

# Leica SmartStation Total Station with integrated GNSS



- when it has to be **right**

**Leica**  
Geosystems

# Leica SmartStation Total station with integrated GNSS

New revolutionary surveying system.  
World's first, TPS and GNSS perfectly  
combined. High performance  
total station with powerful GNSS receiver.

No need for control points,  
long traverses or resections.  
Just set up SmartStation and let  
GPS1200+ determine the position.

Then measure and stake out  
with the total station.  
You survey easier, quicker  
and with fewer set ups.  
Use TPS and GNSS separately  
when required.

Put the SmartAntenna on a  
pole as an RTK rover.  
Use the TPS as a standard  
total station.

SmartStation's modular design  
gives you all the options.  
Undertake any type of job.  
Save time and money.  
Increase your productivity  
and profits.

All TPS1200+ total stations can  
be upgraded to SmartStation  
with GPS1200+ unique GNSS  
technology.



# Incredibly versatile

## Use it in any way you like



### **SmartStation position coordinates at the touch of a key**

With SmartStation you don't need to worry about control points, traverses and resections. Just set up wherever it's convenient, touch the GPS key and let the SmartAntenna do the rest. RTK determines the position to centimeter accuracy within a few seconds at ranges up to 50 km from a reference station. With SmartStation you're ready to go in the shortest possible time; fix the position with GPS1200+ and then survey with the total station.



### **GNSS fully integrated into total station**

With the entire software in the total station, all TPS and GNSS operations are controlled via the TPS keyboard. All data are stored in the same database on the same CompactFlash card. All measurement, status and other information are displayed on the TPS screen. The TPS plug-in battery also powers the ATX1230+ GNSS SmartAntenna and RTK communication device. All components combine perfectly. Everything is integrated into one compact unit – no need for cables, external battery, data logger etc.



### **Use as SmartStation, or as a total station and RTK rover**

With SmartStation's modular design, you can use the equipment in any way you like. Use SmartStation when there are no control points available. Once SmartStation is accurately positioned, take off the SmartAntenna, put it on a pole, and use it with the RX1250 Controller as a fully fledged, ultra light SmartRover. You're totally flexible with SmartStation.

# Leica SmartStation

## A new way to survey

**Remote Area  
Topographic Survey**



Time required for setup

Conventional 100%

SmartStation 50%

### Situation

Survey company has a detail and topographic survey in a remote area. Vegetation makes kinematic RTK difficult and a total station has to be used. There are no control points but there is a reference station 40 km away transmitting RTK.

### The conventional way

Fix a series of control points with GNSS. Transfer the coordinates into the total station. Occupy the points with the total station, orient to other points, and survey the detail. If the total station occupies points before GNSS, results have to be transformed in the office.

Points have to be occupied twice, once with GNSS and once with the total station. Two sets of equipment are needed. Two crews may be needed. It may be necessary to transform results.

### The SmartStation way

Set up SmartStation where it is convenient and determine the position with RTK. Orient to a second point that will be used but is not coordinated yet. Survey the detail from the first station.

Set up at the second point and determine the position with RTK. As the bearing between the points is now known, SmartStation transforms the coordinates of all detail surveyed from the first point. Orient to the first point and survey the detail from the second point.

### The advantages

- Points occupied only once.
- Only SmartStation is needed.
- Only one crew is needed.
- Automatic transformations.
- The survey takes less time.

**Rural Area  
Boundary Survey**



Time required for setup

Conventional 100%

SmartStation 20%

### Situation

A farm boundary has to be surveyed with a total station. The nearest control points are 5 km away. RTK data can be received from a reference station.

### The conventional way

Bring in control by measuring a long traverse from the control points. Traverse close to the boundary and coordinate the boundary markers from the traverse stations.

An open traverse is liable to error. A closed traverse will take twice as long. Even with careful planning, traversing in difficult terrain is complicated and time consuming.

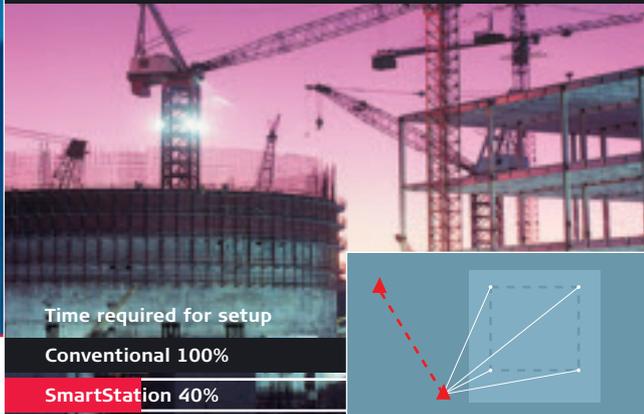
### The SmartStation way

Set up SmartStation at a first point where one or more boundary markers can be seen. Fix the position with RTK. Orient to a second point, which is not yet fixed. Measure angles and distances to the markers. Set up at the second point, fix the position and orient to the first point. All previous measurements are transformed automatically in SmartStation. Survey the markers from the second point. Survey the boundary in this way using pairs or clusters of SmartStation points.

### The advantages

- No long traverses needed.
- Less set ups needed.
- Fewer people required.
- Takes less time.
- Uniform, higher accuracy.

## Construction site Stakeout



### Situation

A large number of markers have to be placed and many components positioned. Control points exist but often get damaged or are covered by equipment, material, vehicles etc. There is a GNSS reference station but, due to obstructions and the type of construction, most points cannot be set out with RTK.

### The conventional way

Stakeout with a total station is possible but difficult and time consuming. Traversing is needed to get around obstructions. Temporary points, which can be used for stakeout, have to be established. The work plan has to be revised constantly. Equipment and material have to be moved, which slows down both the survey and construction work.

### The SmartStation way

Control points are not required. Simply set up SmartStation wherever it's convenient.

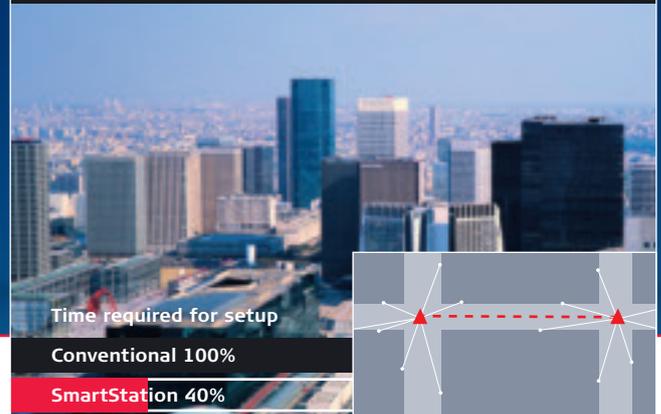
Set up at a first point and fix the position with RTK. Set up at a second point, fix the position, use the first point for orientation, and stake out from the second point.

Work in this way establishing pairs or groups of points from which to stake out. As RTK determines the positions, the groups do not have to be connected by total station measurements.

### The advantages

- Set up where convenient.
- No traversing needed.
- Fewer obstructions.
- Faster stakeout.
- Faster construction work.

## Urban Area Utilities Survey



### Situation

The positions of all manholes, covers, hydrants, distribution boxes etc. for water, gas and electricity have to be determined. High buildings and trees along the roads prevent the use of RTK rover equipment. Many objects are close to buildings or under trees. The city operates GNSS reference stations.

### The conventional way

Control points exist but traffic, parked vehicles and other obstructions make it difficult to set up over them and orient between them. If a standard total station is used, a lot of traversing in a very difficult environment will be necessary. Both careful planning and improvisation will be needed. The work will be awkward and slow.

### The SmartStation way

Set up SmartStation where RTK fixes are possible, such as at road intersections, open spaces and even on the tops of buildings. Use pairs of SmartStation setups as explained in the previous examples. Measure angles and distances to the objects that have to be surveyed.

### The advantages

- Control points not needed.
- No awkward traversing.
- RTK fixes the positions.
- Consistent high accuracy.
- Fast, flexible, convenient.
- Much easier, saves time.

# Leica System 1200 – SmartStation and SmartAntenna

## High accuracy GNSS positioning

Leica's SmartCheck+ algorithms compute static RTK fixes with 5 mm + 0.5ppm horizontal and 10 mm + 0.5 ppm vertical accuracy at ranges up to 50 km. Reliability is 99.99%.



## CompactFlash card

SmartStation, TPS and GNSS data are stored in the same job, in the same database, on the same CompactFlash card.

## ATX1230+ GNSS SmartAntenna

120 Channel receiver incorporating Leica's SmartTrack+ GNSS technology. Strong signals, fast satellite acquisition, superior signal tracking to all GNSS also at low elevations, multipath mitigation and anti-jamming guarantee top performance.

## Plug-in Li-Ion battery

One small plug-in battery provides long-lasting power for SmartStation. Cables and external batteries are

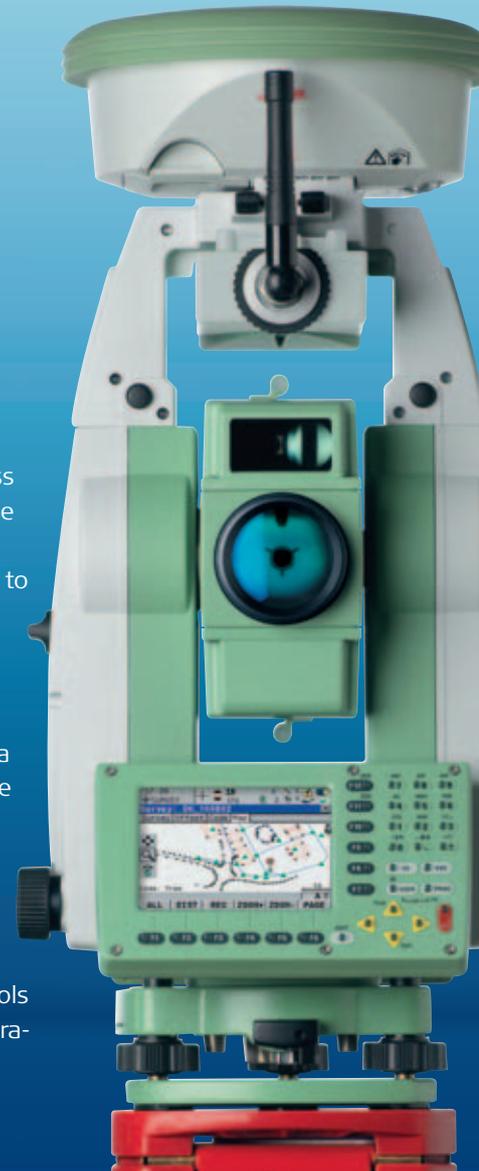


## Bluetooth® integrated

With Bluetooth® wireless technology built into the total station, you can transfer data wirelessly to PDA's and cell phones. The Bluetooth® device in the SmartAntenna facilitates connectivity when the SmartAntenna is used as a stand-alone rover.

## Operated via TPS keyboard

With SmartStation, the TPS keyboard controls all measurements, operations and routines for both TPS and GNSS.



**FUNCTION**  
integrated

SmartStation combines TPS and GNSS in one instrument.

Use TPS and GNSS together or separately, according to the work you do.

Survey 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



**ATX1230+ GNSS  
SmartAntenna  
as stand-alone rover**

When not on SmartStation, the SmartAntenna can be used with the RX1250 as an ultra light, fully fledged SmartRover. Use it on a pole as an RTK rover or on a tripod for logging data and post processing, with all the capabilities and performance of GPS1200+.

**RTK communication  
devices**

There is a wide choice of communication devices with SmartStation. Radio modems, GSM, GPRS and CDMA modules fit neatly into a small, waterproof, clip-on housing.

**GNSS reference stations**

Connect to a reference station and let SmartStation fix its position. Static RTK provides high accuracy in accordance with the accuracy specifications provided by the reference station network.

**GX1200+ and  
GNSS Spider software**

If public reference stations are not conveniently available, set up your own private reference station using the GX1200+ receiver and GNSS Spider software.



**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.



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.**

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**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 R100 / R300):**  
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

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

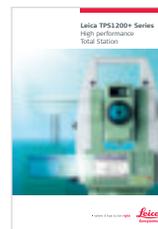
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**Leica SmartPole**  
Product brochure



**Leica GPS1200+**  
Product brochure



**Leica TPS1200+**  
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**Leica System 1200 Software**  
Product brochure



**Leica GRX1200+**  
Product brochure