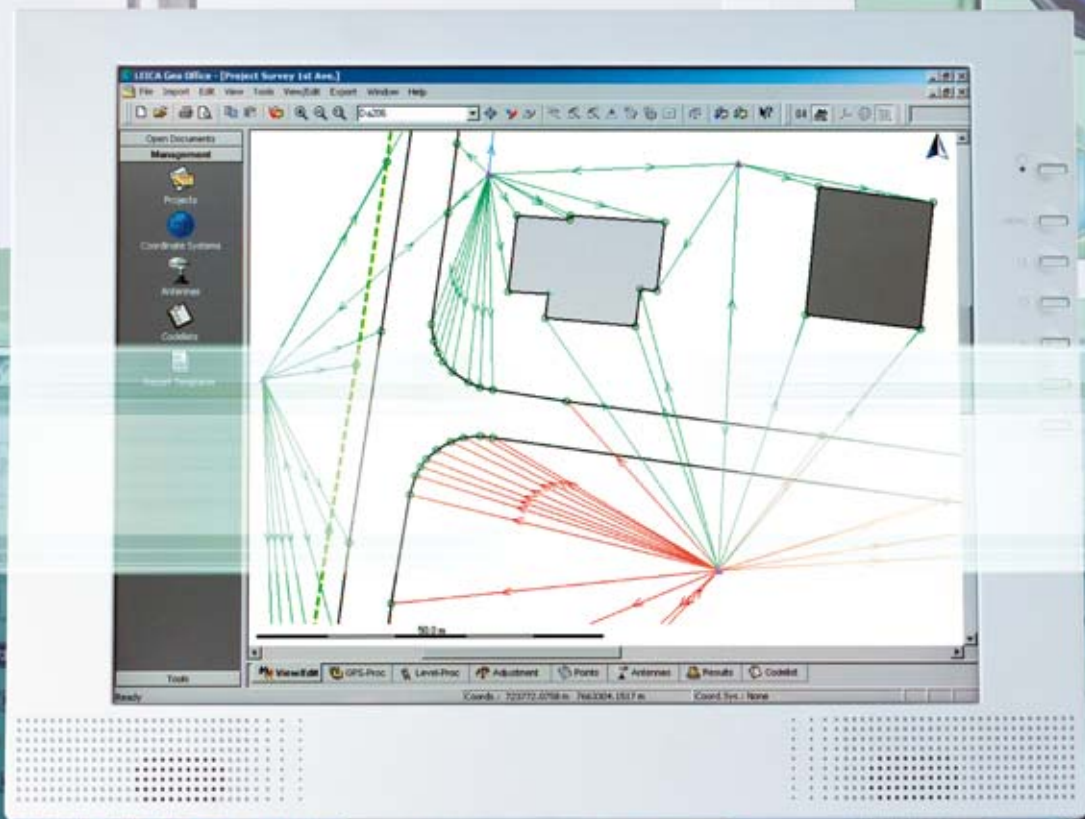# LEICA System 1200 Software

**WORKING TOGETHER**

X **FUNCTION** integrated

**LEICA SYSTEM 1200**

*Integrated Software for GPS1200 receivers and TPS1200 total stations*

**Leica Geosystems**

# LEICA System 1200 Software

**The new System 1200 software supports both GPS and TPS ensuring that they are efficient, powerful, easy to use and fully compatible, with the same displays and operation, identical functions and routines, common application programs, and one comprehensive office support package.**

### Application programs
Various easy to use on-board application programs are available for both GPS and TPS, as the instruments share a common operating concept. Operators can easily switch from one to the other.

### RoadRunner alignment suite
RoadRunner is a new, powerful, comprehensive software suite for staking out and checking all types of alignments, from simple centerlines to the most complex designs. Available for both GPS and TPS.

### Seamless data-flow
A key to System 1200 is the powerful data management system that is common to GPS, TPS and LEICA Geo Office and that allows data to be transferred seamlessly in any direction between any components and between field and office.

### LEICA Geo Office
This new office software provides everything needed for managing, visualizing, processing, importing and exporting GPS, TPS and level data. Also ensures easy interfacing to other software packages.

## FUNCTION integrated

**Combine GPS and TPS. Use them in the same way.
Change easily from one to the other.
Work faster, more accurately and more efficiently.
Enjoy all the freedom, flexibility and power of System 1200.**

### GPS1200
*Unites top GPS technology with powerful data management. Perfect for all GPS applications.*

### TPS1200
*Top performance, high accuracy total stations do everything you want and much more.*

*LEICA System 1200*

*GPS and TPS*
*Working together*
*For all applications*
*Today and in the future*

Designed and built to the most stringent standards with the latest measurement technologies, LEICA System 1200 instruments are extremely efficient and reliable, and stand up to the severest environments.

A new, highly intuitive user interface, a multitude of functions and features, powerful data management, and user-programming capabilities are common to both System 1200 GPS and TPS instruments.

Operators can switch instantly between GPS and TPS and use whichever is the most convenient and suitable; extra training is not required.

These new high-tech GPS and TPS instruments with identical operation enable you to do every type of job, faster, more accurately and more efficiently than ever before.
And most important, you reduce your costs and increase your profits.

| *Uniform operating concept* | *Identical data management* | *Standardized accessories* | *LEICA Geo Office* |
|---|---|---|---|
| *Same operation for GPS and TPS. Use whichever is the most convenient.* | *As TPS and GPS use exactly the same format and data management, you can transfer cards from one to the other and work in the same way.* | *Same batteries, chargers and accessories used for both TPS and GPS; keep equipment costs down.* | *Everything you need in a single package for GPS and TPS: import, visualization, conversions, quality control, processing, adjustment, reporting, export etc.* |

# LEICA Application Programs

*A suite of easy to use application programs*

GPS1200 and TPS1200 are supplied with a range of standard application programs to help you perform

standard survey tasks such as topographic surveys and stakeout as accurately and efficiently as possible.

For advanced survey tasks a wide range of optional application programs is offered. For special

requirements, you can even write your own programs in GeoC++ or contact a Leica software center.

■ **Identical operating concept**
The operating concept, displays, keyboard layouts, functions, routines and even many of the application programs are identical for GPS and TPS. Use which-ever instrument is the most convenient and, best of all, use them in the same way.

■ **Easy, fast operation**
GPS1200 and TPS1200's operating concept leads you straight to what you need. Use the default settings, or allocate displays and functions to keys and define your own menu for the way you work. System 1200 adapts to you!

■ **Powerful field coding**
Set point identifiers in any way required, use free or thematic coding with or without attributes, define points, lines and areas. With System 1200 it's easy to prepare data for design, CAD and mapping software.
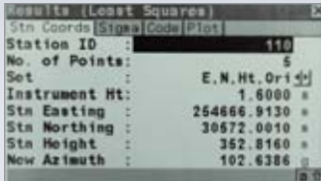
## Standard application programs
### – for increased productivity

### Optional application programs
### – for special tasks
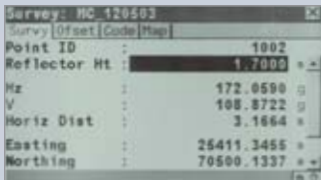
**Survey – for GPS & TPS**

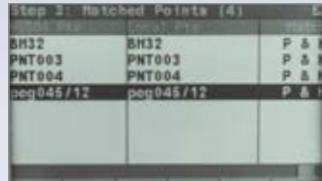A powerful program for detail, topo, title surveys etc. For surveying points, lines and areas with or without codes.

**Stakeout – for GPS & TPS**

Various stakeout methods and orientation choices are provided. Navigate directly from a map or with text and graphical aids.

**Reference Line – for GPS & TPS**

For staking out relative to defined lines and arcs. Can be used with or without offsets. Use for grids, buildings, drainage, seismic surveys etc.

**DTM Stakeout – for GPS & TPS**

Stakeout a terrain design and monitor progress during construction. For earthworks, land reclamation, mining etc.

**Setup – for TPS**

Setup and orient TPS1200 on a known station or perform a resection by measuring to known stations.

**Coordinate Systems – for GPS**

Transform WGS84 to local grid. Contains ellipsoids, map projections, transformations - for GPS surveys in local coordinates.
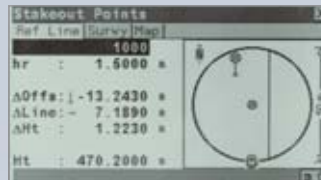
**Sets of Angles – for TPS**

Measure angles and even distances one or more times in face I and face II. Calculate and store the mean values.

**Traverse – for TPS**

With user guidance, measure direction and distance data to compute the coordinates of new stations. Upon completion, view comprehensive traverse closure results.

**COGO – for GPS & TPS**

Full range of coordinate geometry routines: inverse, traverse, lines, arcs, etc. Compute what you need directly in the field.
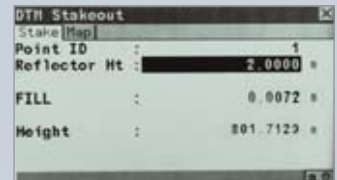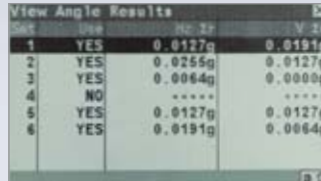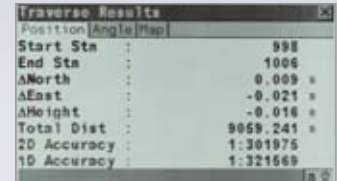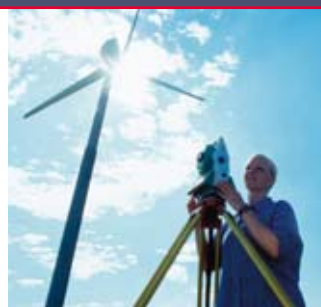
**…and many more…**

System 1200 includes many more application programs to enhance your efficiency.

**WORKING TOGETHER**

**✕ FUNCTION** integrated

**LEICA SYSTEM 1200**

■ *Visual checks in the field*
With GPS1200 and TPS1200's large, graphical, map-view display, you see immediately what you've surveyed and staked out and what you've still to do. Zoom in and out and check for completeness directly in the field.

■ *Import/export formats*
Import control and stake-out data directly to GPS and TPS or via LEICA Geo Office. Export data from GPS, TPS or LEICA Geo Office in standard formats or user-definable formats. System 1200 interfaces easily to GIS, CAD and mapping software.

■ *Special application programs*
If you need special programs for special applications, your investment in System 1200 is safe. New application programs can be created at any time with GeoC++. Simply write your own program, or contact a Leica software center to do it for you.

# LEICA RoadRunner

## The complete solution for roads and alignments

*RoadRunner is a new, optional application program for GPS1200 and*

*TPS1200 for staking out and checking all types of alignments:*

*highways, railways, pipelines, canals, airport runways, earthworks etc.*

*RoadRunner also includes support software that converts data*

*from many design packages, prepares the data for the way you work,*

*and uploads to GPS1200 and TPS1200.*

## RoadRunner in the field

**Stakeout and check with
the design elements you use**
With RoadRunner you can
handle any combination of
geometric elements, from
simple straights to different
types of partial spirals.
All working tasks can be
handled, including:
- Stringlines (e.g. centerline)
- Grades / Slopes
  (e.g. road surface, cut/fill)
- DTM stakeout
- and many more…

**Advanced graphics
facilitate your work**
View your position relative
to cross sections, alignments,
and other graphically selected
elements that you have to
stakeout or check. With
advanced graphics you can
see what you've done and
what you've still to do. You
work easier and faster with
RoadRunner.

**Adapts to your requirements
Works how you want to work**
RoadRunner is easy to use
and incredibly versatile.
- Configure and set it the
  way you prefer.
- Use it for any type of job,
  from simple to complex.
- Define panels to display the
  information you require.
- Create the log files, cut
  sheets and reports that
  you have to deliver.
- Store your working
  procedures ready for
  instant recall.

**Onboard design editor**
Use the editor if you have
to make quick changes
to alignments or station
equations in the field, for
instance if you are confronted
with unexpected obstructions.
Use the editor for manually
entering alignments taken
from plans when carrying
out small jobs or when
making minor amendments.
You can adapt easily with
RoadRunner.
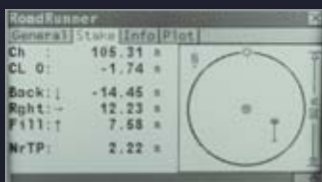
## RoadRunner
## Increases productivity

■ *Seamless dataflow*
With RoadRunner you can transfer design data easily and quickly from many major design packages via the office software to the CompactFlash cards used in GPS1200 and TPS1200 (no manual reconstruction of the design is required). As the transfer is seamless and largely automatic, you can start the stakeout work immediately confident that the data are correct.

■ *Identical for GPS and TPS*
As RoadRunner is identical for GPS1200 and TPS1200, you can use whichever is the most suitable for the job. Insert the Compact-Flash card(s) with the design data into the unit(s) that you want to use. To change between GPS and TPS, simply move the card to the other instrument.

■ *Easy to learn and use*
RoadRunner is easy to learn, adapts to your working methods and can be used for all types of jobs, complex or simple, large or small.

■ *Completely flexible*
One of the benefits of RoadRunner is that it allows you to represent data in the way that corresponds to your working procedures. Select whether you want to stakeout relative to centerlines, curb lines, profiles, cross sections etc. – whatever you prefer.

■ *All data available in the field*
RoadRunner provides rapid access to all data irrespective of the size of the job. When staking out in the field, you can locate the data you need immediately.

■ *Manages complex sites*
RoadRunner's project management helps you to organize data and work more efficiently.
■ Group the data into projects.
■ Organize the data in layers, e.g. layers for different stages of construction.
■ Reference the data to several jobs.

■ *Restarts instantly*
With RoadRunner you can restart again after stopping work without wasting time (no long searches). Touch the Start/Resume function to lead you straight to where you last ended and start working again immediately.

## RoadRunner in the office

*Full support package*
RoadRunner office software interfaces to design packages and converts data for direct use in GPS1200 and TPS1200.
■ Seamless dataflow from numerous design packages.
■ Fully compatible with the industry standard LandXML road design format.
■ Additional converters can be easily added.
■ Easy to use wizard for road design converters.
■ Extremely versatile.
■ Allows you to prepare data the way you prefer, for the work you have to do.

**WORKING
TOGETHER**

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integrated

**LEICA SYSTEM 1200**

*With RoadRunner you will stake-out even the most complex alignments faster, more efficiently and more accurately than ever before.*
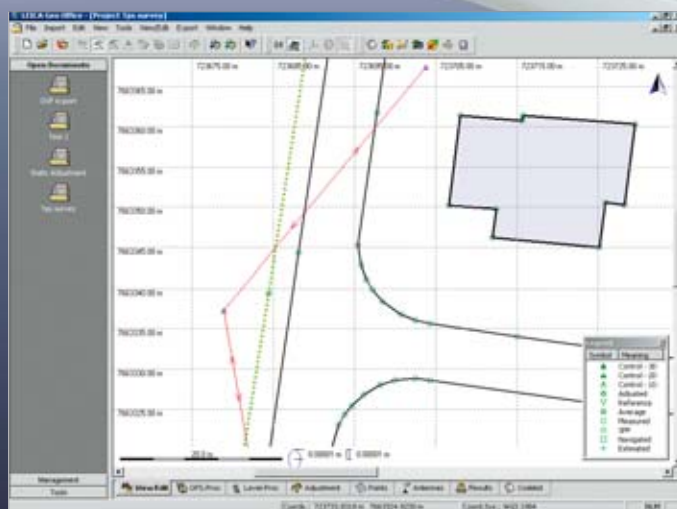
# LEICA Geo Office Software

### The perfect partner for GPS1200 and TPS1200

*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 independently or combine your data.*

*LEICA Geo Office ensures you get the best result.*

**■ Easy and efficient to use**

LEICA Geo Office is based on an intuitive, graphical interface within a Windows™ multitasking environment making it very easy to learn and use. All components have a similar look and feel and interact seamlessly with each other.

GPS, TPS and level data are handled in a similar way with standardized tools and dataflow. The embedded HELP contains useful tutorials and provides advice and information whenever needed. LEICA Geo Office assists you at every step.

**■ Data management**

The different management components for projects, coordinate systems, GPS antennas, report templates etc. provide a very logical separation of important information and a clear overview of all data. They enable you to manage your data and work easily and efficiently in a consistent manner.

**■ View and edit**

Various graphical and numerical displays allow you to view the data. Point, line, area, coordinate, code and attribute information can all be accessed and inspected in detail. Editing functions allow you to make any changes, corrections, additions or deletions that may be necessary before processing or exporting the data. With the view and edit facility, you can make sure that your work is correct.

**Easy to customize**
Choose the way you want to work. Configure and set the software for your preferences and requirements. Set panels and screens to display the information that you need and in the formats you prefer. Define import and export masks for the way you have to handle data. LEICA Geo Office can be customized easily and quickly.

**Tools for GPS, TPS and levels**
Codelist Manager, Data Exchange Manager, Format Manager and Software Upload are common tools for GPS receivers, total stations and also for digital levels. Powerful, easy-to-use, user-definable and wizard-guided, these software tools have all the functionality needed to exploit the full potential of the instruments and their data.

**WORKING TOGETHER**

**X FUNCTION** integrated

**LEICA SYSTEM 1200**

**Quality control**
LEICA Geo Office provides numerous quality checks. View a plan of your work and inspect the data on the screen to check for completeness. Compute and check loop misclosures. Coordinates of points measured more than once are averaged automatically provided that they lie within user-defined tolerances.

**Flexible reporting**
HTML-based reporting provides the basis for generating modern, professional reports. Measurement logs in field book format, reports on averaged coordinates, various processing log files and other information can be prepared and saved. Configure reports to contain the information that you require and define templates to determine the presentation style. LEICA Geo Office has full reporting facilities.

**Flexible import and export**
Import data from Compact-Flash cards, directly from receivers, total stations and digital levels, or from reference stations and other sources via the Internet. Import coordinate lists as user-defined ASCII files using the import wizard. Export results in any format to any software using the ASCII export function. Transfer point, line, area, coordinate, code and attribute data to GIS, CAD and mapping systems. LEICA Geo Office has all the flexibility required for the easy import and export of data.

# LEICA Geo Office Software
# Powerful processing modules

## Optional modules

Extend the functionality of the standard software to further

suit your needs. All the additional components share the

same fundamental operating concepts and work together  in

a seamless fashion for maximum efficiency.

■ **Coordinate transformations**
LEICA Geo Office has a complete range of libraries and tools for defining coordinate systems and transforming coordinates from one system to another: libraries of ellipsoids, projections and geoidal models, as well as six different transformation methods that give you the flexibility to select the transformation technique that suits your project best.

Convert ellipsoidal to orthometric heights and vice versa using imported and user defined geoidal models.

A special feature of LEICA Geo Office is the support of country specific coordinate systems that are based on grids of correction values for the conversion of WGS84 to local coordinates.

With the LEICA Geo Office coordinate management component and transformation module you can work in any system, WGS84 or local coordinates, and convert easily from one to the other.

■ **GPS post processing**
This module processes all types of GPS raw data. One of the main applications is the classical processing of baselines in geodetic control networks. It is also used for processing kinematic data, especially for "filling in gaps" when RTK coordinates are not available due to breaks in the radio link.

As well as utilizing the integrity checks in the GPS1200 field system, LEICA Geo Office post processing allows extended user control over what has to be processed and how it is processed. For routine baseline computations, processing can be set to run fully automatically using default settings. For critical lines or special investigations, processing can be manually controlled, in which case advanced users have ample scope to set parameters and use their own processing scenarios.

Results Manager contains a range of graphical analysis tools and report logs that allow the results to be viewed and examined in depth before they are accepted and stored.
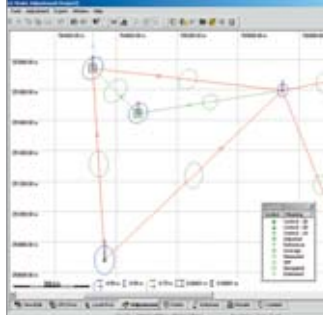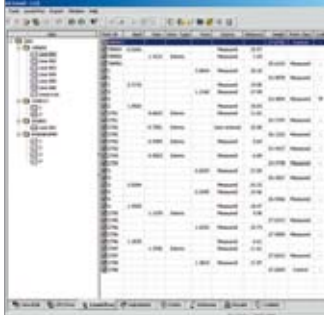
■ *Processing level data*

View all of the data collected with your Leica digital level in the LEICA Geo Office level booking sheet. Select the processing settings that you prefer and process the level lines, quickly and automatically.

Use Results Manager to inspect and analyze the leveling results and generate a report. Finally, store the results and/or export them as required.

LEICA Geo Office is the ideal complement for Leica digital levels.

■ *Network adjustment*

The Network Adjustment module allows you to combine all types of measurements – GPS, TPS and level – or to handle them separately in a rigorous least squares adjustment in order to obtain the best possible set of consistent coordinates and verify that they fit with the coordinates of known control points. Extensive statistical testing identifies blunders and outliers.

Network Adjustment is based on the powerful MOVE3 kernel with rigorous algorithms. It will adjust 3D GPS networks, 2D TPS traverse nets, 3D TPS traverse and height networks, 1D level line networks, as well as combined GPS, TPS and level networks.

A further advantage of Network Adjustment is that it allows the user to design and analyze networks in order to test their suitability before going into the field, establishing markers and taking measurements.

Network Adjustment completes your work, perfectly.

**LEICA System 1200 – working together.**

**Combine GPS and TPS.**

**Change as required from one to the other.**

**Use whichever is the most suitable for the job in hand.**

**Enjoy all the freedom, flexibility and power of System 1200.**

**LEICA GPS1200**
Product brochure
*Art No. 738 812*
*Online:*
www.leica-geosystems.com

**LEICA TPS1200 Total Stations**
Product brochure
*Art No. 738 582*
*Online:*
www.leica-geosystems.com

**TQM**
*ISO 9001 / ISO 14001*

*Total Quality Management – our commitment to total customer satisfaction.*

Find out more about our TQM program from your local Leica Geosystems representative.

Leica Geosystems

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