Leica Viva GNSS GS14 receiver

Datasheet

Proven GNSS Technology

Built on years of knowledge and experience, the Leica GS14 delivers the hallmarks of Leica GNSS – reliability, availability and accuracy.

- Leica SmartCheck – RTK data-processing to guarantee correct results
- Leica SmartTrack – advanced four constellation tracking guarantees most accurate signals
- Leica xRTK – delivers more positions in difficult environments

Unlimited Series

The Leica GS14 Unlimited is your safe investment for the future.

- Future proof – lean back and observe GNSS modernisation with future proof hardware
- Integrated mobile communications and UHF radio modems (receive and transmit)
- GPS, Glonass, Galileo and BeiDou provide maximum performance. Additional support of BeiDou only and Glonass only positioning.

Rugged

The Leica GS14 is built for the most demanding environments.

- IP68 protection against dust and continuous immersion
- Built for extreme temperatures of –40° C to +65° C
- Integrated mobile communication intenna technology to avoid breaking, losing or forgetting antenna

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- when it has to be right

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Technical Specifications

Leica GS14 GNSS Receiver	Leica GS14 Single Frequency	Leica GS14 Performance	Leica GS14 Professional	Leica GS14 Professional with BeiDou	Leica GS14 Unlimited
Supported GNSS systems					
GPS L2	o	●	●	●	●
GLONASS	o	o	●	●	●
Galileo	o	o	●	●	●
BeiDou	–	–	–	●	●
RTK Performance					
DGPS / RTCM	o	●	●	●	●
RTK unlimited	o	●	●	●	●
Network RTK	o	●	●	●	●
Position Update & Data Recording					
5 Hz positioning	●	●	●	●	●
20 Hz positioning	o	●	●	●	●
Raw data logging	●	●	●	●	●
RINEX logging	o	o	●	●	●
NMEA out	o	o	●	●	●
Additional Features					
RTK reference station functionality	o	●	●	●	●
3.75G Phone modem	●	●	●	●	●
UHF radio modem (receive and transmit)	o	o	o	o	●

● = Standard o = Optional – = not available

GNSS Performance	GNSS technology	Leica patented SmartTrack technology: • Advanced measurement engine • Jamming resistant measurements • High precision pulse aperture multipath correlator for pseudorange measurements • Excellent low elevation tracking • Very low noise GNSS carrier phase measurements with < 0.5 mm precision • Minimum acquisition time
	No. of channels	120 / 500+[1] channels
	Max. simultaneous tracked satellites	Up to 60 Satellites simultaneously on two frequencies
	Satellite signals tracking	• GPS: L1, L2, L2C • GLONASS: L1, L2 • Galileo, QZSS[2] • BeiDou B1, B2 • SBAS: WAAS, EGNOS, GAGAN, MSAS
	Reacquisition time	< 1 sec
	Position latency	Typically 0.02 sec
Measurement Performance & Accuracy	**Accuracy (rms) code differential with DGPS / RTCM[3]**	
	DGPS / RTCM	Typically 25 cm
	Accuracy (rms) with Real-time-Kinematic (RTK)[3]	
	Standard of compliance	Compliance with ISO17123-8
	Single Baseline (< 30 km)	Horizontal: 8 mm + 1 ppm Vertical: 15 mm + 1 ppm
	Network RTK	Horizontal: 8 mm + 0.5 ppm Vertical: 15 mm + 0.5 ppm
	Accuracy (rms) with post processing[3]	
	Static (phase) with long observations	Horizontal: 3 mm + 0.1 ppm Vertical: 3.5 mm + 0.4 ppm
	Static and rapid static (phase)	Horizontal: 3 mm + 0.5 ppm Vertical: 5 mm + 0.5 ppm
	Kinematic (phase)	Horizontal: 8 mm + 1 ppm Vertical: 15 mm + 1 ppm
	On-the-fly (OTF) Initialisation	
	RTK technology	Leica SmartCheck technology
	Reliability	Better than 99.99%[3]
	Time for initialisation	Typically 4 sec[4]
	OTF range	Up to 70 km[2]
	Network RTK	
	Supported RTK network solutions	VRS, FKP, iMAX
	Supported RTK network standards	MAC (Master Auxiliary Concept) approved by RTCM SC 104

[1] The Unlimited series has free future upgrade to 500+ channels.

[2] Support of QZSS is incorporated and will be provided through future firmware upgrade.

[3] Measurement precision, accuracy and reliability are dependent upon various factors including number of satellites, geometry, obstructions, observation time, ephemeris accuracy, ionospheric conditions, multipath etc. Figures quoted assume normal to favourable conditions. Times required are dependent upon various factors including number of satellites, geometry, ionospheric conditions, multipath etc. A full BeiDou and Galileo constellation will further increase measurement performance and accuracy.

[4] Might vary due to atmospheric conditions, signal multipath, obstructions, signal geometry and number of tracked signals.

Leica GS14 GNSS Receiver

Hardware	**Weight & Dimensions**	
	Weight (GS14)	0.93 kg
	Weight	2.90 kg standard RTK rover including controller, batteries, pole and bracket
	Dimension (GS14) (diameter x height)	190 mm x 90 mm
	Environmental Specifications	
	Temperature, operating	–40° C to +65° C, compliance with ISO9022-10-08, ISO9022-11-special, MIL STD 810G Method 502.5 II, MIL STD 810G Method 501.5 II
	Temperature, storage	–40° C to +80° C, compliance with ISO9022-10-08, ISO9022-11-special, MIL STD 810G Method 502.5 I, MIL STD 810G Method 501.5 I
	Humidity	100%, compliance with ISO9022-13-06, ISO9022-12-04 and MIL STD 810G Method 507.5 I
	Proof against: water, sand and dust	IP68 according IEC60529 and MIL STD 81G Method 506.5 I, MIL STD 810G Method 510.5 I and MIL STD 810G Method 512.5 I Protected against blowing rain and dust Protected against temporary submersion into water (max. depth 1,4 m)
	Vibration	Withstands strong vibration during operating, compliance with ISO9022-36-08 and MIL STD 810G Method 514.6 Cat.24
	Drops	Withstands 1.0 m drop onto hard surfaces
	Functional shock	40 g / 15 to 23 msec, compliance with MIL STD 810G Method 516.6 I No loss of lock to satellite signal when used on a pole set-up and submitted to pole bumps up to 100 mm
	Topple over	Withstands topple over from a 2 m survey pole onto hard surfaces
	Power & Electrical	
	Supply voltage	Nominal 12 V DC Range 10.5 – 28 V DC
	Power consumption	Typically: 2.0 W, 270 mA UHF transmit: 3.3 W, 270 mA
	Internal power supply	Recharge & removable LI-Ion battery, 2.6 Ah / 7.4 V, 1 battery fit into receiver
	Internal power supply, operation time	• 10.00 h static observations[5] • 7.00 h receiving RTK data with internal UHF radio[5] • 5.00 h transmitting RTK data with internal UHF radio[5] • 6.00 h receiving / transmitting RTK data with internal modem[5]
	External power supply	Rechargeable external NiMh battery 9 Ah / 12 V
	Certifications	Compliance to: FCC, CE, PTCRB Local and operator specific approvals (as IC Canada, C-Tick Australia, Japan, China, AT&T)
Memory & Data Recording	**Memory**	
	Memory medium	Removable microSD Card: 1 GB
	Data capacity	1 GB is typically sufficient for about GPS & GLONASS (8+4 satellites) 280 days raw data logging at 15 s rate
	Data Recording	
	Type of data	Onboard recording of: • Leica GNSS raw data • RINEX data
	Recording rate	Up to 20 Hz
User Interface	Buttons	• ON / OFF button • Function button
	Button functionality	Function button: • Easy switch between Rover / Base mode • Easy "Here" positioning functionality
	Led status indicator	*Bluetooth*®, position, RTK Rover status, RTK Base status, data logging, internal power status, external power status
	Additional user interface	Additional web interface functionality provides full status indicator and configuration options
Communications	Communication ports	1 x USB / RS232 Lemo 1 x *Bluetooth*® port, *Bluetooth*® v2.00+ EDR, class 2
	Built-in Data Links	
	Radio modem	• Fully integrated, fully sealed receive and transmit radios • SATEL, Pacific Crest and TrimTalk support • 403 – 473 MHz bandwidth • Output power 1W max.
	UHF antenna options	• External UHF antenna connector (Type QN)
	GSM / UMTS phone modem	• Fully integrated, fully sealed 3.75G phone modem • Quad-Band GSM / GPRS: 850 / 900 / 1800 / 1900 MHz • Penta-Band UMTS: 800 / 850 / 900 / 1900 / 2100 MHz • DynDNS service support – Base station supports up to 10 rovers via TCP/IP
	GSM / UMTS antenna	• Integrated GSM / UMTS antenna
	External Data Links	
	Radio modems	Support of any suitable UHF / VHF radio
	GSM / UMTS / CDMA phone modems	Support of any suitable GSM / GPRS / UMTS / CDMA modem
	Landline phone modems	Support of any suitable landline phone modem
	Communication Protocols	
	Real-time data formats for data transmission and reception	Leica proprietary formats (Leica, Leica 4G) CMR, CMR+
	Real-time data formats according RTCM standard for data transmission and reception	RTCM 2.2, RTCM 2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2 MSM Full support of RTCM 3 Transformation Message
	NMEA output	NMEA 0183 V 4.00 and Leica proprietary

[5] Might vary with temperatures, age of battery, transmit power of data link device.

Scan with your iPhone or iPad to get the Leica Viva GNSS App or visit www.leica-geosystems.com/viva-gnss

Whether you want to stake-out an object on a construction site or you need accurate measurements of a tunnel or a bridge; whether you want to determine the area of a parcel of land or need the position of a power pole or to capture objects for as-built maps – you need reliable and precise data.

Leica Viva combines a wide range of innovative products designed to meet the daily challenges for all positioning tasks. The simple yet powerful and versatile Leica Viva hardware and software innovations are redefining state-of-the-art technology to deliver maximum performance and productivity. Leica Viva gives you the inspiration to make your ambitious visions come true.

When it has to be right.

Swiss Technology
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