- when it has to be **right**

Leica Geosystems

Leica Captivate v7.50
Software Release Notes

Product	Leica Captivate
	Field Controllers: CS20, CS35, CS30
	Total Stations: TS16, TS60, TM60, MS60, TS13, TS10
	GNSS Sensors: GS07, GS18 T, GS18 I, GS18
Release date	22nd November 2022
Maintenance date	1st November 2022
Available in myWorld	Week 47, 2022

Available via : https://myworld.leica-geosystems.com/irj/portal

Contents

1 Leica Captivate v7.50 Release Notes - Introduction

Please do take your time to read these Release Notes. They contain information about new features and bugfixes.

General information	There is a Leica Captivate v7.50 release for the following hardware • Field Controllers: CS20, CS35, CS30 • Total Stations: TS10, TS13, TS16, TS60, MS60, TM60 • GNSS Sensors: GS18, GS18 T and GS18 I
Customer Care Product (CCP) dates	The Leica Captivate software version 7.50 can be loaded onto all CS Field Controllers, GS18 GNSS Sensors and TS Total Stations with a CCP license valid until at least 01.11.2022
Jobs, Coordinate Systems, Working Styles, RTK Profiles and other objects	All Leica Captivate "objects" (such as Jobs, Coordinate Systems, Working Styles, RTK profiles etc.) created or used within previous Leica Captivate versions can be used without problems in Leica Captivate v7.50

Compatibility between Leica Captivate versions

Compatibility between Leica Captivate versions is guaranteed if the instruments run the same major version.

For the new Leica Captivate v7.50, all Leica Captivate GS Sensors and TS Total Stations must be updated to a version 7.x to be compatible with a CS20 Controller or CS30/CS35 Tablets running v7.50 and vice versa.

Note that to use the new GS related features on a GS07 GNSS sensor connected to a CS20 Controller, the new ME firmware v7.813 needs to be loaded on the GS07. The ME firmware v7.813 can be obtained from myWorld.

Compatibility between Leica Captivate and SmartWorx Viva versions

The table below shows the compatibility between Leica Captivate and SmartWorx Viva versions.

The new GS related features released with Leica Captivate v7.50 can be used with a Leica Viva GS16, GS10 or GS25 sensor. SmartWorx Viva GS version 11.50 is needed on these GS sensors to use the new features.

|		**CS20, CS3x**			
		Leica Captivate v1.x	…	Leica Captivate v5.x	Leica Captivate v7.x
TS MS GS	All versions prior to SmartWorx Viva v6.0 and higher than v5.60	Fully compatible		Not compatible	Not compatible
	…				
	SmartWorx Viva v8.x	Not compatible		Not compatible	Not compatible
	SmartWorx Viva v9.x	Not compatible		Fully compatible	Compatible for Viva TS
GS	SmartWorx Viva v11.x	Not compatible		Not compatible	Fully compatible

2 Leica Captivate - New Software Features

Showing data from more than one IFC file in a job

When working with IFC files it is possible that multiple IFC files are created by different disciplines or different roles on the same project. For instance, one IFC file might contain architectural elements, while another could contain structural details.

In this case it is important to have all relevant information from these IFC files available in the field, which means displaying information from more than one IFC file when working with the same job in Leica Captivate.
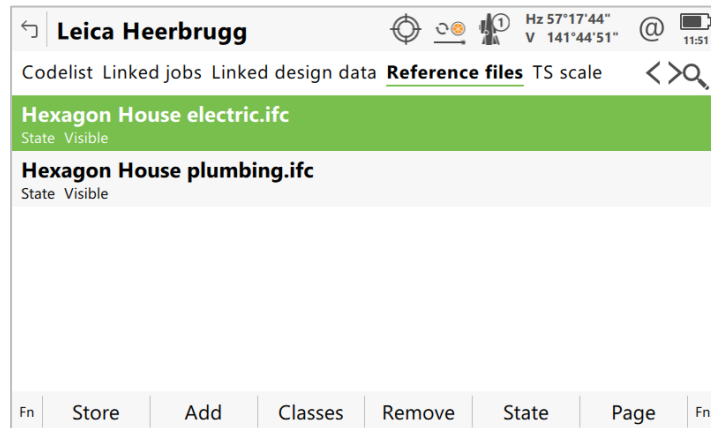
Previous versions of Captivate would allow only one IFC file to be viewed at a time. With Leica Captivate v7.50 it is possible to display the information from multiple IFC files simultaneously, giving a more holistic view of the available design elements in a project.

Note, to also use this new option to use more than one IFC file in the Inspect Surfaces app, the latest version, v7.50 of the Inspect Surfaces app needs to be loaded to the instrument.

**Read and display IFC object information and properties**

When working with IFC data, the information assigned to each object is very valuable. With previous versions of Leica Captivate, IFC classes could be displayed, but the information contained in the IFC property sets for each object were not displayed or read.

With Leica Captivate v7.50, the common and user-defined property sets of each IFC object are be read and can be displayed. When selecting an IFC object in the 3D viewer, the **Information** option is shown in the 3D viewer menu.
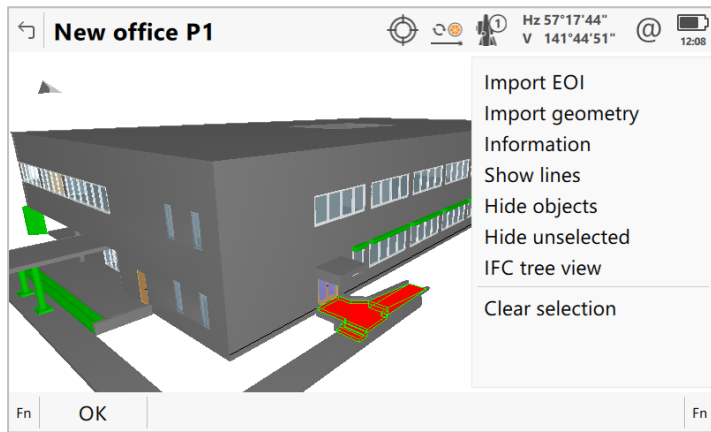
The **IFC Object Information** panel contains two pages, one showing the IFC object **Details**, the other showing the IFC object **Properties**.
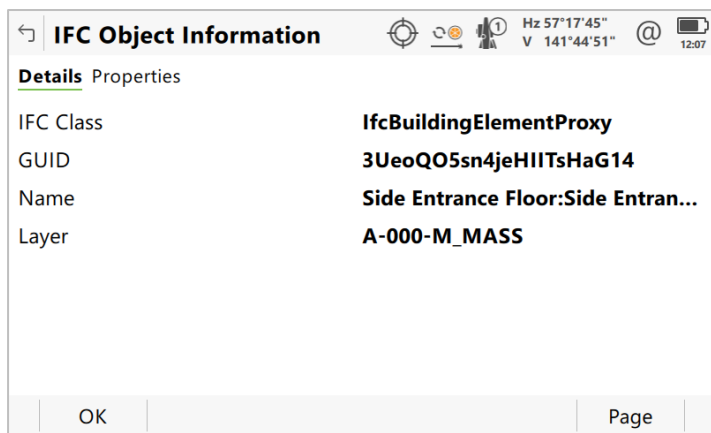
The IFC **Properties** are shown grouped into the corresponding property sets.
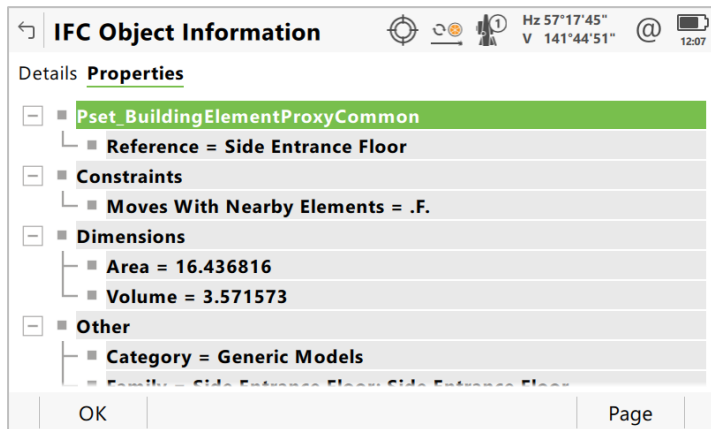
This new feature allows for object specific information, such as geometry, properties, or materials to be available in the field and seen directly on site as needed.

Write IFC object GUID into attribute 1 for each point and line imported from that IFC object

When working with IFC data, each IFC object has an ID called Globally Unique Identifier or GUID. It enables IFC objects to be tracked over the lifetime of a project, even when changes are applied. It also allows data to be associated with IFC objects by referencing the object GUID.

To support this, Leica Captivate v7.50 uses the GUID with data imported from IFC objects to allow tracing back, which IFC object job data was imported from.

When importing IFC data into Leica Captivate, each object is broken down into points and lines. Leica Captivate v7.50 assigns the GUID from the original IFC object as the value of attribute 1 to each point or line created during import. At the same time, **Attribute 1** is renamed to **IFC GUID**:
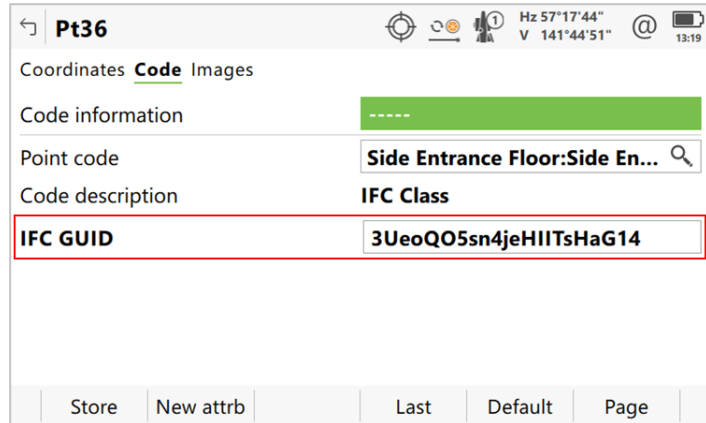
This will allow content within a Captivate job to be associated with the IFC object they originate from and make it possible to use and correctly associate this data throughout the lifetime of the IFC data.

Automatically use IFC object name and GUID for point coding

During and at the end of the building phase for a structure, as-built measurements document the final build. With these measurements it is possible to compare the finished build to the original design to understand the differences and analyse the possible impact of these changes.

To make this comparison easy, it is useful if every measured point can automatically be associated with the design object it refers to. When using IFC for the design data, this means associating each measured point to the relevant design IFC object. To support this, the Leica Captivate v7.50 allows creating a code with information from an IFC object when working with coding and linework.

In the **Measure** app, an IFC object can be selected in the 3D viewer and a menu option allows selecting to **Use details as code**.
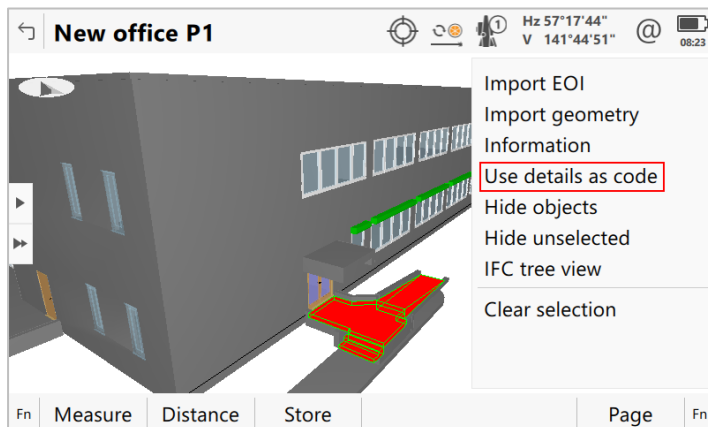
For each point measure afterwards, the IFC object name will then automatically be stored as the code for the measured points and the GUID will be written as the value for attribute 1 of that code.
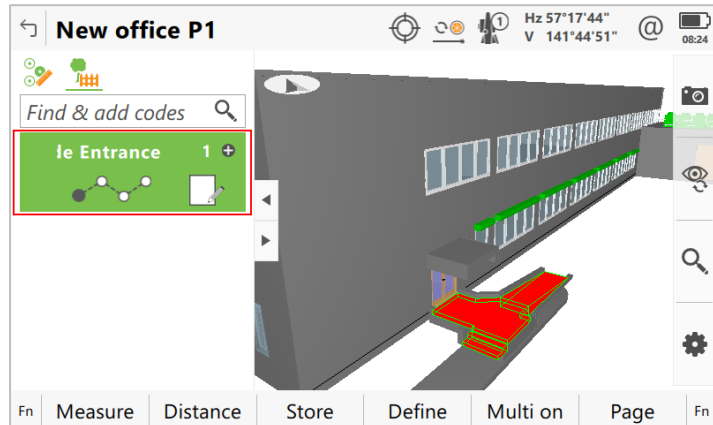

Once the points are imported into the office software, the code and attribute allow automatically matching the measured points to the relevant IFC object. This saves time, eliminates the need for manually matching measured points to IFC objects and makes this process less error prone.

Option to use a design point code and attributes for coding points created in the Stake to line or Measure to line apps

Leica Captivate v7.50 contains a new feature for the **Measure to line** and **Stake to line** apps. A new setting in the apps allows coding each newly created point using the code and attributes from the design point. For measuring and staking to line, the code and related code attributes of the point at the start of the line are used as the code and attributes for each point resulting from staking or measuring to that line.

The same setting is also new for the **Stake points** app. In this app, the design code has always been used to code the point created during stakeout. It can now be turned off to allow individual coding of the stakeout point.
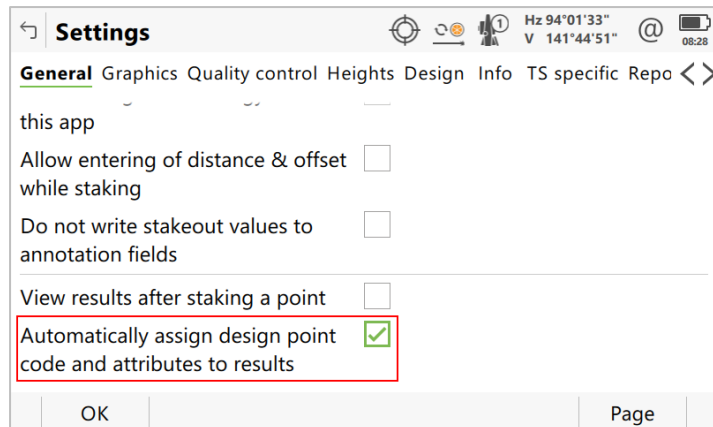
Note that per default the new setting is active in the **Stake points** and **Stake to line** apps while it is deactivated in the **Measure to line** app. When activated in the Measure to line app, the coding and linework tab will not be shown in the app as codes are applied automatically.

An additional benefit of this new feature comes when working with IFC data. When the point to stake or the line to be measured or staked to is imported from an IFC object, the GUID from that object will be written into the code attribute 1 of each point created by measuring or staking to the line. This again allows

automatic matching of the measured points to the relevant IFC object once all measured data is imported into the office software, which saves time and reduces errors when working with IFC data.

Allow measuring and coding and linework tasks in the Stakeout apps

With Leica Captivate v7.50, it is now possible to do measure and stakeout tasks in one app while using the full coding and linework functionality. A new extension allows the code boxes to be used in the **Stake points** and **Stake to line** apps. It also allows creating linework within these apps.

As mentioned above, a new setting in the **Stake points** and **Stake to line** app automatically copies design codes and attributes to the staked points if activated. If this setting is deactivated, the coding and linework tab is now available in the apps.
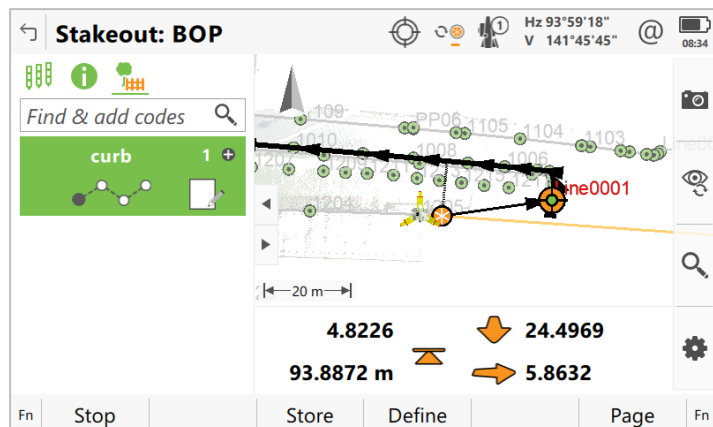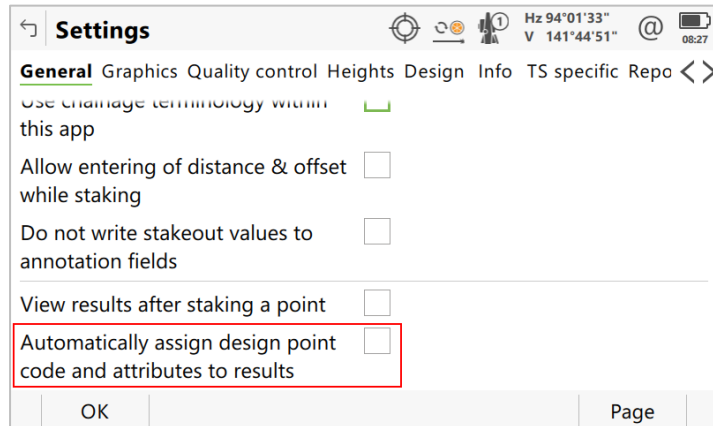
With this extension of the **Stake points** and **Stake to line** apps, measure and check routines can now be done in the same app while using the full coding functionality. This enables staked/checked data to be used to create an entirely new data model, which can then be compared to the original design model.

Allow copying Design code or attribute values into the code information of a staked point

With Leica Captivate v7.50 a new setting in the **Stake points** and **Stake to line** apps allows defining that the code information for each created point is populated automatically.
The options are to either copy the **Design point code** or the design point **Attribute 1, Attribute 2,** or **Attribute 3** value into the **Code information** field of the newly created point.
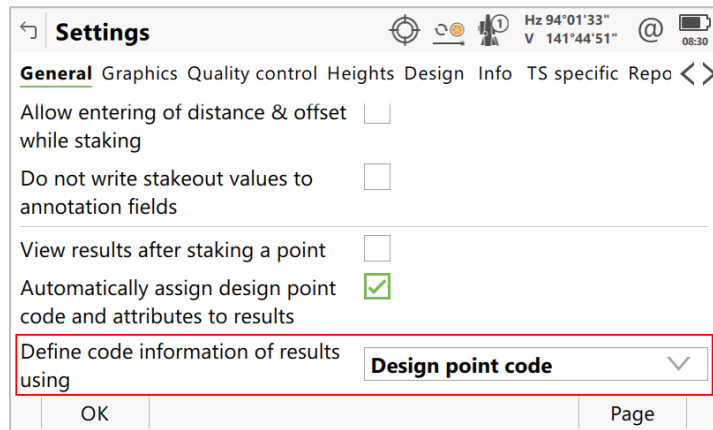
This new option can be very useful when coding staked points individually but still needing to retain code information from the design point. In the **Stake to line** app, the copied data will be taken from the point at the start of the line that is being staked to.

The new option can also be useful when the design comes from an IFC object. If the design point has been imported from IFC, attribute 1 contains the GUID of the IFC object it originates from. This GUID can now be written to the code information field, enabling the points to be associated with the design IFC object once they are brought back into the office software.

Define the frequency of the new firmware version and CCP expiration notifications

With previous versions of Leica Captivate, we have made it very easy to upgrade an instrument to the latest version. A message is shown when a new version is available and if the CCP license key installed on the instrument is not sufficient for this update or is about to expire.

However, these messages and the option to update are not relevant for everyone working with Leica Captivate in the field at the frequency they are currently shown. To allow reducing distraction, the **Update Software** panel was extended with a **Settings** panel, which can be accessed via the **Settings (Fn+F1)** button.

The panel allows defining, how often notifications regarding the CCP expiration and the availability of new firmware versions are shown. The option allows to show these notifications on a daily basis when relevant or reduce the frequency to a monthly or even yearly basis.
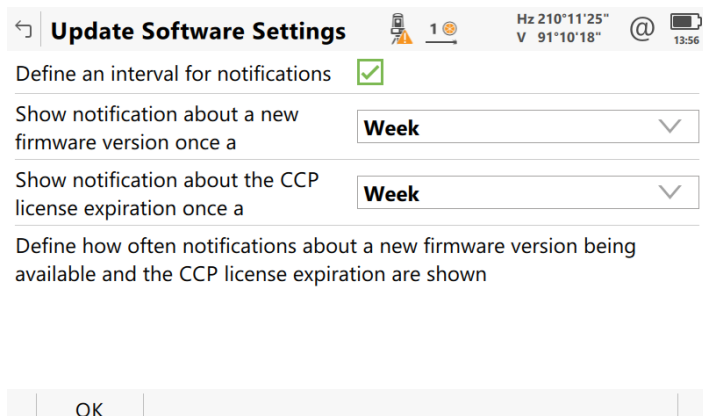
As it is possible to hide the **Update Software** panel via the **Access Restriction Wizard**, this would also hide the settings for the notification frequency, making it impossible to change the settings. In this case, CCP expiry notifications and new firmware notifications will not be shown at all.

This extension allows for a regulation of the displayed firmware and CCP messages according to company needs. If the daily user of Leica Captivate does not update the firmware, the panel and messages can be hidden completely. If the update of the instruments is done on e.g., only a yearly basis, the settings can be adapted to this need.

3 Leica Captivate New Features – TS specific

Show warning message for angle only measurements

When working with a TS Total Station or MS MultiStation, there can be occasions when a point measurement records angle values, but no distance is measured. This can happen for instance when the instrument loses lock to the prism without this being noticed. In this case, measurements might result in points being stored with angle values but no distance value.

To prevent this, Leica Captivate v7.50 offers a new check to be activated that shows a confirmation message when points without a distance measurement are about to be stored.
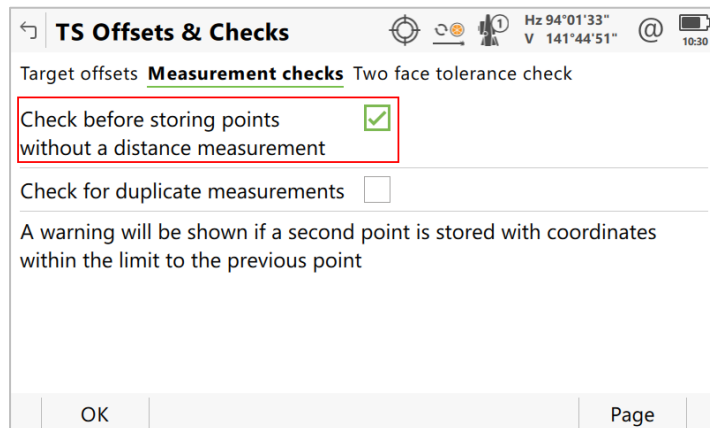
The new check can be found in the **Point storage** settings, within the **TS offsets and checks** panel. Note that per default, the check box will be activated, meaning warning messages will be shown for angle only measurements unless the check box is being deactivated.

This new check prevents accidentally storing points without a distance value and therefore prevents errors and additional work to be done if the issue is noticed much later.

Hotkey for changing tilt compensation mode

With Leica Captivate v7.0 it is possible to use a hotkey to turn the AP20 tilt compensation on or off. However, when there is a need to change the tilt compensation mode from measuring to the pole tip to measuring to the top of the pole, this would need to be done by leaving the currently used app and accessing the **Settings** panel.
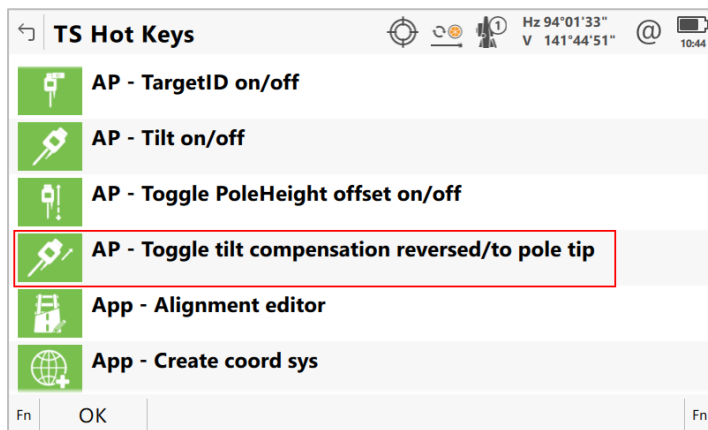
With Leica Captivate v7.50 there is a new hotkey to allow toggling between the two tilt compensation modes without leaving the app. When tilt compensation is off, pressing this hotkey turns tilt compensation on and switches the tilt compensation mode at the same time. A message indicates the change of tilt compensation modes.

The new setting can also be configured to be available in the **My TS Favorites** bubble.

Automatically apply pole extension value for AP20

The AP20 PoleHeight feature is making sure that measurements are always done with the correct pole height as the height is applied automatically in Leica Captivate. However, if the maximum pole height is not sufficient and an extension is needed, then the pole height still must be entered manually.

With Leica Captivate v7.50 it is possible to configure the length of a pole extension and apply it automatically to each AP20 measured pole height change. This way, even when working with an extension to the AutoPole, automatic height measurements can be used as a guarantee to always apply the correct pole height.
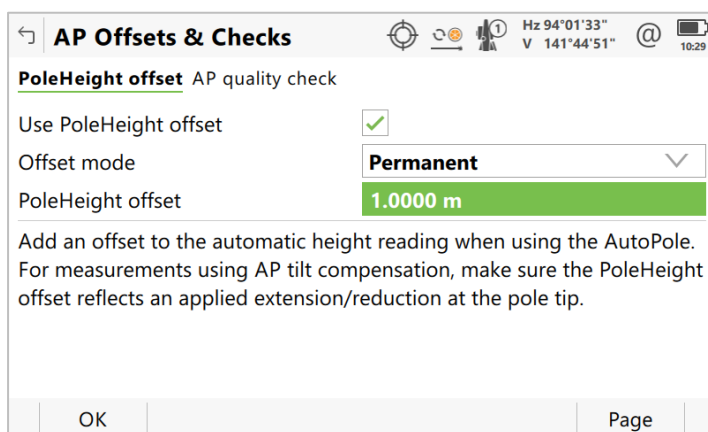
This new setting can be found in the **Point storage** settings, **AP Offsets & Checks** panel. The setting also allows entering an extension to be entered and applied to only the next measurement. Further, it is possible to enter a negative extension height in case a slightly worn off pole tip is used.

Keep the laser pointer on while turning the instrument

When trying to position a Total Station to a non-reflective target, it can be useful if the red laser pointer is visible while turning the instrument. With previous versions of Leica Captivate for security reasons, the laser pointer would always automatically be turned off while the instrument is being turned from the arrow keys.

With Leica Captivate v7.50 there is a new option to keep the laser pointer on while the instrument is being turned using the arrow keys.
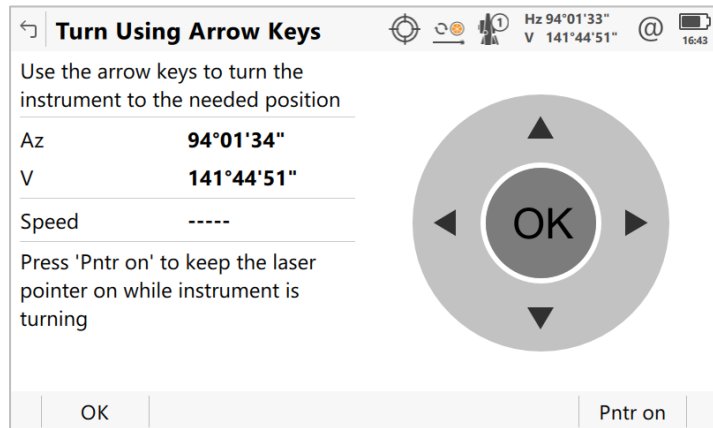
Press **Pntr on (F6)** in the **Turn Using Arrow Keys** panel to use the laser pointer while positioning the instrument. The **Pntr auto (F6)** button allows returning to automatically switching the laser pointer off while turning the instrument.

This new feature can be very useful, especially when positioning the instrument remotely, using a CS Controller, when it is not possible to look through the instruments telescope.

New As-built check message for the Tunnel app when using and MS60

The **Check tunnel** app offers several methods to check a tunnel profile during the different phases of a project. One of these methods allows scanning a "slice" of the tunnel, meaning the tunnel profile between two chainages. This method can be used with an MS60 MultiStation.

With Leica Captivate v7.50 an additional method specifically for the MS60 MultiStation has been added, which uses the full potential of the MS60. With the **As-built by MS band scan** method, the MS60 scans the tunnel profile with a speed of up to 30000 pts/s and makes it possible to scan the tunnel profile while the instrument is set up between the defined chainages.
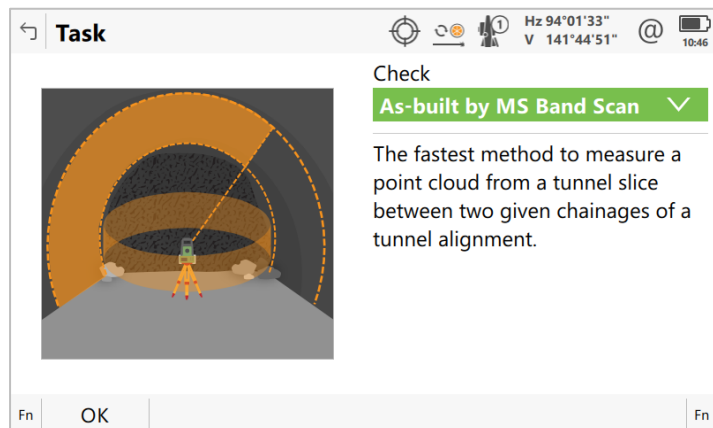
The new method allows for a much-improved work speed and is also more flexible when scanning a tunnel profile by not making it necessary to move an already set up instrument outside the defined chainages.

4 Leica Captivate New Features – GS specific

The new GS related feature released with Leica Captivate v7.50 can be used with a Leica GS18, GS18 I and GS18 T using Leica Captivate v7.50, with Leica Viva GS10, GS14, GS15, GS16 and GS25 sensor using SmartWorx Viva v11.50 and with a GS07 using ME version 7.813.

Improved RTK performance in challenging environments

With Leica Captivate v7.50, the GNSS positioning algorithms have been improved to allow higher RTK availability, particularly when working under challenging environments (e.g., near canopy and buildings).

In comparison to previous versions, an improvement of the RTK availability in challenging environments of over 30% is expected. This includes improved positioning accuracy and reliability.
Note: the position type xRTK, with a typical 3D accuracy of 20cm, has been removed in Leica Captivate v7.50 to instead provide solutions with higher accuracy and reliability."

To get the maximum performance from this improvement, both the GS Sensor and the CS20 Controller or CS30/CS35 Tablet need to be updated to the latest version.

5 Leica Captivate Software Improvements

Improve the interpretation of IFC objects for base-shaped geometries

With Leica Captivate v7.50 changes were done to improve the interpretation of IFC objects for base-shaped geometries. With previous versions, these shapes were interpreted in a way that would miss some EOI when importing the data, which would result in missing points in the field.

With Leica Captivate v7.50 the interpretation of 3D objects which have a base shape that is extruded has been improved, giving much better results when importing these objects.

Issue when informing about new Leica Captivate versions available

With previous versions of Leica Captivate, there was an issue when informing about new versions being available if these versions had a format of x.0x. For instance, a version 7.03 would be interpreted as 7.30.
The issue was then that with e.g., a Leica Captivate v7.10 loaded on the instrument, an information was received, that a new version 7.30 was available, even though only a version 7.03 was available.

The issue is fixed with Leica Captivate v7.50

Not possible to format an external memory device after deleting a coordinate system

With previous versions of Leica Captivate, there was an issue when trying to format an external memory device (SD card or USB memory device) after deleting any of the coordinate systems on the device.
In this case, the memory device could not be formatted until the CS Controller or TS Total Station was restarted.

The issue is fixed with Leica Captivate v7.50

Laser plummet not switching off when connected to a CS Controller

With the previous version of Leica Captivate there was an issue that the laser plummet would not turn off after leaving the Level & Compensator panel if the TS Total Station was remote controlled by a CS Controller.
When leaving the Level & Compensator panel, the laser plummet should automatically switch off. However, with this issue, the laser plummet would stay on.

The issue is fixed with Leica Captivate v7.50

Issue when automatically connecting to RTK network

With Leica Captivate v7.0 there was an issue connecting to the RTK network when the option to **Automatically connect** was activated and the **Connect when** list box is set to **Turned on** in the RTK rover settings. In that case, the RTK connection was never established.

The issue is fixed with Leica Captivate v7.50

New point name not shown in 3D viewer immediately after renaming a point

With Leica Captivate v7.0 there was an issue when renaming a point in the data management of the active working job and then switching to the 3D viewer. In this case, the point would still be shown with the previous point ID. Only when switching the active job in the job carousel and then switching back to the previous job, would the correct, renamed point ID be shown in the 3D viewer.

The issue is fixed with Leica Captivate v7.50

Issue when exporting the sequence of measurements from the Measure sets app into RW5

There was an issue when exporting measurements made in the Measure sets app to RW5. When a sequence other than A'B'B"A" was chosen, then the sequence in the RW5 file would not match the measured sequence. In RW5, the sequence would always be A'B'B"A".

The issue is fixed with Leica Captivate v7.50

Improved internet connectivity on the CS30 and CS35 tablets

With a previous version of Leica Captivate, the configuration of the internet connection on CS30 and CS35 tablets was brought into Leica Captivate. With this improvement, it was not necessary anymore, to close Leica Captivate and access the Windows OS to configure the internet connection and then switch back to Leica Captivate.

However, a side effect of this change was that when closing Leica Captivate the internet connection was also closed and could not be used for any other windows functionality on the tablet without re-establishing it in the Windows settings.

The issue is fixed with Leica Captivate v7.50 and an internet connection configured and established in Leica Captivate will continue to work when the field software is closed, and the tablets continues to run.

No position after rebooting a GS sensor when using a user defined antenna calibration

With previous versions of Leica Captivate there was an issue when using specific user defined antenna calibrations. After selecting such an antenna calibration and rebooting the GS sensor, no position would be calculated.

The issue is fixed with Leica Captivate v7.50. It also occurred with SmartWorx Viva GS sensors and is fixed with SmartWorx Viva v11.50.

6 Obtaining and loading the new software using the online update (CS Field Controller and TS/MS Total Stations)

It is strongly recommended to use the online update to load the new software to the CS Field Controller and TS/MS Total Stations. As a pre-requisite, your instrument must be registered in Leica myWorld.

The online update cannot be used to load the new software to the GS18 GNSS receivers.

Once your Controller or Total Station has been registered in myWorld, connect your instrument to the internet. It is recommended to use a WLAN connection.

Open Leica Captivate on the device and navigate to the **Settings – Tools – Update Software** panel. The field **Update software using** contains the option **Online update**. Note that this option is only available if a new version is available online. The instrument will do a check for new versions within the first minutes of being connected to the internet. An SD card needs to be inserted in the instrument for the firmware update to work.

When selecting this option and pressing **F1(OK),** the firmware update is triggered. Should the currently installed CCP license not be valid for the firmware to be installed, a check for new licenses is done first. If any new licenses, such as extended CCPs, are available in Leica myWorld, those new licenses will be downloaded and installed first.

Afterwards, the new firmware file and all additionally loaded apps will be downloaded and once successfully finished, the installation process is started automatically.

7 Obtaining and loading the new software using manual loading (CS20 Field Controller and TS/MS instruments)

If you prefer not to use the myWorld online update, it is also possible to "manually" load the new software – in this case, please carefully read the notes below.

Obtaining the new software	The new software and apps can be obtained from the following sources: - the myWorld web site - your local Leica Selling Unit or Dealer
Files which need to be obtained for upgrading a CS20 Field Controller	**The following file needs to be obtained to update a CS20 Field Controller - CS20LeicaCaptivate_v7.50.fw**
Files which need to be obtained for upgrading a TS/MS instrument	**The following file needs to be obtained to update a TS/MS instrument - TSxxMS60LeicaCaptivate_v7.50.fw TS10LeicaCaptivate_v7.50.fw**

How to load the Leica Captivate files to a CS20 Field Controller or TS/MS instrument	1. Insert your SD card or USB flash drive into your PC or card reader and copy the necessary file to be uploaded to the instrument to the **System** directory of the used memory device. This can be done with Windows Explorer or any other suitable PC software.
	2. Insert the SD card or USB flash drive into the CS20 Field Controller or TS/MS instrument and turn on. Ensure the battery is fully charged.
	3. From the main menu, choose **Settings** and then choose menu item **Tools** and then choose **Update software**. The **Update software** screen is now visible.
	4. In the **File to load** list box ensure the correct file name is visible. If the file name is not visible, then check you have correctly copied the firmware file to the **System** directory of the SD card USB flash drive.
	5. Press **F1(OK)** – a message will appear to remind you that the CS20 Controller or TS Total Station will turn off and on during the process. Press **F6(Yes)** to begin the loading process.
	6. The loading process will take a few minutes and the CS20 Controller or TS Total Station will turn off and on several times during the process.

How to load the Leica Captivate files to a TS13 Total Station with a 4-button keyboard	1. Insert your SD card into your PC or card reader and copy the necessary file to be uploaded to the instrument to the System directory of the Sd card. This can be done with Windows Explorer or any other suitable PC software.
	2. Insert the SD card into the TS13 Total Station
	3. Ensure the battery is fully charged
	4. Turn on the instrument, the firmware update starts automatically.
	5. Check the power LED. If it shows permanent green, the firmware update is finished

8 Obtaining and loading the new software using manual loading (GS18, GS18 T and I GNSS sensors)

The GS18, GS18 T and I GNSS sensors can only be updated manually. Follow the instructions below.

Obtaining the new software	The new software and language files can be obtained from the following sources: - the myWorld web site (it is also possible to manually download the files from the myWorld web site as well as automatically upgrading your controllers and sensors with myWorld) - your local Leica Selling Unit or Dealer
Files which need to be obtained for upgrading a GS18, GS18 T and I GNSS sensor	The following file must be downloaded to update the GS18, GS18 T and I GNSS sensors **GSxxLeicaCaptivate_v7.50.fw**
How to load the Leica Captivate files to the GS18, GS18 T and I GNSS sensors	1. Insert the SD card into your PC or card reader and copy the firmware file to be uploaded to the instrument to the **System** directory of the card. This can be done with Windows Explorer or any other suitable PC software. (It is NOT

possible to use a USB stick to update your GS18, GS18 T or GS18 I GNSS sensor)

Or

Download the firmware file to the PC from which you will update the GS18, GS18 T or I GNSS sensor

2. Insert the SD card into the GS18, GS18 T or GS18 I GNSS sensor. Ensure the battery is fully charged.
3. Connect the GS18, GS18 T or GS18 I GNSS sensor to your PC via a USB cable. Open the web interface by typing **192.168.254.2** into the browser window.
4. Go to **User – Load firmware** to start the firmware update. You can now either browse to the firmware file on your PC or check the box that says the firmware file is on the SD card.
5. Start the firmware update and follow the instructions in the web interface.

9 Obtaining and loading the new software using manual loading (CS30 and CS35 Tablet)

The CS30 and CS35 Tablet can also be updated manually. Follow the instructions below.

Obtaining the new software	The new software and apps can be obtained from the following sources: - the myWorld web site (it is also possible to manually download the files from the myWorld web site as well as automatically upgrading your controllers and sensors with myWorld) - your local Leica Selling Unit or Dealer
Files which need to be obtained for upgrading a CS35 Tablet	The following file must be downloaded to update the CS35 Tablet **LeicaCaptivate_CS3x_v7.50.zip** The file contains Leica Captivate languages and apps.
How to load the Leica Captivate files to the CS35 Tablet	1. On your PC unpack the files from the .zip file to a USB stick 2. Insert the USB stick into the CS30/CS35 Tablet 3. Using the File Explorer app within Windows on the CS30/CS35 Tablet, browse to the USB stick. Double tap the Setup.exe file 4. Follow the instructions Note that this procedure will need to be performed twice – once to uninstall the existing Leica Captivate software and then a second time to install the new software.
Obtaining sample data	Leica Geosystems provides sample data that can be used with the simulator or the instruments to try out new features or apps. The sample data needs to be installed using a separate installer. Before using it on a CS20 Controller or a TS Total Station, the data needs to be installed on a simulator first. During the installation, it is possible to select for which simulators the sample data can be installed – the sample can be installed for all 4 simulators (SmartWorx

Viva CS simulator, SmartWorx Viva TS simulator, Leica Captivate CS20 simulator and the Leica Captivate TS/MS simulator).

The sample data installer can be downloaded from myWorld. An installation guide is provided along with the sample data installer though the installation process is very easy to follow.

10 Summary of Leica Captivate Software Files

Listed below is a summary of the files available relating to the new Leica Captivate software.

File name	Description	Version	Maintenance date
CS20LeicaCaptivate_v7_50.fw	CS20 Field Controller Leica Captivate software file	7.50	01.11.2022
TSxxMS60LeicaCaptivate_ v7_50.fw	TS/MS/TM Total Station Leica Captivate software file	7.50	01.11.2022
TS10_LeicaCaptivate_ v7_50.fw	TS10 Total Station Leica Captivate software file	7.50	01.11.2022
LeicaCaptivate_CS3x_ v7_50.fw	CS35 Tablet Leica Captivate software file	7.50	01.11.2022
GSxxLeicaCaptivate_ v7_50.fw	GS18, GS18 T/I smart antenna Leica Captivate software file	7.50	01.11.2022
OEM7.813.fw	GS07 ME firmware file	7.813	-