



Version 7.04.4 Release Notes

Updated 11/17/2023

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Improvements and Resolved Issues By Release

Version 7.04.4.4

Release Date: November 17, 2023

Major New Features and Improvements:

- SurvPC now supports base setup mode Local NTRIP using data collector internet.
- SurvPC now supports adding coordinate systems using EPSG codes.
- It is now possible to view the boundaries of coordinate systems in the Edit/View System dialog. The software will display a map with the borders of the coordinate system. This option is currently supported on NAD83 2011, NAD27, EPSG, and UTM coordinate systems.

Other New Features and Improvements:

- Screenshots will now be saved in PNG format.
- NMEA output now supports local host if you set the IP to "0.0.0.0". This should allow connection to third party software on the same device.
- Reference Drawing Setup is now available as an option in the Hotlist.
- Esri AGOL -- Group layers are now supported
- Esri AGOL -- Feature values will no longer be updated if they did not change. This improves efficiency when storing and updating.
- Esri AGOL -- The Visible/Hidden Field states from the Web Map (Layer) is now correctly applied.
- Esri AGOL -- Remeasure is now working as designed from the Store Point->Point Info screen.
- Esri AGLE -- SurvPC no longer generates consistency check errors when deleting CSCRD points or canceling during measurement. Changing heights and overwriting elevations now also work as designed.
- Esri AGLE -- SurvPC now has merge control for 3D min-max for start and end line or measurable field with a location.
- Esri AGLE -- Required fields are now supported when re-measuring objects. However, to be user-friendly, the software will only check for the missing initial measurement when the required field is ON.
- Resection results will now pre-calculate as soon as two measurements have been taken, and the turn to point button will become available.
- The BIM module routines will now retain line or point selection even when view mode is switched.
- It is now possible to hide averaging graphics when configuring automatic averaging on every Store/Enter key.
- A progress bar will now display when reprocessing data due to changes in transformation.
- Reprocessing GPS points is now 20% faster.
- SurvPC now allows the option to use the stock Windows keyboard docked at the bottom for portraitview devices. This is useful on very wide (tall) screens.
- SurvPC now supports the RTK export format in File | Export/Data Transfer | Export | Raw Data | RTK
- SurvPC now automatically disables tilt correction when 2D mode is enabled.
- The software now hides Elevation and Rod Height in Point Edit and Point Info dialogs when

the point is a 2D point.

- SurvPC now shows the instrument battery status when clicking the top bar battery icon when available.
- When establish link detects a baud rate using a cable connection, the detected baud rate will be recalled and set on the comms tab to avoid future baud rate searching.
- Minimized stakeout view can now be manually enabled in Stakeout settings. The previous method of sliding to lower/raise the bottom bar still works as well.
- Export GIS to ASCII per Feature Class/Table now offers the option to skip empty columns.
- The Auto Detect Code Pattern setting has been moved from Feature Code List/Special Codes/Settings to be more readily available in the Equip->Configure menu.
- Warnings from the GIS Store dialog have been improved to combine prompt and field name warnings.
- SurvPC will now reliably maintain previous job settings to be applied to a new job, even if the previous job has been removed from the device.
- Import LandXML now presents more detailed error messages when files are imported or saved, for instance permissions, failure of the file name, etc.
- Import LandXML CL now obeys a user configurable tolerance for the maximum allowable gap between elements and warns if tolerance is exceeded in the data.

Bug Fixes:

- JXL Export now works correctly.
- Camera resolution configured in Advanced Settings now holds its value and works as designed.
- HTML/PDF exports now use the use-configured date and time format.
- The Profile Editor now displays parameters appropriately when using unequal parabolic curves.
- When editing the rod height of a point and selecting the "Only Modified Point" option, other points are not changed and CRD file is updated correctly.
- There is no longer a potential for the software to fail if the F1 key is pressed multiple times on a data collector with an attached keyboard.
- The Photo display in Point Information now displays correctly for Esri AGLE jobs.
- Loading Solids and Surfaces (TIN) in Stk Road now correctly shows the name of the file and points loaded.
- Virtual Keyboard and Point ID edit boxes now check for valid point ID when appropriate.
- Import LandXML from Microstation/OpenRoads Station Equations now works as designed.
- Esri AGOL -- The software will now validate portal link urls and try to correct for minor formatting errors.
- Esri AGOL -- Setup now prevents duplicate layers in the map list.
- Esri AGLE -- There is no longer a possibility for a failed consistency check between CRD/JDB when the schema uses Z1/Z2.
- Esri AGLE -- Deleting points from File->Points now works correctly and no longer causes a CRD/JDB inconsistency.
- Esri AGLE --The software now supports GlobalID field types for related tables and relationship field types.
- Esri AGLE --The JOIN Profile in the C2E Schema has been improved. Profile Points relationships are created correctly.
- The right half of the "Backspace" key in the numeric keyboard now works properly.

- Topcon .gc3 and .loc files received from the cloud Topcon file conversion service will no longer include unexpected points.
- The Point ID in Store Points no longer has the potential to be incorrect after a full reprocess due to changing projections.
- The SurvPC installer will only create a "Carlson Projects" folder on the C: (Windows) drive. Previously it had the potential to also create this folder on other drives.
- The JDB no longer has the potential to get out of sync with the Localization dialog causing errors in reprocessing.
- The "Elevation" label will no longer be missing on the stake coordinates page.
- SurvPC will no longer create a fragmentary projections.xml on the desktop when it is installed and run for the very first time on a data collector.
- Geodetic values reported as part of point reports will now be correct.
- Editing a single point description or point ID will no longer cause a reprocess.
- The software will no longer save an SP record in the RW5 file to replace a GPS record unless the coordinates have changed.
- The Receiver and RTK tab dialogs will now update properly when the RTK device is changed.
- Users will now be warned when opening a job with a JDB file that is read only.
- The virtual keyboard now works correctly in the COGO/Inverse routine.
- Total station points measured with an auto-scale-to-grid factor and then reprocessed in the points list will maintain the grid factor.
- Users will no longer get a consistency error when they edit their CRD file outside of SurvPC or use the job file in a previous version of the software. Points will be corrected silently and any affected coordinates will be marked as calculated.
- The resection routine will no longer allow typing in a point ID or description with a length outside the bounds of what is accepted by the job type (CRD/CRDB).
- The software will no longer increment base IDs when switching back and forth between bases in the same job. The bases will rewrite to the RW5 file with the same ID if used.
- The software is now faster when using an external keyboard in the COGO/Intersection routine when selecting an azimuth from two points.
- There is no longer a chance for total station auto-read to fail during monitoring or in survey sets.
- Point ID will now increment correctly when using OSNAPS in F2F.
- The GPS Tilt offset method will no longer cause CRD/JDB inconsistency errors due to overly long point names in CRD files.
- Files can now be overwritten after choosing the email file option in the Export dialog.
- The One-Touch option in store points has been partially reverted to the previous behavior. The "One Touch" check box has been added back in.
- There is no longer the potential for GPS positions to flash on the screen after pressing reconnect from the helmet when using a NMEA driver.
- Newly created point notes and point attributes are now added to the Job database.
- The software now reads the base position more reliably when starting the base from a ref file.
- More error handling is offered when importing data from LandXML. More explicit error messages will be presented if there are problems with read/write access due to file location and permissions.
- Base configuration using a previously measured point no longer has the potential to fail.
- The offset edit box in the page Station/Offset now allows +/- math operations. It also preserves the +/- radio buttons L/R if the cursor is empty as an edit box or the cursor is at the start of the string in the edit box.
- Reloading the Carlson RNF/temporary RDF file in Select Road now works as designed.

- The CIR option now allows optional quadrants: e.g., CIR10N (Circle 10 feet radius aligned to point 1, at North; point 1 at the top and the circle draws below as 1 being a tangent point).
- Import GC3 no longer has the potential to fail when importing Lat/Lon in x64 version.
- Import GC3 no longer fails on the x86 version.
- Carlson F2F now changes the description of stored points appropriately.
- Check boxes located near the bottom of dialogs are now easier to access and select on small screens.

Driver Specific Improvements:

- Carlson BRx7 -- The error message is now more clear when modem initialization fails due to a missing SIM or wrong APN server.
- Carlson BRx7 -- The Hemisphere Atlas satellite will now show in monitor skyplot.
- Carlson BRx7 -- The default base output RTK type is now RTCM 3.2.
- Carlson BRx7 -- The BRx7 will send fewer unnecessary Reset RTK commands during configuration, and in particular will not send one when the data link or system mode are not changed. This prevents losing Atlas convergence unnecessarily in Equip->Configure and also reduces configuration time.
- Carlson BRx7 -- The Brx7 Quick Release antenna is no longer in the default list, but still in the full antenna list.
- Spectra Precision Focus 30/35 -- SurvPC File-About-Data Collector Info will inform the user that Trimble Product Activation has not been installed instead of displaying scrambled characters.
- Carlson CRx -- SurvPC now supports the new Hybrid RTK5 360 prism. The RTk5 GPS receiver now offers Antenna option TWI3972+RTK5 360 to adjust for the vertical offset on a 2m pole. For use with a total station, please manually adjust the pole height by +25.4mm.
- Carlson RTk5 GPS -- SurvPC will now offer to email downloaded .njs files immediately after retrieval.
- Carlson RTk5 GPS -- SurvPC now has an option to create a rinex file automatically when downloading a Gama log file.
- Carlson RTk5 GPS -- SurvPC will now show the antenna name in the connecting dialog. This reduces the possibility of accidentally selecting the wrong antenna.
- Geomax Zoom40 -- The total station now measures more reliably after a failed or canceled measurement.

Version 7.03

Release Date: August 28, 2023

Major New Features and Improvements:

- SurvPC now includes a numeric keyboard tab that will be activated automatically when the virtual keyboard is enabled and a numeric edit box is selected.
- Esri AGOL now supports adding, deleting, and updating photos on features.
- Esri AGOL now supports linear (polyline and polygon) Esri features and uploads metadata correctly.
- SurvPC now will show NTRIP bases sorted by distance from current GPS reading if the user selects the "Sort bases by nearest" check box. Note that this feature requires the correct mount point position to be available in the caster source table, along with a valid GPS position from the rover.
- SurvPC now allows the selection of a different coordinate transformation when exporting coordinate files.
- Localization by Points now loads Trimble CAL and Geosi file types.
- The Stakeout routine now includes a "Remeasure" mode, designed for locating and improving the positional accuracy of known points.
- Reloading drawings and reference drawing is now 35% faster.
- Export points is now 50x faster for simple formats like PNEZD. Progress bar is improved for Export Points and Job report.

Other New Features and Improvements:

- The Hydro-lite DFX depth sounder is now supported.
- Loading Solids/MDL for STK Road is now faster and shows user progress.
- SurvPC will now display a warning if the measured distance to the backsight differs from the calculated distance by more than the user configured stakeout tolerance.
- The software will now issue an immediate notification when a software update download completes. The version number of the available download will now be reported before the download begins.
- Drawing import options are now available for reference drawings. Options can be found in the settings button of the top bar, and all filters are enabled by default.
- The previously created alignment will now be used by default when BIM files are used to create solid models.
- The GCP ground control file now contains projection and geoid information.
- Carlson SurvPC Export to Esri SHP now automatically generates the Esri PRJ from the Carlson projection. This eliminates extra steps for users.
- The station ID in base setup will now default to the next numeric ID available when an unknown (new) point is used. Otherwise the selected point will be used. Storing the base point will use the station ID by default, but allow user override for ID and description.
- An error message will now display when exports fail to send output over email due to internet connectivity problems.
- The setting to enable/disable drawing import options been removed. These options will now always be displayed to the user.
- One-Touch feature coding mode has been simplified. Feature codes will now always be

displayed as buttons in this coding style, and the Height/Desc setting has been removed, reducing configuration and allowing for a more streamlined experience.

- Contours with spline control data (points and segments) are no longer drawn. This creates a cleaner map view.
- The Reference drawings "Update Path" dialog has been improved to allow detaching, replacing, or locating the new path of the file.
- The virtual keyboard now supports Ctrl+C/Ctrl+V copy/paste shortcuts from the Windows clipboard.
- The setting "Allow Stake Nearest Pt from Pts List" has been removed. This option is now always available.
- The point range and "Add to Point IDs" options are now available for .html and .pdf coordinate exports.
- Carlson F2F CIR code with RADIUS usage now works with lines. The software now allows a line to be created and circles on the following points of the lines (except the first point.).
- BIM Visualize and BIM Stakeout will no longer use intersection snapping as an automatic snap mode. This improves snap speed in BIM.
- NGS Query will now display columns in its results to indicate HORZ_ and VERT_ORDER values for the monument when available.
- The total station monitoring routine now allows saving and loading MSM (monitoring session files).
- The Total station point information screen now includes the backsight circle value.
- The point list title bar will now display "Pt Count:x Highest:xx" instead of "Pts: x <= xx" for clarity.
- Carlson Cloud JobShare now offers point collision options. The user can choose to ignore (i.e. discard), overwrite (same behavior as previous versions) or add a Prefix (to distinguish job-shared point from existing point).
- Stake Road/Cut From Alignments now saves and re-calls the data if the user created TPA (alignments files) from a drawing and the strings are on the same layer. In that case, we use the suffixes _L and _R (left and right) more consistently.
- The user customizable hotlist now includes new options for Manual Transfer and Turn To Point
- Esri AGOL now supports changing rod heights and overwriting elevations in the Edit Point screen. Both the Esri point and the CRD point will be modified.
- Esri AGOL map placement and draw map is now more efficient and reduces refreshes. Zoom extends is now more reliable and loads all feature layers.
- Esri AGOL will now present a user error if the user tries to add a feature and the Feature Layer is not found for the supplied feature code/description.
- Esri AGOL now lists automatically populated GNSS Metadata fields at the end of available fields when prompting for feature attributes. This allows quicker access to user-entered fields.
- Esri AGOL now displays the state of the button Add Code in the MAP/Layers.
- SHIFT, or CTRL+SHIFT shortcuts now work in point selection lists for quick selection of multiple points.
- Web Map Overlays will now default to the highest available resolution for the map provider.
- SurvPC will no longer allow a user to store changes in the pre-installed starter.fcl file. This file is intended as a template to help users get started. Once a user begins to add or change feature code list entries, a new FCL file must be used.
- RW5 note for deleting a single point is now --Deleted Point ID(s): even if there is only one point. This change is for compatibility with third party software.
- Delete Line now preserves the code used for the line as a comment. This allows re-activation

of the code.

- Export ASCII will now use 5 decimal places unless job settings are higher, then it will use job settings.
- "Elevation" labels in reports have been changed to "Elevation (APC)" or "Elevation (MSL)" to better reflect the type of elevation.
- Elevation Difference will now revert to the default description upon entering the routine, regardless of the description set in any other routine.
- The Surface Limits pop up when loading a DTM can now be permanently suppressed.
- MTEXT from Blocks/Inserts is now more feature rich. Block ration and MTEXT as part of a block are now supported.
- SurvPC now supports the Leica GSI-16 export format.
- SurvPC will play the TS success sound upon a successful robotic read prior to entering the "Storing Point From TS" dialog. The success sound will be played again when the point is stored.
- The APN Server for RTK Mobile has been updated to flolive.net.
- The TCP/IP Base server dialog will now warn when closing that the base will stop transmitting. Bytes Transmitted is now displayed on the dialog.
- Point Info Buttons are now displayed correctly based on the current version of the point.
- Saved instrument configurations now also save and recall the NTRIP and base settings. These settings are now saved in the global settings database, and extra files caster.txt, tcpbases.txt, etc. have been removed for simplification.
- Tunnel Solids/MDLs cross sections now report radiuses for ovoid (s); improved the click on the closed areas in which radiuses are closed from one surface exterior to an interior surface.
- Delete Job will now allow deletion of the entire job folder. The user is notified if unexpected folders are found inside the job folder so that he can cancel the delete. The deleted job will go to the Recycle Bin unless the user has set his Recycle Bin settings to permanently delete.
- SurvPC now has "Data Collector info" command in the Helmet menu of the About screen to display data collector type, if detectable, the collector's serial number. For 32-bit only there is additional information for support to assist with Focus 30/35 licensing issues.
- KDOT (Kansas DOT) coding style is now supported.
- The following coordinate systems are now supported:
 - MEXICO/ITRF2008/UTM zone 11N
 - MEXICO/ITRF2008/UTM zone 12N
 - MEXICO/ITRF2008/UTM zone 13N
 - MEXICO/ITRF2008/UTM zone 14N
 - MEXICO/ITRF2008/UTM zone 15N
 - MEXICO/ITRF2008/UTM zone 16N
- Helmert parameters have been updated for the following coordinate systems:
 - AUSTRIA/M28b
 - AUSTRIA/M31b
 - AUSTRIA/M34b
- The following coordinate systems have been renamed from 1.05 to 1.06, and geoids romanian_etr89v106.grd and romanian_zitaBucxv106.grd are now available:
 - ROMANIA/Stereographic 1970 TransDatRo Source Code 1.06
 - ROMANIA/Stereographic 1930 TransDatRo Source Code 1.06
- The following coordinate systems are now supported:
 - CZECH/Krovak-JTSK-1710(GRID) -E,-N
 - SLOVAKIA/S-JTSK (Krovak)SlovakiaGrid -E,-N
- Datum shift values and azimuth parameters have been updated in the following coordinate

systems:

CZECH/Krovak-JTSK-East North (SJTSK EPSG 5514)

SLOVAKIA/Krovak-JTSK-East North (SJTSK EPSG 5514)

- SurvPC now includes the following Danish System 34 coordinate systems with negated X values.
DENMARK/ED50/System34 Jutland -E,N
DENMARK/ED50/System34 Seeland -E,N
DENMARK/ED50/System34 Bornholm -E,N

Bug Fixes:

- Screen Pick in Map view now works correctly for Carlson points. Previously dense points could cause difficulty selecting points in the x64 version.
- SurvNet from SurvPC will now use the correct antenna height for the specific base setup used to measure the session on the point.
- Port options will now appear correctly for depth sounders. There is no longer a potential for failure when connecting over Bluetooth.
- There is no longer a potential for software failure when a message with an attachment is sent to a group in Carlson Cloud.
- Measurements in the Catenary Survey routine will no longer be incorrectly halted by an invalid direct instrument read.
- Measurements made while performing a Catenary Survey are now more accurately projected to the vertical plane between the attachment points.
- The elevation type labels in the Catenary Survey Report now correctly report the type of elevation used.
- The minimum distance to ground point is now calculated properly in the Catenary Survey Report.
- When available, METAR report text will now be automatically fetched when pressing the "Get Report" button in the Catenary METAR Report Settings dialog.
- Password reset for Carlson Cloud is now working as designed. The new password reset routine will automatically open a web browser to reset the password.
- There is no longer a potential for software failure in the resection residuals page.
- The remote elevation routine will now update targets correctly when the target is changed in the prompt dialog.
- There is no longer the potential to lose a configured projection and revert to default in the event of a software failure or forced stop of the program.
- When overriding point elevation, the SP record will be added to the RW5 appropriately, and no temporary (backup JDB) will be created when only one point is being modified.
- When a reference drawing is loaded from a removable drive, and the drive becomes unavailable, the software will now load the data from the Carlson Job Cache folder: <job name>\Tmp\Cache_<drawing name>.
- Switching between Carlson Basic Jobs and Carlson Esri RT AGOL no longer has the potential to cause a software failure.
- Report files that were flagged to be overwritten are now once again successfully overwritten.
- Esri AGOL now prioritizes the date/time stamp of the feature over the date/time stamp of the server.
- Esri AGOL we now correctly recalls the credentials last used (username, password, portal). These settings are now saved in global settings and not tied to the job.

- Esri AGLE now applies the correct alignment of the feature name in the point edit dialog.
- Esri AGLE now presents the feature types correctly in measurement screens.
- Esri AGOL and Esri AGLE now hide the “Reference Drawing” feature, as it is incompatible with Esri use.
- Esri AGOL will now better handle and report partial errors or partial feature commits.
- Esri AGOL will now correctly adapt the attribute values passed to the server and use the Field Length (FME - check value test for TEXT).
- Esri AGOL now loads and displays WFS Layers if Esri FieldMaps creates them and they include special symbols. SurvPC will revert unknown symbols to basic symbols.
- Esri AGOL now sets non-nullable fields appropriately as Carlson Basic GIS Fields/required.
- Esri AGOL no longer fails when committing numeric values to fields defined on the server as TEXT.
- Esri AGOL now reports back to the user if the commit to the server fails, or the WFS (Feature Table) has missing capabilities. ADD, DELETE, and UPDATE are required.
- Esri AGOL no longer has the potential to fail when using Group Feature Layers.
- Esri AGOL will no longer have residual map artifacts.
- Esri AGOL now determines map names more quickly. The software now also tracks MMPKs.
- Esri AGOL now correctly uses coded values with double or float fields.
- Esri AGOL is now more robust when deleting features and shows a status bar.
- Changing rod height in hybrid resection will now work correctly and not cause a CRD/JDB error.
- Hybrid wizard text will now fit correctly.
- Successful hybrid resection measurements now play the correct "success" sound.
- The Swiss datum no longer has the potential to cause a negative scale factor.
- There is no longer a potential for failure when editing a feature code list, in the case where a new list is started, then a single code added, deleted, and more codes added.
- The Scientific Calculator is now more robust.
- The monitoring routine will now write the BS rod height correctly in the RW5 records.
- The monitoring routine no longer has the potential to trigger CRD/JDB errors when measurements fail.
- When a new static log file is created, the duration timer will now always reset to 0. Previously, if the user stopped an existing log file outside of SurvPC, it was possible for the time on site to not be reset.
- There is no longer a potential for software failure in the Hungarian translation when running the resection routine.
- Draw Template is now more robust. This feature also now has the ability to draw a CURB/Round style template (smooth, straight).
- Export Drawing as FARO style is now working as designed, the Draw Template/Profile/Centerline and Next options are working.
- There is no longer a potential for software failure when saving or creating a new tolerance profile for total station.
- Photo of a Point is now set correctly from the GIS dialog. The software will only capture the point ID and not the label from the User Interface dialog.
- Data Transfer and Export polyline to csv are working correctly.
- Point names with invalid characters such as "-" and "," will now properly be handled when

importing a text localization file.

- Lower case point names are now changed to upper case names when importing.
- GNSS Analysis no longer has the potential to fail when points are deleted prior to processing.
- Map Backgrounds now display correctly when using South/East/West as zero azimuth in map screen.
- When adding a user defined coordinate system, SurvPC will no longer falsely prompt to replace the coordinate system if a coordinate system with the same name doesn't actually exist.
- The TS/RTS – Equip | Configure | Stake | "Move Relative to:" setting now saved by instrument type (Robotic vs. Direct) and is not tied to the job.
- SurvPC will no longer fail when using an NGVD29 coordinate system when the NGVD29 grid files are missing. The software will now offer to download the missing files.
- Editing a coordinate system will now correctly replace the coordinate system. Previously a copy of the coordinate system was added.
- SurvPC will no longer revert the ellipsoid to WGS84 when editing the ellipsoid.
- Export/Data Transfer/Copy Current Job to Folder no longer has the potential to fail. This routine will now also report a list of folders and files copied.
- Opening a new basic Carlson SurvPC Job from an existing opened Carlson SurvPC Esri AGOL job no longer shows a false error relating to data being committed.
- Changing feature code categories no longer has the potential to cause software failure.
- GNSS Point Store now obeys the "Automatically accept average results" setting in the Settings Average tab. Raw only, Raw logging, Read Alignment, Cross Section and Elevation difference still automatically accept the average results.
- Trimble CAL import now outputs the grid point name into the point description. Calibration points that come after previous calibration points with the same names will now overwrite the previous values, so that they do not appear multiple times. "Deleted" lines are now respected.
- Merging GNSS or TS points now works whether applying to associated points or not.
- Simultaneously renaming point IDs and turning measurements on/off in the point edit dialog now works.
- Simultaneously changing description and rod height in the point edit dialog now works.
- Setting a description to be blank now removes the description as intended in the edit point dialog.
- The SurvNet substitution string now saves and recalls more reliably.
- Profile Edit no longer has the potential to fail when using check station and the stations are close to the existing stations in the PVIs.
- Control Jobs no longer have the potential to cause software failures when an incorrect/invalid path is set.
- SurvPC will now appropriately apply the scale factor when checking the broadcast ID point to make sure it matches the current location.
- There is no longer a potential failure in the Equip->Configure page, on the stakeout tab.
- The software now hides the incline column in the GNSS Measurement statistics dialog if all inclines are invalid. N/A will be used when only certain inclines are invalid.
- The triangle direction for GNSS positions will now orient correctly even if the GNSS is in float or autonomous and no compass is available in the data collector.
- When no changes are made to the localization, there is no longer a prompt to reprocess.
- Point Info history now displays correct coordinates in point history.
- SurvPC will display any newly added groups in the Send To combo of Carlson Cloud upon

- return from the Groups dialog. The button to return from Groups dialog is now a green check.
- SurvPC will no longer have internet errors in Carlson Cloud caused by logging off and logging in again (same or different user).
 - SurvPC will no longer retain the photos taken during Prompt for Height & Description if the user cancels from storing the point. This prevents those photos from reappearing when a point of that ID is actually stored.
 - The mode combo box at the bottom of total station two-point offset now works as designed to set the elevation of the new offset point.
 - Geoid name in reports will now report only the geoid file name and not the full path.
 - Scale factor modification records will now show 9 digits after the decimal point.
 - SurvPC will correctly load and save control point settings so that results will be consistent.
 - SurvPC will initialize the blunder tolerance value on the settings page. The previous failure to initialize may have resulted in a 0 value being saved but a change to the desired value will now be saved.
 - Reprocess will now use the localization setting "2pt Rotate Only" from the current job.
 - Point reports will no longer fail when a session is disabled. The "No" tag for session or measurement disabled will now write correctly.
 - Map Twist> Southern Hemisphere, Denmark/System34, Czech/Krovak special projections now support "Free pick" osnaps.
 - Czech/Krovac twist map special projections now show the proximity stakeout arrow correctly.
 - Storing the resection occupation point in lower case letters will no longer trigger a CRD/JDB error.
 - Select polyline now shows current/last measurement.
 - Coordinate systems names with commas will now show up in the predefined list.
 - Inverse will now display the correct grid and ground distances when the job is not using a CSF.
 - Carlson F2F Offset 3D OH/OV now works properly in cases where the offset points are very close to each other.
 - The Quick View dialog for TS now works as designed.
 - SurvPC now correctly writes the GT record while averaging.
 - There is no longer a potential for rover configuration to be skipped after clicking the green check on the Configure Rover window.
 - Averaging points with Point Edit by changing the point number to an existing point now gives priority to the existing point description unless the edited point description is changed and not empty.
 - The GSAL record for tilt now writes in job units.
 - The current scale point of the job will now be correctly used in Reprocess GPS.
 - Carlson RW5, MO record (job record) reflects the correct Azimuth Direction marker, AD; we added the West and East Directions. Now the enumerations are: North = 0, South = 1, East = 2, West = 3.
 - Download Geoid file dialog now disables the green check icon until a geoid is selected.
 - There is no longer the potential for software failure when using Navigation Style in Survey Points, using a Centerline.
 - C&G CRD files are no longer supported.
 - SurvPC will display the correct labels on the Digital Level Settings page.

Driver Specific Improvements:

- SokkiaIX -- The total station now searches and starts tracking faster.
- SokkiaIX -- The instrument will now resume streaming after the search icon is pressed on the joystick page.
- BRx6/6+/7 – When starting a logging file in the receiver, if the filename is rejected because it already exists, the warning to the user will be more clear and the user will be given the opportunity to modify the filename and try again.
- BRx7 – An option has now been added to turn on use of the Galileo HAS differential correction signal.
- BRx7 --The quick release antenna is now listed as an additional default antenna for the BRx7.
- BRx7 – The instrument will now display an orange icon with an exclamation point when magnetic reorientation is required. This happens rarely and can be resolved by rotating the receiver on all three axes.
- RTk5 -- The NJS to Rinex converter is now included in SurvPC and files will automatically be converted when downloaded.
- RTk5 -- Base mode over Listen-Listen and TCP/IP is now supported using data collector internet.
- RTk5 -- The Harxon antenna is now listed as a default antenna.
- RTk5 -- Logging interval is now supported.
- RTk5 – The "Allow Fixed-U" option can now be found under Equip->Receiver->Advanced.
- Zoom 10 – The default timeout is increased to 4 seconds to allow for potential slowness on the total station.
- Spectra Precision SP80/SP90 – Configure RTCM3 projection will no longer be an option in the RTK+ RTK Bridge tab.

Version 7.01

Release Date: April 26, 2023

Major New Features and Improvements:

- The SurvPC Desktop Edition with no instrument drivers is now available.

Other New Features and Improvements:

- SurvPC now allows editing the total station setup data (occupied point, backsight point, instrument height) of any measured point from the Points | Edit Points Dialog. The software will reprocess the data to correct the coordinates.
- GNSS Average Redundancy now handles cancellation more flexibly by offering the user options on whether to cancel only the current session or the entire average.
- GNSS Average Settings now uses redundancy number to indicate extra sessions instead of total sessions. i.e. 1 = One redundancy session in addition to the initial average.
- The software now supports exporting coordinates to a Scan Control Point file (SCP) in Export | Coordinates | File Type | Scan Control Points.
- Zoom level will now stay fixed when alignment is changed in STK Line/Arc.
- The software now supports the geoid for Riga City, Latvia (riga20.grd).
- Coordinate systems have been renamed from COLUMBIA to COLOMBIA to correct a misspelling.
- Coordinate system "COLOMBIA/MAGNA-SIRGAS / Origen-Nacional / CTM12" is now supported.
- SurvPC now supports the coordinate system for Bavaria, Germany "GERMANY/DHDN-GRID/GK Zone 4 BY KanU." Note: This system requires ntv2_bayern.gsb (>3GB), which can be downloaded here: https://www.ldbv.bayern.de/vermessung/utm_umstellung/trans_geofach.html
- The software now supports manual elevation override of measured or calculated points.
- The duplicate "Enable Sound in SurvPC" setting has been removed from the Power Details dialog. Sound settings are available under Helmet->Advanced Settings->Audible Settings.
- RTK Mobile is now available in the list of Mobile Providers (www.rtkmobile.com).
- Better file naming is now used when extracting solids from a Revit file. Name and category are now captured, and empty folders are no longer created.
- Reports will now respect operating system date and time formats when available.
- The SurvNet routine now allows setting the Relative Positional Accuracy setting up to 20cm.
- If rod heights are changed in a RW5 file with tilt corrections, and the RW5 is reprocessed, the tilt corrections will now be recalculated for the new height. Note that the preferred method of changing rod heights is now via the edit button in the point list. Manually modifying the RW5 is not recommended.
- Road STK now displays the status of alignments, sections, and templates in the lower right hand corner.
- The default extension when selecting a localization file is now ".loc".
- When the last job used cannot be found on startup, SurvPC will initialize itself to NEWJOB but not allow the user to "Continue Last". Tapping "Select New/Existing Job" will take the user to the last used path instead of reverting to C:\Carlson Projects\Data. Returning to the last used path restores 6x behavior, as requested.
- The "Use Line Details" option will now default to enabled.

- Latency ("AGE") will now be written into the RW5 file as 999 when it is invalid.
- SurvPC will show the time delta for points in the SurvNET display as hh:mm instead of minutes.
- Buffer Offset has been improved. Angular portions not fitting the offset have been removed and start/end of offset line has been removed.
- Creation of solids from IFC has been improved. The names from the IFC will now be used, including the second part of names when the entity is made of parts.
- Edit Point now allows modifying coordinate values for imported points and calculated points.
- The set collection routine will now recall the last height and target type on known targets.
- The set collection routine will no longer give an error when using known targets.
- Esri AGLE now supports filters from Tensing/Limburg validators; independent By User, or By Dates.
- Esri AGLE now supports the Tensing (Python) Tool for field data validation.
- The software will no longer write a .sys file for each job. Its elimination will allow all job files to be zipped and emailed on more email servers. Some email servers, such as gmail, incorrectly flagged and rejected the .sys file. Projection data previously stored in the .sys file is now included in the JDB.
- Changing the scale factor in Equip->Localization will now reprocess better using full measurement details, rather than reverting to the RW5 file.
- Inverse will now accept a comma separated input, for instance "1,2" to quickly inverse from 1-2.
- Inverse now reports a ground distance when both points are GNSS points and the project is not already using a CSF. The CSF used for this calculation is auto-calculated based on the position of the first point in the inverse.
- Enable/Disable Laser Pointer is now a pre-installed option for the hotlist.
- The "Copy Entire Job" option in Data Transfer now works better on Esri MXD Jobs.
- The software will now show the RTK Device name on the monitor skyplot ref tab. The missing "Base ID" label has been restored.
- Esri AGOL settings will now be saved and recalled globally. This makes it easier to create new jobs on the same server and login.
- NMEA Output Log To DC Port can now be configured using a direct TCP/IP connection.
- The Web Map Overlay button will now appear in layer manager regardless of whether the feature is currently enabled.
- Imported point coordinates can now be edited.
- A "Use write caching (not for shared folders)" checkbox has been added to Helmet | Advanced Settings | Software Settings. This setting defaults OFF. Enabling it can potentially improve software speed with large job files. The setting should be disabled when background file syncing is used (dropbox, etc.).
- CRD import now happens after the user is prompted to open the current job or new Job.
- A progress bar is now displayed in JDB/CRD synchronization and speed has been improved.
- The graphic in the point statistics dialog now highlights the point selected in the table.
- JDB/CRD synchronization is now performed as a job is closed in addition to when it is opened.
- SurvPC will now play a sound for each tap on the virtual keyboard. Numeric keys will play a different sound. A camera click will sound when a photo is taken. Key-click can be disabled under Advanced Settings.
- SDR Raw (*.sdr) and TDS (*.rw5) exports have been moved from the Coordinate export type to the Raw Data type for ease of access.
- "Inverse", "Import DXF", "Export DXF", "Instrument Configuration", "Volume", and

"Reference Drawings" are now included as optional hotlist routines.

- In the enable/disable constellation page, the software will now always show the GPS checkbox, and disable it if the receiver can't turn off the constellation.
- For the SurvNET routine, specific connections and max connections can now be supplied from the settings page. Configure icons for Points and Connections give users access to max connections and the ability to choose points from list/map.
- BIM Settings now offers a camera elevation setting for first person view in BIM Stakeout.
- The Statistics dialog now draws disabled sessions or measurements (different highlighting indicates that the sessions/measurements are disabled).
- The Statistics dialog now draws elevations in Z graph correctly. (bigger elevations at top).
- Unwanted items can now be removed from the Recently Used Codes group.
- The last used HTML/PDF format type for Coordinates, Job, and Stake exports are now saved and recalled for future sessions.
- Sliding area calculation has been improved.
- The JDB Consistency check error message has been improved and the software will now offer to email the report immediately.
- The option "Next Store Obj Use Complete/Simple" setting has been moved to the Esri Settings Dialog.
- The BIM module now supports the Revit 2023 format.
- Reference Drawings will now recover more smoothly if the reference drawings are moved to a new path. User will be prompted to reattach the files.
- When in proximity stake mode, BIM Stakeout will now zoom out, if needed, so that 2m are visible around the stake point after stopping staking.
- Virtual serial ports will now work in 64 bit versions.
- The current location marker in the map screen now works correctly for both Total Station and GNSS and no longer has the potential to cause software failure.
- Extract Solids from IFC now works correction when the IFC contains combined polyfaces (combined objects).
- The "Auto store pick points from OSNAPS" option now default off. This option is primarily used for Esri EGLE.
- File | Export | Raw data | SDMS PRJ and JXL now available, including email option.
- The Edit RW5 dialog no longer has an export button. All supported exports are now available in the main menu export button under "Raw Data".
- Reports in SurvPC now support dynamic coordinate NEZ/ENZ ordering based on job settings.
- The customizable Hot List feature can now be accessed from the Main Menu by pressing 'Q' on the keyboard or F12. RT3/RT4 users can assign F12 to any of the P1/2/3 softkeys.

Bug Fixes:

- Graphics are now shown normally during first person BIM stakeout of IFC files.
- Esri AGLE --ArcPy/Tensing/Water Authority now calls data sources more reliably by picking the current GDB assigned to the job regardless of other data sources currently set.
- Esri AGLE --ArcPy/Tensing/Water Authority now shows the correct result/closed buttons when appropriate.
- Esri AGLE -- Features for the ArcPy/Tensing LYRs are now set correctly based on MAP Indexes.
- Esri AGLE --Carlson C2E Schema now handles duplicate codes/re-opening lines more smoothly.

- Esri AGLE -- LYR results are now used. Validation filters now work more effectively when reading the GDB results database and feature classes, and results are displayed correctly on the map.
- Esri AGLE -- Equations are now working as designed.
- Esri AGLE -- Multiple code use has been improved.
- Esri AGLE -- The edit button in Point Info now correctly displays the coordinates for Esri AGLE features.
- Esri AGLE -- The software now saves and recalls the last tool, or las Py/Exe ArcPy used in Python/ArcPy or Toolboxes.
- Esri AGLE -- SurvPC will no longer present false JDB consistency check errors when closing the job.
- Esri AGLE -- When re-opening non-active lines to be converted to active F2F, the software now allows lines which could connect to other Codes, but they keep a full single code for each of any of the points the line is created from. E.g. Duiker could connect to water lines, etc.
- Esri AGOL -- The software now works better when reopening a previously used Esri job.
- Esri AGOL -- It is now possible to change the selected map on an Esri job if points have not been stored in the CRD.
- Esri AGOL -- The map scale value will now be set correctly.
- Esri AGOL -- The software will now only pass modified attributes to the server to reduce database interaction.
- Esri AGOL -- The software will now cache in progress work on the selected feature to allow safer editing.
- The software no longer has the potential to flash an empty dialog with Job name at startup.
- The GNSS Average dialog will now display the correct error messages on screen when encountering a no / invalid position error.
- "Automatic Scale to Grid" is now written correctly to the RW5 when the feature is used.
- The Process GPS command on the Raw Data screen will remain available if the user has filled a new job's .crd by processing a selected .rw5 but has not yet done anything to create a .rw5 file with the new job's name.
- The "Starting point already exists. Please choose another point." error will no longer incorrectly appear when attempting a Grid Scan with a valid starting point ID.
- Points changed by reprocessing after changing the scale factor in the Localization dialog now show the correct data in Points List/Info/History.
- Total station occupation setup now behaves more consistently in regards to known/unknown backsight and occupied points. The green check will no longer be disabled incorrectly in some situations. The software will prevent users from moving forward with an incomplete backsight setup.
- BIM Visualize and BIM Stakeout will now show a black background when the Graphic Screen style setting is set to Reverse, when showing IFC files.
- STK Points now updates NEZ in the point selection dialog as soon as the point is selected, and prevents invalid points from being selected.
- SurvPC will now wait up to two minutes to receive server transformations when they are configured by the user.
- Curvature & Refraction calculation for total station no longer has the potential to cause a CRD/JDB discrepancy.
- Auto Description in stake points no longer has the potential to cause the software to fail.
- Edit Points now updates the edited description even if other changes are made at the same

time.

- SurvPC will no longer capture the image of an application that is underneath its windows when the snapshot feature is used.
- Selection of a section file or multiple section files are now saved in the settings of the job correctly for road stakeout.
- The "Item" category of cutsheets is now saved and recalled correctly.
- The "Default Cutsheets to EXCEL(*.csv) files" Job setting is now taken into account when selecting a cutsheet file.
- The SurvPC installer will place a copy of the NADConv folder containing .las/los files alaska, conus and prvi in the correct location. This restores the function of older Nad27 projections.
- Detailed Point Report session measurements have been changed to display Lat/Lon/Elv instead of Northing/Easting/Elv.
- Correct point is now averaged when averaging from Point Protect dialog after changing the id.
- User information text will no longer overlap the "Update Registered User" button after requesting updated user information in the About SurvPC dialog.
- GEOCENTRIC X,Y,Z in custom ASCII export will now always be output in job units, instead of being forced to metric.
- GNSS vectors sent to SurvNET for analysis will no longer include measurements that have been manually disabled by the user.
- SurvNET point aliasing (e.g. =<PN>) is now correctly detected regardless of the presence of other text in the description.
- Changing height in the pt and rod height dialog when using correct for tilt no longer shows a mismatch between CRD and JDB.
- Historical points now only show the sets and sessions originally collected.
- Basic GIS and Esri GIS used in Carlson SurvPC now correctly handles very large numbers (greater than 98765432.1).
- "Invalid Localization points" will no longer be displayed after changing localization points and reprocessing the file.
- The Topcon .tn3 to Carlson .tin function has been improved to support a broader range of .tn3 files.
- The "Using Solids" button in roading stakeout will no longer be hidden behind radio buttons in some instances.
- Road stakeout with solids now offers a new setting for Vertical Delta's when the cut-edge will slice the solid; The routine also supports approximation of ARCs/Tesselation as a % from radius, better ARC/Radius detector; uses Iterative Best Circle LSQ method.
- View BIM Content of the IFC does not show "Empty" character, 255-actually; now the software will check for the label/attribute name or use the class name if not yet implemented (like IfcAlignment (Road alignment), etc).
- The software no longer has the potential to fail when using Map Extend By Edge and using Draw Open and Undo.
- The software will now attempt to detect inadvertent double mouse-clicks between dialogs and block unwanted behavior.
- Navigate settings are now saved/recalled using the new Stakeout UI settings under Configure.
- The software will no longer flash to the desktop briefly when performing the "turn to backsight" function.
- The One Point Test routine will now work correctly even when tilt is disabled prior to entering

the routine.

- The software will now prevent duplication of localization points when points are stored using GNSS Analysis.
- SOLIDs (from AutoDesk mostly, REVIT, Architectural, etc) as Hatch/or standalone ad now correctly imported.
- Point Info History will now show the correct timestamp for edited points.
- Points from a control job can now be properly selected as a reference point in the configure stakeout info dialog.
- The software will now fall back to standard GNSS Average if GNSS Analysis fails. This prevents a CRD/JDB mismatch.
- SurvPC on an RT3 or RT4 will no longer sporadically leave a newly taken photo upside down.
- It is no longer possible to edit or add a point ID when the ID is used for an azimuth only backsight. This prevents errors in RW5 reprocessing.
- Reports will now respect SurvPC UTC vs Local time setting for timestamps and dates.
- RT3/RT4 tablets will now be properly identified in the x64 version.
- Center snap will now work correctly in BIM Stakeout.
- Topcon file conversions are now re-enabled in x64 versions of SurvPC. Internet connectivity is required.
- There is no longer a potential for a CRD/JDB consistency error to occur when modifying points by point range.
- Export GIS blocks to drawing now works correctly in x64.
- The New and Delete buttons will now be hidden when accessing base information from the "i" button on the bottom of the RTK page.
- SurvNet: =PN or =BP in description will now use that point when indicating redundancies of points with multiple sessions.
- Angle formats in the Point Info dialog now respect job settings.
- The Triangle and Curve Calculator no longer has the potential to fail.
- The Average Statistics dialog now shows signs (+/-) of residuals.
- Cancel during the "Starting Bluetooth" dialog should reliably cancel the attempted connect. If a user cancels (Red-x) from Equip-Rover, the return to the last selected instrument will not immediately try to connect to that instrument. In this case, the connection attempt will be delayed until a command such as Store Points requires a good connection to proceed.
- The software will now show the correct icon for the GRZ122 prism.
- The software no longer has the potential to fail when the number of Recently Used Codes exceeds the predefined limit.
- The software will no longer set the wrong backsight target type after performing a set collection.
- Point Info now formats multi-line values in right column.
- The software no longer has the potential to fail when the measure button is pressed in the measurement statistics dialog.
- Switching between export types in the export dialog will no longer forget the last used settings for exports with multiple format options.
- During SurvNET use, a change of control points in the settings will no longer leave incorrect points on Control tab or omit base points from the Points Used tab when the base point is not to be used as control.
- Averaging two GNSS sessions no longer has the potential to cause a software failure.

- The Tilt Corrections block for GNSS points in HTML/PDF reports will now only show when tilt correction was performed.
- QR code registration is once again available in the x64 install of SurvPC.
- The BIM module will now present an error message if it can't open an IFC file.
- If a point ID is entered in a point edit box prior to pressing the point list icon, the software will jump to that point in the list. Otherwise it will scroll to the bottom of the point list.
- BIM Stakeout will now correctly display the scale bar size when the IFC/RVT file linear units differ from the job linear units.
- There is no longer the potential for a dual frequency depth sounder setting to incorrectly carry over to a single frequency depth sounder setup.
- The Log Raw screen will no longer offer an append option when append is not supported by the receiver.
- ASCII coordinate reports will no longer return a blank file when a non-English translation of "All" is provided in the "Points To Export" option.
- The Import dialog no longer has overlapping controls in portraitview.
- JXL export now works correctly in x64.
- SurvPC will now recognize the portrait versions of any non-English languages available.
- Editing sessions with various rod heights no longer reprocesses using a rod height of 0.
- The Alaska 10 zone coordinate system now works correctly when operating near the 180/-180 degrees longitude split.
- There is no longer a potential for a software failure when no item is selected in geoid download.
- There is no longer a potential for a software failure when canceling in the monitoring dialog.
- Points from MAPs used for GIS management now work as designed.
- SurvPC will use a shorter string when in Portrait for its x64 About label to avoid running to 3 lines of text on the button.

Driver Specific Fixes:

- Topcon GM Total Station -- The default time out for the Topcon GM has been increased to 3 seconds to avoid timeouts due to sluggish communication.
- Carlson BRx7 – The aRTK option is once again available.
- Carlson BRx7 – Surefix will now be enabled by default.
- Carlson BRx7 – All satellite constellations will now be enabled by default.
- Carlson BRx7 -- The BRx7 now supports an option to output base corrections over the receiver's Wi-Fi. After starting this output at the base, connect your data collector to the base's Wi-Fi hotspot, and run Data Collector Internet at the rover set to TCP/IP. Port setting will be 192.168.10.1:8322.
- Carlson BRx7 -- There is no longer the potential for the software to fail when reading GPS for base setup on BRx7.
- Spectra Precision Focus 35 -- The license retrieval for Spectra Precision Focus35 will no longer fail. Note that this instrument requires the x32 installation.
- Javad Triumph 2/Javad Triumph 3 -- Base configuration mode is now allowed by the software.
- Leica TPS -- Leica total stations will now query the temperature and pressure set in the total station and write the values to the RW5 file. SurvPC will no longer offer a setting for temperature and pressure in instrument settings. This must be set on the total station.
- Leica TPS – The "Lost Lock Behavior" is once again available for supported Leica TS.
- Leica TPS – The check level routine will now run more smoothly.

- Leica TPS - -Migrations from 6.0 with Leica robotic total stations no longer have the ability to select the wrong driver in version 7.
- Leica GPS – Data collector internet is once again working for Leica GPS.
- Sokkia IX – x64 versions will now connect to the Sokkia IX without asking to pair each time. This bug may affect other total stations and GNSS.

Version 7.0

Release Date: February 3, 2023

Major New Features and Improvements SurvPC:

- SurvPC now supports x64 and x86 installations. Use x64 for improved performance, BIM, and Esri ArcGIS Online. The x86 version is required only for legacy Esri MXD use.
- The last known location of the user is now displayed in the map view for convenience.
- The software includes updated support for DXF/DWG/DGN including latest versions and improved blocks and inserts.
- BIM is now supported using IFC and Revit files. Includes viewing, storing, and staking in 2D or 3D mode. Purchase of BIM module is required.
- Esri ArcGIS Online is now supported. Log in with user credentials to read and store to the Esri Online ArcGIS database from within the software.
- SurvPC report and export options have been revamped and enhanced. It is now possible to export job, point, and stake reports in HTML or PDF format. Reports are easily customizable including the ability to add a logo.
- Tunnel road stakeout is now supported from Civil3D Land XML Files. The software will report tunnel wall under/over excavation data in real time. This new feature requires purchase of the Tunneling module.
- Total Station Monitoring is now supported under Survey->Feature Survey. This new feature requires purchase of the Monitoring module.
- Carlson Cloud has been improved and revamped. It is now possible to log in automatically on startup, define custom broadcast groups, or broadcast to all members. Chats are now displayed per-user. Notification method (immediate popup or flashing helmet) is now selectable. Users can now see who is logged in and the status of messages (read or unread). The helmet will now indicate if messages are available. Message size limitations have been removed.
- It is now possible to check for software updates and view release notes from the Software->About->Helmet menu.
- The list points routine now displays date/time, point source, and rod height columns.
- The point info button now shows more detailed point information, including photos and point history if the point has been modified or replaced.
- Rod height can now be edited from within the software. The software gives the option to only change the selected point, or reprocess and update all associated rod heights.
- Reference drawing files with full layer control are now supported. Reference drawings are read-only and can be auto updated using a set time interval or through Carlson Cloud.
- It is now possible to collect redundant measurements using the same point ID. All measurements will be tracked and averaged, and can be viewed later to disable/enable horizontal and/or vertical components of any measurement session.
- Automatic point proximity tagging is now supported. Enable in the Configure in Equip->Configure->GNSS Average tab. The user can customize the tag and proximity at which to auto populate descriptions. For example, a second measurement to point 3 can be auto tagged as "=3". Please see additional release notes about other options for redundant measurement in this version.
- The software now includes a fully customizable user hot list available by double-tapping the top bar.

- The averaging routine has been improved. Measurements are now graphed in both horizontal and vertical as they are taken. Previous measurements to the point are displayed as well as one sigma and two sigma quality ellipses.
- The software now supports redundant cycles in the average screen. This allows the user to configure multiple measurement sessions on the same point with a time delay and RTK reset in between.
- Tolerance profiles are now supported.
- Catenary Survey is now supported under Survey->Feature Survey. This specialty routine will measure and report on power lines and other sagging lines. It allows specifying ground elevation and minimum distance to ground as well as deviation from expected catenary curve.
- SurvPC now defaults to creating new jobs inside of a folder. This new feature can be disabled in File->Job Settings if it is not preferred.
- It is now possible to copy a point using “Add” in the Point List dialog without changing anything except the name.
- Road Stakeout now supports the use of Solids/Carlson MDLs. Solids can be created from Revit and IFC BIM files using the BIM module and will be sectioned on the fly to allow real-time staking to any element of the 3D model. Purchase of the BIM module is required.
- SurvNet least square processing is now supported in the field for GPS measurements under Equip->Raw Data. A full HTML or PDF report will be created, and adjustments to points will be detailed in the Point Info screen.
- The software now offers automatic blunder detection for repeated measurements to the same point (either with the same point ID, or user defined duplication tag, i.e. "="). The user will be warned if the measurements differ by more than the user specified 2D or 3D tolerance, otherwise, measurements will be automatically averaged. This reduces the possibility for field error.
- The help menu now includes an option to take a screen capture. Specialist help links for certain hardware has also been added.
- The software now supports emailing reports, exports, debug logs, and screen captures directly from the field. The user can create an address book for easy address recall.
- Geoids covering the selected location can now be downloaded from the field.
- Point history is now supported, including point restore on older versions of a point.
- Stake Roads now allows the use of surface files including TIN and Multi-layer LandXML for stakeout or slope staking (Final Surfaces). Files will be sectioned in real time for complete staking access to any point.
- It is now possible to edit a point ID in Point List->Edit to average the measurement with previous measurements to an existing point.

Other New Features and Improvements SurvPC:

- The "Use IMU" setting has been removed from the receiver tab. All IMU settings have been consolidated to the Equip->Configure->IMU tab, allowing for easier access.
- It is now possible to jump to a new station in road stakeout based on the measured position.
- Distance to Surface is now presented visually in the MAP in Road Cross Section, in road stakeout.
- Shift up arrow and Shift down arrow will now change the current GPS Simulation elevation by 1% of the current zoom level. Alt-up and Alt-down modify the GPS Simulation elevation by 2 cm.
- Export google earth now supports KML and KMZ.

- Instrument configurations can now be exported easily for sharing from the configure screen.
- The x86 version now supports full script toolboxes when the ArcGIS Esri Engine is used with MXD files.
- UTM/NAD27 coordinate systems are now supported.
- The TDOT and TDOT1 symbols files are now included in the SurvPC install.
- Ground control points (GCP) export is now available as a coordinate export type. This is the preferred export for Carlson Photo Capture.
- The KY Single Zone projection has been renamed to Kentucky Single Zone in the CSL file for consistency.
- Carlson SurvPC-Esri now supports Environments by dynamically creating options based on the Esri Py (python) file.
- SurvPC now supports a different user friendly approach to switching Category/Groups aimed at GIS users. This new method eliminates an extra click by allowing one click selection from the code list. This option can be selected in Advanced Settings->Software Settings->Switch Category/Group.
- The option "Store GPS Vectors in Raw File when available" has been removed. Vectors will always be stored in the raw file when available.
- The software can now automatically set the left or right offset for road stakeout by finding the correct left/right surface.
- Html reports will now be opened using the default browser.
- SurvPC NGS Search now has settings to control warnings displayed. The list of monuments found can be sorted by field. The distance from search center is displayed in the monument list. The user can extend the waiting time if the network is slow or a large search radius is specified. Lat/Lon display has been improved.
- New CRD files now always support alphanumeric point names. The legacy numeric only CRD file option is no longer supported for new jobs.
- SurvPC will warn a user that his job has existing GPS points and offer to reprocess them if he changes his geoid or projection.
- While in the SATView and SATInfo screens, the software will now display the breakdown of satellites in use and available by constellation. This will be displayed in the title bar at the top. This will not be displayed if that space is in use for displaying the time on site/time remaining (static logging).
- The "Store When Fixed" dialog now supports minimum fixed epochs.
- "Internal GSM" has been renamed to "Receiver GSM" and "Data Collector Internet" has been renamed to "Data Collector GSM or Wifi".
- IRNSS satellite data will now be properly displayed in the SATView and SATInfo tabs.
- Arc Tessellation has been improved in the map screen.
- SurvPC will offer "Skip This Point" and "Skip All Duplicates" if importing points triggers point protection. If the user taps "Skip All Duplicates" any further points with duplicate point ids will simply be skipped over during the import process.
- The software will now display grid shift file names in the System tab of the Localization dialog for projections that require them.
- The software now writes "--Reprocessed Raw data change. See 'filename'" to the RW5 file after reprocessing.
- Users will now be prompted to download grid files if they are required by the selected projection and are missing when the job is loaded.
- COGO->Inverse now reports the Delta N, Delta E, and Delta Z values.
- By default, neither the OS nor the display will go to sleep when SurvPC is running. This can be disabled from Equip-Configure setting "Prevent OS sleep when SurvPC running".

- Minimum OS version for SurvPC is now Windows 10. The installation will be blocked on computers not meeting this requirement.
- Multiple total station tolerance warnings are now combined into a single dialog.
- Vector records now include a G4 record to indicate final tilt offsets in metric. These values can be added to the G1 record to correct a tilt adjusted APC to APC vector.
- SurvPC will auto-select the current job's RW5 in File->Raw Data unless the current job is empty or there exists a TLV or PRJ file for the job. This eliminates a prompt.
- Stakeout settings have been rearranged for clarity. Navigation specific settings have moved to Advanced Settings->Software settings. Proximity is now listed as a mode, and proximity radius is available in the same dialog.
- The software now supports drawing files produced by MODUS CAD app. BYBLOCK insert capabilities are now also improved.
- When using previously surveyed point, the selected point ID will be used as the RTK Broadcast ID when possible. The "Store in Point List" prompt will default to the broadcast ID.
- West Azimuth is now supported. The GPS Simulation rotation will now also follow this setting.
- The Check Backsight button on the robotics tab now also allows the user to set the backsight.
- Users are now warned if the storage drive their job is located in has limited space. (< 100MB).
- In GPS Offset mode, the GNSS position status icon will continue to update in real time. Previously, this icon would show no position.
- The GridScan routine has been renamed to RoboScan.
- Model specific help is now available from the help menu. This is available for the BRx7 and CRx now but will be expanded. Internet access required.
- The "Store in Point List" button in base setup now uses the rtk broadcast id by default as the point id. Point protect will appear if that point ID already exists in the job.
- UTM Coordinate systems are now at the top of the list.
- The Ohio NAD83 LDP coordinate systems are now supported.
- System34 = West Reference is now supported.
- The SLOVAKIA/S-JTSK [JTSK03] / Krovak East North (EPSG 8353) coordinate system is now supported.
- The 2012B Geoid will no longer be included in the SurvPC install. The 2018 Geoid continues to be provided. The 2012 version can be auto downloaded from the Geoid setup button if needed.
- Drawings will now load with increased speed and less memory use.
- The "Default User Settings" feature under the Helmet in the About screen will now offer two options: Reset User Warnings and Reset Job Settings to Default.

Bug Fixes in SurvPC:

- Editing RW5 files no longer truncates the lines at 123 characters.
- The Wrong Driver selected error will now prevent users from continuing with instrument configuration on the wrong driver.
- The software will no longer include centerline error in point description when storing Elevation Difference.
- SurvPC will report lack of internet connection if that is the cause of failure when attempting to create a new Carlson Cloud user.
- Localized GPS jobs now work correctly with google maps.
- When NMEA output is turned on and GGA messages are selected, the geoid value in the GGA message will use the correct sign. Previously, the value was incorrectly negated.

- If the selected coordinate system does not require NADCON conversion grid file, the NADConv folder will no longer be automatically created.
- Satellites with azimuth values of 0 will now be shown in the SATView screen SNR table.
- SurvPC will provide the ability to add photos from the store point dialog after set collection.
- SurvPC will no longer fail when it does not have permission to access the camera. It will report lack of access to the user.
- When the Water Authority or German Schema is used with the Esri ArcGIS Engine (mxd), the software will now obey Carlson's required field values instead of the Esri's Field required setting.
- Carlson RT4 and RT3 tablet camera and video feeds will no longer be incorrectly flipped and rotated.
- Resection residual values will now use absolute values when sorting in the results table using the column headers.
- The software no longer has the potential to store an old measurement if position data is lost (dead battery) on a cable connection.
- The distance error calculation message in advanced occupation now only shows the real result, and never compares against the precalculation result.
- Process Raw File->No Adjust will now respect the "Reduce to Grid Coordinates" setting even when the TS setting "Use Ground to Grid" is off.
- The turn to point button in resection will now turn directly to the point without prompting an additional dialog. The point entered in the Point ID will be remembered if the user goes into settings, uses turn to point, or goes into the robotics dialog.
- The Check level dialog now opens and closes more smoothly.
- Changing the NE order in Job Settings no longer causes the job headings to be abbreviated.