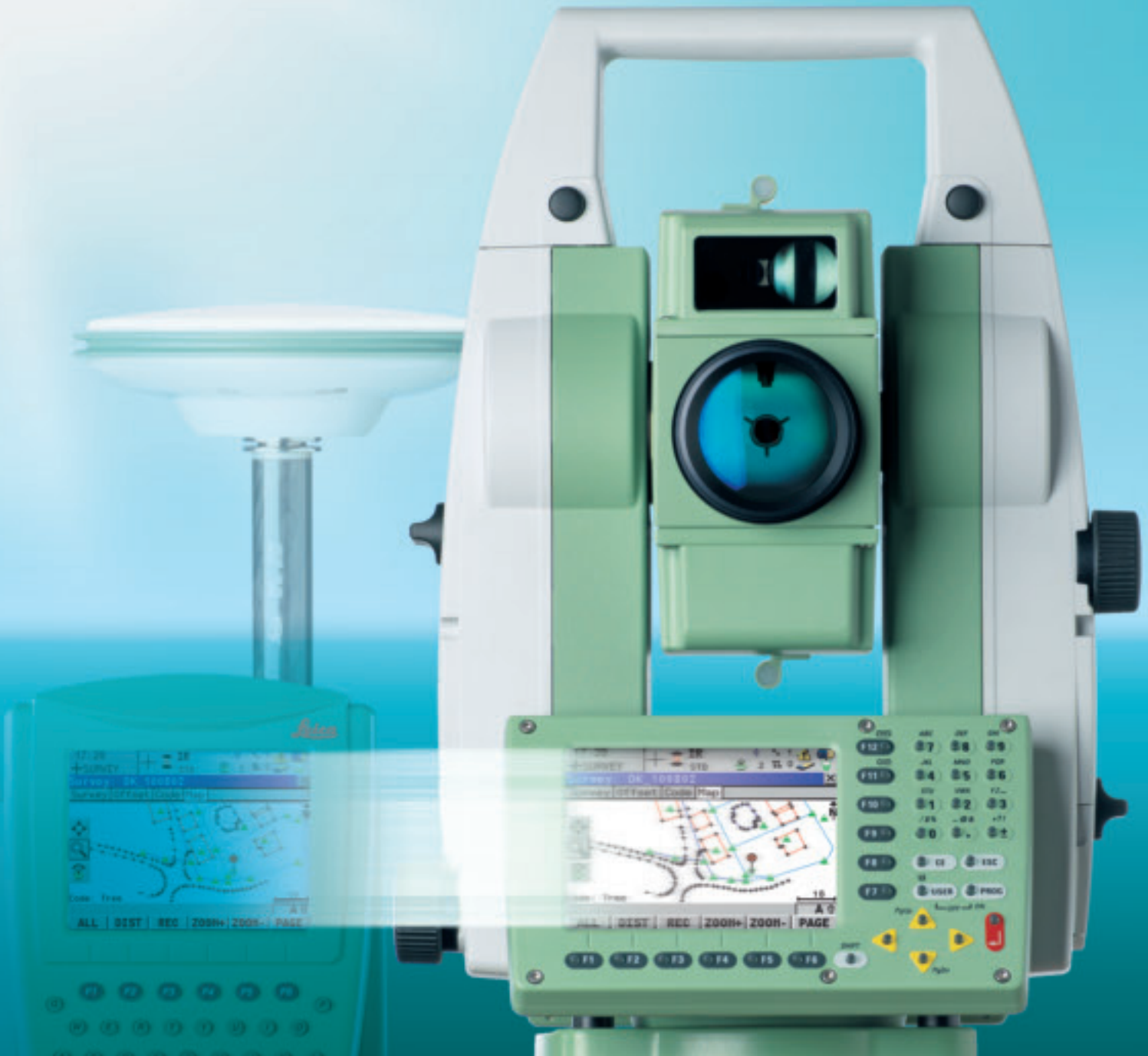


# Leica TPS1200+ Series

## High performance Total Station



- when it has to be **right**

**Leica**  
Geosystems

# Leica TPS1200+ Total Stations

Packed with exciting new features, built for speed, accuracy, ease-of-use and reliability. Leica TPS1200+ total stations carry out even the most complex tasks, better and more efficiently than ever before. And, best of all, they combine perfectly with GPS1200+.

## Superb measurement technology

High accuracy angle measurements and precise long-range distance measurements backed by automatic fine pointing and fast, reliable reflector location. You work faster, more precisely and more relaxed.

## Easy to operate

Intuitive interface, powerful data management, on-board routines and programs: all easy to use and identical for TPS, GNSS and RX1250.

## Large graphic colour display

Easy viewing of entire surveyed area and immediate access to all measured data. You see exactly what you've done and what you've still to do.

## Totally flexible

Configure and program TPS1200+ in the way you want, for your applications, for the way you work and for the data output you require.

## A complete series

TPS1200+ total stations cover a range of models and options. Select the ones that suit you best.

## Use TPS1200+ for everything

Use TPS1200+ total stations for surveying, engineering, stakeout, topo, monitoring etc. Combine them with GNSS. Benefit from huge productivity of System 1200.



**FUNCTION**  
integrated

Combine TPS and GNSS. 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.

### Leica SmartStation

TPS1200+ with integrated GNSS. All TPS1200+ can be upgraded to Smart Station.



### Leica GPS1200+

Unites top GNSS technology with powerful data management. Perfect for all GNSS applications.





## Leica System 1200

TPS and GNSS  
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 TPS and GNSS instruments.

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

These new high-tech TPS and GNSS 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.

### Leica TPS1200+

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



### Leica SmartPole

Save time with SmartPoles' setup On-the-fly and easily swap between GNSS and TPS when needed.



### Leica SmartWorx

SmartWorx TPS/GNSS application software is both easy-to-use and extremely powerful.



### Leica Geo Office

Everything you need in a single package for TPS and GNSS: import, visualization, conversions, quality control, processing, adjustment, reporting, export etc



# Leica TPS1200+

## Exceptional performance and outstanding features

### Fast, precise, long-range EDM

Coaxial, high-accuracy EDM with various measuring modes. 3 km range to a single prism.

### PinPoint R1000

Best reflectorless electronic distance measurement technology in combination of range, accuracy, measurement time and laser spot size in the market. Measure more than 1000 m range with true PinPoint accuracy.

### RadioHandle

Transfers data instantly between TPS1200+ and remote control unit. Powered by TPS1200+ plug-in battery.

### Plug-in Li-Ion battery

Small, light, high-capacity Lithium-Ion battery powers TPS1200+ for hours and hours.



### Bluetooth® Wireless-Technology integrated

Wireless transfer of data to PDA's and cell phones.

### High-tech angle measurement

High-accuracy continuous angle-measuring system. Choice of accuracies from 1 to 5 seconds.

### Endless drives

For fast, comfortable operation and precise pointing.

### Well-designed keyboard

Clear, logical arrangement with alphanumeric, function and user-definable keys.

### Touch screen

Gives instant access to all functions without using the keyboard.

### Laser plummet

Centers TPS1200+ easily, quickly and exactly over a ground point.



### Guide Light (EGL)

Practical alignment aid for stakeout; helps rodman to line up reflector quickly and exactly.

### Automatic Target Recognition (ATR):

Automatic fine pointing to prism. Speeds up measurements and improves productivity.

### PowerSearch (PS)

Fast rotating laser fan finds reflector quickly and ATR fine points. Valuable aid for all types of work; perfect for remote control surveys.

### High contrast graphic colour display

Best colour display in the market because of perfect clarity and contrast. Excellent graphics and easy to read whether in fading light or bright sunshine.

### 360° reflector

No orientation required; surveying and stakeout are easier and quicker.

### Wide range of accessories

Can also be used for GPS1200+ and other Leica equipment.

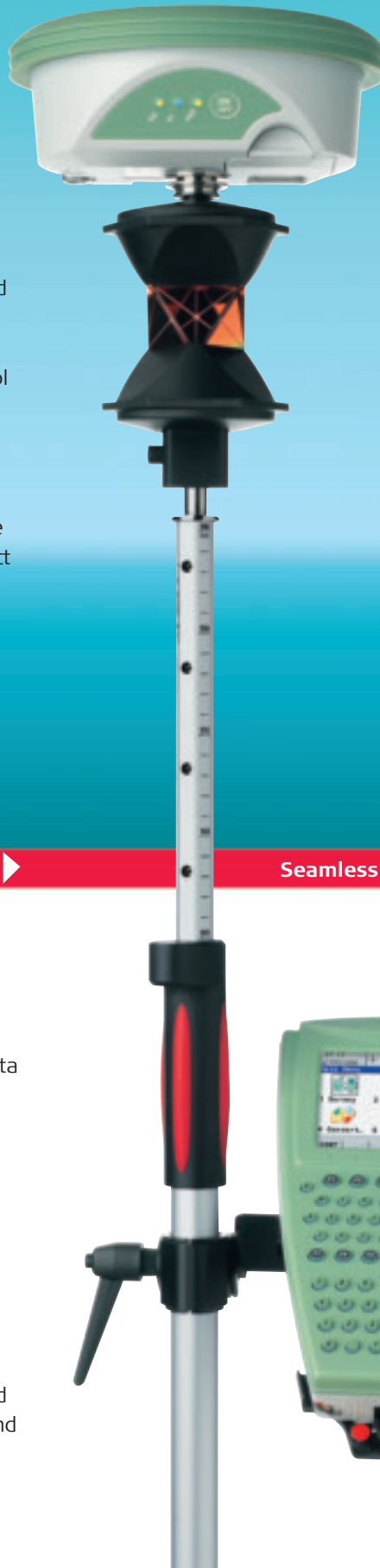


### SmartPole

SmartAntenna, 360° reflector and the RX1250 is the perfect setup to operate GNSS and TPS from one control unit.

### Leica Geo Office

Software support package for TPS and GNSS with tools and components for import, visualization, conversions, quality control, processing, adjustment, reporting, export.



### CompactFlash cards

High capacity, reliable data storage. Ideal for data transfer.

### Internal memory

High capacity, reliable internal memory.

### Various models and options

TPS1200+ total stations cover a range of standard and motorized models and various exciting options. Only pay for what you need!

Seamless dataflow

WORKING  
TOGETHER

FUNCTION  
Integrated

LEICA SYSTEM 1200

### RX1250 Control Unit

Remote controls the TPS1200+ via radio modem and operates the SmartAntenna on the pole via Bluetooth® Wireless Technology or cable. Surveyor with reflector carries out the entire GNSS and TPS survey by himself.

### Plug-in Li-Ion battery

Small, light Lithium-ion battery powers remote control unit and integrated radio.



# Leica TPS1200+

## Extremely powerful Yet very easy to use

TPS1200+ is loaded with a multitude of features and functions to meet the many different needs of users all over the world, yet it is remarkably easy to use.

TPS1200+'s graphical operating concept is self-explanatory and guides you straight to what you need.

You can use the default settings or, if you prefer, you can set TPS1200+ to operate, display and output data in exactly the way you require.

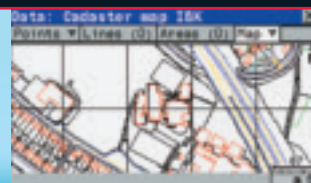
When you use TPS1200+ you'll find that everything is very easy to understand.

Even better, TPS1200+ and GPS1200+ are fully compatible with the same CompactFlash cards, data management, displays and keyboards.

Depending on the jobs you do, you can change easily from TPS to GNSS and continue working in exactly the same way.



### Graphic view mode



Graphic views show your work. Zoom in for details and out for the entire survey. Use the touch screen or keyboard to access data related to points and objects.

With graphical views you can check quickly in the field for completeness and correctness.

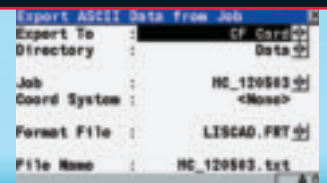
### Coding and plan of your work



Define points, lines and areas to build up a plan in the display as you survey. You see immediately what you've done. Attach the codes, attributes and information needed for input into your office or mapping software.

System 1200 has all types of tools and is incredibly versatile.

### Data export in any format



Data can be exported directly from TPS1200+ or via Leica Geo Office in various standard formats or in your own user-defined formats for direct input into any type of processing, office, CAD or mapping software.

System 1200 interfaces easily to third-party software packages.



### Status icons

These indicate the current instrument settings, battery status, measurement and operation modes.

### QWERTY keyboard

The remote control unit has a standard QWERTY keyboard layout for fast, easy input of alphanumeric data and information.

### Quick settings key

For quick selection of functionality such as PinPoint, ATR, LOCK and EDM tracking.

### Definable function keys

Allocate commands, functions and displays to those keys for immediate access.

### Configurable user menu

Set up your own user menu for the way you and your crews operate. Show what you need and hide the rest.

### Program menu

Direct access to all loaded application programs, such as Survey, Setup, Stakeout and all other optional application programs.

### Large graphic colour display

1/4 VGA high-resolution LCD, easy to read in any light. Display and keyboard light up for work in the dark.

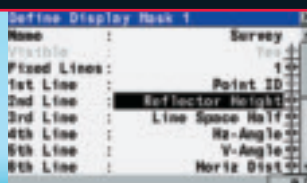
### Second keyboard/display

If required, TPS1200+ can be fitted with a second keyboard and display for operating in face II.

### Touch screen

The touch screen provides immediate access without using the keyboard. You can view data and information related to points and objects and call up all types of functions directly via the screen. Use the touch screen and/or the keyboard, whichever you prefer.

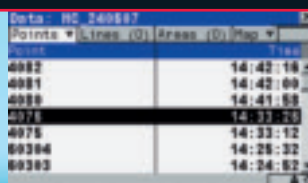
## User definable displays



With TPS1200+ you can define different display masks so that the instrument shows exactly what you and your crews want to see when surveying in the field. Set the displays according to the jobs you do and the information required.

TPS1200+ adapts perfectly to your needs.

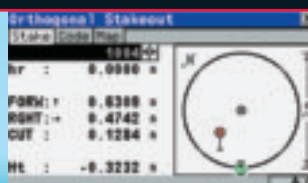
## Data management



The powerful database manages data, files, jobs, quality checks etc. You can view, edit, delete, and search with or without filters. Coordinates of points measured more than once are averaged provided that they lie within specified tolerances.

Surveying is much easier and more reliable with System 1200.

## Application programs



TPS1200+ is supplied with many useful programs such as Survey, Setup, Stakeout, COGO etc. Other programs such as RoadRunner, Reference line, Sets of Angles and DTM Stakeout are optional. You can also write your own programs for special applications in Geo C++.

Most programs run on both TPS and GNSS.



# Leica TPS1200+

## High-precision measurement technology Time-saving measurement aids

### Angle and distance measurement (IR-Mode)



#### Highest accuracy Longest range

TPS1200+'s precision angle-measurement system operates continuously providing instant horizontal and vertical circle readings that are automatically corrected for any "out of level" by a centrally located twin-axis compensator. The coaxial EDM uses a visible red laser, has various measuring modes, and measures to prisms and reflective tape. The range is excellent – 3 km to a single prism – and the accuracy superb – 1 mm + 1.5 ppm for all TPS1200+ models. Resolution is 0.1 mm.

- Fast, continuous, high-accuracy angle measurements
- Choice of accuracy from 1 to 5 seconds
- No initialization
- Twin-axis compensator
- EDM with standard, fast and tracking modes
- Long range, fast measurements and high accuracy
- Totally reliable

### PinPoint – reflectorless EDM (RL-Mode)



#### Measure extreme ranges with highest accuracy

PinPoint is the ideal tool for measuring to wall corners, inaccessible objects, facades, rock faces, roofs and walls inside buildings, in fact to anything at which it is difficult to set up a reflector. PinPoint's tightly bundled laser marks the point exactly with a small red dot. Measurements are taken instantly and directly (no complex routines measurement). And with PinPoint you can also take very long distance measurements to prisms.

- Optional for all TPS1200+
- Two versions: standard range R400 (more than 400 m), superior range R1000 (more than 1000 m)
- Very small laser spot, marks the point exactly
- Standard measurement and tracking modes
- Accuracy 2 mm + 2 ppm
- Motorized TPS1200+ with PinPoint – the perfect tool for scanning facades

### Automatic Target Recognition (ATR / LOCK)



#### Measure points quick and accurate

With ATR, you only need to point roughly and take a measurement; TPS1200+ then fine points to the center of the prism and measures, all fully automatically. In LOCK mode TPS1200+ remains locked onto the reflector and follows it as it moves. Measurements can be taken at any time. And, as software predicts reflector movements, TPS1200+ continues to track in spite of obstructions and short interruptions. If long interruptions should cause complete loss of lock, use PowerSearch.

- Optional for motorized TPS1200+
- Eliminates manual operation
- Very fast measurements
- Uniform high accuracy
- Works with standard prisms (no need for active target)

# Work easily, quickly and comfortably

## Increase productivity and profits

### PowerSearch (PS)



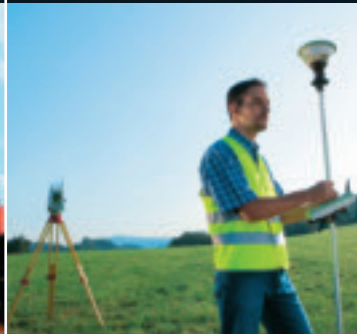
#### Finds reflector automatically

PowerSearch finds reflectors within seconds no matter where they are. With PowerSearch activated, TPS1200+ rotates and sends out a vertical laser fan. As soon as the fan strikes a prism TPS1200+ stops rotating, ATR takes over and fine points – all fully automatically.

Use PowerSearch for the first ATR measurement or to find the reflector again if Automatic Target Tracking loses lock completely. PowerSearch is particularly advantageous when operating with remote control.

- Optional for motorized TPS1200+ equipped with ATR
- Activated at the touch of a key or automatically
- Finds standard prisms (no need for active target)
- Saves time, increases productivity
- Highly recommended for fast, efficient remote control

### Remote Control Unit (RX1250)



#### Operate at the reflector

With the RX1250 remote control unit you can control both the TPS1200+ via RadioModem and Radio-Handle and the GNSS Smart-Antenna via *Bluetooth*® Wireless Technology or cable from the reflector pole. The control unit has the same display as the TPS1200+, a touch screen, optionally a colourscreen and a full alphanumeric QWERTY keyboard. Operation is exactly the same. You can trigger measurements, enter codes, use routines and programs, collect data from GNSS and TPS – whatever you like.

- Optional for all TPS1200+
- Extend setup to SmartPole
- Best with ATR, PowerSearch and 360° reflector
- Light, rugged, reliable
- Reliable wireless communication via Radio-Handle and *Bluetooth*® Wireless Technology
- Perfect one-man survey system
- No need for cables
- Increases efficiency and productivity

### SmartStation (ATX1230+ GNSS)



#### TPS & GNSS perfectly combined

TPS1200+ with ATX1230+ GNSS Smart-Antenna combined in one compact, easy-to-use instrument. No need for control points, traverses or resections. Set up SmartStation and let RTK GNSS determine the position within seconds to centimeter accuracy, then survey and stake out with TPS1200+. The total station controls all measurements, displays and data, for both GNSS and TPS. Once SmartStation is positioned, use the Smart-Antenna on a pole with controller and sensor as an RTK rover.

- TPS and GNSS combined into one instrument
- Fix the position with RTK then survey with TPS
- No need for control points, traverses or resections
- Increase productivity and profits
- All TPS1200+ can be upgraded to SmartStation

WORKING  
TOGETHER

**FUNCTION**  
integrated  
LEICA SYSTEM 1200

# Leica TPS1200+

## Technical specifications and system features



### Models and options

	TC	TCR	TCRM	TCA	TCP	TCRA	TCRP
Angle measurement	•	•	•	•	•	•	•
Distance measurement (IR-Mode)	•	•	•	•	•	•	•
PinPoint reflectorless dist. measur. (RL-Mode)		•	•			•	•
Motorized			•	•	•	•	•
Automatic Target Recognition (ATR)				•	•	•	•
PowerSearch (PS)					•		•
Guide Light (EGL)	◦	◦	◦	•	•	•	•
Remote Control Unit / RadioHandle	◦	◦	◦	◦	◦	◦	◦
GUS74 Laser Guide				◦		◦	
SmartStation (ATX1230+ GNSS)	◦	◦	◦	◦	◦	◦	◦

• = Standard

◦ = Optional

### Angle measurement



		Type 1201+	Type 1202+	Type 1203+	Type 1205+
Accuracy (std.dev., ISO 17123-3)	Hz, V	1" (0.3 mgon)	2" (0.6 mgon)	3" (1 mgon)	5" (1.5 mgon)
	Display resolution:	0.1" (0.1 mgon)	0.1" (0.1 mgon)	0.1" (0.1 mgon)	0.1" (0.1 mgon)
Method	absolute, continuous, diametrical				
Compensator	Working range:	4' (0.07 gon)	4' (0.07 gon)	4' (0.07 gon)	4' (0.07 gon)
	Setting accuracy:	0.5" (0.2 mgon)	0.5" (0.2 mgon)	1.0" (0.3 mgon)	1.5" (0.5 mgon)
	Method:	centralized dual axis compensator			

### Distance measurement (IR-Mode)



Range (average atmospheric conditions)	Round prism (GPR1):	3000 m
	360° reflector (GRZ4):	1500 m
	Mini prism (GMP101):	1200 m
	Reflective tape (60 mm x 60mm)	250 m
	Shortest measurable distance:	1.5 m
Accuracy / Measurement time (standard deviation, ISO 17123-4)	Standard mode:	1 mm + 1.5 ppm / typ. 2.4 s
	Fast mode:	3 mm + 1.5 ppm / typ. 0.8 s
	Tracking mode:	3 mm + 1.5 ppm / typ. <0.15 s
	Display resolution:	0.1 mm
Method	Special phase shift analyzer (coaxial, visible red laser)	

### PinPoint R400/R1000 reflectorless distance measurement (RL-Mode)



Range (average atmospheric conditions)	PinPoint R400:	400 m / 200 m (Kodak Gray Card: 90 % reflective / 18 % reflective)
	PinPoint R1000:	1000 m / 500 m (Kodak Gray Card: 90 % reflective / 18 % reflective)
	Shortest measurable distance:	1.5 m
	Long Range to round prism (GPR1):	1000 m – 7500 m
Accuracy / Measurement time (standard deviation, ISO 17123-4) (object in shade, sky overcast)	Reflectorless < 500 m:	2 mm + 2 ppm / typ. 3 – 6 s, max. 12 s
	Reflectorless > 500 m:	4 mm + 2 ppm / typ. 3 – 6 s, max. 12 s
	Long Range:	5 mm + 2 ppm / typ. 2.5 s, max. 12 s
Laser dot size	At 20 m:	approx. 7 mm x 14 mm
	At 100 m:	approx. 12 mm x 40 mm
Method	PinPoint R400 / R1000: System analyzer (coaxial, visible red laser)	

### Motorized



Maximum speed	Rotating speed:	45° / s
---------------	-----------------	---------



### Automatic Target Recognition (ATR)

<b>Range ATR mode / LOCK mode</b> (average atmospheric conditions)	Round prism (GPR1):	1000 m / 800 m
	360° reflector (GRZ4, GRZ122):	600 m / 500 m
	Mini prism (GMP101):	500 m / 400 m
	Reflective tape (60 mm x 60 mm):	55 m (175 ft)
	Shortest measurable distance:	1.5 m / 5 m
<b>Accuracy / Measure time</b> (std. dev. ISO 17123-3)	ATR angle accuracy Hz, V:	1 " (0.3 mgon)
	Base positioning accuracy:	± 1mm
	Measure time for GPR1:	3 – 4 s
<b>Maximum speed (LOCK mode)</b>	Tangential (standard mode):	5 m / s at 20 m, 25 m / s at 100 m
	Radial (tracking mode):	4 m / s
<b>Method</b>	Digital image processing (laser beam)	



### PowerSearch (PS)

<b>Range</b> (average atmospheric conditions)	Round prism (GPR1):	300 m
	360° reflector (GRZ4, GRZ122):	300 m (perfectly aligned to instrument)
	Mini prism (GMP101):	100 m
	Shortest distance:	5 m
<b>Search time</b>	Typical search time:	< 10 s
<b>Maximum speed</b>	Rotating speed:	45° / s
<b>Method</b>	Digital signal processing (rotating laser fan)	



### Guide Light (EGL)

<b>Range</b> (average atmospheric conditions)	Working range:	5 m – 150 m
	<b>Accuracy</b>	Positioning accuracy:



### General data

<b>Telescope</b>	
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
<b>Keyboard and Display</b>	
Display:	1/4 VGA (320*240 pixels), graphic LCD, colour, illumination, touch screen
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
<b>Data storage</b>	
Internal memory:	256 MB (optional)
Memory card:	CompactFlash cards (256 MB)
Number of data records:	1750 / MB
Interfaces:	RS232, Bluetooth® Wireless-Technology (optional)
<b>Circular Level</b>	
Sensitivity:	6' / 2 mm

<b>Laser plummet</b>	
Centering accuracy:	1.5 mm at 1.5 m
Laser dot diameter:	2.5 mm at 1.5 m
<b>Endless drives</b>	
Number of drives:	1 horizontal / 1 vertical
<b>Battery (GEB221)</b>	
Type:	Lithium-Ion
Voltage:	7.4 V
Capacity:	4.4 Ah
Operating time:	typ. 5 – 8 h
<b>Weights</b>	
Total station:	4.8 – 5.5 kg
Battery (GEB221):	0.2 kg
Tribrach (GDF121):	0.8 kg
<b>Environmental specifications</b>	
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



### Remote Control Unit (RX1250T/Tc)

<b>Communication</b>	via integrated radio modem	
<b>Control unit</b>	Display:	1/4 VGA (320*240 pixels), graphic LCD, touch screen, illumination
	Keyboard:	62 keys (12 function keys, 40 alphanumeric keys), illumination
	Interface:	RS232
<b>Battery (GEB211)</b>	Type:	Lithium-Ion
	Voltage:	7.4 V
	Capacity:	2.2 Ah
	Operating time:	RX1250T: typ. 9 h, RX1250Tc: typ. 8 h
<b>Weights</b>	Control unit RX1250T/Tc:	0.8 kg
	Battery (GEB211):	0.1 kg
	Reflector pole adapter:	0.25 kg
<b>Environmental specifications</b>	Working temperature range:	RX1250T -30° C to +65° C / RX1250Tc -30° C to +50° C
	Storage temperature range:	-40° C to +80° C
	Protection against water, dust and sand (IEC 60529, MIL-STD-810F)	IP67
		waterproof to 1 m temporary submersion, dust tight

Whether you want to survey a parcel of land or a construction site, a facade or indoors to create as-built plans or carry out high-precision measurements of bridge and tunnel constructions – Leica Geosystems' surveying instruments provide the right solution for all measuring tasks.

The System 1200 Series instruments as well as the software are designed to meet the daily challenges of modern surveying. They all have outstanding, easy to read and user-friendly interfaces. Their straightforward menu structures, their clearly outlined scope of functions and high technology perfectly mate GNSS and TPS applications in the field. Whether you use the advantages of both technologies combined or each separately – due to the exceptional flexibility of Leica Geosystems instruments, reliable and productive surveying is assured.

**When it has to be right.**

Illustrations, descriptions and technical specifications are not binding and may change.  
Printed in Switzerland – Copyright Leica Geosystems AG, Heerbrugg, Switzerland, 2008.  
738582en – XII.08 – RDV



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

Ask your local Leica Geosystems dealer for more information about our TQM program.

**Distance meter (PinPoint R400 / R1000):**  
Laser class 3R 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 (IR), ATR and PowerSearch:**  
Laser class 1 in accordance with IEC 60825-1 resp. EN 60825-1

The **Bluetooth®** word mark and logos are owned by Bluetooth SIG, Inc. and any use of such marks by Leica Geosystems AG is under license. Other trademarks and trade names are those of their respective owners.



**Leica SmartPole**  
Product brochure



**Leica SmartStation**  
Product brochure



**Leica GPS1200+**  
Product brochure



**Leica System 1200 Software**  
Product brochure



**Leica GRX1200+**  
Product brochure