

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 GPS.

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 and GPS.

Large graphic 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 GPS. Benefit from huge productivity of System 1200.

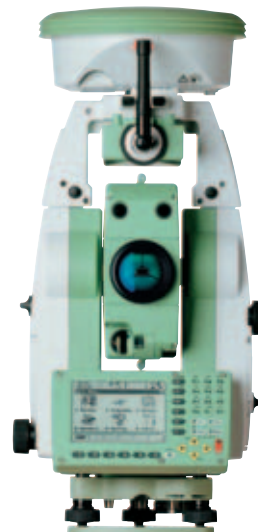


FUNCTION
integrated

Combine TPS and GPS. 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 GPS. All TPS1200 can be upgraded to SmartStation.



Leica GPS1200

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





Leica System 1200

TPS and GPS
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 GPS instruments.

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

These new high-tech TPS and GPS 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.



Uniform operating concept

Same operation for TPS and GPS. Use whichever is the most convenient.



Identical data management

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.



Leica Geo Office

Everything you need in a single package for TPS and GPS: 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 – reflectorless EDM

Coaxial visible red laser with sensational range (up to 500m) and very small spot. Measures to building corners and inaccessible objects. Two range options: R100 and R300.

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™ 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.



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 display

Large, bright display with 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.



GPS1200

TPS and GPS use exactly the same format and data management. Transfer cards from one to the other and keep on working.

Leica Geo Office

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



Seamless dataflow

WORKING TOGETHER



LEICA SYSTEM 1200

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. Select the ones that suit you best.



Remote Control Unit

Controls TPS1200 via radio modem. Surveyor with reflector carries out the entire survey by himself. Saves manpower.

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.

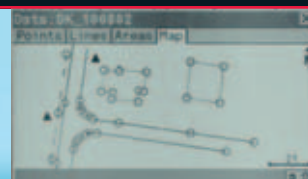
When you use TPS1200 you'll find that everything is very easy to understand.

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 GPS and continue working in exactly the same way.



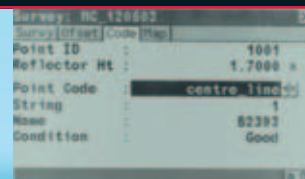
Graphic view mode



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.

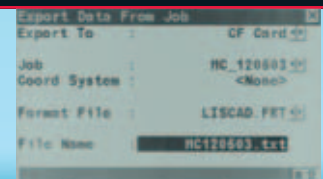
Coding and plan of your work



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.

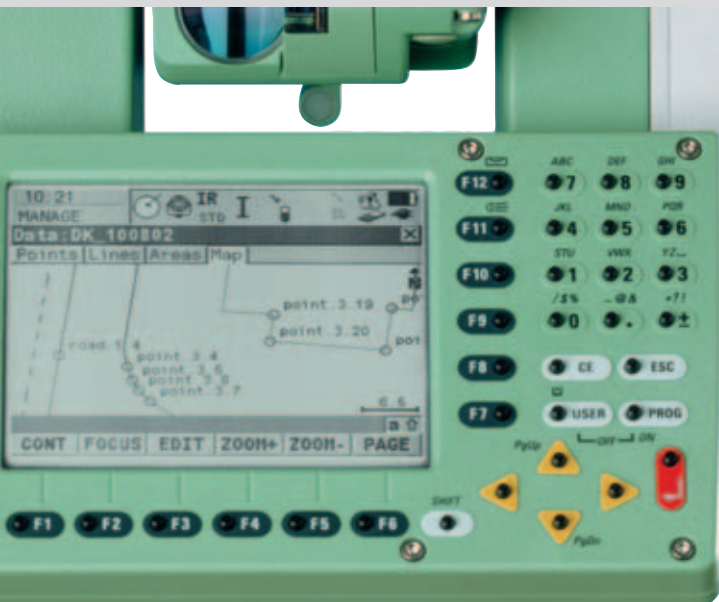
System 1200 has all types of tools and is incredibly versatile.

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

Indicate the current measurement and operation modes, recording and battery status, instrument settings etc.

Definable function keys

Allocate commands, functions, displays etc (whatever you like) 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.

Quick settings key

For toggling PinPoint, ATR, LOCK, EDM tracking etc. ON or OFF. Quick changes save time.

QWERTY keyboard

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

Program menu

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

Large graphic display

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

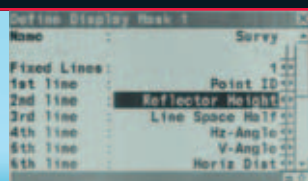
Second keyboard/display

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.

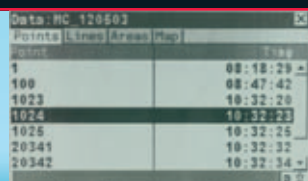
User definable displays



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.

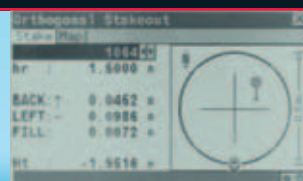
Data management



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 GPS.



Leica TPS1200

High-precision measurement technology Time-saving measurement aids

Angle and distance measurement (IR)



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 an infrared 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 – 2 mm + 2 ppm. 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)



Marks the point precisely Measures directly

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 R100 (up to 200m), superior range R300 (up to 500m)
- Very small laser spot, marks the point exactly
- Standard measurement and tracking modes
- Accuracy 3 mm + 2 ppm
- Motorized TPS1200 with PinPoint – the perfect tool for scanning facades

Automatic Target Recognition (ART / 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, if configured
- Finds standard prisms (no need for active target)
- Saves time, increases productivity
- Highly recommended for fast, efficient remote control

Remote Control Unit (RX1220)



Operate at the reflector

With the remote control unit and RadioHandle you can control the TPS1200 from the reflector. The control unit has the same display as the TPS1200, a touch screen and a full alphanumeric QWERTY keyboard. TPS1200 transmits its current display continuously to the remote control unit. Operation is exactly the same. You can trigger measurements, enter codes, use routines and programs – whatever you like.

- Optional for all TPS1200
- Best with ATR, PowerSearch and 360° reflector
- Light, rugged, reliable
- Reliable radio communication via RadioHandle
- All data recorded and stored safely in TPS1200
- Perfect one-man survey system
- No need for cables or external batteries
- Increases efficiency and productivity

SmartStation (ATX1230)



TPS & GPS perfectly combined

TPS1200 with GPS Smart-Antenna combined in one compact, easy-to-use instrument. No need for control points, traverses or resections. Set up SmartStation and let RTK GPS 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 GPS and TPS. Once SmartStation is positioned, use the SmartAntenna on a pole with controller and sensor as an RTK rover.

- TPS and GPS 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) | • | • | • | • | • | • | • |
| PinPoint reflectorless dist. measur. (RL) | | • | • | | | • | • |
| Motorized | | | • | • | • | • | • |
| Automatic Target Recognition (ATR) | | | | • | • | • | • |
| PowerSearch (PS) | | | | | • | | • |
| Guide Light (EGL) | ◦ | ◦ | ◦ | • | • | • | • |
| Remote Control Unit / RadioHandle | ◦ | ◦ | ◦ | ◦ | ◦ | ◦ | ◦ |
| GUS74 Laser Guide | | | | ◦ | | ◦ | |
| SmartStation (ATX1230) | ◦ | ◦ | ◦ | ◦ | ◦ | ◦ | ◦ |

• = Standard

◦ = Optional

Angle measurement



| | | Type 1201 | Type 1202 | Type 1203 | Type 1205 |
|-----------------------------------|---------------------|-----------------------------------|-----------------|-----------------|-----------------|
| Accuracy | Hz, V | 1" (0.3 mgon) | 2" (0.6 mgon) | 3" (1 mgon) | 5" (1.5 mgon) |
| (standard deviation, ISO 17123-3) | 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)



| | | |
|------------------------------------|--------------------------------|---|
| Range | Round prism (GPR1): | 3000 m |
| (average atmospheric conditions) | 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 mode: | 2 mm + 2 ppm / typ. 1.5 s |
| (standard deviation, ISO 17123-4) | Fast mode: | 5 mm + 2 ppm / typ. 0.8 s |
| | Tracking mode: | 5 mm + 2 ppm / typ. < 0.15 s |
| | Display resolution: | 0.1 mm |
| Method | | Phase measurement (coaxial, invisible infrared laser) |

PinPoint R100/R300 reflectorless distance measurement (RL)



| | | |
|------------------------------------|-----------------------------------|--|
| Range | PinPoint R100: | 170 m / 100 m (Kodak Gray Card: 90% reflective / 18% reflective) |
| (average atmospheric conditions) | PinPoint R300: | 500 m / 300 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 | Reflectorless < 500 m: | 3 mm + 2 ppm / typ. 3-6 s, max. 12 s |
| (standard deviation, ISO 17123-4) | Reflectorless > 500 m: | 5 mm + 2 ppm / typ. 3-6 s, max. 12 s |
| (object in shade, sky overcast) | 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 R100: | Phase measurement (coaxial, visible red laser) |
| | PinPoint R300: | System analyzer (coaxial, visible red laser) |

Motorized



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



Automatic Target Recognition (ATR)

| | | |
|---|---------------------------------------|------------------------------------|
| Range ATR mode / LOCK mode (average atmospheric conditions) | Round prism (GPR1): | 1000 m / 800 m |
| | 360° reflector (GRZ4): | 600 m / 500 m |
| | Mini prism (GMP101): | 500 m / 400 m |
| | Reflective tape (60 mm x 60mm): | 55 m (175 ft) |
| | Shortest measurable distance: | 1.5 m / 5 m |
| Accuracy / Measurement time | Positioning accuracy: | < 2 mm |
| | Measurement time: | 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): | 4 m / s |
| Method | Digital image processing (laser beam) | |



PowerSearch (PS)

| | | |
|--|--|---|
| Range (average atmospheric conditions) | Round prism (GPR1): | 200 m |
| | 360° reflector (GRZ4): | 200 m (perfectly aligned to instrument) |
| | Mini prism (GMP101): | 100 m |
| | Shortest distance: | 5 m |
| Search time | Typical search time: | < 10 s |
| Maximum speed | Rotating speed: | 45° / s |
| Method | Digital signal processing (rotating laser fan) | |



Guide Light (EGL)

| | | |
|--|-----------------|-----------------------|
| Range (average atmospheric conditions) | Working range: | 5 m – 150 m |
| | Accuracy | Positioning accuracy: |



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: | 1/4 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 |
| Interfaces: | RS232, Bluetooth™ (optional) |
| Circular Level | |
| Sensitivity: | 6' / 2 mm |

| | |
|-------------------------------------|---------------------------|
| Laser plummet | |
| Centering accuracy: | 1.5 mm at 1.5 m |
| Laser dot diameter: | 2.5 mm at 1.5 m |
| Endless drives | |
| Number of drives: | 1 horizontal / 1 vertical |
| Battery (GEB221) | |
| Type: | Lithium-Ion |
| Voltage: | 7.4 V |
| Capacity: | 3.8 Ah |
| Operating time: | typ. 6 – 8 h |
| Weights | |
| Total station: | 4.8 – 5.5 kg |
| 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 |



Remote Control Unit (RX1220)

| | | |
|-------------------------------------|----------------------------|---|
| Communication | via integrated radio modem | |
| Control unit | Display: | 1/4 VGA (320*240 pixels), graphic LCD, touch screen, illumination |
| | Keyboard: | 62 keys (12 function keys, 40 alphanumeric keys), illumination |
| | Interface: | RS232 |
| Battery (GEB211) | Type: | Lithium-Ion |
| | Voltage: | 7.4 V |
| | Capacity: | 1.9 Ah |
| | Operating time: | typ. 10 h |
| Weights | Control unit 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 1 m |

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.

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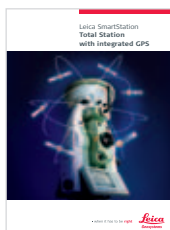
**Distance meter (IR),
ATR and PowerSearch:**
Laser class 1 in accordance
with IEC 60825-1 resp. EN 60825-1

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

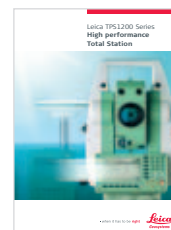
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**Leica
SmartStation**
Product brochure



Leica GPS1200
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**Leica System1200
Software**
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Leica GRX1200
Product brochure