



# Leica GS18 I

## Innovative



The Leica GS18 I is an accurate and easy to use GNSS RTK Rover. It utilises highly innovative Visual Positioning technology based on seamless integration of GNSS, IMU and a camera. It enables you to measure survey grade points in images on site and in the office. Create point clouds from captured data with Infinity to expand possibilities even further.

## Fast



Designed to measure a large amount of points efficiently. The Leica GS18 I allows you to capture images and measure hundreds of points within minutes. There's no need to physically reach the point to measure it. This allows you to reduce time spent on-site and cut down re-work: once you've captured the site, you can measure all details whenever you want to.

## Versatile



Imaging power has changed the rules of the game. By having the power to measure what you see, you can now reach places you couldn't before without switching tools or climbing through obstacles. That gives you flexibility in the field, frees up equipment and crews and truly maximises productivity in your projects, which results in increased profits.





# Leica GS18 I

| GNSS technology & services                              |                                                                               |                                                                                                                                                                                                                                        |
|---------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Self-learning GNSS                                      | Leica RTKplus                                                                 | Adaptive on-the-fly satellite selection                                                                                                                                                                                                |
| HxGN SmartNet Global                                    | HxGN SmartNet Pro                                                             | Network RTK and unlimited worldwide RTK bridging and PPP service                                                                                                                                                                       |
|                                                         | HxGN SmartNet+                                                                | Network RTK and RTK bridging service                                                                                                                                                                                                   |
|                                                         | HxGN SmartNet PPP                                                             | Unlimited worldwide RTK bridging and PPP service                                                                                                                                                                                       |
| Leica SmartCheck                                        | Continuous check of RTK solution                                              | Reliability 99.99%                                                                                                                                                                                                                     |
| Signal tracking                                         | GPS / GLONASS                                                                 | L1, L2, L2C, L5 / L1, L2, L2C, L3                                                                                                                                                                                                      |
|                                                         | Galileo / BeiDou                                                              | E1, E5a, E5b, AltBOC, E6 / B1I, B1C, B2I, B2a, B2b <sup>2</sup> , B3I                                                                                                                                                                  |
|                                                         | QZSS / NavIC                                                                  | L1, L2C, L5, L6 <sup>2</sup> / L1 <sup>2</sup> , L5                                                                                                                                                                                    |
|                                                         | SBAS / TerraStar                                                              | WAAS, EGNOS, MSAS, GAGAN / L-Band, IP                                                                                                                                                                                                  |
| RAIM                                                    | Receiver Autonomous Integrity Monitoring                                      | Detection and elimination of faulty satellite signals for enhanced positioning solution and GNSS integrity                                                                                                                             |
| Number of channels                                      |                                                                               | 555 (more signals, fast acquisition, high sensitivity)                                                                                                                                                                                 |
| Tilt compensation                                       | Increased measurement productivity and traceability                           | Calibration-free<br>Immune to magnetic disturbances                                                                                                                                                                                    |
| Imaging                                                 |                                                                               |                                                                                                                                                                                                                                        |
| Measuring camera                                        | Sensor / Field of view / Video frame rate                                     | Global shutter with 1.2 MP / Hz 80°, V 60° / 20 Hz                                                                                                                                                                                     |
| Image group capture                                     | 2 Hz capturing rate                                                           | Max. capturing time: 60 s, size of an image group appr. 50 MB                                                                                                                                                                          |
| Point cloud                                             | Leica Infinity software                                                       | Derive point clouds from image groups                                                                                                                                                                                                  |
| Measurement performance & accuracy <sup>1</sup>         |                                                                               |                                                                                                                                                                                                                                        |
| Time for RTK initialisation                             |                                                                               | Typically 4 s                                                                                                                                                                                                                          |
| Real-time kinematic (Compliant to ISO17123-11 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                                                                                                                                                             |
| Real-time kinematic tilt compensated                    | Not for static control points                                                 | Additional Hz uncertainty less than 2 mm + 0.3 mm/° tilt down to 30° tilt                                                                                                                                                              |
| RTK bridging                                            | Up to 10 min bridging of RTK outages                                          | Hz 2.5 cm / V 5 cm                                                                                                                                                                                                                     |
| PPP                                                     | Initial convergence to full accuracy typically 6 min, Re-convergence < 1 min  | Hz 2.5 cm / V 5 cm                                                                                                                                                                                                                     |
| 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                                                                                                                                                                                                                     |
| Image point measurement                                 | 1-click measurement in field & office                                         | Typically 2 cm – 4 cm (2D <sup>1</sup> ) captured from 2 – 10 m distance                                                                                                                                                               |
| Communications                                          |                                                                               |                                                                                                                                                                                                                                        |
| Communication ports                                     | Lemo / Bluetooth® / WLAN                                                      | USB and RS232 serial / Bluetooth® v4.0 (BLE & BR/EDR), class 1.5 / 802.11 b/g/n for field controller communication only                                                                                                                |
| Communication protocols                                 | RTK data protocols<br>NMEA output<br>Network RTK<br>Security protocol         | Leica 4G, Leica, 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)<br>TLS 1.2                                                                         |
| Built-in 4G LTE modem <sup>3</sup>                      | LTE frequency bands<br>UMTS frequency bands<br>GSM frequency bands            | 20, 8, 3, 1, 7 / 1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28, 38, 40, 41, 66 / 13, 17, 5, 4, 2 / 19, 3, 1<br>8, 3, 1 / 1, 3, 2, 4, 5, 6, 8, 19 / 5, 4, 2 / 6, 19, 1<br>900, 1800 / 850, 900, 1800, 1900 / 850, 900, 1800, 1900 MHz |
| Built-in UHF modem <sup>4</sup>                         | 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 / 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 & CC180 & CC200 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 <sup>5</sup> | 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 / Dimensions                                                           | 1.25 kg / 3.55 kg standard RTK rover setup on pole / 173 mm x 173 mm x 109 mm                                                                                                                                                          |
| Environmental                                           | Temperature                                                                   | -30 to +50°C operating with camera, -40 to +65°C operating without camera, -40 to +85°C storage                                                                                                                                        |
|                                                         | Drop<br>Proof against water, sand and dust                                    | Withstands topple over from a 2 m survey pole onto hard surfaces<br>IP66 / IP68 (IEC60529 / MIL STD 810G CHG-1 510.6 I / MIL STD 810G CHG-1 506.6 II, MIL STD 810G CHG-1 512.6 I)                                                      |
|                                                         | Vibration<br>Humidity<br>Functional shock                                     | Withstands strong vibration (ISO9022-36-08 / MIL STD 810G 514.6 Cat.24)<br>Up to 100% (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)                                     |

<sup>1</sup> 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.

<sup>2</sup> BeiDou B2b, QZSS L6 and NavIC L1 will be provided through future firmware upgrade.

<sup>3</sup> Depending on version. In order Europe (SN < 5480000) / Worldwide (SN ≥ 5480000) / NAFTA / Japan version

<sup>4</sup> Available for the GS18 I UHF variants only.

<sup>5</sup> Might vary with temperature, age of battery, transmit power of data link device or use of wireless communication devices.



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