Version 6.16 Release Notes

Updated 8/1/2022

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Improvements and Resolved Issues By Release

Version 6.16

Release Date: August 1, 2022

NOTICE:

Tilt features have been actively used in SurvCE and SurvPC since the release of 6.0. The latest update as of July 7th, 2022 was 6.14. An astute Czech Republic customer, using tilts in the range of 20° to 30° on the pole, noticed some errors in the 2.5 cm range compared to vertical readings, with one outlier error of 5.5 cm. Note that the BRx7 IMU accuracy is rated at 2 cm at 30° of tilt. Although some of this error can be attributed to the extent of the tilt, he noticed accuracies within spec in UTM projections but just outside of spec in the commonly used Czech projection Czech (JTSK-Krovák 1710), at tilts of 20° to 30°.

The referenced Czech projection is a long east-west, short north-south projection, where points at the east-west extremes of the projection can be far from the central meridian. The tests were conducted at some distance from the central meridian of the projection and at significant tilts, and the errors exceeding 2 cm were noticed particularly in the Easting values, when tilting to the west and to the east. Changes were made in the software to apply the tilts, using the converging longitudes, to the Lat and Long values first before conversion to projection coordinates and not directly to the final coordinates based on projection North. This brought the accuracies down to the 1 to 2 cm level in the large tilts of 20° to 30° on the pole. This improvement in tilt accuracy was placed in release 6.15 made available on July 8th and would apply in particular to Lambert-style projections in the farther north and south latitudes at the extremes of the projection measured from the central meridian and at large tilts of 20° to 30°.

This program change introduced a bug that existed in 6.15 until fixed and updated in 6.16. The SurvCE.com website duration of this bug was from July 8th to August 2nd. From July 9th to July 28th, 6.15 was loaded on RT4 tablets shipped with the BRx7. On July 29th after the bug was first discovered by user Michael Kirkpatrick, confirmed and traced, and through August 1st, RT4s were shipped with 6.14. Starting August 2nd, RT4 tablets were shipped with 6.16 which fixed the problem, defined as follows:

1. Running in Tilt Off mode exclusively, there is no problem.

2. Running in Tilt On mode exclusively, there is no problem.

3. Running in Tilt Off mode and converting to Tilt On mode, there is no problem.

4. Specifically Running in Tilt On mode and converting to Tilt Off mode, that last tilt recorded is applied to all Tilt Off readings until power off or the program is exited. Although measurements in this condition may be positioned correctly relative to each other, the delta of the

tilt would make every measurement wrong by the tilt amount of the last recorded tilt. Unless checking to a known coordinate, the errors could go unnoticed in this state.

While most users of SurvCE/SurvPC and the BRx7 run in either Tilt Off mode (using the level on the pole) or continuously in Tilt On mode, some users may switch from Tilt On to Tilt Off mode such as when entering canopy and would encounter this problem in 6.15. Version 6.15 existed on the download site of SurvCE.com for just over 3 weeks from July 8th to August 2nd, and nothing shipped from Carlson Software with 6.15 loaded after Thursday, July 28th. The problem was identified in a tech support call received around July 27th by user Michael Kirkpatrick who had experimented with a large pole tile and then switched to tilt off mode. We are grateful for his discovery of this problem.

Version 6.16, the current version of SurvPC/SurvCE, has the tightened accuracy tilt improvement described above and handles all modes of tilt activation and deactivation. Carlson Software, since July 29th, has initiated a program of notification of users based on serial numbers indicating use of 6.15, based on shipments on data collectors between July 8th and July 28th and based on pings to our website that occur with usage of any version of SurvCE and SurvPC. But this notice serves as further instruction to our customers and dealers to update to SurvCE/SurvPC 6.16 for high accuracy results with tilt mode on or off.

Further note: A case can be made that tilt mode should always be on in “open sky” field measurement with the BRx7 since tests have shown that some level bubbles are not calibrated accurately and even in apparent pure vertical position, inclinations can exist that are more accurately measured by the IMUs within the BRx7 leading to more precise coordinate measurement. It should also be pointed out that in float/fix conditions of high multi-path near buildings or under canopy, tilt off is recommended due to IMU performance degrading in intermittent float/fix conditions.

Bug Fixes in SurvCE:

- There is no longer the potential for tilt correction to get frozen when the setting is disabled.

New Features, Improvements, and Bug Fixes in SurvPC with Esri:

- SurvPC Esri now manages Templates if they are broken by setting them so the storing of a linear work displays on the screen.
- SurvPC Esri now recalculates the grid index. Without this the storing of linear features could potentially fail.
- SurvPC Esri now includes new basic Equation, GIS, reset GIS attribute. If on for a field, and the user has picked AutoRecall values, the software will reset this value.
- SurvPC Esri using German C2E schema now works with osnap center.
- SurvPC Esri now supports fast "recall Tool" from the Toolbox of Esri ArcGIS Engine in MAP.
- Blocks, drawing/dxf now supports arcs in the blocks/with arbitrary axis.
- Canceling while storing in Carlson SurvPC Esri German C2E now works and cleans the F2F active lines.

Version 6.15

Release Date: June 30, 2022

Bug Fixes in SurvCE:

- Resection details will now be included in the SDR export.
- The software will now stop using RTCM projections if the user reenters the Configure Rover screen and accesses the projection settings on the RTK Tab. This will prevent the server projection from overwriting the fallback projection in that dialog.
- The job settings dialog will now show the correct projection in the case where RTCM Projections are enabled but none has been received.
- The software will now support LandXML import even if the version is set as "0", invalid format.
- When the enter button is configured to store only and the total station is in RL mode, going into backsight will no long prevent the next measurement from being stored.
- Import DGN From the map screen is now improved. Multiple origin DGN is now supported, and all linear entities are now represented.
- It is no longer possible to open a DGN file from the job selection menu. Please open a new job and import the DGN file from the map screen.
- SurvCE will now write the correct 2011 realization name from the CSL file when writing the projection name to the RW5.
- SurvCE on Windows Mobile 6 data collectors should again be able to access Carlson Cloud with elevated security.

New Features, Improvements, and Bug Fixes in SurvPC with Esri:

- SurvPC will now display a checkbox option "Invert Camera Image" in the Advanced Settings-Photo Settings for non-Carlson PCs. This can be used on tablets such as the FC6000 or SHC6000 whose images are delivered upside down by the camera to SurvPC.

Version 6.14

Release Date: May 5, 2022

New Features and Improvements SurvCE:

- The software will now refresh the fallback projection and reconnect to the RTK Network when changing jobs if RTCM3 projections are in use.
- The software now offers a new option "Internet Failures Warning" on the Equip-Configure list, enabled by default. When disabled, no check for internet will be performed prior to attempting communication.
- The software now supports coordinate system: "CANADA/NAD83:CSRS to NAD83:Orig (Ontario)/UTM zone 17N". It requires the NTv2 file: ON83CSv1.gsb.
- The software now supports coordinate system: AUSTRIA/M28b, AUSTRIA/M31b, AUSTRIA/M34b.
- The software now supports coordinate system: GERMANY/DHDN-GRID/GK Zone 2 RP
- The software now supports coordinate system: SLOVAKIA/Krovak-JTSK-East North (SJTSK EPSG 5514)
- MGI-GIS Austrian coordinate systems (West, Central, East) now offer Kurz versions with a false easting of -5000000m.
- SurvPC now offers better support of Cross Section import from LandXML.
- Import of Civil3D style LandXML with multiple surfaces has been improved.
- The extended entity data limitation of drawings has been eliminated in Carlson F2F linework when free action codes are used.
- The software will now issue a warning if tilted pole correction is used on rod heights larger than 2.3m.
- The software now allows a 2 point average in GNSS Average. Note that a simple average will be performed in this scenario since not enough data is available for statistical analysis.
- When an offset is used to define the point in road stakeout, the software will now describe the offset in the bottom bar of the stakeout routine for clarity.
- Cross Sections loaded from LandXML now ensure the cross sections are tested using the current stations. The number of cross-sections loaded has been cleaned up, and pressing cancel on this routine will no longer apply the profile rule.
- Deletion of non-linear points for C2E when using multiple linear and non-linear feature layers has been improved. The software will now search through the entire data set to find the appropriate layer.
- SurvPC now supports using a mouse wheel/button for zooming in cad screens. Updates to Windows 10 disabled this functionality in recent versions.
- SDR Serial Transfer/Receive is once again available the Data Transfer screen.
- Export ASCII now allows customization for markings (delimiter;separators; aliases for basic Action Codes) for importing. This allows better compatibility with Autodesk and Microstation/Bentley.
- The setting "Automatic Recall Last GIS Values" has been moved to the Advanced Settings / GIS settings.
- The software will now enable "Allow import dxf/dwg options" by default on a new install. This setting is located in in File / Job settings / Option.
- SurvPC now supports deleting and adding GIS Features for a CODE, from Line to Point, or reverse. In this case, the identical CODE is passed from Line or Point to the newly defined

feature.
- Using RW5 files as the source of simulated positions is now more reliable.
- Import Carlson FLD into Carlson SurvCE/SurvPC now works with any FLD version, including Carlson FLD produced in C2022.
- The Bulgarian translation is now supported.
- The French translation has been updated.
- The software will now allow export Lat/Lon from the export ascii routine even when no raw data is available. In this scenario the lat/lon will be reverse calculated from the coordinate based on the job projection.
- When using the "Jump to point" option in the GPS Simulator, if the target position has elevation 0.0, the user will now be asked whether he prefers to keep his existing elevation.
- When Cut/Fill are both zero, the cutsheet report will now show a 0 value, instead of being blank.
- Sliding Areas/Arcs math has been updated for speed.
- Extend By Edge now allows Apparent and True intersections. The apparent Intersection will keep the slope of the polyline that is to be extended. The True Intersection will use the Elevation of the Edge.
- The software now supports basic CSV to FCL conversion, useful for Civil3D compatibility.
- The software will no longer prompt for a localization file during base setup if a localization file has already been loaded. The existing localization will be used.

Bug Fixes in SurvCE:
- Resection information will now be included in the SDR export.
- The hybrid tolerances screen for GPS has been improved better fit the screen for CE devices.
- Column labels in Edit Centerline are now centered.
- When using RTCM3 corrections, it is no longer possible to lose the downloaded projection by going into the Job Settings dialog. Projection and geoid will now be inaccessible in this dialog when running RTCM3 projections. To change, use the localization dialog.
- SurvCE will no longer store vectors in the RW5 file for offset measurements.
- When incline values are not available, the software will blank them out. Previously, a bogus value of 40'52.43" could be displayed in some areas of the software.
- When RTCM3 Projections are enabled the software will now wait for correction messages before finalizing RTK Communication. Previously the software only waited if the "Show Notifications" option was enabled.
- Obstructed point stakeout now works correctly even if there is a stake point list. Previously the routine could increment to the next point prematurely.
- Obstructed point stakeout now gives the correct distance on the map.
- The Advance Scaling dialog is now more robust.
- Minimize/Navigate data works using Direct TS.
- For output to Bakhtar radar, the com port selection box will now only show valid com ports. The list will also no longer limit the ports to 1-9.
- The software will no longer throw a latency tolerance warning on receivers for which latency is not being reported. It will also ignore this tolerance unless the receiver status is float or fixed.
- The Active Linework dialog now displays correctly on the Nautiz X8.
- There is no longer a potential to fail when using the OSTN15 coordinate system and the current position is far away from the grid.
- LandXML import/export special names for alignments are now working correctly.
- It is no longer possible for the software to fail while editing an FCL file.

- When using Carlson F2F unique line IDs and each code is using an Action Code-start line, the software now correctly increments the codes using string numeric designators. In the past the user was prevented from using identical codes and the process was too keyboard dependent. The process is now more automated.
- The software no longer has the potential to fail in the XBYDIST map command.
- When background maps are used and a scale factor is set, the map will now display appropriately.
- Line Details RECT/CIR action code no longer has the potential to fail.
- The software no longer has the potential to fail during ASCII export when using GIS features.
- Point Protect now works correctly when “Average with Prior Measurements” is selected.
- Users will now be warned in set collection when the distance tolerance is exceeded.
- The advanced average routine will no longer reject duplicate measurements when the GPS Simulator is used.
- The software will now take rod height into account when the user attempts to "jump to point" with the simulator.
- When base is set up using local coordinates, and a localization file exists, the localization file will always be used, even if the point appears to be a grid coordinate.
- When the station of the centerline is changed in STK Line-Arc with 3D Pline, the profile will also be adjusted.
- PC products (SurvPC, SurvCE Demo) being used with a mouse now prevent errors in MAP commands when using a double click or right mouse click.
- The calculator will now remember the memory saved values.

New Features, Improvements, and Bug Fixes in SurvPC with Esri:

- CSEsriSeed.dxf/.dgn/.dwg files are now included in the install.
- Re-opening Line/C2E now works even if there are multiple Linear Codes/setup as non-linear lock setting/GNT.
- Carlson SurvPC-Esri can now display zero-elevations for Points in Esri databases.
- Carlson SurvPC-Esri now exports Blocks/Attributes including Elevation to CAD/drawing.
- Visualization of the Water Line (especially when using Z2) has been improved when C2E is used.
- Opening and re-opening the closed linear C2E now works correctly regarding the start/end points of the profile. The Carlson F2F will now be synced start/end and also use the profile's domain value for start/end of the profile. This means reverse polylines are supported if required.
- The software will now detect the correct direction of Linear Profiles when C2E is used with a CSCRD.
- Reverse Polyline (3D line features) now display the correct status of the polyline's direction.
- Export to CAD now displays a progress bar and errors if it fails.
- Esri ArcGIS 10.8 is now being applied to the Python routines in MAP.
- The CSCRD point will now be deleted when a vertex is removed in the MAP.
- Export Drawing data can now use aliased Geometry fields. Previously only standard shape fields were used.
- The software is now able to export DWG from Esri Features (ArcGIS Engine).
- Delete Vertex from MAP now uses the CSCRD if present in the Carlson F2F Active Lines.

Version 6.12

Release Date: September 11, 2021

New Instruments Supported:

- Carlson CRx Robotic Total Station
- Geomax Zoom 95 Robotic Total Station
- HiTarget HTS Total Station
- Thomastechnik U20A GPS

New Features and Improvements SurvCE:

- The Kazakh translation is now supported.
- COGO/Keyboard Input now allows deletion of a point range filtered by a wildcard descriptions.
- It is now possible to take a screen capture of SurvPC using the "save" button in the top bar of the help menu.
- SurvPC now launches more quickly.
- International characters can now be used in the name of the instrument configuration.
- When Bluetooth fails very quickly, SurvPC will now warn the user that their Bluetooth radio may not be enabled.
- The user can now specify a latency tolerance in the tolerance screen for GPS.
- Import Ascii now works more reliably on non-English languages.
- STK list of points now uses the Up/Down key to reorder point lists.
- Raw Processing now supports the GRD file type.
- Base setup using local coordinate now has a scale to ground option.

Bug Fixes in SurvCE:

- The RW5 GSRD (tilt) record now writes decimal degrees instead of DMS in TXD, DYD and THD fields.
- The software now exits properly when log static is used and the user chooses not to close the log file on exit.
- In Road Stakeout/Grade, vertical and horizontal grade will now display correctly.
- Append/Re-write cutsheet files when importing data from the RW5 now correctly handles % characters. Previously this could cause failure.
- A new Slope Report is now available for AK DOT. New data used in the Carlson RNF contains a special case of the road, in which the super-elevation gets included as PIVOT to the slope stake. This data is used to create the report.
- Added back the Germany Rheinland-Pfalz coordinate system that was inadvertently removed in 6.09.18. This was added back as: "GERMANY/DHDN-GRID/GK Zone 3 RP"
- Added back German Sachsen coordinate systems that were inadvertently removed in 6.09.18. These were added back as: GERMANY/RD83-GRID/GK Zone 4 SA, GERMANY/RD83-GRID/GK Zone 5 SA
- The software no longer has a potential to fail in the MAP screen when using rasters and the file or folder does not exist.

New Features, Improvements, and Bug Fixes in SurvPC with Esri:

- Carlson SurvPC-Esri now zooms better in the manual traverse screen.

- Carlson SurvPC-Esri C2E schema now allows the use of basic EQ SYM especially for the Point Symbol field.
- Carlson SurvPC-Esri now supports Profile Export to Carlson Office/Civil including point symbols.

Version 6.11

Release Date: June 23, 2021

New Features and Improvements SurvCE:

- Road Stakeout now shows a measurement button in XSCT view.
- The software now offers an Advanced Setting to control whether comments in descriptions will carry over to the following point.

Bug Fixes in SurvCE:

- The software now imports DWG versions 2019-2021. This new feature was broken in version 6.10.
- Dialog controls with unit labels now display correctly.
- Road Stakeout zoom-extents is now working as designed.
- The append base ID setting will no longer apply outside of NTRIP mode.

New Features, Improvements, and Bug Fixes in SurvPC with Esri:

- The Linear Profile View now shows symbols correctly when C2E is used.

Version 6.10

Release Date: May 28, 2021

New Features and Improvements SurvCE:

- It is now possible to view and set the geoid file in the job settings page.
- German file type D66 is now supported for import of cross sections. D40 files are also supported.
- Russian Coordinate systems have been updated.
- German coordinate systems have been renamed and reorganized.
- The inverse flattening parameter for coordinate system "LITHUANIA/LKS94" has been updated to 298.257222101.
- The "LITHUANIA/LKS94" coordinate system has been renamed from "LKS94" to "Lithuania_1994_ETRS89". This new datum name is consistent with EPSG, but doesn't result in any mathematical change.
- The following Bulgarian coordinate systems are now supported:
  BULGARIA/BGS2005/CCS2005
  BULGARIA/BGS2005/UTM zone 34N
  BULGARIA/BGS2005/UTM zone 35N
- The following German coordinate systems with corresponding grids are now supported:
  Gauss-Kruger zone 3 Rheinland-Pfalz"
  GERMANY/RD83-GRID/Gauss-Kruger zone 4 Sachsen
  GERMANY/RD83-GRID/Gauss-Kruger zone 5 Sachsen
- SurvPC will now offer to download grid files for the following German projections if missing from SurvPC folder: MV, MV 1942, DHDN, DHDN NRW and (new) DHDN RLP.
- When jobs are exported by SurvCE photos will now go in the root folder with the job. This change ensures compatibility with Carlson Office 2020 and future versions.
- Virtual keyboards and windows keyboards have been improved for entering stationing data.
- WMS/NetCad URLs can now be supplied with embedded username and password (https://user:pwd@site.domain/rest_of_url)
- The QuickView option is now available in TS Utilities. This feature provides a simple angle/distance/measure view of the total station.
- Bluetooth connection functions are now cancellable.
- HATCH elements imported as boundaries are now loading the color of the element instead of just the layer color.
- The Store Vectors in RW5 option file will now default to true.
- The software now supports automatic removal of action codes when they have been created using the special code buttons in the prompt for height/desc screen. This allows for fast storing when the user has codes memorized.
- Max, Min, and Average incline will now be noted in the raw file for averaged measurements when tilt data is available.
- GPS Simulation now displays simulated Galileo and Beidou satellites and they are spaced out more appropriately in the sky view.

Bug Fixes in SurvCE:

- SurvCE will no longer attempt to draw satellites on the sat view screen if the azimuth or elevation are not available.

- SurvCE no longer has a potential to fail when breaklines are added.
- The manual traverse routine has been improved to force values below 90 degrees to stay in the correct quadrant. The software now allows entry format QUAD+ value (e.g. N13E) when bearing entry is desired.
- The software will no longer fail on CE devices when trying to set a base from a previously surveyed point.
- When designing Horizontal Alignments using railroad style, in the case of complex alignments (12+ spirals, curves, etc, 30000 ft+ alignments) there is no longer the potential for curves to be counted multiple times for the railroad computation.
- Navigate To Point/To Path will now display the correct symbols on the map when auto-zoom is disabled.
- When importing a drawing file (DWG/DXF) curves which are part of a line but not in the WCS, but instead are in their own UCS now work correctly. The code has been updated to allow curves/bulges which are not aligned with the normal WCS (they are tilted in space).
- It is no longer possible for the backsight circle measurement to be lost if a resection is performed, the BS D&R option is ON, and the resection D&R option is OFF.
- It is no longer possible to get looping (constant repeat) audible instrument status changes.
- Import ISPOL to SCT has been improved to correctly handle right offsets order.
- The Layer Manager icon/button in the scale bar now displays correctly in all scenarios.
- Multi-Z now prompts and correctly stores the last point, using either the current or previous Rod HT. This solves a problem where the user stores the final point using the green check to exit the dialog.
- Profile export from Profile view now correctly uses the Z's absolute value for the 3D Polylines.
- The checkbox setting "GSF File is relative to WGS84" now works as expected. The setting will hold it's value per coordinate system.
- Stakeout directional information will now display correctly when the bottom bar is minimized, showing cut/fill information. This applies in road stakeout and offset stakeout.
- CRBD export to KML now obeys the selected point range setting.
- The Import DTM from LandXML dialog has been improved.
- Carlson Cloud can now successfully send files whose names contain the ampersand character.
- The most recent category used is now preserved in the One Touch Store routine.
- Import of a DWG now generates better warnings during import when unsupported entities are encountered.
- An incorrect initial elevation will no longer be displayed when staking a station and auto-zoom is disabled.
- JPN is now working correctly for cases where the selected lines are separated by space.

New Features and Improvements SurvPC:

Note that all relevant features in SurvCE are included in SurvPC

- SurvPC can now import DWG versions up to Autocad version 2021. DGN support has also been updated.
- In the photo capture screen, SurvPC will capture the photo when the user taps green check if he has not already done so. Red X will exit without taking photo.
- SurvPC will display tiles from NetCAD online with transparent instead of black backgrounds.
- SurvPC will display more descriptive error messages when the search for Layers fails from WMS, WMTS, TMS, or NetCAD maptile services.

New Features and Improvements SurvPC with Esri:

- Deletion of the Z2 elements has been simplified.
- Unique ranges for fields can now be displayed as a single combo box.
- The C2E Schema now offers faster storing and operation. The line dialog has been eliminated and the creation of linear features now occurs as a background process. The software now offers full support of C2E deletion of CSCRD in the MAP or Survey screen.
- Complex C2E and simple Complex Esri Features are now supported in the Survey Offset Store routines.
- Aliases for Linear entities are now supported in the C2E schema. Previously only aliases for non-linear were supported.
- Carlson SurvPC-Esri no longer has the potential to fail when the C2E schema is used and Z1 is deleted from the CSCRD.
- Simultaneous string/numeric Carlson field to finish codes now work even if they are non-linear combined with non-linear, or linear combined with linear.
- Non-linear equations are working even when the value set is not locked or default on.
- The C2E schema now updates the remeasured elevations (Z1) from the measured button and passes the data to the coordinate points, the CSCRD feature, and to the feature profile point.
- The software now makes it easier to select active linework in the user interface. It is now possible to combine them using the "Add" checkbox. This makes it easier to apply multiple codes in a single action.
- When a new job is opened, re-measure settings from the previous job will no longer be retained.
- Non-linear profiles in C2E or CSCRD now allow remeasuring of a profile point in fewer clicks.
- Re-measure button for linear and non-linear (snap segments) are now displayed correctly.
- SurvPC now allows the user to cancel remeasure of non-linear profile points from any screen.
- Measure buttons used when storing features now use consistent audible alerts.
- Related Root/Tables using Point/Line/Polygons have been improved.
- Robotic total station status information is now available in the GIS/Remeasure dialogs.
- C2E linear entities now allow direct Remeasure access from the Profile Viewer.
- C2E now allows re-measuring the first point from a non-linear entity. The initial segment of the non-linear entity is now set correctly to be accepted by the schema.
- C2E works even if the Profile Point Feature Layer is not selectable.
- The software now eliminates extra taps when using the C2E Schema by automatically detecting duplicate C2E, CSCRD and Profile Points, and skipping the extra list for multiple Point's entities.
- The software no longer generates a warning when a user attempts to re-measure a C2E point.
- Store is now faster and SurvPC now allows customization of a feature when storing.
- Custom fields are now working when adding and removing EQs from the fields. Changes are correctly reflected in the dialogs.
- Hidden Date and type fields are now working correctly when editing Feature Code List/Field from the feature.

Version 6.09

Release Date: January 20, 2021

New Instruments Supported:
- Geomax ZDL 700 Digital Level

New Data Collectors:
- DaiShin DS4

Other New Features and Improvements SurvCE:
- Stakeout and navigation now support sun and magnetic point reference. Enable in View/Configure.
- The RW5 raw data file will now note manual deletion of points from the map or list points.
- The new option “Auto Append Suffix to base ID in Raw File” is now supported in Job/Options. The default value for this feature is ON. This will allow users to turn off a feature that was added in the 6.07 release patch. This feature appends a suffix such as "_BASE_1" to the base ID in the the BP and G1 records, where the trailing number is incremented with each newly detected base setup.
- The selected Geoid file is now displayed on the Job Settings/Systems Tab.
- Export ascii now offers RAW_GND_ELEV in the custom export.
- Seiler grid files are now supported in Germany. Use projections GERMANY/Seiler-Grid and contact stephan.seiler@ib-seiler.de to purchase required grid files.
- The Surveyor+ data collector will now have much faster performance on version 6.09. Smart phone registration via QR code has been disabled on this device. Please register with data collector internet or manual registration.
- When starting a static or stop and go log file, the rod height will now be recorded as an LS record in the rw5 file.
- NumLock/KB light can now be activated in the main menu by pressing Alt + (.) on the keyboard.
- Point ID and read from GPS are now available as options to set search location in NGS Survey Mark Query.
- Coordinate system "SLOVAKIA/Krovak-JTSK-East North" is now supported.
- Coordinate system "CZECH/Krovak-JTSK-East North" has been changed from a 6m accuracy coordinate system, which covered both Czechia and Slovakia, to a 1m accuracy Czechia specific coordinate system.
- When performing a 2-Point offset with Instrument Readings, the HT for Points 1 and 2 will be populated with the foresight rod height from the "HT:" box in Store points. The "method" will default to "Flat" instead of "Slope".

Bug Fixes in SurvCE:
- STK View in TEXT mode no longer has the potential to create slowness in the software.
- The software will now work correctly when using the divided road with offsets method in Elevation Difference.
- The software will now apply the List Points/Digits precision setting to the Point Add/Edit coordinate dialog.
- It is no longer possible to get a redundant BK record in the RW5 when a duplicate setup is

completed during survey sets and the repeated setup is within close tolerance to the previous setup.
- GPS vectors of an average position will now be correctly recorded in the RW5 file even if the broadcast ID does not match the point ID that was used to configure the base.
- The onboard total station versions of SurvCE no longer have the potential to fail on start up. Job names will now appear in the top bar as expected.
- Importing a localization point from a TXT file will now default vertical on to true.
- A stored point in set collection will now use the user entered point description rather than the description from the last stored point.
- The numeric keypad of a portrait data collector such as the Mini2 will now produce the expected input to the Num tab of the virtual keyboard.
- User entered offsets for Stake Road will now be stored with the job setting and not with the general user settings. This will prevent Stake Road settings from one job from carrying over to other jobs.
- HC3 Data Collector -- SurvCE will now successfully perform the Reconnect command if the long range BT connection is severed by loss of power or distance.
- HC3 Data Collector -- SurvCE will now accept HC3's internal UBlox to be setup as Base and broadcast corrections from COM2.
- The enter key now works as the OK function in the projections dialog.
- HGT/Desc and other dialogs where descriptions are typed, using the new auto-fill code, works correctly using multiple descriptions, and arrows or backspace key.
- The radio buttons for the enter-action control will now set and save the setting correctly in the leveling dialog.
- Export RW5 to SDR format now works correctly.
- Display of the RW5 lines in the software is now correct in the case that Descriptions contain TS/RTS pre-defined records, like BK, FD, etc.
- List controls will now resize better on the last column. This specifically improves the visibility of columns in the Edit Raw dialog.
- F2F now works when using the same point and multiple offsets of circles (e.g. Point CIR.5 CIR1). Special code for close circle has also been added: PC PT+CLO.

New Features and Improvements SurvPC:

Note that all relevant features in SurvCE are included in SurvPC

- Network licensing is now supported.
- Esri version 10.8 is now supported.
- Carlson F2F has been improved when used with Esri and the new C2E Schema.
- SurvPC can now use imagery from netcad.com.tr (WMS service) for Web Map Overlay
- The credential and workspace previously provided for WMS are remembered when SurvPC is exited and re-entered.
- SurvPC now allows import and export of the Topcon LN3 (linework) and Topcon TN3 (surface) files.
- Speed of the _CEN special storing geometry snaps has been improved.
- The Internal UBlox M8N chip in the Carlson RT4 now supports RTCM corrections.
- SurvPC Esri -- The Description_Date_Time GIS equation is now available. This is useful for creating unique IDs in large databases.
- SurvPC Esri -- Large domain lists are now handled more efficiently.
- SurvPC Esri -- The process of converting lines created in Esri to Carlson F2F has been improved.
- SurvPC Esri -- When using geometry OSNAPS CEN style, there is now a list of points to pick

(point features).
- SurvPC Esri -- Aliased Carlson SurvPC Esri and FCL code lists now provide confirmation that the alias feature layer and the codelist from the FCL have been created using a Carlson query, using the field value from the schema.

Bug Fixes in SurvPC:

Note that all relevant bug fixes in SurvCE are included in SurvPC

- Photos captured on an RT4 in SurvPC will no longer be captured upside down.
- Profile view in the MAP or Esri will no longer fail when the profile has multiple types but one has zero points in the profile.
- SurvPC Esri C2E -- Point types are now tracked for all non-linear and linear entities.
- SurvPC Esri C2E -- When a line is started and the profile is non-linear, the software will now apply the F2F BPRJ action code automatically to the point's description.
- SurvPC Esri C2E -- The new C2E schema now correctly shows measured complex and true complex entities.
- SurvPC Esri C2E -- Waterline is now displayed correctly in the new C2E schema and applies repeatable keys usage on profile points while measuring.
- SurvPC Esri C2E -- The C2E schema now works with Real-Time Store Points screen using F2F Osnaps.
- SurvPC Esri C2E -- It is no longer necessary to close/end the linear entity using BPRJ, the software will automatically apply the BPRJ based on the profile type without requiring the End of the Action Code.
- SurvPC Esri C2E -- The C2E Schema now has better profile management of used/unused profile points in the case of linear profiles.
- SurvPC Esri C2E -- The check mark icon will now be set correctly when the C2E schema is used to measure Z2 in start/add new profile point.
- SurvPC Esri -- Position data will now be restarted after F2F Osnap PER is used in store points.
- SurvPC Esri -- The IMU icon will now appear in simple or true complex measurement screens.
- SurvPC Esri -- Elevation labeling in the map now obeys the elevation digits to display option in Advanced Settings.

Version 6.08

Release Date: September 26, 2020

New Instruments Supported:

- Javad Triumph 3

Other New Features and Improvements SurvCE:

- DXF drawing import now supports up to AutoDesk version 2021.
- When in the text store dialog with coding type set to none, the PLUS icon will still be available for easy descriptions.
- Typing descriptions in text dialogs has now been improved and offers options to mimic previous versions of SurvCE (4.x, 5.x, 6.x).
- For GNSS, the software now allows list Points/Digits precision setting to be applied to the Map/Store Positions (display coordinates).
- Advanced Occupation records are now stored to the RW5 as results, and additionally raw data was added for target measurements. A new option has been added to prompt for published vs. Solved OC.
- All TS -- The electronic bubble level now has half the resolution.
- It is no longer possible to lose communication settings when switching away from the COMM tab before tapping the green check or connect button.
- In TEXT mode a new easy-to-access setting is available to control the highlight of the Stored Point Typed Description.
- The Minimum Solution Type tolerance failed dialog has been redesigned and improved to provide more information.
- The number of digits in the .ref file output have been increased from 10 to 14 to match the RW5 file.
- The following German /NRW Coordinate systems have been added:
  GERMANY/DHDN-GRID/Gauss-Kruger zone 2 NRW
  GERMANY/DHDN-GRID/Gauss-Kruger zone 3 NRW
  GERMANY/DHDN/Hessen GK3
- If a base point ID has been read from a file, but does not match the RTK base broadcast ID, the ID from the file will have precedent when recording the BP record and vectors at the rover.
- The software will no longer incorrectly apply geoid corrections for Greek coordinate systems that use the Transverse_Mercator_GGRS87 projection type.

Bug Fixes in SurvCE:

- There is no longer the potential for certain caster tables with very long entries to become corrupted. This could lead to unexpected base station changes.
- The software will no longer give a false warning about "Possibly out of range" for the Mississippi West state plane zone, when still well within the zone.
- Dual Frequency depth sounder strings will now be parsed correctly when temperature is not in use and does not exist in the data stream stream.
- Reconfiguring the base station with identical parameters as the last configuration (ID/LLH) will no longer trigger an increment of the automatic ID suffix.
- When the user opts to wait for the minimum solution status tolerance to be met when storing, the residual values will be shown in the units of the current job. Previously, they were

displayed in metric.
- The HTML output file for the localization will now correctly show the ellipsoid value in the units of the current job. Previously, they were displayed in metric.
- Codes will no longer be sometimes overwritten if the second character is typed too quickly.
- There will no longer be a failure when attempting to configure a TS to communicate over radio.

New Features and Improvements SurvPC:

Note that all relevant features in SurvCE are included in SurvPC

- Storing complex entities in Esri has been improved for faster performance.
- SurvPC will display the camera preview on devices updated to new Windows 10 2004 version.
- Carlson SurvPC Esri C2E works with non-linear aliases in the same manner as the legacy schema regarding selection, erasing, etc. The new C2E does not need to setup an explicit query in the Esri Desktop. Only the legacy schema requires this extra step.
- Carlson SurvPC Esri C2E Aliases of Layers are working with multiple identical entities during selection.
- Custom Carlson Esri SurvPC setup of the Fields and Order List has been improved when using Equations. The software now uses user friendly selection/updating of the item from the list.

Bug Fixes in SurvPC:

Note that all relevant bug fixes in SurvCE are included in SurvPC

- SurvPC no longer has the potential to fail when using the C2E Esri Schema and re-activating a line using snapping.
- Deletion of Esri entities using the C2E Schema now works correctly when multiple entities are used.
- Carlson SurvPC Esri -- The software will now correctly report the number of selected entities intersected by the windows selection when adding multiple true identical entities.
- Carlson SurvPC Esri -- Advanced equations are now working using the new C2E schema and can be deleted. Feature-to-Feature qualifications are now support.
- Carlson SurvPC Esri -- Advanced equations now support LOK EQs for non linear entities/profiles.
- Carlson SurvPC Esri -- Domains are now working. In previous versions, sometimes the domain list would fail to load.
- Carlson SurvPC Esri -- Non-Linear Equations now use default and lock correctly.
- Carlson SurvPC Esri -- Main root simple Features are now used when storing data and applying the custom field order. Applies to all related point features with a main root related table.
- Carlson GIS now has a check/prompt when assigning the basic EQ and the field type is not appropriate.
- Carlson SurvPC Esri -- Default EQs are now used for point feature relation in the main root table.
- The SurvPC “flashback” issue has been resolved. Periodically when another application was opened behind SurvPC and a message box appeared, it was possible that windows would briefly flash to the desktop.

Version 6.07

Release Date: August 3, 2020

New Instruments Supported:

- Bathylogger DFX Depth Sounder
- Stonex S980*
- Stonex S990*
- Nikon N TS
- Nikon K TS
- eGPS 20T, M6, E100, E300, E600, E800 *

Other New Features and Improvements SurvCE:

- SurvPC now allows the import of multiple surfaces from third party software when designing road modules. This option is available in Import LandXML and Stake Road when the roading module is enabled. This feature is currently available in North America only.
- An all new cad layer manager is now available to more easily manage layer colors and enable/disable layers. It is also possible to control the WebUI and ImageDB layers from the layer manager.
- SurvCE will now attempt to download grid files when the localization is changed in Equip->Localization. Previously this only happened if the projection was changed under Job Settings->Units.
- Inverse/Traverse/SideShot has been improved to support Radial Stakeout.
- The Pole Calibration dialogs and One Point Test now show IMU and Instrument status icons in the top bar.
- The "Fixed Only", "Sure Fixed Only", and "Verified Fix Only" options in Equip->Configure have been removed. They have been replaced with a "Minimum Solution Type" option in the tolerance page which encompasses all three options and allows even more flexibility to the user in setting survey requirements.
- The top bar tab icons will now stretch to fill all available space.
- SurvCE now loads and handles CRDB jobs faster.
- GIS attributes will now be exported as part of the KML file.
- The GPS Utilities "Sensor Calibration" button has been renamed to "Sensor Utilities". Options inside have been reordered to put tests at the bottom. Sensor Utilities is now also available in the Equip->Configure->IMU Page. The Test Compass button has been moved inside of Sensor Utilities.
- Stake Road now allows Zoom to All SCTs, Zoom to Current SCT and Custom Zoom (Hold offset or Hold grade).
- The broadcast base ID in base setup can now be empty. Previous versions would give a warning in this scenario.
- Logging Interval and other static logging settings have been moved from the separate settings dialog and into the main settings page. This affects GPS Base and GPS Rover only GPS Raw Only remains unchanged.
- Receivers with ebubble support but no tilted pole correction will now show the option "Use Ebubble" instead of "Use IMU" in Equip->GPS Rover for clarity.
- Options in GPS setup will now refresh after a link to the device is established. This will ensure options are updated based on the capabilities of the receiver.

- Import Columnar Text/Pipe data now applies the correct conversion from inch/mm to current unit's job.
- The software now supports both sides type of cross-sections (closed areas) loaded from Autodesk Civil 3D tunnel type.
- Open areas of cross sections have been improved when loaded from Autodesk Civil 3D.
- The HGT/Desc dialog now offers a "+" action item for quick compound coding (i.e. lines and point codes together when storing POLE FN ST).
- List and groups will now update without exiting the dialog when storing descriptions in TEXT mode.
- Beidou and Galileo satellites will now be enabled by default for all receivers with support.
- Delta values in stakeout now use signed numbers (-/+). Previously absolute values were used.
- Import ISPOL/SC1 to Carlson SCT file is now more robust. The import of vertical elements of the SC1 to the SCT is now better controlled.
- When targeted station is used in STK/Off line and reverse curves exist along the CL, the software will now attempt to filter the closest station and offset.
- The ID for the base point in the rw5 file (BP records and vector records) will now include an incrementing suffix. i.e. _BASE_1 This will help to ensure that base point IDs do not conflict with rover point IDs for the sake of vector processing.
- SurvCE will now prompt a selection dialog when attempting to select surfaces in Road Stake/Cross Section in the scenario where the desired selection is ambiguous.
- Import TIN from LandXML now allows "skipped invisible" triangles.
- SurvCE now allows repetitive offset codes along a main linear feature, similar to Carlson Office.
- Hybrid -- The Hybrid setup wizard now includes an option to check level on the total station.
- During DXF export, the software will now confirm that exported layer names will comply to Autodesk requirements and make changes as necessary.
- SurvCE will now display the post processing timer all the time inside of GNSS Raw Utilities, and all the time inside of Monitor Skyplot if the logging is running.
- Export SHP now allows lower tesselation/cutoff values. 1mm and 0.01feet for ARCs."
- Export SHP allows an option to have the Prompts (code/fields) to be used during the export of the Fields to the DBF file.
- The Applies/Force Section template rule option has been moved from Job Settings/Road/Alignment to Stake Roads/Slope Staking for ease of use.

Bug Fixes in SurvCE:

- The HTML report for localization will now correctly show the ellipsoid elevation. Previously, if a geoid file was selected, the orthometric elevation would be written and incorrectly labeled "Ellips".
- The dialog for average GPS has been improved for portraitview to prevent going off the edge of the screen.
- STK Line/Arc now displays and saves the design Ahead/Back special offsets on Angular Points correctly. In the past the design offset for those special cases were always shown as defaults.
- PLN are now drawing correctly in Carlson SurvCE/SurvPC, created using 2D style from Carlson Office 2020. The software will automatically zoom extents at the end of the routine.
- SurvCE will now check for a base ID change in the middle of an average and will not write vector data for the average if the base ID changed. This is a rare scenario.
- Stake Road view has been improved to draw correctly (proportionally) when offsets used are off road.

- Load Sections in the Stake Road page now scales and shows the paths to the SCT selected/added.
- Currently used surface will now be displayed when multiple selection of surfaces is used in Stake Road and Cross-Sections.
- The TEXT view store points screen has been improved to better handle the HGT/Desc box.
- Radio Protocol "PDL w/ EOT" is now limited to GMSK and 4FSK modulation for all radios that support that protocol.
- Points use of Layers or Symbols (under CONFIGURE) are now working independently from the Job Option Setting.
- A layer can now be deleted by deleting the last point or CODE that is using it.
- Feature Code List use of the polyline width (s) is working now correctly. Previous versions may have incorrectly used the wrong units.
- Status icons in the distance/angle offset routine will now update appropriately.
- SurvCE will no longer post bogus D&R records when hybrid resection is used.
- The tilted pole offset feature will no longer adhere to the "average same point ID setting." The combination of the two features causes confusion and is not practical.
- SurvCE will now write the correct units into tilt records when a tilted pole offset is performed. The function will now perform more smoothly.
- Two-prism-pole offset will use a tolerance of 15mm (.6 in) when confirming that its readings harmonize with the value entered as the distance between the prisms.
- It is no longer possible for an RW5 export to have double lines. This could happen in the rare scenario where a TDS file raw file of the same name exists in the export folder.
- The ESC key now works correctly as the "x" dialog button for VIEW/TEXT dialogs, returning to the main menu rather than to graphics view.
- The default stakeout tolerance default is now .1ft.
- ISPOL/CLIP section interpolation works correctly. Tunnels now work in interpolation mode.
- The Elev Diff routine now adheres to the user selected Auto Zoom setting. Note that zoom will still be applied to the measurement and the cross section, even when the Auto Zoom is disabled.
- Import ASCII Points now allows SKIP (cases like P,Y,X,Z,D,S) relative to descriptions which are followed by notes.
- Tappable sub-commands in MAP now display correctly on all screen resolutions and sizes.
- It is now possible to change the RTK mode when using Listen-Listen. In previous versions this setting was blocked in some scenarios.
- Surface to XML will now display the correct message upon completion.
- The Inverse feature will now allow accidental repeated entry of the "I" code without assuming it is a point ID.
- After storing point(s) through the NGS Datasheet query routine, the default next point to store will automatically be updated. Also, an SP record will be written to the rw5 file for each imported point.
- Mission planning will no longer fail when downloading the almanac.
- There is no longer a potential for the software to fail when accessing camera settings on devices with no internal camera.
- SurvCE will no longer use the TXT (shx) in DXF exports when exporting to AutoCad versions in which it is not supported. The Standard (simplex) font will be used when required.

New Features and Improvements SurvPC:

Note that all relevant features in SurvCE are included in SurvPC

- Activating existing Esri Features will now work better using Feature Code/Alias. In the case of

Feature Layers which are used as aliases for FCL code, the F2F re-activation works with the aliased Feature Layer, or the Base Feature Layer.
- GIS Esri text screens now include the IMU icon as well as the TEXT/VIEW toggle.
- The new Carlson Custom Esri Schema "C2E" is now supported. This schema is designed to integrate seamlessly with Carlson SurvPC and Field-to-Finish.
- Maximum list of stations has been increased from 10000 to 60000 for PC products.
- Unique Linework ID for Carlson F2F now works with Carlson SurvPC-Esri.
- The EQ Desc default will now be filtered to remove action codes.
- The software now offers a Profile View button in the current linework store dialog.
- SurvCE now handles Date/Time EQs more consistently. The date and time will automatically be updated by the software only in survey screens.
- It is now possible to reopen closed linear features.
- A new setting is available under Advanced Settings/Esri Settings to allow Definition Query to be applicable when selection is performed in the Point Feature Layer.

Bug Fixes in SurvPC:

Note that all relevant bug fixes in SurvCE are included in SurvPC

- Carlson SurvPC-Esri File Geodatabase could potentially lock the data sets when opening/closing the data sets (commits) are not always paired. This was a problem introduced in version 6.06 only. The issue is now resolved.
- Activating Carlson F2F when using Esri Feature class which is not matching the Carlson FCL code will now show the appropriate error report.
- Tab Control in the Virtual KB PC Products is shown correctly regardless of the selected DPI resolution.
- C2E now allows the linear entities which have related simple features to have a View Profile (button).
- When C2E is in use and the Elevation Z1 field is hidden the software will no longer prompt with the warning “Missing necessary measurements for the profile point”.
- SurvPC will no longer display an inverted image from the built-in camera on the Carlson RT4 tablet.
- The software will now check to ensure there are enough Z values when storing a profile point.
- The software will now filter already-used Profiles from the list.

**Outside of North America only*

Version 6.06

Release Date: March 12, 2020

New Instruments Supported:

- Bathylogger Depth Sounder (Bluetooth Only)
- Carlson BRx7
- CHC i90*
- Geomax Z16
- Geomax Zoom10 TS
- Nikon XF/XS
- Satlab SL700
- Satlab SL900
- Spectra Precision SP85
- Stonex S700A*
- Stonex S850A*
- Stonex S900A_V2*
- Stonex S900N_V2*

New Data Collectors Supported:

- Carlson RT4

Other New Features and Improvements SurvCE:

- Combo boxes in SurvPC now have a wider scroll bar and down arrow for ease of use.
- SurvCE now uses World Magnetic Model 2020 for magnetic declination.
- Land XML import can now import cross sections of a road as generated by Autodesk Civil 3D.
- The ContinuentalUS_NGS2018.gsb file has been updated to correct for minor errors in the original NGS release.
- SurvCE will now sound a tone when a robotic total station search successfully finds a prism.
- When importing a drawing, SurvCE will now adhere to the ATTMODE and ATTDISP commands for visibility of attributes.
- SurvCE can now reliably export drawings of more than 100k+ entities.
- GNSS -- A tilted pole offset method is now available to allow calculating coordinates via multiple measurements at different inclinations.
- SurvCE now supports extrusion of TEXT. Location and direction are calculated using the Axis Arbitrary Algorithm.
- SurvCE/PC will now reject the '#' character when setting Carlson Cloud passwords.
- The web map server setup dialog has been improved to allow more visibility of longer URLs.
- The software can now access more layers from WMS sites.
- SurvCE can now successfully use many WMTS sites from Spain that previously failed.
- SurvCE will display web map layer names containing accented characters correctly.
- SurvCE will now show a "Test Compass" button on the IMU tab to allow users to quickly check the quality of their internal data collector compass.
- Stake line in STK Navigation now displays cut/fill values.
- Pressing the hotkey Alt-T in the command Stake Road/Design Section Files will now provide

the user with a list of stations for each section/surface added to the list. This is helpful in managing large XML datasets.
- In Stake line, staking line by azimuth will now work more fluidly. The enter key will work correctly when defining the azimuth by points.
- SurvCE now better handles corrupted drawing files.
- The One Point Test now handles IMU state "uninitialized" for inertial sensors and prompts the user to rock the pole. A new status icon will also be available for this state in the main menu.
- LandXML import has been improved to correct invalid multiple surface names.
- It is now possible to specify the default job type in SurvCE under Helmet->Advanced Settings->Software Settings.
- SurvCE can now store the calculated GPS scale factor for each measurement in the RW5 file. This option is available in job settings. Note that this scale factor should not be used for any reprocessing. It is only useful for JXL file export.
- SurvCE will now import TEXT/MTEXT using the correct color, even if it differs from the generic layer color.
- It is now possible to select multiple SCT files at once when selecting road/section files.
- Cross sections in a road now always draw in the correct order, where the last drawn is the current surface.
- SurvPC now allows more flexibility in GeoBORG plugin versions.
- After successful import of LandXML data to a DTM file, the software now alerts the user that the process is finished.
- Export to KML or KMZ now allows the option to export line work.
- GIS Equation PHOTO,PHL is now supported.
- Drawing import of 2D and 3D blocks has been improved.
- SurvCE now supports coordinate system "GERMANY/DHDN-GRID/GAUSS KRUGER BW" for use in Baden Wuerttemberg, Germany. This system requires grid files, BWTA2017_lat.grd and BWTA2017_lon.grd.
- The "RD NAP Trans 2018" coordinate system no longer applies the geoid shift after geographic shift when converting LLh->XYZ. Users should use the nlgeo2018.GRD geoid file with this coordinate system now, instead of the nl2018.GRD file.
- The NETHERLANDS/AMERSFOORT 2018/RD NAP Trans 2018 coordinate system is now supported.
- The following coordinate systems have been renamed: "ROMANIA/Stereographic 1930 TransDatRo Source Code 1.02" to "ROMANIA/Stereographic 1930 TransDatRo Source Code 1.03" and "ROMANIA/Stereographic 1970 TransDatRo Source Code 1.02" to "ROMANIA/Stereographic 1970 TransDatRo Source Code 1.03"

Bug Fixes in SurvCE:
- GNSS Analysis has been improved. The report will now display correctly when non-metric units are used. Display of errors and results will now also adhere to job units. The method of GPS Average will now be saved and recalled correctly.
- Layerized feature code lists are now working as designed when using point comments.
- SurvCE no longer has the potential to calculate an incorrect position when the Hotine_Oblique_Mercator projection is used.
- The Romanian grid files have been corrected.
- SurvPC in portraitview has been improved to ensure that all icons are visible.
- SurvCE now appropriately recalls non-flat line entities when saving and loading the drawing associated with a job.
- SurvCE now automatically finds the correct insertion point for blocks which have only an

attribute definition or only a text definition.
- SurvCE will now apply 210/22/230 values for the arbitrary axis algorithm to all TEXT/MTEXT imports. This prevents import scenarios in which text falsely locates to 0,0,0.
- After pressing the monitor/skyplot button from within Store Points and storing the base position from the REF tab, the next point ID suggested in the Store Points screen will now be updated.
- SurvCE now offers an option in the hotlist to suppress surface limit warnings in the elevation difference dialog.
- Export ASCII with localization and Geoid applied now reports the Z correctly, when using GRID option.
- GNSS -- For some receivers, the base ID recorded at the rover was truncated to the first 3 characters. The software will now support up to 31 characters.
- The software no longer has the potential to fail when empty descriptions are used for CRD feature codes.
- GPS reporting from RW5 is now saving and displaying the duration of each measurement in the case of repeated point IDs.
- In the MAP/Extend By Distance command using UNDO no longer has the potential to produce an error in the software.
- GNSS --The used sats/total sats report in text view dialog is no longer reversed.
- SurvCE no longer has the potential to fail while writing a localization report when Helmert is in use.
- It is no longer a possibility for the scale factor to be ignored in the LLH-Grid calculation when the "Apply Localization" check is on and no points are present in the localization, but a scale factor is set.
- SurvCE can now import blocks/inserts even in the case where the layer in which the block exists is disabled.
- The coordinate system parameters are no longer blank when adding the "USA/NAD83/KY Single Zone" predefined coordinate system.
- Subcommands work correctly in cad basic even when OSNAPS are in use and set to sticky.
- Stake pipes and alignments now works more reliably when the station is not zero and works correctly with “corners” (angular points).
- The software now supports the import of mesh/solids.
- SurvCE no longer has the potential to fail when dealer splash screens are used on faster data collectors.
- The last selected offset method for GPS will now be remembered as part of the job.
- SurvCE now stores and recalls the last used backsight setup method for manual total station.
- SurvCE no longer has the potential to briefly go to autonomous with no position when the rod height is changed in store points.
- SurvCE no longer has the potential to show the wrong dialog when GPS Analysis is enabled and TS/RTS is used.
- The final note in the notes dialog will now include a carriage return automatically.
- EXIF data for Point/Photo now sets decimal degrees appropriately.

New Features and Improvements SurvPC:

Note that all relevant features in SurvCE are included in SurvPC

- SurvPC will offer to download the following grids if selected by the user but missing from the SurvPC folder: BWTA 2017, Portugal Lisboa, Portugal D73, Austria MGI GIS W/C/E.
- Esri -- The software will now allow direct simple relationships between two feature geometries. The appropriate relationships will be created automatically.

- Esri -- The layout of the Esri measurement screen has been improved for portraitview.
- SurvPC now allows the user to choose the camera resolution to use when taking photos. This applies to the .jpg produced by the camera. The preview thumbnails are still bitmaps and are scaled to the same aspect as the camera resolution selected.
- Esri ArcGIS 10.7 is now supported.
- Esri -- The cad CLIP and TRIM commands now work on interior rings.
- Esri -- SurvPC can now more quickly update from the Carlson CRD file to the Esri feature class.

Bug Fixes in SurvPC:

Note that all relevant bug fixes in SurvCE are included in SurvPC

- Esri -- The FID/OID connection between two feature classes is now working correctly on schemas containing unused/unread settings.
- Audible prompting now works correctly in Russian.
- The software no longer has the potential to delay for a long time while waiting for a Bluetooth connection that is lost due to distance from instrument.
- Esri - There is no longer the potential to experience software failures when updating text during Esri data collection.
- The GeoBORG plugin now provides more helpful information to the user in the case of failure.
- The GeoBORG plugin is now easily accessible from the command menu of the MAP screen.
- Adding descriptions to photos for Esri is now improved.
- SurvPC will record the correct lat/lon values in the Exif data of photos added to a point.

**Outside of the United States only*

Version 6.05

Release Date: October 10, 2019

Other New Features and Improvements SurvCE:

- The BARBADOS/Barbados National Grid(7+3) coordinate system is now supported. This coordinate system uses a 10 parameter Molodensky-Badekas transformation.
- The 2018 US geoid has been added to SurvCE/SurvPC installs.

Bug Fixes in SurvCE:

- Newly calculated backsight points will now always be stored during the Set Collection routine. Prior to this fix, if the occupy point was created during the station setup process, storing of the backsight could potentially be skipped.
- RTK message type will now be stored and recalled correctly in GPS base and rover setup.
- The installer will correctly detect whether a data collector can be used with Focus35, offer the extra installation package(s) needed, and deliver those extra items when requested.
- Drawing import will now work correctly when the Arbitrary Axis Algorithm used for an entity was oriented from below the plane of 0,0,0, normal xyz.
- SDR output is now working as designed.
- Manual TS once again has the ability to set the backsight to any azimuth.

New Features and Improvements SurvPC:

**Note that all relevant features in SurvCE are included in SurvPC*

- Scroll bars in list controls have been widened for easier user.

Bug Fixes in SurvPC:

**Note that all relevant bug fixes in SurvCE are included in SurvPC*

- SurvPC can detect an external keyboard attached to a tablet. It will no longer force the user to either use our virtual keyboard or the Windows on screen keyboard when an external keyboard is present.

Version 6.04

Release Date: September 27, 2019

New Instruments Supported:

- UBlox ZED-F9P
- ComNav T30
- Nikon Xf/Xs Series

Other New Features and Improvements SurvCE:

- GPS Point averaging and advanced GNSS Analysis are now available directly from list points, point average, and map.
- CAD Basic Drawing Import now supports importing Hatch/Solids as polylines.
- The resection routine has been revamped. Residuals and results will now appear on two different tabs to allow more space for residuals. Columns in the residual table can now be sorted. The On/Off options are now available inside the table. The user can now select the backsight point from all resection points.
- Control of the top left map screen button “show text” has been moved into the advanced settings screen, and the option has been enhanced to alternatively allow direct access to show linework. This gives the user control over the function of the button.
- Sizeable text in graphics screen has been improved.
- The Name drop-down on the RTK Broadcasters dialog will be easier to activate on capacitive screens.
- Required field rules will now be enforced when editing a GIS feature (non-Esri).
- Geomensura feature coding is now supported.
- Geomensura export is now supported.
- NGS Survey mark query has been improved. The elevation can now be retrieved from the data sheet. There are now more options for selection of search-position.
- Arcs and Circles with tessellation will now display more smoothly.
- Simulated positions will change slightly while in GPS average even when the "Jitter" option is turned off or when "Always Use this Position" is selected. This prevents failure due to identical positions from being filtered out.
- Warnings for not getting the base position or being out of range of the current projection or geoid are no longer shown when GPS Simulation is active.
- SurvCE will now warn the user if a German Cadastral coordinate system has been selected, but a standard UTM coordinate system is received via RTCM3 corrections. This prevents a mismatch between short/long UTM coordinates in Germany.
- The antenna list has been updated from NGS.
- The GNSS point averaging routine has been improved to allow easier editing. Averaged point can now be edited easily from within COGO/Pt Average, Map, or list points. On/Off status of all horizontal and vertical components is now saved and recalled.
- GNSS Point averaging now has a flexible user report option.
- SurvCE will now list the model name in the top bar of the status dialog when connecting to an instrument.
- The "Save Drawing Map Data" option has been moved to advanced settings.
- A new setting has been added in Advanced setting to force drawing output to include unused layers.

- Updated parameters for all Australia GDA2020 projections. The new parameters no longer convert from GDA94, instead, they assume the geographic coordinates given are already in the GDA2020 datum. If users already have GDA2020 projections in their list of projections, they will need to delete them and re-add them to get the updated parameters.
- SurvCE will now allow pre-configuration of internal server projection messages including suppression of all pop-up alerts. The checkbox in the RTK tab has been renamed to "use server projections."
- The Dutch translation has been updated.
- SurvCE will now demonstrate more accuracy in user selection when a mouse is used. Previously the software was refined for finger navigation and did not detect a mouse. The software will now behave more like desktop software when a mouse is used.
- Data collectors will now produce differing sounds to notify GPS Fixed vs GPS point stored, as was the case in 5.0x
- SurvCE now supports GGA output from a total station. Enable in the Peripherals/Output tab.
- SurvCE will now output LLQ and LLK messages correctly from the total station when the units are in feet.
- The following new Portuguese coordinate systems are supported: PORTUGAL/PTRA08/UTM zone 25N, PORTUGAL/PTRA08/UTM zone 26N, PORTUGAL/PTRA08/UTM zone 28N
- The Luxembourg coordinate system is now supported.
- GNSS Analysis reporting now has the option to limit the software range of collected data.
- The software now allows the user to color the Points Info on the screen based on the Layer of the Code from the FCL (Point Description contains the code).
- SurvCE will now skip the "search" after turning in GPS Search, and try to lock immediately if the GPS is fixed. This improves the speed of the feature.
- OSNAP selection is now sticky.
- WMS now supports servers with DCPType redirects.
- The popup to warn users that they have received an RTCM3 projection message even though they haven't enabled the feature will now have a "do not show this warning again" option.
- The Belgium grid files, Belgium72_dnorth.grd and Belgium72_deast.grd, will now be delivered in the International SurvCE install when the Dutch or French language is selected.
- Line Details now has an option to show and review a 3D Pline as Profile/Crosssection.
- Windows Mobile 6 -- Dealer splash screens are now supported. Contact support for more information.

Bug Fixes in SurvCE:

- There is no longer a potential for failure in the GPS Offsets routine when using the intersection method and taking multiple measurements without storing.
- The software will now highlight and replace the old feature code when the user starts typing a new code in text mode of store points.
- When coding style is set to NONE, the software will no longer display the description dialog when the user types a code in store points, text mode.
- Drawing Import to CAD Basic now works correctly when drawings contain empty TEXT entities. (cases of web server/cadastre outputs, dxfs from Germany, Austria, etc).
- The value 999999 in ASCII geoid files will be treated as offgrid. This prevents scaling errors near the grid border for some files.
- The status icon will now be updated immediately upon connecting to a total station. Previously the icon stayed red until entering a live storing routine.
- SurvCE can now successfully use the EUREF caster for RTK corrections via data collector

internet. Previously there was an error unique to this caster.
- There is no longer a possibility for a lockup in COGO transformation.
- The interpolation method has been changed from quadratic to bilinear for the coordinate systems which use the Hungary EOV VITEL grid (HUNGARY/EOV-VITEL, HUNGARY/EOV-VITEL2009, HUNGARY/EOV-VITEL2014)
- Replaced all 0.000 with NULL in the file HungarianEOV2014_dH.grd, which is used by the coordinate system "HUNGARY/EOV-VITEL2014". 0.000 was being used to represent offgrid areas but our code uses N for offgrid. This fixes getting incorrect heights when operating very close to the offgrid area.
- It is no longer possible for the software to fail in advanced occupation.
- When OSNAPS are used to create points, appropriate Code/Descriptions will now be added.
- The Manual Transfer file tool will now allow file and folder renaming. Previously, name editing resulted in confusing "Unable to create directory" message and disappearance of folder from list (though not affected on storage device).
- The software will no longer apply RTCM Grid adjustments when the feature is disabled after use (this was a problem within a single session only).
- SurvCE will now load faster in the monitor skyplot sat screen.
- Unregistered (demo) copies of the software will no longer falsely warn that NMEA output has been terminated.
- CAD/Basic, and Carlson F2F now refreshes the MAP after Point Editing. In the past there was a lag and the map was not redrawn.
- Entering and green-checking View Options can no longer cause "Only Display Last Stored Point" to unexpectedly turn on.
- Average Point GPS from previous measurements from raw file now works as designed.
- It is no longer possible to have a lag in updating the rod height when it is changed in the bottom bar while tracking and the store button is pressed.
- The RTS setting for horizontal and vertical search range will now display and recall correctly when "use south azimuth" is enabled.
- SurvCE no longer has the potential to fail when a virtual com port is used for NMEA out in total station mode.
- The software will now remember the color settings for points regardless of whether the user manually saves the drawing.
- Editing cutsheets now works correctly even on special fields.
- The New Hampshire NAD83 coordinate system will now longer show a false “out of range” error.
- Hybrid -- It is no longer possible to get into an infinite loop when a cross check fails.
- Hybrid tolerances will now be saved correctly when using the Hybrid Setup Wizard.
- Hybrid -- It is no longer possible to get into an infinite loop in hybrid resection when resection D&R is enabled.
- SurvCE no longer has the potential to fail when attempting to open badly formatted GEOID files or files with unexpectedly large values.
- South Azimuth functionality has been restored.
- Selection in the Slope Report, Triangulate and Contour, and Volume routines has been improved to allow pick style and windows crossing style for selections. The software now also supports remove (removal of the previous groups or single entities selected, if the user makes a mistake during the selection of the inclusions/exclusions).
- The reference centerline dialog is improved so that options update appropriately. Previous versions required exiting and reentering the dialog to apply some settings.
- SurvCE will no longer show "rotating" when changing face in the monitoring screen.

- The monitoring routine will no longer measure the backsight after every target.
- Slope Staking now follows the usage of the setting: Centerline: start/end, CL points, settings, and the extend alignment style. Applies to next/prev stationing.
- The ALT-F hot key now works correctly, even when the Point ID is enabled in the point info display.
- The software will now allow UNDO when line work is created using OSNAP. The new point will be removed from the CSCRD.
- It is no longer possible to get locked into an endless loop by entering a non-numeric value into some combo boxes.
- RTCM3.2 will now be properly detected from NTRIP source tables.
- All control of sound is via Advanced Settings-Audible Settings from the main page helmet menu. Inoperative "Use Audible Alerts" option removed from Equip-Configure.
- When detecting point layers, numeric values in codes are now ignored (EP1, EP2, etc. are detected as the same layer).
- The search icon will now show as it should on non-reflectorless total stations. Previously it could be incorrectly hidden.
- Cut/Fill in Volume command reports the label/direction of the surface, when the case of Flat/Z elevation case. In the past we did not account for the normal case scenario in the field, in which reference Flat Z, which increase in height/final volume surface, will be noted as FILL, and reverse, Flat Z, which decrease in height/final volume surface, will be noted as CUT.
- Manual Standby will not be reported incorrectly as status after a failed GPS Search.
- Error handling for the virtual joystick has been improved and it is no longer possible to get into an endless loop if connection is lost while using the joystick.
- GNSS Analysis now reports the correct version of the software in the header of the report.
- The "Use BS Ht at FS" option now works correctly.
- The software will now apply the super elevation mode for using inside edge of pivot vs. center of road as pivot when an RNF file is in use.
- The RTCM3 projection message will now show all information. Previously some projection information could be missing on the initial report.
- A slope distance can once again be entered for manual laser readings.
- SurvCE no longer has the potential to fail when writing the RW5 file in GPS Offsets using averages, or in the 2-point or intersection methods.
- The NMEA GPS driver will now parse the base position message again.
- When using RTCM3 corrections, and only vertical grid is enabled, SurvCE will shift the elevation correctly.
- Voice prompting will once again reformat numbers to force them to be spoken correctly in German and Spanish.
- RW5 processing now works correctly with numeric coordinate files.
- The appearance of the scale bar in the map screen has been improved for portraitview. Previously the bar displayed overlap in some resolutions.
- There is no longer an artifact on the map screen after using GIS Inspector and no Line Details in Survey Graphic screen.
- Improved warnings when using CAD Basic Line Details. When there is an existing active CODE the software will now warn the user to avoid issues when running Carlson F2F later.
- The building face routine now increments points correctly when storing points to define the plane.

New Features and Improvements SurvPC:

**Note that all relevant features in SurvCE are included in SurvPC*

- SurvPC with Esri -- The software now offers an option to warn users if they attempt to store a point with an empty feature class definition.
- SurvPC with Esri -- It is no longer possible to lose geometry in the situation where a point is stored using GNSS Analysis and then stored again as an Esri point using the same feature class.
- SurvPC with Esri -- Code alias will now be used in the list of points in GNSS Analysis.
- SurvPC with Esri -- Some SurvPC Esri specific settings have been moved to Advanced Settings.
- SurvPC's control of the tablet keyboard has been improved. The operating system's popup keyboard should no longer intrude while SurvPC is running.
- SurvPC now offers the option to export a compacted slope report similar to Carlson office software.
- SurvPC now works the same as Carlson office products when a mouse is used. The middle button will function as a PAN.
- Measurement of complex features has been improved to eliminate a click when using the virtual keyboard inside the "value" button.
- Line selection is now more accurate, making it easier to choose the desired line.
- SurvPC has been improved to better handle high resolution screens in MAP/CAD for floating dialogs, (e.g. Inverse two line text, etc); placement of the boxes could fail on high resolution display.
- SurvPC with Esri -- The software now has improved visibility of the symbology drawn by Carlson Software, pen, re-measure, sliding, WCS, etc. All based on the scaling: DPI, and resolution, Allows Default and Large, Small/Large Fonts from Point Details.
- Esri use in Carlson SurvPC allows F2F/Continue Line/Activate Line as CAD Basic.

Bug Fixes in SurvPC:

**Note that all relevant bug fixes in SurvCE are included in SurvPC*

- It is no longer possible for the software to fail when Next/Previous buttons are pressed very quickly during Esri feature collection.
- SurvPC with Esri -- Cancel/Remeasure Point now works the same as the CAD/Basic/CRD style. The software will correctly recall the Point ID name used before the Re-Measure operation has started.
- SurvPC with Esri -- The list of points will now refresh more reliably in GNSS Analysis.
- SurvPC with Esri -- It is no longer possible to get a duplicate CSCRD in the Carlson SurvPC Esri remeasure routine.
- SurvPC with Esri --Re-Activating F2F lines now works with CSCRD points with no descriptions, or if you used simultaneously OSNAPs against common vertex one from a different feature; e.g. LO feature and third vertex was snapped from LP_AS feature.
- The software will now recall the F2F definition after a line is closed or when the software is restarted.
- The Fill Polygons setting can now be disabled. Previously it was necessary to exit the software to disable this feature.
- Labeling and Font size now adjust correctly for screen resolution.
- Use of multiple Rasters now works correctly. Previously the software only handled 1-2 rasters per group.
- There is no longer a potential for failure when the software is launched and the user immediately attempts to delete points from the profile.

Version 6.03

Release Date: May. 1, 2019

New Instruments Supported:

- Carlson NR3
- Geomax Zenith 40
- Nikon Xf/Xs
- Geomax Zoom70 Onboard Version

Other New Features and Improvements SurvCE:

- The “Extend Line” feature has been renamed to “Continue Line” for clarity.
- The software will now issue a warning when Codes are added to the FCL and the user attempts to use "space separator" generating an invalid code name (multiple code names are not allowed in the Feature Code List).
- If SurvCE gets an error during RTK configuration but still gets corrections, configuration will still be considered complete. This helps in areas of slow internet connection where the user may get a false failure.
- When configuring the settings for a Stop & Go raw data file inside the receiver, if the configured number of readings to take per point when not in logging mode is higher than the current Readings per Point in logging mode, the higher value will be used by default. Also, the user can now change the Readings per Point while in the Store Points/Stakeout screens by using the "C" for configure button.
- Slope Report cutsheets have been improved. The deliverable cutsheet will now include left/right Offset+Catch+Pivot, and grades in columnar form.
- In Volume routine comparison, Surface and Surface, Elements, etc. SurvCE now offers the option to report the import data (stockpile) or the export data (pit).
- SurvCE will automatically connect to onboard total stations on startup and not ask user whether or not to connect.
- In the Cogo/Inverse routine, if the user does not change the Point ID or source (Current/Control) and presses Enter, the routine will no longer cancel out back to the Main Menu. A resulting 0 distance, 0% slope will be displayed.
- The 0-4 meter rod height warning will now only apply to real instruments (not simulators).
- Dealer splash screens are now supported in SurvPC. Add file dealersplash1.bmp into the program folder to replace the standard splash screen.
- SurvCE will now display symbols properly when using the reverse mode (white on black) in the map.
- Use Virtual Joystick will now be on by default when SurvPC is installed for the first time to a tablet PC.
- Import LandXML to CRD/CRDB now allows only point ID, no description, nor code.
- TEXT/MTEXT now allows the reading from the import drawing routine, the alignment, top/center, and also it draws the data (text) in the CAD Basic MAP.
- Import Drawing allows scaling, detects the type of the units in the Drawings, and the scaling units.
- Points from Esri SHP files with point ID defined will now save correctly to CRDB files.
- The NMEA message RMC is now added as an option for data collector nmea out.
- SurvCE now supports Pregeo data output even for receivers without vectors.

- When averaging only 1 reading or tagging only 1 epoch in a Stop&Go session, the software will no longer display statistical (min/max/stdev) data on the screen.
- When first entering the Export Ascii screen, the "Format Geodetic" button will be disabled if no Geodetic items have been selected for export.
- The option "Do not configure" is now available on the RTK tab. When selected, SurvCE will bypass RTK device configuration. This is useful when users want to configure their RTK device externally, or when a receiver auto-connects.
- SurvCE now allows direct access to layer management in all graphic/work screens, including store points, stake points, intersection, etc.
- Joystick Page has been improved, especially when using virtual Joystick buttons/touch screen.
- SurvCE will now force the total station to go into standby mode before setting the angle after resection. This eliminates a small chance for error if the prism is moved in the brief time the angle is being set.
- SurvCE will now display an out of level warning in the quick view dialog when the measurement fails due to being out of level.
- SurvCE now calculates better directions in stakeout when the method is set to Direction or Deflection L/R and the user is very close to the stakeout point.
- GPS Simulation -- When the left or right arrows are pressed and the speed is zero, the speed of the simulator will now increase incrementally so as to make the turn visible.
- The GIS inspector will no longer leave an artifact on the MAP screen after use.
- Hybrid+ -- SurvCE will skip the turn in GPS Search if it is already looking in the correct direction within 1 degree.

Bug Fixes in SurvCE:

- Voice prompting in stakeout will speak correct units ("meters") when Job is metric.
- When using the quick switch rod height feature within any routine, the newly selected rod height will now accurately be applied to the current reading.
- Labels have been corrected in the complex measurable screen for equation definition.
- When entering a routine for which communication should be stopped, SurvCE will no longer try to configure the instrument.
- SurvCE will go ahead and start the position stream if it has communication, even if part of configuration may have failed.
- RMS values will now be stored in metric within the .loc file. This corrects an issue that caused the RMS values to display incorrectly in the Localization screen and .HTM output file.
- Light Bar settings and the UI in Elev Diff are working correctly.
- The digital leveling screen no longer has a display glitch.
- Hybrid+ -- SurvCE will no longer perform two GPS Searches at the beginning of a cross check.
- Hybrid+ -- SurvCE will not attempt to measure in Cross Check if the GPS Search failed.
- Hybrid+ -- GPS status text will now update in hybrid resection. Previously when IMU was on, it was possible that the status did not update.
- Hybrid+ -- SurvCE will now hide and disable the "Ignore Elevation" option when performing a hybrid resection.
- The LLQ and LLK NMEA output will now work when the total station is tracking.
- The DC Phone option will no longer show as an option when it is not supported.
- GPS Rod height will now be updated appropriately in TXT mode and other non-graphic dialogs.
- Measurable buttons now apply the GPS Average number of readings setting appropriately.
- There is no longer a potential for failure when attempting to delete records from the RW5

editor.
- SurvCE will no longer report a connection error when using any of the three types of manual levels.
- NMEA output to file is now working correctly again.
- When creating a new single point localization during the base configuration process, the existing project scale factor will be maintained. Furthermore, if the base scale point method is set to "First Localization Point", the base scale point will also be updated to reflect the new localization point.
- Carlson CrewView now works in all quadrants.
- Import Profile from "inframodel" "fi" now works correctly.
- PERP and TANG OSnaps are now working correctly when coming from any dialog.
- The software will no longer block the user from storing a newly staked point when the description has not changed.
- LandXML export from a CRDB now works as designed, and the user interface has been improved.
- Base translation by rover is now working as designed.
- Fixed an issue which caused the VRES value of newly added localization points to be off by the amount of the rod height. This issue was in display only and did not affect the actual calculation of the localization.
- Modify GIS point data now works as designed.
- The errors record will once again be written to the RW5 file when a stakeout point is stored.
- Surface Inspector in Elevation difference will now revert to point data when cancelling the stakeout of the inspected point.

New Features and Improvements SurvPC:

**Note that all relevant features in SurvCE are included in SurvPC*

- SurvPC with Esri -- Esri OEM 10.6 serial numbers will now receive the 10.6.1 engine if they download via SurvPC.
- SurvPC with Esri -- The Join Lines feature now handles more than two entities to be joined and obey rules for 2D/3D feature class definitions.
- SurvPC with Esri -- Custom domain order and visibility are now supported.
- SurvPC with Esri -- the software now includes comprehensive Import ASCII from an ASCII file to CSCRD, or User's defined Feature Class. Newly inserted Features will also comply to the GNT (s) rules: defaults, date, time automatically filled-in requests.
- SurvPC with Esri -- Multiple selection dialog now has the capability to set(highlight) the most appropriate Feature Layer, versus Unique Range set, versus the actual default value set for a field (gets the best match). E.g. LP_RI, LP_AS, LP_LI, etc.
- SurvPC with Esri -- TS/RTS now are using the Carlson SurvPC-Esri set aliases for points. It allows the user to run the same points which are part of the Instrument Setup, Set Collection, etc.
- Photos taken from SurvPC will have files names prepended with point number if user selects that option from Helmet->Advanced Settings->Photo Settings. The date encoded in the file's name will follow the date format chosen in Job Settings.
- Audible Prompting will announce advanced fixes (Surefix, Verified Fix, etc.)
- SurvPC now gives user-friendly warnings when permissions on the tablet or computer block access to critical files and folders needed by SurvPC.
- The OSTN15.bin file is now included in the SurvPC installer.

Bug Fixes in SurvPC:

**Note that all relevant bug fixes in SurvCE are included in SurvPC*

- SurvPC with Esri -- The toolbox once again contains scripting.
- SurvPC with Esri -- Point style selection, works appropriately in the GPS Simulation Utilities; when picked points from the Feature Classes or ArcMap Documents.
- SurvPC with Esri -- SurvPC will now set the drive correctly when using direct access to add features to Esri.
- There is no longer a potential for error when features are deleted from the list selector and there are no remaining features after the deletion.

Version 6.02

Release Date: January. 31, 2019

New Instruments Supported:

- Topcon HiPer VR (OAF license may be required)
- Sokkia GRX3
- MarXact UNI
- HiTarget iRTK5
- Leica TS03
- Leica TS07
- Leica TS10
- Geomax Zoom70

Other New Features and Improvements SurvCE:

- The following translations have been updated: French, Hungarian, Dutch
- SurvCE now warns the user if a rod height outside of the range of 0-4 meters is entered.
- Hybrid+ Smart Lock will now take the GPS Receiver's solution into account before performing a GPS Search. Autonomous and float solutions on the receiver will prevent a GPS Search from being performed when the GPS Receiver is within 10 meters and 5 meters (respectively) of the Total Station.
- SurvCE will now alert the user when a 0,0 coordinate is calculated in Hybrid resection+. This is an indicator that the wrong projection is in use.
- The following projections are now supported:
  GERMANY/ETRS89/UTM zone 31N_kurz
  GERMANY/ETRS89/UTM zone 32N_kurz
  GERMANY/ETRS89/UTM zone 33N_kurz
  GUYANA/PSAD56/UTM zone 20N
  GUYANA/PSAD56/UTM zone 21N
  Barbados National Grid
- The SurvCE Instrument status icon is now visible in the GPS Offset dialog for both GPS Rover and Hybrid+ modes.
- The localization report button is now available in the top bar for all pages of the localization sheet.
- The option “Repeat Store” in the prompt for heights and description screen has been renamed to “Multi-Z Store.” The purpose of this option is to store the same X and Y coordinate several times with different rod heights (elevations).
- A job's cutsheets will now be included when copying files using File-Data Transfer.
- Display for import ascii has been changed to remove the X,Y, and Z legend. The old labeling was confusing in scenarios where the X and Y were reversed in a coordinate system.
- Photos added to a job after measurement by editing the point will now have the point's lat/lon/elevation inserted into the the photo EXIF data.
- Import ASCII now offers the option to skip the creation of the SP records in the RW5.
- The OSNAP_CEN command has been improved.
- The process of setting the total station orientation after a resection has been smoothed out for a better user experience.

- The default function of the search-icon in the top bar is now better adapted to the capabilities of the driver.
- A new GIS setting has been added to allow direct access to GIS features when a point is selected (instead of point details).
- The GDA2020 C+D coordinate systems (the version that required grid files) have been removed, leaving the 7 parameter coordinate systems. Removed the C out of the GDA2020 7 parameter coordinate system names.
- In stakeout, the software now includes a turn to “0” angular display, where the difference between the stakeout point and the current angle are displayed relative to 0.
- The localization dialog now asks to reprocess the raw file after changing the grid to ground scale factor.
- The L/R Quick Search directions in the search icon will now adapt to account for perspective.
- Check level is now accessible under the helmet inside the total station setup screen.
- The Robotics button will now be available in the BM- tab of the Leveling routine.
- SurvCE will now automatically calculate a Grid to Ground scale factor and scale point when toggling on Grid to Ground, when using one or two localization points. The automatically calculated Grid to Ground scale factor is calculated using the projected coordinates (from the geographic position and ellipsoid elevation) from first localization point that has Horizontal Control turned on. The automatically calculated scale point is set to the local coordinates of the same localization point.
- A new starter feature code list is now included in all installs (starter.fcl)
- After installing SurvCE to a Surveyor2 equipped with a barcode scanner, the user can change the helmet back to triggering the scanner by choosing the key labeled "Carlson SurvCE" and setting it to "Barcode Scan". Previously, the installer interfered with resetting the helmet to be the trigger key.
- SurvCE will no longer get an out of range error for geoids that straddle the prime meridian when using a position in the eastern hemisphere portion of the geoid.
- The Hgt/Desc checkbox in the one-touch storing screen is now directly tied to the "Prompt for Height and Desc" option in Equip->Configure.
- MAP/Polyline to Points when used on Data Collector now works more quickly.
- When using STK Points/Map and using OSNAPs the software now defaults on the edit box of the coordinate, not as before on the empty Point ID(Name).
- Reprocessing the raw file from within the Localization dialog, while having localization points (one or two with Rotate-Only on) will now use a scale point based on the local coordinates of the fist localization point that is turned on.
- When setting the combined scale factor using the Read GPS method (either via clicking the button, or via the Read GPS method inside the calculator) while having localization points (one or two with Rotate-Only on), SurvCE will set the scale point to the first localization point that is turned on.
- Edit boxes now support scientific notation.
- The Import Drawing command now allows drawing-points to be saved to the coordinate job as points.
- Handling of RTCM3 projection messages has been improved. SurvCE will now wait for the messages before finalizing the instrument configuration.

Bug Fixes in SurvCE:

- The software will no longer incorrectly report an error tagging a point during store points when the receiver was not actually logging a raw data file. This could happen when the same data collector was used to set up a logging base and then immediately setup a not-logging

rover.
- Angles/Slopes Static controls (e.g. slope ahead/back in Stk Road) are now displayed correctly.

- SurvCE no longer has the potential to fail when moving a new feature code to an empty category.
- SurvCE no longer has the potential to fail when performing an average reading inside of 2-point offsets.
- Unregistered (demo) copies of SurvCE no longer has the potential to fail when configuring NMEA output while in TS mode.
- SurvCE no longer has the potential to fail in a list control when there are zero items in the list.
- HRMS and VRMS tags will now print in all upper case in the RW5 file. This fixes errors in the web-based raw file report tool.
- SurvCE will no longer show unwanted messages related to “Averaging with previous point IDs…” when GNSS Analysis is enabled on a new job.
- It is no longer possible to get a "reflectorless" tag in some dialogs when using drivers in which reflectorless is not supported.
- The HC1/HC3 data collector will now correctly save, recall, and reconnect to devices when using Long Range Bluetooth.
- GNSS with IMU -- For averaged readings calculated with tilted pole corrections, the IMU data will no longer be written in the rw5 file. Due to the GPS record for these readings being a result of the averaged tilt-corrected readings, the IMU data was no longer valuable for reprocessing and would lead to incorrect results after reprocessing. The following note will be recorded for these types of readings, "--Average result with Tilted Pole Correction".
- Simple parallel non 90 degrees polygons now compute slided areas more reliably.
- The New Job setting "Use Last Job Localization" will no longer apply when an existing job is opened.
- SurvCE running onboard CE 5.0 total stations will now offer color for layers.
- Hungarian Coordinate systems using grid files will no longer falsely display a Localization Error dialog.
- New jobs now write the correct MO/Raw RW5 value for the Azimuth Direction.
- STK Line/Arc by two points now works more reliably.
- Spiral curves are now more reliable when creating CL files.
- SurvCE can now switch correctly out of hybrid mode when GPS Simulation is being used.
- SurvCE will no longer show an incorrect 40 meter warning message when the user configures a GPS base and enters an orthometric height.
- Point entry for benchmark points has been improved to not overwrite while typing.
- The "Ignore Elev" checkbox no longer has the potential to get stuck (cannot check or uncheck) in Hybrid+ resection.
- Unregistered (demo) copies of SurvCE will now display the point list correctly when a CRDB file is in use.
- GPS point store, GPS fixed and GPS loss of fix now make the same sounds they did in Version 5.x.
- Robotic total stations will now return to Face 1 after a F2/F1 shot in benchmarks.
- When software orientation is set to Auto, SurvPC will now lock its orientation correctly.
- The FS and BS prism offset labels in the RW5 file are no longer switched. This was a cosmetic error only.

- SurvCE will now correctly display all items when going through the Hybrid+ wizard on smaller portrait data collectors.
- The base translation by rover Base Info display has been fixed. Previous versions could display a date in the longitude field. This was a display only problem.
- Generic Bluetooth will now correctly connect to the selected com port, and will save/load the chosen com port setting correctly.
- Advanced Occupation now adds targets more reliably.
- When storing the base position to the coordinate file during a base setup by local coordinates, the elevation will now correctly be stored.
- Export Ascii to user-defined file other than XLS and CR5 will no longer unnecessarily prompt to replace an existing file.
- The localization report dialog now displays the correct title in the top bar.
- SurvCE no longer has the potential to retrieve the wrong rod height in text mode.
- The live display of total station measurements when not tracking (angle only) will now be closer to previous versions.
- SurvCE no longer has the potential to throw a projection backup validation message when connecting to the RTK network.
- The pick from point and pick from map options now work correctly in offsets.
- It is no longer possible to fail when using the calculator from within an edit box in graphic screens.
- SurvCE will no longer have the potential to store the wrong base position when setting up using local coordinates.
- Fix error in Equip / GPS Base / From Known Position / Use Local Coordinates localization calculation.
- SurvCE will no longer create an unneeded InstConfig folder.
- The "Send Rover Position To Network" option will no longer appear at the base.
- It is no longer possible to get duplicate RW5 records when editing points.
- When the backsight target is a prism and the FS is reflectorless, there is no longer a potential for the backsight rod height to be overwritten with the FS value.
- RNF (road network file) from Carlson Software/Office now works as designed when using SCT/Subgrades.
- On CRDB jobs, certain files will not be misnamed as <name>.crdb.xxx instead of <name>.xxx.
- Reprocessing the raw file from within the Localization dialog will now use the scale point of the current job.
- The Leica CS15 can once again use F11 together with letter keys to produce punctuation.
- There is no longer a possibility for a software failure in advanced occupation for non-English languages.
- Fix an error in height factor calculation when using both a geoid file and localization points.
- Vertical only localization now works correctly.
- The "Read GPS" Grid to Ground method will no longer erroneously apply the localization to the local coordinates it calculated.
- The Leveling routine will no longer attempt to access road files when "Use Road Files" is unselected.
- The GPS Grid to Ground scaling status screen now displays the combined scale factor instead of the combined inverse, displays the geoid offset as positive always, and displays the geoid

offset in job units instead of meters.

New Features and Improvements SurvPC:

**Note that all relevant features in SurvCE are included in SurvPC*

- SurvPC will now offer more clear error messages when windows permissions block access to required or selected files.
- SurvPC Esri now supports third-party plugins.
- SurvPC now supports the "YYYY/MM/DD" date format.
- A user with his own ArcGIS engine license can now use it when in demo mode.

Bug Fixes in SurvPC:

**Note that all relevant bug fixes in SurvCE are included in SurvPC*

- SurvPC no longer has the potential to highlight multiple objects on the screen when a “smart” stylus is used. These styluses are sold with the CS35 tablet, for example.
- UI improvements have been made for narrow screens to ensure that all options are visible.

Version 6.01

Release Date: Sept. 21, 2018

New Instruments Supported:

- Leica TS13 Total Station
- Stonex R35 Total Station (including onboard)

Other New Features and Improvements SurvCE:

- All sound related settings are now consolidated in the "Audible Settings" button from the Advanced Settings helmet item. Stakeout prompting settings remain accessible from the Stake tab of settings.
- The Stake Report dialog now includes the Point ID and Description of the point being staked out for Stake Points.
- Hybrid+: Resection now displays GPS receiver status and errors when "Use GPS" is enabled.
- Hybrid+: SurvCE now displays the levelling dialog when storing points from total station in Localization.
- Hybrid+: SurvCE now notes each Cross Check in the RW5 raw file as a comment, noting that a cross check was performed and listing the horizontal and vertical residuals.
- Hybrid+: The Cross Check report dialog now offers the option to retry the cross check. This will repeat the total station search and read, and get a new position from the GPS.
- Hybrid+: Users may now enter into Store Points, Stake Points, Auto by Interval, etc. in GPS mode without setting up their Total Station. Attempting to switch instruments with a TS that has not been setup will show the Backsight dialog and prompt users to setup their instrument.
- Hybrid+: GPS Search is now available in Resection after the second hybrid point is taken.
- Hybrid+: A new "silent" option is now available for Cross Check. This option will perform the cross check and note the error in the RW5 but suppress any errors.
- Hybrid+: GPS quality will now be noted in the RW5 raw file whenever a Cross-Check is performed.
- Hybrid+: It is now possible to switch jobs without restarting Hybrid+. Note that a crosscheck must be performed to validate setup on the new job.
- Some GIS options have been relocated to Advanced Settings->GIS Input Settings.
- Web Map Overlays WMTS option now supports WMTS servers that offer CRS of :3857 and WKSS of :GoogleMapsCompatible.
- Australia GDA2020 Coordinate Systems are now supported, including WA Project Grids.
- SurvCE will now warn the user if an RTCM3 projection is received and the 1021-1027 option is not enabled. This feature is limited to data collector internet.
- RW5 file reprocessing now supports GNSS tilt records.
- SurvPC now offers users the ability to increase the precision of their NMEA GGA messages by 1 decimal point when setting up their NMEA output.
- SurvCE now requires RTCM3 projection dialog to be displayed before finishing GPS configuration or connection when the 1021-1027 option is enabled.
- Robotic total stations will now rotate more accurately to the reverse face during set collection.
- Users may now change the date format used in the RW5 file under the System tab in Job Settings.
- The reconnect button in the helmet menu has been enhanced for reliability.
- SurvPC will now save valid WMS URLs in a drop down list to make for easier switching

between WMS servers.
- SurvCE will now warn the user when the backsight is accidentally measured in the reverse face.

Bug Fixes in SurvCE:
- Out of order calls to get crd points from alphanumeric and CRDB now works correctly. This corrects a problem when using JPN in field to finish.
- AUSTRIA/MGI-GIS Grid/Austria West Zone, AUSTRIA/MGI-GIS Grid/Austria Central Zone, AUSTRIA/MGI-GIS Grid/Austria East Zone have been improved.
- The SurvCE shortcut will now start SurvCE correctly when the user has chosen to install somewhere other than root.
- Processing RW5 files with depth sounder data now works correctly.
- The point list will no longer appear corrupted when the current Job is reselected in File/Job. Note that this was a display issue only.
- Hybrid+: Users will no longer receive IMU-level prompts when storing the calculated occupation point in Resection.
- Hybrid+: RTCM3 projection is preserved when configuring Hybrid instruments.
- Hybrid+: Performing a GPS Search with "Ignore GPS Verticals" enabled will no longer adjust the zenith angle.
- Hybrid+: The GPS Search icon will now appear in the drop down search list when GPS Search is available during a Hybrid Resection.
- Hybrid+: SurvCE will now ensure that both the TS and GPS equipment setup information is written to the RW5 file when Hybrid+ is used.
- Hybrid+: GPS Hrms/Vrms records will be added to the RW5 file whenever a Hybrid Resection point is taken.
- It is no longer possible to get into an endless data-validation loop when entering invalid data in some edit boxes.
- The "One Shot" icon will now work in GPS mode.
- When exiting SurvCE/PC, any received RTCM3 projection is now discarded. This prevents the old projection from being used when the job is reloaded.
- Storing a point now warns user if RTCM3 "Use 1021-1027" is on but there is no current RTCM3 projection.
- SurvCE will now wait for the RTCM3 projection to be received before finalizing configuration when the option is enabled.
- There is no longer a potential to fail when feature code groups are used and the group definition is no longer valid.
- The breakline dialog inside of Grid Scan will now appear correctly. Previously the topbar could appear corrupted.
- The "read" button in point projection is now working for total station.
- SurvCE will now find a user defined APN in the list if the *.apn file exists.
- ISPOL SC1 import has been improved to better handle identical offsets (vertical walls, for example).
- NGVD29 coordinate systems now work more quickly.
- Pressing the Defaults button for NMEA output port settings will now give the correct default values.
- SurvCE no longer has the potential to falsely display the localization error dialog when receiving RTCM3 projections.
- GeoPak Import now works correctly.

- Set collection will now use the user-entered description correctly. Previously there was a chance that an old description could be used.
- Export DXF/DWG now better handles the INSERTS/BLOCKS for Entities which have attributes. E.g. Carlson Block Points. Avoids issues when loading the data in AutoDesk products.
- Line stakeout is now more reliable when using average readings.
- GPS Average now applies the RMS tolerance correctly.
- Now showing last tolerance exceeded instead of reading count when tolerance fails in Average GPS dialog.
- SurvCE no longer has the potential to skip some direct face measurements in set collection.
- Stakeout in TEXT mode is now working correctly.
- TS Levelling dialog now uses correct default setting for leveling instrument and buttons for Read, Store, etc. are now shown correctly
- GPS Rod height now correctly transferred from Version 5 Rover and Base settings.
- When selecting a new/existing job on startup, the default filename will use the correct file extension. Previously, the default filename would use a .crd extension even if the last file used had a .crdb extension.
- Port settings from Version 5 files now imported correctly.
- The backsight height will no longer be erroneously written over the foresight height when going to the robotics tab from store points.
- The Check BS routine in the Robotics tab no longer has the potential to use the wrong target type.
- Export Drawing now relies on the setting used by customers which produce and deliver directly the drawing with no Office intervention on the data, setting> "Disable F2F descriptions when the user edits the polylines in Map"; in this case although the linework is no longer Carlson F2F qualified, the software will still export the Points (inserts) to the appropriate LAYER.
- SurvCE will now show the error values in the correct distance units during sensor calibration.
- Changing settings from the Single Setup, Remote BM, and Robotics tabs is now more reliable.
- SurvCE will no longer incorrectly add the label “EDM Mode” into the RW5 file.
- The stake points routine will now show the “Turn To AR” data even when no distance is available.
- When occupying an unknown point with the same point ID as the next expected foresight point ID, the next expected foresight point ID will be incremented automatically.
- Cancelling Configure Rover now makes sure previous rover is configured.
- When selecting a new job, if the last job used was a .crdb type and the new filename does not have an extension typed in by the user, .crdb will be the file type for the new file.
- SurvCE will resume updating angles in the joystick screen after a turn or search command.
- The Sonarmite Depth sounder is now working correctly.
- Leveling "Update Points in Job" dialog now shows correct Point Elevation for beginning benchmark point.
- Leveling "Update Points in Job" dialog now shows correct elevations for open loop traverses.
- GPS rod heights will be correctly written to the note file when the option is selected by the user.
- When staking out in locked mode, and the read button is pressed, the instrument will now use Stakeout review instead of attempting to store the point.
- There is no longer a potential for failure in stakeout when moving to next point or using the map from the stakeout screen when “Stake Review” is active.
- The localization report now correctly displays the Combined Scale Factor. Previously it

displayed the 1/CSF value.
- Grid to Ground manual entry is now working as designed.
- There is no longer the potential for total stations to fail to rotate during a traverse when D&R is enabled.

New Features and Improvements SurvPC:

**Note that all relevant features in SurvCE are included in SurvPC*

- Esri version 10.6 is now supported.
- A PRO or PRO set file will be saved whenever a complex or simple profile is displayed. SurvPC will also generate a PRO settings file.
- SurvPC will now only offer the “Force All Features To Be Selectable” option when an Esri job is being used.
- The Res folder will now be deleted by uninstall unless the user copied additional files to that location.
- Hybrid+: SurvPC will now do a voice prompt whenever a cross check has failed or passed when using "Silent" Cross Check Mode.
- Graphics for checkboxes, radio buttons, etc. have been updated for a crisper image.

Bug Fixes in SurvPC:

**Note that all relevant bug fixes in SurvCE are included in SurvPC*

- It is no longer possible to launch multiple simultaneous instances of the software on very fast tablets. This unusual situation could result in unexpected errors.

Version 6.0

Release Date: July 11, 2018

New Instruments Supported:

- Carlson BRx6+
- CHC M6
- CHC i70
- ComNav G200
- ComNav T300+
- geo-Fennel FGS100
- Geomax Zoom 90S
- iGage iG8
- HiTarget QBox8
- Hemisphere C321
- Hemisphere A326
- South G1+
- Stonex S800/S800A
- Stonex S900/S900T/S900A
- ** Support for the Focus 10 and Trimble 5600 have been removed*

New Data Collectors Supported:

- CHC LT35
- Trimble Juno 5
- Pentax PS9

** Support for Windows Mobile 5 data collectors has been removed in version 6.0.*

Major New Features and Improvements SurvCE:

- SurvCE now offers the Hybrid+ Survey module to survey with both GPS and Total Station at the same time. Visit www.survce.com/hybrid for more details.
- Log Raw GPS has been redesigned to allow static logging without configuring an RTK Rover or Base. The process has been streamlined for ease of use.
- SurvCE now offers an advanced total station search icon to allow selection of search type from inside of any live survey screen.
- GNSS Analysis has been updated to the 2017 version.
- SurvCE now supports a laser pointer icon in all live survey screens for any total station with a laser pointer.
- SurvCE now supports web map overlays from Google, Open Street Maps, ArcGIS REST, and user defined Web Map Servers (WMS/WMTS/TMS).
- SurvCE can now read and export PRJ projection files.
- SurvCE now includes a Robotic Total Station Simulation driver for demos and testing. Pressing F12 will switch modes between standby, locked, and tracking in the simulator.
- SurvCE now includes Snap options inside of store points to facilitate drawing in the field as part of the survey process. An UNDO option has also been included.
- Total station control icons Search, Lock/Track, Target, and Laser Pointer will now be available in more screens.

- A new status icon will now show the status of the instrument connection from all screens.
- SurvCE now includes a "GIS Inspector" feature in the Map screen that allows viewing and editing GIS attributes as linework is created and edited.
- SurvCE now supports obstructed view stakeout mode.
- SurvCE now includes a "Surface Inspector" for elevation difference which allows storing and staking points from the surface as well as viewing cut/fill to the surface using Snaps.
- SurvCE now displays a red tolerance bar to indicate that a measurement is currently outside of a user defined tolerance.
- SurvCE now supports an automatic backsight check in the joystick screen.
- Auto by Interval when level now stores the most level reading which was recorded during the required level tolerance period.
- SurvCE now supports continuous reflectorless measurement for total stations which support the feature.
- SurvCE now offers the ability to demo the roading module on an already registered copy of the software.
- SurvCE now supports a two-prism pole in the 2-Point offset routine.

Other New Features and Improvements SurvCE:

- Labels related to scaling in the scaling dialogs have been updated to more accurately match the value being displayed.
- On the Process Raw dialog, a GPS button has been added next to the scale setting. Clicking this will auto-fill either the Combined Scale Factor (Ground to Grid) or the localization scale from the current job.
- On the Edit/View System dialog, a GPS button has been added next to scale setting. This button will take a GPS measurement and auto-fill a combined scale factor.
- Map screen redrawing has been improved to increase speed.
- SurvCE now supports coordinate System "UNITED ARAB EMIRATES/WGS 84/Dubai Local TM".
- The Czech grid files have been updated to add support for 1710.
- Projection type Hotine_Oblique_Mercator_Azimuth_Center is now supported.
- Coordinate system CANADA/NAD83/MTM Zone 11 is now supported.
- Coordinate system "USA COUNTY KS/KRCS" (20 zones) is now supported.
- Transverse_Mercator_South_Orientated is now supported. South African projections have been updated to use this option and scale factors have been switched for -1 to 1.
- In CarlsonCloud, a file is now sent immediately if the user confirms it. It is no longer necessary to hit the send button.
- The Pause/Break button will now switch the GPS Simulation between states (autonomous/float/fixed).
- The Convert WGS84 to NAD83 checkbox has been removed from the localization dialog.
- The Coordinate System Report (HTML) now writes scale factor and latitude of origin with more precision.
- In MAP/CAD Basic when background is set to dark color, SurvCE now displays the UCS icon correctly.
- SurvCE will now always prompt before connecting to an instrument, allowing the user to bypass connection more easily when necessary.
- When running F2F in Carlson CAD, points created when drawing polylines will now be part of the feature class.
- When exporting drawing data in CAD, the user can now decide whether to export nodes or skip in the export.

- SurvCE now offers options for Optimal Proximity STK Distances, Australia/Europe. E.g. km/m/mm, km/m/cm. This option is available under helmet->Advanced.
- SurvCE now supports export format PREGEO .dat for Italian Cadaster support.
- GIS CAD Basic now automatically stores points for Centroids, F2F creation using MAP commands.
- SurvCE now allows associating attributes with multiple fields.
- SurvCE now supports Start and End during GIS prompting.
- The Input/Edit Attributes option is now more visible. This options allows the user to show and remove attribute types.
- The "Point stored" message is changed to "SIMULATION point stored" for simulation, and lengthened to 800 ms.
- Nautiz Z4, Zenius -- SurvCE will use allow internal compass use on Nautiz X4 and Zenius data collectors.
- SurvCE will now show status "Turning" when the joystick is being moved in the robotics screen.
- SurvCE now offers the user all orientation options (Set zero, set to current, set azi, set to:) from the Configure button of the Resection screen. The prompt to set zero on the first resection point has been removed, as final orientation of the instrument now happens at the end of resection.
- In 2 point offset, a selected point's coordinates will populate immediately after a point is selected. Previously, an enter was needed to cause the update.
- MAP/Polyline and 3DPoly allows: +/-/Len (Right or Left or Length segments added to the entity).
- For all polyline commands in the map when Len = Extend by Brg+Dist is used, the software will now allow escape without going back to the main menu.
- CAD Basic Polyline Commands (2D, 3D, 2D (Road), 2D Free Sketch) now support Direction and Distance.
- The resection routine now includes a point count in the header bar.
- If "Average with Prior Measurements" is selected when storing a point with an existing ID in GPS mode, the software will check the distance between the new coordinates and the existing coordinates. If this distance is greater than 10cm, the user will be prompted to confirm that they wish to continue with the average. This should prevent errors of incorrectly averaging to the wrong point ID.
- Constellation checkboxes have been moved from the Advanced dialog under the Receiver tab to their own dialog "Configure Constellations".
- Proximity Radius setting has been moved from the JobSettings-Stake tab to the Equip-Tolerances page.
- SurvCE now includes a line in the raw file to report the min, max and average latency when averaging.
- SurvCE will no longer show the laser tab in offsets when the laser is not active.
- In demo mode, if the software blocks the user from storing because the point limit is exceeded, SurvCE will no longer increment the point ID, giving the false impression that the point was stored.
- Configuration and coding style options for the “One Touch” feature have been moved to a more convenient location.
- Manual Transfer is now available as an option in the SurvCE desktop demo to allow the demonstration of the CE File Transfer Tool from a Windows device.
- SurvCE now supports Cutsheet options Design North/and East for STK Points.
- Users can now choose a point from their current job to seed the GPS Simulator. This new

option is available in GPS Utilities or in point details within the map and live survey screens.
- GPS Simulation options for rotation increment, acceleration rate, and jitter have been added to GPS Utilities to allow for more user control.
- SurvCE can now run the command “View 3D Profile” using a 3D Polyline.
- ComNav AllStar -- The F2 key will now function as the enter key.
- The option "Increment number or time on valid Readings" in advanced GPS average has been renamed to "Ignore Invalid Readings". SurvCE will now show the correct status when readings are rejected with this option enabled. The setting will now be retained between sessions.
- The option “Use Point Symbols” has been renamed to “Use Symbols from FCL” and moved to Point Settings->View Settings for convenience.
- Point protect now works more intuitively when importing ASCII text files without point names.
- GNSS Analysis now allows turning on/off Vertical Blunders in the User Interface.
- SurvCE now includes a new option to allow use of Section Typical Templates; interpolation of cross sections when there is an equal number of angular points left/right will use now the string's contiguity.
- Export Ascii Custom now includes options for exporting: DEPTH - Raw depth sounder reading. SEAFLOOR Z - Always elevation adjusted for depth sounder (Excludes Water Elevation). DEPTH_QUALITY - Raw depth sounder quality.
- SurvCE now exports the coordinate system information as part of a LandXML export.
- SurvCE now supports TDS Ascii Export. Infrared, SDR and TDS transfer have been removed.
- SurvCE now has increased protection against the creation of an invalid localization by introducing logic to automatically turn off horizontal or vertical control on newly added invalid points.
- When an existing localization file is loaded, the geoid separation information will be compared against current user settings. Current user settings for geoid separation will override geoid separation data in the localization file. A note regarding the change will be recorded in the rw5 file.
- The One point sensor test dialog now grays out the errors when the receiver is not fixed, noise is detected, or tilt is more than 30 degrees.
- The NMEA GGA messages generated by SurvCE will now always includes the correct geoid separation, latency, and RTK Base ID when available. Digits of precision for lat and lon in all NMEA messages generated by SurvCE/SurvPC has been increased from 6 to 8.
- The internal compass of the Nautiz X8 can now be used for guidance in proximity stakeout. Caution: Hold the data collector near level. Too much pitch/roll will cause X8 hardware not to provide compass reading.
- RW5 file will now note the breakdown of satellite count by constellation type. Example: --HRMS:0.065, VRMS:0.066, STATUS:FIXED, SATS:16[G10,R6], PDOP:2.371, HDOP:1.100, VDOP:2.100, TDOP:1.997, GDOP:3.100, NRMS:0.043, ERMS:0.049. This is supported on limited drivers at this time.
- The Quickview dialog for onboard total stations now includes total station battery status.
- The Monitor Skyplot routine can now display S/N ratios for more than 24 satellites. Press the large arrow icon to scroll to a new set of data.
- SurvCE now offers the option "Use Previous File" in elevation difference. This allows speedier access to the elevation difference routine by skipping file selection and auto-loading the last used surface.
- When a geoid is specified, only the name will show on the monitor skypot screen, instead of the entire path.

- SurvCE will now turn to the correct point in stakeout when using reflectorless with a target height.
- JPEG format is now supported for map backgrounds, and decoding PNG/JPEG is now significantly faster.
- CRDB filenames now support Latin characters.
- Antenna calibration values have been updated to NGS14.
- The warning threshold for low disk space in raw data logging has been increased from 100KB to 1MB to better warn the user.
- When exiting the software, or switching instruments, SurvCE will now disable the Total Station laser pointer if it is on.
- Users will now be prompted with "Operation Completed Successfully" when exporting DXF files or SHP files.
- SurvCE now displays "Vrms" and "Hrms" instead of "VRMS" and "HRMS" to save space in the bottom bar and in other displays.
- Import Ascii now assumes destination is the current job. The option to choose another job has been removed.

Bug Fixes in SurvCE:

- SurvCE will no longer fail in some cases when attempting to use the leveling routine.
- The wait cursor will no longer appear on top of the success dialog in cloud account creation.
- SurvCE will try to determine whether internet is available before attempting connect to NTRIP using data collector internet.
- When using Data Collector Internet registration on a data collector, the OK button on notification of successful registration will once again work and the top bar will not be scrambled and unselectable.
- The base name is now fully displayed in GPS Monitor.
- Is is now possible to cancel from the “checking internet status” dialog.
- Legacy geoids with 0-360 longitudes are now working correctly.
- Entering Configure Rover, Base or Total Station no longer tries to make a connection.
- The user will no longer be warned that the base position is unavailable when the software has not yet obtained a valid position.
- Text on the "Configure NMEA Output" button will no longer run off the screen when logging.
- The degree symbol will appear correctly when SurvCE runs on an onboard TS with a Chinese/Korean code page.
- SurvCE will display the complete prompt for reading including Reading # in the Resection dialog.
- When using feature codes via the button next to the description box, all icons for the codes will be displayed. Previously icons could be hidden the first time a job was loaded.
- When recording an average position the timestamp for the start of the average in the rw5 will come from the first actual reading of the average. Previously, it was possible for this timestamp to be from the reading prior to the start of the average.
- When Job Settings/ Auto Store Pick Points from MAP is disabled, SurvCE will still create a BK point in resection if needed.
- SurvCE will now hide the 1021-1027 option when the network type is not NTRIP.
- SurvCE now hides "send NMEA to network" when Listen-Listen is selected.
- Newly created rw5 files for crd or crdb files created during the import ascii process will now contain the correct job name in the header line.

- When a user selects Local Coordinates for Base configuration and those coordinates match grid coordinates for the current autonomous position within 5" of latitude and longitude, and the selected localization file is empty, the base will be configured with the latitude, longitude and elevation that have been calculated from the grid coordinate entered.
- Survey sets will now be considered incomplete sets if either FD or FR Sdist == 0. This eliminates invalid records in rw5 files when the reverse face is canceled during a survey set.
- SurvCE will display a better message when cloud login fails with error code that probably means collector date is off by more than six months.
- SurvCE no longer has the potential to fail when the com settings button is pressed for GPS Search.
- SurvCE now hides the Windows keyboard icon and the Windows taskbar when capturing photos for points.
- SurvCE will now block out of level measurements for the fixed (level) point in the one point test.
- The eLevel is now visible in reverse graphics mode.
- Removed Data Collector Internet from Base Configuration of GPS that don't support it.

New Features and Improvements SurvPC:

**Note that all features in SurvCE are included in SurvPC*

- Bluetooth now connects better in Windows 10 for most devices.
- Audible prompting in stakeout is now supported. This feature can also prompt on instrument status changes.
- SurvPC now supports SQL query of the MXD in SurvCE.
- SurvPC now supports Esri version 10.5 and Esri related features have been enhanced.
- SurvPC now allows creation and use of virtual serial ports in the data collector Nmea out routine. This makes it possible to send positions for use by another program running on the tablet.
- The Join feature has been improved to detect and remove identical features if they become part of a new entity.
- The EDIT/ADD option now allows a user to connect two feature classes.
- MAP commands dedicated to manipulate the vertexes, break, etc. will now display the vertexes using symbols from the pgn (s) / markers.
- The process for filling in gaps of unused points for numeric crd files has been improved.
- The Esri registration dialog has been updated and redesigned for clarity.
- SurvPC running on a tablet will better control the OS keyboard while more reliably allowing it to appear when a different application becomes active.

Improvements And Resolved Issues By Manufacturer

GNSS Receivers

Carlson

Version 6.15

- BRx7 --The BRx7 can now recognize and use the offsets for non-standard NGS antenna names that come through RTCM messages.

Version 6.14

- BRx7 -- When the RTK correction type is set to "Auto" at the rover, the software will now check for the correction type in use from the receiver and query the antenna offset from the base if the correction type is RTCM3.x.
- BRx7 -- The Sensor Utilities button will now appear in GPS Utilities for the BRx7 on the Surveyor+.
- BRx7 -- NMEA output options 10Hz, 5Hz and 2Hz options are now supported.
- BRx7 -- The method used to validate newly entered frequencies for the internal radio has been modified to allow four specific frequencies commonly used in Australia to pass.
- BRx7 -- The GPS Utilities screen now offers a self-check option.
- BRx7 -- IMU functionality (including e-level) is no longer available in base mode.

Version 6.12

- BRx6/BRx7 -- The radio firmware version has been moved into a button in the top bar to better fit controls on the screen in radio configuration.
- BRx6+Brx7 -- On CE data collectors, when the data collector suspends and reawakens, the software will now force Bluetooth reconnect.
- BRx7 -- It is no longer possible for the frequency hopping options to be displayed for UHF radio protocols in radio configuration.
- BRx7 -- The software will no longer falsely report some radio frequencies as being incompatible with the channel spacing.
- BRx7 -- The BRx7 will no longer show tilt values when tilt is not initialized.

Version 6.10

- BRx6/BRx7 -- When RTCM MSM is used with Data Collector Internet or Listen-Listen and antenna offset values are provided from the base to the rover, SurvCE will now apply those offsets to the base and rover positions.
- BRx6/BRx7 -- When updating the channel table of the internal radio, only the current channel's channel spacing and max power will be modified. Previously, the software would set the channel spacing and max power of all channels to match the current values selected by the user.
- Carlson BRx7 -- The software will now prompt the user to enable incline adjustments after a successful pole calibration.
- Carlson BRx7 -- When entering a new frequency value for the internal radio, the software will present an error if the entered frequency value is not compatible with the center frequency and selected channel spacing.
- Carlson BRx7 -- The software will now block frequencies above 470Mhz or below the minimum supported value for the radio (typically 403MHz). The user will be presented with an error message in this case and returned to the configuration screen with the entered frequency

highlighted.
- Carlson BRx7 -- When modifying settings for the internal radio, the Scrambling option will no longer be displayed for the TrimTalk protocol.
- Carlson BRx7 -- The channel spacing no longer has the potential to incorrectly get forced to 25KHz when Satel and Trimble protocols are used.
- Carlson BRx7 -- For the internal radio, in order to modify a frequency or change the channel spacing or maximum power level, the user must now agree to comply with local regulations.
- Carlson BRx7 -- The wording of the activations/subscriptions list in the instrument info screen has been changed from "L-Band" to "aRTK" to avoid confusion with Atlas options.
- Carlson BRx7 -- When RTCM3.x is used with an internal or external modem or radio and antenna offset values are provided from the base to the rover, SurvCE will now apply those offsets to the base and rover positions. This should resolve small elevation discrepancies in mixed base/rover setups that have previously been solved by modifying rod heights.
- Carlson BRx7 -- If the protocol is Freewave or the frequency of the selected channel is 0 MHz, neither the protocol nor the channel will be set in the internal radio. This will prevent errors from occurring in the radio. The user will be issued a warning in this scenario.
- Carlson BRx6 -- Support for very old radio firmware (Pre October 2016) has been removed. All BRx6 users now require updated firmware for their internal UHF radios to use versions > 6.09.

Version 6.09

- Carlson BRx7 -- Logging raw data has been improved. Correct information about the receiver, antenna, and board type will now be inserted into the file, either by SurvCE or the firmware. Please update BRx7 to WebUI firmware 0.48.201201 for best results.
- Carlson BRx5 -- When configuring the base station, the user supplied broadcast ID will now be correctly sent to the base and broadcast with the RTK corrections.
- Carlson Brx6/Brx6+/Brx7 -- SurvCE will now prompt the user to shut down the receiver on exit.
- Carlson Brx5/Hemisphere S320 -- The DGPS max age setting will no longer be set to 0 in Raw only mode.

Version 6.08

- Carlson NR3 -- SurvCE will now check a new status flag in the position message to determine if a rod height has been applied to the position. If a rod height has been applied, SurvCE will invalidate the position and set the rod height to zero. For these receivers, the rod height is always applied in the SurvCE software.
- Carlson NR3 -- The "Save Config" option is now available at the base. This was already an option at the rover.
- Carlson BRx7 -- When changing internal radio settings, the software will now first ensure that the receiver is set to "UHF" mode. Otherwise, some commands to change settings will fail.
- Carlson BRx7 -- The timeout for setting zero in the hardware ebubble is now 10 seconds. This reduces failures.
- Carlson BRx7 -- Renamed "Internal UHF" to "Internal Radio" as these internal radios also support frequency hopping/spread spectrum modes.
- Carlson BRx5 -- The level bubble will correctly appear in the Store Points screen when "View GNSS Level" and "Use E-Bubble" are turned on.

Version 6.07

- Carlson BRx7 -- Max allowable incline for tilted pole has been increased to 60 degrees.
- Carlson BRx7 -- Pole calibration is now supported.
- Carlson BRx7 -- A new blue "tilt warning" icon now shows when the IMU is initialized but not ready for use.
- Carlson BRx7 -- The Set Sat Status option is removed from GPS Utilities to fix a display issue. The feature is available in monitor skyplot.
- Carlson BRx7 -- The site name and description will no longer be missing from the static logging file when collected in GPS Raw Only/Static mode.
- Carlson BRx7 -- The aRTK setting for the rover will now be applied properly.
- Carlson BRx7 -- The scrambling radio option is now available on the radio configuration screen.
- Carlson BRx7 -- The internal UHF radio now supports setting and retrieving the hopping region and hopping table when using the Freewave 900M protocol.
- Carlson BRx7 -- NMEA output from the serial port is now supported.
- Carlson BRx6/BRx6+/BRx7 -- When downloading the sourcetable through the internal modem, if an error condition occurs, the software will no longer wait out the 2 minute timeout before bailing out and reporting the error to the user.
- Carlson BRx6/BRx6+/BRx7 -- When logging a static file at the base, both the marker name and the marker number will be written to resulting RINEX file.
- Carlson Brx6/Brx6+ -- In the One Point Test for Sensor Calibration, more details will be provided about the status of the tilt sensor data.
- Carlson BRx5/BRx6/BRx6+ -- When RTCM3.x is used with Data Collector Internet or Listen-Listen and antenna offset values are provided from the base to the rover, SurvCE will now apply those offsets to the base and rover positions.
- Carlson NR3 -- When starting a static log file, the user will be able to enter the site name and description before the file is started. This will ensure that this data is properly recorded in the file.
- Carlson NR3 -- Tracking of the L5 signal for GPS will now be turned on whenever GPS satellites are used.
- Carlson NR3 -- Static and Kinematic logging have been re-enabled. Stop & Go logging will continue to be disabled. Note: the rod height in the binary data file will always be set as zero. The user must apply the rod height in their post processing software. This change will not affect data submitted to OPUS, as OPUS has always required the user to supply the rod height at the time they submit their RINEX file.
- Carlson NR3 -- SurvPC will now send a command during the rover configuration to ensure that all Galileo E5 signals will be tracked. Without this, the rover could potentially ignore Galileo satellites in common with the base station.
- Carlson NR3 -- New base RTK output option, "RTCM v3.2 MSM" is now supported. This option will output MSM4 messages for each constellation in use. The original "RTCM 3.0" option will no longer mix MSM4 messages with legacy messages. GPS (1004) and Glonass (1012) will be the only observable messages broadcast for the RTCM 3.0 option.
- Carlson NR3 -- Driver will no longer poll for a battery status if a cached battery status is unavailable. This prevents communication delays.

Version 6.06

- Carlson BRx6/BRx7 -- SurvCE now allows disabling the GPS Satellite constellation.
- Carlson BRx6/BRx7 -- The software will now warn the user when the battery is low.
- BRx5/S320 -- If the user does not supply a Bluetooth pin code and the bond fails on the first attempt, SurvCE will make a second attempt with the default pin (0000).
- BRx6/BRx6+ -- When logging static data at the base station, if the base point was stored, the point ID will be used as the Marker Name. If the base point is not stored, the RTK ID number will be used as the Marker Name. If no RTK ID is given by the user, the name of the static file will be the Marker Name (default). Also, the '.bin' has now been removed from the Marker Name. It is still part of the file name.
- If no BT PIN is entered by the user and the connection fails, the software will retry using the default PIN.
- NR3 -- Static, Kinematic and Stop & Go logging have been temporarily disabled. These were removed due to changes in how rod height is handled in SurvCE.
- NR3 -- SurvCE will now always send a zero rod height to this receiver to reduce the chance of error on lost rod height when the receiver reboots. All rod heights adjustments will be handled only in SurvCE.

Version 6.04

- Carlson NR3 -- Fixed an issue when configuring the base that may have caused the base position to be off by the amount of the L1 offset of the antenna.
- Carlson NR3 -- The IMEI number for the internal modem will now be displayed in the modem configuration screen. This may require firmware 1.3.1 and higher.
- Carlson NR3 -- SNR values for Beidou satellites will now be displayed in the Satellite view.
- Carlson BRx6+ -- When RTCM3.2 is selected at the base, the 1004 and 1012 messages will no longer be broadcast. These are redundant due to the MSM messages that will be broadcast.
- Carlson BRx6/BRx6+ -- Base receivers outputting RTCM3.0 will no longer include MSM messages. These are used for RTCM3.2 only.

Version 6.03

- Carlson BRx6 -- The SureFix feature will be disabled for receivers running firmware versions 5.9Aa06 and 5.9Aa07. These 2 versions of firmware contained a bug that impacted the performance of SureFix.
- Carlson BRx6/6+ -- For receivers with firmware version 5.9Aa07 and higher, SN2 and SN5 values will be displayed in the Skyplot screen.

Version 6.02

- Carlson BRx6 -- If the connection type is set to cable, the IMU option will be disabled. Tilt sensor data is not available over cable connection.

Version 6.01

- BRx6 -- Port baud rate options for NMEA output from the receiver will be determined based on the hardware version. Hardware version 1.0 only supports 115200 baud rate from the 7-pin port (USB tail on the cable). Hardware versions 1.1 and up support baud rates from 9600 to 115200 on the 5-pin port (no USB tail on the cable).
- BRx6 -- NMEA output that is configured from the Receiver/Advanced section will now

correctly stream from the Bluetooth and Cable ports of the receiver.

Version 6.0

- BRx6 -- "Auto Start Base" feature is now supported for the base station. When this option is enabled, the receiver will restart in base mode with last used settings every time it is powered on.
- BRx6 -- RTK reset command will be sent after the datalink parameter is changed to use LBand (Atlas) only, when the user has selected Atlas-only RTK. Previously, the RTK reset command was sent before the datalink parameter was set.
- BRx6 -- When Atlas LBand is selected as the radio type for RTK, the REF tab will not be visible in Monitor/Skyplot.
- 10Hz will no longer be shown as a "Subscription". This is a permanent activation on all BRx6/S321 models.
- BRx6 -- When the position status is Atlas (Converging) or Atlas (Converged), the program will no longer warn the user that the base position cannot be stored. Base Position does not apply in this situation.
- BRx6 -- When Atlas LBand is selected as the radio type for RTK, all unnecessary options will be hidden.
- BRx5 -- SurvCE now supports downloading the GPS/GLONASS almanacs. This is used for mission planning.

ComNav

Version 6.09

- ComNav GPS can now enable/disable the Galileo constellation.
- ComNav GPS now warns when the GPS battery is low.

Version 6.07

- Antenna definitions now include radius and shmp values to allow for slant antenna measurement.
- Base output for RTCM MSM now works correctly.

Foif

Version 6.09

- The pole calibration method will now be used for all Foif models with new inertial sensor type.

Geomax

Version 6.14

- Zenith 40 -- Starting a log file after base configuration will no longer stop base output.

Version 6.10

- Zenith 20 -- The Geomax Zenith 20 no longer has errors relating to battery ID, Sensor Type, and OS Version. These are new commands not supported on older firmware versions.
- Zenith 35 Pro -- The Zenith 35 Pro will no longer send the command to enable vectors since it isn't supported. The RTK reset command will no longer throw an error when it fails. This allows for smoother configuration of these receivers.

Version 6.08

- Zenith35 Pro -- The Zenith 35 will no longer stop transmitting in base mode when a log file is opened.

Version 6.07

- Zenith35 Pro -- SurvCE will now show tilt information appropriately.
- Zenith35 Pro -- The message "Obsolete Firmware Detected" will no longer show incorrectly.

Version 6.06

- Zenith35 -- SurvCE will no longer send the RTKRESET command, which fails on firmware >=2.39.
- Zenith 35 PRO -- The Zenith 35 TAG and PRO models now properly mark files as static or kinematic.
- Zenith 35 -- The Zenith 35 now has the ability to store raw files either on the SD card on or on internal memory.

Version 6.04

- Zenith40 -- The Zenith40 now supports position rates 2HZ and 5HZ.
- Zenith40 -- Zenith 40 now displays DOP values.

Version 6.04

- Zenith35 -- Zenith 35 and Zenith 35 pro antennas will no longer allow slant antenna selection. There is no slant measurement mark on this receiver.
- Zenith 35 Pro -- Beidou is now supported.

Version 6.01

- Zenith35 -- Extra safe mode is now supported.

Version 6.0

- Zenith35 Pro -- Sensor calibration is now supported.
- Geomax model names have been improved to match official Geomax names (removed spaces).
- The Zenith35 no longer supports relative antenna offsets.

Hemisphere

Version 6.09

- Hemisphere S631/C631 -- Antenna L2 offset values have been updated to match NGS.

HiTarget

Version 6.04

- iRTK5 -- Tilted pole measurement is now supported.
- iRTK5 -- Setting the elevation mask is now supported.
- iRTK5 -- Hard reset and factory reset are now supported.
- iRTK5 -- The software will now correctly retrieve source tables using the internal modem.
- V100 -- Constellations can now be enabled and disabled.
- V100 -- The correct antenna will now be selected by default.

Version 6.03

- iRTK5 -- ELevel is now supported.

Version 6.01

- V10 -- Radio baud has been changed to default 115200
- QBox8 -- The HiTarget QBox8 driver has been reverted to driver used in version 5.07. The Simple NMEA only driver has been added as a separate option.

Version 6.0

- V90+ -- SurvCE will now retrieve more device information, including the expiration date.
- V90+ -- SurvCE will now default to baud rate 115200 when configuring the internal UHF radio.
- V90+ -- SurvCE will now offer the correct ports for all RTK options for base and rover.
- V100 -- The SD card will no longer be listed as an option for storing raw data.

Javad

Version 6.09

- Javad Triumph 1M -- The Javad Triumph 1M now supports message type MSM3.

Version 6.08

- Triumph2 -- Beidou is now supported.
- Triumph2 -- Sat View now updates correctly and displays all constellations.
- Triumph2 -- Satellite constellations can now be enabled and disabled.
- Triumph2 -- Base position elevation is now correct. Previously an ARP elevation may have been mislabeled as APC.

Version 6.06

- Triumph2 - SurvCE will now show the number of used/total sats correctly in the Monitor Skyplot screen.

Version 6.02

- Triumph 1 -- SurvCE will now display the satellite ratio for this receiver as it should.

Version 6.0

- Antenna definitions are now updated to include radius and shmp values.
- SurvCE will now send the correct "internal" command for the Javad when an internal antenna is selected.
- SurvCE will send the correction station ID for Javad receivers.
- SurvCE will now set all antennas to "auto" mode instead of internal or external.
- Triumph2 -- SurvCE now checks and reports expired maintenance.

Juniper

Version 6.03

- Juniper Geode -- The Juniper Geode will now give an error when used for log raw static, as it has no internal memory.

Leica

Version 6.10

- Leica GPS Base -- Leica GPS base setup has been changed slightly in MSM format to slow down the output of reference coordinates and additional reference information.

Version 6.09

- SurvCE will now more reliably log static files at the base.
- There is no longer the potential for a Leica base to be shifted by the rod height when configured as a base using read from GPS method.

Version 6.08

- The modem now connects more reliably after a radio configuration.

Version 6.07

- Downloading log files from the receiver now works correctly.
- Glonass sats will no longer be crossed out on CE versions.
- Vector records will now be tagged ARP_ARP if they are from RTCM3. SurvNet is being changed to process these correctly. This change will eventually be applied to all models as necessary.
- SurvCE will no longer stop the log file when opening the program.

Version 6.06

- Leica based GPS will now warn the user if the battery power is low.
- It is now possible to configure the radio even after switching from another RTK device.
- SurvCE will now ignore errors reported from setting the position rate. This is a firmware bug.
- The network solution type setting will now save and recall correctly.
- Leica radio and modem drivers will no longer say "no configuration necessary."
- Leica GS14 -- The Leica GS14 internal modem now supports auto connect.
- DOPS are now enabled again for all Leica models.

Version 6.04

- GS16: SurvCE now changes the channel on the built in M3-TR4 radio.
- SurvCE will now connect to VRS and Nearest mount points more reliably when DCI is used.
- RTCM3.2 corrections will now use MSM Extended.

Version 6.03

- Leica GPS sat parsing has been improved so that Galileo and Beidou sats will show used/not used appropriately.
- SurvCE will now allow more time for radio configuration.

Version 6.02

- The Leica internal modems will now connect more reliably.
- The APN Username and password are now being recalled correctly.

Version 6.01

- Base elevation will now be broadcasted correctly.
- GS14: Modem connection is now more reliable. Auto-connect has been disabled.
- Tripod antennas models are now included in the antenna list.
- The RTK tab port now recalls the Bluetooth setting properly.

Version 6.0

- All Leica GPS drivers have been modernized and updated to be consistent with other SurvCE drivers.
- Leica receivers will now support more radio settings when the firmware supports it.
- The Leica GPS driver will now warn the user if extended OWI is not detected.
- SurvCE will no longer show unused radios in the radio list..
- Domain name NTRIP servers are now supported.
- APN Username and Password are now supported.
- Direct IP connection is now supported.
- SurvCE will now report a missing SIM card to the user.
- Data collector internet is now supported on the GS14, GS15, and GS16 from all data collectors using a secondary Bluetooth port.
- The GX1230 driver is no longer actively maintained but is still available under Manufacturer: Legacy GPS

Navcom

Version 6.04

- Navcom GPS -- SurvCE will no longer fail on base setup for Navcom receivers.

Version 6.0

- Removed prompt from Localization asking for StarFire or RTK localization. Use 14 parameter method instead.
- Navcom RTK check no longer allows DGPS positions.

Satlab

Version 6.10

- SL700/SL800/SL900 --The Satlab position no longer has the potential to double count the geoid undulation on newer firmware.
- SL700/SL800/SL900 -- The Satlab will now set the base position with more accuracy.

Version 6.08

- SL700/SL800/SL900 -- Receivers now connect more reliably when the green check is pressed.
- SL700/SL800/SL900 -- Radio configuration is now more reliable in both base and rover mode.
- SL700/SL800/SL900 -- Satlab GPS no longer has the potential to get stuck in a no-position state when configuring the base using "read from GPS".
- Satlab GPS with IntRTK will now use the device serial number as a login ID.

Version 6.06

- SL900 -- Data collector internet now works correctly. Previously would get stuck on "waiting for reading".
- SL900 -- It is now possible to configure the radio in base mode.
- SL900 -- FEC radio option is now supported.

Version 6.06

- SL900 -- The SL900 will now show DOP values.
- SL900 -- The SL900 will now allow setting the frequency to a channel and changing the bandwidth.
- SL900 -- The Satlab SL900 will now configure base more reliably.
- SL900 -- The SL900 will now use higher precision on positions.
- SL900 -- The sat view will now display more consistently.

Version 6.04

- SL800 -- Glonass, Galileo and Beidou satellites in common with both the base and the rover and used in the RTK solution will be marked as "In use" at the rover. Previously, only GPS satellites were accurately marked as "In Use" in this situation.
- SL800 -- Extra safe mode is now supported.
- SL800 -- Users may now turn on/off individual GPS and Glonass satellites. Note: the on/off status for satellites will only be known for satellites currently in view.
- SL800 -- Connection to the instrument is now more reliable.
- All -- Satlab drivers with trimble boards will now stream reliably when RTCM3.2 corrections are used over DCI.

Version 6.03

- Open log file now works correctly.

Version 6.01

- SL800 -- SurvCE will no longer post an error when an unnecessary command fails in configure rover.
- SL800 -- The SL800 now fixes more reliably.

Septentrio / Altus / Altus

Version 6.08

- NR3 -- SurvCE will now check a new status flag in the position message to determine if a rod height has been applied to the position. If a rod height has been applied, SurvCE will invalidate the position and set the rod height to zero. For these receivers, the rod height is always applied in the SurvCE software.
- NR3 -- The "Save Config" option is now available at the base. This was already an option at the rover.

Version 6.07

- All -- When starting a static log file, the user will be notified that rod height must be applied in the post processing software.
- APS3G -- Added new base RTK output option, "RTCM v3.2 MSM". This option will output MSM4 messages for each constellation in use. The original "RTCM 3.0" option will no longer mix MSM4 messages with legacy messages. GPS (1004) and Glonass (1012) will be the only observable messages broadcast for the RTCM 3.0 option.

Version 6.06

- All -- SurvCE will now always send a zero rod height to these receivers to reduce the chance of error on lost rod height when the receiver reboots. All rod heights adjustments will be handled only in SurvCE.
- All -- Static, Kinematic and Stop & Go logging have been temporarily disabled. These were removed due to changes in how rod height is handled in SurvCE.

Version 6.03

- APS3G -- SurvCE will now assume that each full battery has a max capacity of 6 hours.
- APS3G -- Base setup is now working correctly.
- Drivers with the capability to signal a low battery warning will now specify the instrument name in the warning. This prevents confusion with the data collector battery.

Version 6.02

- NR3 -- SurvCE will no longer send commands which are not supported in recent firmware.
- APS3G -- When logging Stop and Go (Log Raw Data) to receiver, the software will now wait for receiver confirmation of command instead of timing out too early.

Version 6.0

- APS3 -- Satel Radio configuration now grays out the Forward Error Correction (FEC) if the current protocol does not support it being changed. Satel Protocol is the only protocol that is allowed to change the FEC.

Spectra Precision

Version 6.14

- All -- The tolerance checks for days and temperature since last calibration have been moved to instrument configuration, receiver tab, under the more section. This was done to alleviate overcrowding on the tolerances page.
- All -- Spectra Precision receivers no longer have the potential to leave two baselines active when email or phone alerts are enabled.
- SP90/PF800 -- The SP90 and PF800 will now allow configuration on both output ports at the base.
- SP90 -- The SP90 will now configure the correct base elevation.

Version 6.10

- All -- When ANR is off, SurvCE will set the base to the APC elevation, and when ANR is on, ground position will be used. This should solve base elevation errors on older Spectra Precision receivers.

Version 6.09

- Spectra Precision GPS will now tag points correctly in the rinex file when stop and go is used. Previous tagging method was not supported by the Rinex converter.

Version 6.08

- All -- Spectra Precision communication issues introduced in version 6.07 have been resolved.
- All -- Spectra Precision receivers will now retrieve battery power correctly.

Version 6.07

- SP80 -- The Spectra Precision SP80 now lists RTCM3.2 at the rover.
- All -- SurvCE will now allow position update rate 5HZ.

Version 6.04

- All -- CMRx Base output is now supported.

Version 6.03

- SP80 -- The SP80 will no longer send a radio power value at the rover.
- SP80 -- The internal radio options will now be appropriately limited based on channel spacing and modulation settings.
- SP80 -- The SP80 will now offer log file interval options.
- SP80 -- The static file manager will now work properly on the SP80 when used from a Windows CE device.

- SP500 -- SP500 now has log file intervals and will prompt the user correctly when starting a log file from Configure Rover or Configure base.

Version 6.02

- All -- SurvCE will no longer program the wrong channel into the radio in the scenario where there are channels with 0.000 frequency in the channel table.
- All -- Logging intervals will now be set correctly.
- All -- SurvCE will now connect to NTRIP networks using the internal modem. Previously it was possible that the GGA message wouldn't be sent back to the server.
- All -- SurvCE will now display the correct squelch value in radio configuration.
- SP90M -- SurvCE now uses a better default antenna.
- SP90M -- SurvCE can now retrieve the static file list correctly. This was failing on some data collectors.
- SP500 -- SurvCE will now display the correct internal antenna.
- SP80 -- Internal modem RTCM3 projection messages are now supported.
- SP80 -- When a non-supported language is used, the screen language of the SP80 will now default to English.

Version 6.01

- SP80: Receiver Wifi is now working correctly.
- Large source tables will now download more reliably.

Stonex

Version 6.10

- Stonex S800 -- The Stonex S800/S800A now includes radius and shmp values.

Version 6.09

- Stonex antennas have been updated with radius values to allow for slant measurement.
- Stonex receivers with ebubble only will now show the bubble correctly.

Version 6.08

- Stonex GPS with inertial sensors will now include the new pole calibration.

Version 6.07

- Stonex S900A_V2, S900N_V2, S990A, and S850A: Receivers now show radio options correctly. The frequency hopping radio protocols are now supported. Models without radios will no longer list radio as an option.
- Stonex S700A -- The Stonex S700A will check the receiver to see if it is L1 only and will reduce options accordingly.

Version 6.05

- Stonex S900(Novatel) -- SurvCE will now properly handle undulation when sent from the receiver.

Version 6.04

- Stonex S800/S900 -- Stonex S800 and S900 will now use the novatel BESTPOSA message for positions. This should improve accuracy for error values.
- Stonex S10 -- When setting a radio frequency, the value will no longer be rounded to the 3rd decimal place. Up to 5 full decimal places will be recognized.

Version 6.01

- S900A/S800A -- SurvCE will now set the aRTK Timeout correctly.
- All -- RTCM3 projection messages via internal modem are now working again.

Version 6.01

- S900A: Surefix, Atlas, and aRTK are now available for the S900A.
- S10 and newer: Reset RTK is now supported.
- S9i: The S9i radio driver is now identical the S800.
- Stonex receivers will no longer disconnect from the NTRIP server when going through

configuration for a second time without changes.

Topcon/Sokkia

Version 6.10

- All -- Topcon receivers now support ambiguity fixing "extra low".

Version 6.08

- All -- Error type will now be reported correctly as RMS.
- GRX3-- Radio configuration is now more reliable.
- All -- Topcon and Sokkia antennas now offer slant measurement.

Version 6.07

- GRX1 -- SurvCE will now receive correct satellite information from the GRX1 receiver.
- VR -- The Topcon VR FH915 radio now works correctly.

Version 6.06

- Hiper V -- SurvCE will now display the satellite used/total ratio correctly.
- SurvCE will now connect to Trimble VRS networks more reliably using data collector internet.
- SurvCE will no longer mark sats as used in RTK fix when no corrections source is available.
- Topcon GPS tilt now works more reliably. Previously it was possible that the driver thought the unit was uncalibrated when it was calibrated.
- The Topcon HiperHR is now supported. Modem support is still in progress. Requires appropriate OAF licenses.
- Topcon GPS -- Topcon sat information parsing has been improved to better mark used sats.

Version 6.04

- GRX3/Hiper VR -- SurvCE will now handle tilted measurements on these receivers. Calibration can be completed within SurvCE, and the user will be warned when there is excessive magnetic noise.
- GRX3/Hiper VR -- Log raw static now works correctly.
- All -- The glonass, galileo, and beidou sats will no longer show as crossed out in the sat view for CE.
- GSR2700ISX -- Data collector internet now works correctly for both CE and PC. This was broken in all 6.0X versions.
- All -- SurvCE will no longer throw an error when the RTK option is not available on a Topcon or Sokkia receiver. This allows some users to use the receivers without the option, if they want to use DGPS bases.
- GCX3 -- The GCX3 will now go fixed more reliably when data collector internet is used.
- Sokkia and Topcon GPS will now report a better error message when the tilt sensor command fails.

Version 6.03

- GR5 -- SurvCE will no use the correct antenna.
- GRX3/Hiper VR -- Base configuration over the serial port (generic radio) now works correctly.
- GRX3/Hiper VR -- SurvCE can now change the channel spacing as necessary.
- All -- SAT count will now be correct in monitor skyplot.
- All -- Correction type RTCM_MSM has been renamed to RTCM_MSM3 for clarity.
- All -- SurvCE will no longer change the status icon to yellow when on the sat tab in the monitor skyplot screen.
- GRX3/Hiper VR -- The Trimtalk protocol is now supported for the internal radio.

Version 6.02

- Sokkia GPS -- SurvCE will now correctly save/load XCOM com ports in the RTK tab.
- Glonass Sats will now display in the sat view correctly.
- GCX3 Long link radios are now supported.
- The check for expired maintenance has been removed. This was not reliable on all models.
- For logging raw data files in the receiver, the following logging rates will be available for the user to select from: 20Hz, 10Hz, 5Hz, 2Hz, 1Hz, 2s, 5s, 10s, 30s, 60s.

Version 6.01

- Topcon and Sokkia GPS Bases will now broadcast correctly when configured to broadcast over internal radio.

Version 6.0

- GR5 -- RTCM MSM is now supported.
- GR5 -- Beidou, Galileo, and SBAS are now supported. The method of parsing available sats is improved.
- GR5 -- SurvCE will now alert the user if the "_GPS" option is not available, as a strong indicator that the OAF file is not sufficient.
- GCX3 -- RTCM MSM is now supported.
- GCX3 -- Beidou and Galileo are now supported. The method of parsing available sats is improved.
- Sokkia GSR1700CSX -- This driver has been moved to legacy drivers and will no longer be actively supported.

UBlox

Version 6.14

- UBlox drivers will now show float status appropriately.

Version 6.06

- The UBlox F9P will not display the "L1 Only" fix and float tags, as it supports L1/L2.

Total Stations

Carlson

Version 6.14

- CRx -- The software will now retry when the total station returns a temporary out of tilt error message while setting the horizontal angle.
- All -- The software no longer has the potential to skip enabling ATR mode when in fast mode, already locked, and triggering a backsight set angle and read.

Version 6.12

- All -- The maximum joystick speed has been increased to the highest allowable speed in the firmware.

Version 6.10

- All -- SurvCE will now warn the user if a search fails because the search window was enabled.
- All -- Temperature and pressure are now supported. These options configure the settings in the total station.
- If any known target type fails to set, the software will now manually configure the prism offset.

Version 6.07

- CR+ -- Reticle Illumination is now supported. Note that the laser pointer setting has been removed as it is available as an icon in live survey screens.

Version 6.04

- CR+ -- The ATR field of view and visibility options have been removed from this model. They are not supported.

Version 6.02

- All -- The Carlson 7mm prism is now listed in the prism list.
- CR2/CR5/CR+ -- The ATR Visibility and ATR Field of View options have been restored.
- CR+/CS15-- Installs of SurvCE to CS15 or CR+/Zoom90 on board no longer hang when no valid sqlite3 file previously exists.
- CR+ -- Define Window in Advanced search settings will once again work.

Version 6.01

- CR+: SurvCE will no longer block changing the target when the connection is lost on the total station. This can cause unnecessary errors.

- CR+: SurvCE will no longer periodically fail to read distance on reflectorless shots in direct mode.
- SuperG: The SuperG tablet will now connect to its internal GPS correctly.

Version 6.0

- SurvCE now offers the ability to ignore the backsight on a power search. This option can be found under power search settings.
- CR2/CR5/CR+: SurvCE will now query the device serial number and write it in the RW5 file.
- CR2/CR5/CR+: Continuous reflectorless measurement is now supported.
- CR2/CR5/CR+: SurvCE will now warn earlier if the instrument is out of level.

Geomax

Version 6.10

- Zipp 20 -- The Zipp 20 will now show the laser pointer icon.

Version 6.04

- Zoom 40 -- SurvCE will now display angles from the instrument when Continuous angle updates is selected.

Version 6.02

- Zoom 90 Onboard -- SurvCE can again detect that it is running on a Zoom90. Recently manufactured units had an internal change that prevented proper identification.
- Zipp20/Zoom40 -- The Zipp20/Zoom40 instrument will no longer have errors reading after performing set angle.

Version 6.01

- Zoom90 Onboard: The international CAB to install the Zoom90 has been corrected to include a missing file that prevented SurvCE from starting.
- SurvCE will now show all the tabs it should on the Total Station instrument setup page when Zipp20 or Zoom40 is selected running onboard.
- Zoom40 will remain selected in onboard version. About SurvCE moves to File tab as in the rest of 6.0. Check Level and Show continuous angle updates both work correctly now.

Version 6.0

- The installer for Zipp20 Onboard is renamed to Zipp20_Zoom40_Onboard to indicate support for the Zoom40.

Leica

Version 6.14

- Leica 1000/1100 -- New settings for temperature, pressure, and ATR field of view and visibility not supported on this hardware have been removed.
- Leica/Carlson TS -- The Temperature and Pressure settings have been removed.

Version 6.12

- Leica TS16 -- The "On Lost Lock" option will now save and load correctly.

Version 6.09

- Leica TS16 -- The Leica TS16 now offers a rainy day mode. This mode will cause some commands to retry for better results when it is misty or rainy.
- Leica TS16 -- The Leica TS16 now offers the option "On Lost Lock" to allow the user to control behavior when lock is lost. Setting this option to Cube Search will activate dynamic locking when it is available on the total station.

Version 6.08

- Leica total stations will now retry the measurement up to five times if they get a 1284 or 1285 response from the instrument. This improves reliability on the MPR122 prism.

Version 6.03

- SurvCE will no longer report a false out-of-level message periodically when storing points.
- Leica direct total stations can now stream angles and check level.
- Leica TS06 will now time out faster when the measurement fails.
- New ATR options are now available in all Leica RTS drivers.

Version 6.02

- Leica TS16 -- SurvCE will no longer switch to prism mode after stopping reflectorless tracking.
- The delay before the power search when search-on-read is used has been reduced.
- Continuous angle updates will now work on Leica models running the GSI protocol.

Version 6.01

- The "Leica Adjusted Offset" is once again displayed in the define target dialog.
- Leica total stations will now measure the reverse face correctly in backsight.
- SurvCE will now more reliably warn the user when search is used and the total station is already pointing to a prism.
- Check level streaming rate has been increased.

Version 6.0

- All MTS/RTS -- SurvCE will no longer set the ATR Field of View and Visibility settings to "normal", but will instead ignore these and leave what the user has selected on the total station.
- SurvCE now offers the ability to ignore the backsight on a power search. This option can be found under power search settings.
- All Models -- SurvCE will now query the device serial number and write it in the RW5 file.
- All Models -- SurvCE will now warn earlier if the instrument is out of level.
- The TPS 100/1000/2000/5000 drivers are no longer actively maintained but is still available under Manufacturer: Legacy TS.

Nikon

Version 6.06

- Nikon TS -- SurvCE will now ignore errors when stopping the measurement.

Version 6.04

- SurvCE no longer has the potential to fail when the user hits cancel during a measurement with the Nikon TS.
- Continuous angle updates now works on Nikon models.

Spectra Precision

Version 6.14

- Focus 30/35 -- The software will now correctly update the search window for a Focus 30/35 total station.

Version 6.04

- Focus 35 -- The laser pointer icon will now appear in the top bar as it should.
- Focus 35 -- The new Focus 35 model with long range Bluetooth now works in SurvCE/SurvPC.
- Focus 35 -- The Focus 35 can now be used with the Carlson Surveyor 2 or Mini 2 (either with the radio bridge or LRBT)
- Focus 35 -- Angle reading will now occur more quickly.
- Ranger 3 -- SurvCE will now look at the correct indicator to determine whether Trimble Product Activation has been installed to enable use of Focus35.

Version 6.03

- When SurvPC connects Ranger7 to Focus30/35, the correct comport will be used for radio communications and saved in settings.
- Focus 30/35 -- The first measurement after check level no longer has the potential to fail.
- Focus 30/35 -- SurvPC will inform the user if Trimble Product Activation has not been installed. This is required for use of the Focus 30/35 driver.
- When configuring Comms for the Focus30/35, the com port can now be selected when type is Radio. This should allow the internal radio on the SP Ranger 7.
- Focus 30/35 -- License retrieval for a new PC data collector is more reliable.
- Focus 30/35 -- SurvCE will now better report a mysterious error from the instrument that is found to indicate “mildly out of level.”

Version 6.01

- Focus 30/35: SurvCE toggle between RL and prism no longer has the opportunity to fail due to unexpected default value.
- Focus 30/35: Change of status from tracking to standby is now correctly reported.

Topcon/Sokkia

Version 6.15

- Sokkia DX -- The "Auto tracking" option is now available in this driver in the search tab. When enabled, the driver will go into auto tracking mode after a search or a track command. Otherwise, auto-pointing will be used.

Version 6.14

- Sokkia DX -- The Sokkia DX will no longer do a search prior to starting tracking. For this instrument, the tracking command will manage the search.
- Topcon GT -- The Topcon GT driver now allows sending prism offsets to one decimal place.

Version 6.10

- Topcon GTS -- Topcon total stations will no longer start beeping after leaving the offset routine.
- All -- Sokkia and Topcon TS will now prompt for reconnect when the data collector is put to sleep and wakes back up.
- Sokkia TS -- The software will now send the standby command before searching for Sokkia. This prevents search failures then the total station is in wait mode.

Version 6.09

- Sokkia IX -- The wait time entry option has been converted to a combo box with the following options: User Set, Hold, None, 3 Sec, 10 Sec, 60 Sec.

Version 6.07

- Topcon MS -- The topcon MS will no longer give an error during resection.

Version 6.06

- SurvCE now allows for longer timeouts on commands.
- Topcon 9000 -- SurvCE will now send a quicklock cancel before starting a new search.
- GPT800/GPT8000 -- For cable/radio connections SurvCE will no longer revert the baud rate to 1200.

Version 6.04

- SurvCE will attempt to restart the sokkia message stream if it stops unexpectedly during use. This will prevent instances where it appears communication is lost when walking behind an object.

- Sokkia IX -- The "Search: None" option has been removed from the SurvCE interface as it is not supported in the total station.
- Sokkia IX -- Joystick speeds have been changed to Low/Medium/High and the speeds adjusted. The high speed will now use the max speed for the total station.

Version 6.03

- Topcon 9000 - SurvCE no longer has the potential to fail when connecting to an RC unit.
- Sokkia TS -- Zero_hz_to_target mode now works as designed, putting the TS in zero hz mode. Note that the angles will not display on the screen of SurvCE in this mode.
- Sokkia TS -- Sokkia instruments will no longer go into modes of operation where they beep continuously. This was most noticeable when leaving offsets. The heartbeat command has also been removed. This prevents the beep every 5 seconds.
- Sokkia RTS -- SurvCE no longer has the potential to get stuck in a "lost connection" state inside the joystick page, even though we have communication.
- GRX3 -- The default antenna is now correct.

Version 6.02

- Older sokkia drivers will no longer attempt to stream data. This caused communication errors.
- The set backsight function now uses the backsight search setting as part of its method. Previously it was checking the foresight search method.
- The Sokkia RTS will now start tracking correctly when the RC unit is in use.
- Topcon ES100 -- Continuous angle updates now works.
- Topcon ES100 -- SurvCE will no longer fail periodically when setting the backsight.
- All -- Check level will now stream more fluidly on Sokkia models.

Version 6.01

- Non-Robotic topcon total stations will no longer have a 5 second heartbeat. The heartbeat causes unnecessary beeping on the total station.
- Sokkia IX: The Sokkia IX will now set angle and read more accurately.
- Topcon 9000: Set Angle and Read is now working again.
- IX: The Sokkia iX will now correctly lock on to the prism after a smart lock when using Smart Staking in Hybrid+.
- Sokkia IX with RC: The Sokkia IX will now find the prism when pressing the search icon in the joystick screen and already locked on a prism.
- Sokkia IX with RC: Measurements no longer have the potential to time out when the RC is used and the search before the read takes a long time.
- Sokkia IX with RC: The Sokkia IX will no longer search twice when starting tracking when the RC is in use.
- The Check level routine no longer lags for Sokkia robotics.
- SokkiaIX: The robot will no longer periodically fail to rotate after a fine edm mode measurement.

Version 6.0

- Sokkia RTS -- The Auto-Tracking setting has been removed from the user interface. That setting will be changed automatically as the software is used.
- Topcon GM Top Basic -- SurvCE will now be able to cancel measurements and will no longer show the false "lost connection" error message.
- The Set 1Way/30R drivers are no longer actively maintained but is still available under Manufacturer: Legacy TS.