# Leica GS18
## Data sheet

**Engaging software**

The Leica Captivate field software is the perfect companion for the GS18. Everything from measuring, viewing, and sharing data is done within one software. Easy-to-use apps and precise 2D views/3D models enable you to understand, create, and utilise data effectively. Captivate spans industries and project use cases with little more than a simple tap, regardless of whether you work with GNSS, total stations, or both.

**Seamlessly share data among all your instruments**

Leica Infinity imports and combines data from your GNSS RTK rover, total station and level instruments for one final and accurate result. Processing has never been made easier when all your instruments work in tandem to produce precise and actionable information.

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# Leica GS18

| | | |
|---|---|---|
| **GNSS TECHNOLOGY** | | |
| Self-learning GNSS | Leica RTKplus<br>SmartLink (worldwide correction service)<br><br>SmartLink fill (worldwide correction service) | Adaptive on-the-fly satellite selection<br>Remote precise point positioning (3 cm 2D)[1]<br>Initial convergence to full accuracy typically 18 min, Re-convergence < 1 min<br>Bridging of RTK outages up to 10 min (3 cm 2D)[1] |
| Leica SmartCheck | Continuous check of RTK solution | Reliability 99.99% |
| Signal tracking | GPS \| GLONASS<br>Galileo \| BeiDou | L1, L2, L2C, L5 \| L1, L2, L2C, L3<br>E1, E5a, E5b, AltBOC, E6 \| B1I, B1C, B2I, B2a, B3I |
| | QZSS \| NavIC | L1, L2C, L5, L6[2] \| L5[3] |
| | SBAS \| L-Band | WAAS, EGNOS, MSAS, GAGAN \| Terrastar |
| RAIM | Receiver Autonomous Integrity Monitoring | Detection and elimination of faulty satellite signals for enhanced position solution and GNSS integrity |
| Number of channels | | 555 (more signals, fast acquisition, high sensitivity) |
| **MEASUREMENT PERFORMANCE & ACCURACY[1]** | | |
| Time for initialisation | | Typically 4 s |
| Real-time kinematic<br>(Compliant to ISO17123-8 standard) | Single baseline<br>Network RTK | Hz 8 mm + 1 ppm \| V 15 mm + 1 ppm<br>Hz 8 mm + 0.5 ppm \| V 15 mm + 0.5 ppm |
| Post processing | Static (phase) with long observations<br>Static and rapid static (phase) | Hz 3 mm + 0.1 ppm \| V 3.5 mm + 0.4 ppm<br>Hz 3 mm + 0.5 ppm \| V 5 mm + 0.5 ppm |
| Code differential | DGNSS | Hz 25 cm \| V 50 cm |
| **COMMUNICATIONS** | | |
| Communication ports | Lemo \| Bluetooth® \| WLAN | USB and RS232 serial \| Bluetooth® v4.0 (BLE & BR/EDR), class 1.5 \|<br>802.11 b/g/n for field control communication only |
| Communication protocols | RTK data protocols<br>NMEA output<br>Network RTK | Leica, Leica 4G, CMR, CMR+, RTCM 2.2, 2.3, 3.0, 3.1, 3.2 MSM<br>NMEA 0183 v4.00 & v4.10 and Leica proprietary<br>VRS, FKP, iMAX, MAC (RTCM SC 104) |
| Built-in 4G LTE modem[4] | LTE frequency bands<br>UMTS frequency bands<br>GSM frequency bands | 20, 8, 3, 1, 7 \| 13, 17, 5, 4, 2 \| 19, 3, 1<br>8, 3, 1 \| 5, 4, 2 \| 6, 19, 1<br>900,1800 \| 850,900,1800,1900 MHz |
| Built-in UHF modem[5] | Receive & transmit UHF radio modem | 403 – 473 MHz, channel spacing 12.5 kHz, 20 kHz, 25 kHz, max. 1 W output power up to 28800 bps over air<br>902 – 928 MHz (licence free in North America), max 1 W output power |
| **GENERAL** | | |
| Field controller and software | Leica Captivate software | Leica CS20 field controller, Leica CS30 & CS35 tablets |
| User interface | Buttons and LEDs<br>Web server | On / Off and Function button, 8 status LEDs<br>Full status information and configuration options |
| Data recording | Storage<br>Data type and recording rate | Internal memory up to 4 GB, Removable SD card<br>Leica GNSS raw data and RINEX data at up to 20 Hz |
| Power management | Internal power supply<br>External power supply<br>Operating time[6] | Exchangeable Li-Ion battery (2.8 Ah / 11.1 V)<br>Nominal 12 V DC, range 10.5 - 26.4 V DC<br>Typical time up to 8 h |
| Weight and dimensions | Weight<br>Dimensions | 1.20 kg / 3.50 kg standard RTK rover setup on pole<br>173 mm x 173 mm x 109 mm |
| Environmental | Temperature<br>Drop<br>Proof against water, sand and dust<br><br>Vibration<br>Humidity<br>Functional shock | -40 to +65°C operating, -40 to +85°C storage<br>Withstands topple over from a 2 m survey pole onto hard surfaces<br>IP66 \| IP68 (IEC60529 \| MIL STD 810G CHG-1 510.6 I \|<br>MIL STD 810G CHG-1 506.6 II \| MIL STD 810G CHG-1 512.6 I)<br>Withstands strong vibration (ISO9022-36-08 \| MIL STD 810G 514.6 Cat.24)<br>95% (ISO9022-13-06 \| ISO9022-12-04 \| MIL STD 810G CHG-1 507.6 II)<br>40 g / 15 to 23 msec (MIL STD 810G 516.6 I) |
| **TILT COMPENSATION UPGRADE** | | |
| Tilt compensation | Increased measurement productivity and traceability | Calibration-free<br>Immune to magnetic disturbances |
| Real-time kinematic tilt compensated | Not for static control points | Additional Hz uncertainty typically less than 8 mm + 0.4 mm/° tilt down to 30° tilt |

| LEICA GS18 GNSS RTK ROVER | PERFORMANCE | UNLIMITED |
|---|---|---|
| **SUPPORTED GNSS SYSTEMS** | | |
| Multi-frequency | ✔ | ✔ |
| GPS / GLONASS / Galileo / BeiDou / QZSS | ✔ / • / • / • / • | ✔ / ✔ / ✔ / ✔ / ✔ |
| **RTK PERFORMANCE** | | |
| DGPS/RTCM, RTK Unlimited, Network RTK | ✔ | ✔ |
| SmartLink fill / SmartLink | • / • | ✔ / • |
| **POSITION UPDATE & DATA RECORDING** | | |
| 20 Hz positioning | ✔ | ✔ |
| Raw data / RINEX data logging / NMEA out | ✔ / • / • | ✔ / ✔ / ✔ |
| **ADDITIONAL FEATURES** | | |
| Tilt compensation | • | • |
| RTK reference station functionality | ✔ | ✔ |
| 4G LTE Phone / UHF Radio (receive & transmit) modem | ✔ / • | ✔ / • |

✔ Standard • Optional

[1] Measurement precision, accuracy, reliability and time for initialisation are dependent upon various factors including number of satellites, observation time, atmospheric conditions, multipath etc. Figures quoted assume normal to favourable conditions. A full BeiDou and Galileo constellation will further increase measurement performance and accuracy.

[2] QZSS L6 will be provided through future firmware upgrade.

[3] Support of NavIC L5 is incorporated and will be provided through future firmware upgrade.

[4] Depending on version. In order Europe | NAFTA | Japan version

[5] Available for the GS18 UHF variants only.

[6] Might vary with temperature, age of battery, transmit power of data link device and use of wireless communication devices.



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- when it has to be **right**

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