Nuwa Version(2.4.9.0) Release

May 26, 2025

Overview

Tersus GNSS Inc. ("Tersus") is glad to release the Nuwa for GNSS receiver. Nuwa version

(2.4.9.0) is available to download at www.tersus-gnss.com/software/software

and support documents are available at www.tersus-gnss.com/document/software.

Features

➢ Assists with Bluetooth/USB connection

➢ Configure base/rover setup

➢ Visualized interface for receiver operations

➢ Data management (import/export)

Change from Previous Versions

Issue	Type	Version
Added support for TS20 Wi-Fi connectivity and AR staking based on TS20 camera.	Enhancement	2.4.9.0
Added Oscar Trek Wi-Fi connectivity.	Enhancement	
Adjusted multiple measurement modes in visual positioning.	Enhancement	
Added point clouds generation and export from visual positioning in visual version.	Enhancement	
Added export of the current project CRS.	Enhancement	
Added linear height fitting method for two points in site calibration height fitting.	Enhancement	
Added support for STX import and export.	Enhancement	
Added support for importing FXL code files.	Enhancement	
Added support for WMS basemaps.	Enhancement	
Added support for DXF basemap adaptation in the Slovak coordinate system.	Enhancement	
Added support for LoRa radio protocol.	Enhancement	
Added support for measuring until manually stopped when epoch is set to 0.	Enhancement	
Added export of report in Excel format for control point measurement.	Enhancement	
Added staking reference by sun direction.	Enhancement	
Added surface management functionality.	Enhancement	
Added earthwork volume calculation using another surface as a reference.	Enhancement	
Added 3D surface area calculation.	Enhancement	
Added predefined coordinate system for Russia,	Enhancement	

Libya, Cambodia, India, Costa Rica, Malaysia, UAE, USA, Saudi Arabia.		
Added Slovak language.	Enhancement	
Updated English, Brazilian Portuguese and European Portuguese.	Enhancement	
Adjusted measurement interface status display and data bar layout.	Bug Fix	
Optimized checking point name prefixes logic.	Bug Fix	
Fixed an issue where calibration points were not cleared when creating a new project.	Bug Fix	
Fixed an issue where manually added code colors were not applied correctly.	Bug Fix	
Fixed a potential connection failure issue with David30.	Bug Fix	
Fixed an issue where SBAS settings were not saved in satellite systems settings on David30.	Bug Fix	
Fixed a potential display issue in TAP skyplot.	Bug Fix	
Fixed incorrect satellite count and solution status in NTRIP connection GGA messages.	Bug Fix	
Fixed decimal errors when using usft unit.	Bug Fix	
Fixed repeated base shift calculation in control surveys.	Bug Fix	
Added the function of quick code.	Enhancement	
Added code searching by summary.	Enhancement	
Added code color support.	Enhancement	
Added code cloud uploading and downloading.	Enhancement	2.4.8.0
Added tilt icon status differentiation display.	Enhancement	
Added selected point connecting to line during line measurement.	Enhancement	

Added stakeout prompt frequency setting.	Enhancement	
Added staking point WGS84 coordinates type.	Enhancement	
Added the setting of whether to display the coordinates when staking.	Enhancement	
Added points cloud measurement mode for visual positioning,	Enhancement	
Added visual positioning tasks management.	Enhancement	
Added TAP satellites status display.	Enhancement	
Added TAP Fill support.	Enhancement	
Added support for firmware upgrade checking when connecting to Oscar or Luka.	Enhancement	
Added country code and channel selection in WIFI settings.	Enhancement	
Added expire date display for visual positioning and TAP service in device screen.	Enhancement	
Added David30-D connection support.	Enhancement	
Added SHP vector map support.	Enhancement	
Added KLIC vector map layer control and label text display.	Enhancement	
Added .gps format export support.	Enhancement	
Added WGS84 coordinate system automatic changing of the central meridian.	Enhancement	
Added Morocco coordinate systems central meridian maintenance.	Enhancement	
Added coordinate systems for Finland, France.	Enhancement	
Updated CRS for South Africa, Malaysia.	Enhancement	
Updated German translation.	Enhancement	
Improved refresh point database performance.	Bug Fix	
Fixed the issue that RW5 export data might be	Bug Fix	

in wrong order.		
Fixed the device model issue in RAW export.	Bug Fix	
Fixed the issue of not being able to log in when the space of cloud account is insufficient.	Bug Fix	
Fixed the issues of displaying Feet (US Survey).	Bug Fix	
Fixed the issue that low probability of screen off may lead to database abnormality, and turned on keep screen on by default.	Bug Fix	
Adjusted the logic of Base points generating after checking VRS in rover configuration.	Bug Fix	
Fixed the issue that TAP satellites map may not be displayed.	Bug Fix	
Modified the calculation in Base Shift when selecting basepoint to use ground coordinates.	Bug Fix	
Fixed the possible failure when selecting album picture for code scanning registration device.	Bug Fix	
Fixed the issue of deformation of scanning QRcode in horizontal screen.	Bug Fix	
Optimized the calculation of RMS in tilt survey.	Bug Fix	
Fixed the issue of incorrect direction of offset point in tilt offset measurements.	Bug Fix	
Fixed the issue that the database is abnormal and may crash when the code is null.	Bug Fix	
Fixed the issue that the flag is not refreshed after point stakeout in detailed display style.	Bug Fix	
Optimized auto zoom in CAD stakeout.	Bug Fix	
Fixed the issue of antenna and RMS calculation in editing of visual positioning results.	Bug Fix	
Fixed the issue that the specified target area	Bug Fix	

cannot be calculated in the area division tool.		
Fixed the issue of possible calculation error in intersection tool.	Bug Fix	
Fixed the result points naming issue in line segmentation tool .	Bug Fix	
Added CAD Survey module.	Enhancement	
Added Visual Positioning for Oscar Trek.	Enhancement	
Added code attributes feature.	Enhancement	
Added Internal GPS connection way.	Enhancement	
Added Area Division module.	Enhancement	
Added automatic time zone setting.	Enhancement	
Added project list sorting function.	Enhancement	
Added the display of satellite in used number.	Enhancement	
Added outputting of RTK status, satellite numbers and DOP values in location sharing.	Enhancement	
Added prefix setting in DXF vector map import.	Enhancement	
Added setting of distance decimal display.	Enhancement	2.4.7.0
Added one-key deselect all in cloud sync.	Enhancement	
Added base low battery alarm.	Enhancement	
Added repeat measurement and export.	Enhancement	
Added acceptance status display of correction data via controller network or UHF in Survey interface.	Enhancement	
Added RTK mode, distance to last, line name in points detail and exporting.	Enhancement	
Added setting of displaying survey line detail.	Enhancement	
Added support for grid to ground calculation under Lambert projection.	Enhancement	
Updated Dutch and French languages.	Enhancement	

Fixed possible crash with David30-TAP.	Bug Fix	
Fixed possible incorrect antenna and missing ephemeris in static survey with David30.	Bug Fix	
Fixed the issue of successful registration but may prompt an error with David30.	Bug Fix	
Optimized Base record, refreshing Base after getting base antenna height.	Bug Fix	
Optimized Base record, not repeating the same Base point.	Bug Fix	
Fixed the issue of directly overwriting the old points when inputting the same name in confirmation box in stakeout.	Bug Fix	
Fixed the issue that some road LandXML files may fail to be imported.	Bug Fix	
Optimized color display in Surface Stakeout.	Bug Fix	
Fixed possible issue that Diff Age is shown as 99.	Bug Fix	
Fixed the issue that the azimuth calculation of incomplete out-clothoid may be wrong.	Bug Fix	
Added point list order function.	Enhancement	
Optimized point list display.	Enhancement	
Added support for David30-TAP connection.	Enhancement	
Added support for TAP network mode, and added TAP coordinate conversion.	Enhancement	2.4.6.0
Added graphic measurement containing polygons, rectangles, arcs, and circles added in Survey interface.	Enhancement	
Added point name intelligent filling in Survey.	Enhancement	
Added angle display for electronic bubble.	Enhancement	

Added offset measurement mode.	Enhancement	
Added offset item display in Line Stakeout.	Enhancement	
Added TTF font support for CAD Stakeout.	Enhancement	
Added support for importing points with same name.	Enhancement	
Added support for polygon import in KML KMZ base map.	Enhancement	
Display files according to file format when importing from the cloud.	Enhancement	
Added LandXML road format section data import and section stakeout.	Enhancement	
Added the logic of calculating road stakes by integer miles in Pile point detail.	Enhancement	
Added SP description line to RW5 export.	Enhancement	
Added latitude and longitude dd.mmssss format in Export.	Enhancement	
Added the function of long press TAP key to enter TAP interface on TC80.	Enhancement	
Added SBAS satellites mask.	Enhancement	
Added network module status display in receiver network mode.	Enhancement	
Added external power supply status display.	Enhancement	
Added List mode display of main menu.	Enhancement	
Added the option of left/right side calculation in Two point intersection.	Enhancement	
Updated Portuguese language.	Enhancement	
Modified Philippines, Morocco, Canada coordinate system.	Enhancement	
Added grids and geoids of Belgium, Turkey	Enhancement	

grid, France and Romania.		
Fixed the issue that KML may fail to import.	Bug Fix	
Fixed the issue that the lines in KML base map may disappear when re-entering interface.	Bug Fix	
Fixed the issue of import failure when the file contains point data with the same name.	Bug Fix	
Fixed the issue that NCN file can't be imported if it contains extra spaces, and adjusted the display of point names in NCN export.	Bug Fix	
Fixed the issue that the related files of SHP file can not be exported to the cloud.	Bug Fix	
Adjusted the antenna height in RW5 export, and record it to the ARP height.	Bug Fix	
Fixed the issue that line breaks lead to display error when exporting CSV.	Bug Fix	
Fixed the issue that RTCM1021-1027 may be calculated incorrectly, and added the mark of elevation application calculation.	Bug Fix	
Fixed the issue of not getting new base after modifying base antenna height, and added the base change pop-up window in Survey.	Bug Fix	
Fixed the issue that the distance to base station is not displayed in the location information interface.	Bug Fix	
Fixed the issue that averaging in control point survey mode may be calculated incorrectly.	Bug Fix	
Fixed the issue that the calculation of forward and backward text instructions may be wrong in Line Stakeout.	Bug Fix	

Fixed the issue of UCS coordinates and current position wrong display in CAD Stakeout.	Bug Fix	
Adjusted the display digits of SN number.	Bug Fix	
Fixed the issue that some configurations of NMEA output may not be effective, and added the configuration of NMEA output frequency.	Bug Fix	
Fixed the issue that TIN generated for some graphs may not be correct in Earthwork.	Bug Fix	
Fixed the issue that the result may be not correct when choosing to calculate L from A in Offset Point tool.	Bug Fix	
Added the ability to automatically download when the coordinate system selected in new project contains missing grid and geoid files.	Enhancement	
Added the judgment and pormpt if there are points with the same name in Point Import.	Enhancement	
Adjusted the interface of road input and added the road preview function.	Enhancement	
Added controller voice broadcast function.	Enhancement	
Added Base info tab page in the location screen, displaying information including base power, base satellite count and format.	Enhancement	2.4.5.0
Added base abnormal movement alert.	Enhancement	
Added the function of measuring when the tilt compensation fails but the pole is vertical.	Enhancement	
Added KLIC XML vector map format support and related color display.	Enhancement	
When Stakeout prompt type is set to North and south direction, adjusted the blue arrow	Enhancement	

to be North-South.		
Added the coordinate display when selecting the staking points.	Enhancement	
Added the configuration of displaying survey and stakout points in the line stakeout screen.	Enhancement	
Added the choice of calculating L from A or from B in the tool Offset Point From Line.	Enhancement	
Added Kazakhstan predefined coordinate system, modified Turkey, South Africa predefined coordinate system.	Enhancement	
Added Bosnian, updated German.	Enhancement	
Fixed the issue that RTCM1021, 1023, 1025 check configuration may not be saved.	Bug Fix	
Fixed the issue that APP shortcut keys on controller may repeatedly start the software.	Bug Fix	
Fixed the issue that the distance calculation to the base may be wrong.	Bug Fix	
Added support for LUKA connection.	Enhancement	2.4.4.0
Added support for David30-D connection.	Enhancement	
Added the zone number setting for Gauss Krueger 3-degree zone projection.	Enhancement	
Optimized the login and registration interface of Tersus Cloud service.	Enhancement	
Added the AR mode in Point Stakeout.	Enhancement	
Added support for importing PHI road format.	Enhancement	
Added TIN Display setting in Surface Stakeout.	Enhancement	
Added Record Antenna Type configuration in Static Survey.	Enhancement	
Added the export of RAW format.	Enhancement	

Added export content for HTML and RW5.	Enhancement	
Updated predefined CRS of Oman, Switzerland, Germany, Russia and El Salvador.	Enhancement	
Updated Spanish, French, Dutch display.	Enhancement	
Fixed the problem that the data initialization may fail in Survey and Stakeout interface with larger geoid files.	Bug Fix	
Fixed the problem that static parameters cannot be modified after recording stopped.	Bug Fix	
Fixed the problem that the antenna type is incorrect in David30 static survey.	Bug Fix	
Fixed the problem that the tilt data bar was not cleared after turning off the tilt.	Bug Fix	
Fixed the problem that Dis to Base in the data bar was incorrect when the unit is feet.	Bug Fix	
Fixed the problem that Miles in the data bar was incorrect in Line Stakeout with offset.	Bug Fix	
Fixed the crash in searching or selecting survey points when manually starting base mode or creating staking lines.	Bug Fix	
Fixed the problem that the default export format could not be separated automatically with Excel in European region.	Bug Fix	
Fixed the crash of Azimuth Distance when the angle format is DMS.	Bug Fix	
Fixed the problem that opening CAD drawings may fail on Android 11 and above.	Bug Fix	
Fixed the problem that it may take a long time to start the software on Android 11 and above.	Bug Fix	

Fixed the problem of incomplete display in main page in some languages.	Bug Fix	
Added configuration of projection height parameters.	Enhancement	
Added the function of IMU calibration when connecting Oscar Ultimate.	Enhancement	
Added coordinates display of selecting points in CAD Stakeout.	Enhancement	
Added the function of selecting points from survey point list and control point list in Point Stakeout.	Enhancement	
Added loc file import function in Site Calibration, added selecting points to participate in the calculation.	Enhancement	
Added code attribute to control point and staking point.	Enhancement	2.3.3.0
Added a guide interface when starting the software for the first time.	Enhancement	
Added icon editing mode.	Enhancement	
Improved the speed of online updata, added download progress display.	Enhancement	
Updated Spanish, Russian and French.	Enhancement	
Added Tersus Cloud (beta version), including the function of one-click synchronization, project and data file upload and download.	Enhancement	
Fixed the issue of disconnection when no positioning data is received when connecting to Oscar.	Bug Fix	
Fixed the issue that the antenna type may be	Bug Fix	

deleted abnormally.		
Fixed the issue that Google online map may not be displayed in the Survey and Staekout interface.	Bug Fix	
Fixed the issue that the calculation of Oblique Mercator Projection may not be correct.	Bug Fix	
Fixed the issue of crashing after exporting and clicking share.	Bug Fix	
Added millimeter unit setting and optimized the display of drawing in CAD Stakeout.	Enhancement	2.3.2.2
Added cross section export format and fixed the problem of incorrect display of offsets.	Enhancement	
Fixed the issue that the cut or fill value calculated in Line Stakeout may be incorrect.	Bug Fix	
Fixed crash when searching for staking points and inability to select search results.	Bug Fix	
Optimized the display of Spanish language.	Bug Fix	
Added the import of LandXML, KML, KMZ vector maps.	Enhancement	2.3.2.0
Added support for importing LandXML triangle network and selecting points to create a plane or triangle network in Surface Stakeout.	Enhancement	
Added support for importing LandXML alignment in Road Stakeout.	Enhancement	
Added point name increment setting in Survey.	Enhancement	
Added the code display setting in Survey.	Enhancement	
Added staking by nearby for polylines and arcs.	Enhancement	
Added support for 3dpolyline in CAD Stakeout.	Enhancement	
Added the output of code in RW5 export.	Enhancement	

Added the function of switching format when inputting angle value in Tools.	Enhancement	
Adjusted the order of the project list display, sorted by the recent open time.	Enhancement	
Added the display of release note when receiving update.	Enhancement	
Added the configuration of whether to apply RTCM1021-1027 to the current project CRS.	Enhancement	
Updated Russian, Polish, Dutch and Turkish.	Enhancement	
Added Cambodia, Estonia predefined coordinate system.	Enhancement	
Fixed the US predefined coordinate system.	Enhancement	
Optimized the performance of vector map loading.	Bug Fix	
Fixed the issue in Android 11 where Bluetooth scanning could fail without location services turned on.	Bug Fix	
Fixed the issue that the antenna type may be empty and the issue that the elevation may be wrong after editing the point when connecting to David.	Bug Fix	
Fixed the issue that when the Survey with confirmation is not turned on, the stake point may not be stored in line stakeout, the antenna parameters may be displayed incorrectly in point detail and the PPK survey may repeat the collection point.	Bug Fix	
Fixed the issue that the offset may be displayed as negative in Point Stakeout.	Bug Fix	

Solved the problem of incorrect filling and cutting value calculated beyond the line range in Line Stakeout.	Bug Fix	
Fixed the issue that the calculation of France gsb format grid is incorrect.	Bug Fix	
Added a progress bar when refreshing the database to avoid app crashes.	Bug Fix	
Added the horizontal display mode for TC40.	Enhancement	2.3.1.0
Added Code module, and added the function of selecting code to switch point survey and line survey in Survey interface.	Enhancement	
Added the tilt entrance in Survey interface.	Enhancement	
Added the function of selecting staking points to stake in CAD Stakeout.	Enhancement	
Added the function of switching three RTK working modes.	Enhancement	
Added RW5 export.	Enhancement	
Added Indonesia predefined CRS.	Enhancement	
Fixed the issue that the result may be wrong after multiple Base Shift calculation and application.	Bug Fix	
Solved the problem of frequently prompted Invalid Geoid/Grid.	Bug Fix	
Fixed the issue that there may be bias in some low-resolution Geoid/Grid calculations.	Bug Fix	
Fixed the issue that the Tilt Angle was displayed as negative when the tilt angle exceeded 90°.	Bug Fix	
Fixed the issue that exporting the staking	Bug Fix	

points using custom fields may cause a crash.		
Added the function of taking a photo in survey confirmation box.	Enhancement	
Added the function of offset in line stakeout.	Enhancement	
Added the function of displaying the list of the nodes after selecting the line in CAD stakeout.	Enhancement	
Added the configuration of static IP in WIFI configuration when connecting to Oscar.	Enhancement	
Added the function of TCP push in NMEA output when connecting to Oscar.	Enhancement	
Added the display of correction data format when connecting to Oscar.	Enhancement	
Added South Africa HTML export format.	Enhancement	
Added the option of whether to export height value when exporting DXF file.	Enhancement	2.3.0.0
Added x-y-h and y-x-h coordinate display type.	Enhancement	
Added Denmark predefined coordinate system	Enhancement	
Added Qatar predefined coordinate system.	Enhancement	
Added Slovak predefined coordinate system.	Enhancement	
Added support for gsb format Plan Grid files.	Enhancement	
Optimized the log records.	Bug Fix	
Optimized the calculation of plane grid and geoid, added offset value check.	Bug Fix	
Optimized the survey database storage logic.	Bug Fix	
Fixed the issue that DD:MM:SS in exporting csv files may not show correctly in excel.	Bug Fix	
Optimized the application of RTCM1021-1027.	Bug Fix	
Optimized the display of Russian language.	Bug Fix	
Added the function of importing data between	Enhancement	2.2.9.0

the point lists of Survey Point, Control Point or Staking Point.	
Added the function of saving the coordinates of the base to the point list in the manually base mode.	Enhancement
Optimized the display of icons and texts in Survey interface.	Enhancement
Optimized the interaction of code input and displayed the code list in the survey confirmation box.	Enhancement
Added the configuration of Auto Center during survey in the Survey Config.	Enhancement
Added the option of closing and non-closing when complete the line work in survey.	Enhancement
Added the function to stake the nearest point in the Point Stakeout module.	Enhancement
Added the display of dx dy dz to the target in staking confirmation box, using different colors according to whether exceed the tolerence.	Enhancement
Added the configuration of Auto zoom during stakeout in the Survey Config.	Enhancement
Added the calculation and display of the Remain miles in the Line Stakeout and Road Stakeout.	Enhancement
Added the data export of cross-section in Road Stakeout.	Enhancement
Added the configuration for Auto in Cutoff Angle setting when connecting to Oscar.	Enhancement
Added Wifi Setting when connecting to Oscar.	Enhancement

Added Lock device setting when connecting to Oscar.	Enhancement	
Added the reminder of Oscar expiration time.	Enhancement	
Added Malaysia predefined coordinate system.	Enhancement	
Added Romania predefined coordinate system.	Enhancement	
Added Finland predefined coordinate system.	Enhancement	
Added Salvador predefined coordinate system.	Enhancement	
Modified the Column Header is checked by default in Export, and displayed the column header according to language setting.	Enhancement	
Added the function of Oscar firmware version check.	Enhancement	
Added the selection of control point survey type.	Enhancement	
Added PPK auto survey.	Enhancement	
Optimized the interaction of point selection in Point Stakeout.	Enhancement	
Optimized the interaction of file opening in CAD Stakeout.	Enhancement	
Optimized the rules of point selection rules in Earthwork.	Enhancement	2.2.8.0
Optimized the saving logic of points in Parameters and Point correction.	Enhancement	
Added the Encode selection in Import.	Enhancement	
Optimized the solution of RTCM1021-1027 parameters.	Enhancement	
Added Polish display.	Enhancement	
Updated Vietnamese display.	Enhancement	
Fixed the problem that points import in BLH	Bug Fix	

format may fail.		
Fixed the problem that preview function in Import may fail.	Bug Fix	
Fixed the problem that importing illegal grid files may cause a crash.	Bug Fix	
Fixed the problem that antenna type may fail to read when connecting to David.	Bug Fix	
Fixed the problem of point name deleting in the text survey interface.	Bug Fix	
Fixed the problem that the stakeout indication may be offset when the map rotation opening.	Bug Fix	
Fixed the problem that the data may not be refreshed in Line Stakeout.	Bug Fix	
Fixed the problem that closing layers may not be successful in CAD Stakeout.	Bug Fix	
Fixed the problem that setting antenna height may not be successful in Static Survey.	Bug Fix	
Added predefined coordinate system of South Africa, Peru, Oman, Libya.	Enhancement	
Added the function of setting the repeat count after each RTK Reset, and the saving of each result in the control point survey mode.	Enhancement	
Increased the maximum number of code characters to 30.	Enhancement	2.2.7.0
Allowed swithing staking point by directly click it on the map when staking points.	Enhancement	
Increased the function of cross-section stakeout in the road stakeout module.	Enhancement	
Optimized the logic of road stakeout by	Enhancement	

interval and by nearest in the road stakeout module.		
Increased the search function when selecting points in Parameters Calculation, Point correction and Base Shift.	Enhancement	
Added the map view when selecting the point library in COGO and other functions.	Enhancement	
Added Points average calculation tool.	Enhancement	
Fixed the problem of new project failure when selecting some coordinate systems.	Bug Fix	
Fixed the problem of the incorrect stakeout prompt when selecting South African coordinate systems.	Bug Fix	
Fixed the problem that the default name of stake point may not be automatically stepped in the stakeout function.	Bug Fix	
Fixed a possible error in the calculation of road intersection method.	Bug Fix	
Fixed the problem that the stake point will incorrectly be added to the point libarary in the area stakeout module.	Bug Fix	
Fixed the problem of incomplete display of some information in the interface of Bluetooth pairing and location information.	Bug Fix	
Added the mouse selection tool, the explode tool, the background switching function, and optimized the button display in the CAD stakeout module.	Enhancement	2.2.6.0
Added the graphical display of the filling and	Enhancement	

cutting instructions in the surface stakeout.		
Added the function of entering the point name to select the point when add a stakeout line or in COGO.	Enhancement	
Added Oscar host network module status display.	Enhancement	
Added Oscar host language setting.	Enhancement	
After selecting the coordinate system when creating a new project , added the step of confirming the coordinate parameters.	Enhancement	
Added line segmentation tool.	Enhancement	
Added Peru predefined coordinate system and added Vietnamese language.	Enhancement	
Solved the problem that the road intersection method may be calculated incorrectly.	Bug Fix	
Solved the problem that the six parameters of height parameters fitting may be calculated incorrectly and saved with insufficient accuracy.	Bug Fix	
Optimized the QR code of project parameters sharing, solved the problem of failure of scanning QR code.	Bug Fix	
Optimized the display of Turkish language	Bug Fix	
Added CAD Stakeout module.	Enhancement	
Added Area Stakeout module.	Enhancement	
Added the function of keeping the base mode after reboot in manual start base.	Enhancement	2.2.5.0
Added the function of keeping coordinates after reboot in auto start base.	Enhancement	

Added some customization requirements.	Enhancement	
Fixed the problem that the intersection method may be incorrectly calculated and plotted when using some road data.	Bug Fix	
Optimized the rule of reading files when importing data.	Bug Fix	
Fixed the problem that file sharing through wechat and other tools may fail after data export.	Bug Fix	
Modified the default projection of CGCS2000, BJ54 predefined coordinate system to 3-degree zone.	Bug Fix	
Added Israel predefined coordinate system.	Enhancement	
Optimized the text display of DXF base map.	Enhancement	
Added the function of setting unit when importing and exporting DXF.	Enhancement	
Increased the import and export of txt format.	Enhancement	
Added survey configuration saving logic.	Enhancement	
Added support for Rinex 3.04 when connecting to Oscar.	Enhancement	
Added Stop and Go function when connecting to Oscar.	Enhancement	2.2.4.0
Added the function of clearing disk and the function of debug configuration when connecting Oscar.	Enhancement	
Solved the problem of startup crash caused by failing to obtain permissions when installing software on some Android 8 and 10 phones	Bug Fix	
Solved the problem of crash when using some	Bug Fix	

functions on some Android 10 and 11 cell phones.		
Fixed the problem of detail point survey program on the text survey interface.	Bug Fix	
Fixed the display issues in the survey program due to the display configuration.	Bug Fix	
Fixed the problem that the positioning icon of the stakeout interface is shifted under some display resolutions, and optimize the display of release interface and release prompt sound.	Bug Fix	
Fixed the problem of incorrect calculation of the target point in road stakeout after applying base shift.	Bug Fix	
Fixed the problem of possible jamming when adding antennas.	Bug Fix	
Added building polyline, arc and circle for line stakeout.	Enhancement	
Added funtion of selecting a line for stakeout on the DXF base map, optimized function of selecting the point for stakeout.	Enhancement	
Added Grid to Ground tool.	Enhancement	
Added road stakeout real-time mileage stakeout, optimized the offset display.	Enhancement	2.2.3.0
Added control point survey mode.	Enhancement	
Added Traditional Chinese language option.	Enhancement	
Added Gauss 3-Degree Zone projection.	Enhancement	
Added Columbia Medellin predefined coordinate system, France RGF93 Lambert-93 predefined coordinate system.	Enhancement	

Added support of modifying pole height in tilt-on state.	Enhancement	
Fixed the issue that the registration status displayed for David may be incorrect.	Bug Fix	
Fixed the issue that importing data of ECEF coordinates may fail.	Bug Fix	
Added length unit support of US feet.	Enhancement	2.2.2.0
When creating a new project, added the selection portal of plane grid and geoid.	Enhancement	
Added support for Ireland 35 parameter conversion model, add Ireland geoid of gri format.	Enhancement	
Added support for French geoid of MNT format.	Enhancement	
Added the predefined coordinate system of Philippines.	Enhancement	
During connecting with David, added the function of decoding and applying RTCM1021/1023/1025 when receiving CORS data through the controller network.	Enhancement	
Added function of getting the nearest point and its mileage on the design road when staking a road.	Enhancement	
Optimized the application after unit setting, effective for import and export and other functions.	Bug Fix	
Optimized the processing of the deviation between the device positioning and the central meridian of the project, it will no longer	Bug Fix	

correct the central meridian automatically, but ask whether to jump to the project parameters interface for manual correct.		
Optimized the interaction of the stakeout interface, it automatically obtains 5Hz position data refresh frequency when entering stakeout interface.	Bug Fix	
Solved the issue that David may crash when connected by USB in the previous version.	Bug Fix	
Added photo taking function after point measurement.	Enhancement	2.2.1.0
Added QR code sharing function for survey point.	Enhancement	
Added display and export of ECEF-XYZ coordinate and BLH (Local) coordinate.	Enhancement	
Added NCN format import and export, KML/KMZ format import and export.	Enhancement	
Added base station point export.	Enhancement	
Added the display form of ENh coordinate.	Enhancement	
Added simulation connection function.	Enhancement	
Added the function of registration by scanning code.	Enhancement	
Added function of setting satellite system.	Enhancement	
Added Oscar log download function and battery change mode setting.	Enhancement	
Added function of automatically connect Oscar when starting software.	Enhancement	
Added Oscar internal radio call sign setting function.	Enhancement	

Added differential delay threshold limit.	Enhancement	
Added display of 2D/3D error in the whole interface.	Enhancement	
Added earthwork calculation tool.	Enhancement	
Added anglular bisector calculation tool.	Enhancement	
Corrected Sweden predefined coordinate system.	Bug Fix	
Optimized GSF geoid support.	Bug Fix	
Optimized French resources.	Bug Fix	
Fixed the problem that the coordinates are not refreshed in time between start and stop.	Bug Fix	
Added David30 device support.	Enhancement	
Added Swedish predefined coordinate system.	Enhancement	
Added notice of installing the radio antenna when starting up the Oscar internal radio base mode.	Enhancement	
Fixed the occasional delay in coordinates refreshing when connecting with Oscar.	Bug Fix	2.2.0.0
Updated the display of modulation when setting the Oscar internal radio mode.	Bug Fix	
Fixed the issue that getting the central meridian by clicking the button and getting the central meridian automatically when connecting the device are logically different.	Bug Fix	
Added the predefined coordinate system of Tianjin 2000.	Enhancement	
Added the predefined coordinate system of Netherlands RDNAP2008, and support for the ASCII format horizontal grid and vertical grid	Enhancement	2.1.10.0

under this coordinate system.		
Added the projection parameter setting, the button that the central meridian is automatically obtained according to the current position.	Enhancement	
Added the function of survey point editing, allowing to modify the point name and antenna information of the measured point.	Enhancement	
Added the function of checking coordinates via road mileage.	Enhancement	
Added the display of modulation type and channel bandwidth when connecting to Oscar and using the internal radio.	Enhancement	
Added the network link of TCS protocol when connecting with David.	Enhancement	
Added the display of the distance from the previous survey point in the survey interface.	Enhancement	
Added the display of stakeout collection points in the stakeout interface.	Enhancement	
When staking out the line to the vertical point, if the vertical point is on the extension line, added the drawing display of the extension line.	Enhancement	
When staking out the line to the stake point, added the memory of stake number, and re-enter line stakeout will continue stakeout according to the stake number before exiting.	Enhancement	
Fixed the problem that the antenna type is empty in the survey configuration after Oscar	Bug Fix	

is connected via NFC when the software is not started.		
Fixed the problem that it will stuck in the startup for a long time if there is a network problem when starting the PDA Network working mode.	Bug Fix	
Added data editing for cross section, super elevation, and widening of road module and side stakeout function for road stakeout module.	Enhancement	2.1.9.0
Added the display of vertical point or stake point mileage during line stakeout.	Enhancement	
Added the distinguishing display of positive and negative offset during line stakeout.	Enhancement	
Added the predefined coordinate system of Xi'an 80.	Enhancement	
Fixed the crash problem after connecting to Oscar, turning on the static recording and quickly starting the rover radio mode.	Bug Fix	
Fixed the crash problem when importing illegal csv files.	Bug Fix	
Fixed the lagging problem when there are too many points in the Survey interface.	Bug Fix	
Fixed the problem that when the threshold of point stakeout is set too large, clicking the full image to display will lead a crash.	Bug Fix	
Fixed the problem that the software still displays the coordinate and solution status in the last second of the search when the satellite	Bug Fix	

is not searching suddenly.		
Fixed the problem that the offset may be calculated incorrectly during the line stakeout.	Bug Fix	
Fixed the problem that the central meridian is reset to 0 in Spanish mode.	Bug Fix	
Fixed the problem that garbled characters are displayed when opening the exported csv file in Office Excel by default in Chinese mode.	Bug Fix	
Added support for Stations Equation, Vertical Profiles and Start Mileage in the road function, and road stakeout performs three-dimensional stakeout of center stake.	Enhancement	2.1.8.0
Added support for export in DXF format whose name or code contains Chinese characters.	Enhancement	
Modified the predefined coordinate system of Turkey.	Bug Fix	
Road management and road stakeout are added to the software. The current version supports the editing of Alignment by intersection method and element method, conversion of intersection method to element method, and road stake out function. Other functions will be implemented in subsequent versions.	Enhancement	2.1.7.0
Added Survey with confirmation button to the survey configuration. After turning if off, the survey point data will be saved directly without confirmation box.	Enhancement	
Added the display of QZSS satellites in the sky	Enhancement	

map and satellite table.		
Software optimization: retain the user's common configuration habits; SNR is adjusted to CN0; Portuguese pre-defined coordinate system name adjustment.	Enhancement	
Fixed the crash issue of clicking the offset point tool to enter the point library to select the point when the project is not opened.	Bug Fix	
Fixed the crash issue of switching to Turkish to perform point survey.	Bug Fix	
The Chinese version of the software is renamed to "Tianshuo Measurement", and the Chinese display is optimized in the software.	Enhancement	
Added the function of rotating the map view when staking out, check this function in the display config interface of staking out.	Enhancement	
Added the function of importing points to the survey point library from coordinate files; add the function of importing points to the control point library or the stakeout point library from DXF, SHP, SIMA files.	Enhancement	2.1.6.0
Added the L value negative input and calculation in the offset point from line tool.	Enhancement	
Optimized Bulgarian display.	Enhancement	
Fixed the problem that the software automatic calculates the UTM number incorrectly when it is located in the Western Hemisphere.	Bug Fix	
Fixed the problem that mtext is not displayed when importing some DXF basemaps.	Bug Fix	

Fixed the problem that prompy might not be correct when selecting forward and backward stakeout prompt type.	Bug Fix	
Fixed the problem that when the tilt function is turned on, the rover mode is stopped and the coordinates are no longer refreshed.	Bug Fix	
Support DXF import as the base map, and add function of selecting points on the DXF base map to the staking point library.	Enhancement	
Add the export of the collected line when exporting DXF.	Enhancement	
Support SIMA format import with empty elevation data, add the encoding setting when selecting SIMA import and export, to avoid the situation of garble code.	Enhancement	
When connecting with Oscar, it can be chosen to shut down the Oscar receiver at the same time when exiting Nuwa app.	Enhancement	2.1.5.0
When configuring David at base mode, add the 'save config' statement.	Enhancement	
When performing point stakeout and line stakeout, add the search function for staking point and staking line.	Enhancement	
Add the checkbox 'Display All Staking Point' in the display config of the point stakeout interface.	Enhancement	
Adjust part of the statement display for English, Chinese, Japanese, and Greek.	Enhancement	
Add predefined Mexican coordinate system.	Enhancement	

Solve the crash of selecting empty project as the source project if there is no project in the app.	Bug Fix	
Added Bulgarian displayed.	Enhancement	2.1.4.0
Added Irish pre-defined coordinate systems.	Enhancement	
Fixed the problem of low success rate of David connection.	Bug Fix	
Fixed a crash of the tilt enable button when connecting with Oscar Ultimate, if the Android phones do not support GIF view.	Bug Fix	
Fixed the problem that when connecting Oscar Ultimate and turning on the tilt enable, and then switching to connect David, the tilt button was still on.	Bug Fix	
Fixed the crash of clicking the confirm button on ths soft keyboard on TC20 after modifying the point name in stakeout.	Bug Fix	
Added tilting initialization instructions, optimize tilting interaction, and add tilting initialization, measurement and lofting instructions in user manual.	Enhancement	2.1.3.0
Added Malaysia RSO projection.	Enhancement	
Added Offset Point From Line in the Offset Point tool, to determine the Point on the extension Line or the Point after Offset on the extension Line.	Enhancement	
Added the elevation difference, slope ratio and so on the calculation results in the Azimuth Distance tool.	Enhancement	

Added the Greek display in Nuwa.	Enhancement	
Added Slovenia predefined coordinate system.	Enhancement	
Added Morocco predefined coordinate system.	Enhancement	
Added Belgium predefined coordinate system.	Enhancement	
Added Netherlands predefined coordinate system.	Enhancement	
Added Guatemala predefined coordinate system.	Enhancement	
Added Columbia predefined coordinate system.	Enhancement	
Added Austria predefined coordinate system.	Enhancement	
Solved the problem that when connecting with David, the parameters of compass could not be read, and the stakeout indicating arrow was invalid.	Bug Fix	
Solved the problem that the DXF file exported by Nuwa may can't be imported into autocad.	Bug Fix	
Solved the problem that coordinates may not be refreshed after tilt off.	Bug Fix	
Fixed the problem of parameter calculation or point correction, in which the error details of each pair of points cannot be seen.	Bug Fix	
Optimized Japanese display.	Bug Fix	
Optimized Spanish display.	Bug Fix	
The input control is optimized. A one-click clear button is added to the input box. The latitude and longitude input box supports intelligent input and real-time format switching.	Enhancement	2.1.0.9

Added CGCS2000 predefined default coordinate system.	Enhancement	
In the connection interface the Bluetooth name and MAC address display in newline.	Enhancement	
When connecting Oscar receiver and setting the base station mode, added CMR and RTD differential formats.	Enhancement	
When connecting Oscar receiver and setting static, added configuration record duration, and add recorded duration display.	Enhancement	
When connecting Oscar receiver and setting the built-in network base station mode, added Ntrip protocol support.	Enhancement	
When connecting Oscar receiver, added NMEA serial output configuration.	Enhancement	
When connecting Oscar receiver, added disk usage display and remaining capacity display.	Enhancement	
Added heading display when connected to David plus.	Enhancement	
Adjusted the size of the point name on the Survey interface.	Enhancement	
Added SHP basemap import function.	Enhancement	
Added satellite map display on the online map of Survey interface.	Enhancement	
Added the function of stakeout to the vertical point on the line for Line stakeout.	Enhancement	
Modified the point type of the collection point during stakeout to "Stakeout collection point" to distinguish it from general Detail points and	Enhancement	

added the property of distance from the target point.		
Fixed the problem of using the layer name as the point name in other import - DXF import.	Bug Fix	
Fixed other import - SHP import failure issues.	Bug Fix	
Fixed the problem of low success rate of NFC connection.	Bug Fix	
Fixed the problem of displaying registration information error when connecting unregistered Oscar receivers.	Bug Fix	
Fixed the problem that the base coordinates of the collection point are incorrect when switching between network 1 + 1 mode and VRS mode.	Bug Fix	
Organized Chinese and Japanese translations in the app.	Bug Fix	
Added the function of the plane grid.	Enhancement	
Added the support of GRD, GSF, OSGB plane grid or geoid.	Enhancement	
Added the function of online download plane grid or geoid.	Enhancement	2.1.0.8
Added the import and export of SIMA format files.	Enhancement	
When inputting the repeated line name to continue the Linework measurement, it is supported to choose from the start point or the end point.	Enhancement	
Redo the line stakeout function. Stakeout to the point on the line according to the interval	Enhancement	

and the offset.		
Added the report file function in detail point survey, turn on the function and the coordinate of every epoch will be saved into a .txt file.	Enhancement	
Added the display of L5 SNR.	Enhancement	
Added button to cancel the display of electronic bubble.	Enhancement	
Added the stakeout pointing arrow text description.	Enhancement	
Solved the crash problem when opening the Survey interface on some phones with higher display resolution.	Bug Fix	
The height value in the location share function is calculated to the coordinates of ground points according to the antenna settings in Nuwa.	Bug Fix	
Added Molodensky Badekas datum transform model.	Enhancement	
Added Singapore predifined coordinate system SVY21.	Enhancement	
Added Australia predifined coordinate system GDA2020.	Enhancement	2.1.0.6
Optimized the Survey interface, the survey button will change automatically and the survey configuration will change according to the selection of Survey Mode(Detail or Continous).	Enhancement	
Optimized the Survey Config interface, the	Enhancement	

HRMS limited value and VRMS limited value will change according to the Solution Limited.		
Display optimization of the Survey Config interface. The Config in the Survey and the Stakeout function module only displays relevant items; all configuration items are retained in the Survey Config.	Enhancement	
Adjusted the longitude and latitude coordinates display, put N, S, E, W after the number.	Enhancement	
Opened to use TCS through PDA Network in Oscar base configuration.	Enhancement	
Added the function of Oscar registration by Nuwa.	Enhancement	
Added the limit to 5 survey points when connecting to general instruments of NMEA mode.	Enhancement	
Corrected some translation errors in English language.	Bug Fix	
Solved the problem that sometimes the number of satellites used is larger than the number of visible satellites.	Bug Fix	
Solved the problem of software exception if click Device Info during NFC connection.	Bug Fix	
Solved the problem of Nuwa software crash when connecting Oscar via NFC, if Nuwa is not provided system permission.	Bug Fix	
Solved the problem in XML export that the solution state of all survey points are fixed.	Bug Fix	

Solved the problem when repeated using the baseshift, the value of Base shift and the actual coordinate shift are not the same.	Bug Fix	
Solved the problem that the survey points in the Survey interface may not be displayed when the Survey Style is Detail.	Bug Fix	
Solved the problem that the point cannot be selected to stakeout when importing NE points to the Stakeout point library.	Bug Fix	
Solved the problem of Nuwa crash for some android 9.0 models.	Bug Fix	
Adjusted the display of Tilt Angle quality, Tilt direction quality and Heading quality in tilt measurement.	Bug Fix	
Adjusted the algorithm for calculating the Distance to base, the incorrect result can be avoided by calculating according to the XYZ coordinate in the case of projection unselected.	Bug Fix	
Changed the tone frequency of stakeout prompt distance(long) from 5s to 2s at a time.	Bug Fix	
Fixed the crash when connecting devices using Android 9 caused by the API level change.	Bug Fix	
Fixed the problems that Nuwa is unable to obtain HTTP permissions using Android 9 caused by the API level change, including inablity to perform software automatic update and online map display.	Bug Fix	2.1.0.5
Added moving direction indicator arrow in	Enhancement	2.1.0.3

stakeout interface.		
Added the circle display whose radius is equal to the prompt tone distance in stakeout interface.	Enhancement	
The prompt tone in different grades in stakeout interface. When the surveyor is approaching to the point to stake out, Nuwa beeps every 5 seconds. When the surveyor arrives at the point to stake out, Nuwa beeps every 1 second.	Enhancement	
Added the XML format export which supports being imported to EZSurv to post process Stop&Go data.	Enhancement	
Adjusted DXF export, add height coordinate and height annotation. Distinguish layers according to different kinds of annotations and point feature property.	Enhancement	
Added GNSS Linework function. The survey line will be displayed in survey interface. The survey line allows operations such as delete point, insert point, and continue surveying.	Enhancement	
Change the API level to 28 and re-launch on Google Play.	Bug Fix	
Fixed the issue that the point coordinate saved to the Point database may be wrong in the case of the Base Shift.	Bug Fix	
Fixed incomplete import Stakeout Point selecting all from Survey Point.	Bug Fix	
Fixed the crash issue when turning on location	Bug Fix	

share function for some android devices.		
Tilt compensation function is available for Oscar Ultimate model.	Enhancement	
Added elevation stakeout for point stakeout and line stakeout.	Enhancement	
Opened the TCP Client function for the receiver network.	Enhancement	
Solved the problem that conversion from NEh to BLH may be incorrect when there are seven parameters.	Bug Fix	
Solved the problem that selecting the coordinate system from the Coord System List is not effective when editing the project parameters.	Bug Fix	
Solved the crash problem caused by the name containing illegal characters when creating a new project.	Bug Fix	2.0.1.6
After setting the latitude and longitude format to DD:MM.MMM, the number of decimal places is changed to 7 digits.	Bug Fix	
Solved the problem that the link and differential delay are not displayed on the survey interface when Oscar is set as the receiver network rover mode.	Bug Fix	
Solved the problem that the debug button in the device info interface sometimes is opened illegally when switching from connecting David to connecting Oscar.	Bug Fix	
Corrected the English expression of the	Bug Fix	

altitude and geodetic height on the survey interface.		
Corrected the English expression of long press to cancel the Bluetooth match on the connection interface.	Bug Fix	
The display of base point coordinates is changed to ground when base antenna height is obtained.	Enhancement	
The display of north / east direction STD is added to the survey point attribute which is allowed to be exported.	Enhancement	
During the point survey process, it is allowed to stop the survey by pressing the stop button.	Enhancement	2.0.1.4
Fixed the issue that after configuring David by Nuwa to stop the base mode, restarting David it still displays as Base.	Bug Fix	
Fixed the probabilistic crash issue of returning to the main interface after completing the point staking.	Bug Fix	
Open Oscar Reset function	Enhancement	
The Collection End time of points in the point library will change with the software time zone setting	Enhancement	
The project list is arranged in reverse chronological order by edit time	Enhancement	2.0.1.2
Fixed crash caused by choosing an empty coordinate system	Bug Fix	
Fixed the probabilistic crash in NFC connection	Bug Fix	
Fixed the probabilistic crash of setting Ntrip	Bug Fix	

server after Oscar connection		
Fixed failure of setting up TCPClient in connecting David	Bug Fix	
Solved the problem that modifying antenna parameters does not take effect after the survey of smooth points is completed	Bug Fix	
Solved the problem that Base points would not increase after reaching 9	Bug Fix	
Fixed HTML export crash when there are stakepoints	Bug Fix	
Solved the problem that the export Collection End time property has no hour, minute, or second, when the separator is a space in custom export	Bug Fix	
Solved the problem that the searched results for the point library based on time is empty	Bug Fix	
Fix the severe problem that modification of Ant Height is not effective in the Survey Config	Bug Fix	2.0.0.9
Supports new model Oscar	Enhancement	
Added display of base shift, datum transition, plane adjustment and height fitting in the interface of Satellite Info - Position	Enhancement	
For data import, it supports data preview before importing data	Enhancement	2.0.0.8
For data export, it added HTML export	Enhancement	
Custom import and export format support editing, viewing and deleting	Enhancement	
Added related tips in the Bluetooth pairing and device connection interface	Enhancement	

The base supports RTCM3.0 format	Enhancement	
The logic of Detailed Point acquisition is modified to pop up confirmation dialogue after the acquisition is completed	Enhancement	
Added threshold distance setting for stakeout tone	Enhancement	
In the survey configuration - Display configuration interface, added the check box of displaying all stake out points	Enhancement	
Solve the flashback problem of Nuwa in landscape orientation display	Bug Fix	
Unify NEh coordinates and RMS data, retain 4 decimal places	Bug Fix	
Solve the application crash caused by the special registration date in the Demo Key	Bug Fix	
Solve the problem of incomplete display of part of the Spanish interfaces	Bug Fix	
Solve the problem that the seven parameters and the correction parameters are not imported into the project parameters in the newly created project	Bug Fix	
Solve the problem of search failure according to time in point library search	Bug Fix	
Solve the problem that exporting the custom interface cannot slide	Bug Fix	
Solve the problem that in the survey interface the speed is not refreshed	Bug Fix	
Adjust default antenna	Bug Fix	
Added Japanese JGD2011 coordinate system	Enhancement	1.0.9.7

Optimized the stakeout prompt message	Enhancement	
Fixed the problem of wrong name for the Portugal coordinate system	Bug Fix	1.0.9.5
Fixed the problem of inaccurate acquisition time during the point collection	Bug Fix	
Optimized the SHP export coordinate format	Enhancement	
Optimized online upgrade information prompts	Enhancement	
Optimized Tools Offset Point calculation	Enhancement	
Optimized Tools Azimuth and Intersection Angle calculation	Enhancement	
Optimized OSM online map loading	Enhancement	
Optimized the seven parameters calculation	Enhancement	
Optimized Survey Config options	Enhancement	
Optimized the function of adding stakeout points and control points	Enhancement	
Added Ghana's predefined coordinate system	Enhancement	
Added Portuguese predefined coordinate system	Enhancement	1.0.8.0
Optimized static storage	Enhancement	
Optimized elevation fitting calculation	Enhancement	
Fixed elevation problems caused by geoid model during data inverse calculation	Bug Fix	
Fixed the flashback issue caused in certain situations	Bug Fix	
Optimize DXF export	Enhancement	
Fixed the problem that the default is the control point library when importing points for stakeout point library	Bug Fix	

Fixed the problem that the interface has no prompt when the stakeout point is approaching the stakeout point library	Bug Fix	
Support collecting points with physical collection button in TC20 controller	Enhancement	1.0.4.1
Support quick points collecting in 'point stakeout' and 'line stakeout' with physical collection button	Enhancement	
Add 'survey hotkey' in point survey configuration page	Enhancement	
Fix average collection problem if the solution can't meet the requirements	Bug Fix	
Change the display of coordinate axis in projection parameters as X->North Y->East	Enhancement	
Optimized the calculation of parameters and the secondary calculation process of point correction	Enhancement	1.0.3.3
Optimized the device connection experience	Enhancement	
Optimized the device registration experience	Enhancement	
Optimized antenna management	Enhancement	
In the survey configuration, the survey epoch is changed to be editable by users	Enhancement	
Added Oscar preview in Device Connection, so stay tuned! !	Enhancement	
Added support for common NMEA devices	Enhancement	1.0.3.2
Added the function of automatically zooming the scale when approaching the stakeout point during point stakeout/line stakeout	Enhancement	
Added multi-point selection function when	Enhancement	

importing stakeout points		
Solved the connection stability of NtripClient function under Spanish and other languages	Enhancement	
Added the functions of Device Debug and static mutual exclusion	Enhancement	
Fixed the display problem when NtripClient and TCPClient are connected	Bug Fix	
Modified the GNSS point coordinates displayed in the base shift as BLH	Enhancement	
Optimized static record Station ID setting function	Enhancement	
Fixed crash when switching languages in Spanish and other languages	Bug Fix	
Combined the mount point and rover configuration to solve the problem of the display of the mount point history data	Enhancement	
Fixed the problem that the collection time epoch does not take effect in the survey configuration	Bug Fix	
Fixed the problem of not displaying NEh coordinates when manually starting the base station	Bug Fix	
Fixed the problem that the base point cannot be selected in the base shift	Bug Fix	
Fix the stakeout point error on the map and coordinates error after the base shift	Bug Fix	
Fixed the error of multiple repetitive calculations in the base shift	Bug Fix	
Added support for north-south/east-west	Enhancement	

hemisphere		
Optimize continuous point survey by distance	Enhancement	
Optimize continuous point survey by time	Enhancement	
Add the predefined coordinate systems of Malaysia and Romania	Enhancement	
Add the function of station-id setting during static measurement	Enhancement	
Add the function of Inner RTK control	Enhancement	
Add the function of importing projects	Enhancement	
Add preview function for predefined coordinate system	Enhancement	
Optimize the arrangement and display of countries or regions in the predefined coordinate systems	Enhancement	
Optimize the display of satellite quantity	Enhancement	1.0.2.9
Optimize the display of antenna height interface	Enhancement	
'Connected' at the top of the main interface is changed to 'Connected'	Enhancement	
The position status of satellite interface for base station is changed to 'Base Manual' and 'Base Auto'	Enhancement	
Fix the problem of not displaying NEh coordinates when manually starting the base station	Bug Fix	
Add new projections: Cassini, Oblique Stereographic Alternative, Stereographic, and Transverse Cylindrical Equal Area	Enhancement	
Fix the problem of imported line files are not	Bug Fix	

identified		
Fix the problem of crashing when creating new projects and point survey under Spanish language	Bug Fix	
Optimize database upgrade	Enhancement	
Add predefined coordinate system	Enhancement	1.0.2.8
Modify the satellite quantity display as 'satellite tracked / satellite used'	Bug Fix	
Optimize the export format of dxf file	Enhancement	
Fix the problem that the elevation increases when manually starting the base station	Bug Fix	
Optimize base shift experience	Enhancement	
Change shp/dxf export coordinates to local coordinates	Enhancement	
Fix the problem that satellites on the Sat Tab interface has always shown true	Bug Fix	
Add differential data format display when using Ntrip to obtain source list	Enhancement	
Optimize system stability	Enhancement	
System compatibility is improved, compatible with upgrades on older software	Enhancement	
Fixed the problem that the antenna height disappeared in the device connection interface after reloading the software	Bug Fix	1.0.2.6
Fixed the problem of the invalidity of static survey after canceling auto-start	Bug Fix	
Fixed the problem of the Ntrip Client set up failure for the rover	Bug Fix	
Fixed the problem of the antenna height	Bug Fix	

configuration failure for the rover		
Optimize the software automatic update experience	Enhancement	
Optimize the device connections	Enhancement	
Optimize continuous acquisition by time	Enhancement	
Add Geoid Model: (1) support EGM96 and EGM08 at the same time; (2) optimize data loading and reduce waiting time for different devices; (3) simplify algorithm calculation process and save system resources	Enhancement	
Add UTM projection support for the southern hemisphere	Enhancement	
Optimize the rules for point acquisition automatic naming	Enhancement	
Optimize the base shift function: (1) support multiple times of base shift; (2) support real-time modification of the shift parameters; (3) reorganize the base shift logic; (4) redesign the base shift UI	Enhancement	
Optimize the solution state of the data export, which is the same as the board definition	Enhancement	
Optimize the display of the antenna height when manual-starting the base station	Enhancement	
Repair of other problems	Enhancement	
Antenna height display optimization	Enhancement	1.0.2.4
Survey configuration: display configuration optimization	Enhancement	
Re-enter static storage, status optimization	Enhancement	
Static storage antenna optimization when	Enhancement	

self-starting the base station		
Line stakeout 'distance' distinguishes between positive and negative	Enhancement	
Add column name for coordinate export	Enhancement	
Remove the 'Acquisition Status' of the 'Text Acquisition' interface	Enhancement	
'Smoothing' and 'Acquisition' are combined	Enhancement	
Ntrip site management: IP address display is incomplete	Bug Fix	
Click base/rover configuration without changing order	Enhancement	
Support for name modification of base/rover configuration User-defined name can be changed, the system default name cannot be changed	Enhancement	
Add reminder when creating a new project	Enhancement	
Change the logic of antenna type choosing, the antenna type must be choosing before connection	Enhancement	
Change the default antenna height as pole height in surveying, change the default antenna height as slant height in static surveying	Enhancement	1.0.2.3
Support choosing file type in import file	Enhancement	
Add GPS mock location	Enhancement	
Fixed the error of configuration when build a new project	Bug Fix	
Optimized the interface freeze if there are too many points in point survey interface	Enhancement	

Optimized the display of export interface	Enhancement	
Optimized the display of the result in two point intersection	Enhancement	
Optimized the display of title bar	Enhancement	
Optimized the option logic in import interface	Enhancement	
Change the voice output frequency in point stakeout	Enhancement	
Add RTCM1230 message in base model	Enhancement	
Fixed software crashed when sharing project	Bug Fix	
Optimized the logic to register David	Enhancement	
Optimized the device connection	Enhancement	
Support auto start static mode	Enhancement	
Add xyz apporoximate in rinex file	Enhancement	
Optimized the speed to log in CORS.	Enhancement	
Add point name and code in dxf format	Enhancement	1.0.2.2
Fix the abnormity H value if the antenna slant height is zero	Bug Fix	
Change the 'Projection' to 'CRS'	Enhancement	
Change the threshold value in collect points by distance	Enhancement	
Optimized auto collect function by distance	Enhancement	1.0.2.1
Optimized software access authority (it need location information authority at the same time when using Bluetooth if your android version is higher than Android 6.0)	Enhancement	
Optimized auto update function	Enhancement	
Optimized the display of system language	Enhancement	
Optimized many default value	Enhancement	
Optimized the pop-up message when getting	Enhancement	

the first fixed solution		
Optimized the language of pop-up messages	Enhancement	
Fixed the display error in height fitting title panel	Bug Fix	1.0.2.0
Default to open update auto test function	Enhancement	
Fixed software crash due to the display of decimal point in some language	Bug Fix	
Optimized the display of project information	Enhancement	
Fixed the bug that the QR code can't refresh when project parameters changed	Bug Fix	
Fixed the title can't be changed with system language changed	Bug Fix	
Fixed numeric keypad have no decimal point problem in some cellphone	Bug Fix	
Fixed the unusual local coordinate value under some ellipsoid	Bug Fix	