Leica Viva GNSS GS15 receiver

Datasheet









Proven GNSS technology

Built on years of knowledge and experience, the Leica GS15 delivers the hallmarks of Leica GNSS – reliability and accuracy.

- SmartCheck RTK data-processing to guarantee correct results
- SmartTrack advanced four constellation tracking of all GNSS satellites today and tomorrow
- SmartRTK delivers consistent results in all networks



Work as you want to

The Leica GS15 is designed to suit any surveying task.

- Built-in exchangeable communication devices for field base stations and RTK rovers with removable SIM cards
- Fully scalable sensor allows you to buy only what you need today and upgrade with additional functionality as you need it
- Integrated web server to configure the logging of Leica or RINEX raw data and measure with one button press in the field



Rugged

The Leica GS15 is built for the most demanding environments.

- IP67 protection against dust and immersion to 1 m
- Built for extreme temperatures of -40°C to +65°C
- Integrated intenna technology to avoid breaking, losing or forgetting antenna



Technical Specifications

Leica GS15 GNSS receiver	Leica GS15 Single Frequency	Leica GS15 Basic	Leica GS15 Limited	Leica GS15 Performance	Leica GS15 Professional			
Supported GNSS Systems								
GPS L2	0	•	•	•	•			
GPS L5	0	0	0	0	•			
GLONASS	0	0	0	0	•			
Galileo	0	0	0	0	•			
RTK performance								
DGPS / RTCM	0	0	•	•	•			
RTK up to 5 km	0	0	•	•	•			
RTK unlimited	0	0	0	•	•			
Network RTK	0	0	0	•	•			
Leica Lite RTK	0	0	0	0	•			
Position update & data recording								
5 Hz positioning	•	0	•	•	•			
20 Hz positioning	0	0	0	•	•			
Raw data logging	•	0	•	•	•			
RINEX logging	0	0	0	0	•			
NMEA out	0	0	0	0	•			
Additional features								
RTK Reference Station functionality	0	0	0	•	•			
KIN RETERICE Station functionality	• = Standard		O = Optional		•			
GNSS Performance	GNSS technology	Advanced r Jamming re High precis Excellent lo Very low no	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 channels							
	Max. simultaneous tracked sat	Aax. simultaneous tracked satellites Up to 60 Satellites simultaneously on two frequencies						
	• GLONASS • Galileo [T • Galileo: E • Compass		;PS: L1, L2, L2C, L5 ;IONASS: L1, L2 ;Ialileo (Test): GIOVE-A, GIOVE-B ;Ialileo: E1, E5a, E5b, Alt-BOC ompass ¹ BAS: WAAS, EGNOS, GAGAN, MSAS					
	GNSS measurements	Fully indepen • GPS: carrier • GLONASS: o	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					
	Reacquisition time	isition time < 1 sec						
Measurement Performance & Accuracy	Accuracy (rms) Code differential with DGPS / RTCM ² DGPS / RTCM Typically 25 cm (rms)							
	Accuracy (rms) with Real-Time (RTK) ²							
	Standard of compliance		Compliance with ISO17123-8					
	Rapid static (phase)	Horizontal: 5	Horizontal: 5 mm + 0.5 ppm (rms)					
	Static mode after initialization		/ertical: 10 mm + 0.5 ppm (rms)					
	Kinematic (phase)							
	Moving mode after initialization	Moving mode after initialization Vertical: 20 mm + 1 ppm (rms)						
	Woving mode after initialization		FF (-7	Accuracy (rms) with Post Processing ²				
		ocessing ²	, , , , , , , , , , , , , , , , , , ,					
	Accuracy (rms) with Post Pr Static (phase) with long	Horizontal: 3	mm + 0.1 ppm (rms)					
	Accuracy (rms) with Post Pr	Horizontal: 3 Vertical: 3.5 r Horizontal: 5	mm + 0.1 ppm (rms) mm + 0.4 ppm (rms) mm + 0.5 ppm (rms)					
	Accuracy (rms) with Post Pr Static (phase) with long observations	Horizontal: 3 Vertical: 3.5 r Horizontal: 5 Vertical: 10 r Horizontal: 1	mm + 0.1 ppm (rms) mm + 0.4 ppm (rms) mm + 0.5 ppm (rms) mm + 0.5 ppm (rms) 0 mm + 1 ppm (rms)					
	Accuracy (rms) with Post Pr Static (phase) with long observations Static and rapid static (phase) Kinematic (phase)	Horizontal: 3 Vertical: 3.5 r Horizontal: 5 Vertical: 10 m Horizontal: 1 Vertical: 20 m	mm + 0.1 ppm (rms) mm + 0.4 ppm (rms) mm + 0.5 ppm (rms) mm + 0.5 ppm (rms)					
	Accuracy (rms) with Post Pr Static (phase) with long observations Static and rapid static (phase) Kinematic (phase) On the Fly (OTF) Initialization	Horizontal: 3 Vertical: 3.5 r Horizontal: 5 Vertical: 10 m Horizontal: 1 Vertical: 20 m	mm + 0.1 ppm (rms) mm + 0.4 ppm (rms) mm + 0.5 ppm (rms) mm + 0.5 ppm (rms) 0 mm + 1 ppm (rms) mm + 1 ppm (rms)					
	Accuracy (rms) with Post Pr Static (phase) with long observations Static and rapid static (phase) Kinematic (phase) On the Fly (OTF) Initialization	Horizontal: 3 Vertical: 3.5 r Horizontal: 5 Vertical: 10 n Horizontal: 1 Vertical: 20 n on Leica SmartC	mm + 0.1 ppm (rms) mm + 0.4 ppm (rms) mm + 0.5 ppm (rms) mm + 0.5 ppm (rms) 0 mm + 1 ppm (rms) um + 1 ppm (rms) heck+ technology					
	Accuracy (rms) with Post Pr Static (phase) with long observations Static and rapid static (phase) Kinematic (phase) On the Fly (OTF) Initialization RTK technology Reliability of OTF initialization	Horizontal: 3 Vertical: 3.5 r Horizontal: 5 Vertical: 10 n Horizontal: 1 Vertical: 20 n On Leica SmartC Better than 9	mm + 0.1 ppm (rms) mm + 0.4 ppm (rms) mm + 0.5 ppm (rms) mm + 0.5 ppm (rms) 0 mm + 1 ppm (rms) mm + 1 ppm (rms) mm + 1 ppm (rms)					
	Accuracy (rms) with Post Pr Static (phase) with long observations Static and rapid static (phase) Kinematic (phase) On the Fly (OTF) Initializatio RTK technology Reliability of OTF initialization Time for initalization	Horizontal: 3 Vertical: 3.5 r Horizontal: 5 Vertical: 10 r Horizontal: 1 Vertical: 20 r on Leica SmartC Better than 9 Typically 8 se	mm + 0.1 ppm (rms) mm + 0.4 ppm (rms) mm + 0.5 ppm (rms) mm + 0.5 ppm (rms) 0 mm + 1 ppm (rms) m + 1 ppm (rms) m + 1 ppm (rms) heck+ technology 9,99% ² c ²					
	Accuracy (rms) with Post Pr Static (phase) with long observations Static and rapid static (phase) Kinematic (phase) On the Fly (OTF) Initialization RTK technology Reliability of OTF initialization Time for initalization OTF range	Horizontal: 3 Vertical: 3.5 r Horizontal: 5 Vertical: 10 n Horizontal: 1 Vertical: 20 n On Leica SmartC Better than 9	mm + 0.1 ppm (rms) mm + 0.4 ppm (rms) mm + 0.5 ppm (rms) mm + 0.5 ppm (rms) 0 mm + 1 ppm (rms) m + 1 ppm (rms) m + 1 ppm (rms) heck+ technology 9,99% ² c ²					
	Accuracy (rms) with Post Pr Static (phase) with long observations Static and rapid static (phase) Kinematic (phase) On the Fly (OTF) Initialization RTK technology Reliability of OTF initialization Time for initalization OTF range Network RTK	Horizontal: 3 Vertical: 3.5 Horizontal: 5 Vertical: 10 Horizontal: 1 Vertical: 20 n Leica SmartC Better than 9 Typically 8 se up to 50 km³	mm + 0.1 ppm (rms) mm + 0.4 ppm (rms) mm + 0.5 ppm (rms) mm + 0.5 ppm (rms) 0 mm + 1 ppm (rms) m + 1 ppm (rms) heck+ technology 19,99% ² c ³					
	Accuracy (rms) with Post Pr Static (phase) with long observations Static and rapid static (phase) Kinematic (phase) On the Fly (OTF) Initialization RTK technology Reliability of OTF initialization Time for initalization OTF range Network RTK NetWork technology	Horizontal: 3 Vertical: 3.5 Horizontal: 5 Vertical: 10 Horizontal: 1 Vertical: 20 n Leica SmartC Better than 9 Typically 8 se up to 50 km³ Leica SmartR	mm + 0.1 ppm (rms) nm + 0.4 ppm (rms) mm + 0.5 ppm (rms) nm + 0.5 ppm (rms) nm + 1 ppm (rms) nm + 1 ppm (rms) heck+ technology 19,99%² C² TK technology					
	Accuracy (rms) with Post Pr Static (phase) with long observations Static and rapid static (phase) Kinematic (phase) On the Fly (OTF) Initialization RTK technology Reliability of OTF initialization Time for initalization OTF range Network RTK	Horizontal: 3 Vertical: 3.5 r Horizontal: 5 Vertical: 10 n Horizontal: 1 Vertical: 20 n Leica SmartC Better than 9 Typically 8 se up to 50 km³ Leica SmartR Leica SmartR	mm + 0.1 ppm (rms) nm + 0.4 ppm (rms) mm + 0.5 ppm (rms) nm + 0.5 ppm (rms) nm + 1 ppm (rms) nm + 1 ppm (rms) heck+ technology 19,99%² C² TK technology					

- ¹ The Compass signal is not finalized, although, test signals have been tracked in a test environment. As changes in the signal structure may still occur, Leica Geosystems cannot guarantee full Compass compatibility.
- 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 favorable conditions. Times required are dependent upon various factors including number of satellites, geometry, ionospheric conditions, multipath etc. GPS and GLONASS can increase performance and accuracy by up to 30% relative to GPS only. A full Galileo and GPS L5 constellation will further increase measurement performance and accuracy.
- ³ Might vary due to atmospheric conditions, signal multipath, obstructions, signal geometry and number of tracked signals.
- 4 Might vary with temperatures, age of battery, transmit power of data link device.

Leica GS15 GNSS receiver				
Hardware	Weight & Dimensions			
	Weight (GS15)	1.34 kg		
	Weight	3.30 kg standard RTK rover including slot RTK device, controller, batteries pole and bracket		
	Dimension (GS15) (diameter x height)	196 mm x 198 mm		
	Environmental specifications			
	Temperature, operating	-40° C to +65° C, compliance with ISO9022-10-08, ISO9022-11-special, MIL STD 810F – 502.4-II, MIL STD 810F – 501.4-II		
	Temperature, storage	-40° C to +80° C, compliance with ISO9022-10-08, ISO9022-11-special, MIL STD 810F - 502.4-II, MIL STD 810F - 501.4-II		
	Humidity	100%, compliance with ISO9022-13-06, ISO9022-12-04 and MIL STD 810F – 507.4-I		
	Proof against: water, sand and dust	IP67 according IEC60529 and MIL STD 810F – 506.4-I, MIL STD 810F – 510.4-I and MIL STD 810F – 512.4-I Protected against blowing rain and dust Protected against temporary submersion into water (max. depth 1 m)		
	Vibration	Withstands strong vibration during operating, compliance with ISO9022-36-08 and MIL STD 810F - 514.5-Cat.24		
	Drops	Withstands 1.0 m drop onto hard surfaces		
	Functional shock	$40~{\rm g}/$ 15 to 23 msec, compliance with MIL STD 810F – 516.5-I No loss of lock to satellite signal when used on a pole set-up and submitted to pole bump up to 150 mm		
	Topple over	Withstands topple over from a 2 m survey pole onto hard surfaces		
	Power & Electrical	Naminal 12VDC		
	Supply voltage	Nominal 12 V DC Range 10.5 – 28 V DC		
	Power consumption	Typically: 3.2 W, 270 mA		
	Internal power supply	Recharge & removable LI-lon battery, 2.6 Ah / 7.4 V, 2 batteries fit into receiver		
	Internal power supply, operation time	10.00 h receiving RTK data with standard radio ⁴ 9.00 h transmitting RTK data with standard radio ⁴ 7.50 h RTK via GSM/GPRS connection ⁴ using 2 internal batteries		
	External power supply	Rechargeable external NiMh battery 9 Ah / 12 V		
	Certifications	Compliance to:		
		FCC, CE Local approvals (as IC Canada, C-Tick Australia, Japan, China)		
Memory & Data Recording	Memory			
SD	Memory medium	Removable SD 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		
	Button functionality	Function button Function button: Easy switch between Rover / Base mode		
		Easy "Here" positioning functionality		
	Led status indicator	Bluetooth®, position, RTK status, data logging, detailed power status		
	Additional user interface	Additional web interface functionality provides full status indicator and configuration options		
Communications	Communication ports	1 x serial RS232 Lemo 1 x USB / RS232 Lemo 1 x UART serial & USB (for removable internal RTK devices) 1 x Bluetooth® port, Bluetooth® v2.00+ EDR, class 2		
	No. of 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		
	Built In data links			
	Radio modems	Fully integrated, fully sealed receive / transmit radios User exchangeable device SATEL, Pacific Crest and others 390 - 470 MHz bandwidth Transmit power: 0.5 - 1.0 W		
	UHF antenna options	Fully integrated UHF antenna External UHF antenna connector (Type QN)		
	3G GSM / UMTS(HSDPA) phone modem	Fully integrated, fully sealed phone modem User exchangeable device User exchangeable SIM card Tri-Band UMTS / HSDPA: 850 / 1900 / 2100 MHz Quad-Band CSM / GPRS: 850 / 900 / 1800 / 1900 MHz		
	CDMA phone modem	Quad-Band GM/ GPRS: 850 / 900 / 1800 / 1900 MHz Fully integrated, fully sealed CDMA phone modem User exchangeable device Dual-Band CDMA 1XRTT (800 / 1900 MHz)		
	GSM / UMTS / CDMA antenna options	Integrated GSM / UMTS / CDMA antenna External GSM / UMTS / CDMA antenna connector (Type QN)		
	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		
	NMEA output	NMEA 0183 V 2.20 and Leica proprietary		

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.





Total Quality Management our commitment to total customer satisfaction.

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Leica Viva Overview brochure



Leica Viva GNSS Product brochure





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Leica SmartWorx Viva Product brochure



Leica Viva LGO Product brochure



Leica Viva SmartPole Product brochure