Leica GS05

Certified Models: LG1001 (UHF) LG1002 (LTE Cat M1) LG1003 (LTE Cat 1 Bis)



User Manual Version 1.2 English







PDF

Introduction

Purchase	Congratulations on the purchase of the Leica GS05.			
Ĩ	This manual contains important safety directions as well as instructions for setting up the product and operating it. Refer to 1 Safety Directions for fur-ther information.			
	Read carefully through	the User Manual before you switch on t	he prod	uct.
- 27	The content of this document is subject to change without prior notice. Ensure that the product is used in accordance with the latest version of this docu- ment.			
	Updated versions are a	available for download at the following Ir	iternet a	address:
	https://myworld-portal	<u>.leica-geosystems.com/</u> > myDownloads		
Product identification	The model and serial n	umber of vour product are indicated on	the type	e label.
	Always refer to this information when contacting your agency or Leica Geo- systems authorised service centre.			
 Trademarks	• Bluetooth® is a re	gistered trademark of Bluetooth SIG, Inc		
	All other trademarks are the property of their respective owners.			
Validity of this manual	This manual applies to all models of the Leica GS05 GNSS instrument. Where there are differences between the various instruments they are clearly described.			
Available documentation	Name	Description/Format		
	GS05 Quick Guide	Provides an overview of the product together with technical data and safety directions. Intended as a quick reference guide.	~	✓
	GS05 User Manual	All instructions required in order to operate the product to a basic level are contained in the User Manual. Provides an overview of the product together with technical data and safety directions. Also included in the internal memory of the product.	-	✓
	Name	Description/Format		
	Captivate Technical Reference Manual	Overall comprehensive guide to the product and apps. Included are detailed descriptions of special soft- ware/hardware settings and soft- ware/hardware functions intended for technical specialists.	-	✓

Refer to the following resources for documentation/software:

- the Leica Captivate USB documentation card
 - https://myworld-portal.leica-geosystems.com/

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<u>https://myworld-portal.leica-geosystems.com/</u> offers a wide range of services, information and training material.

With direct access to myWorld, you are able to access all relevant services whenever it is convenient for you.

The availability of services depends on the instrument model.

Service	Description
My Products	Register all products that you and your company own and explore your world of Leica Geosystems: View detailed information on your products and update your products with the latest software and keep up-to-date with the latest documentation.
My Service	View the current service status and full service his- tory of your products in Leica Geosystems service centres. Access detailed information on the services performed and download your latest calibration cer- tificates and service reports.
My Support	Create new support requests for your products that will be answered by your local Leica Geosystems support team. View your complete support history and view detailed information on all your support requests.
Knowledge	Enter key words and start searching in our know- ledge base. You can find FAQs (Frequently asked questions) as well as Knowledge articles for Leica Geosystems products.
Downloads	Downloads of software, manuals, tools, training material and news for Leica Geosystems products. Download the latest documentation and software to keep yourself and your products up-to-date. You can access downloads of software, manuals, tools, and training material.
Online Learning	Welcome to the home of Leica Geosystems online learning! There are numerous online courses – avail- able to all customers with products that have valid CCPs (Customer Care Packages).
My SmartNet	Add and view your HxGN SmartNet subscriptions and user information. HxGN SmartNet delivers high- precision and high-availability GNSS network correc- tion services in real-time and around the globe. The HxGN SmartNet Global family offers Network RTK with RTK bridging and Precise Point Positioning (PPP) services. These services work exclusively with Leica Geosystems GS smart antennas and receiv- ers, providing the highest accuracy. Combined, they ensure HxGN SmartNet coverage everywhere.

Service	Description
My Trusted Services	Leica Geosystems Trusted Services offer you increased productivity while at the same time providing maximum security. New software services and state-of-the-art IT infrastructure offer a vast potential to optimise your workflow and increase your efficiency and productivity, both now and in the future.
My Security	Leica Geosystems Security delivers you total peace-of-mind in knowing that if your instrument is ever stolen, a locking mechanism is available to ensure that the instrument is disabled and can no longer be used.

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1	Safety Directions				
1.1	General Introduction				
Description	The following directions enable the person responsible for the product, and the person who actually uses the equipment, to anticipate and avoid operational hazards.				
	The person responsible f these directions and adh	or the product must ensure that all users understand ere to them.			
About warning messages	Warning messages are ar ment. They appear where	n essential part of the safety concept of the instru- ever hazards or hazardous situations can occur.			
	Warning messages				
	make the user alert a of the product.contain general rules	about direct and indirect hazards concerning the use			
	For the users' safety, all strictly observed and foll to all persons performing	For the users' safety, all safety instructions and safety messages shall be strictly observed and followed! Therefore, the manual must always be available to all persons performing any tasks described here.			
	DANGER, WARNING, CA identifying levels of haza damage. For your safety, following table with the mentary safety informati as well as supplementary	AUTION and NOTICE are standardised signal words for irds and risks related to personal injury and property it is important to read and fully understand the different signal words and their definitions! Supple- ion symbols may be placed within a warning message v text.			
	Туре	Description			
	A DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.			
		Indicates a potentially hazardous situation or an unintended use which, if not avoided, could result in death or serious injury.			
		Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor or moderate injury.			
		/ / /			
	ΝΟΤΙϹΕ	Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in appreciable material, financial and environmental damage.			

1.2	Definition of Use			
Intended use	 Computing with software Recording measurements Carrying out measurement tasks using various GNSS measuring techniques Recording GNSS and point related data Remote control of product Data communication with external appliances Measuring raw data and computing coordinates using carrier phase and code signal from GNSS satellites (GNSS systems) 			
Reasonably foreseeable misuse	 Use of the product without instructions Use outside of the intended use and limits Disabling of safety systems Removal of hazard notices Opening the product using tools, for example a screwdriver, unless this is permitted for certain functions Modification or conversion of the product Use after misappropriation Use of products with recognisable damage or defects Use with accessories from other manufacturers without the prior explicit approval of Leica Geosystems Inadequate safeguards at the working site Controlling of machines, moving objects or similar monitoring applications without additional control and safety installations 			
1.3	Limits of Use			
Environment	Suitable for use in an atmosphere appropriate for permanent human habita- tion. Not suitable for use in aggressive or explosive environments.			
	 Working in hazardous areas or close to electrical installations or similar situations Life Risk. Precautions: Local safety authorities and safety experts must be contacted by the person responsible for the product before working in such conditions. 			
1.4	Responsibilities			
Manufacturer of the product	Leica Geosystems AG, CH-9435 Heerbrugg, hereinafter referred to as Leica Geosystems, is responsible for supplying the product, including the User Manual and original accessories, in a safe condition.			

Person responsible for the product

The person responsible for the product has the following duties:

- To understand the safety instructions on the product and the instructions in the User Manual
- To ensure that the product is used in accordance with the instructions
- To be familiar with local regulations relating to safety and accident prevention
- To stop operating the system and inform Leica Geosystems immediately if the product and the application become unsafe
- To ensure that the national laws, regulations and conditions for the operation of the product are respected

1.5 Hazards of Use

DANGER

Risk of electrocution

Because of the risk of electrocution, it is dangerous to use poles, levelling staffs and extensions in the vicinity of electrical installations such as power cables or electrical railways.

Precautions:

Keep at a safe distance from electrical installations. If it is essential to work in this environment, first contact the safety authorities responsible for the electrical installations and follow their instructions.



WARNING

Distraction/loss of attention

During dynamic applications, for example stakeout procedures, there is a danger of accidents occurring if the user does not pay attention to the environmental conditions around, for example obstacles, excavations or traffic.

Precautions:

• The person responsible for the product must make all users fully aware of the existing dangers.

AWARNING

Inadequate securing of the working site

This can lead to dangerous situations, for example in traffic, on building sites and at industrial installations.

Precautions:

- Always ensure that the working site is adequately secured.
- Adhere to the regulations governing safety, accident prevention and road traffic.

∕≜CAUTION

Not properly secured accessories

If the accessories used with the product are not properly secured and the product is subjected to mechanical shock, for example blows or falling, the product may be damaged or people can sustain injury.

Precautions:

- When setting up the product, make sure that the accessories are correctly adapted, fitted, secured, and locked in position.
- Avoid subjecting the product to mechanical stress.

AWARNING

Lightning strike

If the product is used with accessories, for example masts, staffs, poles, you may increase the risk of being struck by lightning.

Precautions:

• Do not use the product in a thunderstorm.

Dropping the product

When being dropped, the product can cause personal injury and/or mechanical damage.

Precautions:

• Secure the product when operating it.

Dropping the product

When being dropped, the product can cause personal injury and/or mechanical damage.

Precautions:

• Ensure to have a firm grip on the product before operating it.

For the AC/DC power supply:

MWARNING

Electric shock due to use under wet and severe conditions

If unit becomes wet it may cause you to receive an electric shock. **Precautions:**

- If the product becomes humid, it must not be used!
- Use the product only in dry environments, for example in buildings or vehicles.



Protect the product against humidity.

For the AC/DC power supply:

AWARNING

Unauthorised opening of the product

Either of the following actions may cause you to receive an electric shock:

- Touching live components
- Using the product after incorrect attempts were made to carry out repairs.

Precautions:

- Do not open the product!
- Only Leica Geosystems authorised service centres are entitled to repair these products.

AWARNING

Dropping the product, high mechanical stress or high ambient temperature

Possible damage to the internal non-removeable battery may occur. International transportation regulations might prohibit transportation of those batteries.

- Do not ship or transport by air.
- Send the affected product to the local customer service under consideration of the local transportation regulations.

If the product is improperly disposed of, the following can happen:

- If polymer parts are burnt, poisonous gases are produced which may impair health.
- If batteries are damaged or are heated strongly, they can explode and cause poisoning, burning, corrosion or environmental contamination.
- By disposing of the product irresponsibly you may enable unauthorised persons to use it in contravention of the regulations, exposing themselves and third parties to the risk of severe injury and rendering the environment liable to contamination.
- The product includes parts of Beryllium inside. Any modification of some internal parts can release dust or fragments, creating health hazard.

Precautions:



The product must not be disposed with household waste. Dispose of the product appropriately in accordance with the national regulations in force in your country. Always prevent access to the product by unauthorised personnel.

Product-specific treatment and waste management information can be received from your Leica Geosystems distributor.

Improperly repaired equipment

Electromagnetic Compatibility (EMC)

Risk of injuries to users and equipment destruction due to lack of repair knowledge.

Precautions:

Only authorised Leica Geosystems Service Centres are entitled to repair these products.

1.6

Description

The term Electromagnetic Compatibility is taken to mean the capability of the product to function smoothly in an environment where electromagnetic radiation and electrostatic discharges are present, and without causing electromagnetic disturbances to other equipment.

Electromagnetic radiation

Electromagnetic radiation can cause disturbances in other equipment. **Precautions:**

 Although the product meets the strict regulations and standards which are in force in this respect, Leica Geosystems cannot completely exclude the possibility that other equipment may be disturbed.

Use of the product with accessories from other manufacturers. For example, field computers, personal computers or other electronic equipment, non-standard cables or external batteries

This may cause disturbances in other equipment.

Precautions:

- Use only the equipment and accessories recommended by Leica Geosystems.
- When combined with the product, other accessories must meet the strict requirements stipulated by the guidelines and standards.
- When using computers, two-way radios or other electronic equipment, pay attention to the information about electromagnetic compatibility provided by the manufacturer.

Intense electromagnetic radiation. For example, near radio transmitters, transponders, two-way radios or diesel generators

Although the product meets the strict regulations and standards which are in force in this respect, Leica Geosystems cannot completely exclude the possibility that the function of the product may be disturbed in such an electromagnetic environment.

Precautions:

• Check the plausibility of results obtained under these conditions.

ACAUTION

Electromagnetic radiation due to improper connection of cables

If the product is operated with connecting cables, attached at only one of their two ends, the permitted level of electromagnetic radiation may be exceeded and the correct functioning of other products may be impaired. For example, external supply cables or interface cables.

Precautions:

While the product is in use, connecting cables, for example product to external battery or product to computer, must be connected at both ends.

Exceeding the RF radiation exposure limits for general population Health risk

Precautions:

- The antennas used for this transmitter must be installed such that a minimum separation distance of at least 20 cm is always maintained between the radiator (antenna) and all persons.
- The antennas used for this transmitter must not be co-located or operated with any other antenna or transmitter.

AWARNING

Use of product with radio or digital cellular phone devices

Electromagnetic fields can cause disturbances in other equipment, installations, medical devices, for example pacemakers or hearing aids, and aircrafts. Electromagnetic fields can also affect humans and animals.

Precautions:

- Although the product meets the strict regulations and standards which are in force in this respect, Leica Geosystems cannot completely exclude the possibility that other equipment can be disturbed or that humans or animals can be affected.
- Do not operate the product with radio or digital cellular phone devices in the vicinity of filling stations or chemical installations, or in other areas where an explosion hazard exists.
- Do not operate the product with radio or digital cellular phone devices near medical equipment.
- Do not operate the product with radio or digital cellular phone devices in aircrafts.
- Do not operate the product with radio or digital cellular phone devices for long periods with the product immediately next to your body.

2	Description of the System		
2.1	System Components		
Main components	Component	Description	
	Instrument	To calculate a position from the computed ranges to all visible GNSS (Global Navigation Satellite System) satel- lites. To estimate a tilt compensated pole tip position by com- bining the GNSS position with attitude information from an Inertial Measurement Unit (IMU).	
	Antenna	To receive the satellite signals from the GNSS satellites.	
	Leica Infinity	The office software including a series of help programs which support working with Leica instruments.	
Instrument	Instrument	Description	
	GS05	GPS, GLONASS, BeiDou, Galileo GNSS receiver, QZSS, multi-band, code and phase, real-time capable, internal memory and integrated Inertial Measurement Unit.	
2.2	System Concept		
2.2.1	Software Con	cept	
Description	All instruments u	se the same software concept.	
Software for all GS05	Software type	Description	
GN35 Instruments	GS05 firmware	GS05_Captivate_vX.XX.fw This software covers all functions of the instrument.	
Software upload	Uploading GS firmware can take some time. Ensure that the bat at least 75% full before beginning the upload, and do not remo battery during the upload process.		
	Software for	Description	
	All GS05 models	The software can be updated loading the firmware file to the internal memory of the GS05 instrument. Refer to 4.1.6 Updating the Firmware.	
2.2.2	Power Concep	t	
General	Use the batteries, chargers and accessories recommended by Leica Geosys- tems to ensure the correct functionality of the instrument.		
Power options	Power for the ins	strument can be supplied either internally or externally.	
	Model	Power supply	
	Internally	Integrated battery, not removable	
	Externally	5 V DC / 500 mA minimal via USB-C, or	

	Model Power supply
	110 V / 240 V AC to 5 V DC / 3 A maximal via USB-C power supply
137 1	For permanent operations use U ninterruptible P ower S upply units as a back- up in a main power failure.
2.2.3	Data Storage Concept
Description	Data (Leica GNSS raw data and RINEX data) can be recorded in the internal memory.
Memory device	Internal The GS05 GNSS instrument has an internal memory. memory: Available capacity: Up to 4 GB
	Unplugging connecting cables or interrupting the power supply during the measurement can cause loss of data. Only unplug connecting cables or inter- rupt the power supply when the GS GNSS instrument is switched off.
2.3	Container Contents
2.3.1	GVP754 GNSS Base & Rover Container
Container for GS instrument and accessories 1/2	
	h P g

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- a GHT63 clamp
- b Manuals and USB documentation card
- c GEB212, GEB260 or GEB334 batteries
- d Antenna
- e LTE antennas, for example GAT36
- f Radio antennas, for example GAT35
- g Field controller or tablet with holder
- h Tribrach
- i Height hook
- j USB stick
- k CBA4, Li-ion battery for CC200
- l Cables
- m Antenna
- n Stylus
- o SD cards
- p GAD34 arm 3 cm
- q TNC QN-adapter
- r Allen key and adjustment tool

Container for GS instrument and accessories 2/2



- h GRT146 or GRT247 carrier
- i GAD33 arm
- j GHT58 tripod bracket for GFU
- k External battery

Container for GS instrument and accessories



- a Field controller with holder
- b Antenna
- c LTE antennas, for example GAT36
- d Stylus
- e GHT63 clamp
- f USB stick
- g CRP15, quick release adaptor for quick mounting and demounting the GS05 to the pole without screwing
- h GHT87 tablet holder
- i GAT1, GAT2 or GAT35 radio antennas
- j Antenna arm
- k microSD card including adapter or SD card
- l Cables
- m Manual and USB documentation card
- n GHT87 tablet holder bracket
- o GEB212, GEB260 (spare battery for CS30) or GEB334 batteries

2.3.3

Container for GS05 1/2



- a GAD33 arm
- b Field controller or tablet with holder
- c GAT33 Multiband GSM/UMTS/LTE antenna, or GAT27/GAT28/GAT36
- d Antenna arm
- e Manuals and USB documentation card
- f GPR121 circular prism PRO or GZT4 target plate for GPH1 and GPH1 prism holder with GPR1 circular prism
- g Allen key and adjustment tool
- h GHT63 clamp
- i GAT25 radio antenna
- j Stylus
- k SLXX RTK modem
- I GEB212 or GEB331/GEB333/GEB334 batteries
- m Antenna
- n SD cards
- o TNC QN-adapter



- a GHT87 tablet holder bracket
- b GAD103 adapter
- c Protective cover for instrument, sunshade for objective lens and cleaning cloth
- d CBA4, Li-ion Battery for CC200
- e GAT radio antennas, long flexible
- f GKL311 battery charger
- g GRZ101 mini prism
- h Cables
- i GRZ4 or GRZ122 prism
- j Standard handle or RadioHandle
- k GAD110 adapter for antenna
- I GAD31 screw to stub adapter
- m Mini prism spike

2.4

Instrument Components

GS05 components



- a LEDs and ON/OFF button
- b USB-C port
- c Antenna Reference Plane (ARP)
- d RP-SMA connector for external UHF or LTE antenna

A Bluetooth port is included inside all GS GNSS instruments enabling connectivity to the field controller.

3	User Interfa	ce
3.1	Keyboard	
Keyboard GS05	a	Ū 🔶 🤝
	27412_001	a ON/OFF button
ON/OFF button	Button	Function
	ON/OFF	 If GS05 is off Turns on GS05 when held for 2 s. While the GS05 is booting, the Battery, Position and Connectivity LEDs light up sequentially one at a time. If GS05 is off Battery status of GS05 is shown when the button is pressed for < 1 s. If GS05 is on Turns off GS05 when held for 2 s. If GS05 is on The Battery, Position and Connectivity LEDs light up sequentially one at a time.
		If GS05 is on Forces shutdown of GS05 when held for 12 s.
		 If GS05 is on Press and hold button for 7 s. System configuration and network settings on the GNSS instrument are reseted. After the reset, the GNSS instrument is rebooted. The Position and Connectivity LEDs flash in orange and blue.
3.2	LED Indicators	on GS05

LED indicators

Description

The GS05 instrument has Light Emitting Diode (LED) indicators. They indicate the basic instrument status.

Diagram



a Battery LEDb Position LEDc Connectivity LED

Description	of	the
LEDs		

LED	LED Status	Status of the Instrument
Battery LED	off	GS05 is switched off and is not being charged.
	green	GS05 is switched on and the battery power is $>$ 30%. OR
		While being charged, GS05 is switched off and the battery power is 100%. OR
		Status check while GS05 is switched off and the battery power is $>$ 30%.
	slow flashing green	While being charged, GS05 is switched off and the battery power is < 100%. OR
		While being charged, GS05 is switched on and the battery power is $< 100\%$.
	red	GS05 is switched on and the battery power is 10% to 30%. OR
		Status check while GS05 is switched off and the battery power is 10% to 30%.
	flashing red	GS05 is switched on and the battery power is $<$ 10%.
		Status check while GS05 is switched off and the battery power is < 10%.
Position LED	off	No satellites are tracked or GS05 is switched off.
	flashing orange	Satellites are tracked, a position is not yet available.
	orange	A navigated position is available.
	flashing green	A code-only position is available.
	green	A fixed RTK position is available.
Connectivity LED	off	GS05 is not powered or module is not ready.

	LED	LED Status	Status of the Instrument	
		green	GS05 is on and ready for connecting.	
		blue	GS05 is connected to a field controller via Bluetooth.	
3.3	Operating	Principles		
Operating the instru- ment	The GS05 GNSS instrument is operated by pressing the ON/OFF button or by the field controller.			
	 Operation by button The GS05 GNSS instrument is operated by pressing its button. Refer to 3.1 Keyboard for a detailed description of the buttons and their function. Operation by field controller The GS05 GNSS instrument is operated by the field controller using the Captivate software. Refer to the User Manual of the field controller for a detailed description of the keys and their function. 			
Turn on GS05	To turn on th	e instrument pres	and hold the ON/OFF button for 2 s.	
Turn off GS05	To turn off th • press and	e instrument: hold the ON/OF	F button for 2 s	
	confirm to field cont	o power down th roller	e instrument when exiting the software on the	

4	Operation		
4.1	Equipment Setup		
4.1.1	Setting up as a Post-Processing Base		
Use	The equipment setup described is used for static operations over markers.		
Description	The instrument can be programmed with the field controller before use which can then be omitted from the setup.		
-	 The antenna is mounted directly using screw fitting. If using stub and adapter, procedures can vary slightly. When using the adapter and carrier, ensure that the antenna and the adapter assembly slide down the full length of the carrier stub. An incorrectly mounted antenna will have a direct effect on the results. 		
- 	Use an external power supply to ensure operation for a full day.		
Equipment setup			



Equipment setup	1.	Set up the tripod.			
step-by-step	2.	Mount and level the tribrach on the tripod.			
	3.	Ensure that the tribrach is over the marker.			
	4.	Place and lock the carrier in the tribrach.			
	5.	Screw the GS onto the carrier.			
	6.	Check that the tribrach is still level.			
	7.	Insert the data storage device and the battery into the field control- ler.			
	8.	Switch on the field controller and connect it to the instrument if necessary.			
	9.	To hang the field controller on the tripod leg, use the hook on the hand strap or use the utility hook. Refer to the User Manual of the field controller.			
	10.	Insert the height hook into the carrier.			
	11.	Measure the antenna height using the height hook.			
	12.	Press the ON/OFF button on the instrument for at least 2 s to switch on the instrument.			
4.1.2	Settir	ng up as a Real-Time Base			
Use	The equipment setup described is used for real-time base stations with the need of optimal radio coverage. Raw observation data can also be collected for post-processing.				
Description	The GS which	505 instrument can be programmed with the field controller before use can then be omitted from the setup.			
	The connection between GS05 and the field controller is made via Bluetooth.				
	The rad	dio antenna (GAT35) is directly mounted downwards facing at the GNSS na.			
	 The GNSS antenna is mounted directly using screw fitting. If using stub and adapter, procedures can vary slightly. When using the adapter and carrier, ensure that the antenna and the adapter assembly slide down the full length of the carrier stub. An incorrectly mounted antenna will have a direct effect on the results. Standard radio is used throughout the instructions. Digital cellular phones can also be used but the setup can differ slightly. 				
	Use an external power supply to ensure operation for a full day.				

Equipment setup -GS05 cellular or GS05 a UHF b

GS05 cellular or GS05 UHF	b – c – d – f – g –			i j k l m		
	27483 a b c d e	GS instrument with integ- rated cellular modem or UHF modem GAD54 adapter, only required in combination with GAT35 UHF antenna GRT146 carrier Tribrach GAT35 UHF antenna	f g h j k I m n	GAT36 LTE antenna Height hook Tripod Utility hook CS20 field controller GEB334 battery SD card CS30, CC180 or CC200 tablet USB stick		
Equipment setup	1.	Set up the tripod.				
step-by-step	2.	Mount and level the tribrach o	Mount and level the tribrach on the tripod.			
	3.	Ensure that the tribrach is over the marker.				
	4.	Place and lock the carrier in t	Place and lock the carrier in the tribrach.			
	5.	Screw the GS05 onto the carrier.				
	6.	Check that the tribrach is still level.				
	7.	Connect the UHF or LTE antenna to the GS05.				
	8.	Insert the data storage device and the battery into the field control- ler.				
	9.	Connect the field controller to	o the ir	nstrument if necessary.		
	10.	To hang the field controller or hand strap or use the utility h field controller.	n the t 100k. R	ripod leg, use the hook on the refer to the User Manual of the		
	11.	Insert the height hook into th	ie carri	er.		
	12.	Measure the antenna height ι	using t	he height hook.		
				-		

13. Press the ON/OFF button on the instrument for at least 2 s to switch on the instrument.

4.1.3	Setting up as a Real-Time Rover			
Use	The equipment setup is used for real-time rover with extended periods of use in the field.			
Description	Connections are made to the GNSS antenna, radio antenna and field control- ler.			
	The field controller is fixed to the pole with the GHT63. Connection between the GS05 instrument and the field controller is made through Bluetooth.			
-3 	 The antenna is mounted directly using screw fitting. If using stub and adapter, procedures can vary slightly. When using the pole with stub, ensure that the antenna and the screw-to-stub adapter slide down the full length of the stub before tightening the locking ring. An incorrectly mounted antenna will have a direct effect on the results. Standard radio is used throughout the instructions. Digital cellular phones can also be used but the setup can differ slightly. 			



Equipment setup - GS05 UHF	a b c d e f g h i j k l m n		
	0		
	a GS instrument with integrated b GHT63 pole clamp		
	UHF radio modem i CS30 tablet		
	b GLS30 carbon fibre pole j USB stick		
	c GAT35 radio antenna k GHT81 holder		
	d CS20 field controller I CC180 tablet		
	e SD Card Tor CS20 III GH190 Holder		
	g GHT66 holder o CMB16 holder		
Equipment setup	1. Attach the GHT66 for CS20 holder to the pole.		
Step by Step	2. Insert the data storage device and the battery into the field control- ler.		
	3. Clip the field controller into the holder and lock it by pushing the locking pin into the locked position.		
	4. Press ON/OFF button on the field controller to switch on.		
	5. Press ON/OFF button on the GS05 to switch on.		
	6. Screw the GS05 to the top of the pole.		
	7. The field controller and GS05 are connected via Bluetooth.		
4.1.4	Fixing the Field Controller to a Holder and Pole		
1. Jan	Refer to the User Manual of the field controller.		

4.1.5	Connecting to a Personal Computer			
Description	Leica USB drivers are not needed for GS05. Standard Windows drivers support all USB cables used for GS05.			
	Cables			
	Windows USB drivers support:			
	Name	Description		
	GEV278 GEV288	USB data cable, USB-C to USB-C		
	GEV284	USB data cable, USB-C to USB-A		
Connect to PC via USB	1.	Start the PC.		
cable step-by-step	2.	Plug the cable into the instrument.		
	3.	Turn on the instrument.		
	4.	Plug the cable into the USB port of the PC.		
	5.	Open the File Explorer on your PC.		
	6. Select This PC and select the Leica GS05 in section Devices and drives .			
	7.	Transfer your data from the internal memory of the Leica GS05 to your Windows PC.		
4.1.6	Updating the Firmware			
Description	The firmware of the GS05 GNSS instrument is updated by copying the firmware file onto the internal memory of the GS05.			
Update firmware step-by-step	1.	Firmware packages are available for download at the following Inter- net address: https://myworld-portal.leica-geosystems.com/ -> myDownloads		
	2.	Connect to PC via USB cable. Refer to 4.1.5 Connecting to a Per- sonal Computer.		
	3.	Follow the instructions mentioned in myWorld.		
	4.	Once followed all the steps required in previous point, the GS05 starts the update process automatically. LEDs indicate the process.		
	5.	Once the update process is complete, the GS05 instrument reboots automatically.		

4.2	Batteries			
4.2.1	Operating Principles			
First-time use/ charging batteries	 The battery must be charged before using it the first time The permissible temperature range for charging is from 0 °C to +50 °C/ +32 °F to +122 °F. For optimal charging, we recommend charging the batteries at temperature of +10 °C to +20 °C/+50 °F to +68 °F It is normal for the batteries to become warm during charging. The char- gers provided by Leica Geosystems automatically interrupt the charging when the temperature is too high For new batteries or batteries that have been stored for a long time (> three months), it is effectual to make a discharge/charge cycle For Li-lon batteries, a single discharge/charge cycle is sufficient. We recommend carrying out the process when the battery capacity indicated on the charger or on a Leica Geosystems product deviates significantly from the actual battery capacity available. 			
 Operation/discharging	 The batteries can be operated from -30°C to +60°C/-22°F to +140°F. Low operating temperatures reduce the capacity that can be drawn; high operating temperatures reduce the service life of the battery. 			
4.2.2	Battery for GS05 GS05 has an internal battery that cannot be removed. Refer to 2.2.2 Power Concept for information about how to charge the battery.			
4.3	Working with the Tilt Compensation			
Description	The pole can be held in a slanting position up to 30 degrees over the point to be measured without checking the circular bubble on the pole.			
	Measurements are reliable and accurate even if the pole is not levelled as the tilt values are calculated by an Inertial Measurement Unit. Tilt values contain information about the 3D position of the pole.			
	The measurements are immune to magnetic disturbances as there is no mag- netometer used.			
	Tilt compensation also works with Navigated and Code solutions. High accur- acy positions are recommended to speed up the tilt compensation initializa- tion.			
	Tilt compensation is turned off when RINEX logging is on.			
	When measuring a point, the pole tip must be stable on the point while the pole should be in slight movement.			
	Advantages:No need to level the poleFaster surveying procedure			



Tilt compensation step-by-step	Action		Result
		A GS05 must be configured as real-time rover and connected to a field controller running Captiv- ate software.	
	1.	Leica Captivate - Home: Set- tings\GS sensor\Tilt compens- ation	
	2.	Tilt Compensation Use tilt compensation: Check box checked. Set Use tilt compensator to: Compensate & store tilt.	
	3.	ОК	
	- A	Move the antenna for initialisa- tion. Walking to the survey mark is sufficient. A message and a voice promt indicate that the tilt compensation is being applied.	
	- - -	The green background of the position icon on the field con- troller indicates when a tilt com- pensated measurement is pos- sible.	

4. For an overview of the current position in the survey area

Action		Result
	Click the GS position icon. Select Current position .	
5.	Current GS position, Tiltpage The fields are updated according to the setting for GS position update rate in Screen, Audio & Text Input.	Privet a Direction of tilt β Tilt

6. For an overview of the current position in the survey area



	Action		Result
	9. Stal are	ke out the point. The values valid for the tip of the pole.	0.0191 2 1.4473 94.0191 m
4.4	Configurir	ig an eSIM	
Description	Some devices The GS05 LTI Manage eSIN • Enabl • View • Create	s are without physical SIM but E integrates eSIM which do no I profiles and their respective s e and disable eSIM existing eSIM profiles e, edit, deactivate, delete and	with integrated eSIM. t need a physical SIM. states: navigate eSIM profiles
Terms and	Term	Description	
abbreviations	eSIM	embedded Subscriber Ider An eSIM is a SIM card emb be updated over the air. The user must download t activate via a remote SIM	ntity Module bedded within the phone that can the eSIM profile over the air and provisioning process.
	ICCID	Integrated Circuit Card Ide This is a unique numerical an eSIM in a mobile device enabling mobile networks card with a specific user o	entifier code that identifies a SIM card or e. Every eSIM has its own ICCID, to accurately associate the eSIM r account.
	SM-DP+	Subscription Manager Dat The SM-DP+ address+ is a the address of the subscr activate the eSIM. The act provided by the service pr activated on the device.	a Preparation Protocol+ a unique identifier that specifies iption management server used to ivation code is an one-time code ovider that enables the eSIM to be
eSIM provisioning	The GS05 ha internal cellu tions, specifie	s been specifically designed as lar modem supports only LTE I cally LTE-M (also known as Cat	an IoT device, meaning that its networks tailored for IoT applica- t-M or Cat-M1) and Cat-1bis.
	When orderir ator (MNO) s deployed. Ad works to ens	ng your eSIM, please ensure th supports Cat-M or Cat-1bis in t Iditionally, the eSIM should be sure seamless operation.	hat your Mobile Network Oper- the area where the GS05 will be properly provisioned for these net-
Configuring eSIM step-by-step	1. Con adre	tact your eSIM network service ess, activation code and confir	e provider and ask for the SM-DP+ mation code for your eSIM.

You receive an QR code. This contains:

- SM-DP+ Adress: Unique identifier of the profile. This will be stored on the eUICC.
- Activation code: One-time code
- Confirmation code: Optional

With a QR code scanner, extract the QR code SM-DP+ Adress, the
activation code and the confirmation code (optional).
The information must be entered manually in Captivate.

- 2. Start Captivate.
- Connect GS05 to the Internet via WLAN: In Connection Settings, GS connections page, highlight GS WLAN and press Edit. Enter the settings.
- 4. In **Connection Settings**, **GS connections** page, highlight **GS inter-net** and press **Edit**.
- 5. In Internet Connection, select Connect using: GS modem. Press OK.
- 6. In **Connection Settings**, highlight a connection which has an eSIM capable device integrated.
- 7. Control.
- 8. Check Enable eSIM.
- 9. Press New.
- 10. In Internet Connection, **eSIM** page enter the information from the QR code
 - **eSIM profile label** as name for the profile.
 - SM-DP+ address as provided
 - Activation code as provided
 - Confirmation code (optional) if provided
- Press OK to install the profile.
 Press Enable to activate the eSIM profile.
 Configure the phone settings.

 In Internet Connection, APN page enter the APN.
 - In Internet Connection, **Sim codes** page enter the PIN and PUK. Most eSIM profiles do not require any PIN code.
- 14. GS05 is connected to the Internet.

4.5	Licence Activation
First time licence activation	The GS05 is delivered with all purchased licenses not yet activated. Connect the GS05 to the Internet for the initial license activation. For simplicity, we recommend doing this via the GS05 WLAN.
Subsequent licence activation	If new licenses have been re-ordered, they will be activated on the GS05 during application startup, after re-connection to the Internet, or every hour while the device is connected to the Internet.
	For more information please check <u>https://leica-geosystems.com/services-</u> and-support/product-services/license-activation?sc_lang=en.

4.6	Guidelines for Correct Results with GNSS Surveys			
Undisturbed satellite signal reception	Successful GNSS surveys require undisturbed satellite signal reception, espe- cially at the instrument which serves as a base. Set up the instrument in locations which are free of obstructions such as trees, buildings or mountains.			
Steady instrument for static surveys	For static surveys, the instrument must be kept perfectly steady throughout the entire occupation of a point. Place the instrument on a tripod or pillar.			
Centred and levelled instrument	Centre and level the instrument precisely over the marker.			
Tilt compensation for kinematic surveys	If tilt compensation is available and activated then tilt compensation is applied for stakeout and surveys with instantaneous point measurement, auto points or point measurements with short occupation time. The pole tip can be placed on the marker, while the antenna does not have to remain levelled and steady.			

5	Care and Transport		
5.1	Transport		
Transport in the field	 When transporting the equipment in the field, always make sure that you either carry the product in its original container, or carry the tripod with its legs splayed across your shoulder, keeping the attached product upright. 		
Transport in a road vehicle	Never carry the product loose in a road vehicle, as it can be affected by shock and vibration. Always carry the product in its container and secure it.		
Shipping	When transporting the product by rail, air or sea, always use the complete original Leica Geosystems packaging, container and cardboard box, or its equivalent, to protect against shock and vibration.		
Shipping, transport of batteries	When transporting or shipping batteries, the person responsible for the product must ensure that the applicable national and international rules and regulations are observed. Before transportation or shipping, contact your local passenger or freight transport company.		
5.2	Storage		
Product	Respect the temperature limits when storing the equipment, particularly in summer if the equipment is inside a vehicle. Refer to 6 Technical Data for information about temperature limits.		
Li-Ion batteries	 Refer to 6 Technical Data for information about storage temperature range Remove batteries from the product and the charger before storing After storage recharge batteries before using Protect batteries from damp and wetness. Wet or damp batteries must I dried before storing or use A storage temperature range of 0 °C to +30 °C / +32 °F to +86 °F in a dienvironment is recommended to minimize self-discharging of the batter At the recommended storage temperature range, batteries containing a 40% to 50% charge can be stored for up to one year. After this storage period the batteries must be recharged 		
5.3	Cleaning and Drying		
Product and accessories	• Use only a clean, soft, lint-free cloth for cleaning. If necessary, moisten the cloth with water or pure alcohol. Do not use other liquids; these may attack the polymer components.		
Cleaning and drying	Dry the product, the transport container, the foam inserts and the accessorie at a temperature not greater than 40 °C [104 °F] and clean them. Remove th battery cover and dry the battery compartment. Do not repack until everythir is dry. Always close the transport container when using in the field.		



Cables and plugs	Keep plugs clean and dry. Blow away any dirt lodged in the plugs of the connecting cables.
Connectors with dust caps	Wet connectors must be dry before attaching the dust cap.

6	Technical Data				
6.1	GS05 Technical Data				
6.1.1	Tracking Characteristics				
Satellite reception	Multi-band				
Instrument channels	Depending on the satellite systems and signals configured, a max- imum number of 184 channels is allocated.				
Supported signals	System	Signal			
	GPS	L1, L2C			
	GLONASS	L1, L2C			
	Galileo	E1, E5b			
	BeiDou	B1I, B2I			
	QZSS	L1, L2C			
	SBAS	Enabled through futu	ire firmware updates		
-					
	Carrier phase and code measurements on L1, L2 and L5 (GPS) are fully inde- pendent with AS on or off.				
6.1.2	Accuracy				
3	Accuracy is dependent upon various factors including the number of satellites tracked, constellation geometry, observation time, ephemeris accuracy, iono-spheric disturbance, multipath and resolved ambiguities.				
	The following accuracies, given as r oot m ean s quare, are based on measu ments processed using Leica Infinity and on real-time measurements.				
	The use of multiple GNSS systems can increase accuracy by up to 30% relative to GPS only.				
Differential code	The baseline precision of a differential code solution for static and kinematic surveys is 25 cm.				
Differential phase in	Туре	Horizontal	Vertical		
post-processing	Static and rapid static	5 mm + 0.5 ppm	10 mm + 0.5 ppm		
	Kinematic	10 mm + 1 ppm	20 mm + 1 ppm		
	Static with long observa- tions	3 mm + 0.5 ppm	6 mm + 0.5 ppm		
Differential phase in	Тура	Horizontal	Vertical		
real-time	Single Baseline (230 km)	10 mm + 1 00m	20 mm + 1 ppm		
	Network RTK	10 mm + 0.5 mm	20 mm + 0.5 ppm		
			20 mm + 0.5 ppm		

Tilt compensated in real-time Additional Hz uncertainty: Typically less than 1.5 cm tilt down to 30° tilt

6.1.3	Technical Dat	ta			
Dimensions	118.9 m 680 680 680 680 680 680 680 680 680 680		Lengt Width Heigh	h 118.9 mm 118.9 mm t 75.5 mm	
Weight	Туре	We	eight [kg]/[lbs]		
	GS05	0.7	75 / 1.76		
Recording	Data (Leica GNSS raw data and RINEX data) can be recorded on the internal memory or on the connected controller/tablet. 1 GB is sufficient for over 1 year of raw data logging based on logging every 15 s from an average of 15 satellites.				
Power	Power consumption:2.5 W typicallyExternal supply15 W maximal in charging mode via USB-Cvoltage:				
Internal battery	Battery	Voltage	Capacity	Operating time, typical*	
	Li-Ion	3.6 V	6.0 Ah	10 h	
	* Operating time depends on use of wireless communication devices.				
_ Operating times	 The given operating times are valid for GS05 instrument; one fully charged internal battery Room temperature; operating times will be shorter when working in cold weather. 				
	Туре			Operating time	
	Static			10 h continuously	
	Rover	with cellular m	odem	8 h continuously	
		with radio modem		10 h continuously	
	Base	with cellular modem		8 h continuously	
		with radio mod	lem	10 h continuously	
_					
Electrical data	GNSS Signal	Freque	ency	GS05	

GNSS Signal	Frequency	GS05
GPS L2C	1227.6000 MHz	\checkmark
GLONASS L2C	1243.375 — 1248.625 MHz	\checkmark
BeiDou B1I	1561.0980 MHz	\checkmark
GPS L1 Galileo E1	1575.4200 MHz	\checkmark
GLONASS L1	1598.625-1605.375 MHz	\checkmark
Gain (LNA)		Typically 22 dB
Noise Figure		Typically < 2 dB

Environmental specifications

Temperature

.

•		
Туре	Operating temperature [°C]	Storage temperature [°C]
GS05	With internal power: -30 to +55 With external power: -40 to +65	-40 to +80

Protection against water, dust and sand

Туре	Protection
GS05	IP66 & IP68, dust tight IEC 60529 MIL STD 810H 506.6 Proc II MIL STD 810H 512.6 Proc I MIL STD 810H 510.7 Proc II
	Protected against continuous immersion in water Tested for 2 hours in 1.40 m depth

Pollution degree

Туре	Pollution
GS05	4

Humidity

Protection

Up to 95%

The effects of condensation are to be effectively counteracted by periodically drying out the instrument.

Altitude

Туре	Protection
GS05	Unrestricted

Sound level

Туре	Value
All instruments	No sound emitted or no physical moving parts

Conformity to National Regulations

6.2

6.2.1

GS05

Labelling

GS05 (LG1001 (UHF))

GS05 (LG1002 (LTE Cat M1))

GS05 (LG1003 (LTE Cat 1 Bis))



Antenna

Antenna	Туре	Antenna	Gain [dBi]	
	GNSS	Internal GNSS antenna ele- ment (receive only)	-	
	Bluetooth	Internal Microstrip antenna	2 max.	
	UHF	External antenna	0	
	WLAN	Internal Patch antenna	2 max.	
	LTE	External antenna	2 max.	
Frequency bands, output power	Туре	Frequency band [MHz]	Output power ¹⁾ [dBm]	Country restrictions
	Bluetooth	2402-2480	8.00	
	WLAN	2401-2495	18.00	
	Radio	413-473	13.00	
	LTE (Cellular CatM)	700 (B12, B13, B28, B85) 800 (B18, B19, B20, B26, B27) 850 (B5) 900 (B8) AWS-3 (B66) AWS-1 (B4) 1800 (B3) 1900 (B2,B25) 2100 (B1)	20	This variant is the one used within articles 949991 and 949992.
	LTE (Cellular Cat1Bis)	2100 (B1) 1900 (B2) 1800 (B3) 2100 (B4) 850 (B5) 2600 (B7) 900 (B8) 800 (B20) 700 (B28) TDD2600 (B38) TDD2600 (B38) TDD2300 (B40) TDD2500 (B41) 2100 (B66)	23	This variant is the one used with article 949990.
	GS05	1207.14 1227.60 1243.375-1248.625 1561.098 1575.42	Receive only n/a ²⁾	

1) Conducted power for mobile technologies and EIRP for other technologies. ²⁾ Not applicable

1598.625-1605.375

Radiation Exposure Statement

The radiated output power of the instrument is below the radio frequency exposure limits. Nevertheless, the instrument should be used in such a manner that the potential for human contact during normal operation is minimised.

EU

USA

Hereby, Leica Geosystems AG declares that the radio equipment type
GS05 (LG1001 (UHF))

GS05 (LG1002 (LTE Cat M1))

GS05 (LG1003 (LTE Cat 1 Bis))

is in compliance with Directive 2014/53/EU and other applicable European Directives.

The full text of the EU declaration of conformity is available at the following Internet address: <u>http://www.leica-geosys-</u> tems.com/ce.

This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

FCC ID: LG1001 (UHF): RFD-LG1001, LG1002 (LTE): RFD-LG1002 Part 15, Part 15 B, 22, 24

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1. This device may not cause harmful interference, and
- 2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.

However, there is no guarantee that interference does not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

	Changes or modifications not expressly approved by Leica Geosystems for compliance could void the user's authority to operate the equipment.
Canada —	CAN ICES-003 B/NMB-003 B IC: LG1001 (UHF): 3177A-LG1001, LG1002 (LTE): 3177A-LG1002
	 Canada Compliance Statement This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: This device may not cause interference This device must accept any interference, including interference that may cause undesired operation of the device
	 Canada Déclaration de Conformité L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: L'appareil ne doit pas produire de brouillage L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement du dispositif
Japan	 This device is granted pursuant to the Japanese Radio Law (電波法). This device should not be modified (otherwise the granted designation number will become invalid).
Others	The conformity for countries with other national regulations has to be approved prior to use and operation.
6.2.2	Dangerous Goods Regulations
Dangerous Goods Regulations	Many products of Leica Geosystems are powered by Lithium batteries. Lithium batteries can be dangerous under certain conditions and can pose a safety hazard. In certain conditions, Lithium batteries can overheat and ignite.
	When carrying or shipping your Leica product with Lithium batteries onboard a commercial aircraft, you must do so in accordance with the IATA Dangerous Goods Regulations .
	There are guidelines on How to carry and How to ship products with Lithium batteries. Before any transportation of a Leica product, we ask you to consult the guidelines on the web page (<u>IATA Lithium</u> <u>Batteries</u>) to ensure that you are in accordance with the IATA Dan- gerous Goods Regulations and that the Leica products can be trans- ported correctly.
	Damaged or defective batteries are prohibited from being carried or transported onboard any aircraft. Therefore, ensure that the condition of any battery is safe for transportation.

7	Software Licence Agreement/Warranty
International Limited Warranty	This product is subject to the terms and conditions set out in the International Limited Warranty which you can download from the Leica Geosystems home page at Leica Warranty or collect from your Leica Geosystems distributor.
Software Licence Agreement	This product contains software that is preinstalled on the product, or that is supplied to you on a data carrier medium, or that can be downloaded by you online according to prior authorisation from Leica Geosystems. Such software is protected by copyright and other laws and its use is defined and regulated by the Leica Geosystems Software Licence Agreement, which covers aspects such as, but not limited to, Scope of the Licence, Warranty, Intellectual Property Rights, Limitation of Liability, Exclusion of other Assurances, Govern- ing Law and Place of Jurisdiction. Please make sure, that at any time you fully comply with the terms and conditions of the Leica Geosystems Software Licence Agreement.
	Such agreement is provided together with all products and can also be referred to and downloaded at the Leica Geosystems home page at <u>Hexagon – Legal Documents</u> or collected from your Leica Geosystems distributor.
	You must not install or use the software unless you have read and accepted the terms and conditions of the Leica Geosystems Software Licence Agree- ment. Installation or use of the software or any part thereof, is deemed to be an acceptance of all the terms and conditions of such Licence Agreement. If you do not agree to all or some of the terms of such Licence Agreement, you must not download, install or use the software and you must return the unused software together with its accompanying documentation and the purchase receipt to the distributor from whom you purchased the product within ten (10) days of purchase to obtain a full refund of the purchase price.
Open Source information	The software on the product may contain copyright-protected software that is licenced under various open source licences.
	 Copies of the corresponding licences are provided together with the product (for example in the About panel of the software) can be downloaded on <u>http://opensource.leica-geosystems.com</u>
	The Customer is permitted to modify our software components for the cus- tomer's own use and to perform reverse engineering of our software com- ponents for debugging of such modifications if these software components are linked with libraries licensed under the GNU Lesser General Public License (LGPL). However, forwarding the knowledge acquired during reverse engineer- ing or forwarding modified software to third parties is prohibited.
	The safety of this product is of great importance to us.
	Therefore, as a rule, modified versions of the deployed Open-Source software can only be installed if the security features in use are removed by us. Please note that the installation of modified software can entail that possible safety requirements on the product are no longer fulfilled and that consequently, it can no longer be used in the originally intended way.

If you still wish to install modified versions of the software components licensed under the GNU General Public License (GPL) and the GNU Lesser General Public License (LGPL), please contact opensource@leica-geosystems.com noting that you would like to install own versions of the software on your device.

You will then receive all necessary information to return the device to us.

In order to comply with our license obligations towards the GPL and/or LGPL licensors, we will remove the security features in use, thereby enabling you to install GPL and/or LGPL software, remove our trademarks from the product, and return the product to you. However, redistribution of the product with modified software is not permitted as exhaustion of the distribution right cannot occur for the specific copy. Also, the use of the product may be prohibited if it violates any legal provisions. It is your responsibility to check whether the use is permissible in the specific case or to obtain the required permits. The warranty is void for any defects related to the use of modified software.

You may also obtain the complete corresponding source code from us on a physical medium (CD-ROM, DVD or USB memory stick) for a period of 3 (three) years after our last shipment of the corresponding product by sending an email to opensource@leica-geosystems.com. Please specify the address to which you wish us to send the source code. Additional product information (e.g. explicit product name, serial number etc.) will help us to identify the corresponding source code for you. The source code will be sent to the given address after reimbursement of the expenses actually incurred for providing the data carrier and shipping.

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www.leica-geosystems.com



- when it has to be **right**



