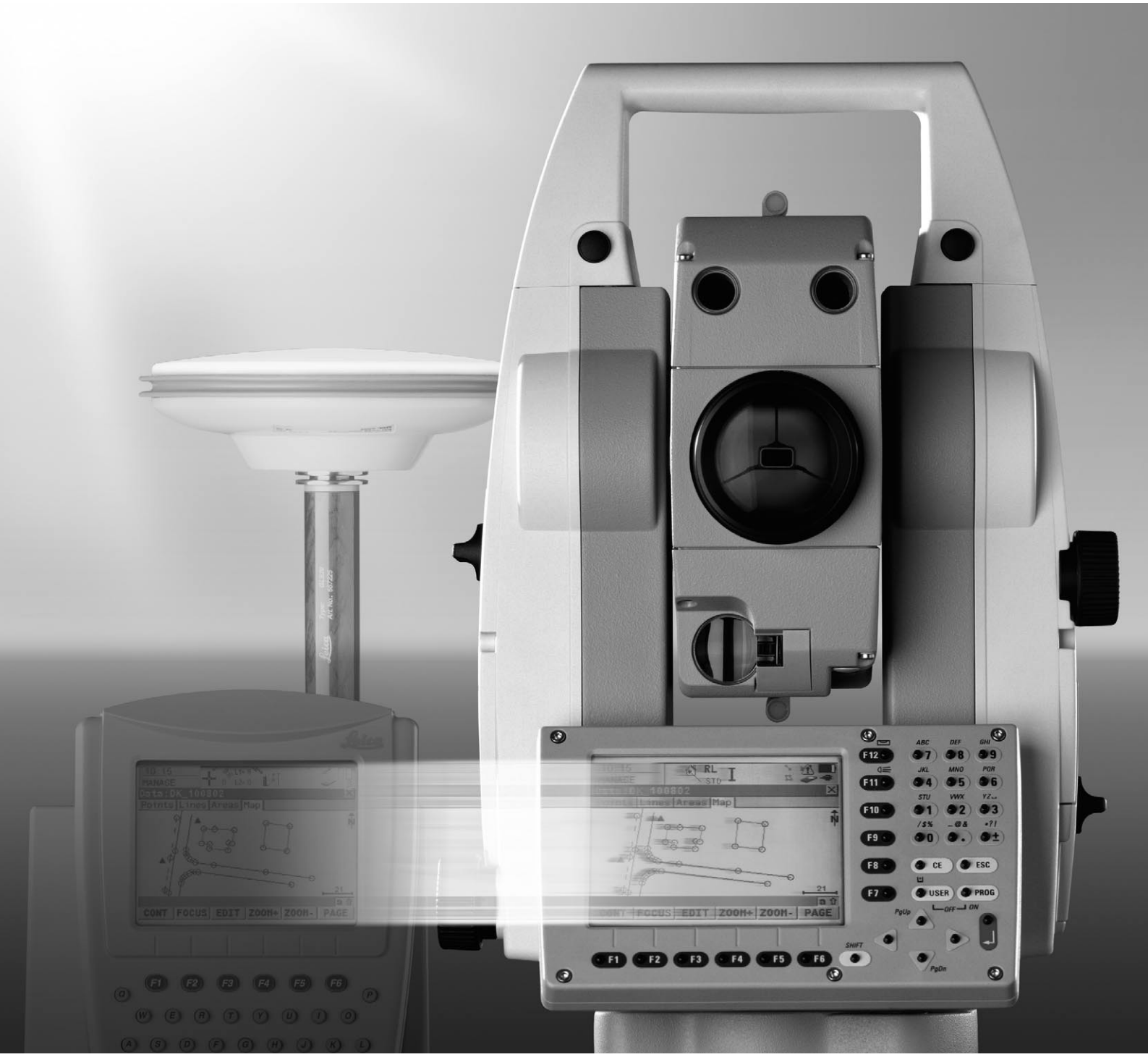
Leica TPS1200 Series
Technical Data



- when it has to be **right**

Leica Geosystems

TPS1200 Technical Data

Models and Options

	TC	TCR	TCRM	TCA	TCP	TCRA	TCRP
Angle measurement	●	●	●	●	●	●	●
Distance measurement (IR)	●	●	●	●	●	●	●
PinPoint reflectorless distance measurement (RL)		●	●			●	●
Long range distance measurement (LO)		●	●			●	●
Motorized			●	●	●	●	●
Automatic Target Recognition (ATR)				●	●	●	●
PowerSearch (PS)					●		●
Guide Light (EGL)	○	○	○	●	●	●	●
Remote Control Unit (RX1220)	○	○	○	○	○	○	○
Laser Guide GUS74				○		○	
SmartStation (ATX1230)	○	○	○	○	○	○	○

● Standard ○ Optional

Angle measurement

Description

The highly accurate and reliable angle measurement system consists of a static line-coded glass circle, which is read by a linear CCD array. A special algorithm determines the exact position of the code lines on the array and determines the precise measurement instantly. As the code on the glass circle is absolute and continuous, no initialization of the instrument is required prior to measurements.

A dual axis compensator constantly monitors both axes of the vertical axis tilt. The compensator consists of an illuminated line pattern on a prism, which is reflected twice by a liquid mirror forming the reference horizon. The reflected image of the line pattern is read by a linear CCD array and then used to mathematically determine both tilt components. These components are then used to immediately correct all angle measurements.

	Type 1201	Type 1202	Type 1203	Type 1205
Accuracy (standard deviation ISO 17123-3)				
Hz, V:	1“ (0.3 mgon)	2“ (0.6 mgon)	3“ (1 mgon)	5“ (1.5 mgon)
Display least count:	0.1“ (0.1 mgon)	0.1“ (0.1 mgon)	0.1“ (0.5 mgon)	0.1“ (0.5 mgon)
Method	absolute, continuous, diametrical			
Compensator				
Working range:	4′ (0.07 gon)			
Setting accuracy:	0.5“ (0.2 mgon)	0.5“ (0.2 mgon)	1.0“ (0.3 gon)	1.5“ (0.5 mgon)
Method:	centralized dual axis compensator			

Distance measurement (IR)

Description

The IR EDM transmits an invisible laser beam to specular targets such as prisms or reflector tapes. The reflected light is detected by a sensitive photo receiver and converted into an electrical signal. After digitizing and accumulating the signal, the distance is determined by means of modern phase measurement techniques. A modulation frequency of 100 MHz is the time base for the high distance accuracy. The coaxiality and the divergence angle of the laser beam together with the automatic target recognition (ATR), allow dynamic tracking of targets quickly and accurately in 3 dimensions.

	A	B	C
Range			
Standard prism (GPR1):	1800 m (6000 ft)	3000 m (10000 ft)	3500 m (12000 ft)
3 standard prisms (GPR1):	2300 m (7500 ft)	4500 m (14700 ft)	5400 m (17700 ft)
360° prism (GRZ4):	800 m (2600 ft)	1500 m (5000 ft)	2000 m (7000 ft)
360° mini prism (GRZ101):	450 m (1500 ft)	800 m (2600 ft)	1000 m (3300 ft)
Mini prism (GMP101):	800 m (2600 ft)	1200 m (4000 ft)	2000 m (7000 ft)
Reflector tape (60 mm x 60mm):	150 m (500 ft)	250 m (800 ft)	250 m (800 ft)
Shortest measuring distance:	1.5 m		
Atmospheric conditions:	**A**: Strong haze, visibility 5 km; or strong sunlight, severe heat shimmer		
	B: Light haze, visibility about 20 km; or moderate sunlight, slight heat shimmer		
	C: Overcast, no haze, visibility about 40 km; no heat shimmer		

Accuracy (standard deviation ISO 17123-4) / Measure time

Standard mode	2 mm + 2 ppm / typ. 1.5 s
Fast mode:	5 mm + 2 ppm / typ. 0.8 s
Tracking mode:	5 mm + 2 ppm / typ. < 0.15 s
Averaging mode:	2 mm + 2 ppm
Display resolution:	0.1 mm

Method

Principle:	Phase measurement
Type:	Coaxial, infrared laser
Carrier wave:	780 nm
Measuring system:	Special frequency system basis 100 MHz ≙ 1.5 m

PinPoint reflectorless distance measurement (RL)

Description

The reflectorless EDM PinPoint R100 transmits an accurately collimated visible red laser beam to the target. The distance is measured by an optimally deigned phase measurement technique that allows measuring to low reflective targets even at distances greater than 100 m. The coaxiality of the measurement beam and its extremely small “diffraction limited” spot size allow the highest degree of pointing and measurement accuracy.

The reflectorless EDM PinPoint R300 measures to targets up to 768 m. To measure to targets at such long distances with high measurement accuracy, a new measurement technology was developed. The main component of the EDM is a system analyzer, which uses modulation frequencies of the transmitted signal between 100 MHz and 300 MHz. The system analyzer properties are defined for each individual measurement for both the EDM beam and the target qualities. As a result of the system analysis, the parameters for every individual measurement are now known. The distance is calculated using modern signal processing based on the principle of maximum-likelihood. Besides the drastically increased sensitivity which leads to a sensational increase in reflectorless measurement range, the new EDM system provides many other advantages such as a very high measurement quality and reliability even when measuring in rain, fog, dust or snow. In addition the measurement system helps to prevent errors, by detecting if there are multiple targets within the measurement beam.

	D	E	F
Range PinPoint R100			
Kodak Gray Card, 90% reflective:	140 m (460 ft)	170 m (560 ft)	> 170 m (> 560 ft)
Kodak Gray Card, 18% reflective:	70 m (230 ft)	100 m (330 ft)	> 100 m (> 330 ft)
Range PinPoint R300			
Kodak Gray Card, 90% reflective:	300 m (990 ft)	500 m (1640 ft)	> 500 m (> 1640 ft)
Kodak Gray Card, 18% reflective:	200 m (660 ft)	300 m (990 ft)	> 300 m (> 990 ft)
Range of measurement:	1.5 m to 760 m		
Display unambiguous:	up to 760 m		
Atmospheric conditions:	**D**: Object in strong sunlight, severe heat shimmer **E:** Object in shade, or sky overcast **F:** Underground, night and twilight		

Accuracy (standard deviation ISO 17123-4) / Measure time

0 m - 500 m:	3 mm + 2 ppm / typ. 3-6 s, max. 12 s
> 500 m:	5 mm + 2 ppm / typ. 3-6 s, max. 12 s
Atmospheric conditions:	Object in shade, sky overcast
Display resolution:	0.1 mm

Laser dot size

At 20 m:	7 mm x 14 mm
At 100 m:	12 mm x 40 mm
At 200 m:	25 mm x 80 mm

Method

Type:	Coaxial, visible red laser
Carrier wave:	670 nm
Measuring system PinPoint R100:	Special frequency system basis 100 MHz ≙ 1.5 m
Measuring system PinPoint R300:	System analyzer basis 100 MHz - 150 MHz

Long Range distance measurement (LO)

Description

The highly collimated red laser beam of the PinPoint R100 can also be used to measure to prism targets at distances between 1000 m and 12000 m or reflector tape at extended ranges. The visibility of the laser beam simplifies the search of far distant reflectors, because the reflected light is even visible at distances more than 5000 m. The distance is measured by the same phase measurement technique as for the infrared beam.

The accurately collimated red laser beam of the PinPoint R300 is similar to that of the PinPoint R100, the ambiguity range is also 12000 m. The main module of the long range EDM is again a system analyzer (similar to the system analyzer used for reflectorless measurements) but with a reduced frequency set between 100 MHz and 150 MHz. The distance is calculated by an estimation method using modern signal processing incorporating the advantages such as high measurement quality and reliability when measuring in rain or snow positive and the detection of multiple targets within the measurement beam.

	A	B	C
Range			
Standard prism (GPR1):	2200 m (7300 ft)	7500 m (24600 ft)	> 10000 m (> 32800 ft)
Reflector tape (60 mm x 60mm):	600 m (2000 ft)	1000 m (3300 ft)	> 1300 m (> 4300 ft)
Range of measurement to prism:	1000 m to 12000 m		
Display unambiguous:	up to 12000 m		
Atmospheric conditions:	**A**: Strong haze, visibility 5 km; or strong sunlight, severe heat shimmer **B:** Light haze, visibility about 20 km; or moderate sunlight, slight heat shimmer **C:** Overcast, no haze, visibility about 40 km; no heat shimmer		

Accuracy (standard deviation ISO 17123-4) / Measure time

Entire measurement range: :	5 mm + 2 ppm / typ. 2.5 s, max. 12 s
Display resolution:	0.1 mm

Method

Principle:	Phase measurement
Type:	Coaxial, visible red laser
Carrier wave:	670 nm

Motorized

Maximum speed

Rotating speed:	45° / s

Automatic Target Recognition (ATR)

Description

The ATR sensor transmits an invisible laser beam, which is reflected by any standard prism (no active prisms emitting special signals are required) and is received by an internal high-resolution CCD camera. The intensity and the "spot" characteristics of the reflected light are calculated in respect to the CCD camera center. The offset components from this reference are computed in both the vertical and horizontal planes. These offsets are then used to control the motors of the telescope axes, which react immediately to position the instrument's crosshairs onto the prism. To minimize measurement time the crosshairs are only positioned within a 5 mgon tolerance (EDM mode IR-Fine) of the actual prism center. The remaining offsets are then mathematically applied to the Hz and V angles.

	ATR mode	LOCK mode
Range		
Standard prism (GPR1):	1000 m (3300 ft)	800 m (2600 ft)
360° prism (GRZ4):	600 m (2000 ft)	500 m (1600 ft)
360° mini prism (GRZ101):	350 m (1150 ft)	300 m (1000 ft)
Mini prism (GMP101):	500 m (1600 ft)	400 m (1300 ft)
Reflector tape (60 mm x 60mm):	55 m (175ft)	-
Shortest measuring distance:	1.5 m	5 m
Accuracy / Measure time		
Positioning accuracy (GPR1):	< 2 mm	
Measure time (GPR1):	3-4 s	
Maximum speed (LOCK mode)		
Tangential (standard mode):	5 m / s at 20 m, 25 m / s at 100 m	
Radial (tracking mode):	5 m / s	
Searching		
Search time in field of view:	Typ. 3 s	
Field of view:	1° 30' (1.66 gon)	
Definable search windows:	Yes	
Method		
Principle:	Digital image processing	
Type:	infrared laser	

PowerSearch (PS)

Description

This fast and reliable prism search uses a sender / receiver couple to detect prisms by means of digital signal processing algorithms. An invisible, vertical laser fan sized 40 gon in height and 0.025 gon in width is sent out while the instrument rotates around its standing axis. Once this fan comes across a prism, the reflected signal is evaluated on the fly to verify the target. If the specified signal patterns are matched, the horizontal position of the prism is determined and the rotation is stopped. Now an ATR search limited to the vertical line of the fan is launched, which precisely positions to the prism center. With this technique any standard prism (no active prisms emitting special signals are required) can be used.

Range

Standard prism (GPR1):	200 m (650 ft)
360° prism (GRZ4):	200 m (650 ft) (perfectly aligned to the instrument)
Mini prism (GMP101):	100 m (330 ft)
Shortest measuring distance:	1.5 m

Searching

Search time:	Typ. < 10 s
Default search area:	Hz: 400 gon V: 40 gon
Definable search windows:	Yes

Method

Principle:	Digital signal processing
Type:	infrared laser

Guide Light (EGL)

Range

Working range:	5 m - 150 m

Accuracy

Positioning accuracy:	5 cm at 100 m

General data

Telescope

Magnification:	30 x
Free objective aperture:	40 mm
Field of view:	1°30' (1.66 gon) / 2.7 m at 100 m
Focusing range:	1.7 m to infinity

Keyboard and Display

Display:	¼ VGA (320*240 pixels), graphic LCD, illumination, touch screen (optional)
Keyboard:	34 keys (12 function keys, 12 alphanumeric keys), illumination
Angle display:	360° ' ", 360° decimal, 400 gon, 6400 mil, V%
Distance display:	meter, int. ft, int. ft/inch, US ft, US ft/inch
Position:	face I standard / face II optional

Data storage

Internal memory:	32 MB (optional)
Memory card:	CompactFlash cards (32 MB and 256 MB)
Number of data records:	1750 / MB
Interface:	RS232, Bluetooth™ (optional)

Laser plummet

Centering accuracy:	1.5 mm at 1.5 m (deviation from plumb line)
Laser dot diameter:	2.5 mm at 1.5 m

Endless drives

Number of drives:	1 horizontal / 1 vertical

Circular level

Sensitivity:	6′ / 2 mm

Internal Battery (GEB221)

Type:	Lithium-Ion
Voltage:	7.4 V
Capacity:	3.8 Ah
Operating time:	Typ. 6 - 8 h

Dimensions

Tilting axis height:	196 mm above tribrach
Height:	345 mm
Width:	226 mm
Length:	203 mm

Weights

Total station:	4.8 - 5.5 kg (depending on type and options)
Battery (GEB221):	0.2 kg
Tribrach (GDF121):	0.8 kg

Environmental specifications

Working temperature range:	-20°C to +50°C
Storage temperature range:	-40°C to +70°C
Dust / water (IEC 60529):	IP54
Humidity:	95%, non-condensing

Onboard Software

User Interface

Graphics:	Graphical representation of points, lines and areas Application result plots
Icons:	Icons indicating the current status of measure modes, settings, battery etc.
Quick settings menu:	Quick settings menu for toggling reflectorless EDM, ATR, LOCK, EDM Tracking etc. on and off
Function keys:	Direct function keys for quick and easy operation.
User menu:	User menu for quick access of the most important functions and settings

Configuration

Configuration sets:	Ability to store and transfer all instrument and application configuration settings for different operators, survey tasks etc.
Displays masks:	User definable measurement display
User menu:	User definable menu for quick access to specific functions
Hot keys:	User configurable hot keys for quick access to specific functions

Coding

Free Coding:	Recording codes with optional attributes in between of measurements Manual code entry or selection from a user defined codelist
Thematical Coding:	Coding points, lines and areas with optional attributes when measuring Manual code entry or selection from a user defined codelist
Quick Coding:	Recording a measurement with a point, line, area or free code by entering an alphanumerical or a numerical quick code from a user defined codelist. Line and area quick codes automatically create line and area objects.

Data Management

Jobs:	User definable jobs containing measurements, points, lines, areas and codes Directly transferable to LEICA Geo Office software
Points, lines, areas:	Creating, viewing, editing, and deleting points, lines and areas and codes
Functions:	Sorting and filtering of points, lines and areas Averaging of multiple points within user defined averaging limits

Data Import & Export

Data import:	Character delimited ASCII files with point id, easting, northing, height and point code GSI8 and GSI16 files with point id, easting, northing, height and point code
Data export:	User defined ASCII files with measurements, points, lines, codes

Standard application programs

Survey:	Measuring points, lines and areas with codes and offsets. ▪ Auto Points: Tracking 3D movements of the target by automatically logging points at a given time interval, minimum distance difference or minimum height difference. ▪ Remote Points: Determining the 3D coordinates of inaccessible points by measuring the distance to a base point directly underneath or above the target and then measuring the angles to the inaccessible point.
Setup:	Setting up and orienting the instrument using various set-up methods. For all setup methods that require a known setup point the coordinates can be measured by GPS whenever a SmartAntenna is connected. ▪ Set Azimuth: Setting up the instrument on a known point and orienting to a backsight with known or unknown coordinates. Once the coordinates of the backsight are known all measurements are automatically updated. ▪ Known Backsight Point: Setting up the instrument on a known point and orienting to a known backsight point. ▪ Orientation and Height Transfer: Setting up the instrument on a known point and setting the orientation by measuring angles or angles and distances to known targets points. ▪ Resection: Setting up the instrument on an unknown point and set the orientation and calculate the station coordinates by measuring angles or angles and distances to up to 10 known targets points.
Stakeout:	3D Staking of points using various stakeout methods: ▪ Orthogonal: Displaying distances forwards / backwards, left / right from or to the station and cut / fill. ▪ Polar: Displaying direction, distance and cut / fill. ▪ Coordinate differences: Displaying coordinate differences and cut /fill.
COGO:	Performing various coordinate geometry calculations: ▪ Inverse: Calculating the direction, the distance and the coordinate differences between two known points. ▪ Traverse: Calculating position coordinates given either azimuth and distance or angle and distance from a known point. ▪ Intersection: Calculating intersections given any combination of bearings and distances between two known points or two lines between four known points. ▪ Line Calculations ▪ Arc Calculations
Determine Coordinate System:	GPS coordinates are measured relative to the global geocentric datum known on WGS 1984. A transformation is required to convert the WGS 1984 coordinates to local coordinates. Three different transformation methods are available: ▪ Onestep ▪ Twostep ▪ Classic 3D (Helmert transformation)
GPS Survey	Measuring points with GPS if a SmartAntenna is connected, optional entry of codes.

Optional application programs

Reference Line:	Defining lines and arcs, which can be stored and used for other tasks, using various methods: ▪ Measuring to a line / arc where the coordinates of a target point are calculated from its position relative to the defined reference line / arc. ▪ Staking to a line / arc where a target point is known and instructions to locate the point are given relative to the reference line / arc. ▪ Gridstaking to a line / arc where a grid can be staked relative to a reference line / arc.
DTM Stakeout:	▪ Staking out a Digital Terrain Model. ▪ Comparing actual and design height and displaying height differences.
RoadRunner:	Stake-out and as-built check of roads and any type of alignment related design (e.g. rail, pipeline, cable, earthworks) ▪ Handles any combination of geometric elements in the horizontal alignment, from simple straights to different types of partial spirals. ▪ Vertical alignment supports straights, arcs and parabolas. ▪ Covers all working tasks including stake-out/check of lines, grades/slopes (e.g. road surface, cut & fill), DTMs and many more. ▪ Visualization of cross-sections and planar view of design. ▪ Graphical selection of tasks to stake-out/check. ▪ Smart project management of design data. ▪ Support of multiple road layers (construction phases). ▪ Enhanced station equation capabilities. ▪ Comprehensive, user definable log files and cut sheets. ▪ Seamless data flow from all major design packages via PC conversion tool.
Sets of Angles:	Measuring directions and distances to targets in one or two faces in various measurement routines. ▪ Calculating the average directions and distances of all sets. ▪ Calculating the standard deviations for single directions / distance and average directions / distances. Monitoring option to repeat measurements at given time intervals.
Traverse:	Measuring a traverse with unlimited number of legs: ▪ Measuring sets to angles to backsight and multiple foresights. ▪ Measuring topographic points from any station. ▪ Using known points during traverse to validate quality of traverse. ▪ Calculating traverse closure results for field checking.
Reference Plane	Stake-out or measure points relative to a reference plane: ▪ Defining a plane by either measuring or selecting points. ▪ Calculate the perpendicular distance and height difference from a measured point to the plane. ▪ Scanning of points on a defined plane.

Remote Control Unit (RX1220)

Description

The RX1220 uses the latest in spread spectrum 2.4 GHz radio technology to permitting total remote control of the TPS1200 total station while at the prism pole. This market proven remote controlling philosophy has created an easy to learn and simple to use communication concept which mirrors the user interface of the TPS1200 on the RX1220 while at the same time adding the flexibility of a full QWERTY alpha keypad.
This concept ensures that no valuable measurement data is relayed over the radio link totally eliminating the risk of data loss. The encrypted protocol and frequency band hopping technology used in the data transmission greatly reduce the cases of interference from any other 2.4 GHz transmitters. In addition, a number of user selectable 'link numbers' can be configured easily in cases where more than one RX1220 is being used in the same area.
The RX1220 also enables the transmission of measurement data to a remote location for processing in real time. Such features result in a system, which offers total remote data flexibility.
Further more, the RX1220 is completely interchangeable with both the TPS1200 and the GPS1200 giving the user an efficient and economic solution to all sensor control needs.

Communication:

Communication:	via integrated radio modem

Control unit

Display:	¼ VGA (320*240 pixels), graphic LCD, touch screen, illumination
Keyboard:	62 keys (12 function keys, 40 alphanumeric keys), illumination
Interface:	RS232

Internal Battery (GEB211)

Type:	Lithium-Ion
Voltage:	7.4 V
Capacity:	1.9 Ah
Operating time:	Typ. 10 h

Weights

RX1220:	0.6 kg
Battery (GEB211):	0.1 kg
Reflector pole adapter:	0.25 kg

Environmental specifications

Working temperature range:	-30°C to +65°C
Storage temperature range:	-40°C to +80°C
Dust / water (IEC 60529):	IP67
Waterproof (MIL-STD-810F):	temporary submersion to 1m

SmartStation (ATX1230)

Description

SmartStation is a TPS1200 with ATX1230 12 L1+12 L2 SmartAntenna. All GPS and TPS operations are controlled from the TPS keyboard, all data are in the same database, all information is shown on the TPS screen. RTK GPS fixes the position to centimeter accuracy, then the setup routine is completed using the total station. SmartAntenna can also be used independently on a pole with a GTX1230 and RX1210 controller.

Important Note

Measurement precision and accuracy in position and accuracy in height are dependent upon various factors including number of satellites, geometry, observation time, ephemeris accuracy, ionospheric conditions, multipath etc. Figures quoted assume normal to favourable conditions. Times can also not be quoted exactly. Times required are dependent upon various factors including number of satellites, geometry, ionospheric conditions, multipath etc.The following accuracies, given as root mean square, are based on real-time measurements.

Accuracy

Position accuracy:	Horizontal: 10mm + 1ppm Vertical: 20mm + 1ppm When used within reference station networks the position accuracy is in accordance with the accuracy specifications provided by the reference station network.

Initialisation :

Method:	Real time (RTK)
Reliability of initialisation:	Better than 99.99%
Time for initialisation:	Typically 8 sec, with 5 or more satellites on L1 and L2
Range:	Up to 50 km, assuming reliable data-link is available

RTK Data Formats

RTK Data Formats for data reception:	Leica proprietary format, CMR, CMR+, RTCM V2.1/2.2/2.3/3.0

ATX1230 SmartAntenna

Receiver technology	SmartTrack - patented. Discrete elliptical filters. Fast acquisition. Strong signal. Low noise. Excellent tracking, even to low satellites and in adverse conditions. Interference resistant. Multipath mitigation.
No. of channels	12 L1 + 12 L2
Groundplane	Built-in groundplane
Dimensions (diameter x height)	186mm x 89mm
Weight	1.12kg

LEICA Geo Office Software

Description

Easy, fast and comprehensive, automated suite of programs for TPS, GPS and Level data. View and manage TPS, GPS and Level data in an integrated way. Process independently or combine data – including post processing and support of real-time GPS measurements.
Manages all data in an integrated manner. Project management, data transfer, import/export, processing, viewing data, editing data, adjustment, coordinate systems, transformations, codelists, reporting etc.
Consistent operating concepts for handling GPS, TPS and level data, based on Windows standards. An embedded help system includes tutorials with additional information.
Runs on Windows™ 98, 2000 and XP platforms.

User Interface

Intuitive graphical interface with standard Windows™ operating procedures. Customizable built-in configuration options allow users to set up the software exactly to suit their specific needs and preferences.

Standard components

Data and Project Management:	Fast, powerful database manages automatically all points and measurements within projects according to well-defined rules to ensure data integrity is always maintained. Projects, coordinate systems, antennas, report templates and codelists all have their own management. Numerous transformations, ellipsoids and projections, as well as user-defined geoid models and country specific coordinate systems which are based on a grid of correction values are supported. Six different transformation types are supported, giving the flexibility to select the approach which suits the project needs best. Antenna management system for offsets and correction values. Codelist management for code groups / code / attributes.
Import & 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 of real-time (RTK), DGPS coordinates.
ASCII Import & Export	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.
View & Edit:	The various graphical displays form the basis for visualizing data and giving an instant overview of the data contained within a project. Point, line and area information may be viewed in View/Edit together with coding and attribute information. Editing functionality is embedded allowing to query and clean up the data before processing or exporting it further.
Codelist Manager:	Generation of codelists with code groups, codes, and attributes. Management of codelists.
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 output. Configure reports to contain the information that are required and define templates to determine the presentation style.
Tools:	Powerful Tools like Codelist Manager, Data Exchange Manager, Format Manager and Software Upload are common tools for GPS receivers, total stations and also for digital levels.

GPS Options

L1 data processing:	Graphical interface for baseline selection, processing commands etc. Automatic or manual selection of baselines and definition of processing sequence. Single baseline or multi-baseline batch processing. Wide range of processing parameters. Automatic screening, cycle-slip fixing, outlier detection etc. Automated processing or user-controlled processing.

L1 / L2 data processing:	Graphical interface for baseline selection, processing commands etc. Automatic or manual selection of baselines and definition of processing sequence. Single baseline or multi-baseline batch processing. Wide range of processing parameters. Automatic screening, cycle-slip fixing, outlier detection etc. Automated processing or user-controlled processing.
RINEX Import:	Import of data in RINEX format.

Level Options

Level data processing:	View the data collected from the Leica digital level in the Geo Office level booking sheet. Select the preferred processing settings and process the level lines. Processing runs 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.
Design & Adjustment 1D:	Powerful MOVE3 Kernel with rigorous algorithms for 1D adjustment. Furthermore, network design and analysis is supported.

General Options

Datum & Map	LEICA Geo Office supports numerous transformations, ellipsoids and projections, as well as user-defined geoid models and country specific coordinate systems, which are based on a grid of correction values. The optional Datum/Map component supports the determination of transformation parameters. Six different transformation types are supported, giving the flexibility to select the approach which suits the project needs best.
Design & Adjustment 3D:	Combine all measurements in a least-squares network adjustment to obtain the best possible set of consistent coordinates and check that the measurements fit with the known coordinates. Use adjustment to help identify blunders and outliers based upon the extensive statistical testing. Using the powerful MOVE3 Kernel, the algorithms are rigorous and the user can choose between whether a 3D, 2D or 1D adjustment is computed. Furthermore, the component supports network design – allowing to design and analyze a network before actually going into the field.
GIS / CAD Export:	Permits export to GIS/CAD systems such as AutoCAD (DXF / DWG), MicroStation

System requirements

Minimum PC configuration:	Pentium 150 MHz processor 32MB RAM 100MB free hard disk space Microsoft® Windows™ 98 Microsoft® Internet Explorer 4.0
Recommended PC configuration:	Pentium® 300 MHz processor or higher 256 MB RAM or more 300 MB or more free space on hard disk Microsoft® Windows™ 2000 or XP Microsoft® Internet Explorer 5.5 or higher

Leica System 1200 – working together

TPS, GPS and SmartStation.
Use TPS and GPS together or separately according to the work you do.
Use whichever is the most suitable for the job in hand.
Change easily from one to the other and use them in the same way.
Enjoy all the freedom, flexibility and power of System 1200.

When it has to be right.

738601en – I.05 – RVA

Distance meter (IR), ATR and PowerSearch:
Laser class 1 in accordance with IEC 60825-1 resp. EN 60825-1

Guide Light (EGL):
LED class 1 in accordance with IEC 60825-1 resp. EN 60825-1

Laser plummet:
Laser class 2 in accordance with IEC 60825-1 resp. EN 60825-1

Distance meter (PinPoint R100 / R300):
Laser class 3R in accordance with IEC 60825-1 resp. EN 60825-1

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- when it has to be **right**

Leica Geosystems