- when it has to be right

LEICA Geo Office Release Notes
What's New! - V7.0 Release

No. of pages: 13 December 10, 2008

1. About this release

LEICA Geo Office (LGO) is the office software, which accompanies the LEICA GPS and TPS System 1200. It supports all measurement types (TPS, GPS and level data) and is the ideal tool to view, process, quality-check and archive data before exporting it to virtually any format required by subsequent mapping or engineering software packages.

LEICA Geo Office is the perfect partner for GPS1200 and TPS1200 instruments, and in addition also supports the existing range of instruments including GPS System 300 and 500, the TPS series 300, 400, 700, 800, 1000 and 1100 as well as the BUILDER and DNA instruments.

Version 7.0 further improves the strengths of LGO and includes many new features for data import and export, TPS-Processing, Reporting and Coordinate System Management. The Design to Field component has also been improved and the Scripting interface has been extended.

2. New Features and Enhancements

This document describes all new features implemented since LGO version 6.0 in more detail. Please read the following sections carefully, as they contain important information about this new release. For full information please also refer to the updated Online Help System.

2.1 Raw Data Import

- **Support for SmartWorx 7.0 and GPS 1200+**

  LGO version 7.0 is prepared to import data collected with System 1200 **SmartWorx** firmware version 7.0. Note that older versions of LGO will not import data from a GPS1200 instrument, if raw data (code and phase observations) has been stored onboard using SmartWorx

Leica Geosystems AG

Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
Phone +41 71 727 31 31
Fax +41 71 727 46 74

www.leica-geosystems.com

version 7.

LGO version 7 also supports the new range of **GPS1200+** instruments and the connected antennas, which have been released together with SmartWorx version 7. The **AX1203+ GNSS** and the **ATX1230+ GNSS** antennas have been added as new default antennas in the LGO Antenna Management and are also recognized during RINEX Import.

- LGO version 7 imports raw data also in **RINEX version 3** format. GPS as well as GLONASS data contained in RINEX version 3 observation files will be imported and stored to the project database.
  Note that during RINEX Export version 2.11 formatted files will still be created.

- As another improvement of System 1200 raw data import in LGO version 7, points will no longer be duplicated after raw data import, if jobs are imported again. If a job has already been assigned to a project and afterwards additional points have been recorded to the same job, another import into the same project will no longer duplicate the already assigned point records.

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2.2 Data Export

- **RINEX Export**
  When exporting RINEX files for either a single interval or for the entire project you can now select if GLONASS raw data shall be included or not. From the **GNSS Type** combo-box you can select **GPS and GLONASS** or **GPS only**.

- **GISCAD Export**
  When exporting **lines or areas without codes** to AutoCAD or MicroStation you can select to export these lines or areas to the same layer or level as their individual start point.
  For lines and areas without codes you can also choose to apply the individual settings for the line style, color and thickness.
  The settings can be made in the **Code Defaults** page of the **Lookup-Table Definition** dialog:

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Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
Phone +41 71 727 31 31
Fax +41 71 727 46 74

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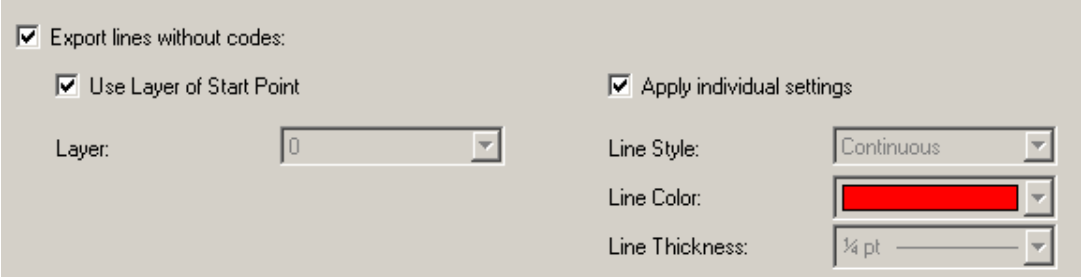
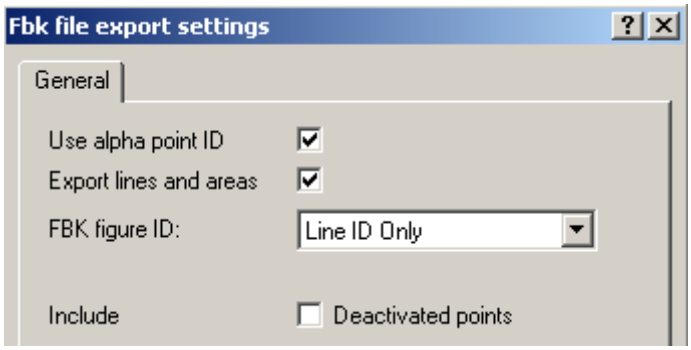


- The new version of the **Format Manager** included in LGO version 7.0 supports new variables in the System 1200 Office template to export Station specific information in the *Points* and in the *Points (measured by TPS)* export strings. Using the variables with the **Custom Ascii Export** of LGO requires that the point to be exported is of class Measured and has a TPS observation connected to it.

- When exporting to **FBK files** you can select a new setting to preserve Point Ids containing alpha characters rather than converting these to Point Ids containing purely numeric characters. If this option is checked the respective Point Ids will be written in between quotation marks in the FBK file.
  In addition a new setting allows you to include or exclude points which are de-activated in the project.



- In the **Export from Job utility**, which allows System 1200 raw data jobs to be exported to ASCII files using a format file, it is now possible to select whether setup measurements shall be exported to all data blocks or just to the TPS Setup data blocks. In the Export from job settings you can select *All Blocks* or *Setups Only*.

Leica Geosystems AG

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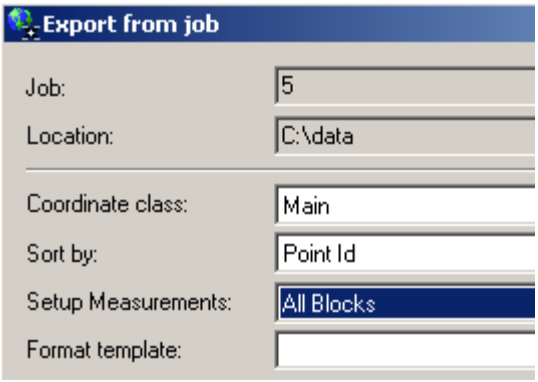
Switzerland
Phone +41 71 727 31 31
Fax +41 71 727 46 74

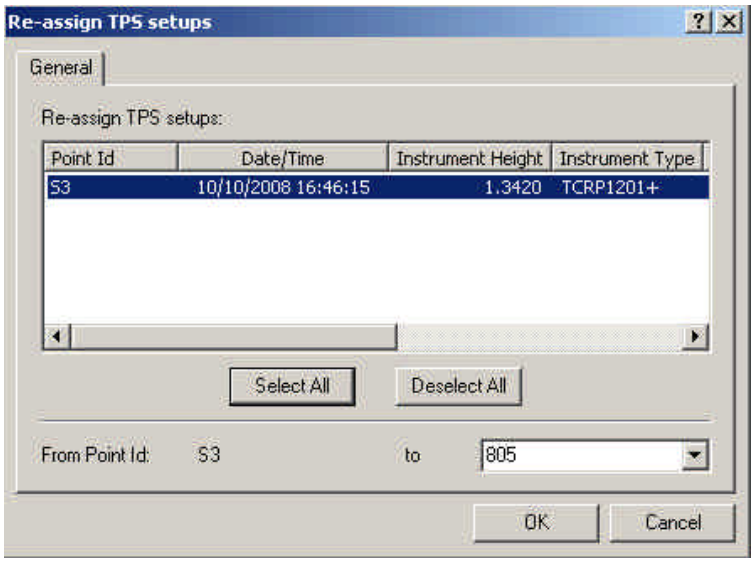
www.leica-geosystems.com



2.3 TPS-Processing

LGO version 7.0 supports various enhancements when working with TPS data:

- It is now possible to **re-assign setup applications** from one point to another point. This may be necessary if multiple setups are available for the same point and one or more setups need in fact to be reassigned to another station. When re-assigning the setups to an existing point all connected target points will be shifted by the same amount as the station coordinates change. The **Re-assign TPS setups** functionality can be invoked from either the View/Edit or from the TPS-Proc view:



Leica Geosystems AG

Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
Phone +41 71 727 31 31
Fax +41 71 727 46 74

www.leica-geosystems.com

- **Closed Loop traverses** can now be processed without having to set up the instrument on the start point again, if the initial backsight is to the last traverse station and the final foresight is to the traverse start point. No Control coordinates are required to calculate angular and coordinate misclosures. For the distribution of the coordinate misclosures a distance must have been measured for the final traverse leg.
  For this type of closed traverse loop no *End Azimuth* can be entered in the *Traverse Properties*. A *Start Azimuth* can be entered to define the azimuth of the initial backsight.

  For details please refer to the Online Help system, which also includes a summary description of the traverse types supported in LGO.

- When **creating a new traverse**, a setup which only has a forward/setup observation to the next traverse station can also be used as the start point of the traverse. However, since such traverses do not have an initial backsight, they can only be processed by entering a *Start Azimuth* in the *Traverse Properties* dialog or by using *the 2D Helmert* method.

- When importing **Sets of Angles applications** directly from a TPS1200 instrument, sets which have been deactivated in the field will now be set to de-activated during import into LGO. In the TPS-Processing tabbed view it is always possible to later activate or de-activate sets or entire target points when re-calculating the set results.

2.4 Reporting

- In the **GNSS-Processing Reports** the number of used satellites is now available in the Summary and in the SPP and Baselines reports and will be displayed separately for GPS and GLONASS satellites.
  For the detailed Baselines and SPP reports this additional information is user configurable by the corresponding **report templates** in the *Final Coordinates* section.

DOPs (min-max):	GDOP: 2.8 - 4.0 PDOP: 2.4 - 3.5	HDOP: 1.3 - 2.1	VDOP: 2.1 - 2.8
Number of used satellites:	GPS: 9 GLONASS: -		

- In the **Setup Reports** the range of geometrical and atmospherical ppm values are given individually for each setup and summarized for all setup observations.

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Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
Phone +41 71 727 31 31
Fax +41 71 727 46 74

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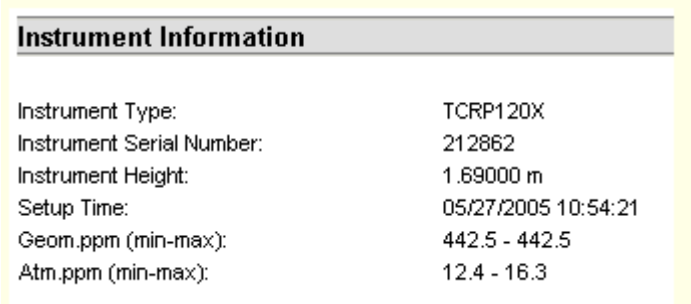
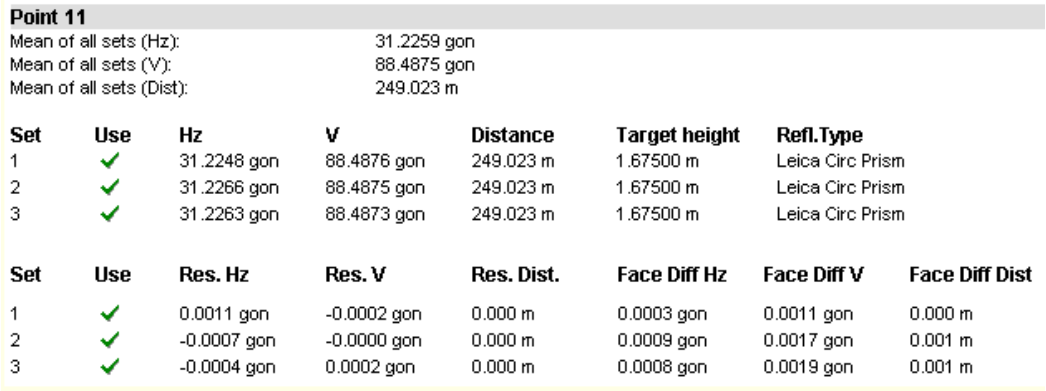


Instrument Information

Instrument Type:	TCRP120X
Instrument Serial Number:	212862
Instrument Height:	1.69000 m
Setup Time:	05/27/2005 10:54:21
Geom.ppm (min-max):	442.5 - 442.5
Atm.ppm (min-max):	12.4 - 16.3

- In the **Sets of Angles Reports** the Target Height and the Reflector type are now displayed together with the Sets of Angles observations.



Point 11

Mean of all sets (Hz):	31.2259 gon
Mean of all sets (V):	88.4875 gon
Mean of all sets (Dist):	249.023 m

Set	Use	Hz	V	Distance	Target height	Refl.Type
1	✓	31.2248 gon	88.4876 gon	249.023 m	1.67500 m	Leica Circ Prism
2	✓	31.2266 gon	88.4875 gon	249.023 m	1.67500 m	Leica Circ Prism
3	✓	31.2263 gon	88.4873 gon	249.023 m	1.67500 m	Leica Circ Prism

Set	Use	Res. Hz	Res. V	Res. Dist.	Face Diff Hz	Face Diff V	Face Diff Dist
1	✓	0.0011 gon	-0.0002 gon	0.000 m	0.0003 gon	0.0011 gon	0.000 m
2	✓	-0.0007 gon	-0.0000 gon	0.000 m	0.0009 gon	0.0017 gon	0.001 m
3	✓	-0.0004 gon	0.0002 gon	0.000 m	0.0008 gon	0.0019 gon	0.001 m

2.5 Coordinate Systems and Datum&Map

LGO version 7.0 adds more functionality when working with Coordinate Systems:

- In the Coordinate System Management a new type of CSCS Model is supported with LGO version 7.0:
  Ellipsoidal conversion methods work similar to the existing Geodetic conversion method. This new method also applies a shift in geodetic latitude and longitude but at a different step in the coordinate conversion process. When converting from WGS84 to Local Grid first the transformation and the ellipsoid specified will be applied to get preliminary local geodetic coordinates. As an extra step a shift in latitude and longitude will be interpolated in the grid file of the CSCS Model resulting in the final local geodetic coordinates to which the map projection is applied.

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Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
Phone +41 71 727 31 31
Fax +41 71 727 46 74

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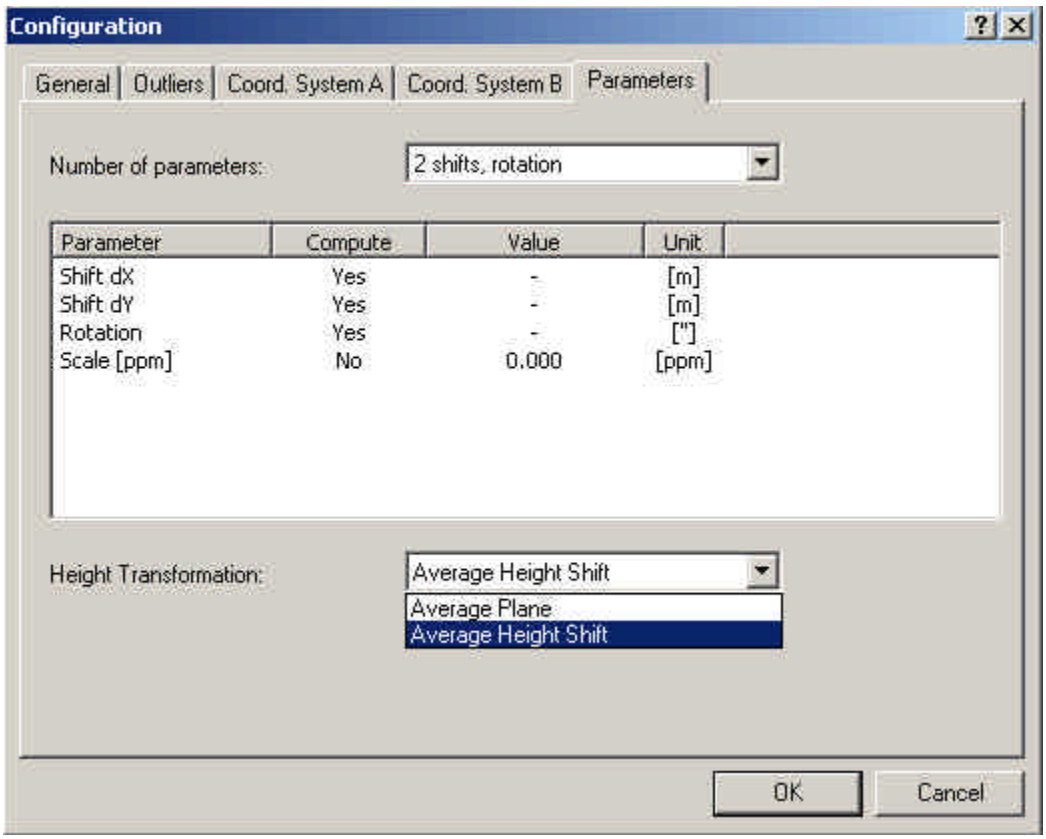
This type of CSCS model is also supported in System 1200 SmartWorx version 6.0 or higher and can be created onboard the instrument when receiving transformation messages via RTCM.

- In the **Datum&Map** component of LGO version 7.0 it is now possible to fix parameters of the 2D Helmert as well as of the height transformation part for *Onestep* and *Twostep* transformation types. For these two transformation types a **Parameters** dialog is now also available like for the Classical 3D transformation type.

  In this dialog you can select to fix either the scale factor or scale factor and rotation. For the Height transformation you can select to compute an average plane or a constant height shift. When selecting *Average Height Shift* a constant height shift will be computed also in case there are more than two control points available.



Leica Geosystems AG

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Switzerland
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Fax +41 71 727 46 74

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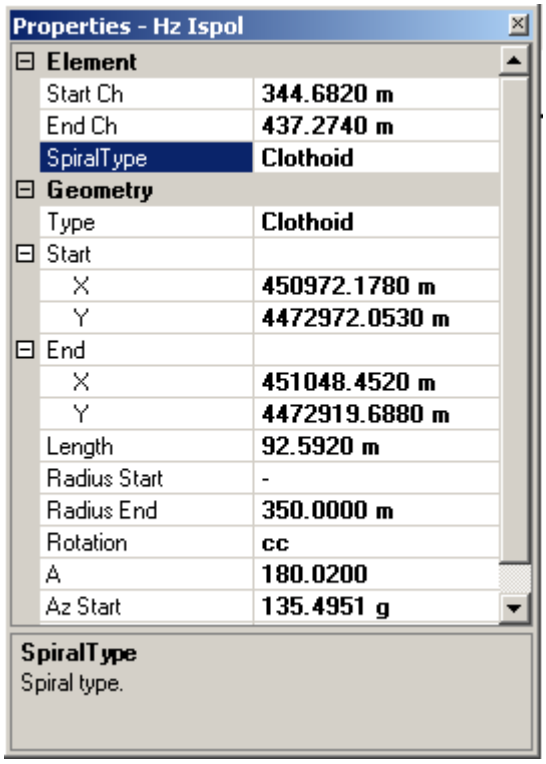
2.6 Design to Field

Various enhancements have been added to the Graphical Viewer and to the Cross Section Editor of the Design to Field component of LGO version 7.0:

- For road job types you can now switch the view between a horizontal and a vertical view by using a new toolbar button.

- Detailed information about the geometry of the selected part of an alignment can be displayed by invoking the **Properties Toolbox** with another new toolbar button:



- In the horizontal view the current cursor position is projected to the alignment and the projection line is displayed. The status bar shows chainage and offset of the projection point and a combo-box to select the alignment to project to.

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Switzerland
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Fax +41 71 727 46 74

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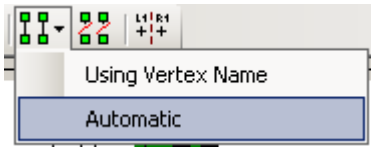
- Shortcuts have been added to quickly change the zooming options. Keeping the Shift, Ctrl or Alt button pressed on the keyboard switches to the Zoom In, Zoom Out and Pan mode respectively until the button is released again.

- The context menu of road jobs with stringlines has been enhanced to allow selecting an alignment for export and to copy, move or remove an alignment to or from the active layer.

- Road jobs can now also be exported to **RoadWorks 3D** to prepare the data for use onboard a TPS800 (or FlexLine) instrument. The format can be selected in the Export dialog of the Graphical Viewer.

- Rail jobs can now be edited. New layers can be created with a new toolbar button and rails can be assigned to individual layers using the context menu.

- In the **Cross Section Editor** cross sections can be connected either by using the vertex name or with a new automatic option, which can be selected from the toolbar:



- When importing DTMs from LandXML boundaries and breaklines defined in the LandXML file will be recognized and will be drawn with separate colors.

2.7 Scripting

Using the **LGO Scripting interface** you can access the database and the most important functionality by a basic scripting language. LGO version 7.0 adds the following functionality to the scripting:

- Export of SKI ASCII files (points and baselines)
- Modify existing lines to create arc, spline and straight segments
- Create TPS setups, TPS observations and define TPS Setup Applications

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Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
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Fax +41 71 727 46 74

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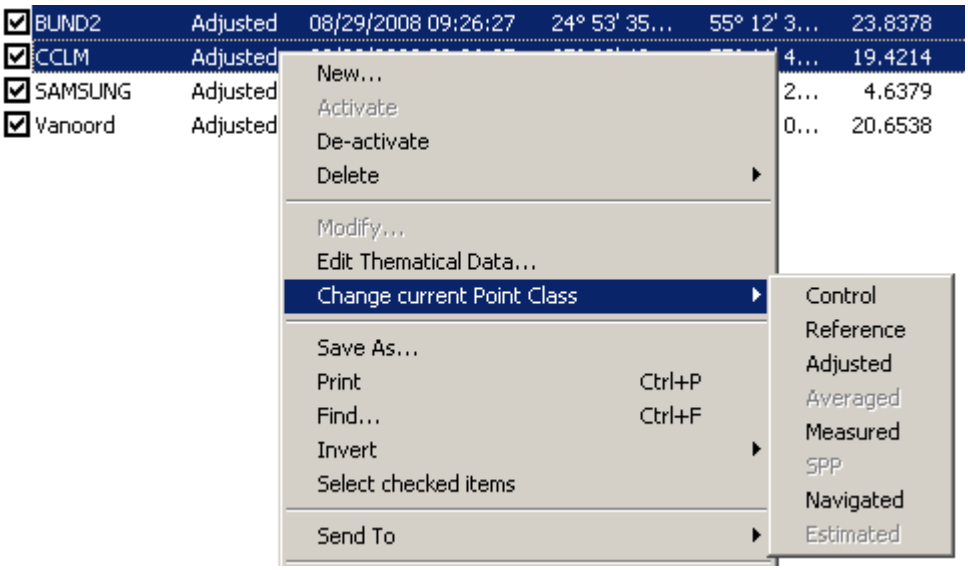
- The new traverse object allows to create traverses, access the properties, set processing parameters, re-calculate traverses and access the XML file of the traverse report.

The full documentation is updated and is embedded into the Online Help System. Sample scripts have been added to describe the new functionality.

2.8 Other improvements

Various other new features have been added for LGO version 7.0 to improve the overall functionality.

- In the Points view and in the Observations view the thematical point code can be changed for single points or for a multiple selection of points. From the context menu select **Edit Thematical Data…** or **Edit Target / Rover Point Code…**
  Note that attribute values which have been defined for the selected points are removed when changing the code.
- In the Points view you can now change the current point class for a multiple selection of points. Highlight the points and from the context menu select **Change current Point Class…**



- In the Observations view the Target height, the Reflector type, the Offsets and the Thematical Code can now be changed using in-line edit (slow double-click or selecting

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Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
Phone +41 71 727 31 31
Fax +41 71 727 46 74

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Modify… from the context menu).

- In many report view columns containing point Ids **numerical sorting** has been implemented for point ID ranges that contain purely numerical characters. Previously points were sorted as e.g. (1, 10, 11, 2, 3) instead of (1, 2, 3, 10, 11).

- In the Adjustment component of LGO version 7 the new **MOVE3 Kernel version 4.0** is integrated. The MOVE3 kernel is licensed to Leica Geosystems by Grontmij Geo Informatie, and utilizing the latest version ensures highest maintainability and robustness of this powerful and reliable product.

2.9 Updated Online Help

All changes are described in full detail in the updated **Online Help System**. The contents of the Online Help are also available as a separate **PDF file** on your LGO version 7.0 CD. The Format Manager Help is also available as a separate PDF file on the CD.

3. Comments on the Installation

Before you install...

3.1 LEICA Geo Office Maintenance

Note that LGO version 7.0 can only be executed, if you have a valid **maintenance licence** with an **expiry date** beyond the release date of version 7.0. If no valid licence can be found on the computer or if you install LGO for the first time, a warning will be issued, but you can continue to complete the installation.

When starting the software you will need to register your licence. This only needs to be done once. In the **Licence information** dialog enter the **licence number**, which is printed on the cover of your LGO CD. Enter the **licence key** or browse to the key file. Press **Register** to activate the maintenance licence on your computer and to start LGO.

Leica Geosystems AG

Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
Phone +41 71 727 31 31
Fax +41 71 727 46 74

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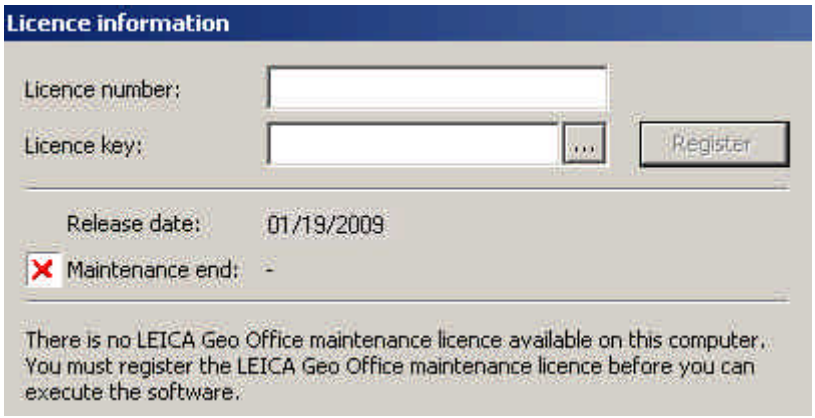
After registering your LGO software maintenance licence all new versions of LGO, which are released before the expiry date of your licence can be downloaded from the Leica Geosystems web site free of charge and executed.



Within LGO you can check the expiry date of your maintenance in the **Maintenance** page of the **Purchased Options** dialog accessible from the **About Box**. There you can also register a new licence key, if you need to extend your maintenance. Please contact your Leica representative for details.

3.2 Installation

Note that LGO version 7.0 is running under Windows 2000, Windows XP or Windows Vista operating systems. To run all of the example scripts included in the installation Internet Explorer 6.0 (or higher) is recommended.

Note that LGO can only be installed successfully if the user is logged in as Administrator.

LGO is also available as an '**LGO Tools**' installation on a separate CD, which only supports the basic tools for the TPS 300, 400, 700, 800, 1100 and the System 1200 instruments, the TPS 1000 series and the BUILDER, DNA or SPRINTER levels.

To install LGO please run LAUNCH.EXE from the CD and follow the instructions on the screen.

Note: It is recommended that existing versions of LGO as well as older versions of SKI-Pro or LevelPak-Pro should be un-installed first. To un-install LGO please use the 'Uninstall…' function from the LEICA Geo Office program folder.

It is also recommended to uninstall any version of Leica Survey Office **before** you install LGO version 7.0.

Leica Geosystems AG

Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
Phone +41 71 727 31 31
Fax +41 71 727 46 74

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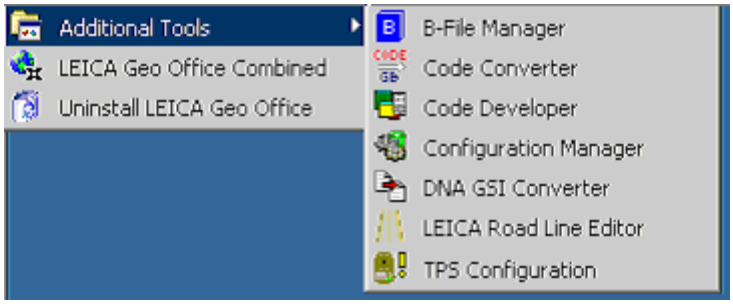
The LGO version 7.0 installation program will update the dongle drivers and will install the **Microsoft .NET framework version 2.0**, which is required to use the Design to Field component.

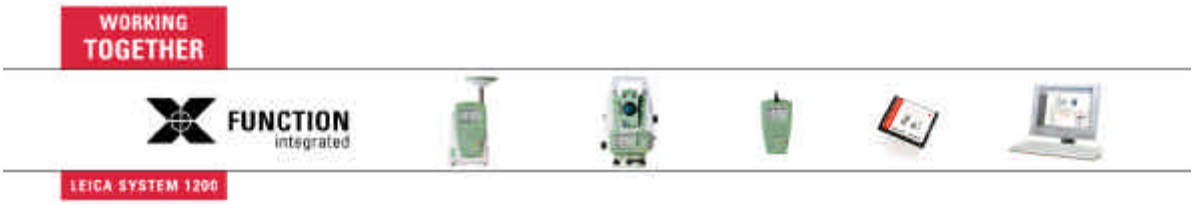
Note on Windows 64-bit operating systems:
LGO version 7.0 is prepared for Windows 64-bit operating systems. Note however, that the .NET framework for Windows 64-bit must first be downloaded and installed. Also note, that separate USB drivers for the RX1250 terminal are included on the LGO CD.

Note: The installation will add a separate folder '**Additional Tools**' into the Leica Geo Office program group. This includes various tools as stand-alone applications.



4. Closing Remark

Exploit the full potential of your data with LEICA Geo Office. View and manage your TPS, GPS and Level data in an integrated way. Process your data independently or combine your data. LEICA Geo Office ensures you get the best results.



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Leica Geosystems AG, Heerbrugg, Switzerland, has been certified as being equipped with a quality system, which meets the International Standards of Quality Management and Quality Systems (ISO standard 9001), and Environmental Management Systems (ISO standard 14001).

TQM
ISO 9001 / ISO 14001

Total Quality Management-
Our commitment to total customer satisfaction.

Ask your local Leica agent for more information about our TQM program

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Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
Phone +41 71 727 31 31
Fax +41 71 727 46 74

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