GNSS Survey Leica

Leica
Geosystems

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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Customer care only a click away

Through Active Customer Care (ACC), a global network of experienced professionals is only a click away to expertly guide you through any challenge. Eliminate delays with superior technical service, finish jobs faster and avoid costly site revisits with excellent consultancy support. Control your costs with a tailored Customer Care Package (CCP), giving you peace of mind you are covered anywhere, anytime.

Leica GS18

GNSS TECHNOLOGY		
Self-learning GNSS	Leica RTKplus SmartLink (worldwide correction service) SmartLink fill (worldwide correction service)	Adaptive on-the-fly satellite selection Remote precise point positioning (3 cm 2D)[1] Initial convergence to full accuracy typically 18 min, Re-convergence < 1 min 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 Galileo | BeiDou	L1, L2, L2C, L5 | L1, L2, L2C, L3 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 (Compliant to ISO17123-8 standard)	Single baseline Network RTK	Hz 8 mm + 1 ppm | V 15 mm + 1 ppm Hz 8 mm + 0.5 ppm | V 15 mm + 0.5 ppm
Post processing	Static (phase) with long observations Static and rapid static (phase)	Hz 3 mm + 0.1 ppm | V 3.5 mm + 0.4 ppm 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 | 802.11 b/g/n for field control communication only
Communication protocols	RTK data protocols NMEA output Network RTK	Leica, Leica 4G, CMR, CMR+, RTCM 2.2, 2.3, 3.0, 3.1, 3.2 MSM NMEA 0183 v4.00 & v4.10 and Leica proprietary VRS, FKP, iMAX, MAC (RTCM SC 104)
Built-in 4G LTE modem[4]	LTE frequency bands UMTS frequency bands GSM frequency bands	20, 8, 3, 1, 7 | 13, 17, 5, 4, 2 | 19, 3, 1 8, 3, 1 | 5, 4, 2 | 6, 19, 1 900,1800 | 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 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 Web server	On / Off and Function button, 8 status LEDs Full status information and configuration options
Data recording	Storage Data type and recording rate	Internal memory up to 4 GB, Removable SD card Leica GNSS raw data and RINEX data at up to 20 Hz
Power management	Internal power supply External power supply Operating time[6]	Exchangeable Li-Ion battery (2.8 Ah / 11.1 V) Nominal 12 V DC, range 10.5 - 26.4 V DC Typical time up to 8 h
Weight and dimensions	Weight Dimensions	1.20 kg / 3.50 kg standard RTK rover setup on pole 173 mm x 173 mm x 109 mm
Environmental	Temperature Drop Proof against water, sand and dust Vibration Humidity Functional shock	-40 to +65°C operating, -40 to +85°C storage Withstands topple over from a 2 m survey pole onto hard surfaces 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) Withstands strong vibration (ISO9022-36-08 | MIL STD 810G 514.6 Cat.24) 95% (ISO9022-13-06 | ISO9022-12-04 | MIL STD 810G CHG-1 507.6 II) 40 g / 15 to 23 msec (MIL STD 810G 516.6 I)
TILT COMPENSATION UPGRADE		
Tilt compensation	Increased measurement productivity and traceability	Calibration-free 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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Leica Viva GS16

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Leica Viva GS16 – Experience Innovation

Meet the latest innovation, a self-learning GNSS with RTKplus and SmartLink. The growing number of signals from an ever increasing satellite constellation demands a GNSS receiver to be smarter than ever before.

Simply put, RTKplus is like RTK but better. RTKplus intelligently adapts to changing conditions by selecting the optimal signals to deliver the most accurate positions. Work more efficiently and in more challenging environments than you've ever worked in before.

Enjoy uninterrupted accurate positioning even when your local correction service is unavailable due to obstructions or lack of cellular coverage with the global SmartLink service. Even when no reference data is available, work fully remotely with SmartLink.

Engaging software

The Leica Viva GS16 GNSS smart antenna is accompanied with the revolutionary Captivate software, turning complex data into the most realistic and workable 3D models. With easy-to-use apps and familiar touch technology, all forms of measured and design data can be viewed in all dimensions. Leica Captivate spans industries and applications with little more than a simple swipe, 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, 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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RTKplus

- 555 channels for more signals, faster acquisition and improved sensitivity
- Intelligent management of multi-frequency, multi-constellation signals
- Intelligent selection to automatically reject reflected or noisy signals

SMARTCHECK

- Unique RTK technology provides continuous checks to guarantee correct results
- Initialisation within seconds
- Complete reliability

SMARTLINK

- Achieve centimetre accurate positioning worldwide - perfect when working in remote areas around the globe
- No RTK base station or RTK network required, correction data is continuously transmitted by satellite delivering global coverage
- Bridging RTK outages for uninterrupted centimetre positioning

BUILT FOR THE MOST DEMANDING ENVIRONMENTS

- IP68 protection
- Built for extreme temperatures of -40°C to +65°C
- Fulfils toughest standards throughout the complete product lifetime

ERGONOMICS

- Integrated mobile phone and UHF radio RTK devices
- Compact housing
- Lightweight

ONLINE SERVICES

- SmartNet Satellite Positioning - your No.1 partner for network RTK
- Leica Active Assist - the next level in support
- Leica Exchange - transfer data easily, quickly and safely

Unlock the power of handheld devices

In a controller or a tablet, take your entire office on the go when you discover the power to overcome any environment from the palm of your hand.

The Leica CS20 controller and Leica CS35 tablet provide the ultimate in control and convenience with complete mobility. Touch screen technology allows for comfortable and quick data processing while a stunning 3D view transforms your Leica Viva GNSS experience.

reddot award 2015
honourable mention

Leica Viva GS16

GNSS TECHNOLOGY		
Self-learning GNSS	Leica RTKplus SmartLink (worldwide correction service) SmartLink fill (worldwide correction service)	Adaptive on-the-fly satellite selection Remote precise point positioning (3 cm 2D)[1] Initial convergence to full accuracy 20 - 40 min, Re-convergence < 1 min 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 (L1, L2, L2C, L5), Glonass (L1, L2, L3[2]), BeiDou (B1, B2, B3[2]), Galileo (E1, E5a, E5b, Alt-BOC, E6[2]), QZSS[3], NavIC L5[3], SBAS (WAAS, EGNOS, MSAS, GAGAN), L-band
Number of channels		555 (more signals, fast acquisition, high sensitivity)
MEASUREMENT PERFORMANCE & ACCURACY[1]		
Time for initialisation		Typically 4 s
Real-time kinematic (Compliant to ISO17123-8 standard)	Single baseline Network RTK	Hz 8 mm + 1 ppm / V 15 mm + 1 ppm Hz 8 mm + 0.5 ppm / V 15 mm + 0.5 ppm
Post processing	Static (phase) with long observations Static and rapid static (phase)	Hz 3 mm + 0.1 ppm / V 3.5 mm + 0.4 ppm Hz 3 mm + 0.5 ppm / V 5 mm + 0.5 ppm
Code differential	DGPS / RTCM	Typically 25 cm
COMMUNICATIONS		
Communication ports	Lemo Bluetooth®	USB and RS232 serial Bluetooth® v2.00 + EDR, class 2
Communication protocols	RTK data protocols NMEA output Network RTK	Leica, Leica 4G, CMR, CMR+, RTCM 2.2, 2.3, 3.0, 3.1, 3.2 MSM NMEA 0183 V 4.00 and Leica proprietary VRS, FKP, iMAX, MAC (RTCM SC 104)
Built-in data links	3.75G GSM / UMTS / CDMA phone modem Radio modem	Fully integrated, internal antenna Fully integrated, receive and transmit, external antenna 403 - 470 MHz, 1 W output power, up to 28800 bps over air
External data links		GSM / GPRS / UMTS / CDMA and UHF / VHF modem
GENERAL		
Field controller and software	Leica Captivate software	Leica CS20 field controller, Leica CS35 tablet
User interface	Buttons and LEDs Web server	On / Off and Function button, 7 status LEDs Full status information and configuration options
Data recording	Storage Data type and recording rate	Removable microSD card, 8 GB Leica GNSS raw data and RINEX data at up to 20 Hz
Power management	Internal power supply External power supply Operation time[4]	Exchangeable Li-Ion battery (2.6 Ah / 7.4 V) Nominal 12 V DC, range 10.5 - 28 V DC 7 h receiving (Rx) data with internal radio, 5 h transmitting (Tx) data with internal radio, 6 h Rx / Tx data with internal phone modem
Weight and dimensions	Weight Diameter x Height	0.93 kg / 3.20 kg standard RTK rover setup on pole 190 mm x 90 mm
Environmental	Temperature Drop Proof against water, sand and dust Vibration Humidity Functional shock	-40 to 65°C operating, -40 to 80°C storage Withstands topple over from a 2 m survey pole onto hard surfaces IP68 (IEC60529 / MIL STD 810G 506.5 I / MIL STD 810G 510.5 I / MIL STD 810G 512.5 I) Withstands strong vibration (ISO9022-36-08 / MIL STD 810G 514.6 Cat.24) 100% (ISO9022-13-06 / ISO9022-12-04 / MIL STD 810G 507.5 I) 40 g / 15 to 23 msec (MIL STD 810G 516.6 I)

LEICA VIVA GS16 - GNSS SMART ANTENNA	Basic	Performance	Unlimited
SUPPORTED GNSS SYSTEMS			
Multi-frequency	•	✔	✔
GPS / GLONASS / Galileo / BeiDou	✔ / • / • / •	✔ / • / • / •	✔ / ✔ / ✔ / ✔
RTK PERFORMANCE			
DGPS/RTCM. RTK Unlimited, Network RTK	•	✔	✔
SmartLink fill / SmartLink	• / •	• / •	✔ / •
POSITION UPDATE & DATA RECORDING			
5 Hz / 20 Hz positioning	✔ / •	✔ / ✔	✔ / ✔
Raw data / RINEX data logging / NMEA out	✔ / • / •	✔ / • / •	✔ / ✔ / ✔
ADDITIONAL FEATURES			
RTK reference station functionality	•	✔	✔
3.75G or CDMA 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] Believe to comply, but subject to availability of BeiDou ICD and Galileo commercial service definition. Glonass L3, BeiDou B3 and Galileo E6 will be provided through future firmware upgrade.

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

[4] Might vary with temperature, age of battery, transmit power of data link device.

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Leica GS07
Data sheet

Engaging software

The Leica Captivate field software is the perfect companion for the GS07. 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.

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Leica GS07

GNSS PERFORMANCE		
GNSS Technology	Leica RTKplus	Adaptive on-the-fly satellite selection
Leica SmartCheck	Continuous check of RTK solution	Reliability 99.95%
Signal tracking	GPS | GLONASS Galileo | BeiDou	L1, L2, L2C, L5 | L1, L2, L2C, L3 E1, E5a, E5b, AltBOC, E6 | B1I, B1C, B2I, B2a, B3I
	QZSS | NavIC	L1, L2C, L5, L6[2] | L5[3]
	SBAS	WAAS, EGNOS, MSAS, GAGAN
RAIM	Receiver Autonomous Integrity Monitoring	Detection and elimination of faulty satellite signals for enhanced positioning solution and GNSS integrity
Number of channels		320 hardware channels

MEASUREMENT PERFORMANCE & ACCURACY[1]		
Time for initialisation		Typically 6 s
Real-time kinematic (Compliant to ISO17123-8 standard)	Single baseline Network RTK	Hz 10 mm + 1 ppm / V 20 mm + 1 ppm Hz 10 mm + 0.5 ppm / V 20 mm + 0.5 ppm
Post processing	Static (phase) with long observations Static and rapid static (phase)	Hz 3 mm + 0.5 ppm / V 6 mm + 0.5 ppm Hz 5 mm + 0.5 ppm / V 10 mm + 0.5 ppm
Code differential	DGNSS	Hz 25 cm | V 50 cm

COMMUNICATIONS		
Communication ports	Lemo Bluetooth®	USB and RS232 serial Bluetooth v2.00 + EDR, class 2
Communication protocols	RTK data protocols Network RTK	Leica, Leica 4G, CMR, CMR+, RTCM 2.2, 2.3, 3.0, 3.1, 3.2 MSM VRS, FKP, iMAX, MAC (RTCM SC 104)
Built-in data links[4]	3.75G GSM / UMTS / CDMA phone modem Radio modem	Fully integrated, internal antenna Fully integrated, receive, external antenna 403 - 473 MHz, up to 28800 bps over air
External data links		Bluetooth GSM / GPRS / UMTS / LTE / CDMA phone modem

GENERAL		
Field controller and software	Leica Captivate software	Leica CS20 field controller
User interface	Buttons and LEDs	On / Off button, 3 status LEDs
Data recording	Storage[5] Data type and recording rate	Removable SD card Leica GNSS raw data and RINEX data at up to 5 Hz
Power management	Internal power supply External power supply Operation time[6]	Exchangeable Li-Ion battery (2.6 Ah / 7.4 V) Nominal 12 V DC, range 10.5 - 28 V DC 8 h GNSS 7 h receiving RTK data with CS modem
Weight and dimensions	Weight Diameter x Height	0.7 kg / 2.7 kg standard RTK rover setup on pole 186 mm x 71 mm
Environmental	Temperature Drop Proof against water, sand and dust Vibration Humidity Functional shock	-40 to 65°C operating, -40 to 80°C storage Withstands topple over from a 2 m survey pole onto hard surfaces 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) Withstands strong vibration (ISO9022-36-05 / MIL STD 810G 514.6 Cat.24) 95% (ISO9022-13-06 / ISO9022-12-04 / MIL STD 810G CHG-1 507.6 II) 40 g / 15 to 23 msec (MIL STD 810G 516.6 I)

LEICA GS07 – GNSS SMART ANTENNA	
SUPPORTED GNSS SYSTEMS	
Multi-frequency	✔
GPS / GLONASS / Galileo / BeiDou / QZSS	✔ /•/•/•/✔
RTK PERFORMANCE	
DGPS/RTCM, RTK Unlimited, Network RTK	✔
POSITION UPDATE & DATA RECORDING	
5 Hz positioning	✔
Raw data / RINEX data logging	✔ / ✔
ADDITIONAL FEATURES[4]	
3.75G GSM / GPRS / UMTS / CDMA phone modem	•
UHF radio modem (receive only)	•

✔ 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 the used CS field controller and radio modem.
[5] Data is recorded to the CS field controller.
[6] Might vary with temperature, age of battery, transmit power of data link device.

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