- when it has to be **right**

# Leica Captivate v7.00
# 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** | 20th April 2022 |
| **Maintenance date** | 1st April 2022 |
| **Available in myWorld** | Week 16, 2022 |

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

**Contents**

# 1 Leica Captivate v7.00 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 v7.00 release for the following hardware<br>• Field Controllers: CS20, CS35, CS30<br>• Total Stations: TS10, TS13, TS16, TS60, MS60, TM60<br>• GNSS Sensors: GS18, GS18 T and GS18 I |
| **Customer Care Product (CCP) dates** | The Leica Captivate software version 7.00 can be loaded onto all CS Field Controllers, GS18 GNSS Sensors and TS Total Stations with a CCP license valid until at least 01.04.2022 |
| **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 v7.00 |

**Compatibility between Leica Captivate versions**

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

This means, for example, when using a version 6.x on a Leica Captivate GS Sensor or TS Total Station, the CS20 Controller or CS30/CS35 Tablet must also run a v6.x to be compatible.

For the new Leica Captivate v7.00, 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 v7.00 and vice versa.

Note that to use the new GS related features on a GS07 GNSS sensor connected to a CS20 Controller or CS30/CS35 Tablet, the new ME firmware v7.811 needs to be loaded on the GS07. The ME firmware v7.811 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 v7.00 can be used with a Leica Viva GS16, GS10 or GS25 sensor. SmartWorx Viva GS version 11.0 is needed on these GS sensors to use the new features.

| | | **CS20, CS35** | | | |
|---|---|---|---|---|---|
| | | 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 | Fully compatible |
| **GS** | SmartWorx Viva v11.x | Not compatible | | Not compatible | Fully compatible |

## 2 Leica Captivate - New Software Features

**Configure the internal modem on the CS30 or CS35 from within Leica Captivate**

With previous versions of Leica Captivate, when using the internal modem on the CS30 or CS35 to connect to the internet, it was necessary to leave Leica Captivate and do all necessary configuration steps within Windows.

With Leica Captivate v7.0, the configuration of the internal modem for those controllers can be done from within Leica Captivate. The RTK rover wizard and the Internet wizard have been extended to allow for the necessary changes.
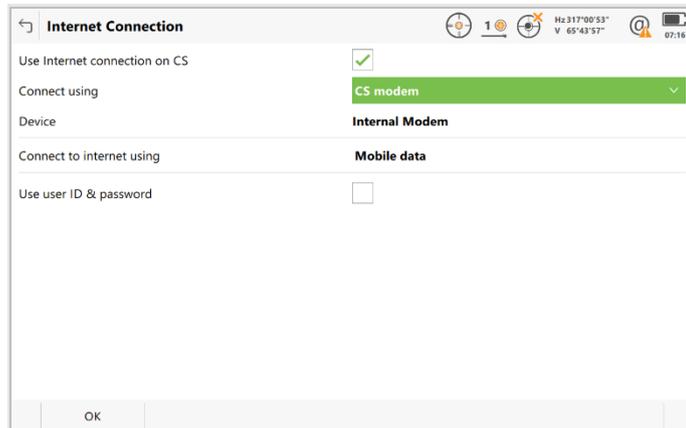


This extension makes the modem configuration on the CS30 and CS35 controllers much easier and more convenient.

**Configure the CS30 hard keys**

Until recent versions of Leica Captivate, it was not possible, to configure the CS30 hard keys to be used with any other functionality than the default, meaning they could not be used for quick access.

From Leica Captivate v7.0 onwards, the two keys on the side panel of the CS30 can be configured to a variety of functions, including the F1-F12 buttons, ENTER, BACKSPACE, ESCAPE and DELETE.
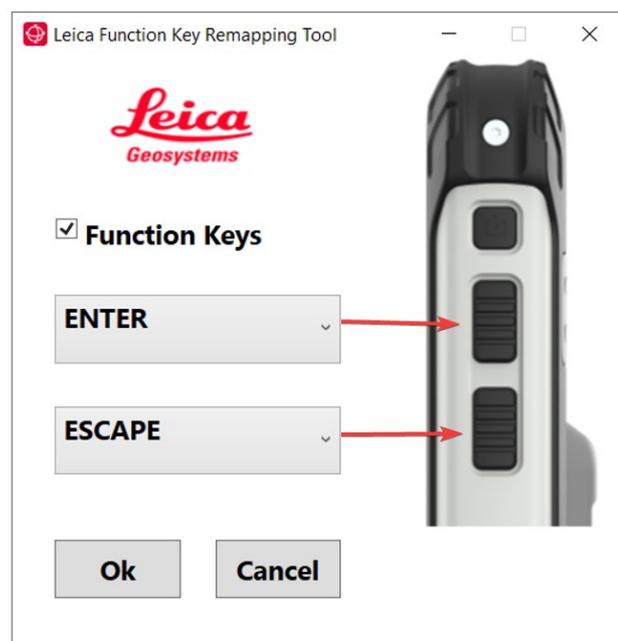
The configuration of the CS30 hard keys needs to be done via a separate windows tool. For a detailed description, please see the latest version of the CS30 user manual, which you can download from myWorld.

**Hotkeys can be configured on the CS30 and CS35 tablets**

With previous versions of Leica Captivate, on the CS35 and CS30 tablets, it was possible to configure the **TS and GS favourites**, but not the **hot keys**. This is because there is no keyboard available to show the hot keys.

With Leica Captivate v7.0 it is possible to configure the hotkeys also on the tablets. They can be used in two different ways:

1) To configure the hard keys on either instrument to work as a function key and then define in Leica Captivate, which function is to be on that key.

2) To use the F7-F12 keys of the pop-up keyboard for the configured function keys. In this case, adding the function to call the pop-up keyboard on one of the hard keys is advisable.
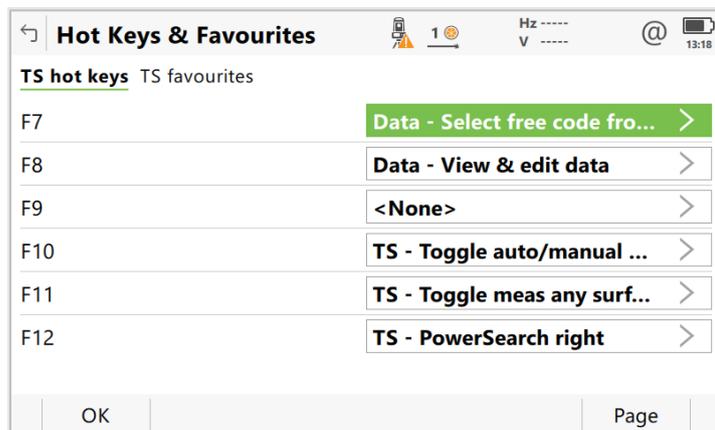


The hot keys in Leica Captivate are making it much easier, to call often used functions in the different applications.

**Zoom in and out of the 3D viewer by using multitouch on the CS30 and CS35**

When using the 3D Viewer in Leica Captivate, the zoom tool can be used to zoom in and out of the data to get the degree of detail needed. The zoom tool needs to be opened and selected in the menu and it then allows zooming in or out by moving up and down in the 3D viewer.

However, on multitouch enabled devices it is more common to zoom using a so-called pinch zoom. Leica Captivate v7.0 allows such a pinch zoom on the CS30 and CS35 tablets.
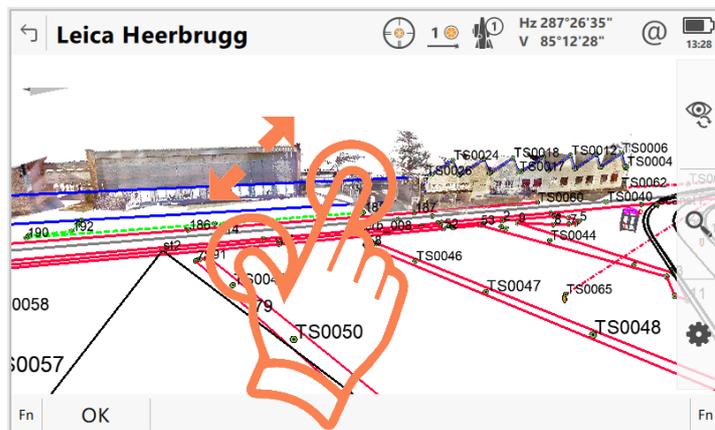
In the 3D Viewer or any app displaying the 3D Viewer, touch two fingers on the touch screen, and move them apart to zoom in, or together to zoom out. This is a very quick way to get to the right zoom level and saves time by not having to activate and deactivate the zoom tool via the tools menu.

**Allow the Measure hidden point tool to be used on the CS30 and CS35 tablets**

Since the first release of Leica Captivate, a **Measure hidden point** tool is available in the **Tools** menu of several apps on the CS20 Controller.
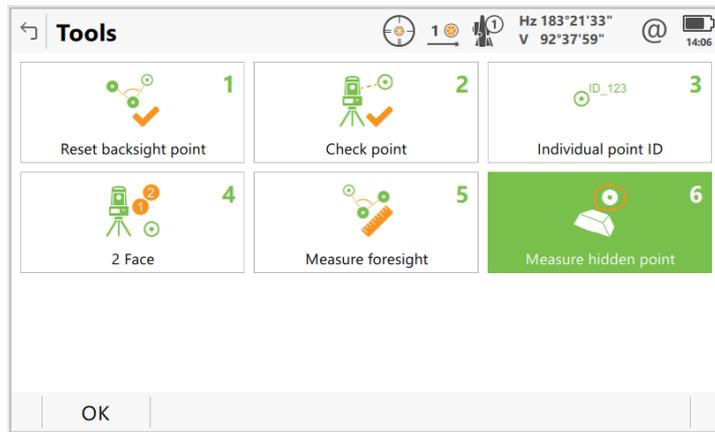


With Leica Captivate v7.0, this tool is now also available on the CS30 and CS35 tablets.

The tool allows to measure the coordinates of a point that is not visible to the Total Station or not accessible to the GS sensor, allowing for a more complete survey and possibly saving on number of setups needed.

**Improved text input on the CS30 and CS35 tablets**

To enter or edit data in Leica Captivate, it is sometimes necessary to first delete already entered values before entering the new content.

With previous versions of Leica Captivate, it was necessary to delete the content of an input field by pressing the backspace button several times. This becomes noticeable when it needs to be done often, for instance when measuring points while creating linework with newly entered point codes.

With Leica Captivate v7.0, it is now possible to delete or overwrite the content of a field with one button click. When a field is in edit mode, already existing content is highlighted and could now be deleted with the backspace button or overwritten by typing a letter.
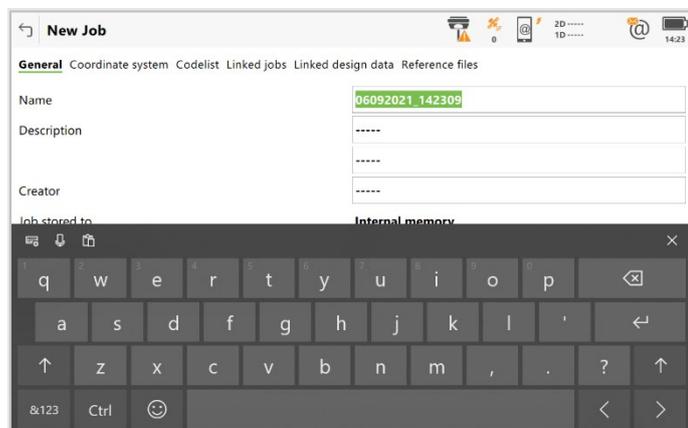
This new text deletion option makes it much quicker to edit text fields with already existing content.

**Support of non-Latin characters for text imported from CAD files**

With previous versions of Leica Captivate, non-Latin characters in CAD files would not be shown in the Field Software when the file was attached or imported. This means that unless Latin characters were used to describe elements in the data, then this information would be lost when using the file in Leica Captivate.



With Leica Captivate v7.0 a wide range of new character set new sets is supported, such as Cyrillic, Japanese, Korean and Chinese. Texts in these character sets can now be displayed when contained in CAD data that is used with Leica Captivate.

This allows for much needed text information to be available when doing work in the field.

**Allow a backup on the SD card for jobs stored on the internal memory**

When working on site for several hours or days, lots of data gets stored to the jobs in Leica Captivate. To allow an additional degree of protection for this data, Leica Captivate v7.0 offers a backup option for the jobs stored on the internal memory of the device.

In the **Job Management** panel, press **Fn+F1(Settings)** and activate the **Back up working job** check box. There are a number of options shown to configure when to back up data and which data to include in the backup. It is also possible to set a regular reminder to do a backup of the data.
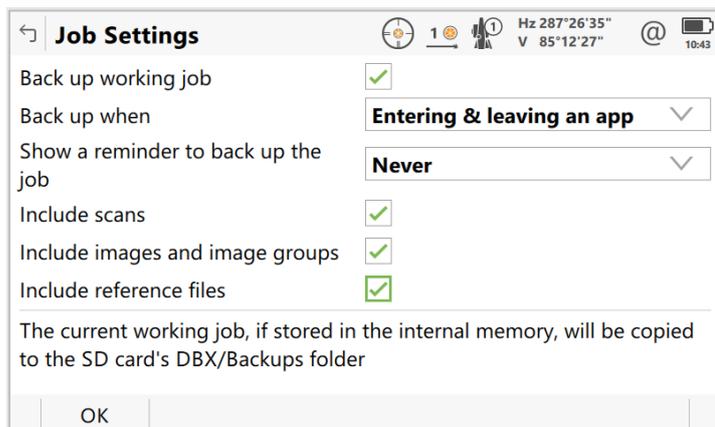


Each time a backup is stored, a copy of the currently active working job is created on the SD card in the *DBX/Backups* folder. Should it be necessary to

revert to a backup. The folder stored here can be copied back to the internal memory and used for further data storage.

Note that an inserted SD card is needed to allow a backup of the active working job to be stored.
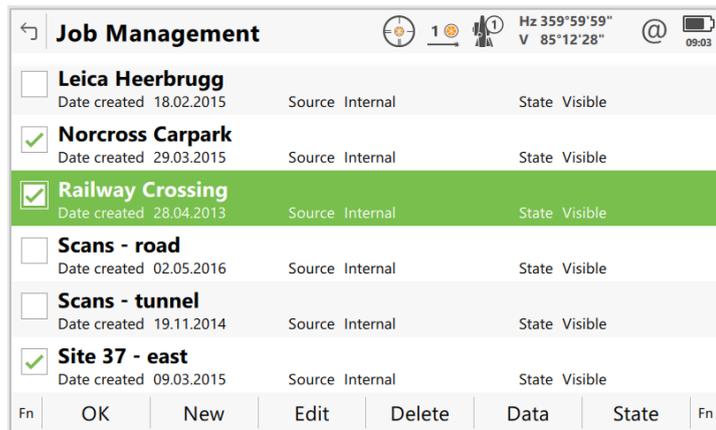
This new option offers an additional protection for the valuable data collected in the field.

**Delete multiple jobs at a time**

When working with Leica Captivate, over time, a large number of jobs might accumulate on the device. When it's time to clean up, it might be necessary to delete several or possibly even all jobs on the device.

With previous versions of Leica Captivate it was only possible to delete the jobs one by one. With Leica Captivate v7.0 several or all jobs can now be deleted at once.



Open the **Job Management** panel, select the jobs to delete and press **F4(Delete).** You can also use **Fn+F6(All)** to select all jobs to be deleted.

This allows for a much faster and easier clean-up of jobs when the device gets filled up.

**Allow several exports in a row**

At the end of a day or project, when exporting data from a job, it often happens that the same data needs to be provided to different entities in different formats. This means exporting the same data several times.

With previous versions of Leica Captivate, each such export would end with a redirect to the **Home** panel. To export the data from the same job into another format, it was necessary to access the back of job menu again and select a new export format.

With Leica Captivate v7.0, there is now a prompt asking if more data is to be exported.
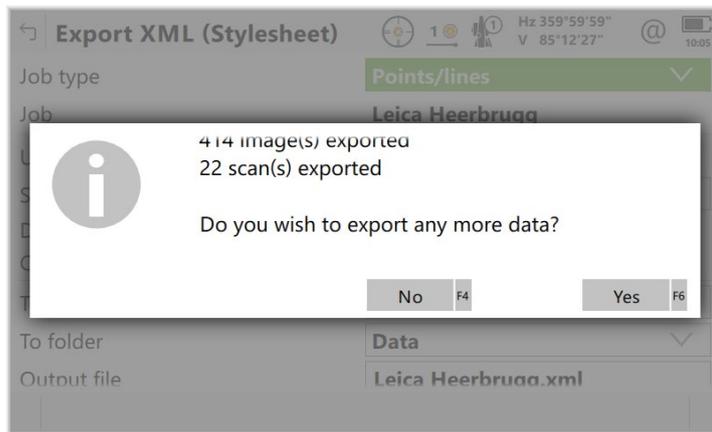
When selecting **F6(Yes)** in the message to confirm the export, the **Export data to** panel is opened again and another format can be chosen to directly add another export.

This allows a quick succession of exports from the same job without having to start from the **Home** panel each time.

**Improvement when transferring settings between devices**

Since the first release, Leica Captivate offered the possibility to create an AllObjects.zip file to transfer settings between devices or to back up the configuration of a device.

However, since new options are added with each release, this file did not truly cover all settings for an instrument anymore and some manual adjustments were necessary.

With Leica Captivate v7.0 the AllObjects.zip file has been extended to make a true copy of all instrument settings that would be necessary to transfer between instruments to truly have the same configuration.
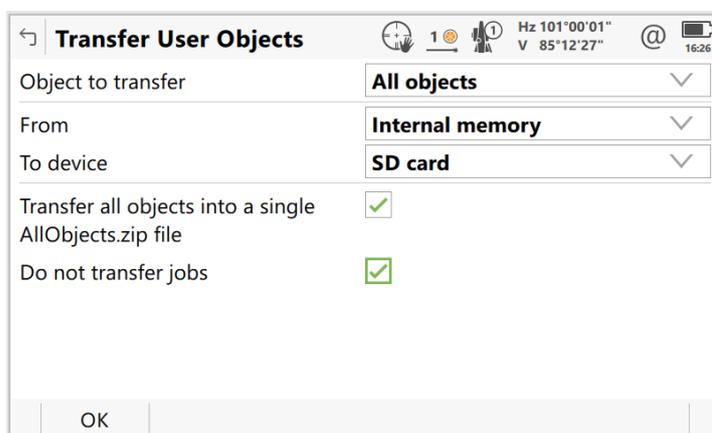


A complete list of all the settings covered can be found in the Technical Reference manual. The workflow to store the setting within Leica Captivate is the same as it had been in previous versions.

**Allow using Ground coordinates for shift values in the Measure to line and Stake to line apps**

In some regions, ground coordinates are being used in for Cadastre Surveys, specifically when entering the shift values in the Measure to Line and Stake to Line apps.

To accommodate this need, in Leica Captivate v7.0, a new button allows switching between grid and ground coordinates when defining shift values.
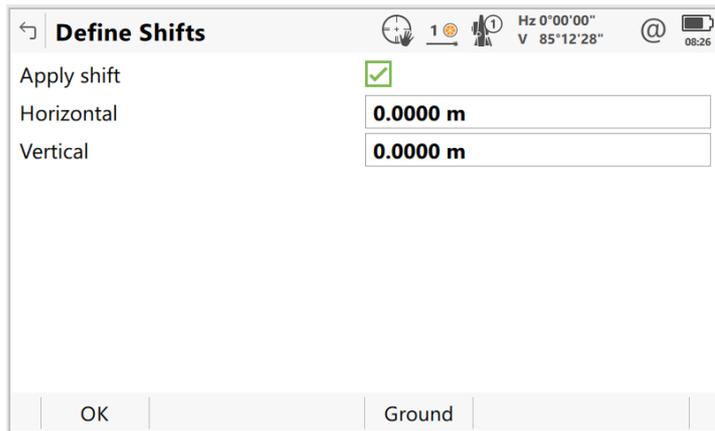
When entering the shifts in ground, this information needs to be available for documentation purposes. It can therefore be exported to XML, including when using stylesheets.

**Bricsys 24/7 regional improvement**



When access to the Bricsys 24/7 cloud service was first introduced in Leica Captivate, there was one access point to up- and download the data. In the meantime, the Bricsys 24/7 service has been localized, making it necessary to use different server addresses to access the service in different regions.
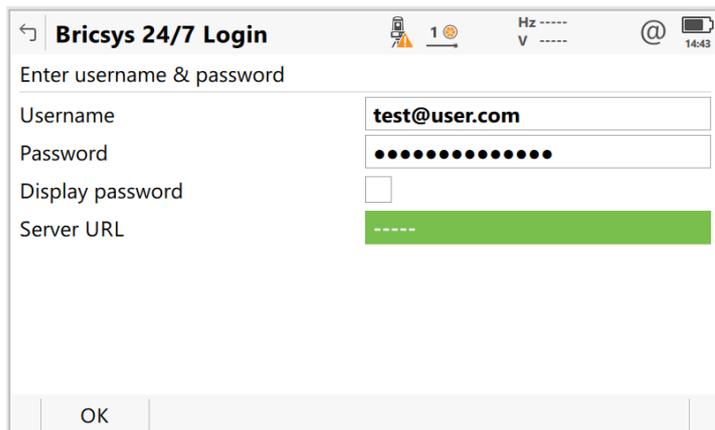
With Leica Captivate v7.0 it is now possible to configure the regionally used Bricsys 24/7 URL.



This new **Server URL** option makes the service more accessible in the different regions.

**Check tunnel app – new Tunnel axis option**



The **Check tunnel** app in Leica Captivate allows comparing the as-built of a tunnel against the design of that tunnel; and with that, finding any displacements that need to be corrected. For a quick check of the tunnel, when no specific design points are marked along the excavated tunnel profile, a check against the tunnel axis can be very valuable.

Leica Captivate v7.0 contains a new option called **Tunnel axis**, which allows to calculate the centre point of the measured tunnel profile and compare it to the position of the tunnel design centreline.
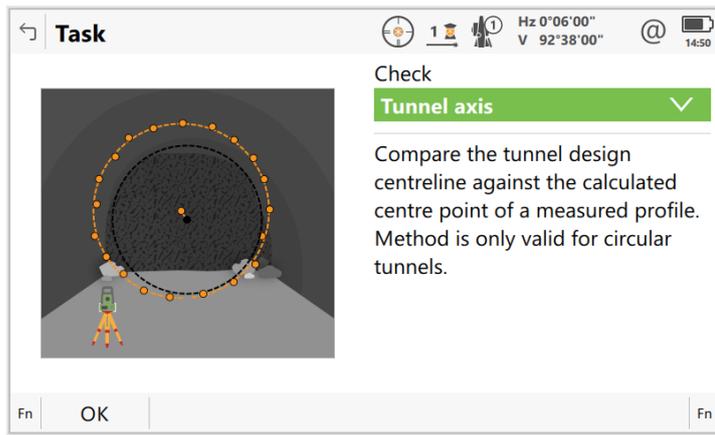
This way, tunnel axis displacements can easily be spotted by measuring only a few points along the tunnel profile.

**Extensions to the Stake and Check Rail apps**



Leica Captivate v7.0 introduces several changes to the Stake rail and Check rail apps.

There is now a new page in the **Rail Settings**, called **Gauge device**. In this page it is possible to select the **Gauge device** to be used. It is also possible to select in the **Device sensor mode** setting, whether the used device is a **Rule** or a **Trolley**.

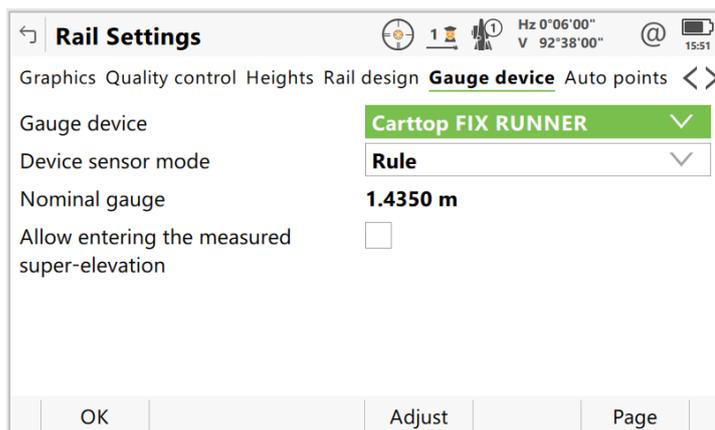

For the selected device, if known, the **Nominal gauge** is shown. Further, for the **Carttop RLM PLUS** device, a new **Gauge(F5)** button is introduced, which allows changing the value for the **Nominal gauge**.

When using the **Track & gauge device** method and using a device that works as a Trolley a special correction is calculated and applied to get the correct coordinates for both rails.

**Extension to the Auto Setup app**



The Auto Setup app allows automatically setting up the instrument using a resection. Using PowerSearch, it scans the surrounding area for prisms and calculates a resection setup for the Total Station, by matching the found prisms to control point coordinates from a Control job.

The app has been extended for Leica Captivate v7.0

An additional PowerSearch routine to find the surrounding prisms has been added to allow prisms at different heights to be found more reliably. The new **PowerSearch-Multiband** routine turns the instrument around its axis 3 times

and searches for prisms at different vertical angles. This increases the success of finding prisms when they are installed at noticeably varying heights.
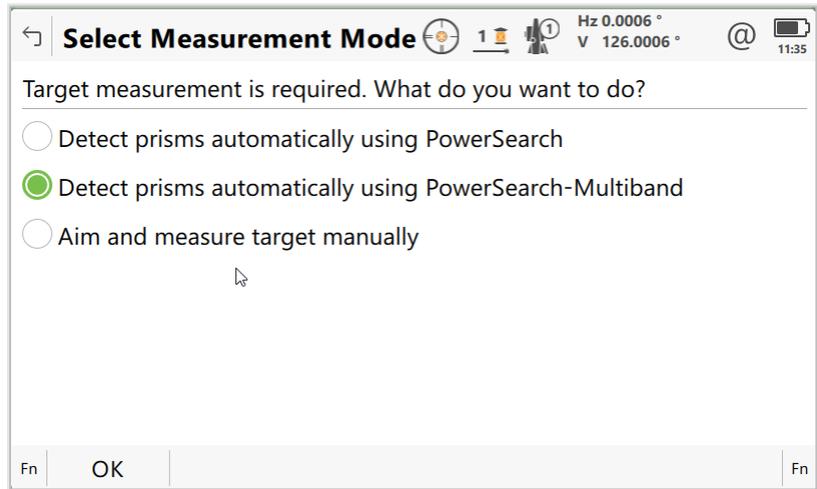


Further, the app now allows all points used to calculate the free station setup to automatically be added to the PowerSearch filter after the setup is finished.
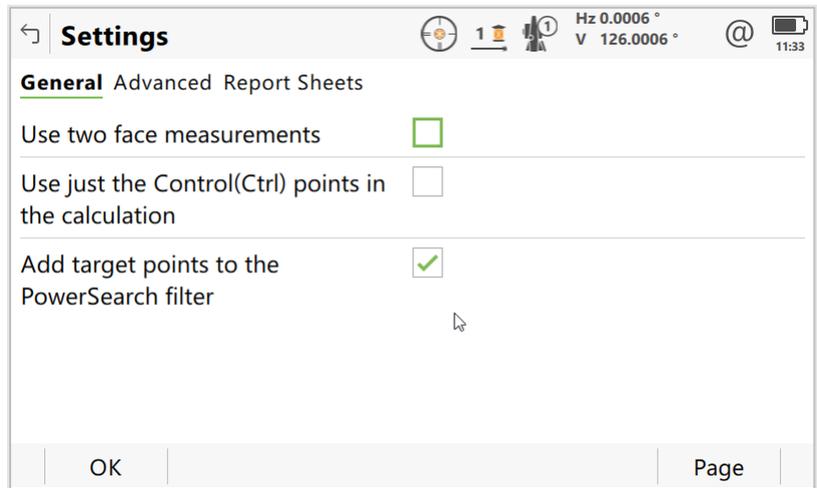


This way when measuring and staking points, surrounding control points will not interfere when searching for the actual working prism after a loss of lock.

## 3 Leica Captivate New Features – TS specific

**Automatic update of the target height**

When measuring or staking out points, it is important to work with the correct target height entered in Leica Captivate. Otherwise, the coordinates of the measured points or the position of the staked-out points will be incorrect.

When the surroundings require a change in reflector height, it can happen that the new height might be read or entered incorrectly or that changing the target height in Leica Captivate before measuring the next point is forgotten altogether.

Leica Captivate v7.0 supports the new Leica AP20 AutoPole. The AP20 measures the pole height automatically and transmits it to Leica Captivate. Any change in pole height is also detected and transmitted.
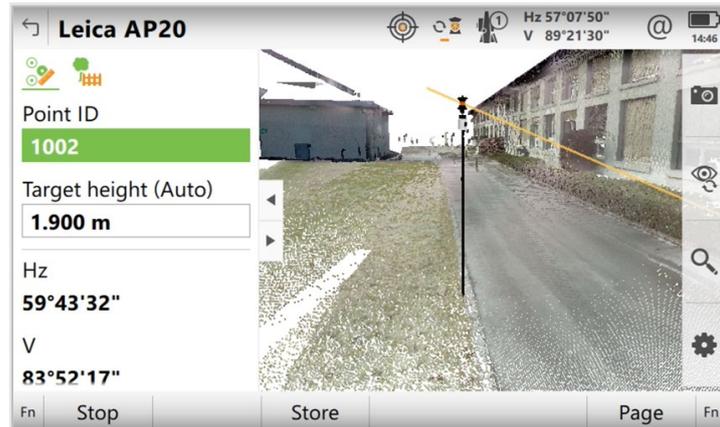


This new feature and the AP20 allow ensuring that the correct target height is used in Leica Captivate at all times, preventing costly corrections or mistakes.

**Measure points without levelling the pole**

When working with a Total Station and measuring or staking out points, it was always necessary to level the pole over the point to be measured or staked to get the correct results. This takes time, especially on stakeout tasks, where the level, the stakeout values and the movement of the pole tip all need to be watched simultaneously to find the correct position to be staked.

With Leica Captivate v7.0 supporting the new AP20 AutoPole, there is now the option to compensate the tilt of the pole automatically within the Field Software. This means it is no longer necessary to level the pole.
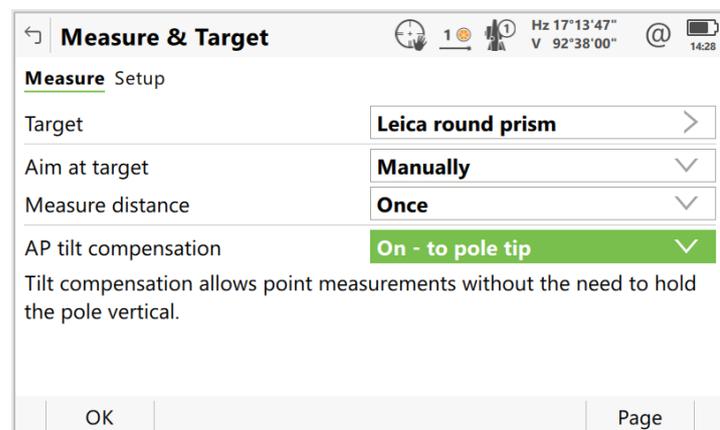
Besides activating or deactivating the tilt compensation, it is also possible to configure using the pole "reversed" mode. This allows to significantly reduce the distance between the AP20 and the pole tip and therefore increases the accuracy of the measured or staked point coordinate.

To start tilt compensation in any app using the AP20, press **F1(Start tilt)**. This will start a search for the target and, when found, lock onto the prism and start continuous distance measurements. Moving the pole around for a few seconds (for instance by walking to the next point to be measured), will initialise the tilt compensation.



Now just press **F3(Store)** each time a point is to be measured.
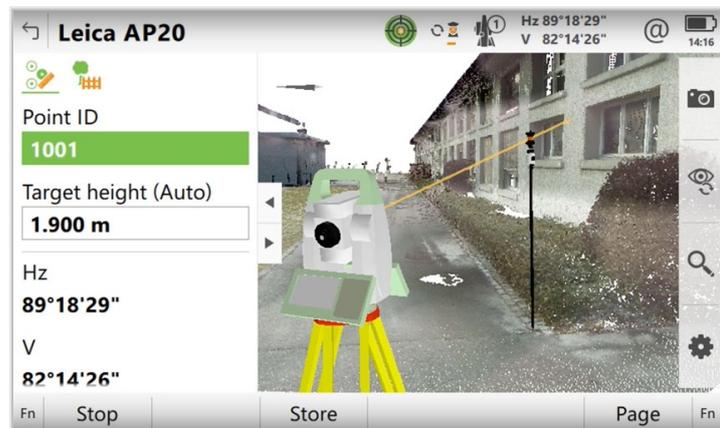


Besides saving time and avoiding errors, this new feature allows measuring points at which the prism would not be visible to the total station when required to hold the pole vertical.

Further, it allows to efficiently measure points on vertical objects (e.g. walls), where the width of the prism would traditionally have prevented to precisely access that point.

**Find the correct target automatically using a target ID**

Repeatedly throughout the day, when working with a robotic total station, the TS might occasionally lose lock to the target due to the nature of the environment in which it is being used, where vehicles, people and other obstructions may repeatedly interrupt the line of sight between the total station and the target.

Each time this happens, there is a small risk of the total station re-locking to the wrong target.

With Leica Captivate v7.0 supporting the new AP20 AutoPole, there is now the possibility to verify that the correct target is found, by using a target ID during search and lock.

Activate the **Use TargetID** field and select an ID from the **Choose ID** dropdown list. Any ID can be chosen. Ideally, they are not duplicated on the same working site.

The ID is transferred to the AP20 once connected. This ensures that any ID from the list can be used with any AP20, making the **TargetID** setup very straightforward.
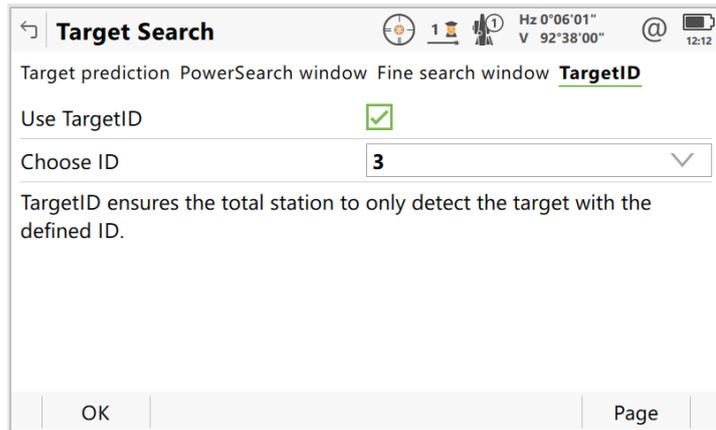


The automatic target search and the new target identification prevent measurements to wrong targets and avoid interruptions that will occur on any busy, multi-crew site.

**Number of supported backsight points for resections extended**

In some regions, government regulations require that under certain conditions, resections must be calculated from more than 10 backsight measurements.
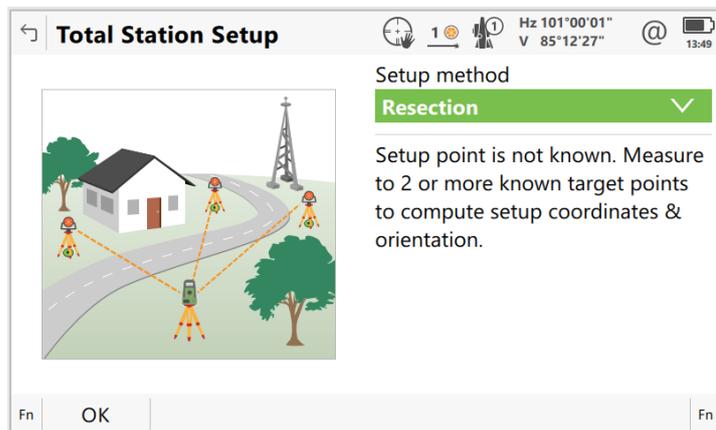


Leica Captivate v7.0 has been extended to allow up to 30 backsight targets to be measured, stored, and exported to fulfil regulations in these regions.

Further, the new HeXML Schema 2.0 allows exporting an extended number of backsights measured to support this change.

**Extended Reset backsight tool**

In previous versions of Leica Captivate, the **Reset Backsight Point** tool allowed to check the setup values and then decide to either accept them and leave the tool or update the setup with a new Set Orientation record.

With Leica Captivate v7.0, the **Reset Backsight Point** tool has been extended to allow storing the values from the setup check.

| ↩ **Reset Backsight Point** | ⊕ 1⦿ ▮① Hz 0°06'00" | @ ▯ |
| --- | --- | --- |
| | V 92°38'01" | 14:13 |
| Point ID | **33** | |
| Target height | **1.7500 m** | |
| Target | **Leica round prism** | > |
| Difference in azimuth | **-0°06'00"** | |
| Difference in horizontal distance | **-0.0400 m** | |
| Difference in height | **0.0019 m** | |
| Press 'Reset Ang' to store the difference values & create a new Set Orientation setup record. All future measurements will refer to the new Setup. | | |
| Reset Ang | Distance | Store | | Cancel |

After pressing **Distance (F2)**, the values of difference to the original setup are shown. The new **Store (F3)** button now allows storing these values. This creates a record of the setup having been checked, without creating a new setup.

The **Reset Ang (F1)** functionality has also been extended. Besides storing a new setup record, it also stores the difference value to create a record of what they were before the new setup.

This allows creating records of regular setup checks and the values that had been measured.

**Turn off Bluetooth and WLAN module**

Total Stations running Leica Captivate are sometimes used in areas (for example in mines), where no wireless communication is allowed. For this purpose, it is necessary to disable the Bluetooth and WLAN adapter.

Leica Captivate v7.0 allows turning off both wireless adapters from within Leica Captivate. In the Connection Settings panel, the Fn+F4 (Wireless) button accesses the Wireless Connections panel.

| ↩ **Connection Settings** | ⊕ ⟲⦿ ▮① Hz 134°00'00" | @ ▯ |
| --- | --- | --- |
| | V 88°00'01" | 15:55 |
| **TS Internet** | | |
| Device - | Port - | |
| **GSI output** | | |
| Device - | Port - | |
| **Export job** | | |
| Device - | Port - | |
| **CS controller** | | |
| Device - | Port - | |
| **GeoCOM** | | |
| Device - | Port - | |
| Fn | Home | End | | Wireless | Fn |

In the Wireless Connections panel, either or both settings can be turned off.

Wireless Connections

Use internal Bluetooth on TS ☑
Use WLAN on TS ☑

When disabling the use of internal Bluetooth and/or WLAN, the TS cannot connect to wireless networks and/or Bluetooth devices

OK
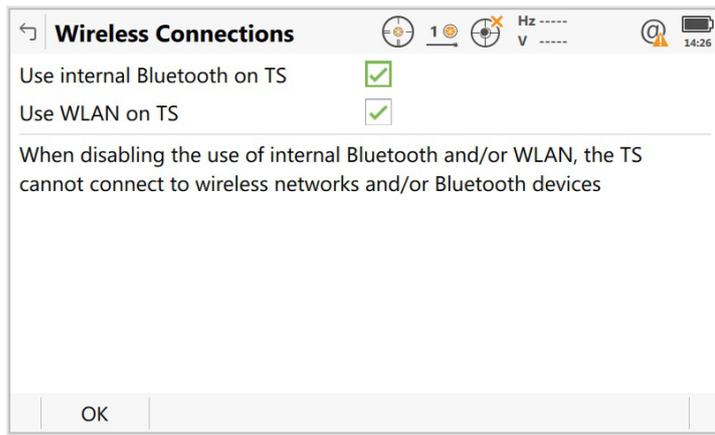
This allows using the TS Total Stations and MS MultiStations in areas where wireless communication must be turned off.

## 4 Leica Captivate New Features – GS specific

The new GS related features released with Leica Captivate v7.0 can be used with a Leica GS18, GS18 I and GS18 T using Leica Captivate v7.0 and with Leica Viva GS10, GS14, GS15, GS16 and GS25 sensor using SmartWorx Viva v11.0.

**Automatic update of the antenna height**

When measuring or staking out points, it is important to work with the correct antenna height entered in Leica Captivate, as otherwise the coordinates of the measured points or the position of the staked-out points will be incorrect.

When the work surroundings require a change in antenna height, it can happen that the new height might be read or entered into Leica Captivate incorrectly or that updating the antenna height before measuring the next point is forgotten altogether.

Leica Captivate v7.0 supports the new Leica AP20 AutoPole. When starting to work with the GS sensor, the AP20 measures the antenna height automatically and transmits it to Leica Captivate. Any subsequent change in antenna height is also detected and transmitted automatically.
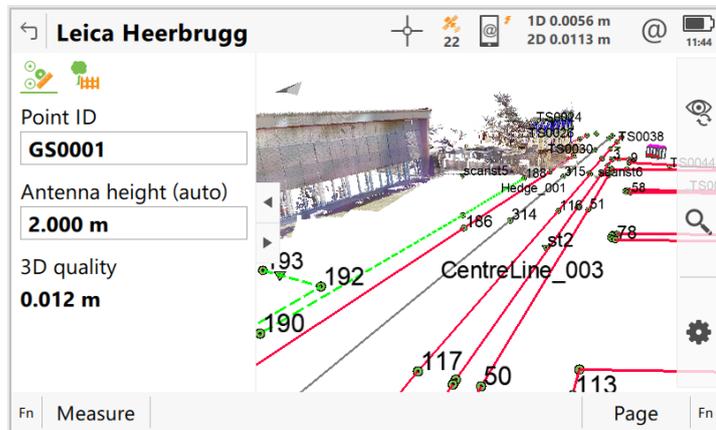


This new feature and the AP20 ensure that the correct antenna height is used in Leica Captivate at all times, preventing costly corrections or mistakes.

**HxGN SmartNet Global Services**

Already with previous versions of Leica Captivate, the following three technologies could be used to receive correction data for GNSS observations

1) Network RTK providing regional network corrections
2) PPP (Precise Point Positioning) providing global network corrections
3) RTK bridging, which uses PPP correction data to bridge short outages of the Network RTK correction data

In April, the new HxGN SmartNet Global service family was introduced, combining these technologies. The new HxGN SmartNet Global services are supported in Leica Captivate v7.0.

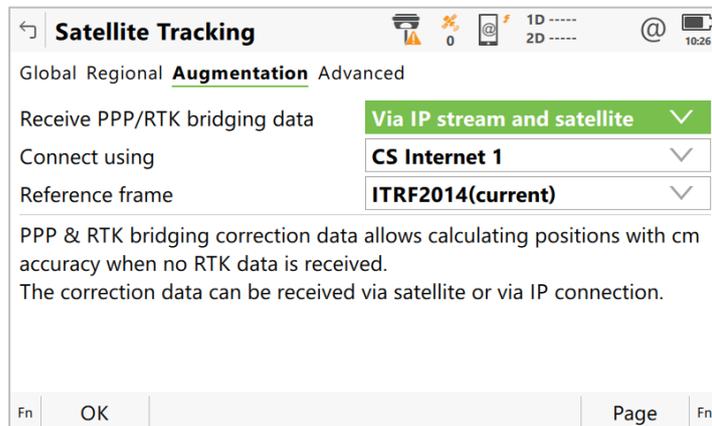| | HxGN SmartNet Global | | |
|---|---|---|---|
| **Technologies** | **HxGN SmartNet Pro** | **HxGN SmartNet+** | **HxGN SmartNet PPP** |
| **Network RTK** | ○ | ○ | |
| **RTK bridging** | ○ | ○ | ○ |
| **PPP** | ○ | | ○ |

The ease-of-mind way of working these HxGN SmartNet Global services provide is further supported in Leica Captivate v7.0 with the improvements explained below.

**PPP corrections received via TCP/IP connection**

With previous versions of Leica Captivate, RTK bridging and PPP correction data could be received only via satellite link. This meant that when there was no direct line of sight to the satellite, the PPP correction data could not be received and used.

In Captivate v7.0, a new option allows receiving RTK bridging and PPP corrections via a mobile internet connection.

This option is available if a HxGN SmartNet Global service has been purchased.

This new way of receiving RTK bridging and PPP corrections allows keeping high precision accuracy even if there is no direct line of sight to the geostationary satellite.

**Transform PPP corrected points to the local RTK based reference frame**

With previous versions of Leica Captivate, it was necessary to know the local reference frame used at every job site or location to shift the PPP corrected measured points to the local reference frame received from the RTK corrections.

With Leica Captivate v7.0 it is possible to transform the PPP solution from its original reference frame to any local reference frame already used within the same Job.

When a GNSS measured point of type PPP and a GNSS measured point of type RTK is known, the applied PPP reference frame and local reference frame received from the RTK connections are also known and the differences can be calculated and stored in a so-called adjustment.

This adjustment can then be applied when using the PPP service. All points measured after configuring the adjustment will be shifted accordingly. This

means that when a job contains PPP corrected and RTK corrected points, they are all stored with coordinates referring to the same local reference frame.

This new reference frame adjustment can be configured from the **Augmentation** tab of the **Satellite Tracking** panel.
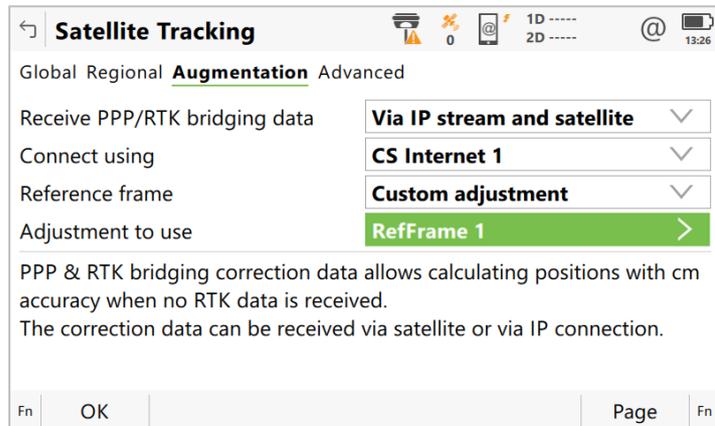


A custom adjustment can be created by clicking in the Adjustment to use list, which opens the full list of available custom adjustments. F2(New) opens the New Adjustment panel.
What is needed to calculate an adjustment is a point that is measured once with RTK Network corrections and a second time with PPP corrections. Select the two points in the New Adjustment panel and press F1(Store) to start the calculation and store the new adjustment.



With this new feature, it is no longer needed to know the local reference frame used at every job site or location. With access to a local RTK corrections service, it will be possible to easily and conveniently estimate a PPP reference frame adjustment that can be used to shift the PPP points to the local reference frame received from the RTK corrections.

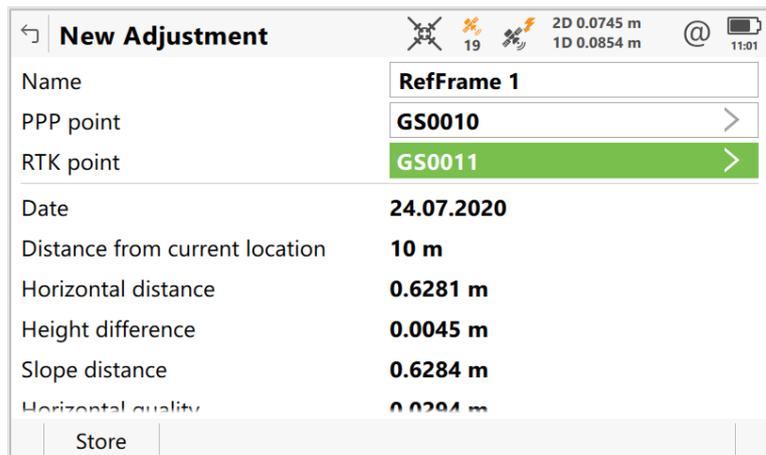**Sensor ID based authentication for HxGN SmartNet Global services**

With previous versions of Leica Captivate, it was only possible to register for a SmartNet service by using username and password. This could be a bit tedious if the login details were complex and would also mean repeated login and logout when sharing accounts on the same device.

With Leica Captivate v7.0 it is now possible to use the sensor ID to log in to HxGN SmartNet Global services. This means the GNSS sensor to be used needs to be registered with the HxGN SmartNet Global service, but it can then

be used without login details and without sharing or switching accounts between users.
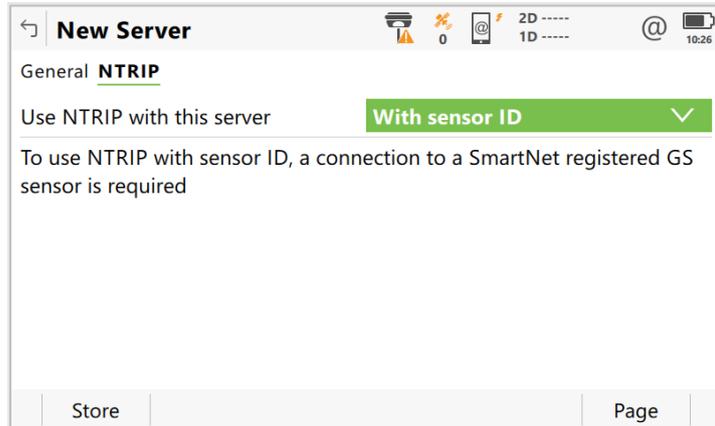


Using the sensor ID for authentication with the HxGN SmartNet Global service can be configured when creating a new server while configuring Internet port settings. Open the NTRIP page to choose between authentication via user account or sensor ID.

This new method not only makes the authentication process faster, it also increases the security against account hacking.

**HxGN SmartNet Global services available for GS07 GNSS receivers**

With previous versions of Leica Captivate, it was not possible to use SmartLink and SmartLink Fill services when connected to a GS07 GNSS sensor.

With Captivate v7.0, GS07 GNSS sensors will benefit from the inclusion of PPP and RTK bridging data within the HxGN SmartNet Global service family. All available HxGN SmartNet Global services can also be used with a GS07 GNSS sensor.
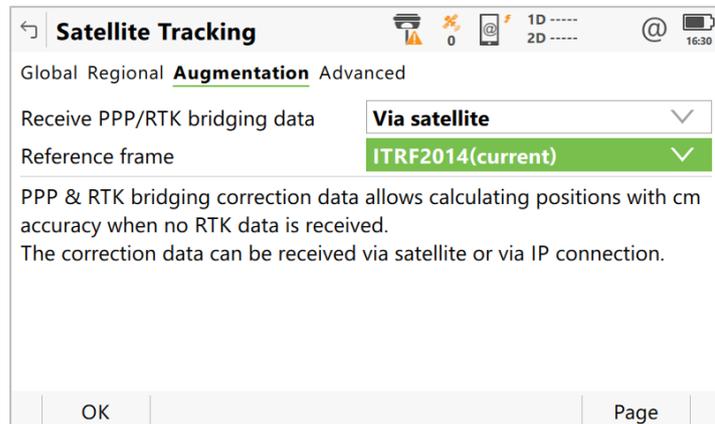


This allows for a much-extended working area in which to receive the PPP correction data and bridge RTK corrections.

**Option to reduce signal interference now also supported on the GS16 GNSS receivers**

In Leica Captivate v6.50 a new option to reduce GNSS signal interference was introduced. This option allows mitigation of out-of-band interferences and enables filtering functionalities to remove in-band distortions.

This new option was fully supported when using the GS18 and GS10/GS25 GNSS receivers, but not for the GS16 GNSS receivers.



From Leica Captivate v7.0 onwards, the new interference mitigation option is fully supported also for the GS16 GNSS receivers. It allows obtaining the highest robustness of signal tracking against interferences.

**New option to change the WLAN channel**

With previous versions of Leica Captivate, the GS18 sensor's WLAN access point was always configured to use channel 8. This could lead to instabilities in the WLAN connection between the CS controller and the GS18 when interferences in the same channel appeared.

To prevent these issues in the future, Leica Captivate v7.0 allows changing the WLAN channel in the Web interface.



This way interference can be avoided in the future and connection loss is minimized.

**Set up base over point coordinates stored in linked job**

In a previous Leica Captivate release it was made possible to link several jobs to a working job as control and design data. This allows easy instrument setup and design data access without having to switch the active job. However, using data from a linked control job to set up a Base station in GNSS base mode was not possible.
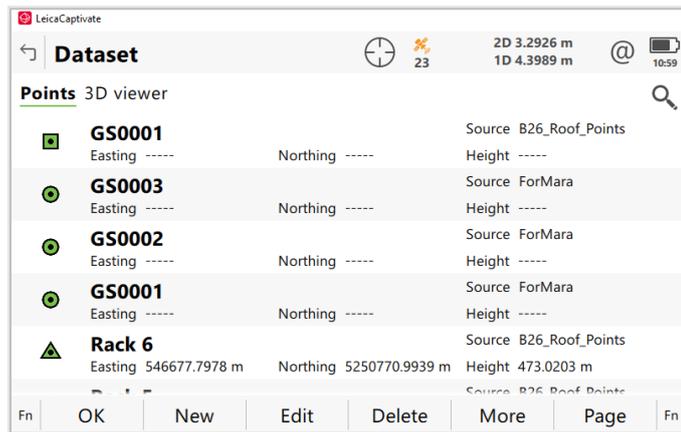
With Leica Captivate v7.0, the base setup point can now also be selected from the points stored in the linked jobs. This means it is now not necessary anymore to switch the active job in rover mode for setting up the base and to switch it back afterwards to use with the rover.

**Support of NavIC regional satellite navigation system**

NavIC is the Indian Regional Navigation Satellite System providing accurate real-time positioning services. From Leica Captivate v7.0, it is possible to use NavIC satellite data for position calculation. A license is needed to use NavIC data.

NavIC satellites will be tracked automatically when the corresponding option is enabled in the **Regional** page of the **Satellite Tracking** panel.
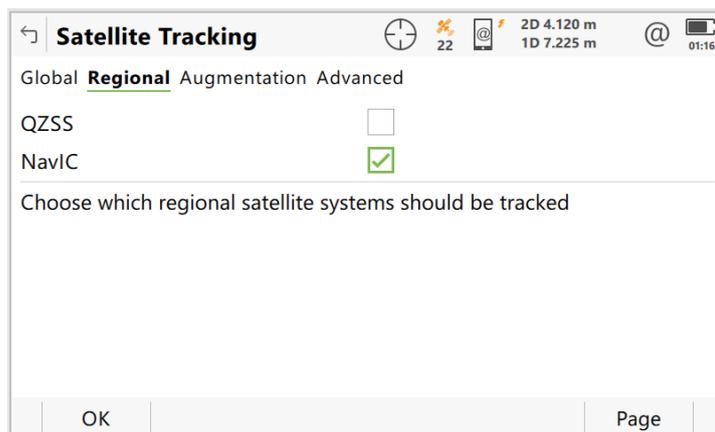


NavIC can also be configured from the Web interface in the **Instrument - Satellite settings** panel.
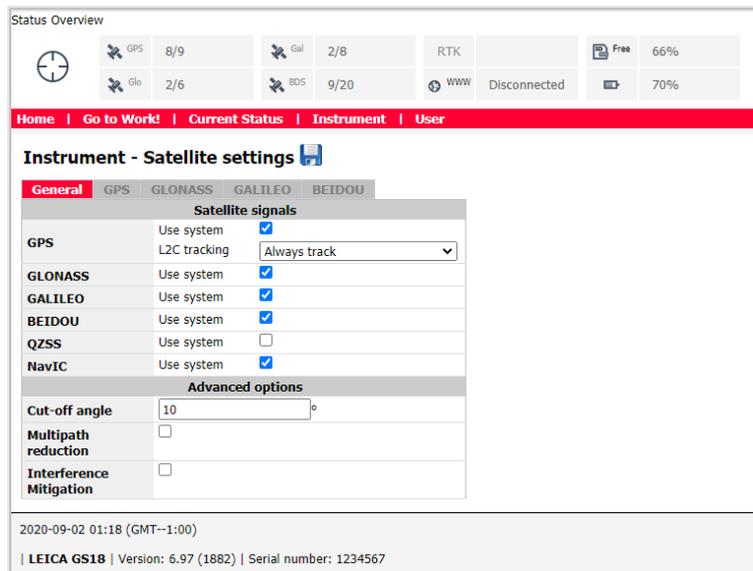
Further, NavIC data will be logged to RINEX v3.04 if raw data logging is activated.

**Download GNSS raw data from GS18 internal memory**

In Leica Captivate v6.50 the option to store GNSS raw data to the GS18 internal memory had been introduced. However, downloading the data from the internal memory to a local memory was not possible.

With Leica Captivate v7.0, downloading GNSS raw data from GS18 internal memory is possible and configurable from the Web interface in the **User – Internal memory** panel.
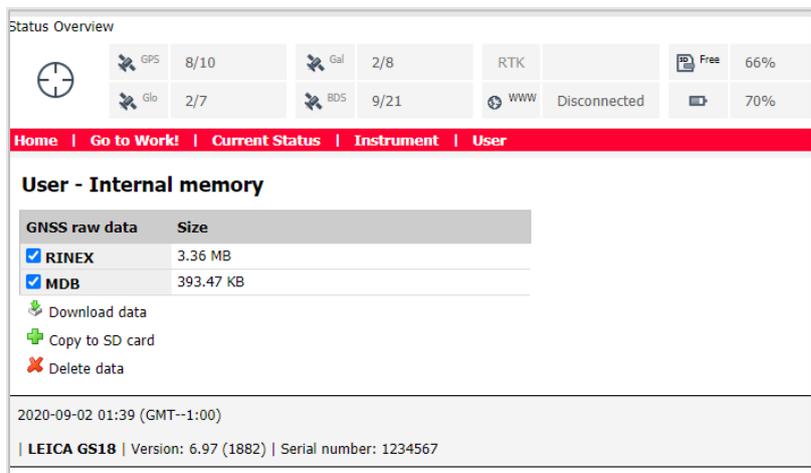


This extension brings more flexibility in storage options on the GS18 GNSS receivers and foregoes the need for an SD card.

## 5 Leica Captivate Software Improvements

**Improved performance in the Stakeout app**

When staking out points using a large working job (containing several thousand points), performance issues have been noted, which resulted in a much slowed down workflow.

With Leica Captivate v7.00 the speed of the point storage has been much increased, giving a great performance improvement in the overall process of staking out points.

**Improved performance in the point ID or code search fields**

When searching for a point ID or a code in Leica Captivate, the reaction of the field software would sometimes be slow, delaying the process of finding the needed data.

With Leica Captivate v7.0 this process was made much faster, with the system reacting faster to typed characters, updating the search list faster as well as finding and highlighting the relevant point or code faster.

**Improved performance for Inspect Tunnel**

With previous versions of Leica Captivate, when using the Inspect Tunnel app, it could take rather long to process the results when comparing the measured data of an excavated tunnel against the tunnel design. This was especially noticeable for complex tunnel designs.

With Leica Captivate v7.0 the processing performance has been vastly improved and results are achieved much faster now. For complex tunnel designs, processing can be up to 17 times faster.

**Wrong height stored when staking design point with no defined design height**

When staking out a point, the resulting stored point can be displayed in the Data management. The **Stake results** page will display the stakeout results, which also contains the Design height.

With previous versions of Leica Captivate, if a design point without height information (-----) is staked, the Design height stored and shown in the **Stake results** page was the design height of a previously staked design point that had a non-null height, instead of the current design point being staked that has a null height.

This issue is fixed with Leica Captivate v7.00.

**Height design related data for staked points is shown for points without a design height**

With the Leica Captivate Stake points app, it is possible to stake out points that have only 2D coordinates, and no design height information. In this case, only the Northing and Easting related stakeout information should be shown in the results panel and stored in the job as there is no relevant stakeout information for the height.
With previous versions of Leica Captivate, when staking out a point with no design height information, among other points with design heights, that point would still show stakeout related information for height values in the results page and corresponding values would be stored in the job, even though there was no reference.

This issue is fixed with Leica Captivate v7.0.

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| **Issue in rare cases when changing TPS position while storing point** | With Leica Captivate v6.50 there was an issue with storing the coordinates of a staked out point under very specific circumstances. The issue could be seen if the **Check differences before storing setting** as well as the **Do not update stakeout values between distance measurements** settings were activated and measurements were done in continuous mode.

If a point is stored, using **Store(F3),** while outside the defined check limits, a message is shown warning about the exceeded limits. If under these circumstances, the position of the instrument is moved while accepting the message with **OK(F4)**, the position of the point is stored as the last instrument position, as opposed to the position when **Store(F3)** was pressed.

This issue is fixed with Leica Captivate v7.0. |
| **Issue when measuring a point after a 2-face measurement** | With Leica Captivate v6.50 there was an issue when using the **Stop(F6)** button after a 2-face measurement in the **Measure** app. After pressing **Fn + 2 Face(F4)**, the device will perform a measurement in the 2$^{nd}$ face and then turn back to face 1 and the position of the measured point.

If during this turning **Stop(F6)** is pressed and then a measurement is triggered, the coordinates of this measured point would be the same as the previously measured point instead of the new position.

This issue is fixed with Leica Captivate v7.00. |
| **Job corruption message shown unnecessarily in Setup app** | This bug would happen in rare cases in the Setup app, when doing a Resection and measuring a point with a GS sensor. In that case, a message would be shown that the active job was corrupted.

This would only be seen if the GS measured point was coded and stored in a different job than the active job. Despite the message, the job was not corrupt and could be used without problems.

The issue is fixed with Leica Captivate v7.0. |
| **Job corruption message shown unnecessarily when removing an external storage device** | With previous versions of Leica Captivate, in rare cases, when an external storage device has been attached to a CS20 Controller, a message that the current working job is corrupt might be seen when removing the external storage device.

This would only be seen if the **View & edit job properties** panel of the active working job would be opened within a few seconds of removing the storage device. Despite the message, the job was not corrupt and could be used without problems.

The issue with the message being displayed is fixed with Leica Captivate v7.0. |

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| **Issue when post processing multi-coded GNSS points in Infinity** | When using multi-coding in Leica Captivate, a point is measured and coded and, depending on the number of further codes used, several copies of that same point are created, coded, and stored.

With previous versions on Leica Captivate, when importing GNSS measured, multi-coded points into Leica Infinity, issues could occur, depending on the post-processing that was done. For instance, the points could be interpreted as several measurements of the same points, for which an average needed to be calculated or when changing the GNSS correction information, those changes might only be applied to the originally measured point, not to the copied points.

This issue is fixed when using Leica Captivate v7.0 and Leica Infinity v4.0. |
| **POI not placed correctly when importing circular geometries from CAD files** | In some cases, when importing circular geometries from CAD files, some of the POIs would be placed in the wrong position. This would happen when the number of chords making up the circle, was not divisible by 4.

This issue is fixed with Leica Captivate v7.0. |
| **Issues with displaying chainages when the centerline design has a gap** | With previous versions of Leica Captivate, there was an issue regarding the chainage information when the design had a gap in the centreline.

If there was a design going e.g., from station 100 to 200, then a gap from 200 to 300 and then the design would continue, anything after 200 would not be usable in Leica Captivate.

With Leica Captivate v7.0, this was fixed in two ways. If there is a gap in the centreline, any chainage falling into that gap will be indicated as not part of the design. Any chainage after the gap can now be used without problems. |
| **Issue displaying certain data from IFC** | When using IFC data, Leica Captivate displays data from the available IFC objects and entities as configured. However, with previous Leica Captivate versions certain lines were not displayed.

Typically, lines in an IFC file are part of an IFC object (such as a solid, a surface, or a mesh) these lines were already supported and displayed. However, occasionally lines can be an IFC entity by themselves and these lines were not displayed in previous versions of Leica Captivate.

This has been improved for Leica Captivate v7.0, so that lines which were not part of an IFC object can also now be displayed. |
| **Pop-up keyboard does not start more than once when initiated from the Favourites menu on the CS30** | This issue could be seen on the CS30, if the pop-up keyboard function was configured to be used from the Favourites menu.
When opening the keyboard from the Favourites once, it would work as expected. However, when activating it a second or more times, the keyboard would not be shown. Only once Leica Captivate was restarted, could the pop-up keyboard be called from the Favourites menu again.

This issue is fixed with Leica Captivate v7.0. |
| **Code search issue** | With previous versions of Leica Captivate, it could happen that when entering a new code name in the Code box, that the first letter entered would not be recognized and therefore the search would give incorrect results, or a new code box would be populated incorrectly. |

This would be seen when prior to entering a new code, the focus was on another code box while starting to type the new code name.

This issue is fixed with Leica Captivate v7.0.

**Crash when 3D viewer attempts to display an attached dxf file containing huge objects**

With previous versions of Leica Captivate, there was an issue when trying to display the content of a DXF file where the size of contained objects varied from millions to billions of units which lead the system to run out of memory, making it crash.

This issue is fixed with Leica Captivate v7.0 and the crash does not occur anymore.

**Issue when importing and editing polylines with arcs from DXF data**

With previous versions of Leica Captivate, there was an issue when importing closed polylines that contain arcs. The lines would be shown correctly before being imported, however, during the import, the arc information was lost and instead, a straight line was stored and shown.

This issue is fixed with Leica Captivate v7.0.

**GLONASS fixing issue when using the RTK data stream provided by Geo++ GNSMART**

With previous versions of Leica Captivate, when using the RTK data stream provided by Geo++ GNSMART with GLONASS code phase bias corrected, GLONASS is not used in fixed solutions.

This issue is fixed with Leica Captivate v7.0.

**Issue with LOC8 device ID mismatch**

If a TS Total Station or an MS60 MultiStation is equipped with the LOC8 theft deterrence and location device, Leica Captivate occasionally shows the error "LOC8 module Device ID does not match". After this error is shown, the Total Station shuts down.

With Leica Captivate v7.00, this issue is resolved.

## 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, TS/MS instruments and AP20 AutoPole)

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, language files and apps can be obtained from the following sources:<br>- the myWorld web site<br>- 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_00.fw**<br><br>This file contains all Leica Captivate and WinEC languages and apps |
| **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_00.fw TS10LeicaCaptivate_v7_00.fw**<br><br>These files contain all Leica Captivate and WinEC languages and apps |

| | |
|---|---|
| **Files which need to be obtained for upgrading an AP20 AutoPole** | **The following files need to be obtained to update an AP20 AutoPole -**<br>**AP20H_ID_Firmware.swu** - for AP20 H and AP20 ID<br>**AP20_T_Firmware.swu** - for AP20 T and AP20 |

| | |
|---|---|
| **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.<br>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.<br>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.<br>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.<br>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.<br>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. |

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| **How to load the Firmware on an AP20 AutoPole** | 1. Download the suitable firmware file from https://myworld.leica-geosystems.com to your local PC.<br>2. Turn on the AP20.<br>3. Connect the AP20 to the PC using a GEV284 cable.<br>4. Copy the firmware file onto the root directory of the AP20 memory device.<br>5. Disconnect GEV284 cable from the AP20.<br>6. Switch the AP20 off.<br>7. Switch the AP20 on.<br>8. The upload starts automatically. During the upload, all three LEDs are flashing consecutively.<br>9. The update is complete when the Power LED on AP20 is constantly on. |

| | |
|---|---|
| **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.<br>2. Insert the SD card into the TS13 Total Station<br>3. Ensure the battery is fully charged<br>4. Turn on the instrument, the firmware update starts automatically.<br>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, language files and apps can be obtained from the following sources:<br>- 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)<br>- 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<br><br>**GSxxLeicaCaptivate_v7_00.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 T or GS18 I GNSS sensor) Or<br>Download the firmware file to the PC from which you will update the GS18 T or I GNSS sensor<br>2. Insert the SD card into the GS18 T or GS18 I GNSS sensor. Ensure the battery is fully charged.<br>3. Connect the 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.<br>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.<br>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, language files and apps can be obtained from the following sources:<br>- 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)<br>- 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<br><br>**LeicaCaptivate_CS3x_v7_00.zip**<br><br>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<br>2. Insert the USB stick into the CS30/CS35 Tablet<br>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. The version number for all files is v7.00, except for the AP20 and the GS07 for which version numbers are listed below in the Build no. column.

| File name | Description | Build no. | Maintenance date |
|---|---|---|---|
| CS20LeicaCaptivate_v7_00.fw | CS20 Field Controller Leica Captivate software file | 226 | 01.04.2022 |
| TSxxMS60LeicaCaptivate_ v7_00.fw | TS/MS/TM Total Station Leica Captivate software file | 226 | 01.04.2022 |
| AP20H_ID_Firmware_v1.01.swu AP20_T_Firmware_v1.01.swu | AP20 AutoPole firmware files | 1.01 | - |
| TS10_LeicaCaptivate_ v7_00.fw | TS10 Total Station Leica Captivate software file | 226 | 01.04.2022 |
| LeicaCaptivate_CS3x_ v7_00.fw | CS35 Tablet Leica Captivate software file | 226 | 01.04.2022 |
| GSxxLeicaCaptivate_ v7_00.fw | GS18 T/I smart antenna Leica Captivate software file | 105 | 01.04.2022 |
| OEM7.811.fw | GS07 ME firmware file | 7.811 | - |