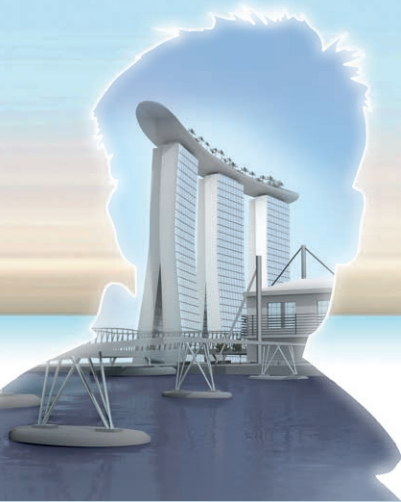


Leica Viva GNSS GS14 receiver Datasheet



Proven GNSS Technology

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

- Leica SmartCheck – RTK data-processing to guarantee correct results
- Leica SmartTrack – best measurement data quality in all environments
- Leica xRTK – delivers more positions in difficult environments



Flexibility

The Leica GS14 is designed to suit any measuring task.

- Integrated mobile communications and UHF radio modems (receive and transmit)
- Fully scalable sensor allows you to buy only what you need today and upgrade with additional functionality as you need it
- Integrated web server




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 $+65^{\circ}\text{C}$
- Integrated mobile communication antenna technology to avoid breaking, losing or forgetting antenna

Technical Specifications



| Leica GS14 GNSS Receiver | Leica GS14 Single Frequency | Leica GS14 Performance | Leica GS14 Professional |
|--|--|---|----------------------------|
| Supported GNSS systems | | | |
| GPS L2 | ○ | ● | ● |
| GLONASS | ○ | ○ | ● |
| Galileo | ○ | ○ | ● |
| BeiDou | ○ | ○ | ○ |
| RTK Performance | | | |
| DGPS / RTCM | ○ | ● | ● |
| RTK unlimited | ○ | ● | ● |
| Network RTK | ○ | ● | ● |
| Position Update & Data Recording | | | |
| 5 Hz positioning | ● | ● | ● |
| 20 Hz positioning | ○ | ● | ● |
| Raw data logging | ● | ● | ● |
| RINEX logging | ○ | ○ | ● |
| NMEA out | ○ | ○ | ● |
| Additional Features | | | |
| RTK reference station functionality | ○ | ● | ● |
| Modem (choice of 2G or 3.75G) | ● | ● | ● |
| UHF radio modem (receive and transmit) | ○ | ○ | ○ |
| | ● = Standard | ○ = Optional | |
| <div>GNSS Performance</div> <div></div> | 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 channels (240 channels) ¹ | |
| | 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• GLONASS: L1, L2• Galileo, QZSS²• BeiDou¹• SBAS: WAAS, EGNOS, GAGAN, MSAS | |
| | Reacquisition time | < 1 sec | |
| | Position latency | Typically 0.02 sec | |
| | 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 ² | | | |
| 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 | | Better than 99.99% ³ | |
| Time for initialization | | 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 Future upgrade possibility to 240 channels including GPS L5 and BeiDou.

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. GPS and GLONASS can increase performance and accuracy by up to 30% relative to GPS only.

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 | <ul style="list-style-type: none"> 10.00 h static observations⁵ 7.00 h receiving RTK data with internal UHF radio⁵ 5.00 h transmitting RTK data with internal UHF radio⁵ 6.00 h receiving / transmitting RTK data with internal modem⁵ |
| 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: <ul style="list-style-type: none"> Leica GNSS raw data RINEX data |
| Recording rate | Up to 20 Hz |

User Interface



| | |
|---------------------------|---|
| Buttons | <ul style="list-style-type: none"> ON / OFF button Function button |
| Button functionality | Function button: <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> External UHF antenna connector (Type QN) |
| GSM / UMTS phone modem | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 2.1, 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 |

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.



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