

Provided by Xpert Survey Equipment  
 Click [Leica GX1230](#) for Product Info and Updated Pricing

# Leica GX1230

## Technical specifications and system features



GPS1200+ receivers	GX1230+ GNSS/ ATX1230+ GNSS	GX1220+ GNSS	GX1230+	GX1220+	GX1210+
<b>GNSS technology</b>	SmartTrack+	SmartTrack+	SmartTrack	SmartTrack	SmartTrack
<b>Type</b>	Triple frequency	Triple frequency	Dual frequency	Dual frequency	Single frequency
<b>Channels</b>	120 channels L1/L2/L5 GPS L1/L2 GLONASS E1/E5a/ E5b/ Alt-BOC Galileo Compass <sup>1</sup> 4 SBAS	120 channels L1/L2/L5 GPS L1/L2 GLONASS E1/E5a/ E5b/ Alt-BOC Galileo Compass <sup>1</sup> 4 SBAS (with DGPS option)	16 L1 + 16 L2 GPS 4 SBAS	16 L1 + 16 L2 GPS 4 SBAS (with DGPS option)	16 L1 GPS 4 SBAS (with DGPS option)
<b>Upgrade to GX1230+ GNSS</b>	-	Yes	Yes	Yes	Yes
<b>RTK</b>	SmartCheck+	No	SmartCheck	No	No
<b>Status indicators</b>	3 LED indicators for GX1200+: power, tracking, memory				

GPS1200+ receivers	GX1230+ (GNSS)/ GX1220+ (GNSS)	GX1210+	ATX1230+ GNSS
<b>Ports</b>	1 power port, 3 serial ports, 1 controller port, 1 antenna port		1 power/controller port, Bluetooth <sup>®</sup> Wireless-Technology port
<b>Supply voltage,</b> <b>Consumption</b>	Nominal 12 VDC 4.6 W receiver + controller + antenna		Nominal 12 VDC 1.8 W
<b>Event input and PPS</b>	Optional: 1 PPS output port 2 event input ports	Optional: 1 PPS output port 2 event input ports	
<b>Standard antenna</b>	SmartTrack+ AX1203+ GNSS	SmartTrack AX1201	SmartTrack+ ATX1230+ GNSS
<b>Built-in groundplane</b>	Built-in groundplane	Built-in groundplane	Built-in groundplane

The following apply to all receivers except where stated.

<b>Power supply</b>	Two Li-Ion 4.4 Ah/7.4 V plug into receiver. One Li-Ion 2.2 Ah/7.4 V plugs into ATX1230+ GNSS and RX1250.
<b>Plug-in Li-Ion batteries</b>	Power receiver + controller + SmartTrack antenna for about 17 hours (for data logging). Power receiver + controller + SmartTrack antenna + low power radio modem or phone for about 11 hours (for RTK/DGPS). Power SmartAntenna + RX1250 controller for about 6 hours (for RTK/DGPS)
<b>External power</b>	External power input 10.5 V to 28 V.
<b>Weights</b>	Receiver 1.20 kg. Controller 0.48 kg (RX1210) and 0.75 kg (RX1250). SmartTrack antenna 0.44 kg. SmartAntenna 1.12 kg. Plug-in Li-Ion battery 0.11 kg (2.2 Ah) and 0.2 kg (4.4 Ah) Carbon fiber pole with SmartTrack antenna and RX1210 controller: 1.80 kg. All on pole: carbon fiber pole with SmartAntenna, RX1250 controller and plug-in batteries: 2.74 kg.

<b>Temperature</b>	Operation: Receiver	-40° C to +65° C
ISO9022	Antennas	-40° C to +70° C
MIL-STD-810F	Controllers	-30° C to +65° C
	Controller RX1250c	-30° C to +50° C
	Storage: Receiver	-40° C to +80° C
	Antennas	-55° C to +85° C
	Controllers	-40° C to +80° C
	Controller RX1250c	-40° C to +80° C
<b>Humidity</b>	Receiver, antennas and controllers	
ISO9022, MIL-STD-810F	Up to 100 % humidity.	
<b>Protection against water, dust and sand</b>	Receiver, antennas and controllers:	
IP67, MIL-STD-810F	Waterproof to 1 m temporary submersion. Dust tight	
<b>Shock/drop onto hard surface</b>	Receiver: withstands 1 m drop onto hard surface. Antennas: withstand 1.5 m drop onto hard surface.	
<b>Topple over on pole</b>	Receiver, antennas and controllers: withstand fall if pole topples over.	
<b>Vibrations</b>	Receiver, antennas and controllers:	
ISO9022	withstand vibrations on large construction machines. No loss of lock.	
MIL-STD-810F		

<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.

<b>SmartTrack+ Advanced GNSS measurement technology</b>	<p>Time needed to acquire all satellites after switching on: typically about 50 seconds.</p> <p>Re-acquisition of satellites after loss of lock (e.g. passing through tunnel): typically within 1 second.</p> <p>Very high sensitivity: acquires more than 99% of all possible observations above 10 degrees elevation.</p> <p>Very low noise. Robust tracking.</p> <p>Tracks weak signals to low elevations and in adverse conditions.</p> <p>Multipath mitigation. Jamming resistant.</p> <p>Measurement precision:</p> <p>Carrier phase on L1: 0.2 mm rms.</p> <p>On L2: 0.2 mm rms.</p> <p>Code (pseudorange) on L1 and L2: 20 mm rms.</p>
<b>SmartCheck+ Advanced, long range RTK technology</b>	<p>Initialization typically 8 seconds.</p> <p>Position update rate selectable up to 20 Hz.</p> <p>Latency &lt; 0.03 secs.</p> <p>Range 40 km or more in favorable conditions.</p> <p>Self checking.</p>
Accuracies	<p>Kinematic</p> <p>Horizontal: 10 mm + 1 ppm</p> <p>Vertical: 20 mm + 1 ppm</p> <p>Static (ISO 17123-8)</p> <p>Horizontal: 5 mm + 0.5 ppm</p> <p>Vertical: 10 mm + 0.5 ppm</p> <p>Reliability: 99.99 % for baselines up to 40 km.</p> <p>Formats supported for transmission and reception: Leica proprietary (Leica, Leica 4G), CMR, CMR+, RTCM V2.1/2.2/2.3/3.0/3.1.</p>
<b>Reference station networks</b>	<p>RTK rover fully compatible with Leica's Spider i-MAX &amp; MAX formats, VRS and Area Correction (FKP) reference station networks.</p>
<b>DGPS</b>	<p>DGPS, includes support of MSAS, WAAS, EGNOS and GAGAN.</p> <p>RTCM V2.1/2.2/2.3/3.0/3.1. formats supported for transmission and reception.</p>
GX1230+ (GNSS), ATX1230+ GNSS, GX1220+ (GNSS) – standard, GX1210+ – optional	<p>Baseline rms: typically 25 cm rms with suitable reference station.</p>
<b>Position update rate and latency</b>	<p>Applies to RTK, DGPS and navigation positions.</p> <p>Update rate selectable from 0.05 sec (20 Hz) to 1 sec.</p> <p>Latency less than 0.03 secs.</p>
NMEA output	<p>NMEA 0183 V3.00 and Leica proprietary.</p>
<b>Post-processing with Leica Geo Office software</b>	<p>Horizontal: 10 mm + 1 ppm, kinematic</p> <p>Vertical: 20 mm + 1 ppm, kinematic</p>
<b>All GPS1200+ receivers</b>	<p>Horizontal: 5 mm + 0.5 ppm, static</p> <p>Vertical: 10 mm + 0.5 ppm, static</p>
<b>Notes on performance and on accuracies</b>	<p>For long lines with long observations</p> <p>Horizontal: 3 mm + 0.5 ppm, static</p> <p>Vertical: 6 mm + 0.5 ppm, static</p> <p>Figures quoted are for normal to favorable conditions. Performance and accuracies can vary depending on number of satellites, satellite geometry, observation time, ephemeris, ionosphere, multipath etc.</p>

<b>Controllers</b>	<p>High contrast, 1/4 VGA display with colour option (RX1250)</p>
<b>RX1210/RX1250</b>	<p>Touch screen, 11 lines x 32 characters.</p> <p>Windows CE 5.0 on RX1250.</p> <p>Full alphanumeric QWERTY keypad.</p> <p>Function keys and user definable keys.</p> <p>Illumination for screen and keys.</p> <p>Can also be used with TPS1200+ for alphanumeric input and extensive coding.</p>
<b>Operation with controller</b>	<p>Via keypad and/or via touch screen.</p> <p>Graphical operating concept.</p> <p>Function keys and user definable keys.</p> <p>All information displayed.</p>
<b>Displayed information</b>	<p>All information displayed: status, tracking, data logging, database, RTK, DGPS, navigation, survey, stakeout, quality, timer, power, geographical, cartesian, grid coordinates etc.</p>
<b>Graphical display of survey</b>	<p>Graphical display (plan) of survey. Zooming.</p> <p>Can access surveyed points directly via touch screen.</p>
<b>Stakeout display</b>	<p>Graphical with zoom.</p>
<b>Operation without controller</b>	<p>Automatic on switching on.</p> <p>LED status indicators.</p>
GX1200+ only	<p>Digital, polar and orthometric.</p> <p>Accuracy: 10 mm + 1 ppm at 20 Hz (0.05 sec) update rate. No degradation with high update rates.</p> <p>For reference stations and static measurements.</p>
<b>Data logging</b>	<p>On CompactFlash cards: 256 MB and 1 GB</p> <p>Optional internal receiver memory: 256 MB.</p>
<b>Capacity</b>	<p>64 MB sufficient for (30 % less for GPS/GLONASS):</p> <p>About 500 hours L1 + L2 data logging at 15 sec rate.</p> <p>About 2 000 hours L1 + L2 data logging at 60 sec rate.</p> <p>About 90 000 RTK points with codes.</p>
<b>Data management</b>	<p>User definable job management.</p> <p>Point identifiers, coordinates, codes, attributes etc.</p> <p>Search, filter and display routines.</p> <p>Multi point averaging.</p> <p>Five types of coding systems cover all requirements.</p>
<b>Coordinate systems</b>	<p>Ellipsoids, projections, geoidal models, coordinate, transformations, transformation parameters, country specific coordinate systems.</p> <p>Fully support of RTCM 3.1 coordinate system transfer.</p>
<b>Application programs</b>	<p>Standard: Full range of COGO functions.</p> <p>Hidden point.</p> <p>Optional: RoadRunner, Reference Line, DTM Stakeout, Reference Plane, Area Division and X-Section Survey, DXF Export, LandXML Export and Volume Calculations</p>
<b>Programmable</b>	<p>User programmable in GeoC++.</p> <p>Users can write and upload programs for their own special requirements and applications.</p>
<b>Communication Data links</b>	<p>One or two of the following devices can be connected: Radio modem, GSM, GPRS, CDMA.</p> <p>Different frequencies and/or formats can be received and transmitted.</p> <p>Time slicing is supported.</p>