

# Leica GRX1200+ Series High Performance GNSS Reference Receivers



**GNSS**  
future proof



- when it has to be **right**

**Leica**  
Geosystems

# Leica GRX1200+ Series

## For permanent reference stations

The Leica GRX1200+ Series, part of Leica's future proof System 1200, is designed specifically for use as reference stations. GNSS reference stations using the GRX1200+ are more accurate, more powerful, more versatile and more reliable than ever before, whilst being easier to set up and operate. Invest today in future proof GNSS technology and be sure that your equipment can track all satellites today and tomorrow.



### SmartTrack+

#### Best GNSS and RTK technology

The Leica GRX1200+ Series incorporates an ultra precise GNSS (Global Navigation Satellite System) measurement engine that supports both modernized GPS, GLONASS, Galileo and Compass.

The GRX1200+ Series provides:

- Acquisition within seconds
- Excellent signal strength
- Reliable tracking to low elevations
- Phase and code multipath suppression
- Jamming resistance
- High precision code and phase measurements up to 20 Hz
- High reliability and robustness
- Low power consumption

The Leica GRX1200+ Series delivers uncorrelated data of the highest quality under all conditions making them ideal for all reference station applications.

Since the GRX1200+ Series is able to track the new multi-frequency signals from modernized GPS (including L5 and L2C), GLONASS and Galileo, your investment is secure.

### Simple and robust data management

Removable and robust industrial-grade CompactFlash cards up to 8 GB are used for logging data, where 1 GB is sufficient for about 55 days (110 days if compressed) of 1 Hz L1+L2 GPS data. There is no need for power-consuming external memory storage, which typically cannot fulfill the tough environmental conditions to which reference stations can be exposed. The memory can be split into primary and ring buffer files for logging at different rates and in files of different lengths. Files can be logged in raw data and/or RINEX format.

### Built-In FTP services

The receiver has an in-built FTP server, allowing simple and quick manual download of data without the need for special software. Or use the FTP Push, a fully automatic upload of data from the receiver to a remote FTP server.

### Ntrip Support

An Ntrip Server is built into the receiver. Using one of the three NET ports, the receiver can be set up as a real-time reference connected to GNSS Spider or the Internet. Real-time data can be sent to the Ntrip Caster.

### RTK and DGPS output

The Leica GRX1200+ Series provides all the information required for precise surveying with all types of RTK and GIS rovers. They output RTK and DGPS data for transmission from the site by radio or GSM/GPRS Phone, or for distribution from a control center by radio, phone or Internet. Leica, Leica 4G, CMR, CMR+, RTCM versions 2.x and 3.x are supported.

The receivers can transmit two different formats simultaneously on two different frequencies or using two different media (e.g. radio and phone). Time slicing and RTK multiplexing are supported.

### Benefits

- High accuracy data
- Tracking up to 20 Hz
- Low power consumption
- Removable memory
- Simple configuration
- Powerful and secure web interface



### Continuously Operating Reference Stations (CORS)

Today, many organizations in many parts of the world recognize the benefits of establishing GNSS reference stations and networks to support surveying, GIS, construction, geodesy, navigation, and for monitoring natural and man-made structures.



### Web interface

Use a web browser to securely and conveniently control and monitor your GRX1200+ Series receiver from any computer connected to the same network or the Internet. Have the receiver push raw data or RINEX files to your FTP site for distribution to users. Get notified by the onboard SMTP server in case of important system events.



### Well trained specialists World-wide support

With support and service engineers in all areas of the world, Leica Geosystems can help you to define your requirements and to set up powerful, easy-to-use GNSS reference stations and networks. Just call your dealer or contact us directly.



### AX1203+ GNSS Triple Frequency Antenna for surveying applications

The AX1203+ GNSS antenna supports modernized GPS, GLONASS and Galileo and is suitable for single reference stations and RTK networks. The AX1203+ GNSS Antenna provides sub-millimeter phase center accuracy and high quality observations even from low elevation satellites. Its built-in ground plane effectively suppresses multipath.



### AT504 GG choke ring antenna Built to IGS standards

For national and continental first-order networks, and for IGS stations, the AT504 GG Dorne & Margolin geodetic choke-ring antenna will usually be required. Built to IGS standards, this antenna suppresses multipath, has excellent phase center stability and, when used with the Leica GRX1200+ Series delivers GPS and GLONASS observables of the highest quality.



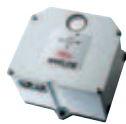
### AR25 choke ring antenna 4 Constellation GNSS Antenna

The revolutionary 3D AR25 choke ring antenna sets new standards in low elevation tracking and multipath reduction. The AR25 antenna has been designed for all existing and currently planned signals of the GPS, GLONASS, Galileo and Compass systems. The robust, high performance AR25 uses a new ultra-wideband Dorne-Margolin element.

## GRX1200+ Series – Technical Data

<b>GNSS Technology</b>	
GRX1200+	SmartTrack+, Triple frequency, 16 L1+16 L2+16 L5 GPS, 4SBAS
GRX1200+ GNSS	SmartTrack+, Triple frequency, 120 channels, L1/L2/L5 GPS, L1/L2 GLONASS, E1/E5a/E5b/Alt-BOC Galileo, Compass <sup>1</sup> 4SBAS
<b>SmartTrack+ Advanced GNSS measurement technology</b>	Time needed to acquire all satellites after switching on: typically 50 seconds. Re-acquisition of satellites after loss of lock: typically within 1 second. Very high sensitivity: acquires more than 99% of all possible observations above 10 degrees elevation. Very low signal noise. Robust tracking. Tracks weak signals to low elevations and in adverse conditions. Multipath mitigation. Jamming resistant.
<b>Measurement precision:</b>	
Carrier phase	L1: 0.2 mm rms L2: 0.2 mm rms
Code (pseudorange)	L1: 20 mm rms L2: 20 mm rms
<b>Status indicators</b>	3 LED indicators for power, tracking and memory.
<b>Web &amp; FTP Services</b>	Control and configuration of the receiver over a web browser through Ethernet or Serial PPP. Security by SSL and access management. FTP access to receiver memory, FTP push*, Email notification.
<b>Optional</b>	Leica GNSS Spider and/or Leica SpiderWeb
<b>Control software</b>	For managing single stations and RTK networks.
<b>Weight</b>	1.2 kg
<b>Temperature range</b>	ISO9022, MIL-STD-810F
Operating	-40° C to + 65° C
Storage	-40° C to + 80° C
<b>Humidity</b>	ISO9022, MIL-STD-810F Up to 100%
<b>Waterproof</b>	MIL-STD-810F Temporary submersion to 1 m
<b>Rain, dust, sand, wind</b>	MIL-STD-810F, IP67/IP57 Sealed against wind blown rain, sand, and dust

\*Optional



### Meteorology and tilt sensors connect to receivers

Meteorological and tilt sensors, such as the Leica Nivel210, can be connected to Leica GRX1200+ Series receivers. Meteorological and tilt data are logged and downloaded together with GNSS data.



### GRX1200+ Standard GPS receiver

The GRX1200+ is the ideal GPS receiver. With an Ethernet port for easy LAN/WAN connectivity, two power ports, four serial ports, an antenna port, an external frequency input port for an external oscillator and a pulse per second output port it provides all the connection options that you need. IP-port specific access restriction and SSL ensure Internet security. Upgradable to GRX1200+ GNSS when the additional signals are needed.



### GRX1200+ GNSS Full GNSS receiver

The GRX1200+ GNSS has all the functions of the GRX1200+ but also supports modernized GPS, GLONASS and Galileo tracking thereby enabling it to provide a full range of corrections for current and future rovers. Multi-frequency and multi-GNSS measurements significantly increases positioning accuracy and reliability. The GRX1200+ GNSS fulfills the most demanding reference station requirements.

<b>Shock / drop onto hard surface</b>	Withstand 1.0 m drop	
<b>Vibrations</b>	ISO9022, MIL-STD-810F Withstand vibrations, no loss of lock	
<b>Supply voltage</b>	Nominal 12 V DC	
External power input	10.5 V to 28 V DC	
2 power ports	1 primary, 1 back-up	
	<b>GRX1200+</b>	<b>GRX1200+ GNSS</b>
<b>Power consumption</b>	3.3 W	3.6-4.0 W
<b>Ports</b>		
External power	2	2
Serial	4	4
Antenna	1	1
For optional Controller	1	1
Ethernet	1	1
PPS output	1	1
Event input	1	1
External oscillator	1	1
<b>Raw data logging</b>	•	•
Onboard RINEX logging*	•	•
<b>Data streaming</b>		
<b>RTK and DGPS</b>		
Leica for SmartStation	•	•
Leica, Leica 4G, CMR, CMR+	•	•
RTCM v2.1/2.2/2.3/3.0/3.1	•	•
<b>Other data</b>		
Leica LB2 raw data	•	•
BINEX	•	•
NMEA 0183	•	•
<b>NTRIP</b>		
Integrated NTRIP server	•	•
Simultaneous RTK transmission	From 2 ports, identical or different formats	

<sup>1</sup>The Compass signal is not finalized, although, test signals have been tracked with GPS1200+ receivers in a test environment. As changes in the signal structure may still occur, Leica Geosystems cannot guarantee full Compass compatibility.



## Numerous output, connection and communication options

Leica GRX1200+ Series stations and networks are fully scalable. You can install what you need today, and add on and expand later as requirements change and increase. Your initial investment is always secure.

### Exceptionally rugged and reliable

The Leica GRX1200+ Series has a strong magnesium housing and is designed to MIL specifications to withstand the roughest use and the most severe environments. These low power receivers operate throughout a wide temperature range, are protected against temporary submersion in water, wind driven rain, sand and dust.

The Leica GRX1200+ Series will operate 24 hours a day, 365 days a year, and continue to supply top quality data. It is built to be tough, to be left unattended in remote, hostile environments.

### For permanent installations and campaigns

Why does the GRX1200+ Series look similar to a System1200 surveying receiver? Because it combines the best of the reference station



and the surveying worlds: the Internet connectivity, data logging and data distribution features of a reference station and the durability, flexibility and low power consumption of a field system. As a permanent reference station, the GRX1200+ Series receivers integrate seamlessly into a Leica GNSS Spider network for a wide range of reference station applications.

With the optional RX controller, the GRX1200+ Series is also the ideal choice for static raw data logging campaigns. Attach the RX for initial configuration and to start logging, then remove it for the rest of the measurement time. Compared to fixed front panels this saves power consumption and is also more secure. You will also benefit from its robust and field proven magnesium housing, its low power consumption and the wide range of System 1200 accessories.

### Leica GNSS Spider Reference Station software

Leica GNSS Spider is a new, advanced and affordable software package for controlling and operating GNSS reference stations and RTK networks. A single server running Leica GNSS Spider software can control many receivers. PCs are not required at the stations, reducing infrastructure costs, power requirements and points of failure.

Leica GNSS Spider controls the receivers for data logging and RTK. It manages and monitors all received data and provides Network RTK services, with secure RTK data distribution and user management.

Once started, Leica GNSS Spider stations and networks with Leica GRX1200+ Series receivers run completely automatically supplying GNSS services over entire regions, states and even countries.

Whether providing corrections from just a single reference station, or an extensive range of services from a nationwide RTK network – innovative reference station solutions from Leica Geosystems offer tailor-made yet scalable systems, designed for minimum operator interaction whilst providing maximum user benefit. In full compliance with international standards, Leica's proven and reliable solutions are based on the latest technology.

Precision, value, and service from Leica Geosystems.

**When it has to be right.**

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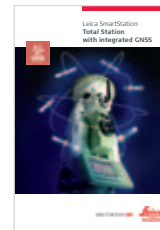
**Leica GRX1200+ Series**  
Technical Data



**Leica Reference Stations**  
Equipment list



**Leica GNSS Spider**  
Product brochure



**Leica SmartStation**  
Product brochure



**Leica GPS1200+ Series**  
Product brochure



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

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

**Leica Geosystems AG**  
Heerbrugg, Switzerland  
[www.leica-geosystems.com](http://www.leica-geosystems.com)

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