

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 maximize 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 modernization 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.**

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: <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> GPS: L1, L2, L2C, L5 GLONASS: L1, L2 BeiDou: B1, B2 Galileo: E1, E5a, E5b, Alt-BOC QZSS: L1, L2, L5² L-band SBAS: WAAS, EGNOS, GAGAN, MSAS | |
| | GNSS measurements | Fully independent code and phase measurements of all frequencies <ul style="list-style-type: none"> 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 / RTCM¹ | | |
| | DGPS / RTCM | Typically 25 cm | |
| | Accuracy (rms) with Real-time-Kinematic (RTK)¹ | | |
| | Standard of compliance | | |
| | 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 Processing² | | |
| | 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) initialization | | |
| | RTK technology | Leica SmartCheck technology | |
| | Reliability of OTF initialization | Better than 99,99% ³ | |
| | Time for initialization | 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 - 1.0W |
| 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 favorable 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.



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