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.
- Built-in communication devices with removable SIM card
- 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°C
- Integrated GSM interna technology to avoid breaking, losing or forgetting antenna

- when it has to be right
## Technical Specifications

### Leica GS14 GNSS receiver

<table>
<thead>
<tr>
<th>Supported GNSS Systems</th>
<th>Leica GS14 Single Frequency</th>
<th>Leica GS14 Performance</th>
<th>Leica GS14 Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS L2</td>
<td>O</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>GLONASS</td>
<td>O</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Galileo</td>
<td>O</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### DGPS / RTCM performance

<table>
<thead>
<tr>
<th></th>
<th>Leica GS14 Single Frequency</th>
<th>Leica GS14 Performance</th>
<th>Leica GS14 Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGPS / RTCM</td>
<td>O</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>RTK unlimited</td>
<td>O</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Network RTK</td>
<td>O</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Position update & data recording

<table>
<thead>
<tr>
<th></th>
<th>Leica GS14 Single Frequency</th>
<th>Leica GS14 Performance</th>
<th>Leica GS14 Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position update &amp; data recording</td>
<td>5 Hz positioning</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>20 Hz positioning</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Raw data logging</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>RINEX logging</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>NMEA out</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

### Additional features

<table>
<thead>
<tr>
<th></th>
<th>Leica GS14 Single Frequency</th>
<th>Leica GS14 Performance</th>
<th>Leica GS14 Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTK Reference Station functionality</td>
<td>GSM</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>UHF Radio</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

### 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 channels (240 channels)\(^4\)

- **Max. simultaneous tracked satellites**: Up to 60 Satellites simultaneously on two frequencies

- **Satellite signals tracking**
  - GPS: L1, L2, L2C
  - GLONASS: L1, L2
  - Galileo
  - Compass\(^1\)
  - SBAS: WAAS, EGNOS, GAGAN, MSAS, QZSS

- **Reacquisition time**: < 1 sec

### Measurement Performance & Accuracy

- **Accuracy (rms) Code differential with DGPS / RTCM\(^2\)**: Typically 25 cm (rms)

- **Accuracy (rms) with Real-Time (RTK)**:
  - **Standard of compliance**: Compliance with ISO17123-8
  - **Rapid static (phase)**: Horizontal: 5 mm ± 0.5 ppm (rms) Vertical: 10 mm ± 0.5 ppm (rms)
  - **Static mode after initialization**: Horizontal: 10 mm ± 1 ppm (rms) Vertical: 20 mm ± 1 ppm (ms)
  - **Kinematic (phase)**: Horizontal: 10 mm ± 1 ppm (ms) Vertical: 20 mm ± 1 ppm (ms)

- **Accuracy (rms) with Post Processing\(^3\)**:
  - **Static (phase) with long observations**: Horizontal: 3 mm ± 0.1 ppm (ms) Vertical: 3.5 mm ± 0.4 ppm (ms)
  - **Static and rapid static (phase)**: Horizontal: 5 mm ± 0.5 ppm (rms) Vertical: 10 mm ± 0.5 ppm (rms)
  - **Kinematic (phase)**: Horizontal: 10 mm ± 1 ppm (ms) Vertical: 20 mm ± 1 ppm (ms)

- **On the Fly (OTF) Initialization**
  - **RTK technology**: Leica SmartCheck technology
  - **Reliability**: Better than 99.99%\(^3\)
  - **Time for initialization**: Typically 4 sec\(^2\)
  - **OTF range**: up to 70 km\(^3\)

### Network RTK

- **Supported RTK network solutions**: VRS, FKP, iMAX
- **Supported RTK network standards**: MAC (Master Auxiliary Concept) approved by RTCM SC 104

\(^1\) 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.

\(^2\) 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.

\(^3\) Might vary due to atmospheric conditions, signal multipath, obstructions, signal geometry and number of tracked signals.

\(^4\) Upgrade possibility to 240 channels will be available.
## 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 only radios
  - SATEL, Pacific Crest and TrimTalk support
  - 400 – 470 MHz bandwidth
- **UHF antenna options**: External UHF antenna connector (Type QN)
- **GSM / GPRS phone modem**: Fully integrated, fully sealed phone modem
  - User exchangeable SIM card
  - Quad-Band GSM / GPRS: 850 / 900 / 1800 / 1900 MHz
- **GSM / antenna**: Integrated GSM 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)
- **RTCM**: RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1
- **NMEA output**: NMEA 0183 V 4.00 and Leica proprietary

---

1. Might vary with temperatures, age of battery, transmit power of data link device.
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.

---

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

Illustrations, descriptions and technical data are not binding. All rights reserved.
Printed in Switzerland - Copyright Leica Geosystems AG, Heerbrugg, Switzerland, 2012. 804855enUS – XI.12 – galledia

Leica Geosystems AG
Heerbrugg, Switzerland
www.leica-geosystems.com