- when it has to be right

Leica Geosystems

# Leica iCON Field v8.5
## Software Release Notes

| | |
|---|---|
| **Product** | **iCON site, iCON build** |
| **Date** | 21st November 2024 |
| **From** | iCON Field software team |

iCON

intelligent CONstruction

**Leica Geosystems AG**
Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
**www.leica-geosystems.com**

**Version** 8.5

**Download** https://myworld.leica-geosystems.com/irj/portal

These Release Notes contain important information about

| Software | Version | Maintenance Date |
|---|---|---|
| iCON build | 8.5 | 01.11.2024 |
| iCON site | 8.5 | 01.11.2024 |

iCON Software is protected and can only be loaded onto instruments with a valid software maintenance date.

**Please do take your time to read these Release Notes!**

The release notes contain information about the new iCON Field software and application programs. Please read the release notes in conjunction with the User Manual delivered with every instrument.

**Table of Content**

## 1. New version iCON Field software v8.5

We are pleased to announce the release of the new iCON Field software v8.5.
This version of iCON Field software contains important improvements and bug fixes.

### *1.1 Latest iCON firmware versions*

It is recommended to always use the latest available firmware version for iCON Field software and sensors.

- **iCON build** **v8.5.0.1771**
- **iCON site** **v8.5.0.1771**
- **iCON gps 30** **v7.901**
- **iCON gps 60** **v6.8.0**
- **iCON gps 70** **v8.80.61**
- **iCON gps 160** **v3.1.5**
- **iCON iCT 30** **v8.0.3.1945**
- **iCON robot 70** **v8.0.3.1945**
- **iCON robot 80/S** **v8.0.3.1945**
- **iCON builder 50/70** **v8.0.3.1945**
- **iCON robot 50** **v7.13**
- **iCON robot 60** **v4.5.0**

With iCON field v8.5, connection to Leica Builder 200/300/400/500, iCON builder 60 and PowerTracker sensors is no longer supported.

**Security Update**
Due to a security update related to license keys within the firmware it is not possible to downgrade a total station to a lower version once Leica iCON Field v8.0.3 is loaded on the instrument.

**Captivate sensors**

- **TS16 / MS60** **v9.00**

**On machine sensors (iCON site excavator)**

- **SJB21** **v4.2.2**
- **iCON gps 100** **v3.1.5**
- **CR50** **v3.1.5**

**It is recommended to upgrade all iCON system components to the latest available software version.**

**Projects Compatibility After Upgrading from an Older Version than v3.5 to v6.7/6.8:**
Upgrading directly from a very old iCON Field version (e.g., v3.0 or older) to versions 6.7/6. results in compatibility issues with the active project.

To avoid this issue, please follow these steps:

a) When using an older version, install the intermediate v3.5
b) Start iCON and activate each project, one after the other, so they all get updated to v3.5
c) Exit iCON and install the desired version (up to v6.7/6.8). After installation, all the projects work as normal.

If the iCON system is running on v6.5 or older it is recommended to upgrade to v6.7/6.8 first and then proceed with upgrading to v8.5.

### *1.2 Customer Care Product (CCP) date*

The iCON Field software v8.5 can only be loaded onto iCON Field equipment which has a **valid CCP date of 1st of November 2024 or later.**

### *1.3 Download new versions*

The new version of iCON Field software can be downloaded from the iCON section within Leica myWorld.

### *1.4 Training Material for iCON Field*

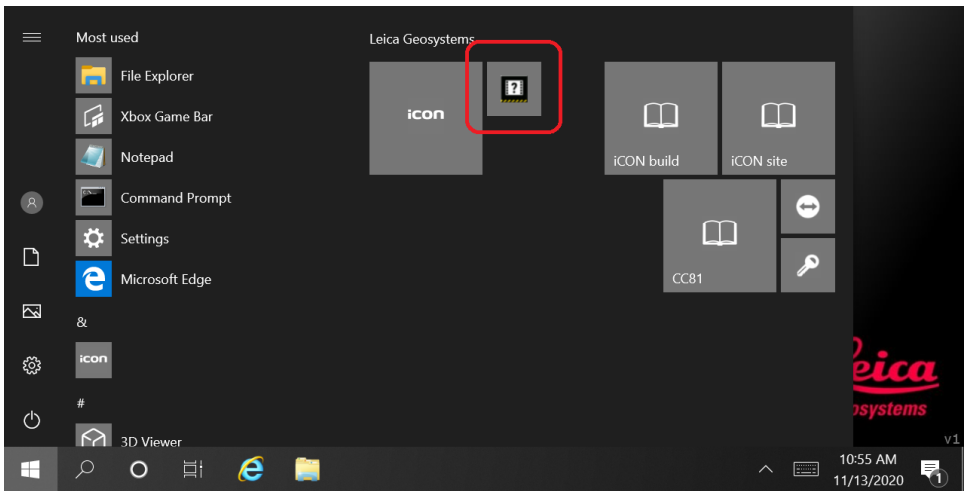
Since iCON Field v1.5, many training videos have been introduced to demonstrate the usage of different applications but also to show how the software can be configured to the customer's needs.

The videos can be downloaded from the iCON section within Leica myWorld.

All videos are also available from the Leica YouTube channel.
http://www.youtube.com/playlist?list=PL0td7rOVk_IVTTMQZVWJn6t8qw-zPVwLF

New training videos have been created and are available from:
https://leica-geosystems.com/how/usingiconsite

The new videos are accessible on iCON field controllers from the Windows start menu providing extra help to customers on the field.



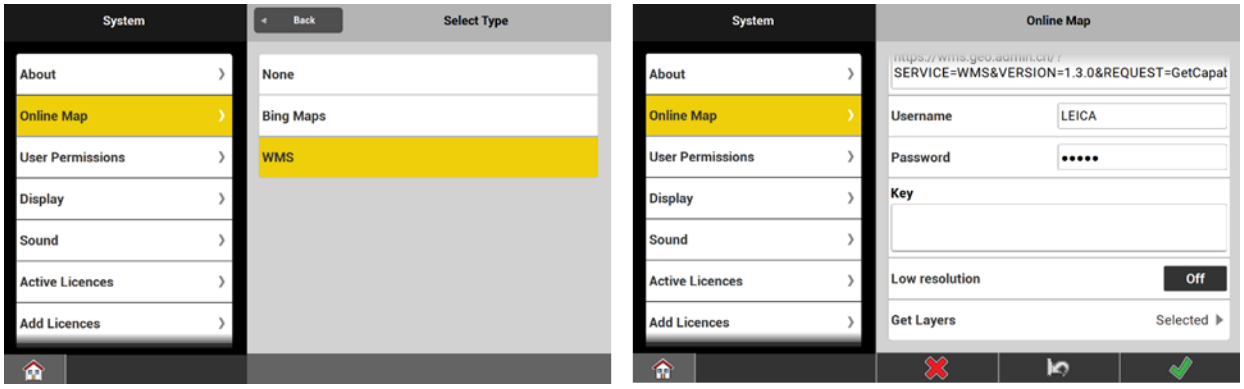

**Access to videos from iCON field controller**

## 2. What is new for the iCON Field software v8.5

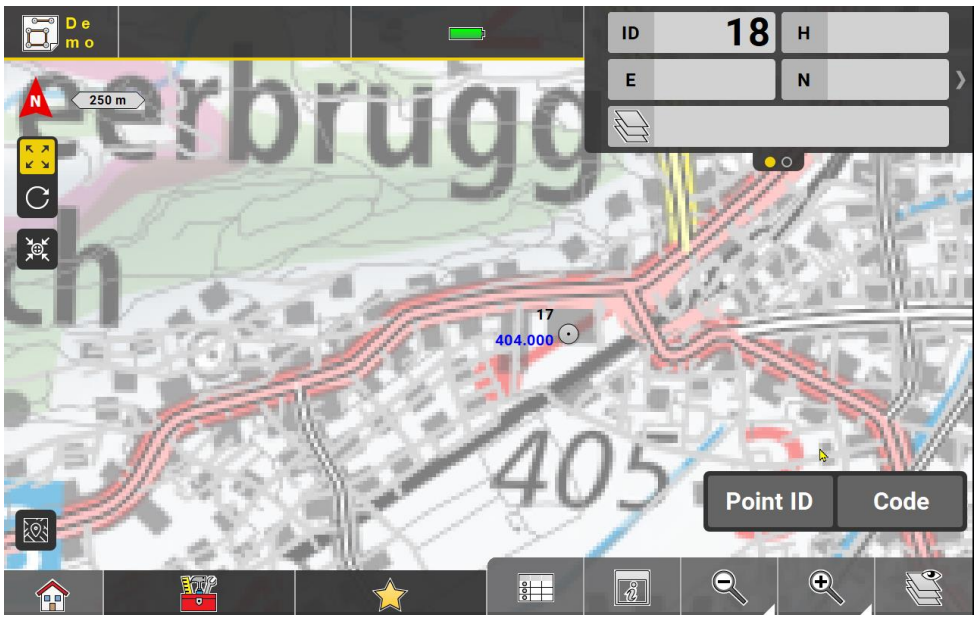
### *2.1 WMS – Online map*

The new Online map option of a WMS (Web Map Service) has been introduced for version 8.5, providing a great option for free Map images.

To configure WMS as the Map Data Provider, ensure the tablet has internet connection and a valid coordinate system is active in the project. To use WMS, access the System page from the main application menu, open the Online Map, select WMS and enter the WMS server UR (required). If necessary, input the Username and Password if the server requires authentication (optional fields).



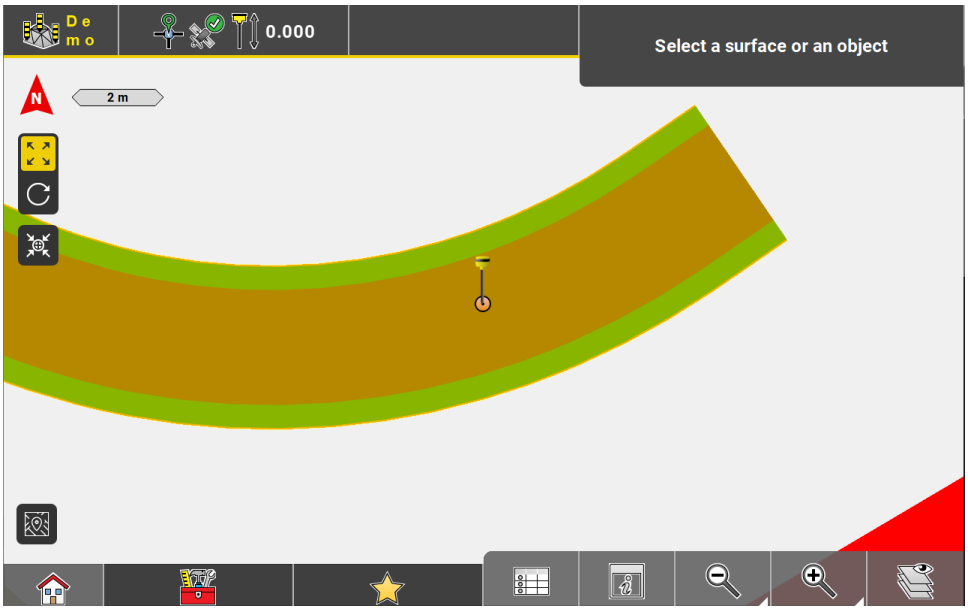

Using the Get Layers option, import the desired WMS layers to display them on the map. Alternatively, it is also possible to save the URL without selecting layers, allowing flexibility to import the WMS layers at a later stage.



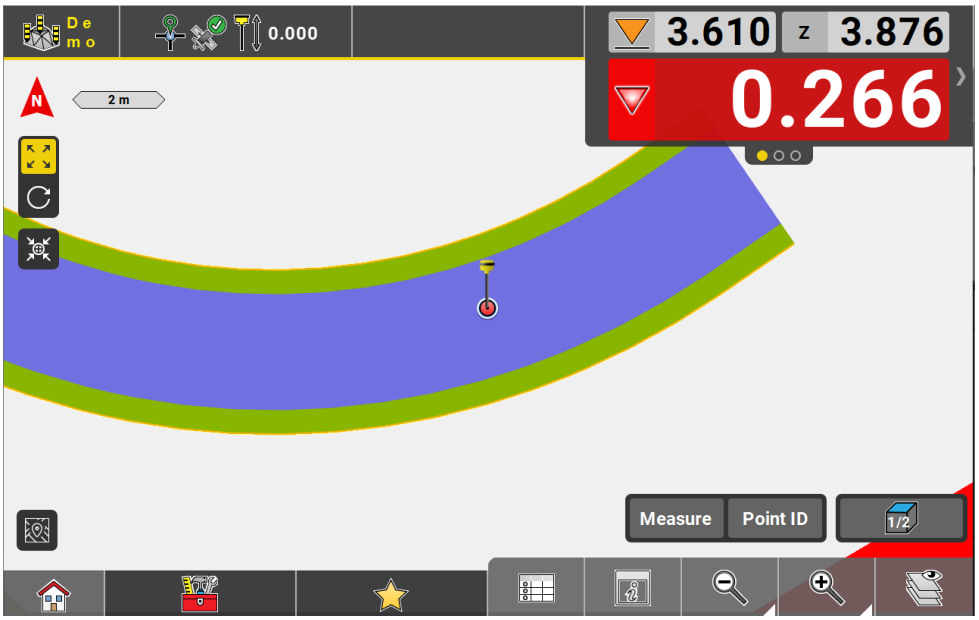

Multiple layers can be imported in different stages, and they can be handled (turning them on/off) in the Layers Manager as normal Layers.

## 2.2 IFC support in Cut & Fill application

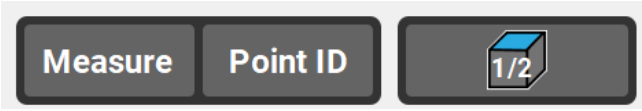
In version 8.5, it is possible to import an IFC file and directly use it in Cut & Fill application. The 928285 CSW268 "**Scan & Adv. Surface**" license is required on the tablet to activate the use of IFC objects in the "Cut & Fill" application.
Upon accessing the "Cut & Fill" application, the information panel text will update accordingly, guiding the available options, as shown in the image below.



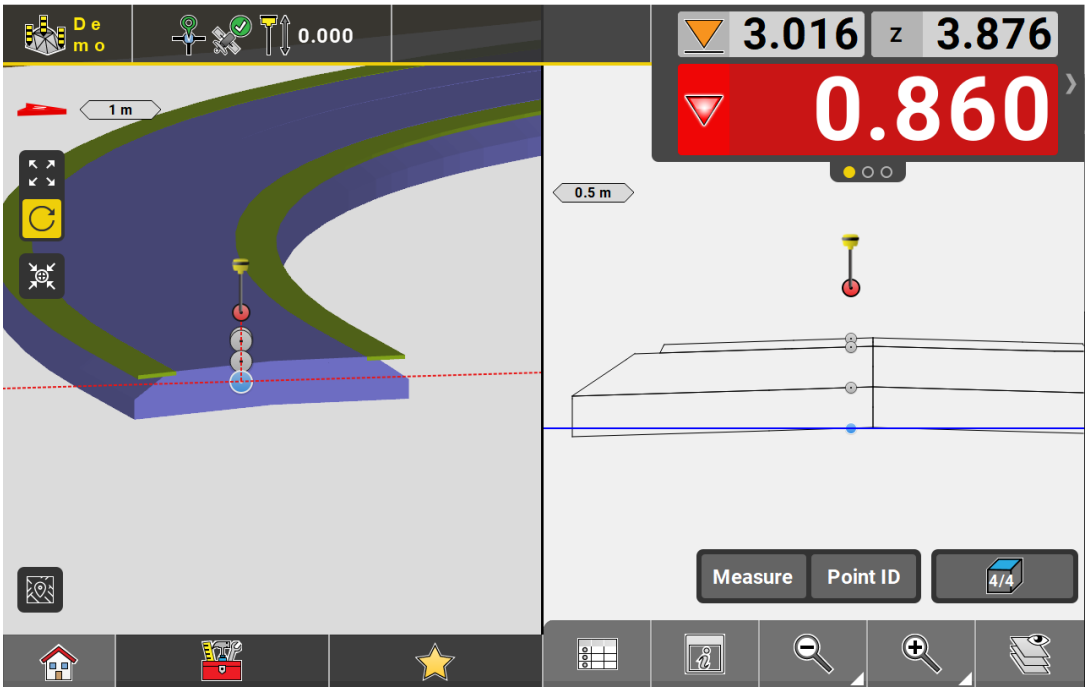

After the IFC object is selected, the colour state of the object will change to blue and the values on the info panel will update accordingly, as shown in the image below.




Since a selected IFC object may have multiple faces (or multiple overlapping objects are selected), it is possible to change the active face of the selected object(s) by pressing the relevant button. By default, the software calculates against the top face of the object.

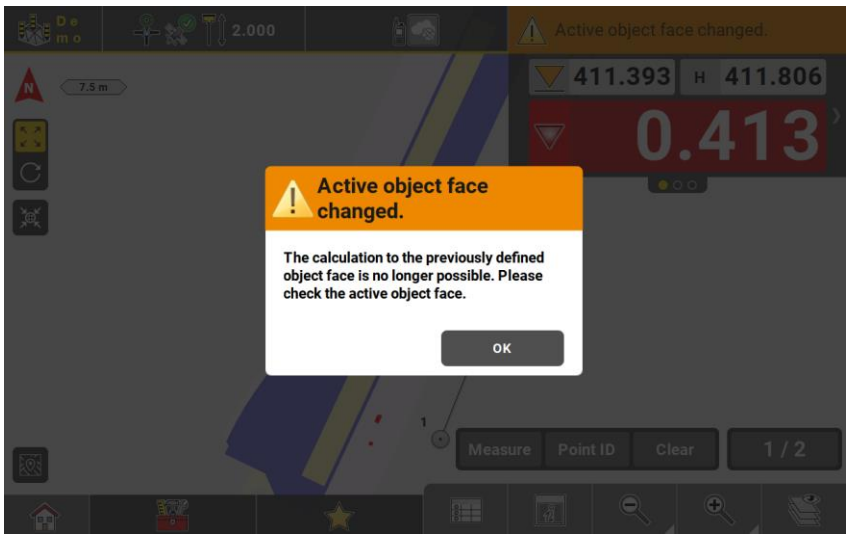



The button displays two numbers (e.g 1/2). The first number is the active face and the second number is the total number of calculated faces.

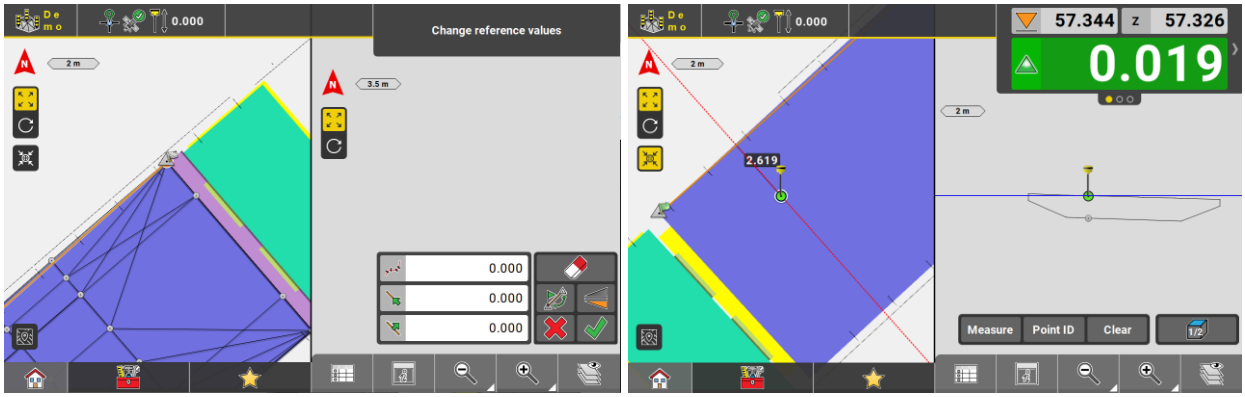



Using the cross-section view, it is now possible to inspect visually the selected object and ensure measurements are done on the correct object phase.

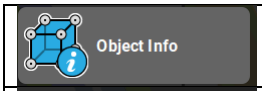
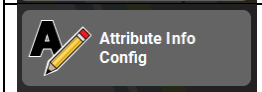
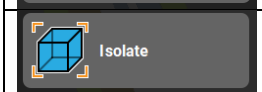
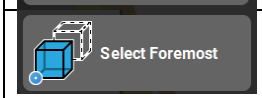
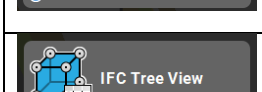
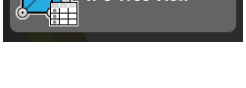
To improve on-site productivity, you can select multiple objects simultaneously (for example, when an object is divided into smaller segments, reducing the need for repeated individual selections). Therefore, a **Clear** button can be configured on the measure bar allowing to reset the selections.
Additionally, when the top or bottom face of an object is selected, this setting remains active even after moving to the next object. However, if an intermediate face is selected, it always resets to the “top” face. For such case a warning message is shown to avoid errors on the field.



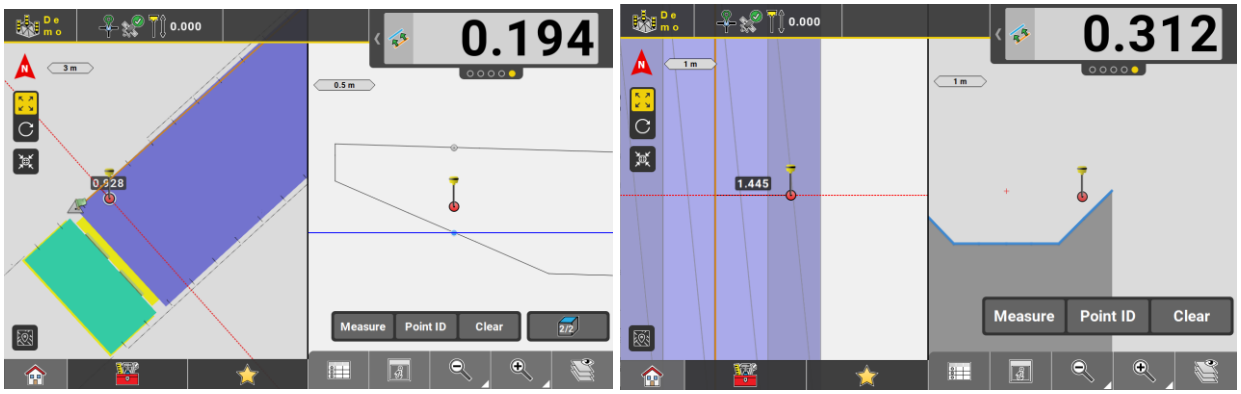

A reference line using either lines/points from the object or any other point/line in the project can be used to “fix” the cross-section direction when needed.




Other tools within the application include:

| | | |
|---|---|---|
|   | Object Info | Displays the IFC attributes of a selected object. |
|   | Attribute Info Config | Allows to assign up to 10 IFC attributes of an object class to the value in the information bar. |
|   | Isolate | Defines the objects or object classes that should be visible. |
|   | Select Foremost | Selects or deselects the IFC object that is closest to the viewer.<br>→The option is active by default |
|   | IFC Tree View | Allows you to display the tree structure of an imported IFC file, to select/deselect objects within the tree structure and to hide/show objects in the map view. |
|   | Edge Styles | Defines the style with which the edges of IFC objects shall be displayed. |

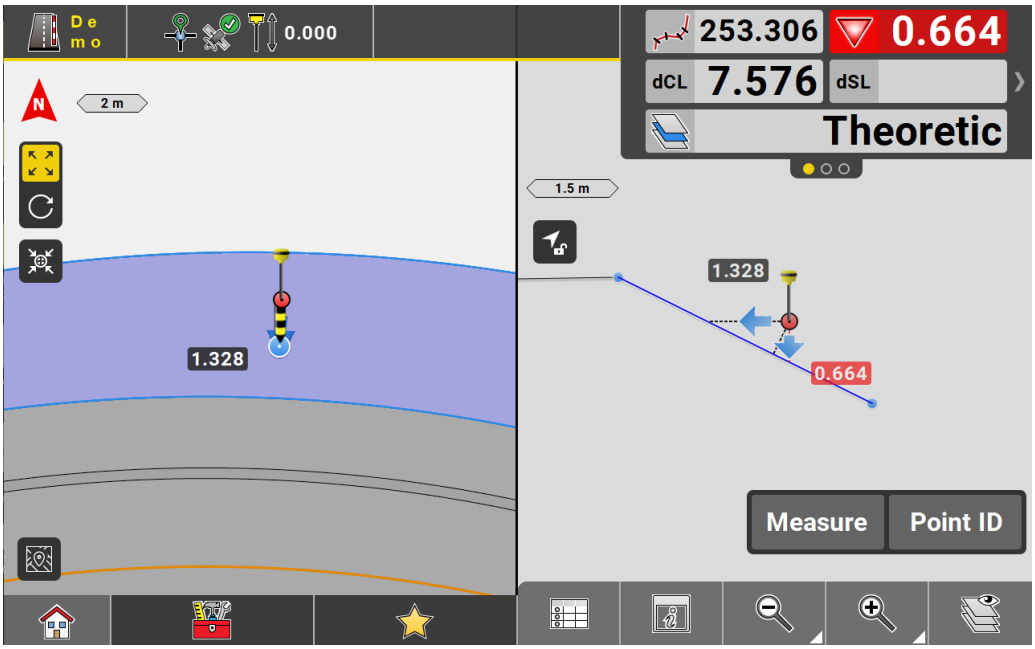
Finally, the perpendicular height difference (dHPO) from the measured position to a) the active object face or b) the selected surface is available in Cut & Fill application. To configure the “dHPO” value, simply tap and hold on the information panel, as illustrated in the image below.




## *2.3 Roading application – New features*

### *2.3.1 New “Map” and “Cross-Section" indicators*

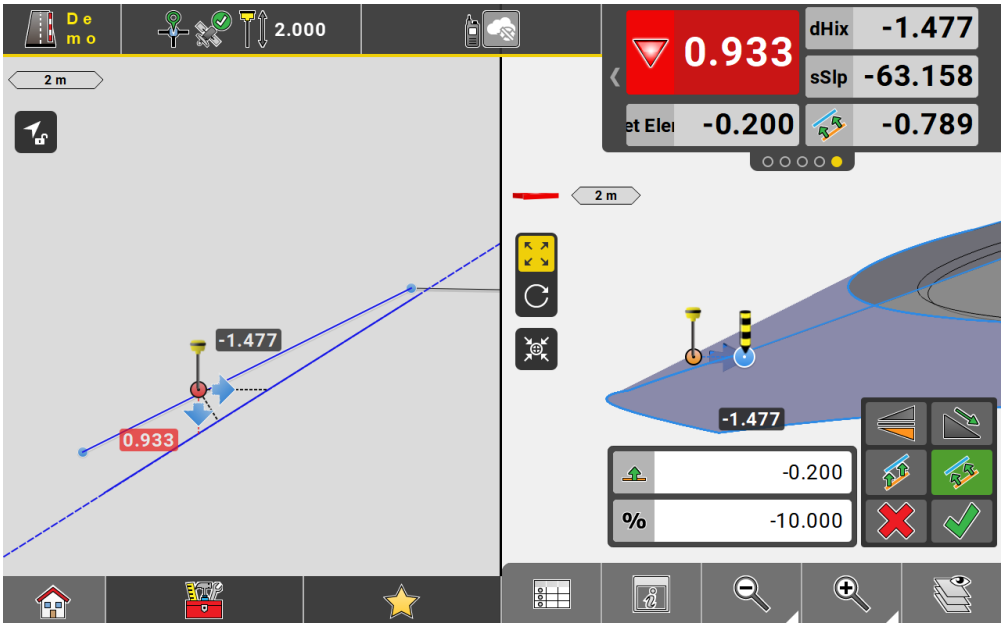
When staking out a road cross slope (road corridor), the distance indicator (dHix) to the daylight point has been added to the map. Additionally, the Cross Section view is enhanced with the introduction of the dHix and Cut/Fill labels.




### *2.3.2 Adjust the Cross-Slope values of the road corridor*

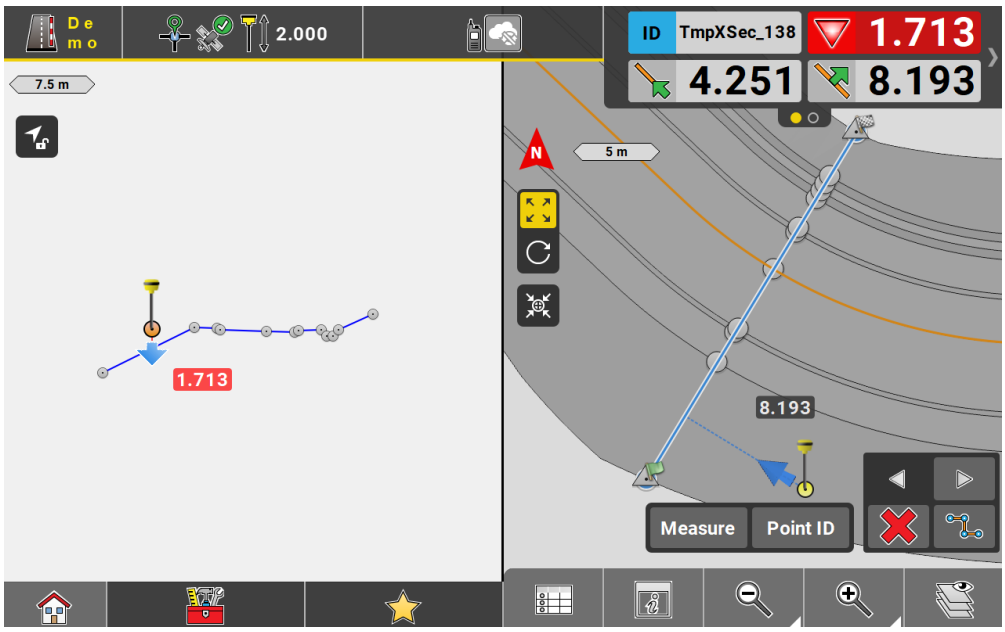
While staking out a road cross slope (road corridor), select the Offset Element function from the toolbox. The tool is improved with additional functionality to a) apply a cross-slope offset and b) change its direction

(slope uphill/downhill). These values can be grouped in the info panel for a clearer overview of the modified slope, as shown in the following image.




### 2.3.3 *Selected Cross-Section shown in "Cross-Section" view*

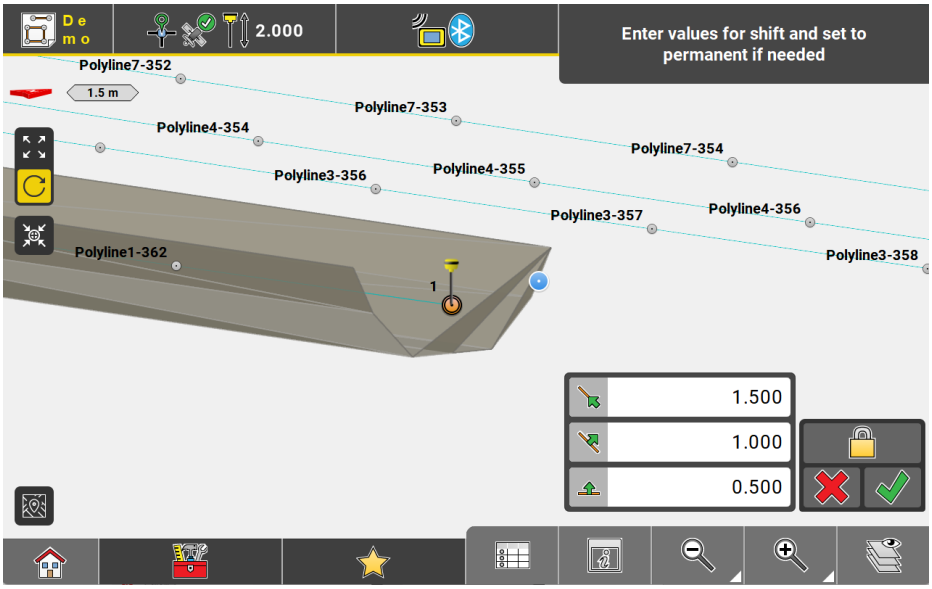
In the new v8.5 version, when staking out cross section lines, you can activate the Cross-Section view to display the cross section of the selected line. All cross-section lines will be visible in the Cross-Section view, whether they are temporarily or permanently stored, as illustrated in the example below.

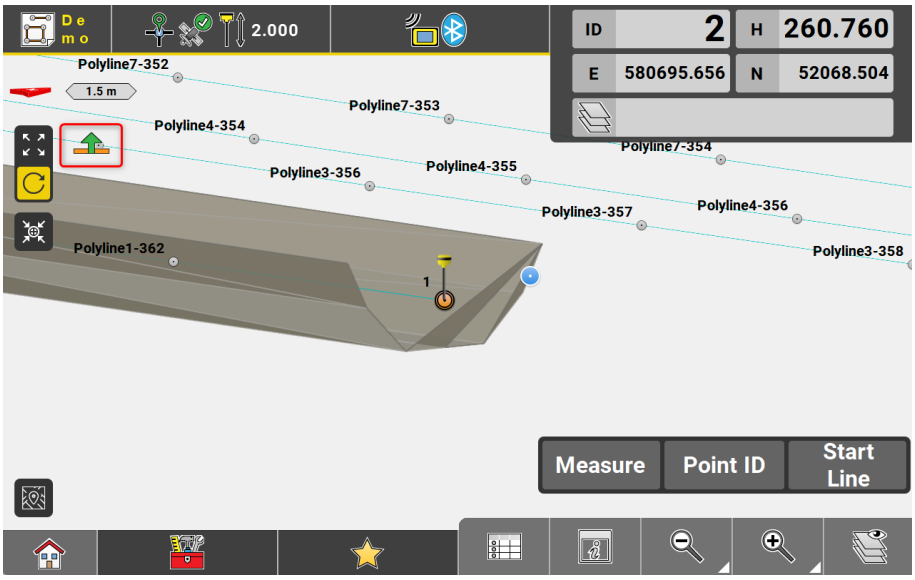


## *2.4 Shift tool improvements*

In the Measure/As-Built application, the shift tool has been enhanced to allow the shift value to be retained. When the “lock” button is enabled (indicated in green), the entered shift values are applied to all newly stored points. Users can modify the shift values or disable the lock option as needed, and all settings will revert to default upon cancelling the tool.

If the application is closed, another project is activated, or a file is imported, the shift tool remains active. However, it resets automatically when a different application is accessed.

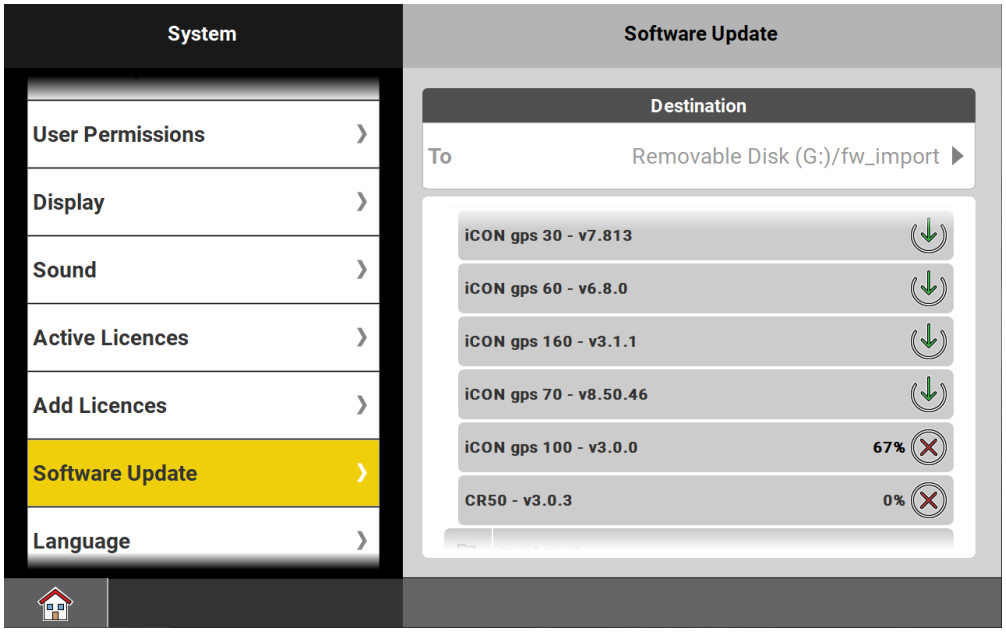


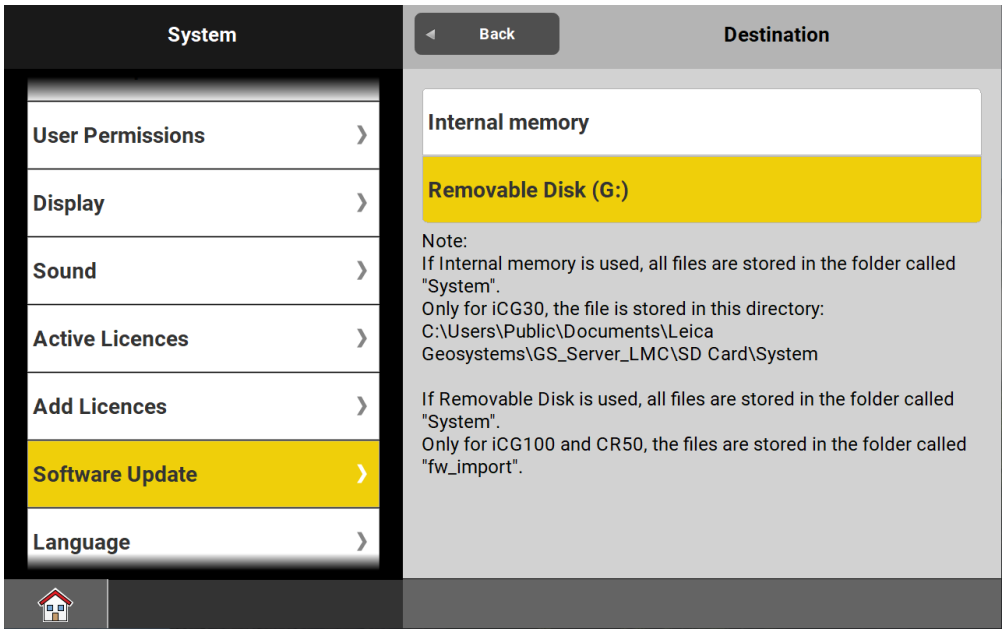

When a shift or an offset is active, an indicator is shown on the top left corner of the map screen.

### *2.5 Software Update improvements*

Downloading the GNSS firmware files has been improved as now users can simply choose between internal memory or a removable disk and the software will save the firmware file to the correct folder making it easier to upgrade the GNSS sensor.

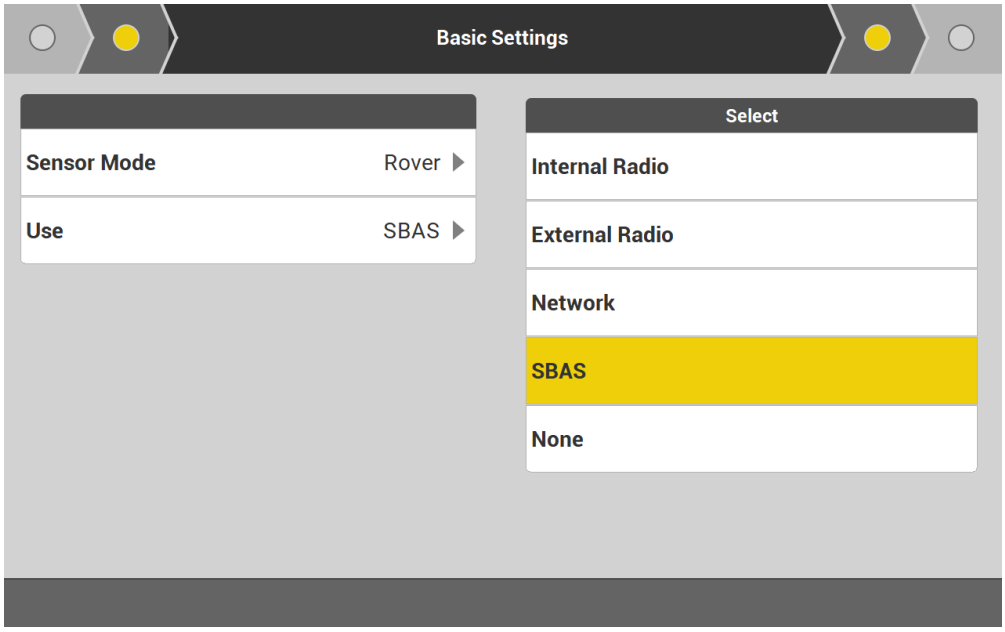



Additionally, help text has been added in the destination page.



## 2.6 GNSS - SBAS profile for iCG160 and iCG100

SBAS is a license free solution providing a sub-meter level of accuracy independent from modem usage or radio coverage.
To create the SBAS profile, connect to the sensor and select the SBAS option in Basic Settings screen. Then follow the wizard to finish the profile.




The SBAS profile is **supported** for **iCG160** and **iCG100** sensors.

**Currently SBAS is not supported in Australia/New Zealand region.**

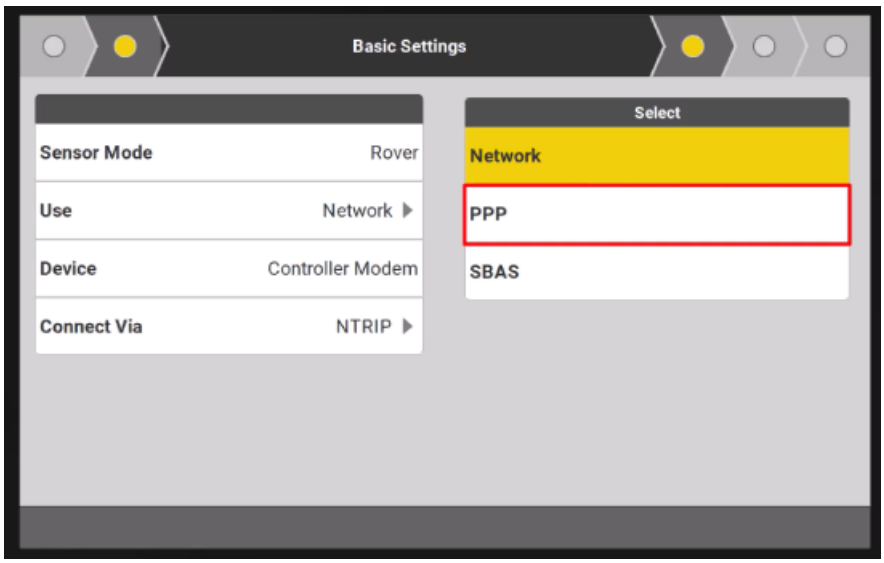
During the connection process to SBAS server, any application may be used. The following icons will appear in the Status Bar to indicate connection progress:

- **Grey Satellite Icon**: SBAS search has initiated. The sensor is currently outside the supported SBAS coverage area.
- **Orange Satellite Icon**: SBAS is inactive. The sensor position is being calculated using SBAS corrections.
- **Green Satellite Icon**: SBAS is active, indicating the final step in the connection process.

The expected positional accuracy is between 0.5 to 0.8 meters. A fixed position cannot be established due to low GPS quality, therefore a warning message, “No Fixed Position - Low GPS Quality,” will be displayed.

## 2.7 GNSS – PPP profile for iCG100

PPP provides accurate position in areas where there is no network or radio coverage. In the new version 8.5 it is now possible to setup the iCG100 as a PPP rover in the same manner as an iCG160 or iCG70. To configure and use PPP, a license is required on the sensor.

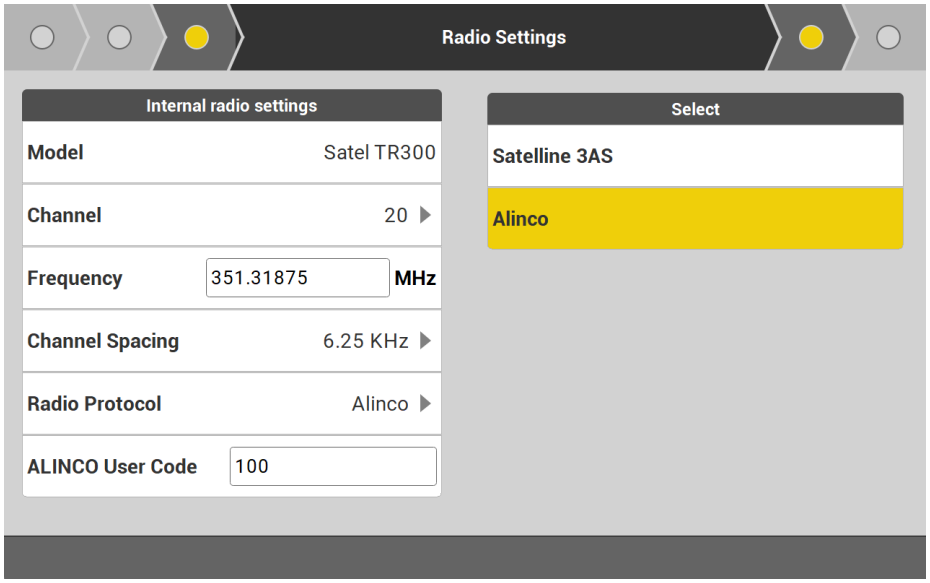



In addition, text changes are done in iCON field software to be in line with the GNSS products.

- “SmartLink” is now called “PPP”.
- “SmartLink Fill” is now called “RTK Bridging”.

### *2.8 GNSS – iCG160 and CR50 TR300 Radio (Japan)*

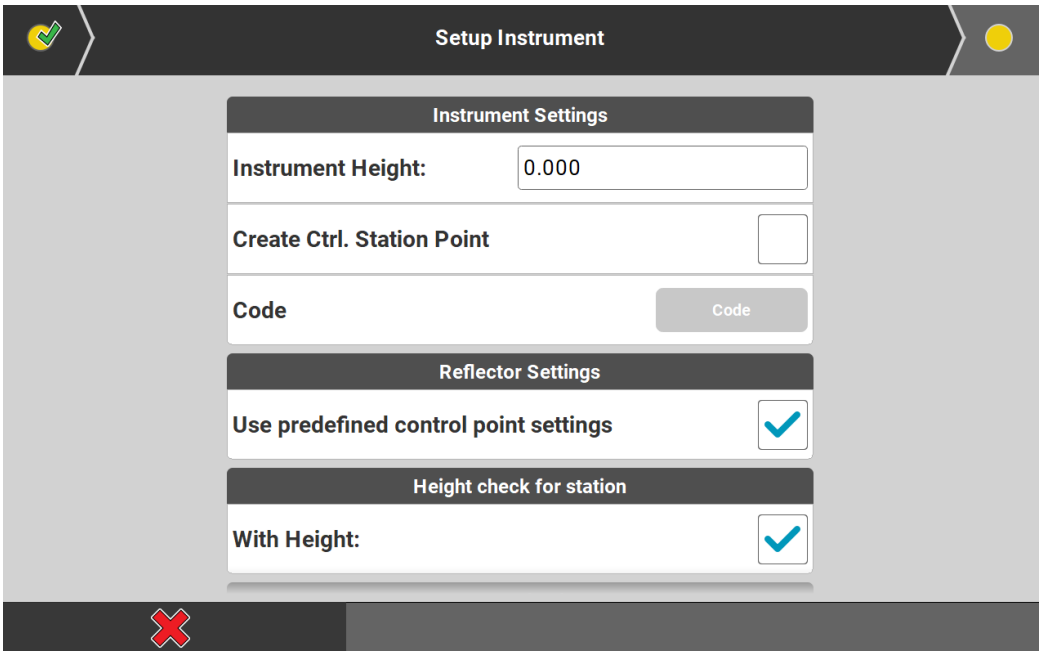
The TR300 radio is introduced for the Japanese market, and it is now possible to setup an iCG160 or an CR50 (when used with iCG100) TR300 radio. The TR300 radio can be configured to receive or send corrections using Satelline 3AS or Alinco radio protocols.



### *2.9 New Reflector Settings check box*

A new checkbox option has been implemented that allows users to override the automatic switch to existing control points prism settings available in the database.

- The checkbox is labeled "**Use predefined control point settings**".
- The checkbox is accessible only for Coordinates Anywhere and Over Known Point Setup methods during the setup process via the TPS-setup wizard screen.
- The Reflector Height field entry has been removed for Coordinates Anywhere and Over Known Point Setup methods.




The checkbox will be ticked by default.

**When Checked**

- Maintains the current workflow meaning that all settings are kept as they are stored in the database for setup prism settings.

**When Unchecked**

- The stored settings are discarded.
- Settings are replaced with the values entered for prism type and height in the status bar.

The chosen state (ticked or unticked) persists across sessions until changed again by the user.

### *2.10 Centimeter as a unit option in the pre-import and export screen*

Centimeter has been added as a supported distance unit option in the pre-import and export settings for DXF/DWG and ASCII files.

- Centimeter is now available in the list of supported distance unit options in the pre-import and export settings.
- This option applies to both DXF/DWG and ASCII file imports and exports.
- The system correctly interprets dimensions in centimeters from imported files when this option is selected.

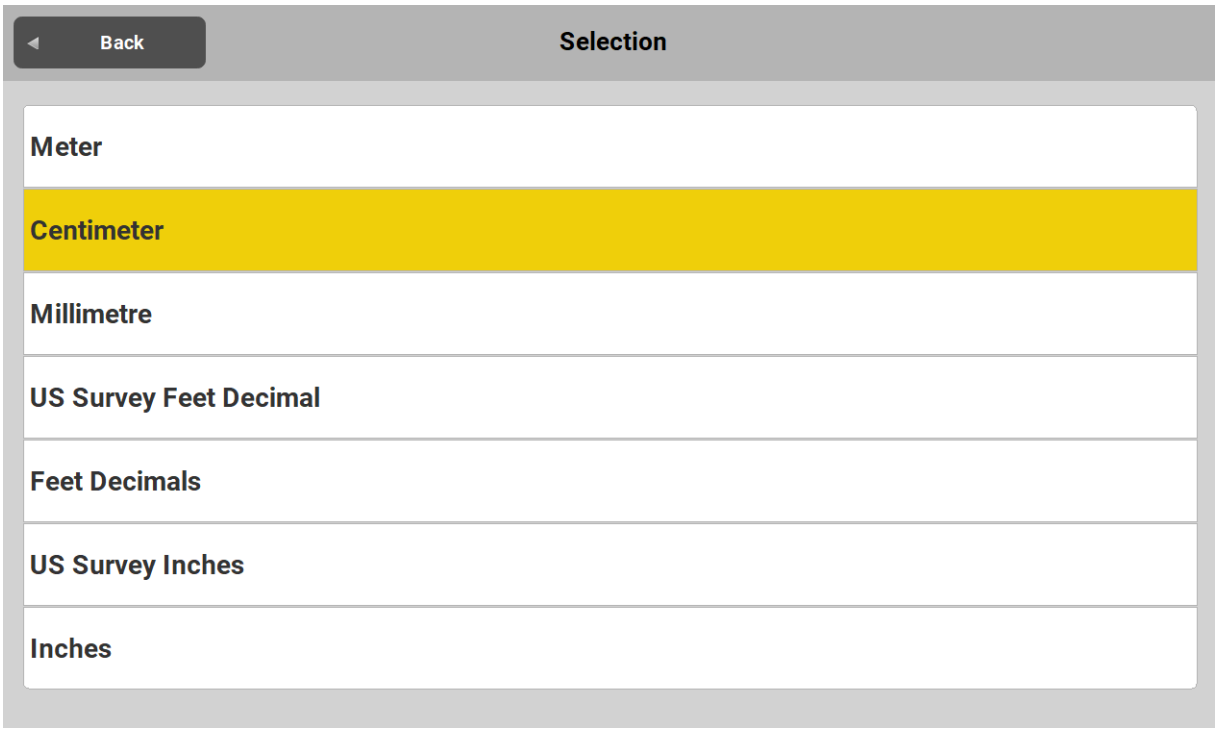
**DXF/DWG Files**:

- The system can now read the centimeter unit from DXF/DWG files.

- When exporting to DXF/DWG, centimeter can be selected as the unit of measurement.

**ASCII (CSV and TXT) Files**:

- The system scales the values that are written in TXT and CSV files depending on the chosen distance unit, including centimeters.




### *2.11 Different symbols for the 3 user defined prism types*

With the new version 8.5, new symbols have been introduced for user-defined prism types, making it easier to distinguish between different selections.
All symbols are now marked with unique numbers for easy identification.

## *2.12 Sketching Improvements*

### *2.12.1 Undo/Redo buttons*

When using the Undo/Redo buttons, the Sunburst follows the sequences of created points. The Toolbar is updated accordingly based on the used action (undo/redo). If the ‘Undo’ is used, the Toolbar displays the values from the “removed” point.
The ‘Redo’ button can be used the same number of times as the ‘Undo’ has been used.
The following functions are adjusted according to the use of the Undo/Redo buttons:

- The orientation of the Sunburst pilot
- ‘Closing figure’ option
- The behaviour of the Sunburst when a point where the Sunburst is located is deleted

### *2.12.2 Automatic snapping on the existing point*

While creating points in the Sketching app, the entered values can suggest the point (blue point on the map) that has the same coordinates (East, North, Height) as an existing point. In such cases, automatic detection and snapping are triggered.

If the suggested blue point is close to the existing point, it is detected and shown both on the map and in the info panel.

- The detection buffer is 20cm in size and checks the 3D area.
- The info panel displays the difference in distance and height between the existing point and the blue point. It presents Horizontal distance (∆D) and Vertical distance (∆H).
  When the point is detected in the buffer, the info panel displays the second page containing the values.
- The detected point can have two indicators on the map:
  - If the point is exactly in the same location as the existing one, it’s displayed in green with a tick mark on it.
  - If the point is detected within the 20 cm buffer but not exactly in the same position, it is marked with the exclamation point, indicating the point is within the buffer but cannot be snapped.

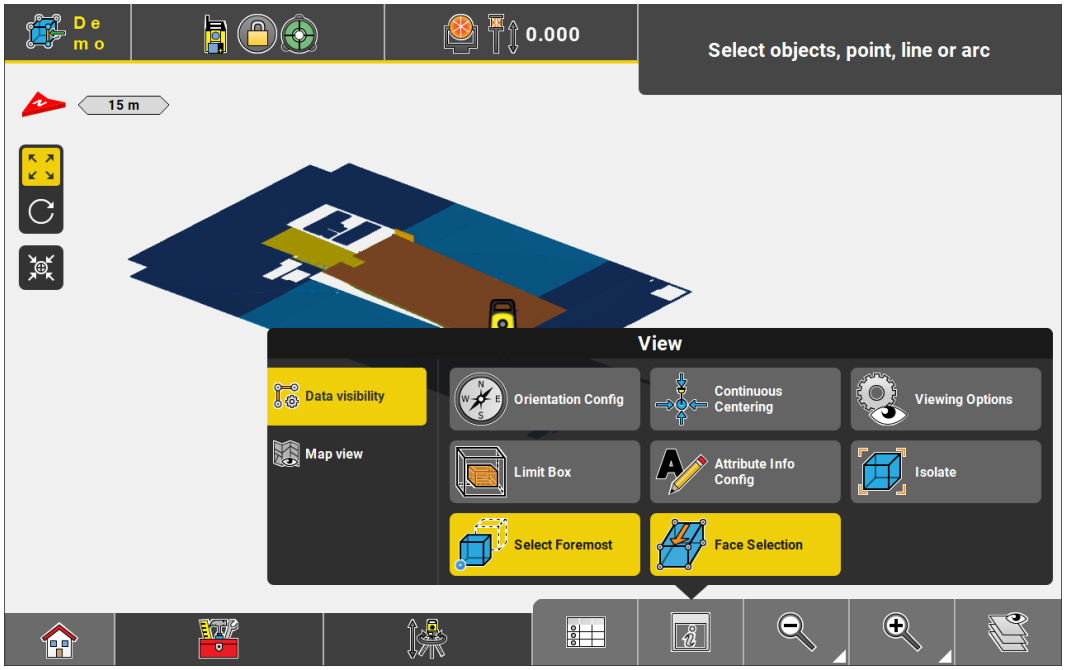
To snap on the existing point, acceptance is required. Once the ‘Accept’ button is pressed, the point is snapped to an existing one – a new line is created to connect to the existing point, and the Sunburst moves to that point.
If the point is detected within the buffer but doesn’t have the same coordinates, after acceptance, the new point is created.

### *2.12.3 Duplicate points – toward vertical*

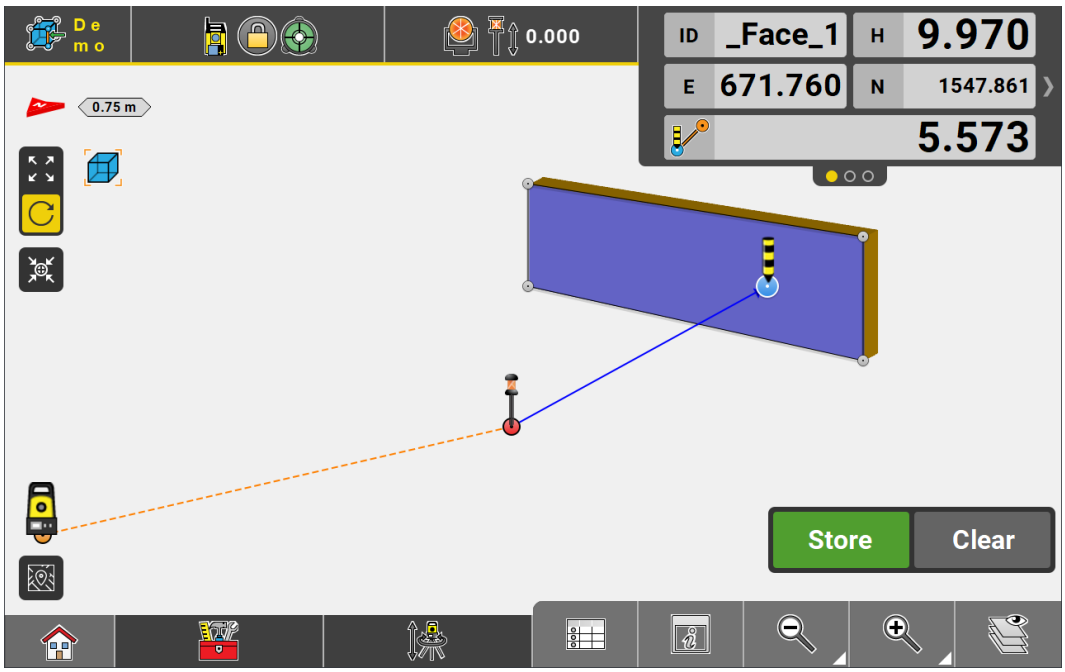
A point can be created with a distance value of 0,0 if the height is different from that of the existing point. If the height is different from that of the existing point, the point is indicated with appropriate symbols. However, if the height is the same as the existing point, the point is marked with an exclamation mark, indicating that a new point cannot be created. In this case, the message ‘Duplicate point’ is displayed. Once the height or distance is changed, the point can be created without issue.

### *2.13 Face selection in Layout Objects*

Faces of IFC objects can now be selected for stakeout. The result of the stakeout is a perpendicular distance to the surface ‘dL’, labelled 3D line distance in the stakeout report.
To change from object selection to face selection, there is a new option in the view handler.




Multiple faces can be selected for staking, and lines and points of that face can also be selected, just like the object selection.




Most existing tools are compatible with face selection, including slope indicator. The exception is that faces cannot be selected from the IFC tree view.

## 3. iCON Field software improvements and bug fixes

### *3.1 Enhanced User Permissions*

In iCON field v8.5 the User Permissions have been enhanced about the following items:

- Data handling – View Settings Container: all possible container items
- Data handling – Reports: all Report Styles
- Settings – Online Maps
- Settings – TPS Settings: new group incl. now also compensator and instrument settings in anywhere setups
- Settings – Sensor Profiles: all available sensor types including a switch for the AP20

### *3.2 dHPO value in all Stakeout apps*

The “3D distance to a line” (dHPO) value is now available to be configured to the info panel in all Stakeout Apps (Stakeout, Layout Lines, Layout Objects).

### *3.3 XML improvements*

In iCON field version 8.5, the exported XML datasets will include calculated deviation values based on the "Setup Anywhere" method.

### *3.4 Coordinate Systems update (Australia and Japan)*

The installer has been updated adding the most recent coordinate systems for Australia and Japan countries.

### *3.5 New generation USB stick not recognized*

In previous iCON field versions, some newer usb sticks were not properly detected (they are not set as “removable disk” from the manufacturer) and could not be used in the software. This has now been fixed in iCON field v8.5.

### *3.6 Issues when reading distances continuously with extremely low battery*

In previous Leica iCON Field versions running on recently produced Leica iCR70/80/80S or iCT30, issues may be observed when reading distances continuously with an extremely low battery state. This is due to slightly different behaviour of newly implemented electronic components caused by mandatory end of life changes. In Leica iCON Field v8.0.3 the affected total stations will stop reading distances when the Measure Mode is set to Continuous with Lock and the battery level gets below 10%.

### *3.7 Connection issue with iCON Field and TS16 in case of AP20*

In previous Leica iCON Field versions the connection between iCON Field and the Captivate TS16 might get interrupted, in case of losing the prism. This might happen especially when using an AP20 with ID functionality and having a TS16 without a dynamic lock key. This is fixed with iCON field v8.5.

### *3.8 CC200 - Unusual beeping noises*

An issue related to unusual beeping noises detected for some of the CC200 tablets has been addressed and fixed in the latest version 8.5.

### *3.9 GNSS Base Setup - Base point storage*

In version 8.5, the software ensures that when setting up a base by selecting point from the map, the base point is saved only once, even when you setup the base on the same point multiple times.

### *3.10 iCG70 / TR9 radio - empty channel list*

In previous version it could happen that the channel list for the TR9 radio was empty. This is now fixed in v8.5.

### *3.11 Info panel - Coordinates display issue*

In iCON field version 8.2, it could happen that the coordinates were not fully displayed in the info panel. This issue has been fixed in version 8.5, ensuring that full coordinates are now properly shown.

### *3.12 Improvement of images names*

A new improvement has done concerning the captured images names. The image name is now automatically assigned based on the point ID of the associated point it is linked to.
These changes are also reflected in the Reports section, addressing the issue in the previous versions where image names were not unique in the Reports file.

### *3.13 iCON site Excavator – Bucket detached from stick*

In previous versions, it could happen that the bucket was detached from the stick. This visual issue has been fixed in v8.5.

### *3.14 ConX - Importing ASCII files from ConX subfolders*

In previous versions, it could happen that files from a ConX project subfolder could not be imported. This is now fixed in v8.5.

### *3.15 ConX- Import of large files*

In previous versions, it could happen that connection to ConX was dropping off when importing large files. This issue has been fixed in v8.5.

### *3.16 Updated “How-To Videos” link*

The link to the "How-To Videos" section has been updated to ensure users have access to the most relevant instructional content.

### *3.17 Blank map after upgrade*

In previous versions, it could happen that after software upgrade the map screen was blank. This was caused by data from imported files which were far away from the measured data. This issue has been fixed in version 8.5.

### *3.18 Draw/Sketching application – polyline offset*

In previous version, it could happen for some polylines the offset function in Draw/Sketching applications did not work as expected (could not select the complete polyline). This is now fixed in v8.5.

### *3.19 Machine Calibration - File import update*

In previous version, it could happen that importing a machine calibration file from a USB stick was failing due to a missing “calibration.ini” file. In iCON field v8.5 this condition is removed allowing to import the calibration files even when the “ini” file is not present in the USB stick.

### *3.20 Code Groups – Crash when using compact view*

In iCON field version 8.2, a crash could occur when working with code groups whilst using the compact view for the codelist. This is now fixed in v8.5.

### *3.21 Slopes app - Slope affected by display accuracy.*

In iCON field version 8.2, it could happen that the created slope over a closed polyline was not correct (the software did not create the slope around the startpoint). This issue might appear depending on the selected display accuracy setting. Nevertheless, this is addressed and fixed in version 8.5.

### *3.22 Wireframe(s) Settings overwrite*

In the iCON field version 8.5, an issue has been addressed where wireframe settings were being overwritten after reimporting the same file. This fix ensures that wireframe settings will now be maintained upon reimport.

### *3.23 Autostake to wall issue*

In the latest version of iCON, the Autostaking feature has been enhanced and accelerated, especially for the ‘Stake to Wall’ function, focusing on points. This improvement primarily benefits Layout Points and Layout Object applications.
Autostaking can be accessed from the Toolbox, where it is highlighted in yellow when enabled. Two measurement modes are available: Stake to Wall and Ceiling/Floor.
When Autostaking is activated and a point is selected, the ‘Stake to Wall’ button turns green, indicating that the device should be aimed at a wall. The system then performs up to six iterations to position and store the point within the specified tolerance. If the point is not within tolerance after six iterations, a warning message is displayed, allowing the user to choose whether to continue or stop the autostaking process.

### *3.24 Checks selection issue*

Previously, it was impossible to select an element in a row that shared the same starting point as the previously selected element. In version 8.5 the functionality has been improved, allowing elements with the same starting point to be selected in any direction.

### *3.25 Field Calibration improvements*

In version 8.5, the user guidance for the iCR/iCB Field Calibration has been improved.

### *3.26 Floor Flatness improvement*

In previous iCON field version, it might happen, that when performing a Floor Flatness routine, a message is shown that the selected points are far away from the device, although the points are not further than 25m away from the device. This has now been fixed in iCON field v8.5.

### *3.27 Persistency of Formwork Deck mode*

The formwork deck mode has been changed so that after a shut down, the mode is always off, even if it was active in the current session. This is to prevent the mode being on inadvertently, it must be an active choice by the user.

### *3.28 Prism change from reflectorless upon triggering a search*

When measuring with reflectorless mode and then triggering any search, the prism type will automatically be changed from reflectorless to the last used prism.

### *3.29 Connectivity to cloud services*

Due to security updates on the ConX server, the connection to older iCON Field software versions might be no longer possible anymore for technical reasons.
To ensure seamless connection to the ConX server, please upgrade iCON Field software to the latest version.

With the latest updates to the Autodesk Construction Cloud, the authentication process was disrupted in iCON field. Similarly, changes to mandatory attributes within BIMPLUS also caused authentication issues for iCON field. In this release, the required changes have been made, so the connections between iCON field and both the Autodesk Construction Cloud as well as BIMPLUS are now working again.

For file exchange with the GeoCloud Drive, Unicode characters such as language specific letters are now supported as well as overwriting existing files in the GeoCloud Drive folders is possible from iCON field version 8.5 onwards.

## 4. General information & recommendations

### *4.1 How to update manuals on the CC70/CC80/CC170 /CC180/ CC200*

On the Start screen and Windows desktop of the tablet, there are links to the iCON site and iCON build PDF manuals. These manuals are NOT updated as part of the installation of the new version.

If you wish to have the latest version of the manuals available on your tablet, follow these steps:

- Download the manual from myWorld / myDownloads / iCON / iCON Field / Manuals / ... download the "iCON field How to Guide" in the language of the manuals which are currently installed on your tablet. Ensure to keep the naming of the downloaded PDF file.
- Copy the downloaded PDF file to your tablet in the folder D:\iCON-Manuals.
- Delete the old versions of the manuals from the same folder.
- Check that the update was OK, by tapping on one of the manual icons from the Start screen or Windows desktop.

### *4.2 Crash reporting function*

To improve the robustness of iCON Field even further, and to ensure good customer support, a function to report software crashes was introduced with iCON Field v2.5. This common tool to improve worldwide used software products is implemented for iCON Field controllers.
In case the software detects a malfunction, the report containing important information about the event is sent automatically to the server – if an internet connection is established or after this is established. Only information related to the malfunction is sent and NO personal customer data is collected.