X•PAD Survey 2.5.5

This document contains a list of all changes, new features, bug fixed introduced in this last version of X•PAD Survey.

GPS

NEW! X-Y RSM: X and Y RMS accuracy is now saved in the GPS measure.

BUG GPS Status: fixed a bug on dialog closing during configuration.

TPS

NEW! TPS Panel: coordinates are now displayed.

NEW! Leica GeoCom Auto: Leica motorized total stations based on GeoCom are now supported.

BUG Zoom80: fixed a bug on search left/right; sometimes prism were not locked.

Coordinate system

NEW! Ireland: Ireland coordinate system and geoid is now supported.

NEW! Bahrain: Bahrain coordinate system and geoid is now supported.

Survey

NEW! Multi code: it is now possible to define up to 3 level of codes. When point is stored it is possible to enter a code for each level; code can be entered manually or can be selected from a list. Each level has a separate list of codes fully customizable.
CAD

**NEW!** Points label: labels are now displayed according to the zoom level and number of points visible.

Import & Export

**NEW!** Excel: Reports can be exported in Excel XML format; XML format is a formatted Excel file.

**NEW!** DXF: DXF files with no-ASCII characters are now supported.

**NEW!** Topcon: TPS measures are exported in Topcon GTS format.

**NEW!** LandXML: improved LandXML data export.

**NEW!** Last used format: last used import/export ASCII format is now saved.
X•PAD Survey 2.5.4

This document contains a list of all changes, new features, bug fixed introduced in this last version of X•PAD Survey.

GPS

BUG  PIN on Zenith25: PIN of the SIM card is now used in the Zenith25 configuration.

TPS

NEW!  Fast measure on Zoom80: in Zoom80 now it is possible to decide between three different EDM mode. The EDM modes are: Standard, Fast, Tracking.

NEW!  Atmospheric correction for Zoom80: in Zoom80 it is now possible to set temperature, pressure and refraction coefficient.

Survey

NEW!  Smart drawing: this new feature allow to easily create drawing during points measurement. It is possible to:
• Create lines and arcs
• Close figures
• Stop drawing
• Select manually new start point
• Select manually a point
• Circle by measuring 3 points
• Circle by measuring center and point on the perimeter
• Square by measuring two opposite corners
• Square by measuring center and a point on the perimeter
• Rectangle by measuring two points on the base and a point for the height
• Rectangle by measuring center and points on the two sides

**Stakeout**

**NEW!** **Turn to point:** in stakeout it is now possible to perform the automatic rotation of the total station toward the point to stakeout.
Surface & Volumes

**BUG** Surface triangulation: fixed some bugs on surface calculation for special cases.

Import & Export

**NEW!** DXF – LWPOLYLINE: for LWPOLYLINE entities is now possible to import the elevation.

**BUG** Export GSI: fixed a bug on distance exportation.

**BUG** Export ASCII measure: measures were exported in the opposite order.
X•PAD Survey 2.5.3

This document contains a list of all changes, new features, bug fixed introduced in this last version of X•PAD Survey.

General

**NEW! Reference job**: to any job file it is possible to associate a reference job. Points of the reference job can be used as GPS calibration points or for the free-station calculation; reference job points can be also used for the stakeout operations.

GPS

**NEW! Q-Fix per Zenith25**: support of Zenith 25 Q-Fix technology. Q-Fix allows for the computation of accurate phase fixed positions even in areas with relatively poor satellite coverage, such as under tree canopy.

**NEW! External radio (Zenith 25)**: it is now possible to configure receiver with the option to use an external radio.

Total station

**NEW! Target selection**: new dialog for the target selection. Select the target is now more simple and fast; it is possible to customize the dialog with the three most used prism type.
**BUG**  
*Zoom Pro*: fixed a bug on setting constant for reflectorless measurement.

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**Stakeout**

**NEW!**  
*Point stakeout*: it is possible to select, as next point to stakeout, not only the next in the list but also the previous.

![Stakeout image](image-url)

**NEW!**  
*Show directions on position*: when you are in the stakeout position, within tolerance limits, an icon shows this status.

![Direction arrow limit](image-url)

By clicking on the panel, software shows the direction to take to improve the position.

**NEW!**  
*Direction arrow limit*: in stakeout settings it is possible to define the distance limit for the display the direction arrow. If your distance from the target is greater than this limit, the direction arrow is shown.

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**Surface calculation**

**NEW!**  
*Calculation improved*: calculation of 3D surface has been improved also by a new option that allow to define the surface boundary limit.

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**Measures list**

**BUG**  
*Measures list*: selection of all measures generated an error and closed the software.
X•PAD Survey 2.5.2

This document contains a list of all changes, new features, bug fixed introduced in this last version of X•PAD Survey.

General

NEW! Bluetooth: improved management of Bluetooth connection in case signal is lost.

GPS

NEW! Zenith25 – Direct call: it is now possible to setup a configuration base-rover that uses receiver internal GPRS to send-receive corrections. In this way it is possible to use two receivers without radio for a base-rover configuration and overpass distance limit supported by radios.

BUG Zenith25: fixed error on antenna height during registration of raw data for post-processing.

Total station

NEW! Zoom35: total station GeoMax Zoom35 is now supported.

NEW! GeoMax Miniprism: introduced mini prism GeoMax with constant 34.4 mm.

BUG Zoom80: general improvements and corrections for robotic total station Zoom80.

BUG Zoom20/30: fixed a bug on setting prism type of Mini prism.

Survey

NEW! Station elevation from point: added the option that allow to calculate station elevation by measuring a reference point.

NEW! TPS Survey: now it is possible to set a target height different from 0 even for measures in reflectorless mode.

NEW! TPS Survey: reflector type and constant is now displayed during the measurement.
**BUG** Free station: improved the calculated result by improving the weight assigned to distances and angles.

**Coordinate systems**

**NEW!** Local system – multiple points: introduced the option that allows to use a rigid body transformation (scale 1).

**NEW!** Istanbul geoid: added Istanbul geoid model.

**Stakeout**

**NEW!** Tolerance: now it is possible to define a different stakeout tolerance for distances and elevations.

**NEW!** Stakeout with robotic total station: if prism is locked, measure starts automatically without necessary to press Measure button.

**Import/Export**

**NEW!** Export STAR*NET: TPS measure can be exported in STAR*NET format.
X•PAD Survey 2.5

This document contains a list of all changes, new features, bug fixed introduced in this last version of X•PAD Survey.

General

**NEW!** Job model: the program general settings are stored on a job model file. All new jobs automatically inherit all the settings defined in the job model.

**NEW!** List of data: it is possible to scroll data by using controller directional keys (if available).

**BUG** Point name increment: fixed a bug on point name increment if starting name was similar to 0001.

CAD

**NEW!** Lenghten: added a command that allows to stretch a graphic object at the extremities, or to add a new point along a direction defined by two reference points.

**NEW!** Lines/polylines/arcs direction: an arrow display the drawing direction of lines/polylines/arcs when selected.
**NEW!** **Object information:** displays the name of the layer to which the object belongs.

**BUG** **Surface drawing:** fixed a bug that didn’t display the triangles when the view was too close.

## Total station

**NEW!** **Measure F1/F2:** added automatic rotation on Face 2 and back on Face 1 (Robotic).

**NEW!** **Free station:** starting from point 3, software rotates automatically the total station towards selected reference point (Robotic).

**NEW!** **Sokkia:** added reflectorless setting.

**BUG** **Free station:** fixed a bug when starts measure by pressing Return.

**BUG** **Zoom80:** fixed a bug on prism search after a measure in tracking mode where prism wasn’t available.

## GPS

**NEW!** **Zenith25:** added full control and support of new receiver GeoMax Zenith25.

**NEW!** **Change of mountpoint:** change of mountpoint is recorded in job notes.
Survey codes

**NEW!** Codes list: the list of survey codes may be displayed in alphabetical order or according to the use, in this last case codes used recently are displayed in the top positions.

**NEW!** Quick codes: plus the ability to select the codes from the list, it is possible to customize up to 27 buttons, in 3 panels, each of which is assigned a code. By pressing the quick code button it is possible to automatically starts the measurement of the point.
Topographic points

**NEW!** **Delete coincident points:** introduced a new function that automatically delete the points whose coordinates coincide with those of another point in the job.

![Survey points](image)

**Stakeout**

**NEW!** **Surface stakeout:** introduced two different sounds if the current elevation is higher or lower than the specified level of the surface.

**BUG** **Polyline stakeout:** fixed a bug in stakeout calculation if polyline had very small segments.

**Import & Export**

**BUG** **Export DXF:** export coordinates in the current job distance unit instead of in meters.

**BUG** **Import ASCII, DXF:** import coordinates according to the current job distance unit.

**BUG** **Export TPS measure:** fixed a bug on horizontal angle exportation.

**Reference plane module**

The new **Reference plane** module allows you to perform an orientation of the total station on a reference plane of any position and direction. The coordinates of the measured and stakeout points are relative to the origin of the reference plane.
Station setup

- Orientation to known point
  - Station position: Known
  - Orientation: Known point

- Orientation by azimuth
  - Station position: Known
  - Orientation: Azimuth

- Free station
  - Station position: To calculate
  - Orientation: Known points

Reference plane

- Station position: To calculate
  - Orientation: Reference plane

No orientation

- Station position: Known
X•PAD Survey 2.4

This document contains a list of all changes, new features, bug fixed introduced in this last version of X•PAD Survey.

General

**Bug**  **Menu selection**: fixed a bug that in some remote cases didn’t allow to select the right commands in the menus.

GPS

**New**  **GPS Status**: added commands that allow to connect and disconnect the GPRS communication.

**New**  **GPRS External with Zenith**: it is now possible to use the internal GPRS of the controller, if available, to connect with NTRIP server and receive corrections; corrections received by the software are sent to the Zenith receiver.

**New**  **Instrument profiles**: new icons has been defined for GPS rover profile with radio and GPS rover profile with GPRS connection.

Total station

**New**  **Zoom80**: supported the new Bluetooth Long Range communication between Getac, with the new Cap, and the new handle ZRT81.
**NEW!** **Zoom20/30:** level of battery is now displayed.

**NEW!** **Nikon TPS:** Nikon total station are now supported by TPS module of X•PAD.

### CAD

**NEW!** **Drawing of rectangles:** this new CAD command allow to draw a rectangle by specifying start point and direction; start point can be the center of the rectangle or one vertex; new points can be optionally created on the vertexes of the rectangle. This command is very useful to create quickly rectangular entities to use in stakeout operations.

**NEW!** **Command line:** now, when the command bar appear and disappear, no regeneration of the drawing is executed with the result to have more speed during CAD operations.

**BUG** **Exit:** fixed a bug that didn’t allow, in some special and remote cases, to close the graphic window.

### Coordinate system

**NEW!** **Local system:** when a local system is created, the corresponding point with local coordinates is created, if doesn’t exists.

**NEW!** **Netherlands:** national coordinate systems and geoid model are now supported and included in X•PAD.

**NEW!** **Switzerland:** national coordinate systems are now supported and included in X•PAD.
**Measure**

**NEW!** **Hidden points**: on the dialog that allow to select the solution (A or B), the complete drawing is now displayed and not just auxiliary points and the two solutions.

**Stakeout**

**NEW!** **Stakeout of point with GPS**: a new orientation method has been added; not just the orientation towards North or Sun, now it is possible to setup the orientation towards a reference point. When you are close to the point you can turn yourself towards the reference point to get the right stakeout information.

**BUG** **Stakeout of closed polylines**: fixed a calculation bug.

**Surfaces & Volumes**

**BUG** **Stakeout of surfaces**: fixed a calculation bug related to flat triangles saved in the surfaces.
X•PAD Survey 2.3

This document contains a list of all the most important features introduced in X•PAD in the last period. X•PAD is continuously evolving and innovations are reported below.

**General**

- **NEW!** **Units**: added two units for distances; foot and US foot.
- **NEW!** **New languages**: Spain, French, Dutch; translation for this languages have to be improved.
- **NEW!** **Russian keyboard**: added Russian characters virtual keyboard.

**GPS**

- **NEW!** **Raw data**: directly from Survey command it is possible to start and stop the saving of raw data. In this way if, during survey, you will be in area where it is not possible to receive corrections through GPRS connection, it is possible to start the recording of raw data. In the office then you will post-process the data.

- **NEW!** **External radio (Zenith 10/20)**: it is now possible to configure receiver with the option to use an external radio.

- **NEW!** **Base and Rover with GSM (Zenith 10/20)**: it is now possible to setup a configuration base-rover that uses receiver internal GPRS to send-receive corrections. In this way it is possible to use two
receivers without radio for a base-rover configuration and overpass distance limit supported by radios.

**NEW!** **Base antenna height:** added Base antenna height field on GPS raw of RAW file; added base antenna height on note that is saved when the base is started.

**NEW!** **Base:** improved base management by unification of base name and base identifier.

**NEW!** **Zenith 10/20:** support of new 1.60 firmware.

**BUG** **Mountpoint list:** fixed a bug that, in some situation, clear the mountpoint list.

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**Total station**

**NEW!** **New drivers:** added new drivers to support the following models:
- GeoMax ZTS600
- Trimble 5600
- Geodimeter 600
- Topcon GTS / GTP
- Pentax

**NEW!** **Point measured with TPS:** in the table that lists points, an icon shows if the point has been measured with reflector or without reflector.
**Robotic**

**NEW!** GeoMax Zoom80: full support of motorized - robotic total station GeoMax Zoom 80. Require Robotic module.

**CAD**

**BUG** Delete reference points from CAD: reference points were not deleted in a proper way.

**BUG** Offset polylines: fixed a bug on display of polyline calculated by offset.

**Coordinate systems**

**NEW!** Multi point localization: X•PAD now displays scale factor calculated according to the reference points. If scale factor is significantly different from 1 a warning message is displayed.
**Coordinate system:** if you use the same coordinate system for major number of jobs it is now possible to save that system as default system. In this way every new job will use directly the default system without the need to define it again.

**Spain:** national coordinate systems and geoid model are now supported and included in X-PAD.

**Belgium:** national coordinate systems and geoid model are now supported and included in X-PAD.

**Geoid EGM96:** geoid EGM96 is now supported and included in X-PAD.

**Surfaces & Volumes**

**Stakeout of surfaces (DTM):** in Volume module of X-PAD has been added the command that allow to stake out a design surface. Design surface can be calculated directly by X-PAD or imported from LandXML file or other formats. With GPS or TPS, X-PAD shows in real time the elevation difference between current position and design surface.
**BUG** Stakeout from CAD: fixed a bug for which it was necessary to regenerate the drawing to stakeout next point after the first.

**Import & Export**

**NEW!** Import DXF: importation of DXF procedure is now able to import block attributes as texts; if the attribute position it is close to the point can be recognized and used as name of the point.

**NEW!** NCN data format (Turkey): improved importation.

**NEW!** Export for GeoMAP: added a function to export data for Lituanian desktop software GeoMap.

**BUG** Import surfaces from LandXML: coordinates was inverted.
X•PAD Survey 2.1

This document contains a list of all the most important features introduced in X•PAD in the last period. X•PAD is continuously evolving and innovations are reported below.

Management of instruments

NEW! Connection to equipment at startup: during the startup is required if connecting to the latest equipment used, or whether to start the software without connecting to any instrumentation.

- GPS Status: from GPS status window it is possible to modify important parameters of the receiver without having to repeat the setup procedure. In particular, you can:
  - GLONASS: activate/deactivate the use of GLONASS satellites
  - Mountpoint: change mountpoint
  - Reset RTK: execute a reset of the RTK corrections
NEW! **Switch off the receiver**: option to switch off the receiver when the software is closing.

NEW! **Sokkia Total station**: Sokkia total stations is now supported.

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**Base-Rover Survey**

NEW! **Base shifting**: after performing a post-processing of raw data acquired from the base, and obtaining the correct coordinates of the same, it is possible to set the new coordinates of the base and update coordinates of all points.

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**Points**

NEW! **Photo**: Introduced the ability to take photos and attach them to the points.

NEW! **Recording voice message**: when storing a point, it is possible to record a voice message and attach it to the point; available on the **Advanced** module.
**Hidden points**

**NEW!** **Leica Disto**: bluetooth connection with Leica Disto for receiving distance measures of measurement of inaccessible points.
Import & Export

**NEW! Export and send files:** all data export procedures allow you to send the resulting file as an attachment to an e-mail.

**NEW! Google Maps / Microsoft Bings:** possibility to download a map of the area from Google Maps or Microsoft Bings.

**Note.** Requires controller with WiFi and cell phone that can provide Internet access.
NEW! Export to Google Earth: export GPS points in KML format for Google Earth.

NEW! Export to ASCII file: export of GPS measurements with all the relevant data (coordinates, precision, DOP, satellites, cofactors, solution, etc.).

NEW! Export to LandXML: export points in LandXML format.

NEW! Import DXF files: an import option lets you assign the name of the topographic points imported, seeking the texts that are in the proximity of the point.

NEW! Import from LandXML format: import points from LandXML file format.

NEW! Import from ESRI Shape Format: Import points and drawing from ESRI Shape file format.

Volumes

NEW! Introduced new Volumes module for calculating and managing volumes and surfaces in the field. In particular the module allow to:

- Create 3D triangular surfaces in automatic mode with option to define breaklines and boundary lines
- Build 3D triangular surfaces in manual mode
- Edit 3D surfaces: add, delete triangles and swap adjacent triangles
- Manage several surfaces
- Display surfaces with shading and colors according to the elevation
- Display of contour lines
- Import surfaces from DXF and LandXML file
- Calculate volume between a surface and a reference elevation
- Calculate volume of stockpiles and pits
- Calculate volume between a surface and a reference level
- Display cut and fill area with color gradient according to the cut/fill quantities

- Volume calculation considering the expansion factor of the volumes excavated; management of a table of expansion factors based on the type of soil
- Calculation of the weight of the amount of excavation and embankment; management of a table of weights based on the type of soil
### X•PAD Modules

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<td><strong>Stakeout</strong></td>
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<tr>
<td>Points (topographic points, CAD positions)</td>
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<td>Lines/Arcs</td>
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<tr>
<td>Lines/Arcs with offset</td>
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<td>Stake out reports</td>
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<tr>
<td>CAD drawing (lines, arcs, circles, polylines)</td>
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<td>CAD drawing with offset (lines, arcs, circles, polylines)</td>
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<td>3D sloped planes</td>
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<td>3D triangle models (DTM)</td>
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<td>Sideslopes</td>
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<tr>
<td><strong>COGO</strong></td>
<td>GPS</td>
<td>TPS</td>
<td>ADV</td>
<td>VOL</td>
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<td>Standard COGO commands</td>
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<td>Area Subdivision</td>
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<tr>
<td><strong>Volume &amp; Surfaces</strong></td>
<td>GPS</td>
<td>TPS</td>
<td>ADV</td>
<td>VOL</td>
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<tr>
<td>Automatic calculation of 3D triangular surfaces by using breaklines and boundary lines</td>
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<tr>
<td>Manual editing of 3D surfaces</td>
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<tr>
<td>Display of 3D surfaces by shading, color from elevation, contour lines</td>
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<td>Import of 3D surfaces from DXF and LandXML</td>
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<td>Management of a list of surfaces</td>
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<tr>
<td>Volume calculation referred to a reference elevation or reference point</td>
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<td>Volume calculation referred to a reference level</td>
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<td>Volume calculation of stockpile/pit</td>
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<td>Management of calculated volumes</td>
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<td>Graphic display of volumes with color by cut/fill quantities</td>
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