

# Leica Zeno 20 Android



User Manual  
Version 1.2  
English

- when it has to be **right**

**Leica**  
Geosystems

# Introduction

## Purchase

Congratulations on the purchase of the Leica Zeno 20 Android.



This manual contains important safety directions as well as instructions for setting up the product and operating it. Refer to "1 Safety Directions" for further information.

Read carefully through the User Manual before you switch on the product.

## Product identification

The model and serial number of your product are indicated on the type plate. Always refer to this information when you need to contact your agency or Leica Geosystems authorised service centre.

## Trademarks and Licenses





- Android™ is a trademark of Google Inc.
- CompactFlash and CF are trademarks of SanDisk Corporation
- *Bluetooth®* is a registered trademark of Bluetooth SIG, Inc.
- SD Logo is a trademark of SD-3C, LLC.

All other trademarks are the property of their respective owners.

## Validity of this manual

This manual applies to the Android version of the LeicaZeno 20 device.

## Available documentation

Name	Description/Format		
Leica Zeno 20 Quick Guide	Provides an overview of the product together with technical data and safety directions. Intended as a quick reference guide.	✓	✓
LeicaZeno 20 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.	-	✓
Name	Description/Format		
ZenoGIS Getting Started Guide	Describes the general working of the product in standard use. Intended as a quick reference field guide.	-	✓
Zeno Connect Getting Started Guide	Describes the general working of the product in standard use. Intended as a quick reference field guide.	-	✓
Zeno Mobile Quick Guide	Describes the general working of the product in standard use. Intended as a quick reference field guide.	-	✓
ZenoGIS Help*	Overall comprehensive help to the product and application functions. Included are detailed descriptions of special software/hardware settings and software/hardware functions.	-	-

\* only available as Online Help

**Refer to the following resources for all Zeno 20 documentation/software:**

- the Leica USB documentation card
- <https://myworld.leica-geosystems.com>



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myWorld@Leica Geosystems (<https://myworld.leica-geosystems.com>) 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.

Service	Description
myProducts	Add 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.
myService	View the current service status and full service history of your products in Leica Geosystems service centres. Access detailed information on the services performed and download your latest calibration certificates and service reports.
mySupport	Create new support requests for your products that will be answered by your local Leica Geosystems Support Team. View the complete history of your support requests and view detailed information on each request in case you want to refer to previous support requests.
myTraining	Enhance your product knowledge with Leica Geosystems Campus - Information, Knowledge, Training. Study the latest online training material on your products and register for seminars or courses in your country.
myTrustedServices	Add your subscriptions and manage users for Leica Geosystems Trusted Services, the secure software services, that assist you to optimise your workflow and increase your efficiency.

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# Table of Contents

<b>1</b>	<b>Safety Directions</b>	<b>6</b>
1.1	General Introduction	6
1.2	Definition of Use	6
1.3	Limits of Use	7
1.4	Responsibilities	8
1.5	Hazards of Use	8
1.6	Electromagnetic Compatibility EMC	11
1.7	FCC Statement, Applicable in U.S.	13
1.8	ICES-003 Statement, Applicable in Canada	14
<b>2</b>	<b>Description of the System</b>	<b>16</b>
2.1	Overview	16
2.2	System Concept	17
2.2.1	Software Concept	17
2.2.2	Power Concept	17
2.2.3	Data Storage Concept	18
2.3	System Components	18
2.4	Components	19
<b>3</b>	<b>User Interface</b>	<b>21</b>
3.1	Keyboard	21
3.2	Operating Principles	22
3.3	LED Indicators on Zeno 20	23
<b>4</b>	<b>Operation</b>	<b>24</b>
4.1	Equipment Setup	24
4.1.1	Fixing the Display Foil to the Zeno 20	24
4.1.2	Inserting and Removing a SIM Card and SD Card	24
4.1.3	Attaching the <b>AS10/AS05</b> Antenna to the Zeno 20	26
4.2	Batteries	26
4.2.1	Operating Principles	27
4.2.2	Changing the Battery	27
4.2.3	Charging the Battery	28
4.3	Power Functions	29
4.4	Connecting the Zeno 20 to a PC with the Micro-USB Cable	30
4.5	Optimising the Zeno 20 for GNSS Tracking	30
4.6	Setting up the Zeno 20 with a Disto S910	31
<b>5</b>	<b>Software</b>	<b>33</b>
5.1	Overview: Home Screen, Navigation, Apps and Widgets	33
5.2	Settings	37
5.2.1	Changing the Operating System Language	38
5.2.2	Resetting the Zeno 20 Device	39
5.3	Useful Applications	40
5.3.1	Hot Keys	40
5.3.2	Screenshots	40
5.3.3	File Manager	41
5.3.4	System Information	41
5.3.5	Using the Digital Camera	41
5.3.6	Boot Logo Changer	41
<b>6</b>	<b>Care and Transport</b>	<b>43</b>
6.1	Transport	43
6.2	Storage	43
6.3	Cleaning and Drying	43

<b>7</b>	<b>Technical Data</b>	<b>45</b>
7.1	Zeno 20	45
7.2	Conformity to National Regulations	47
7.3	Dangerous Goods Regulations	48
<b>8</b>	<b>Software Licence Agreement</b>	<b>49</b>

# 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 for the product must ensure that all users understand these directions and adhere to them.

### About warning messages





Warning messages are an essential part of the safety concept of the instrument. They appear wherever hazards or hazardous situations can occur.

#### Warning messages...

- make the user alert about direct and indirect hazards concerning the use of the product.
- contain general rules of behaviour.

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, CAUTION** and **NOTICE** are standardised signal words for identifying levels of hazards and risks related to personal injury and property damage. For your safety, it is important to read and fully understand the following table with the different signal words and their definitions! Supplementary safety information symbols may be placed within a warning message as well as supplementary text.

Type	Description
 <b>DANGER</b>	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a potentially hazardous situation or an unintended use which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor or moderate injury.
<b>NOTICE</b>	Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in appreciable material, financial and environmental damage.
	Important paragraphs which must be adhered to in practice as they enable the product to be used in a technically correct and efficient manner.

## 1.2 Definition of Use

### Intended use

- Remote control of product.
- Data communication with external appliances.

## Reasonably foreseeable misuse

- Use of the product without instruction.
- Use outside of the intended use and limits.
- Disabling safety systems.
- Removal of hazard notices.
- Opening the product using tools, for example screwdriver, unless this is permitted for certain functions.
- Modification or conversion of the product.
- Use after misappropriation.
- Use of products with recognizable damages 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 application without additional control and safety installations.

## Additional Advice

- The Zeno 20 is essentially an enhanced PDA (personal digital assistant) used in geospatial applications. This device is to be used for data logging and data communication for industrial applications only and not for domestic consumer applications.
- This device does not have held-to-ear voice operations.
- This device does not have body-worn accessories.
- This device is designed to be used only in the hand or in fixed installations by mounting it on a pole or a vehicle. When the device is not mounted on a pole or a vehicle, you may use it in handheld mode only and should keep it away from your body (as described in "4.5 Optimising the Zeno 20 for GNSS Tracking"). Do not place the device on your lap or any part of the body.

## 1.3

### Limits of Use

#### Environment

Suitable for use in an atmosphere appropriate for permanent human habitation: not suitable for use in aggressive or explosive environments.

#### **WARNING**

**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.



The following advice is only valid for battery charger, power adapter and car adapter.

#### Environment

Suitable for use in dry environments only and not under adverse 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 it is used in accordance with the instructions.
- To be familiar with local regulations relating to safety and accident prevention.
- To inform Leica Geosystems immediately if the product and the application becomes 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.



### **WARNING**

#### **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.

---

### **WARNING**

#### **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.

---

### **CAUTION**

Keeping the device too close to the human body during operation may pose a health risk.

This device has been tested for typical operations near the human body, for example handheld mode, with the device kept at 10 mm from the user's body.

#### **Precautions:**

- ▶ Use the device at least 10 mm apart from the human body.

 **CAUTION**

**Inappropriate mechanical influences to batteries**

During the transport, shipping or disposal of batteries it is possible for inappropriate mechanical influences to constitute a fire hazard.

**Precautions:**

- ▶ Before shipping the product or disposing of it, discharge the batteries by running the product until they are flat.
- ▶ When transporting or shipping batteries, the person in charge of 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.

 **WARNING**

**Exposure of batteries to high mechanical stress, high ambient temperatures or immersion into fluids**

This can cause leakage, fire or explosion of the batteries.

**Precautions:**

- ▶ Protect the batteries from mechanical influences and high ambient temperatures. Do not drop or immerse batteries into fluids.

 **WARNING**

**Short circuit of battery terminals**

If battery terminals are short circuited e.g. by coming in contact with jewellery, keys, metallised paper or other metals, the battery can overheat and cause injury or fire, for example by storing or transporting in pockets.

**Precautions:**

- ▶ Make sure that the battery terminals do not come into contact with metallic objects.

 **WARNING**

**Improperly repaired equipment**

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

**Precautions:**

- ▶ Only Leica Geosystems authorised service centres are entitled to repair these products.

The following advice is only valid for battery charger, power adapter and car adapter.



**⚠ WARNING**

**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.



The following advice is only valid for batteries, power adapter or docking station.

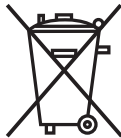
**⚠ WARNING**

**Improper disposal**

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.

**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.

**1.6**

**Electromagnetic Compatibility EMC**

**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.

**⚠ WARNING**

Electromagnetic radiation can cause disturbances in other equipment.

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.

The product is a class A product when operated with the internal batteries. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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 **CAUTION**

**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, they 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.
- 

 **CAUTION**

**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 function of the product may be disturbed in such an electromagnetic environment.

**Precautions:**

- ▶ Check the plausibility of results obtained under these conditions.
- 

 **CAUTION**

**Electromagnetic radiation due to improper connection of cables**

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

**Precautions:**

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

 **WARNING**

**Use of product with radio or digital cellular phone devices**

Electromagnetic fields can cause disturbances in other equipment, in installations, in medical devices, for example pacemakers or hearing aids and in aircraft. It 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 to medical equipment.
- ▶ Do not operate the product with radio or digital cellular phone devices in aircraft.

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**1.7**

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**FCC Statement, Applicable in U.S.**

 **WARNING**

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, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

- 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.

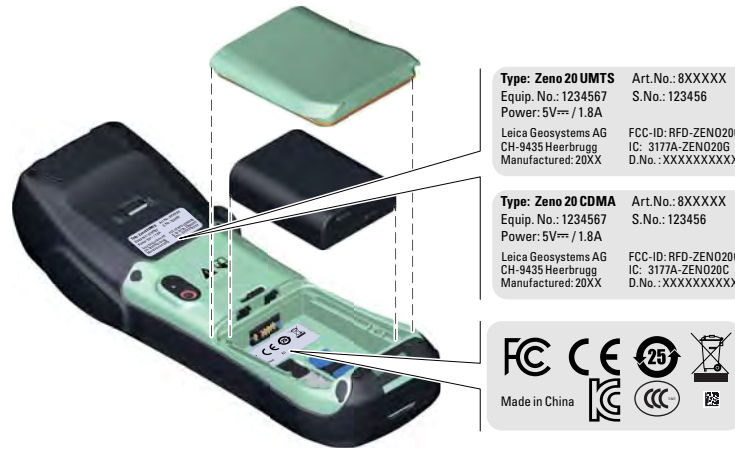
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 **CAUTION**

Changes or modifications not expressly approved by Leica Geosystems for compliance could void the user's authority to operate the equipment.

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## Labelling Zeno 20



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.

## 1.8

### ICES-003 Statement, Applicable in Canada

#### **WARNING**

This Class (B) digital apparatus complies with Canadian ICES-003.  
Cet appareil numérique de la classe (B) est conforme à la norme NMB-003 du Canada.

#### **Canada Compliance Statement**

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

#### **Canada Déclaration de Conformité**

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage;
2. l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## Exposure to radio frequency (RF) signals

The wireless device is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limit for exposure to radio frequency (RF) energy set by the OET Bulletin 65 Supplement C / Ministry of Health (Canada), Safety Code 6. These limits are part of comprehensive guidelines and established permitted levels of RF energy for the general population. These guidelines are based on the safety standards previously set by international standard bodies. These standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

This device and its antenna must not be co-located or operating in conjunction

with any other antenna or transmitter.

This device has been shown to be capable of compliance for localised specific absorption rate (SAR) for uncontrolled environment / general public exposure limits specific in ANSI/IEEE C95.1-1992 and had been tested in accordance with the measurement procedures specified in IEEE Std. 1528-2003.

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## IC Canadian Compliance

This radio transmitter has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p) is not more than that necessary for successful communication. This device complies with Industry Canada license-exempt RSS standard(s).

Operation is subject to the following two conditions: (1) This device may not cause interference. (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur. Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) L'appareil ne doit pas produire de brouillage.

(2) L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

---

## 2

## Description of the System

### 2.1

### Overview

#### Zeno 20 General Description

The Zeno 20 is a compact, high performance, low weight device with an integrated high accuracy GNSS, designed for outdoor & fieldwork usage. The Zeno 20 can withstand severe environmental conditions including vibration, shock, moisture and temperature variations. The Zeno 20 is suitable for use in harsh environments such as construction sites, warehouses, military, manufacturing and field service.



009343\_001

#### Zeno 20 Available Models

Model	Zeno 20 3.75G Android	Zeno 20 3.75G WEH	Zeno 20 CDMA Android	Zeno 20 CDMA WEH
Touch screen	✓	✓	✓	✓
Colour display	✓	✓	✓	✓
Internal modem	W/WWAN-GSM	W/WWAN-GSM	W/WWAN-CDMA	W/WWAN-CDMA
Internal batteries <sup>1)</sup>	✓	✓	✓	✓
MicroSD Card	✓	✓	✓	✓
Bluetooth	✓	✓	✓	✓
Wireless LAN 802.11b/g/n	✓	✓	✓	✓
Wi-Fi	✓	✓	✓	✓
Operating System	Android 4.2.2	Windows Embedded Handheld 6.5 Professional	Android 4.2.2	Windows Embedded Handheld 6.5 Professional
L1/L2 GNSS board	✓	✓	✓	✓
<b>FCC etc. (reports)</b>				
Model Name	Zeno 20	Zeno 20	Zeno 20	Zeno 20
FCC ID	RFD-ZENO20G	RFD-ZENO20G	RFD-ZENO20C	RFD-ZENO20C
<b>CE and IC</b>				
Model Name	ZENO20G	ZENO20G	ZENO20C	ZENO20C

<sup>1)</sup> One removable battery and one backup battery



Model	Zeno 20 3.75G Android	Zeno 20 3.75G WEH	Zeno 20 CDMA Android	Zeno 20 CDMA WEH
IC Number	3177A- ZENO20G	3177A- ZENO20G	3177A- ZENO20C	3177A- ZENO20C

## 2.2





## System Concept

### 2.2.1

### Software Concept

#### Software Options for Zeno 20

Software type	Description
Windows Embedded Handheld 6.5 Professional (WEH)	This software includes: <ul style="list-style-type: none"> <li>• The English version of WEH.</li> <li>• The basic WEH functionality.</li> <li>• If ordered, the Zeno Field or Zeno Connect for Zeno 20.</li> </ul>
Android 4.2.2	This software includes: <ul style="list-style-type: none"> <li>• The language-specific version of Android.</li> <li>• The basic Android functionality.</li> <li>• If ordered, the Zeno Mobile or Zeno Connect for Zeno 20.</li> </ul>

-  This User Manual only describes the Android version of the Zeno 20. For more information about the other version refer to the respective User Manual.
-  The Zeno 20 is delivered with the operating system and software that you ordered. The software is already licensed. For information on how to switch to a different language version, refer to "5.2.1 Changing the Operating System Language" or to the according software documentation.
-  The installation includes the latest released Zeno updates, the latest released GNSS board firmware and the purchased Auth Code. Refer to the according software documentation for more information. Be aware, that the Zeno 20 is only working correctly with the Android versions released from Leica Zeno.
-  "Google Play Store" will not be available on the Zeno Android. Instead, you can use different app stores such as the "Amazon App-store" or "1MobileMarket".

#### **NOTICE**

Rooting your Android device will void your right for any warranty services and support by Leica!

### 2.2.2

### Power Concept

#### General

Use the batteries, chargers and accessories recommended by Leica Geosystems to ensure the correct functionality of the instrument.

#### Power Options

Model	Power supply
Zeno 20	Internally by AZ206 <sup>2)</sup> battery, OR

Model	Power supply
	Externally by AZ209 <sup>3)</sup> AC/DC adapter, OR Externally by AZ208 car adapter. If an external power supply is connected and the internal batteries are inserted, then the external power is used. If the power consumption of the Zeno 20 is less than the charging capacity, the internal batteries are charged.

### 2.2.3

### Data Storage Concept

#### Description

Data is stored on a memory device. The memory device can be a USB stick or internal memory.

#### Memory Device

USB stick:	The device has a USB port fitted as standard.
Internal memory:	The device has an internal memory fitted as standard. Available capacity: 4 GB.
MicroSDHC card:	The device has an MicroSDHC card slot. Maximum card size: 32 GB



The delivered Leica Geosystems USB flash drive contains system software and is not certified for permanent data transfer i.e. as data storage for measurement data. Use only certified industrial grade USB flash drives such as the LeicaMS1 (order number 765199).

### 2.3

### System Components

#### Zeno 20 Package

The Zeno 20 package includes the following components:

#### a Zeno 20



#### b AZ206



#### c AZ201



009342.001

#### d AZ203



#### e AZ211



#### f AZ209



g



h



<sup>2)</sup> manufacturer: ETI CA Battery Inc.

<sup>3)</sup> manufacturer: Ktec

- a) Zeno 20 Android  
**OR**  
Zeno 20 Windows Embedded Handheld
- b) Rechargeable Battery
- c) Capacitive Stylus
- d) Hand Strap
- e) Data Transfer Cable
- f) AC Adapter
- g) Quick Guide
- h) USB documentation card with software and documents

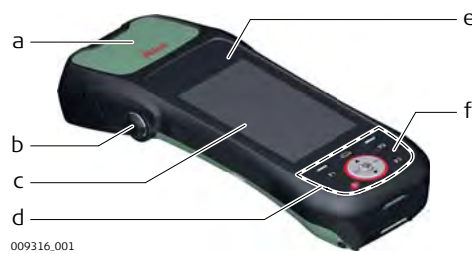
**Optional Accessories**

- 16 GB MicroSD card (823058)
- Car Charger (823056)
- Desktop Charger (823055)
- Additional Battery (823054)
- Zeno 20 Pole Plate (823052)
- Zeno 20 Pole Plate and Disto S910 Pole Plate (823053)
- Additional Stylus (823049)
- Disto FTA360 Adapter for Zeno 20 (827546)
- Screen Protection Foil for Zeno 20 (823050)
- AS10 Antenna Cable (667200)
- AS10 (827546)

**2.4**

**Components**

**Front Side of the Zeno 20**



009316.001

- a Internal GNSS Antenna and Board
- b External GNSS Antenna Connector
- c Screen
- d Keypad
- e LED Indicators
- f Microphone

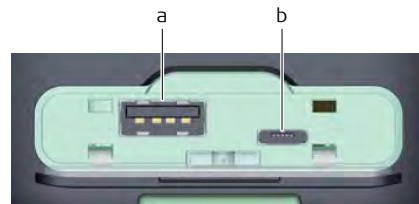
**Back Side of the Zeno 20**



009317.001

- a Holder for Handstrap
- b Camera and Flash
- c Speaker
- d Compartment with Slots for Battery, SIM Card and SD Card
- e Release Lever for Battery Compartment
- f Handstrap Fixation

**Bottom Panel of the Zeno 20**



009318.001

- a USB A Host Port
- b Micro USB Host Port, works also as Power Socket

## Battery Compartment



- a Battery Connectors
- b SIM Card Slot
- c MicroSDHC Card Slot
- d Latch for Battery Pack

### 3

## User Interface

### 3.1

## Keyboard









#### Keypad








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- a Home key
- b Left softkey
- c Direction Pad UP
- d F1 key
- e Camera key
- f Power key
- g Right softkey
- h F2 key
- i OK key
- j Satellite/GNSS key
- k F3 key
- l Direction Pad DOWN

#### Functions of the Keys

Key	Function (WEH)	Function (Android)
 Power key	Power, Suspend & Resume	Power, Suspend & Resume
 Left softkey	Left	Back
 Home key	Home (Returns to main screen)	Home (Returns to main screen)
 Right softkey	Right	Menu
 OK key	OK	OK
 Satellite/ GNSS key	Measure in Zeno Field	Measure in Zeno Mobile
 Direction Pad UP	Up	Up
 Direction Pad DOWN	Down	Down

Key	Function (WEH)	Function (Android)
	Press to open camera app. If camera app is opened: Press to take a picture.	Press to open camera app. If camera app is opened: Press to take a picture.
Camera Key		
	Programmable hot keys.	Programmable hot keys.
F1		
		
F2		
		
F3		
	For detailed information on the programmable hot keys, refer to "5.3.1 Hot Keys".	

## How to Use the Power Key

*If the handheld is turned off:*

To turn on the handheld, press the Power key for 5 s.

*If the handheld is turned on:*

- To put the handheld into stand-by mode, press the Power key for maximally 4 s. If you press the Power key again, the handheld returns to normal operation.
- To open the Shut-Down menu, press the Power key for at least 4 s. Within the menu, you can choose between the options **Power Off**, **Reboot** or **Airplane Mode**. The Airplane Mode suspends many of the signal transmitting functions of the device. You can also choose between silent mode, vibration mode or normal mode. To close the Shut-Down menu, tap on the screen outside the menu or press the left softkey.

## 3.2

### Operating Principles

#### Touch Screen

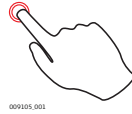
The user interface is operated through the capacitive touch screen. You can either use the supplied stylus or touch the screen with the finger. Multi-touch and gestures are supported.

Operation	Description
To select an item	Tap on the item.
To start the edit mode in editable fields	Tap on the editable field.
To navigate in menus or maps	Swipe with the supplied stylus or via touch from one side to the other or up and down.
To accept data entered into an editable field and exit the edit mode	Tap on the screen outside of the editable field.
To open a context-sensitive menu	Tap on the item and hold for 2 s.

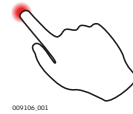
Operation	Description
To zoom in maps/pictures/apps	Pinch with your fingers.
To close the virtual keyboard	Press the left softkey on the keypad or the softkey "Back" on the screen.

### Gestures for Touch-Screen

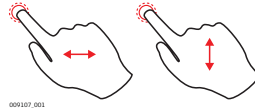
Tap:



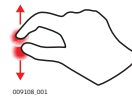
Tap and hold:



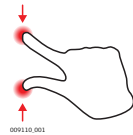
Swipe:



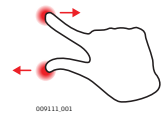
Zoom in:



Zoom out:



Rotate:



## 3.3

### LED Indicators on Zeno 20

#### LED Indicators



- a Battery LED
- b GPS LED

#### Status of the LED Indicators

The Zeno 20 device has Light Emitting Diode indicators. They indicate the basic status of the device.

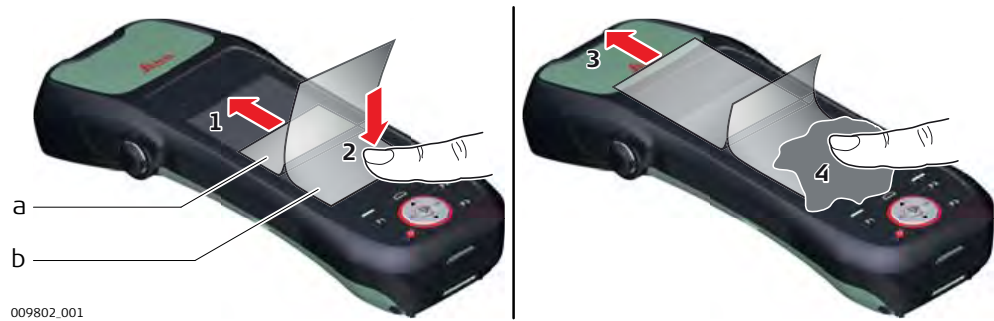
LED	Status of LED	Description
Battery LED	off	Batteries are in use (discharging).
	green	Batteries are fully charged. Device is ready for operation.
	red	Batteries are charging.
	flashing red	Batteries are low and should be charged.
	flashing amber	Error
GPS LED	off	No connection.
	green	GPS FIX is good.
	red	GPS FIX is not good.

## 4 Operation

### 4.1 Equipment Setup

#### 4.1.1 Fixing the Display Foil to the Zeno 20

##### Fixing the Display Foil to the Zeno 20 Hand-held Step-by-Step



☞ Ensure that the display of the Zeno 20 is free of dust and grease.

☞ The non-reflecting display foil (b) has a carrier foil (a) with the name of the foil printed on it.

1. Peel away the carrier foil from the display foil.

☞ Do not peel the carrier foil more than 2 cm - 3 cm away.

2. Fix the laid open adhesive underside of the display foil at the display border.

3. While peeling away the carrier foil bit by bit, slowly smooth out the display foil onto the display.

Use a microfibre cloth to smooth out potential air bubbles between display and display foil.

☞ Do not use sharp objects!

☞ If you want to reattach the display foil, you can easily remove and fix it again.

#### 4.1.2 Inserting and Removing a SIM Card and SD Card

- ☞
- Keep the card dry.
  - Use it only within the specified temperature range.
  - Do not bend the card.
  - Protect the card from direct impacts.

☞ Failure to follow these instructions could result in data loss and/or permanent damage to the card.



## ⚠ CAUTION

Always ground yourself to remove any static charge before touching the CPU card. The electronic devices are sensitive to static electricity.

### Precautions:

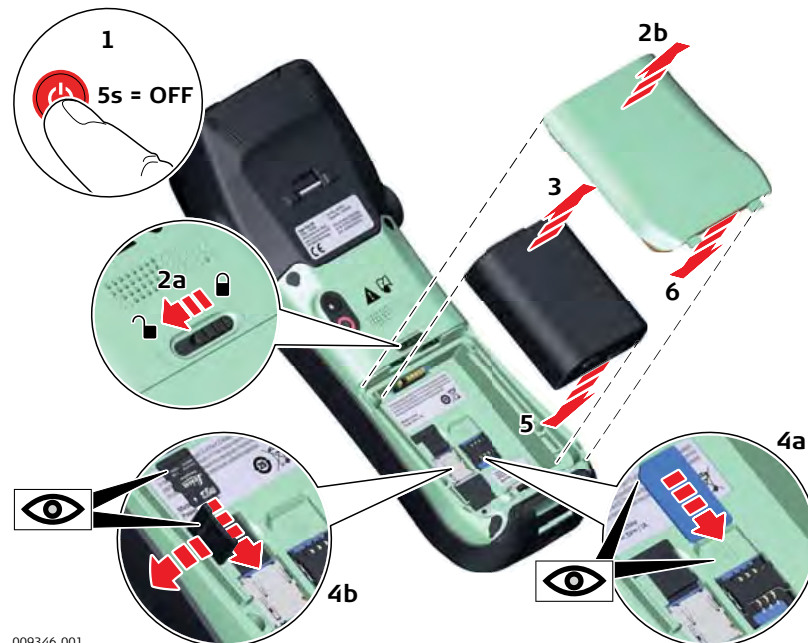
- ▶ Only experienced personnel should open the mechanical housing of the device.
- ▶ Use a grounding wrist strap all the time.
- ▶ Place all the electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.



Apply general practice for working with static-sensitive devices when you open the device, insert the SIM or SD card and closing the device:

- Discharge any static charge before opening the device and working with the SIM or SD card.
- The device must not be subject to high electrostatic potentials when it is open.
- Minimise contact with internal components of the device.
- Avoid any discharges of static electricity near the device when inserting the SIM or SD card.

### Insert and Remove a SIM Card or an SD Card Step-by-step



The slots for the SIM card and the SD card are inside the battery compartment of the Zeno 20.

1. Turn off the Zeno 20.
2. Push the release lever on the back side of the Zeno 20 to the position "unlocked" and remove the cover of the battery compartment.
3. Remove the battery.
4. a) Slide the SIM card firmly into the right slot.  
b) Slide the SD card firmly into the left slot.



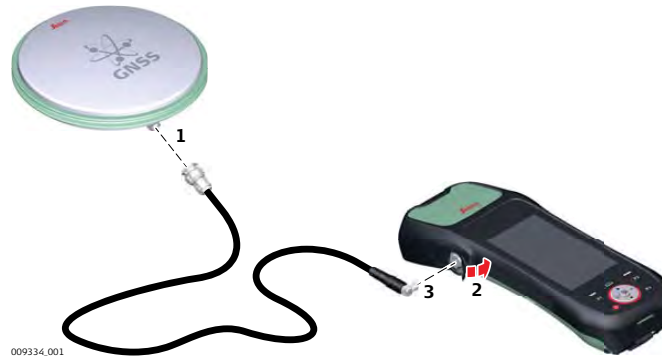
Do not force the card into the slot. The card should be held with the contacts facing the slot.

5. Insert the battery back into the battery compartment.
6. Reattach the compartment cover by inserting it bottom first. Close the battery compartment until it clicks into place. The release lever jumps back to the position "locked".

### 4.1.3

## Attaching the AS10/AS05 Antenna to the Zeno 20

### Attach External Antenna Step-by-Step



1. Connect the antenna cable to the AS10/AS05 antenna.
2. Open the protector cap of the external antenna connector on the left side of the Zeno 20 device.
3. Plug the antenna cable into the external antenna connector.



If you use Zeno Field, Zeno Connect or Zeno Mobile, attaching the antenna cable automatically sets the external antenna as the currently used antenna. If you detach the antenna cable, the internal antenna is used again automatically.

## 4.2

## Batteries

### Battery Power System

The Zeno 20 device is designed to work with one removable battery placed inside the battery compartment. An internal backup battery is also included, which allows to hot-swap the removable battery while the device is running. The fully charged battery provides several hours of battery life.

## 4.2.1

## Operating Principles

### First-time use/ charging batteries

- The battery must be charged before using it for the first time because it is delivered with an energy content as low as possible.
- The permissible temperature range for charging is from 0 °C to +40 °C/ +32 °F to +104 °F. For optimal charging, we recommend charging the batteries at a low ambient temperature of +10 °C to +20 °C/+50 °F to +68 °F if possible.
- It is normal for the battery to become warm during charging. Using the chargers recommended by Leica Geosystems, it is not possible to charge the battery once 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 only one charge/discharge cycle.
- For Li-Ion batteries, a single discharging and charging 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

## Changing the Battery

### Replacing an Empty Battery



The batteries are hot-swappable. You can remove an empty battery and replace it with a charged one without turning off the device completely. Before removing an empty battery, put the device into sleep-mode. After replacing the battery you can resume normal operation.

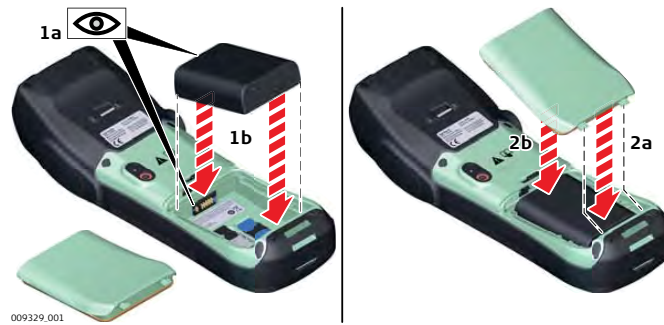
### Remove the Battery: Step-by-step




Ensure that the handheld is put into stand-by mode.


1. Place the Zeno 20 on a stable surface, with the back side facing up.
2. While pushing the release lever to the position "unlocked", open and remove the cover of the battery compartment.
3. To release the battery from the compartment, press down the latch.
4. While pressing down the latch, lift the battery with your thumb and remove it from the compartment.

## Insert the Battery: Step-by-step



 To open the battery compartment, follow the instructions of the previous paragraph.

1. Insert the battery into the compartment with the contacts facing the top, until the battery clicks into place.
2. Reattach the compartment cover by inserting it bottom first. Close the battery compartment until it clicks into place. The release lever jumps back to the position "locked".

 The IP67 protection is only ensured if the battery compartment is attached correctly!

### 4.2.3

### Charging the Battery

#### **WARNING**

#### **Electric shock due to missing ground connection**

If unit is not connected to ground, death or serious injury can occur.

#### **Precautions:**

- ▶ The power cable and power outlet must be grounded!



The following advice is only valid for battery charger, power adapter and car adapter.

#### **WARNING**

#### **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.



The following advice is only valid for batteries, power adapter or docking station.

## ⚠ WARNING

### Electric shock due to use under wet and severe conditions

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

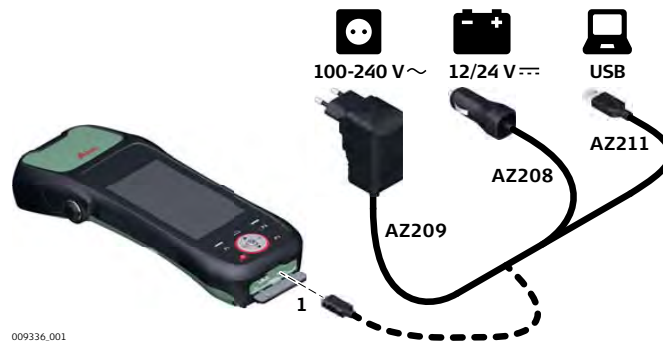
#### Precautions:

- ▶ 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.

## Charge Battery Step-by-Step



Only use the charger delivered with the Zeno 20.



Similar to a smartphone, the Zeno 20 switches on automatically when you attach it to a power adapter. While charging, the device cannot be switched off. To reduce the charging time, turn off GPS.

1. Connect the AZ209 power adapter to the Zeno 20 and to an A/C plug.

#### Alternatives:

- Connect the AZ208 car charger to the Zeno 20 and to a cigarette lighter of a car (12V/24V DC).
- Connect the Zeno 20 to a computer using the AZ211 data transfer cable. Note: The data transfer cable has a lower charging capability than the AC power adapter!
- Remove the battery from the Zeno 20 and charge it with the Desktop Charger (823055). This charger allows you to charge up to two batteries simultaneously.

2. *The batteries start charging. The Battery LED switches on to indicate the status of the battery.*




Refer to "3.3 LED Indicators on Zeno 20" for information about the Battery LED.

## 4.3

### Power Functions

#### Turning the Zeno 20 On: Step-by-step

1. Place the Zeno 20 on a flat and stable surface or hold the device in your hand.
2. Ensure that either the device is connected with the AC power adapter or the batteries are charged up.

3. Press and hold Power key (  ) for 5 s.  
*While the operating system boots up, the booting screen is displayed. When the main screen is displayed, the Zeno 20 is ready to use.*

### Turning the Handheld Device Off: Step-by-step



Note: While charging, the Power Off function is disabled and the device cannot be switched off.

1. Press the Power key for at least 4 seconds to open the Shut-Down menu.
2. Within the menu, select on of the following options:
  - Power Off: The operating system shuts down and the handheld is turned off.
  - Reboot: The handheld device reboots.
  - Airplane Mode: Suspends many of the signal transmitting functions. Select this mode in order to save battery power when not using the device.

Within the menu, you can also choose between vibration or silent mode.

In order to close the Shut-Down menu, press somewhere outside of the dialog.

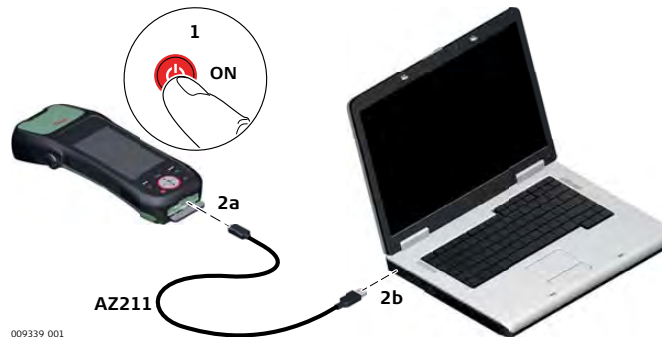


After turning off the handheld device, wait for at least 5 seconds before turning it on again.

## 4.4

### Connecting the Zeno 20 to a PC with the Micro-USB Cable

#### Connect Handheld Device to PC: Step-by-Step



1. Turn on the Zeno 20.
2. With the data transfer cable, connect the handheld device to the PC.
3. On the Zeno 20, you need to select which kind of connection you want to establish to the PC:  
Select **Media sync (MTP)**.  
*The AutoPlay menu opens up automatically and you can browse the files stored on the Zeno 20.*



If an SD card is inserted into the Zeno 20 and the handheld device is connected to a PC, you can also access the data that is stored on the SD card.

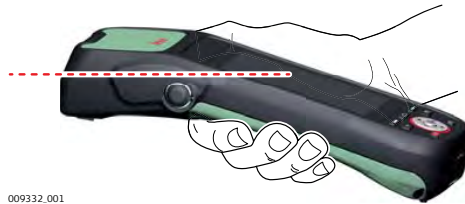
## 4.5

### Optimising the Zeno 20 for GNSS Tracking

#### Recommendations

To optimise the GNSS tracking of the Zeno 20, adhere to the following recommendations:

- Do not hold the device too close to your body to ensure good visibility of satellites.
- Hold the device always pointed towards the direction where the most satellites are probable to be seen. Due to the satellite constellation, this is the southern direction on the northern hemisphere, and the northern direction on the southern hemisphere. This ensures, that you do not impair the visibility of most of the satellites by shielding the device with your body.
- To ensure the best tracking behaviour of the integrated antenna, hold the device in a way that the antenna is aligned horizontally as best as possible.



## 4.6

### Setting up the Zeno 20 with a Disto S910

#### GAMtec-Setup

You can combine the Zeno 20 with a Disto S910 to get a TPS-similar setup. Position the setup close to the asset where the GNSS conditions are good and measure your target with the Disto S910. This method allows you to measure inaccessible or unreachable points from a safe distance and to collect data in areas where the GNSS reception is bad. To increase your productivity, it is also possible to measure multiple assets within sight of one setup point.



**Tripod Solution:** Zeno 20 and Disto S910 are mounted on a tripod using the Disto FTA360 adapter. This solution allows for a stable setup for more accurate measurements with the Disto S910. For this setup, you can use the internal antenna of the Zeno 20.



For more information on how to use the Zeno 20 with a Disto S910, refer to the respective software documentations.

#### Accuracy of Measured Points

When using the combination of Zeno 20 and Disto S910, the accuracies of the points measured with the Disto S910 depend on different variables. To ensure high point accuracies, keep in mind the following principles:

1. The farther away the reference point that you measure for your orientation, the better the resulting point accuracies. Make sure that the reference point is at least 25 m away from your current position.
  2. When measuring new points with the Disto S910 that are far from your current position, the point accuracy decreases.
  3. The better the accuracy of the reference point and of the current position, the better the resulting point accuracies. When measuring points with GNSS, make sure that you measure with highest possible accuracy, for example with open sky conditions and averaging of at least 10 seconds.
-



# 5

# Software

## 5.1

## Overview: Home Screen, Navigation, Apps and Widgets

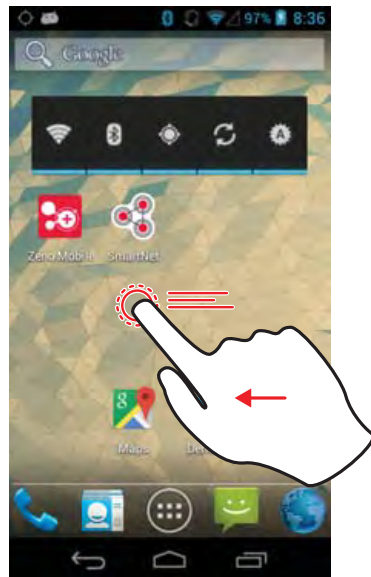
### Home Screen

The home screen is the starting place for accessing all functionalities of the instrument. The screen is displayed after switching on the instrument.



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- a Status bar with icons
- b Notification area
- c Widget installed on the home screen
- d Background image (user definable)
- e Apps added to the home screen
- f Access to all apps, settings and widgets
- g Navigation bar with softkeys



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You can customize the home screen by adding different apps and widgets to the home screen pages (refer to " Apps and Widgets"). To access the additional pages of the home screen, swipe to the left or to the right.

## Status Icons

The icons within the status bar indicate the current status of the main system functions. If an icon is not displayed, the respective system function is switched off.



- a Bluetooth status (on/off)
- b Current volume setting/vibration mode
- c Wifi status (on/off) and reception
- d Modem status (on/off) and reception
- e Battery status: remaining power and charging/discharging mode
- f Current time
- g Airplane mode

## Softkeys

Use the softkeys within the navigation bar to navigate through Android. The same function of the softkeys can be executed by pressing the according hard key on the Zeno 20 keyboard (refer to " Functions of the Keys").



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Back: Returns to the last page. This function also applies to pages within an app.



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Home: Returns to the Home screen.



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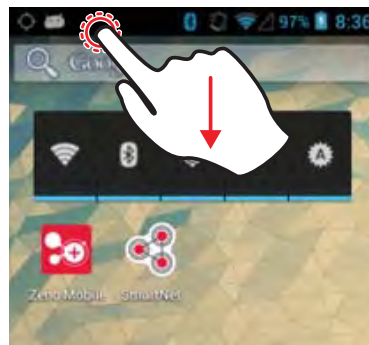
Menu: Opens an overview over all currently running apps. Within this menu, you can close apps to save battery power. To close an app, drag it to the left or right until it disappears.



You can hide the navigation bar or show it again. Press the  button to open the **APPS** page. Select **Tools**⇒**NoNaviBar**. Tap **OK** to show or hide the navigation bar.

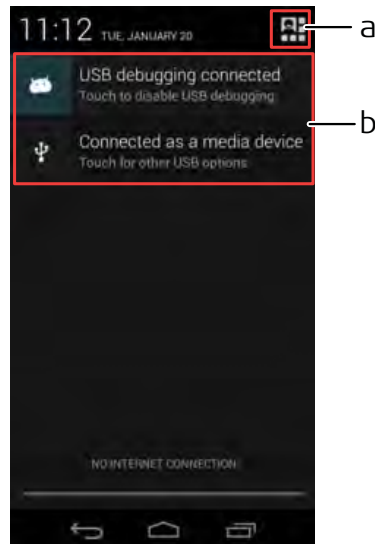
## Notifications and Access to Important Settings

Android is able to push information to you using notifications. In this case, an icon appears within the notification area.



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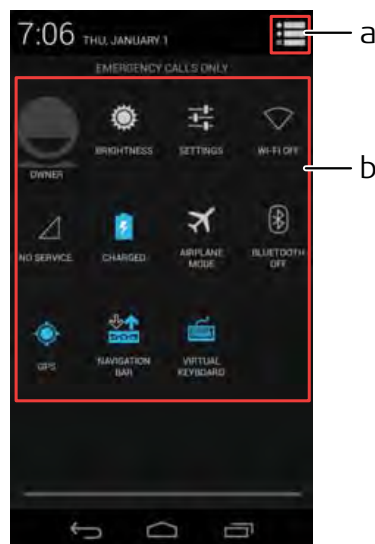
To display details on all recently received notifications, slide down the notification area to open the notification drawer.



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Within the notification drawer, the notifications details are displayed. To display the main settings of the Zeno 20, press the button in the upper right-hand corner.

- a) Button to display the main settings of the Zeno 20.
- b) Received notifications.



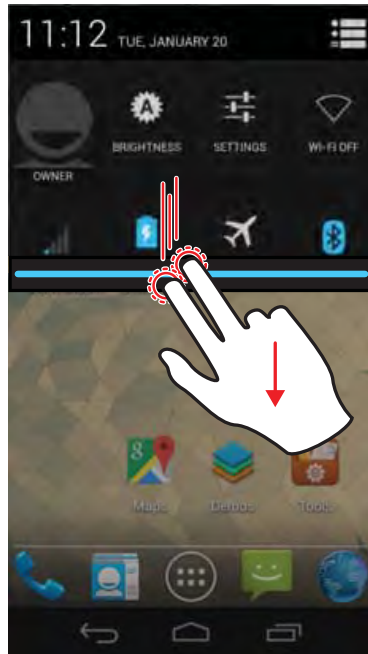
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- a) Button to display the notification details within the notification drawer.
- b) Buttons to access the main settings of the Zeno 20.

Press one of the buttons to change a setting or enable/disable a function, such as Wi-Fi, Modem, Bluetooth.

For some of these functions, further settings are necessary, for example, when enabling Wi-Fi, you have to select a respective Wi-Fi connection.

Tip: In order to save battery power when not working, disable the functions that you do not need currently. This decreases the power consumption of the Zeno 20 and thus increases the lifetime of the battery.




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In order to display the main settings of the Zeno 20 directly from any menu, slide down the notification drawer with two fingers.

## Apps and Widgets

The home screen can have multiple pages which you can access by swiping to the left or to the right. You can use apps and widgets to customise the different pages of the home screen by adding an app or a widget to a page.

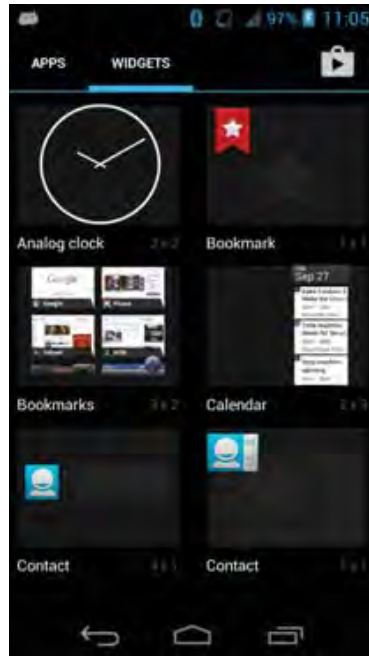
To access all available apps and widgets, press the  button. The APPS page is displayed.



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### APPS page:

- To display further apps, swipe to the left.
- To display the WIDGETS page, swipe to the left or tap on the tab WIDGETS.
- To get faster access to a specific app, drag the app and drop it on a page of the home screen at the desired position.
- To remove an app from a page of the home screen, tap and hold the app, until the text "Remove" appears at the top of the screen, then drag and drop the app on top of the text "Remove".



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### WIDGETS page:

- To display further widgets, swipe to the left.
- To display the APPS page, swipe to the right or tap on the tab APPS.
- To add a specific widget to your home screen, drag the widget and drop it on a page of the home screen at the desired position.
- To remove a widget from a page of the home screen, tap and hold the widget until the text "Remove" appears at the top of the screen, then drag and drop the widget on top of the text "Remove".

## 5.2

### Settings

#### Settings page

To access the settings page, press the  button and tap on the **Settings** icon.



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To scroll up or down the list of available settings, swipe across the screen.

On the settings page, you can manage a variety of information and settings:

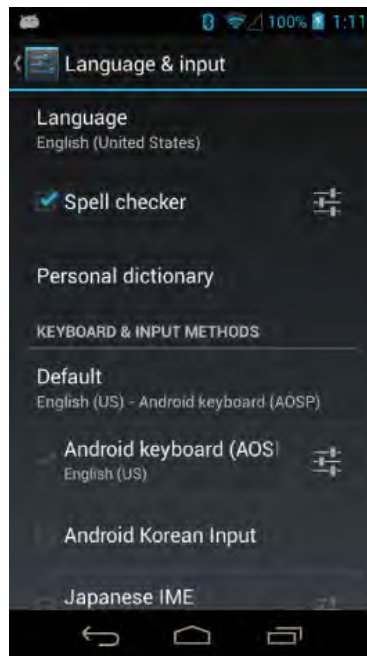
- WIRELESS & NETWORKS
  - Enable or disable Wi-Fi and Bluetooth.
  - Display information on data usage.
  - Press *More...* to display further options.
- DEVICE
  - Define the settings for sound and display.
  - Display information on storage use.
  - Display information on power consumption of different apps.
  - Display information on installed apps.
- PERSONAL
  - Define the settings for location access and security.
  - Define the system language and the input method.
  - Execute factory resets.
- ACCOUNTS
  - Add an account.
- SYSTEM
  - Change the settings for date and time.
  - Define the settings for accessibility.
  - Display basic phone information and execute system updates.

## 5.2.1

### Changing the Operating System Language

#### Language Settings

To access the *Language & input* page, open the Settings menu and tap *Language & input* within the section *PERSONAL*.



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To change the Operating System Language, tap on *Language* and select the desired language.

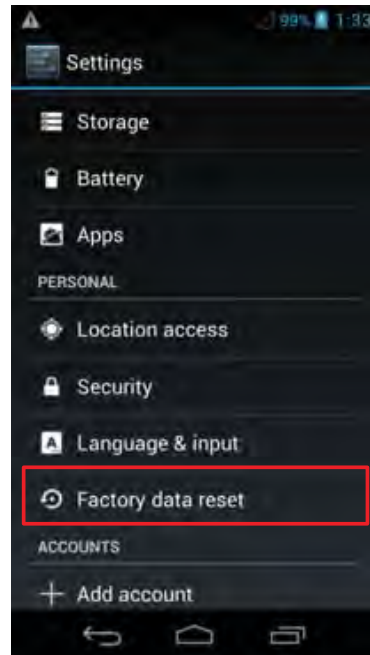


By default, the keyboard language is equivalent to the system language. If you want to change the keyboard language, tap on the button *Default* within the section *KEYBOARD & INPUT METHODS*.



Once the device is connected to a mobile data connection using the SIM card, the language is automatically changed according to the location of the provider.

### Performing a Factory Reset



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Resetting the Zeno 20 device back to factory default is helpful if some components of the device are not working correctly anymore. During a factory reset, Android (including all drivers) is reinstalled completely. A factory reset helps to determine if a problem is hardware or software related.



To prevent data loss, backup all important data to an SD card or an external memory device before performing a factory reset. After a factory reset, you need to install licences and software files again manually.

1. Open the *Settings* menu. Within the section *PERSONAL*, tap on the button *Factory data reset*.
2. To start the data reset, tap on the button *Reset phone*.
3. Confirm by pressing the button *Erase everything*.

The device is automatically reset to the last installed version of the operating system. This process may take a few minutes.

## 5.3


## Useful Applications

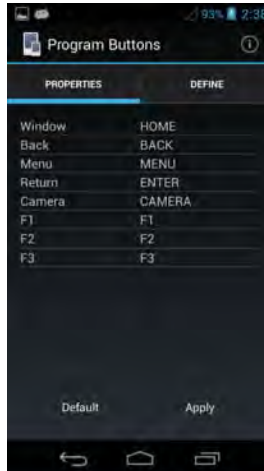
### 5.3.1

### Hot Keys

#### Define a Hot Key Step-by-step

The keys **F1**, **F2** and **F3** on the keypad are programmable hot keys. To assign a function or an application to these keys, carry out the following instructions.

1. Tap on the  button to open the page APPS. Select **Tools**⇒**Program Buttons** to open the **Program Buttons** window.



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Within the tab **PROPERTIES**, a list of the programmable keys and their currently assigned functions is displayed.

2. Tap on the key for which you want to define a specific function. *A window with the available key functions is displayed.*
3. Tap on a function or an application to assign it to the key.
4. To save your changes and exit the window, tap **OK**.  
To reassign the default key function, tap **Default**.  
To exit the window without saving any changes, tap **Cancel**.

#### Alternative:



You can also apply a key definition file with already defined key functions.

1. Within the **Program Buttons** page, tap on the **DEFINE** tab.
2. To select a key definition file, tap the **...** button and choose a file from the directory.
3. To apply the selected key definition file, tap **Apply**.  
To reset the key definition file to default, tap **Default key definition file**.
4. To exit the window, tap **OK** in the command bar or press the OK key on the keypad.



Note: The functions that you assign to the hotkeys do not apply when working within Zeno Mobile. There are predefined functions for Zeno Mobile. For information on these key functions refer to the according software documentation.

### 5.3.2

### Screenshots

#### Create a Screenshot

The system allows you to capture the current screen displayed on the Zeno 20.



To create a screenshot, press the Home key and Power key simultaneously for about 2 seconds.

The captured screenshot is shortly displayed and then stored in the following directory: **/storage/sdcard0/Pictures/Screenshots/**.

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### 5.3.3

#### File Manager

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##### Browse for a File with the OI File Manager

The OI File Manger allows you to browse for files that are stored on the Zeno 20, on a USB stick plugged into the Zeno 20 or on an SD card inserted in the Zeno 20.

To access the file manager, tap on the  button and select **Tools⇒OI File Manager**.

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### 5.3.4

#### System Information

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##### Save System Information to a File

Within the System Information page, you can save the current system information in a file. If there is a problem with the device and the support needs information about the version numbers of the device, you can use this file.

To access the System Information page, tap on the  button and select **Tools⇒System Information**.

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### 5.3.5

#### Using the Digital Camera

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##### Camera App

The Zeno 20 is equipped with a digital camera that allows you to capture images.

To open the Camera app, press the Camera key or tab on the Camera icon within the APPS page.

To capture an image, press the Camera key or press the respective button within the camera app.

The image is stored in the following directory: **/storage/sdcard0/Pictures**.

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### 5.3.6


#### Boot Logo Changer

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##### Customise the Start-Up Screen



You can customise the start-up screen of the Zeno 20 device by using the app "Boot Logo Changer". This app is installed per default on your Android device.

1. To change the start-up screen, place the desired image file in the root directory of the device: **/storage/sdcard0** or **/storage/sdcard1**.  
The image file must meet the following restrictions:
    - Width: 480 pixel
    - Height: 854 pixel
    - File size: max. 410998 byte
    - Bit count: 8
    - Format: BMP
  2. To open the app, tap on the  button and select **Boot Logo Changer**.
  3. Within the app, tap on the image file that you want to install as start-up screen.  
*A message is displayed to inform you about the status of the start-up screen.*  
To switch back to the default Leica start-up screen, select **Default**.
-

## 6 Care and Transport

### 6.1 Transport

#### 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, original packaging or equivalent 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.

### 6.2 Storage

#### Product

Respect the temperature limits when storing the equipment, particularly in summer if the equipment is inside a vehicle. Refer to "7 Technical Data" for information about temperature limits.

#### Li-Ion batteries

- Refer to "7 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 be dried before storing or use.
- A storage temperature range of 0 °C to +30 °C / +32 °F to +86 °F in a dry environment is recommended to minimize self-discharging of the battery.
- 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.

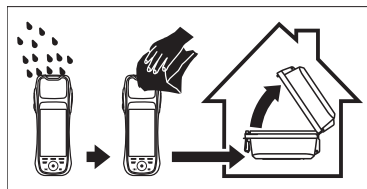
### 6.3 Cleaning and Drying

#### 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.

#### Damp products

Dry the product, the transport container, the foam inserts and the accessories at a temperature not greater than 40 °C/104 °F and clean them. Remove the battery cover and dry the battery compartment. Do not repack until everything 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.

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**Connectors with dust caps**

Wet connectors must be dry before attaching the dust cap.

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## 7

## Technical Data

### 7.1

### Zeno 20

<b>Control unit</b>	Touch Screen:	4.7" FWVGA (854 x 480 pixels); IPS; 600 nits, capacitive multi-touch Asahi Dragontrail chemically strengthened glass
	Keyboard:	12 keys, including three programmable function keys and software-specific keys
	Audio:	Built-in receiver, loud-speaker and microphone
	Digital camera:	8-megapixel camera with autofocus and LED flash

<b>System</b>	Processor:	Texas Instrument 4470 dual-core 1.5 GHz
	Operating System:	Windows Embedded Handheld 6.5 Professional OR Android 4.2.2
	System Memory:	1 GB RAM / 4 GB iNAND Flash
	I/O slot:	SIM (user accessible), MicroSD/MicroSDHC slot
	Storage:	4 GB built-in storage

<b>Dimensions</b>	<b>Length [m]</b>	<b>Width [m]</b>	<b>Thickness [m]</b>
	0.27	0.099	0.050

<b>Weight</b>	<b>Type</b>	<b>Weight [kg]/[lbs]</b>
	Zeno 20 with battery	0.87/1.92
	Zeno 20 without battery	0.72/1.59

**Recording** Data can be recorded on the USB memory stick, on an SD card or in the internal memory.

<b>Power</b>	<b>Type</b>	<b>External supply voltage</b>
	Zeno 20	Nominal voltage 5 V DC (---)

<b>Internal battery</b>	<b>Type</b>	<b>Battery</b>	<b>Voltage</b>	<b>Capacity</b>	<b>Operating time, typical*</b>
	Zeno 20	Li-Ion	3.7 V	7800 mAh	7 h

\* Operating time depends on use of wireless communication devices.

### Environmental specifications

#### Temperature

Operating temperature: -30 °C to +60 °C

Storage temperature: -40 °C to +70 °C

#### Protection against water, dust and sand

IP67 (IEC60529)

Dust tight

Waterproof to 1 m temporary immersion

### Humidity

Protection: Up to 90%  
The effects of condensation are to be effectively counteracted by periodically drying out the device.

### Vibration

Protection: Withstands strong vibration during operation, compliance with MIL-STD-810G - 514.6 I/II - Cat.5

### Drops

Protection: Withstands 1.22 m drop, compliance with MIL-STD-810G - 516.6 IV

## Interfaces

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MicroUSB:	Micro A/B Connector
USB host:	USB A
Bluetooth:	Class 2
WLAN:	802.11 b/g/n
Audio:	Micro-In, Audio-Out
External antenna connector:	SMB connector

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## L1/L2 GNSS

Type	Values
Channels:	120 channels
Satellite signals tracking:	Basic configuration: GPS L1 only
Upgrade options:	GPS: L2, L2C GLONASS: L1, L2 BeiDou: B1 Galileo: E1
Integrated real-time:	SBAS (WAAS, EGNOS, GAGAN, MSAS) <sup>1</sup>
Output data protocols:	NMEA-0183 (GGA, VTG, GLL, GSA, GSV, RMC, GST, GGQ, LLQ) via Zeno Connect on WEH or position provided by Android Location Service via Zeno Connect on Android
Real-time protocols:	RTCM 2.x, RTCM 3.0, RTCM 3.1, Leica, CMR, CMR+
Update rate:	1 Hz (1 s) Optional: 5 Hz (0.2 s)
Horizontal real-time accuracy <sup>2</sup> (SBAS or external source) <sup>3</sup>	1 cm + 1 ppm < 5cm + 1 ppm with L1/L2 handheld < 40 cm L1 handheld < 0.9 m with SBAS L1 handheld
Vertical real-time accuracy <sup>2</sup>	RTK with AS10, L1/L2: 2 cm + 1 ppm RTK with internal, L1/L2: < 10 cm + 1 ppm

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Type	Values
Post-processing accuracy static mode <sup>2</sup>	For AS10:
	Horizontal: 3 mm + 0.5 ppm (rms)
	Vertical: 6 mm + 0.5 ppm (rms)
	For Zeno 20:
Horizontal: < 5 cm + 1 ppm (rms)	
Vertical: < 10 cm + 2 ppm (rms)	
Time to first fix <sup>4</sup>	Typically < 45 s

<sup>1</sup> WAAS available in North America, EGNOS available in Europe, GAGAN available in India & MSAS available in Japan only.

<sup>2</sup> Requires the Zeno L1/L2 option

<sup>3</sup> Measurement precision, accuracy and reliability depends upon various factors including number of available satellites, geometry, obstructions proximity to base station, multipath effects, ionospheric conditions etc.

<sup>4</sup> May vary due to used antenna, atmospheric conditions, multipath, obstructions, signal geometry and number of tracked satellites.

## 7.2

### Conformity to National Regulations

#### Conformity to national regulations

- FCC Part 15, 22 and 24 (applicable in US)
- Hereby, Leica Geosystems AG declares that the radio equipment type Zeno 20 UMTS 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: <http://www.leica-geosystems.com/ce>.



Class 1 equipment according to European Directive 2014/53/EU (RED) can be placed on the market and be put into service without restrictions in any EEA member state.

- The conformity for countries with other national regulations not covered by the FCC part 15, 22 and 24 or European Directive 2014/53/EU has to be approved prior to use and operation.

#### Frequency Band

Mode	Frequency [MHz]	Conducted power [dBm]
EGSM 900	880.2 ~ 914.8	33.0
DCS 1800	1710.2 ~ 1784.8	30.3
WCDMA B1	1922.4 ~ 1977.6	23.86
WCDMA B8	882.4 ~ 912.6	24.14

Mode	Frequency [MHz]	Max. e. i. r. p. [dBm]
2.4G WLAN	2412 ~ 2472	18.23
BT	2402 ~ 2480	7.96

**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**.



Leica Geosystems has developed **Guidelines** on "How to carry Leica products" and "How to ship Leica products" with Lithium batteries. Before any transportation of a Leica product, we ask you to consult these guidelines on our web page (<http://www.leica-geosystems.com/dgr>) to ensure that you are in accordance with the IATA Dangerous Goods Regulations and that the Leica products can be transported 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.

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**Software Licence Agreement**

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