Leica Viva GNSS GS25 receiver
Datasheet

Proven Technology

Leica Viva GNSS is built on years of knowledge and experience – reliability, availability and accuracy are the hallmarks of Leica Geosystems. You can trust even the most demanding tasks to the Leica Viva GS25. **Your benefit – complete confidence to maximise productivity.**

Extreme Reliability

Leica Viva GS25 is built to the highest standards for the most extreme environments. With its internal battery charger you can trust the Leica Viva GS25 to perform, whether on a glacier or in a desert. **Your benefit – trust in a sensor that can be used anywhere.**

Unlimited Series

Lean back and observe GNSS modernisation with Leica Viva GS25 Unlimited. Future signals are all supported and SmartLink bridges RTK communication gaps up to 10 minutes. **Your benefit – safe investment in future proof GNSS hardware.**

- when it has to be **right**

Leica Geosystems

Technical Specifications

Leica GS25 GNSS Receiver	Leica GS25 Basic	Leica GS25 Professional	Leica GS25 Unlimited
Supported GNSS Systems			
GPS L2	●	●	●
GPS L5	○	●	●
GLONASS	○	●	●
Galileo	○	●	●
BeiDou	○	○	●
RTK Performance			
DGPS / RTCM	○	●	●
RTK up to 5 km	○	●	●
RTK unlimited	○	●	●
Network RTK	○	●	●
Leica Lite RTK	○	●	●
SmartLink (L-band)	○	○	●
Position Update & Data Recording			
5 Hz positioning	○	●	●
20 Hz positioning	○	●	●
Raw data logging	○	●	●
RINEX logging	○	●	●
NMEA out	○	●	●
Additional Features			
RTK Reference Station functionality	○	●	●
	● = Standard	○ = Optional	

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, L5 • GLONASS: L1, L2 • BeiDou: B1, B2 • Galileo: E1, E5a, E5b, Alt-BOC • QZSS: L1, L2, L5[2] • L-band • SBAS: WAAS, EGNOS, GAGAN, MSAS
GNSS measurements	Fully independent code and phase measurements of all frequencies • GPS: carrier phase full wave length, Code (C/A, P, C Code) • GLONASS: carrier phase full wave length, Code (C/A, P narrow Code) • Galileo: carrier phase full wave length, Code • BeiDou: carrier phase full wave length, Code
Reacquisition time	< 1 sec
Position latency	Typically 0.02 sec

GNSS Antennas

Standard Survey Antennas		
Types	**AS10 (triple frequency antenna)**	**AS05 (single frequency antenna)**
GNSS technology	SmartTrack	SmartTrack
Satellite signal tracking	GPS: L1, L2, L5 GLONASS, Galileo, BeiDou	GPS: L1 GLONASS: L1, Galileo: E1, BeiDou: B1
Ground plane	Built-In Ground plane	Built-In Ground plane
Dimensions (diameter x height)	170 mm x 62 mm	170 mm x 62 mm
Weight	0.44 kg	0.44 kg
Gain	29±3 dbi	Typically 27 dbi
Temperature operating	–40° C to +70° C	
Temperature storage	–55° C to +85° C	
Humidity	100%	
Protection against water, sand and dust	IP68 according IEC60529 and MIL STD 810G Method 506.5 I, MIL STD 810G Method 510.5 I and MIL STD 810G Method 512.5 I	
Drops & topple over	Withstands 1.5 m drop onto hard surfaces and survives topple over from a 2 m pole onto hard surfaces	
Vibration	Withstands vibrations during operation on large civil construction machines Compliance with ISO9022-36-08 and MIL-STD 810G Method 514.6 Cat24	

Choke-ring Antennas	
Types	**AR25**
Satellite signal tracking	GPS: L1, L2, L5 GLONASS, Galileo, BeiDou
Design	Dorne Margolin, JPL design
Protection radome	Optional
Dimensions (diameter x height)	380 mm x 200 mm
Weight	7.6 kg
Gain	Typically 40 dbi

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 of OTF initialisation	Better than 99,99%[3]
Time for initialisation	Typically 4 sec[4]
OTF range	Up to 70 km[2]
Network RTK	
NetWork technology	Leica SmartRTK technology
Supported RTK network solutions	VRS, FKP, iMAX
Supported RTK network standards	MAC (Master Auxiliary Concept) approved by RTCM SC 104

Leica GS25 GNSS Receiver

Hardware	**Weight & Dimensions**	
	Weight (GS25)	1.84 kg
	Dimension (GS25)	220 mm x 200 mm x 94 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 810G 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 150 mm
	Power & Electrical	
	Supply voltage	Nominal 12V DC Range 10.5 – 28V DC
	Power consumption	Typically: 3.4 W w/o RTK
	Internal power supply	Recharge & removable LI-Ion battery, 5.8 Ah / 14.8 V
	External power supply	External power supply, battery can be charged inside the GS25
	Certifications	Compliance to: FCC, CE Local approvals (as IC Canada, C-Tick Australia, Japan, China)
Memory & Data Recording	**Memory**	
	Memory medium	Removable SD card: 1 GB
	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 • 6 Function buttons
	Display	High resolution display: • Easy switch between Rover / Base mode • Easy "Here" positioning functionality • Provides full status • Indicator & configuration options
	Led status indicator	*Bluetooth*®, position, RTK status, data logging, detailed power status
	Additional user interface	Integrated web interface functionality provides full status indicator and configuration options
Communications	Communication ports	3 x serial RS232 Lemo 1 x USB / RS232 Lemo 1 x 5pin Lemo external power 1 x *Bluetooth*® port, *Bluetooth*® v 2.00 + EDR, class 2 1 x PPS output 1 x Event input
	Simultaneous data links	• Up to 3 data links can be attached and used simultaneously • 2 real-time output interfaces via independent ports, providing identical or different RTK / RTCM formats
	PPS output	Accuracy: 120 ns (3σ) Output voltage: 5 V = High Impedance: 50 Ω Pulse length: 1ms Socket: LEMO ERN.OS.250.CTL
	Event input	Accuracy: 120 ns (1σ) Pulse type: TTL, positive or negative going pulse Pulse length: 150 ns at minimum Voltage: Typically 5 V (range 3 - 10 V) Voltage level: Minimum 2.4 V = High Maximum 0.6 V = Low Pin definition: Centre = signal, Case = ground Socket: LEMO HGP.00.250.CTL
	Built-in Data Links	
	Radio modems	• Fully integrated, fully sealed receive / transmit radios • User exchangeable device • SATEL, Pacific Crest and TrimTalk support • 390 – 470 MHz bandwidth • Transmit power: 0.5 – 1.0 W
	GSM / UMTS phone modem	• Fully integrated, fully sealed phone modem • User exchangeable device • Tri-Band UMTS / HSDPA: 850 / 1900 / 2100 MHz • Quad-Band GSM / GPRS: 850 / 900 / 1800 / 1900 MHz • DynDNS service support – Base station supports up to 10 rovers via TCP/IP
	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 2.1, 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

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

[2] Support of QZSS is incorporated and will be provided through 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, Galileo and GPS L5 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.

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
by Leica Geosystems

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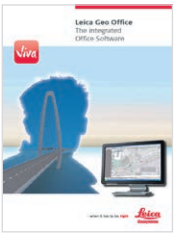
Leica Viva
Overview brochure

Leica SmartWorx Viva
Product brochure



Leica Viva LGO
Product brochure

Leica Viva SmartPole
Product brochure

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