
*Version 4.00 Release Notes*

# Table of Contents

# Improvements and Resolved Issues By Release

## Version 4.03

*Release Date: December 17, 2014*

**New Instruments Supported:**

- Carlson Surveyor2 L1 Internal GNSS
- Geomax Zenith 25 Pro GNSS
- Champion T1/T2 Total Station
- Champion TKII GNSS
- Champion AllStar GNSS
- Stonex S10 GNSS
- Geodetic GS1 GNSS
- Ruide R90X GNSS
- Topcon IS Total Station

**New Data Collectors Supported:**

- HiTarget QMini 3B
- Nautiz X5
- CHC LT500T/H

**New Features and Improvements in SurvCE:**

- SurvCE now supports a proximity stakeout feature, allowing for enhanced and intuitive navigation to staked points.
- SurvCE now supports the ability to automatically store a point in the auto-by-interval routine when receivers with tilt sensors become level.
- SurvCE now supports a GNSS level calibration routine for receivers with internal tilt sensors.
- SurvCE now supports External Curve Calculator.
- SurvCE now supports the ability to revert to default user settings in the About SurvCE dialog.
- Satellite Elevation Mask will now default to manufacturer recommended values when available.
- Satellite text view will display recent satellite data immediately instead of waiting for the next update from the receiver.
- Users in Greece may now select a smaller coordinate system region to load smaller grid sizes. New selections added: Greece/StereaSouthIono_Hepos_GGRS87/TM87, Greece/Creta_Hepos_GGRS87/TM87, Greece/CentralNorth_Hepos_GGRS87/TM87, Greece/Aegean_Hepos_GGRS87/TM87
- Allegro2/Surveyor2/Mini2 -- The top bar is now slightly expanded and optimized for best use on capacitive screens. This allows for more reliable pressing of buttons on the top bar and improved user experience.
- All Bluetooth Radios -- Interface to Bluetooth radios has been improved to allow more user interaction and cancel. User is now given an error when BT connection to radio fails.
- STK/Line-Arc Define Line now supports the “use points” functionality to easily define an

azimuth, the same as COGO/Intersections.

- SurvCE now has the option to automatically create F2F points based on changes in the action codes.
- Offset 2P/ TS/RTS now supports offset types total, flat, and progressive. The routine also now recalls the last two measurements stored.
- SurvCE now supports the import of companion files for Geopac SCT data into Carlson SCT data files when there a CSV file of the same name is present which contains the DESC of the angular points on a cross section.
- SurvCE now displays a robotics button in the point projection dialog to allow for robotic searching.
- SurvCE now displays a target switch icon in the helmet in the point projection dialog.
- The text for battery display has been adjusted to better display all information.
- The red X and green check on the equipment information screen have been replaced with a return icon button.
- Carlson Cloud has been re-worked to improve performance, reliability and usability
- Receivers now support the option "use base antenna from rover when available" in the ref tab antenna button.
- The appearance of the antenna selection dialog has been improved.
- PDOP tolerance default value has been reduced from 10.0 to 3.50.
- SurvCE now performs correct calculation of image boundaries on images with coordinates less than 0.0.
- ADL Vantage -- The ADL has been renamed to "ADL Vantage" and the "ADL Vantage Pro" has been added, with configurable power levels.
- ADL Radio -- The ADL radio now supports power level 4 Watts.
- SurvCE now offers a save button ("floppy disk") in Triangle Calc Report in COGO/Calculator will store Triangle Calc area to RW5.
- Pull down filter of filetype is available when choosing file to send in Carlson Cloud. Last filter used is remembered.
- Import Geopak/InRoads/Microstation SCT file now supports the user of Station Equations.
- SurvCE now supports a divided highway option under Stake Road/Section Files. The user can setup a horizontal/vertical pair for left/right of a divided highway.
- The appearance of the GPS Utilities->Quick Start dialog has been improved.
- The 14 parameters "test" dialog has been renamed to "Calculate" and has been reorganized for clarity.
- A size limit of 1MB is enforced for file upload using CarlsonCloud. Timeout is adjusted to make successful upload likely for all but the slowest internet connections. A status dialog is provided for both Upload and Download from Cloud to give sense of progress.
- Added icons within the CODE List Descriptions: example HGT/DESC, Get Description dialog, etc: showing WITH/ or WITHOUT GIS Feature attached the code.
- The XDL radio now supports setting power level.
- The XDL radio options are now dynamic based on the current modulation setting. Protocols and baud rates not supported will not be displayed.
- The XDL radio now detects incorrect protocol/link rate/modulation configurations and warns the user.
- SurvCE will notify a user that his change of mountpoint or disabling of 1021-1027 messages will result in loss of grid and RTCM projection information. He is instructed to set a new

projection if needed or wait for new mount point to deliver new RTCM projection.
- GPS Simulation -- Added GNSS Level usage to GPS Simulation. (It generates random xtilt/ytilt based on the GPS Sim speed).
- The Pacific Crest XDL radio is now supported over serial connection (Bluetooth version previously supported.)
- All RTS -- The ALT-D shortcut now toggles dist/non-dist for all robotic total stations.
- The Surveyor2 and Allegro2 can now fully operate the Carlson CR2 and Geomax Zoom80.
- SurvCE now supports: AutoCAD R13 (1994) , R27 (2015); import BLOCKs/INSERTs 2D.

**New Features and Improvements in SurvPC:**

**Note that SurvPC also includes all SurvCE improvements*

- Geospatial PDF is now supported in Image View.
- SurvPC now downloads and starts ArcGIS installer without need of DownloadEngine.exe

**Bug Fixes:**

- SurvCE will no longer experience lengthy delay on first entry to map screen that occurred occasionally.
- The Mini2 L1 driver no longer appears as an option for any data collector except the Carlson Mini2.
- Offset using GPS now properly shows the buttons to pick a point from List/MAP. This was a bug for only on Windows Mobile Data Collectors.
- SurvCE will now default OFF the virtual keyboard for all WM6 landscape data collectors except the Juniper Mesa.
- The results dialog when reading in Resection now has correct placement of the "Cancel" button.
- ASCII Export to KML now works correctly when pictures are not attached.
- Winmate S430T WEH 65, fix added to support Platform (Release name) S430T.
- The RTCM3 Parser now correctly and fully recovers from incomplete/faulty data.
- SurvCE will now properly apply the vertical/slant setting when the user modifies it in the tag site screen.
- Pacific Crest Radios -- Pacific Crest radio drivers now wait up to 8 seconds after sending the soft break to ensure that the port is clear, before sending further commands. This improves radio configuration when the radio is actively receiving data.
- Pacific Crest Radios -- SurvCE now properly displays error when incompatible radio settings are selected, and recovers the radio back to data mode after the error.
- SurvCE will no longer erroneously prompt "getting log status" on exit, when the user was not logging static.
- The Select All and Clear All buttons in "Turn Satellites On and Off" now work correctly.
- All TS-- If a backsight check is performed in the Set Collection function, the report will now be written to the RW5 file.
- If grid to ground is checked and there is a one point localization or a 2 point localization with rotate-only checked, the report always shows the first localization point as the "scale point".
- SurvCE will no longer attempt to load/use a geoid if using a total station and SurvCE was not set to calculate ground to grid.
- Atinav BT -- SurvCE can now connect/disconnect to different receivers using Atinav BT without issue.

- Smaller height dialogs, for PortraitView/Capacitive screens, have correct top bar heights and displacements of "cancel, ok, etc" buttons.
- SurvCE no longer has the potential to fail during Carlson Cloud CrewView.
- SurvCE no longer has the potential to fail in Property Sheet/Monitor GPS/property page: SatView > Satellite info: pages GPS, BEIDOU, GLONASS, etc.
- Survey screens will once again use bold font unless the text is too long to fit on the screen (in those cases regular font is used).
- F2F after storing a point with codes usage as for e.g.: 6MH 10FN ST, now correctly returns the DESC in the edit box as: 6MH 10FN. Before the fix, the software was returning incorrectly the DESC in the edit box as: 6MH 10FN10.
- The Blueooth XDL radio now defaults to the "data" port.
- Both BT and regular versions of XDL radio are now "receive only" and do not support power options.
- MAP Fillet will once again allow "separate" linear segments from two different polylines.
- When no storage card is detected in log raw, SurvCE now gives a more useful error message, and grays out all further options for the user.
- File comparison in log raw for new/existing files is now case insensitive.
- The "Turn to AR" string now always fits properly on the screen in stakeout.
- GIS Input Data, in capacitive portraitview "combo + cancel" buttons are no longer overlapping in the screen creating issues when using the Store GIS.
- Fixed the point IDs in the Triangle Calculator report.
- Import ASCII: SurvCE now prevents an extra error when there is a failure while deleting the "backup" CRD file, $#$name$#$.crd. Delete them if the number and max point in the current CRD used it is larger than the temporary file. Import LandXML CL/PRO: accidentally created broken CL/PRO discontinued are now deleted (they are temporary files).
- Only an admin user will be allowed to perform the ArcGIS Engine installation from SurvPC. This will prevent Engine installations that do not respond properly.
- All Bluetooth Radios -- SurvCE will now post an error if the port for the Bluetooth radio does not open properly.
- SurvCE now rewrites the base record when it detects that the baseid has changed.
- SurvCE/PC will remember last successfully logged-in Carlson Cloud user and try to login as that user the next time the software runs.
- All GPS -- If "Store Fixed Only" is selected, the Fix status will be verified before all other tolerances. If the user chooses to "Store when fixed", both the Fix status and the RMS tolerance will be checked before the program will continue.
- Show Z works correctly, in TS/RTS, graphic screens.
- There is no longer the potential for the Turn To BS button to overlap the Set Angle button on the backsight screen for portraitview devices.
- In Log Raw, it is no longer possible to create a new site name that collides with the name of an existing site name. This prevents user from accidentally overwriting data.
- If the translation point is different than the rotation and/or scale point in a combined transformation, the solution will now be correct.
- Win 32 (Carlson SurvCE PC Demo/Carlson SurvPC) -- Edit Rw5 now correctly finds values using the radio buttons Up/Down.
- SurvCE now recovers properly to previous instrument state after offsets.
- All TS -- SurvCE will now return to a good state after a reading fails in "wait" mode.
- SurvCE no longer has the potential to lock up in resection when the UPLOAD STATION SETUP feature is enabled.
- If the base receiver supports setting a max DGPS age, this value will now be applied.

- Corrected the number of SS in Process RW5/Compass.
- SurvCE can now limit the external radio list for individual GPS receivers to simplify setup.
- Fixed import of .dxf/.dwg variables and setting them to the ini file.

**Bug Fixes SurvPC:**

- SurvPC/OEM Esri ArcGIS Engine now works correctly when category contains only "data sources invalid" for the Feature Layers under the Group Layer.
- SurvPC/OEM Esri ArcGIS Engine now detects if any MXD Feature or Layer is added to the MAP and warns the user if the license they are using is not sufficient.
- CSurvPC/OEM Esri ArcGIS Engine working with Geometric Networks/Topologies now allows the user to re-measure Points (Junctions), Non-Points (Edges) and preserves the data during the Editing stage.
- CSurvPC/OEM Esri ArcGIS Engine working with Geometric Networks/Topologies now allows Non-Points (Edges) to be created using Carlson F2F style.
- Carlson SurvPC added: detected Esri ArcGIS Desktop license, and shows the version of the Esri Core Engine for Desktop or OEM ArcGIS Engine under Equip/About Carlson SurvPC.
- CSurvPC/OEM Esri ArcGIS Engine now skips non-feature GCS layers such as raters, lyr, etc., and also feature layers, when the data source is broken.
- CSurvPC/OEM Esri ArcGIS Engine now offers extra details when failing to initialize the Engine on a Windows 8.1 OS.

# Version 4.02

*Release Date: October 23, 2014*

**New Instruments Supported:**

- Focus 35

**New Data Collectors Supported:**

- Carlson Surveyor2
- Juniper Allegro2

**New Features and Improvements in SurvCE:**

- SurvCE now uses icons within the code list descriptions to indicate whether there is a GIS Feature attached to code.
- GNSS Level Calibration feature added under GPS Utilities for all receivers with tilt sensor. Current method for calibration is a 2 step process involving a 180° rotation.
- GPS Tilt Sensor used in Store Points using TAB view now hides all the unnecessary STK/NAV info controls.
- The bottom bar in Carlson SurvCE/SurvPC info text now updates approx 10% faster.
- Support was added to turn off or on BeiDou satellite tracking for individual satellites.
- The MAP new command will now show the direction of a Polyline.

**New Features and Improvements in SurvPC:**

**Note that SurvPC also includes all SurvCE improvements*

- The updated version of DownloadEngine.exe will now be delivered in the installation.
- Com ports 1-9 will now always be available output ports for NMEA. This change is intended to support virtual serial ports running on the Supervisor tablet.

**Bug Fixes:**

- SurvCE now detects and prevents invalid tilt data.
- The Edit Rw5 feature now allows searching correctly using the radio buttons for up/down.
- USA County MN -- The projection definition has been corrected.
- The Find Point from MAP routine in SurvCE has been optimized to improve speed.
- SurvCE no longer has missing North/South in STK info. This also eliminates a potential overlapped Turn To AR on top bar.
- GPS Average will now record points more quickly and at a steadier pace.
- If Configure->Sets->Calculate Reciprocals is turned on, the average elevation for the occupied point was being calculated from the forward and backward measurements but the elevation was not being written to the coordinate file. This behavior is now corrected.
- International builds now support extended ASCII characters in settings files.
- There is no longer the potential for settings files (ini/inf) to fail for lists of values.
- When using Import LandXML, if there is a missing StartSta for Curve Elements, SurvCE will no longer fragment the chain (centerline).
- Pidion data collector -- The background will no longer show through above menu tabs on the

display.

- Pidion data collector -- Special Korean splash screen will display when SurvCE starts with current language set to Korean.

**Bug Fixes SurvPC:**

- SurvPC/OEM Esri ArcGIS Engine now correctly skips non-feature GCS layers such as rasters, lyr, and etc.
- SurvPC/OEM Esri ArcGIS Engine now offers extra details when failing to initialize the Engine on a Windows 8.1 OS.
- SurvPC/OEM Esri ArcGIS Engine now works properly with "zoom previous" feature.

# Version 4.01

*Release Date: September 8, 2014*

**New Instruments Supported:**

- Carlson BRx5 GNSS
- Satlab SL600 GNSS
- HiTarget V60 GNSS
- Altus NR2 GNSS
- Geomax Zipp20 TS
- Pentax SMT888-3G v3 GNSS
- Pentax G3100-R2 GNSS
- Maple TS (MPE-822L)
- Gintec G9 GNSS
- Acnovo GX9 GNSS
- Geopos G9 GNSS
- Geosat Zeus GNSS

**New Data Collectors Supported:**

- BHCNav Gisa
- Winmate S430T WEH65

**New Features and Improvements in SurvCE:**

- GPS Utilities will now use "Hang Up" and "Dial" terminology when a GSM modem is used.
- German grid files will be delivered along with German language when German is selected in International installs.
- Export KML/KMZ will now work for Carlson SurvCE PC Demo and Carlson SurvPC.
- Image file names are now compatible with Carlson Survey.
- SurvCE now supports (IBGE) versions of SAD69 projections for Brazil. These versions will apply the official 3 parameter datum shift from SIRGAS2000 (close to WGS84) to SAD69.
- The Configure button from within Store Points/Stakeout will now allow you to turn the GPS level bubble on and off if the GPS receiver has already been set to output level sensor data. Find this setting under the "View" tab.
- The program now detects if the TSF file contains the TPLs component files at the same location where the original file it is placed at. This avoids the error when loading a file, directly passed from the Carlson Office Software, where the paths included are going different on the Data Collectors/tablet PC, etc.
- The Pacific Crest XDL Rover 2 Bluetooth radio is now supported.
- Satellite data in the monitor skyplot screen now refreshes every 2 seconds. The graphic in the skyplot now loads faster.
- The info screen under equip->GPS Rover/Base now shows the model name if queried from the receiver.
- For data collectors using a cellular network connection, the appropriate type of network connection to make will be queried from the data collector.

- If GDOP or TDOP are not valid, they will not be displayed at the bottom of the Store Points screen.
- If the connection to the GPS on startup fails, the software will no longer attempt to start the position stream.
- SurvCE now allows the user to edit the point number in resection after the reading has been taken.
- Loading a road model is now 70% faster.
- All internal GSM modems can now reconnect to the network RTK when starting SurvCE or after waking up.
- The increment arrows on the signal to noise bar now display properly for portraitview data collectors.
- The timeout to query an NGS data sheet was increased from 2 to 5 minutes to allow for very slow connections.
- SurvCE now supports a maximum of 64 satellites (increased from 32).
- Desktop demo versions now combine support of portrait and landscape, allowing the user to switch orientation in the about dialog.
- Export ASCII now supports adding custom defined spaces to pad values as a prefix or suffix.
- New Coordinate System: German Grid -- German MV-Grid 1942 Gauss-Kruger Zones 3,4 and 5.
- New Coordinate System: German Grid -- German MV-Grid RD83 Gauss-Kruger Zone 3,4,5.
- KML/KMZ how supports exporting zipped archive in WindowsCE.
- SurvCE Demo programs on the PC will import JPEG and TIF georeferenced images.
- For instruments that only support Bluetooth connections, only the Bluetooth option will be shown in the Comms tab.
- SurvCE now supports the option to write the MO (units record) as a note in the RW5 file.
- Getac 336 -- The Getac LRBT cap now works on the Getac 336 data collector.
- The Resection routine now allows the user to edit the data if the calculate button shows NO SOLUTION. Now, regardless of whether there is a solution, the user can go into the resection review/edit dialog. It will still not be possible to store the point until a solution is possible and accepted by the user.
- NGVD29 is now supported.
- SurvCE now supports the option under COGO/Pt Average/Settings to disable the warning if prompt for Hgt/Desc is off and Pt. average same ID is on.
- SuvCE now allows space characters in a CAD entity's name.

**New Features and Improvements in SurvPC:**

**Note that SurvPC also includes all SurvCE improvements*

- SurvPC now supports Graphical Coordinate System (GCS) for Esri OEM Engine data sets.
- SurvPC now supports retrieving Ground Radar Information from the US Radar Controller Software to use in combination with store points.
- MSXML 6.0 SP1 added to installation as redistributable.
- SurvPC OEM Esri Alternate CAD Engine now supports F2F Offsets in Survey/Stk Screens.

**Bug Fixes:**

- SurvCE will no longer crash when an invalid target is read from the custom target list. The software will also no longer write bad values for min and max channels when creating custom targets.
- SurvCE will now always show the direction of the polyline, regardless of zoom level, in the MAP screen. This improves the reverse polyline routine.
- Stake Road, using cut from alignments, or from RoadModel, ensures that the Template Series finds the correct surface = cross section, even if the model (3D strings) are not aligned correctly at the ends (to the normal of the main road), (solution, extends or trims, small amounts from the 3D strings to align correctly to the station from the Template Series).
- SurvCE will now write a new LS record before storing a new point after any edit is done to the RW5 file for rod or instrument heights.
- RoadModel loading has been improved. Now correctly loads only the "surfaces" for picking the Main Road Centerlines. Surfaces tagged either *centerline* or *centreline* will be accepted. The horizontal alignments will also be split correctly based on the start station and the connection between elements.
- When exporting GPS positions in Custom format, Grid Z values will now be ground values with geoid applied, if selected by the user.
- Level tolerance will now only be checked in the Average routine if the Level Bubble is turned on.
- The Auto Scale Factor in Localize->TS is now being calculated in Store Points. Previous versions defaulted to a scale factor of 1.0 when calculating coordinates.
- If turning multiple sets using the BD-BR/FR-FD observation order, the LS record will now be written before the BD record in the next set.
- If a geoid model is selected and the Automatic Scale to Grid is selected, SurvCE will now use geoid separation to calculate the ellipsoid height in order to calculate the z scale factor. Previous versions used the orthometric elevation.
- SurvCE will ignore bits in the DF148_trans_indicator that don't have meaning. A reserved bit on from the SAPOS-Byern server prevented SurvCE from accepting RTCM projection from server.
- Users can no longer cancel a fresh RTCM Projection grid. Improved replacement of old grid with new. Corrected check for whether last horizontal shift valid to check both lat and lon.
- The resection routine no longer has the potential to lock up after calculations if the "upload station setup" setting is enabled.
- The Volume/MAP Command now displays in the report additional information: Import/Export volume, and also Elev Change to Reach Balance.
- Carlson Cloud no longer has the potential to crash when exiting the CrewView dialog.
- The ARWest 435 radio will now properly display the power settings in radio configuration.
- The X and Y values of the GPS tilt feature have been reversed.
- There is no longer the potential in resection for angle residuals to get out of sequence when there are multiple readings to the same point.
- Greek/Russian -- Stakeout sequences will no longer show "?" in place of some characters.
- The CL Reference page no longer has overlapping dialog boxes in PC Demo version.
- Microsoft Bluetooth driver communication has been improved.
- Display of tag duration in the log static screen has been improved.
- SurvCE now displays "Close Site Tag" instead of "Stop Logging" when a site tag closes. The old text was unclear.

- KMZ export for points now works correctly in Win32.
- The RW5 editor now shows the single: Angle values, per record if a Note: example: Calculated AR, Delta, etc.
- Import Carlson RNF (road network files) now supports loading the ProjectPath$ files set on the TSF files done in the Carlson Office, and also supports the new "|" separator. Fix relate with: STK Road/ Load RNF, and also Utilities/Input Edit TSF File.
- The startup time for data collectors has been reduced. Especially noticeable in CHC/Champion data collectors such as the Scepter.
- Croatian/Serbian -- Icons will be displayed correctly for all dialogs.
- Geopak to CL, "angle to Azimuth Angle/Bearing", fixes the issue related with the support, of South/West/East Azimuth angle.
- South African setup for MAP Southern Hemisphere checkbox no longer interferes with the display of Latitude/Longitude Edit and static boxes. The Lat/Lon displays correctly even if the Southern Hemisphere check box it is ON.
- MAP/ Zoom Find Point now works correctly, version 4.0 was incorrectly using the zoom stakeout, which avoided the repeated zoom to a point, if the point was in the current view; now Find Point, Zoom to in MAP works as before, avoiding the STK, which stays the same.
- The description is now stored after the Point gets stored in the Offset/Result tab.
- The South S760 data collector now retrieves a correct hardware ID.
- Nautix X4 data collector now retrieves a correct hardware ID.
- SurvPC now verifies if an International Language Dll, does not match the Exe version. Prevents errors (missing strings, controls in resources).
- Fixed issue with Capacitive Screens (480x800), MAIN MENU, usage of ICONs instead of words (FILE, EQUIP, SURVEY, COGO, ROAD).
- The coordinate system projection will now always be written immediately following the crd file format ("CRD:") in the header of the rw5 file.
- RoadModel now filters and reconstructs the missing CLs, we are associating them through the code, each part of the Centerline. Each CL, can be broken into pieces, so the code does the match, to make 3D strings from the less fixed format of RoadModel added to LandXML.
- SurvCE now allows duplicate PRO names in LandXML Import under Road Utility. Fixed, UTF8 names in the PRO LandXML when storing *.pro files to the disk.
- SurvCE now reports a more concise warning message when PT Average same point is on, but HHT/DSC is off.
- Correct the error to extract code to capture the Projection to be reported to the JSR Analysis. Better enum to identify the "Notes" read from the RW5 for the report. Works now for old/new RW5 files when the Job Attributes are written before the first point stored, which it is added by the software to the RW5.
- SurvCE now has better error handling for software configuration files, to prevent failure in the case of corrupt files.
- Osnap Blocks/Inserts and Texts will now always pick the Texts in the previous version. Now it does the pick from the MAP based on the closest origin to the either: Text, or Insert..
- Handling for Southern Hemisphere has been improved. STK, NAV, works correctly, easy to switch on/off from Northern to Southern.
- SWC Export ASCII will no longer skip the last point in a range.
- SurvCE now allows insertion points to be detected from their alignment for TEXT entities.
- SuvCE now Allows Import Default 2000+ .dxf as current JOB (CRD) (associated .dxf crt job).
- SurvCE now automatically detects the "numerical value from a TEXT entities" for STK,

Inverse, 3D Inverse, etc, when OSNAP used.

- In the SurvCE RoadModel routine, when switching surface names in Road Stake, SurvCE now maintains the correct association: name of surface versus surface data+descriptions.
- SurvCE now captures the last point from the range of points to be reported in point projection.
- SurvCE now saves and reuses the “offset prefixes” used by the Job Settings/Cutsheet.
- Corrected the Cut/Fill used for report from point range for Point Projection.
- SurvCE now clears the Point Projection info per range of points, avoiding incorrect Off/Sta/Cut/Fill invalid values.
- Correct the error to extract code to capture the Projection to be reported to the JSR Analysis. Better enum to identify the "Notes" read from the RW5 for the report. Works now for old/new RW5 files when the Job Attributes are written before the first point stored, which it is added by the software to the RW5.

**Bug Fixes SurvPC:**

- Creating a new MXD (ArcMap Document) now alters the Spatial Reference of the Document and the data set: CSCRD, to match the new Job Settings/Units + Projection.
- SurvPC/OEM Esri ArcGIS Engine now draws Circles using F2F correctly, to generate in the Geodatabase a true circle geometry.
- SurvPC/OEM Esri ArcGIS Engine now supports automatic "repair" of the path to the raster file.
- SurvPC/OEM Esri ArcGIS Engine now supports closing non-polygon Features, F2F, CLO.
- SurvPC now properly refreshes list of elements (chains) in the file to be imported during import Geompak function.
- SurvPC OEM Esri Alternate CAD Engine no longer has the potential to fail when loading 10.2 MXD into a 10.0 or 9.3 license OEM loaded.
- SurvPC OEM Esri Alternate CAD Engine now supports "Selectable ALL" in Feature Manager MAP.
- SurvPC OEM Esri Alternate CAD Engine now supports selection of "bad- incorrect created features, self-intersecting features", for deletion; end users can create accidentally incorrect features, so they need to delete those features.
- SurvPC OEM Esri Alternate CAD Engine now supports multiple features when storing: line codes + point codes (features).

# Version 4.00

*Release Date: June 16, 2014*

**New Instruments Supported:**

- Carlson BRx5 GNSS
- CHC LT400HS internal GNSS
- ComNav OEM Boards: K500, K501, K501G, K508
- ComNav T400
- Horizon Kronos 300 GNSS
- Kolida K9-TX GNSS
- Kolida K96-T GNSS
- South S82N GNSS
- Spectra Precision Focus 30 Total Station
- Spectra Precisions SP800 GNSS
- Stonex R1 Plus Total Station
- Stonex R2+W Onboard Total Station
- Stonex S8+ GNSS
- Stonex S9III+ GNSS
- TechGeo GTRG2 GNSS
- TechGeo GTRi GNSS
- TechGeo Zenite II GNSS
- Topcon GRS1 Internal GNSS
- Topcon Tesla Internal GNSS

**New Data Collectors Supported:**

- Altus GIS-1
- ComNav All Star
- Flint
- Forge
- Juniper Archer 2
- Juno T41
- South S760
- TechGeo Mio

**New Features and Improvements in SurvCE:**

- Read/Write RW5 file is now performed in binary mode. The Edit/Process RW5, etc. operations will be faster than in the TXT mode.
- SurvCE now supports built-in Wi-Fi for receivers that offer it.
- SurvCE can now configure theft/user email and SMS alerts in GPS Utilities for receivers that support it.
- SurvCE now stores rod heights as notes in the .NOT file.
- Survey/Stake points now functions using “Auto Store Points” OFF.
- SurvCE will now properly convert the antenna height to metric when logging raw.
- SurvCE now supports the option to run OV action code, variable Zs when used only for a

linework (same Feature CODE).

- GNSS with Camera -- Export KML/KMZ now shows a description for each photograph.
- SurvCE will now provide a description field for all supporting receivers when tagging a point.
- Carlson Export now supports the Stewart Weir File Format.
- Under Job Settings, there is an option to allow: Auto Store Pick Points. This avoids adding the points to the CRD, picked points, implemented in COGO/Pt Average, JSR Analysis method. The option applies to the Carlson SurvPC using alternate ODA Esri CAD Engine. The point name picks using this method are noted as: <PP,<number>> picked point, or <SP, <number>> selected point.
- SurvCE now supports internal tilt sensors for GNSS receivers that support it. This change includes a new tilt-tolerance to exclude out-of-tilt measurements.
- SurvCE will now show status "Stake Review" when in robotic stakeout freeze mode of store points.
- SurvCE now includes Date Format in Spectra Precision SWC export.
- Reading large RW5 files is now 20% faster.
- SurvCE now supports a Figure-of-Merit tolerance for receivers that support it.
- Zoom/Scale for CAD basic and alternate CAD Engine is improved.
- RW5 record BS will now provide the angle in Minute/Seconds, for South Azimuth case.
- SurvCE now supports RW5 GNSSLOGRCVR and GNSSLOGANT records.
- South Azimuth, South(East) Azimuth, and North(West) Azimuth are now supported.
- 480x800 resolutions screens are now supported in SurvCE, including updates for data collectors with capacitive screens.
- SurvCE now supports the the coordinate projection Brazil SIRGAS 2000 UTM Zone 18S.
- SurvCE now enables the Field Code List button when DESC is used, yielding easy access to the FCL + Action Codes.
- Free Sketch MAP commands for Carlson SurvCE are now enabled.
- SurvCE will now automatically recall last used GIS values for a GIS feature stored in Carlson SurvCE/SurvPC.
- ASCII Export now uses the appropriate GNSS Error labels reported by the driver when reporting the values in formatted files(e.g. HRMS could be CEP stored in the NOT file).
- All RW5 exports lines for Average HRMS/VRMS are using the appropriate GNSS Error labels reported by the driver.
- All LAT/LON edit boxes support the following option: if the end user "picks" or "sets" the radio button "S" or "E", respectively, and types the value, as without "+/-" and also without the "qualifier" ("N/S", or "W/E"), we now keep the "preset value". For example, when one chooses "set S on" and types 12.4321, one will now correctly garner the value S 12 degree 43 mins, 21 seconds.
- SurvCE now supports scalable pixel support for background images. This will allow scaling an image with two known points.
- SurvCE now supports the option in FILE/Job Settings/ TAB Options: "Include Pt blocks in the crt DXF, on Save". Default OFF.
- SurvCE now supports Carlson's AREA style for open polylines for the OEM Esri Alternate CAD Engine.
- Stake Line/Arc, Define Line, using OSNAPs without storing the points, now remembers the locations so you do not have to redo the snap.
- The Inverse (Sketch) style is now supported in the MAP screen.

- When the IP address for an NTRIP caster changes, SurvCE will now prompt the user to delete existing base points.
- SurvCE will now prompt user "Do you want to stop logging?" when exiting SurvCE.
- Carlson SurvCE now supports GNSS Analysis report using point data from the current RW5 through the GNSS Analysis. Option available under COGO/Pt Average. Options: point ID -> report, options: append or overwrite the report. All points from the RW5 (points must contain valid required JSR Analysis information: GNSS Vectors, identical point names, etc).
- SurvCE will now warn the user if no base position is available when storing the first point. The warning message allows the user to choose not to show it again.
- GNSS Analysis now employs optional Identical Point Rule: IDs, or IDs+DESCs.
- Calculate Area/ Sliding new uses a new faster and more precise method.
- The Store GNSS Vectors setting is now located in the job settings and retains its setting regardless of instrument selection.
- COGO/Point Projections now allows selection of Cut/Fill Direction: default: "Survey->Design", later option, "Design->Survey" (removed and moved now under Settings).
- FILE/Raw Data/Process GNSS allows: BP record can now be processed; there are Types as a TAB: Base, Rover, Base + Rover, default old style: Rover.
- A new "Defaults" button was added to the Current Instrument selection tab for GNSS Base, GNSS Rover and Total Station. This button will restore SurvCE settings to their defaults for the selected instrument.
- All GNSS -- When the enter key action for GNSS is set to "Read & Store" and the number of readings is greater than 1, the software will now adhere to the settings from Advanced Average for increment on valid reading, beep on rejected reading and log average observations.
- All GNSS -- Antenna offsets recorded in the BP record will now contain the full 4 digits of precision.
- SurvCE now supports reporting SOE, Point Projection, range of points, point by point.
- Action CODE is working with the following: Circle, CIR( e.g. CIR5, CIR+CIR, CIR+Point+CIR).
- SurvCE now supports adding additional Edit GIS Feature, basic one regular GIS Feature and Auto: SWC(SWLS), NLS(FNLS).
- When the Czech/Krovak-JTSK (Grid) projection is selected, the user will not be allowed to store points if they are off the grid or the grid files have not been loaded.
- TEXT supported as import from drawing.

**New Features and Improvements in SurvPC:**

**Note that SurvPC also includes all SurvCE improvements*

- SurvPC now supports the new OEM Esri 10.2.1 engine.
- Esri OEM Engine Alternate CAD Engine now allows creation for Feature: Line, Polyline, Arc, Circle, Polygon.
- Esri OEM Engine Alternate CAD Engine now prevents usage of Automatic Codes, if the Attribute is defined as a Domain or used as a Point Alias.
- Esri OEM Engine Alternate CAD Engine now prevents redundant "groups" used in Feature Manager routine.
- Esri OEM Engine Alternate CAD Engine now prevents redundant "categories+feature class name", in gnt, alc (general template, alias code) files.
- Esri OEM Engine Alternate CAD Engine now automatically allows fix of file LYR when the

data sources were re-assigned.
- Esri OEM Engine Alternate CAD Engine now supports import LYR with symbology only.
- Esri OEM Engine Alternate CAD Engine now supports Free Sketch 2D.
- Esri OEM Engine Alternate CAD Engine now allows the retrieval and setting of the Carlson versus Esri ArcMap document MXD for the MAP units.
- Carlson SurvPC Esri OEM Engine Alternate CAD Engine now shows different symbols per point selected from MAP/LIST within a dialog box.
- SurvPC now supports Free Draw Locate Points (sketch style) in the MAP screen.
- Carlson SurvPC Esri OEM Engine Alternate CAD Engine now supports the creation of a new Esri ArcMap Document MXD.
- SurvCE will no longer create a polygon (not closed by CAD command in MAP), when storing the data into a Feature Dataset, using the Carlson SurvPC using the OEM Esri CAD Alternate Engine.
- SurvPC now prevents the creation of linear features in non-linear current feature set in the Carlson SurvPC Carlson SurvPC Esri OEM Engine Alternate CAD Engine, in MAP.
- New Jobs created as Esri ArcMap documents are now setting the CSCRD feature (Carlson feature) to unknown spatial reference. This matches the behavior of a CAD drawing.
- Esri OEM Engine Alternate CAD engine now uses the stack of extents (zooms) from a MXD.
- Esri OEM Engine Alternate CAD Engine allows now duplicate "Feature Layers", even if the name or the data source is identical.
- Carlson SurvPC Re-Project Feature Class has been updated to conform with the Carlson Data Collection needs (we only work in Northing/Easting, not in GIS true style lat/lon, so we re-project the data).
- SurvPC now allows reading the geometry of a polyline, path, and multipath when used with the OEM Esri Alternate CAD engine.
- Added creation of default ArcMAP Esri Map document from a pure Carlson CRD job; converts the pure Carlson CRD job to OEM Esri ArcGIS Engine ArcMap Document (adds the points also to a geodabatase).
- Carlson SurvPC using OEM Esri ArcGIS Alternate CAD engine: allows Linear Transformation, in COGO, processes all the CSCRD points.
- Carlson SurvPC using OEM Esri ArcGIS Alternate CAD engine can "empower of regular CRD file, use if needed the RW5 information( unit, projection), and automatically load the CRD points".
- COGO/Calculator, LLH-Grid, Height boxes allow "Z" extraction of a known point. Type "<point name> + <,>"; "1" puts 100, if 100 feet is Z's of point "1". Creating the same x/y points from lat/lon is simple, and you need exact/precise elevations (case when there is no need of shifting of the Height because: geoid, etc).

**Bug Fixes:**
- Job Attributes are now stored after Select Units.
- MAP, Inverse OP/BP no longer retains the saved Points between Jobs.
- Store CRD Points option now presents the correct symbols selected if the user picks points using OSNAPS, or Carlson SurvPC Esri OEM Engine Alternate CAD Engine.
- COGO/Intersection does not crash if using identical x/y for Point 1 and 2, and using at least one "Distance" option. The previous software had the potential to fail during the draw of a full circle, where the CAD Basic and also Alternate CAD Engine might fail to isolate the entire arc

(made of a undefined bulge).

- Program shutdown improved.
- When the user changes the Observation status in COGO/Pt Average, SurvCE will now reload the last changes through the SP record. This means that GNSS Analysis is now reflected in routines like store points and COGO/Pt Average.
- RW5 editor now appends an "end line" (prevents "canceling the point store" and running GNSS Analysis).
- STK Line/Arc now correctly displaying the changed Offset value for GNSS(Point On Line tab) in the Map screen. Previously, there was a chance of error the first time the routine was used in a job.
- SurvCE now prevents invalid windows file names during import of FLD+GIS files.
- The Alt Key now works properly on the Surveyor and Allegro MX.
- The simulated enter key on the virtual keyboard now works correctly in Map, Cogo/Inverse, etc.
- The GPS Simulator is now improved during point averaging to keep points clustered closer together.
- The GPS Simulator will now go to fixed automatically when averaging. This allows the user to go straight into localization without going to monitor first.
- When SurvCE/SurvPC is launched, temporary files in the Windows folder from a previous session will be deleted.
- When the Czech or Spanish language is selected, the grid files for that country will now be delivered automatically.
- The routine to increment base IDs when base position has changed is improved.
- SurvCE will now hold the base ID from the BP record for the vector records.
- All TS-- The "Reflectorless" label next to the target height in the Backsight setup screen is now correct.
- All TS--The target height will now be populated correctly in the Backsight screen, regardless of whether we are IR or RL.
- All GNSS -- SurvCE will now write the base record correctly for GNSS.
- SurvCE now correctly loads Blocks/Inserts when scale x/y different and also negative scale values.
- After switching to GPS Simulation or Manual Total Station from the pull-down menu in the top bar, the user can easily switch back to their 'live' instrument by selecting Total Station or GNSS Rover from either the pull-down menu in the top bar or the button on the Equip menu.
- The receiver NMEA output port will now correctly save and recall its setting.
- SurvCE now saves the Export DXF elevation precision in Export MAP.
- Correct year is now shown in LLQ and RMC messages sent from the data collector port.
- SurvCE will no longer attempt to open the port repeatedly when no depth sounder is available.
- Allegro CX -- Installer will now place language and grid files in correct location for AllegroCX.
- All GNSS -- Latency will now be set to 999 when there are no valid messages. This prevents old data from remaining on the screen.
- All GNSS -- Atom RTK types now warn user if base ID is out of range.
- Carlson latitude/longitude edit boxes combined with radio buttons, are now working correctly when translations are applied for the prefixes "N, E, W, S", and lat/lon.
- In the two-point offset dialog, the "store" button will now be Active after the offset value is

entered.

- The target type option on the Set Collection routine now functions as designed.
- Data collector internet has been moved higher in the RTK device list to make it easier for users to find.
- All -- SurvCE will no longer show a cap above the taskbar for some data collectors.
- .dat (settings files), used by the software, are now using a prevention piece of code, across the entire cpps, to load only valid data (cases, when the software crashes, loss of battery, etc), in which case, the .dat could end-up to be corrupted.
- Pt Average, using identical IDs, regular mode, (median of x/y/z), works correctly for different descriptions of the points as designed. Until now, the Pt Average regular was using the same rule: identical IDs + DESCs.
- SurvCE no longer has potential to crash when configuring base or when “do you want to continue” is answered "no" repeatedly.
- Fixed OSNAP tangent and perpendicular, for polylines (self picked) in MAP.
- Carlson Crew View no longer shows positions set to 0,0.
- Carlson CrewView now refreshes user positions each time the crewview settings are changed.
- The “Send position to base” checkbox is now being set correctly for all receivers. There was a potential error when using a VRS CMR+ mount point.
- GNSS Analysis point by point method, reports the correct sorted points if the user wishes (there is a "sort" check box, cases of "Append").
- GNSS Analysis when done against the entire RW5 file, will sort the points in the reported file.
- GNSS Analysis point by point method, reports the correct footer (adds it correctly).
- All GNSS -- The number of Autonomous readings used in an average position will now be correctly reported in the RW5 file.
- GNSS Average now sounds success music when readings are recorded.
- Station Store allows DESC editing, all DESC boxes are accounted, as per bug report.
- Horiz Clock System is perfoming correctly in AZ/DS.
- Auto By Interval now works correctly using GIS Feature prompts; in previous versions you were prompted for each vertices based on the setup in Special Codes.
- Interface changes: Preferences in MAP removed the Process BLOCKs/INSERTs, moved to Import .dxf/.dwg. Eliminate in the Import .dxf/.dwg Turn ON/OFF all option per dialog.
- Correct warning messages will now be used when projection grid files can not be loaded.
- GIS can be added to any STK (any routines running Stakeout/SlopeStake, etc) points.
- LandXML RoadModel, works with multiple surface, XSCT, etc; all routine active in Road Stake: allows stakeout, slope stake buttons.
- DCPhone will no longer show up twice in the devices list for some data collectors.
- A typo in the Portugal D73 Grid Projection definition had prevented the correct grid from being applied. This is now corrected.

**Bug Fixes SurvPC:**

- Carlson SurvPC Esri OEM Engine Alternate CAD Engine now prevents opening the higher versions of the MXDs, in respect with the ArcGIS version.
- SurvPC now supports Save as Copy using OEM Engine Alternate CAD Engine. It can save any of the available ArcMap (mxd) documents.

- Carlson SurvPC Esri OEM Engine Alternate CAD Engine now supports the ability to overwrite the points under COGO/Point Average, using JSR Analysis; the dialog uses the new Select MAP/LIST.
- Esri OEM Engine Alternate CAD Engine-- now the codes are reused, in the ArcMap Document Esri, (MXD named set in the Feature Code List); if the codes were already used in the Feature Manager and they were discarded (by the means of Remove of the Feature) than the same MXD named codes are reused. Allows stability of the MXD codes between Jobs.
- Esri OEM Engine Alternate CAD Engine will no longer prompt when storing GIS Attributes, if the value it is empty and the Geodatabase Schema allows null-able fields assigned to the attribute's field.
- Esri OEM Engine Alternate CAD Engine now supports Select LIST/MAP if the Features are neither measured nor created by Carlson Software, but by the actual Geodatabase (Esri ArcGIS Desktop).
- Esri OEM Engine Alternate CAD Engine now supports overwriting the points under COGO/Point Average, using JSR Analysis. This includes overwriting the Point Description to preserve the actual MXD Esri/Feature Class name, so the JSR Analysis can work correctly, even if the DSC of the point is not set.
- Esri OEM Engine Alternate CAD Engine when running GPS/Stk Points, Stk Line Arc now skips the refresh for the first measurement, which happens right at the moment when the MapControl is refreshing. Avoiding this will show correctly the position in the GPS measurement in the MapControl screen (map).
- Esri OEM CAD Alternate Engine now stores Alias field attributes, even if the EQ are not defined for this field.
- Esri OEM Engine Alternate CAD Engine now prevents the double tap in Windows Vista/7/8 when the processing of a series of ArcObjects takes time (longer time); when the OS usually prompts the end user to: "unresponsive program, close program", making the software appear as if it is crashing any routine: starting to edit a large data set; redrawing the map control; etc.
- Esri OEM Engine Alternate CAD Engine now handles cases where subfolder name is the parent in cases of File Geodatabases.
- There is no longer potential for error in situations where Aliases and Equations are not set to the correct value, in the process of storing GIS features (codes with attributes; if the end user was not reviewing each attribute value in the dialog).
- Esri OEM Engine Alternate CAD now fixes: group features set as not visible are no longer selectable (through MAP Selection: mouse click)).
- OEM Esri Alternate CAD Engine, fixes: COM Method Call in WM_PAINT Handler Returns 0x80010005.
- OEM Esri Alternate CAD Engine allows selection of non-polygons placed on top of polygons. Select entities; CAD style, which is polyline, reduces the complex geometries: cases, ellipses, bezier (splines); in order to use them for STK, convert to CL, list, etc.
- Removed the "update geometries" using points; Esri OEM ArcGIS Alternate CAD engine has the precision of a "database", we need a pure CAD (double precision), so we "remove and re-create the geometry": Area Calculation, sliding, list, etc will then return the precise values (double precision).
- OEM Esri ArcGIS Alternate CAD engine, allows "pick" entities, polygon type, overlapped.
- Fix error for Carlson SurvPC using OEM Esri ArcGIS Alternate CAD engine, when creating the first Feature when the Class contains no Feature to begin (Point type class).
- Carlson SurvPC using Esri OEM ArcGIS Engine, allows now selection for polygons with a

common edge.

# Improvements And Resolved Issues By Manufacturer

## GNSS Receivers

# Altus

## Version 4.03

- NR2/APS3 -- Display of satellites in use and visible display in Monitor Skyplot now correctly shows the number of satellites used to calculate the position and number of satellites visible in the sky.
- NR2/APS3 -- SurvCE now correctly sets the position rates 2 and 5hz.
- NR2 -- The NR2 antenna has been updated to match NGS calibration.
- NR2 -- RTCM3 messages 1021 - 1027 now processed.
- NR2 -- SurvCE now supports enabling/disabling individual satellites.
- APS3 -- Corrected the display of external power to no longer display a "percent remaining".
- APS-3 Modem -- TCP/IP network modem connection and GSM NTRIP now works correctly. More time is allowed after power-on before attempting to connect.
- APS-3 Modem -- Network Disconnect now supported. These modems will now power off to disconnect from network.
- APS-3 Modem -- Network Connect for APS-3 modems now powers on modem.
- APS3 -- SurvCE will no longer show an error message on receivers without Beidou support.
- APS-3 -- When using Beidou, SBAS and Galileo satellite constellations will be disabled.
- NR2 -- Network connect and disconnect now supported.
- NR2 -- User can now set APN server, username and password for GSM modem.

## Version 4.02

- APS3 -- SurvCE now supports Beidou for this receiver.
- NR2 -- SurvCE now disables LBAND for this receiver.
- NR2 -- APN Username and password will now be saved correctly in the receiver.
- NR2 -- SurvCE now supports reset RTK in GPS Utilities.

## Version 4.01

- APS3 -- Save settings after configuration. This will save the antenna information, elevation mask and other settings.
- APS3L Modem -- The modem now connects to the server correctly.
- APS3 -- The "eject file card" option is no longer available in GPS Utilities.
- APS3 -- The new internal Satel M3R3 radio is now supported.
- APS3 -- Beidou Satellites are now supported.

## Version 4.00

- SurvCE will now properly save the configuration settings in the receiver. This prevents lost settings in the case of an unexpected power cycle.
- Corrected display of memory is now available for the SD card used in data logging.

# Carlson

### *Version 4.03*

- BRx5 -- Reset RTK now works correctly.
- BRx5 -- "Hard Reset" was removed from GPS Utilities for the case when the connection type is Bluetooth.
- BRx5 -- If binary messages are available, reference data at rover will now come from Bin5 message. GGA will no longer be streamed if Bin3 is streamed.
- BRx5 -- The firmware version under the info button now shows more useful information.
- BRx5 -- The list of existing log files on the BRx5 now appears more clean, without extensions or directories. SurvCE can now identify whether a new file name matches one in the list.
- BRx5 -- Radio configuration via passthrough is now supported.
- BRx5 -- Default position update rate will now be 5Hz.
- Mini L1 GPS -- SurvCE now switches the ports back to NMEA upon exiting so that the built in JSNav program can operate.
- Surveyor+ GPS -- Default position update rate will now be 5Hz.
- Surveyor+ GPS now averages readings in a timely manner (60 readings in 60 seconds)

### *Version 4.02*

- BRx5 -- External radios connected directly to the GPS receiver cannot be configured through SurvCE. These radios may still be used by selecting "Cable or Generic Device". This functionality will be restored when new BRx5 firmware is released.

### *Version 4.01*

- BRx5 -- Communication and configuration have been improved.

### *Version 4.00*

- Mini2 -- SurvCE will now better report errors when the Carlson Mini2 (NVS) fails to connect to port.

# Champion

## *Version 4.01*

- TKO -- Internal antenna offset value of L1 and L2 changed to 101.0mm.

# CHC

### *Version 4.03*

- CHC LT500H/T -- SurvCE can now distinguish between the H and T models. The installation will deliver the necessary support files for this.

### *Version 4.02*

- Improvements to CHC position streaming to decrease instances of "No Position" or "Invalid Response". This change will also reduce problems which caused the receiver to lose Fix frequently when using Data Collector Internet.
- Changes to the CHC Trimble driver to improve communication when DCI is running.

### *Version 4.00*

- X91/X91+ -- The TrimMark3 protocol is now supported.
- X91/X91+ -- These receivers now support sCMRx RTK message type.
- Internal Satel radios now support Satel 3AS and PDL 4FSK protocols.
- X91+ -- SurvCE now properly supports 2hz and 5hz update rates.
- X91+ -- The new 3G modem is now supported.
- X91/X900 -- Generation II receivers will no longer receive commands that are exclusive to Generation III receivers.
- X91/X900 -- General improvements to communication will reduce the occurrence of "No Position" error messages when using Data Collector Internet for RTK.

# Datagrid

*Version 4.00*

- Colibri -- The software will now wait for the RTK software to exit.

# Geomax

### *Version 4.01*

- Zenith 25 -- The GMXZENITH25 Tripod and GMXZENITH25 Tripod Short antenna options are now supported. Default for base is now GMXZENITH25 Tripod.
- The correct radio list is now displayed.
- Zenith 25 -- Glonass and Beidou settings will now have default values of ON. If these options are not enabled in the receiver, the setting will not be shown to the user.

### *Version 4.00*

- Zenith 25 -- SurvCE will now query for Glonass support before showing option.
- Zenith 10/20 -- SurvCE will now reset the base position when configuring to ensure that base position doesn't get preserved between configurations.
- Zenith 10/20 -- Beidou is now supported on the new firmware.
- Zenith 25 -- Default antennas will now be set correctly.
- Zenith 25 -- When the user switches to NTRIP, the base antenna will now default to ADVNULLANTENNA.

# Hemisphere

### *Version 4.03*

- When the user switches between cable and bluetooth connections, the software will update internal parameters correctly.

### *Version 4.02*

- S320 --External radios connected directly to the GPS receiver cannot be configured through SurvCE. These radios may still be used by selecting "Cable or Generic Device". This functionality will be restored when new firmware is released.

### *Version 4.01*

- S320 --Communication and configuration have been improved.
- S320 -- It is no longer possible for number of satellites in use to exceed number of satellites available.

### *Version 4.00*

- S320 --GNSS receivers using the new Multi-Feature Application, DGPS selection now allows multiple DGPS types. Allowing use of DGPS when using RTK. DGPS option of ALL added. When RTK is lost position will degrade to best DGPS position. Includes OmniStar.
- S320 -- The satellite table will no longer show a blank line with missing information.
- S320 -- Speed improvements for the display of Position and Satellite messages.
- S320 -- SurvCE will no longer experience a bluetooth drop periodically when configuring GPS Rover.
- S320 -- SurvCE will no longer show the error “set frequency failed” during radio setup.
- S320 -- SurvCE now displays satellites correctly for both GNSS and Glonass.

# HiTarget

## *Version 4.03*

- HiTarget Trimble Models -- Survce now offers rtk baud options 38400, 57600, and 115200 when set to cable and generic device as a base. When set to cable and generic device as a rover, baud rate is fixed at 19200.
- HiTarget SL600 and VC60 -- SurvCE now supports storing raw data to either internal memory or SD card.
- HiTarget QMiniM3G -- SurvCE now installs on both QMiniM3B and QMiniM3G.

## *Version 4.01*

- Corrections made to commands used to connect and disconnect the internal modem in Direct Dial and NTRIP modes.
- For internal GSM using NTRIP, if no parameters have changed, only the 'Connect' command will be sent when the user initiates an NTRIP connection.
- QStar8 -- RTCM 2.3 is now supported.
- All Models -- Initial connection is now improved.
- All Models -- There is no longer a potential buffer overrun error.
- SurvCE will now write the correct antenna record when stopping a tagged point.
- H32 -- SurvCe will now configure the rover correctly.

## *Version 4.00*

- V30 -- Raw data logging has been improved. The antenna height will now be set correctly, and SurvCE will no longer append X's to the end of the file names.
- H32-- SurvCE no longer has the potential to send the COMVOUT command, which locks up communications.
- H32/V30 -- Internal UHF radios now support power levels low, medium, and high instead of predefined powers.
- H32/V30 -- Raw data logging now properly supports intervals of 1,5,10,15, and 30.
- H32/V30 -- The Antenna definitions have been updated.
- H32/V30 -- SurvCE can now retrieve both 7- and 8-digit serial numbers correctly.
- H32 -- SurvCE now sends the correct antenna height when logging raw data.
- H32 -- SurvCE now sends correct file names for log files with spaces in them.
- V30 -- SurvCE will no longer display an error message when configuring receiver for DCI.
- V30/H32 -- Deleting log files is now supported.
- V30/H32 -- SurvCE now reads log files lists of more than 8 files.
- V30 -- The UHF radios now support changing the over-the-air baud rate.
- V30 -- Modem operation is now improved.

# Javad

## *Version 4.03*

- The Javad internal HPT radio now supports a 4W power option.

## *Version 4.00*

- SurvCE will now give correct elevations in base/rover in RTCM3.
- The JAV_TRIUMPH-1R antenna, which is the internal antenna that includes the offset of the radio pole, is now set as an internal antenna in the receiver.

# Kolida

*Version 4.01*

- The Kolida K96T can now be selected in the model list and will not get confused with the SouthS82T2013.

# Leica

## *Version 4.01*

- Leica Viva GPS -- Glonass and Beidou settings will now have default values of ON. If these options are not enabled in the receiver, the setting will not be shown to the user.
- Resolved an issued that caused a partial dialog to be seen behind the prompt asking the user to continue if the rod height was set to 0.
- Leica Icon -- Removed from the list. This instrument is not yet fully supported in SurvCE.

## *Version 4.00*

- Leica Viva GPS -- SurvCE now allows a BT Pan DCI connection inside of SurvPC.
- SurvCE will now query for Glonass support before showing option.
- Radio options and configurations have been standardized to simplify configuration.
- Leica receivers can now do average readings in store points, if logging raw vectors is off.
- SurvCE now offers both the CMR and CMR+ options for Leica GPS.
- Default antennas will now be set correctly.
- When the user switches to NTRIP, the base antenna will now default to ADVNULLANTENNA.

# Navcom

### *Version 4.03*

- SF3040/3050 -- SurvCE now allows the use of DGPS with Base.
- SF3040/3050 -- SurvCE now loads the default profile for first configuration of receiver, then uses Carlson profile for subsequent configurations.

### *Version 4.02*

- SF3040 -- Radio configuration will be properly saved in the receiver.
- SF3040/3050 -- SurvCE now supports Base ID validation for NavCom proprietary RTK types NCT-5B and NCT-5E.
- SF3040/3050 -- SurvCE will now start outputting the GGA message for NTRIP after the user profile is saved.
- SF3040/3050 -- SurvCE will now configure the base and rover with default profiles.
- SF3040/3050 -- Base configuration is now set to DGPS NONE.

### *Version 4.01*

- SF3040/3050 -- There will no longer be an error during radio configuration due to the FEC setting.
- SF3040/3050 -- The internal radio now supports forward error corrections.
- 3rd Party Glonass is now supported.

### *Version 4.00*

- SF3040/3050 -- The base position will now be saved to the profile when configuring base.
- The ref tab now works using radios with RTCM corrections.
- DCI RTCM now updating ref tab with new information as it is received.
- Figure-of-Merit tolerance level is now supported.
- SF3040 -- The radio is now turned off if user selects “radio none” when radio is on.
- SF3040 -- The "radio busy" message will no longer display when switching between radio modes.
- Speed and accuracy of the Quickstart routine has been improved.
- SurvCE no longer has the potential to post an error when configuring the rover.
- SF3040/3050 -- SurvCE will now display DGPS with higher accuracy, including WAAS, SBAS, SF Single, and SF GNSS. In previous versions, there may have been set to status AUTO.
- 3040/3050 -- SurvCE now displays FOM value in the Store and Stake point screen when in StarFire mode.
- SF3040/3050 -- Ref tab now correctly displays the base antenna position after equipment reconfiguration.
- SF3040/3050 -- Ref Tab no longer shows the store point button for this driver.

- SF3040/3050 -- Rover elevation now adjusted by absolute or relative antenna offset from base when using DCI.
- SF3040/3050 -- SF LBAND display text is now improved for portrait view devices.
- SF3040/3050 -- Survce now supports enabling bias vector for RTK-X corrections coming from a 3rd party (non-Navcom) base.
- SF3040/3050 -- SurvCE now supports 3rd party RTK Glonass automatic detection.
- SF3040/SF3050 -- SF Rapid Recovery now allows a larger range of values (5-30).
- SF3040/SF3050 -- Firmware 3.4.6 improves elevation precision of the base antenna. SurvCE will now longer attempt to parse the elevation from the RTCM message for this firmware.
- SF3040/SF3050 -- SurvCE now hides the 3rd party Glonass option for FW 3.4.6.
- SF3040/SF3050 -- StarFire Over IP now supports the 30 second base and 60 second base.
- SF3040/SF3050 -- Popup dialog for StarFire Over IP connection now showing text. Added text "Connecting to Server".

# NMEA

## *Version 4.01*

- DOP values will now be correctly parsed from the GSA message.

# Novatel

## *Version 4.03*

- Smart GPS -- The Base Station ID value will be ignored during configuration.
- Smart AG -- The receiver will no longer send the IONOCONTROL command during configuration. Also, COM3 completely removed from SmartAG. Com2 is only valid radio option.

## *Version 4.00*

- All Novatel and ComNav boards will now tag BP records as APC height for all non-RTCM3 correction types, and ARP for RTCM3 correction types.
- Name of model changed from "Smart-AG" to "SmartGPS"

# Satlab

### *Version 4.02*

- SL300 -- Name of models changed from "iSurvey SL600/500/300" to "SL600/500/300".

### *Version 4.01*

- SL300 -- RTCM 2.3 is now supported.
- All Models -- Initial connection is now improved.

### *Version 4.00*

- SL500 -- SurvCE will now send the username and password when attempting to connect ntrip.
- SL500 -- Raw data logging has been improved. The antenna height will now be set correctly, and SurvCE will no longer append X's to the end of the file names.
- SL500 -- SurvCE will no longer display an error message when configuring receiver for DCI.
- SL500 -- Deleting log files is now supported.
- SL500 -- SurvCE now reads log files lists of more than 8 files.
- SL500 -- The UHF radios now support changing the over-the-air buad rate.

# South

## *Version 4.03*

- S82-2013 -- SurvCE now displays the correct name when the driver is loaded.
- S82 Driver -- South S82 now uses the same driver as S86.

# Spectra Precision (formerly Ashtech)

## *Version 4.03*

- PM700 -- Base mode is now supported.
- PM700 -- The Trimble RTX corrections system is now supported.
- PM700 -- SurvCE will no longer output data on the serial port when not in use.
- PM700 -- SurvCE no longer has the potential to fail while downloading a log file.
- PM700 -- SurvCE now has more reliable communication.
- PM700 -- The Promark 700 now supports the PDL radio
- PM700 -- SurvCE now allows user to enable/disable SBAS.
- SP80 -- SurvCE can now enable and disable satellites properly for the SP80.
- SP80 -- SurvCE now correctly retrieves the base ID from the VCT record.
- SP80 -- The Wifi Config set password dialog now allows full screen width for password entry for maximum length.
- Epoch 50 -- The internal antenna has been corrected to match the NGS (relative) database.
- Epoch 50 -- SurvCE will now set the correct base ID when configuring the Epoch50 as a base.
- Epoch50/PM700 -- SurvCE no longer has the potential to drop the Bluetooth connection during modem connection.
- Epoch50/PM700 -- SurvCE now sends the correct port when attempting to stop streams.
- Epoch50/PM700 -- SurvCE now sets the slant/vertical antenna height correctly when opening a log file.
- All -- SurvCE now supports DC Nmea out and writing NMEA to a file.
- All -- GPS latency will be reduced when using RTCM3 mode.
- All -- SurvCE will now maintain a better fix when using RTCM3 corrections.

## *Version 4.00*

- All -- SurvCE no longer sends RTK corrections inside of the Log raw GPS command. This allows for smoother communication inside that routine.
- ADL radios with programmable power levels will now display the true programmed levels.
- PM100 -- The GPS utilities dialog for the PM100 will no longer show blank buttons.
- PM700 -- SurvCE now allows the user to force stop-log-tag even when insufficient data has been collected.
- PM700 -- Antenna height in tagged point is now recorded up to four decimal places.
- PM800 -- SurvCE will now adjust the PRN number of Galileo sats to display the correct number.
- SurvCE will now properly detect power levels less than 1W in the external ADL radio.
- PM100 -- SurvCE will now properly detect both V1 and V2 for PM5 devices.
- SurvCE will now support channel tables with non-sequential channel numbers.
- SurvCE will now support channel tables with 32 entries.
- SurvCE will now properly retrieve the base position, base antenna height, and L1 record in order to write a good BP record.
- All -- The modem parameters will now be sent correctly, even with a long password.
- PM700 -- The log raw interval will now default to 1s.

- External base radios will now be available in the RTK device list, even if the query fails.

# Stonex

### *Version 4.03*

- Stonex GPS UHF radios now support over the air baud rate 4800 for Trimtalk Protocol only.

### *Version 4.01*

- All GeoElectron models -- Increased wait time when switching between internal modem and internal UHF radio.

### *Version 4.00*

- The Stonex S8, S9, S9III and S9III+ antenna offsets have been updated to reflect relative offset values.
- S9III -- SurvCE will now reset the base position when configuring to ensure that base position doesn't get preserved between configurations.

# Topcon/Sokkia/Sokkia

*Version 4.00*

- WAAS is now disabled to prevent firmware bugs that allows RTK fallback to WAAS position without leaving Fix mode.
- The multipath setting will now default ON.
- The SHC2500 (and all Atinav BT devices) can now reconnect to Topcon receivers without failure after going to sleep.
- The Topcon internal ARWest radio now sets the scrambling setting correctly.
- SurvCE will now give correct elevations in base/rover in RTCM3.
- The Topcon GPS extrapolation is now limited to 10 seconds, rather than the 30 second default.
- If the user enters the wrong baud rate for a Topcon GPS radio, SurvCE will detect the correct baud rate by experimentation, and then populate the detected value back into the RTK page.
- Topcon GPS/Sokkia GRX1/2 -- For receivers that do not support an external antenna, SurvCE will ensure that the command to set the antenna type to "internal" is sent to the receiver.

# Trimble

### *Version 4.03*

-

### *Version 4.02*

- DGPS from code-phase solutions will be reported as DGPS. This is the way that DGPS was reported for Trimble prior to SurvCE 4.0. With the SurvCE 4.0 release, these positions were reported as "Autonomous".

### *Version 4.01*

- The Trimble R8 can now be selected from the model list, and is no longer confused with the Horizon K300. This problem was exclusive to the 4.0 version.

### *Version 4.00*

- The position status is now more properly detected as DGPS.

# Total Station

# Carlson

### *Version 4.03*

- Carlson CR2/CR5 -- SurvCE now warns the user if they are using an unsupported firmware version. The firmware version will also be tagged unsupported in the info button.

### *Version 4.02*

- The Carlson CR2/CR5 is now fully supported by the Allegro2 and Surveyor2 data collectors.

### *Version 4.00*

- The Carlson CR2/CR5 will now authenticate every time it is configured, and when entering a routine. This solves problems with unexpected power loss.
- Carlson CR2/CR5 -- The Carlson CR2 will now authenticate in the "reconnect" button.

# Foif

## *Version 4.03*

- Cable and Bluetooth will both remain as selectable Types on Comms page after a failed connect.

# Geomax

## *Version 4.03*

- Zipp20 Onboard -- SurvCE no longer has the potential to erroneously report that it is unregistered during startup.
- SurvCE now includes a direct-mode driver for the Geomax Zoom80.
- Zoom80 -- SurvCE now warns the user if they are using an unsupported firmware version. The firmware version will also be tagged unsupported in the info button.

## *Version 4.02*

- Zipp20 Onboard -- The timeout for a reflectorless shot is increased from 5 seconds to 20 seconds.

# Leica

## *Version 4.03*

- Leica TPS1100 -- The TPS1100 no longer fails on the first attempt to do a check all.

## *Version 4.01*

- TS0x -- The driver will now obey the "upload station setup" setting in all circumstances. In some cases, the setting was being sent even though the option was disabled.
- Leica TS15 -- The Leica TS15 driver will now perform a 7 degree swing on powersearch before searching. This makes the TS15 behavior match the TS1200.

## *Version 4.00*

- SurvCE will now go into locked mode after a reading in store points, even if the status is "stake review" and data is not updating.
- The Leica RTS will no longer lose the ability to manually position after a joystick turn.
- The timeout for reflectorless readings has been increased to 20 seconds.
- The Leica RTS is now less sensitive to being out of level when moving.
- The Leica TS no longer has the potential to fail during set angle and read.
- The guidelights will now work more fluently when in AUTO mode.
- The buttons on the joystick page will no longer disappear when communication is lost.
- The Leica TPS will now properly show an out of level message when out of level.
- All RTS -- The Joystick speed has been increased for all levels.

# Nikon

## *Version 4.00*

- SurvCE will now force the Nikon into distance mode before every shot to avoid problems when there are power disruptions on the TS.

# Pentax

## *Version 4.01*

- Onboard Version -- SurvCE will remember the user's language after a power-cycle of the instrument instead of reverting to English.

# Spectra Precision

### *Version 4.03*

- Focus30 -- Prevent incorrect report of successful connection. Take note of and act appropriately to comms settings changes.
- Focus30 -- Set Angle now supported for backsight.

### *Version 4.02*

- Focus 30 -- The atmospheric correction is now calculated correctly.

### *Version 4.01*

- Focus 30 -- Check Level function displays correctly even when instrument is extremely out of level.
- SurvCE installer now automatically installs the special cabs delivered to allow use of Focus30.

# Topcon/Sokkia

### *Version 4.03*

- The Sokkia TS no longer has the potential to fail when setting the horizontal angles to certain values (for example, DMS value 21.2300)

### *Version 4.00*

- Sokkia and Topcon RTS drivers now support "Direct" drivers to run on the same equipment, but with no robotic features.