VRS/RTK

VRS is a correction service for GNSS workflows. VRS gives access to RTK correction services using a network of permanent, continuously operating reference stations. (Strong LTE connection required for reliable VRS use).

Once you are licensed with a VRS Subscription, enter your subscription credentials in FieldLink under the **Device Settings VRS Menu**. Once the credentials are received the closest mountpoint to use for the correction service is selected in the drop down list.

To determine the proper mount point to use, please refer to your project manager for this information.

GNSS Set Up - RTX

RTX is a correction service for GNSS workflows. RTX only requires satellite signals for positioning, making it the easier, more accessible GNSS workflow.

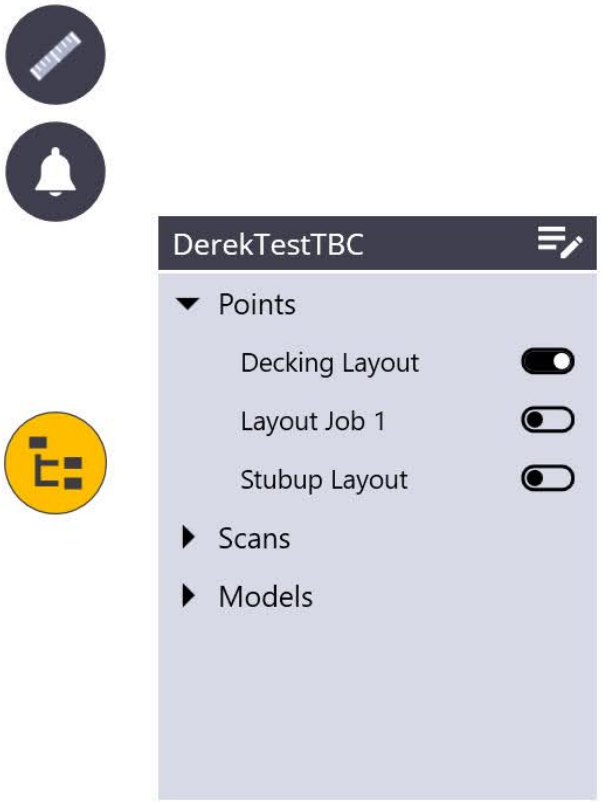
Once the GNSS receiver is licensed with an RTX license, a coordinate system MUST be assigned to the project for you to be able to use the RTX correction option.

NOTE – RTX option is available for a local setup or by selecting a Coordinate System for the Project.

When you open a project that has RTX set as the correction method, you must wait until satellite convergence. Once convergence is reached (the receiver has obtained its location within accuracy parameters) you can continue.

Retain Station Setup

If you have performed a station setup (total Station, GNSS or scanner setup), you can retain that setup and the control points used for the setup when changing jobs within one project. This means you can navigate efficiently between layout jobs in one project without having to re-setup the instrument.



Tilt Calibration

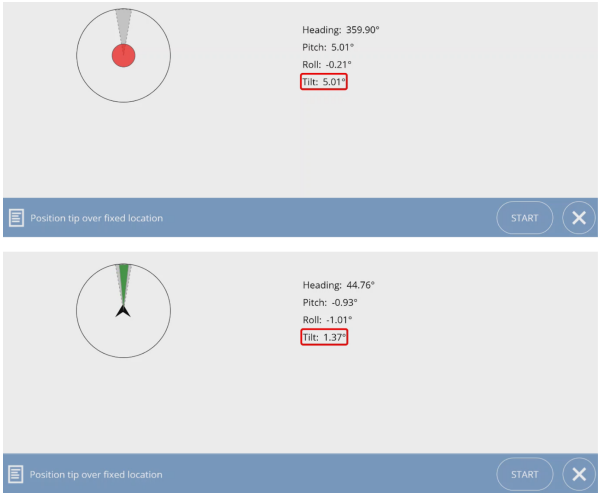
Once you have set up the base station and rover, initialized VRS or RTX, it is possible to enable the tilt compensation feature. Complete the plumb pole routine to calibrate the rover pole. After calibration, it is possible to layout or collect without leveling the rover pole.

NOTE –

- The use of the quick release is not recommended when using Tilt Compensation.
- Tilt compensation will not work with a pole less than 1.5 meters in height.

1. Tap the **Prism** icon.
2. Check the **Enable Tilt Compensator** box.
3. Click the **Plumb Pole** button.

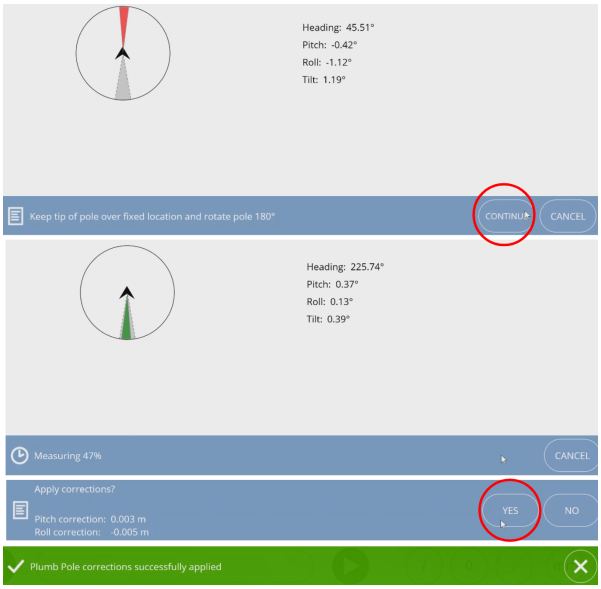
4. Set the tip at fixed location.
5. Rotate the pole to the designated pie piece and keep it in the green during the first part of the calibration procedure.
6. Tap **Start**.



WARNING – Do not move the tip of the pole until the calibration procedure is complete.

7. Once the first part is complete the toast will tell you to rotate the pole 180 degrees (do not move the tip) and tap **Continue**.
8. Repeat the same step as before.
9. The apply corrections toast appears and tap **Yes**.
10. Plumb Pole corrections successfully applied toast appears and you're done.

NOTE – If you switch poles this step will need to be repeated.



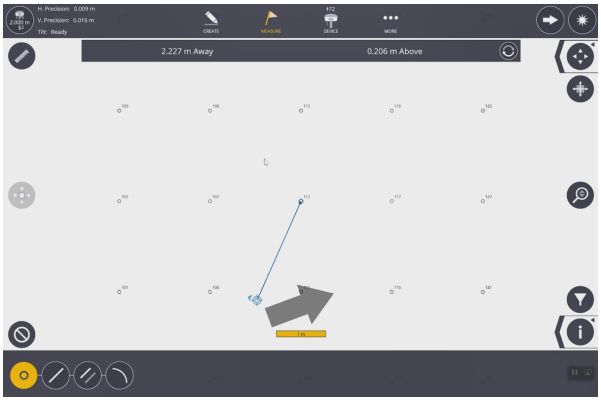
GNSS Layout

Once you have connected to the base station and rover and set up on the project, initialized VRS, or initialized RTX, you can now collect and lay out points, lines, and arcs.

1. Tap **Measure** and then tap **Layout**.
2. Tap the point to lay out.
3. The grey arrow shows the direction you need to go. The smaller blue bullseye with arrow (available with tilt compensation) shows the direction you are pointed.

> **NOTE –**
>
> - With the tilt compensator you have both indicators. If you don't have the tilt compensator enabled only the grey arrow is shown.
> - To change between fast GNSS measurements and high precision GNSS measurements,

go to **Layout > Settings**.



GNSS Out of Precision Point Collection and Stakeout

While using the **Layout**, **Layout Plane**, or **Collect** features with a connected GNSS receiver, this icon will appear when the receiver is operating outside acceptable precision.

If you attempt to stake or collect a point while the receiver is out of precision and the icon above is showing in place of the receiver location, a confirmation toast will appear prompting you to confirm whether you still want to store that point.

The following point and layout types are compatible with **GNSS Out of Precision**, and the icons below indicate how each point was collected or staked within FieldLink:

- Collected Point out of Precision
- Collected Control Point out of Precision
- Staked Point IN Tolerance and out of Precision
- Staked Point OUT of Tolerance and Precision
- Staked Plane Point IN Tolerance and out of Precision

- Staked Plane Point HIGH (Out of Tolerance and Precision)
- Staked Plane Point LOW (Out of Tolerance and Precision)

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