Leica Zeno 20 Windows Embedded Handheld

Zeno

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 Windows Embedded Handheld.

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

- Windows is a registered trademark of Microsoft Corporation in the United States and other countries
- 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 Windows Embedded Handheld 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.	-	✓

Name	Description/Format	🗓	📄
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

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.

Table of Contents

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
⚠ DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a potentially hazardous situation or an unintended use which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor or moderate injury.
NOTICE	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:
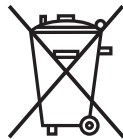
▶ The product must not be disposed with household waste. Dispose of the product appropriately in accordance with the national regulations in force in your country. Always prevent access to the product by unauthorised personnel.

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.

⚠ **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.

| 1.7 | **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.
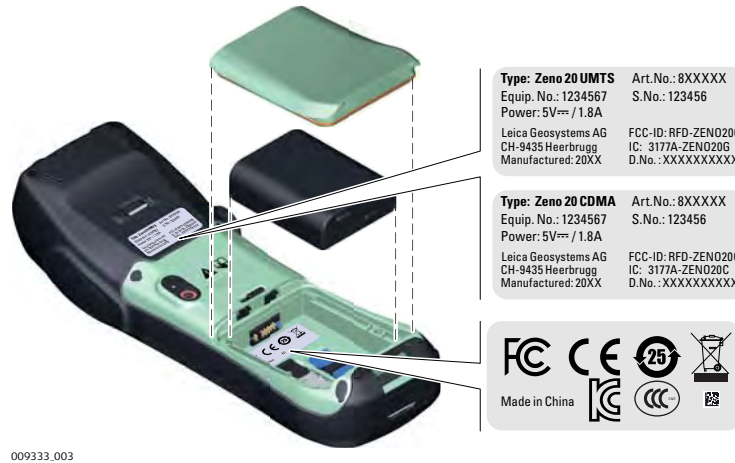
This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

- • 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.

⚠ CAUTION

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

Labelling Zeno 20

Type: **Zeno 20 UMTS** Art.No.: 8XXXXX
Equip. No.: 1234567 S.No.: 123456
Power: 5V --- / 1.8A
Leica Geosystems AG FCC-ID: RFD-ZENO20G
CH-9435 Heerbrugg IC: 3177A-ZENO20G
Manufactured: 20XX D.No.: XXXXXXXXXX

Type: **Zeno 20 CDMA** Art.No.: 8XXXXX
Equip. No.: 1234567 S.No.: 123456
Power: 5V --- / 1.8A
Leica Geosystems AG FCC-ID: RFD-ZENO20C
CH-9435 Heerbrugg IC: 3177A-ZENO20C
Manufactured: 20XX D.No.: XXXXXXXXXX

Made in China

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☞ 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.

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) Ll'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.

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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[1]	✓	✓	✓	✓
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	✓	✓	✓	✓
FCC etc. (reports)				
Model Name	Zeno 20	Zeno 20	Zeno 20	Zeno 20
FCC ID	RFD-ZENO20G	RFD-ZENO20G	RFD-ZENO20C	RFD-ZENO20C
CE and IC				
Model Name	ZENO20G	ZENO20G	ZENO20C	ZENO20C

[1] 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: • The English version of WEH. • The basic WEH functionality. • If ordered, Zeno Field or Zeno Connect for Zeno 20.
Android 4.2.2	This software includes: • The language-specific version of Android. • The basic Android functionality. • If ordered, Zeno Mobile or Zeno Connect for Zeno 20.

☞ This User Manual only describes the Windows Embedded Handheld 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.

☞ 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.

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[2] battery, OR
	Externally by AZ209[3] 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] manufacturer: ETI CA Battery Inc.

[3] manufacturer: Ktec

2.2.3	**Data Storage Concept**

Description

Data is stored on a memory device. The memory device can be a USB stick, an SD card or the 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

d AZ203

g

b AZ206

e AZ211

h

c AZ201

f AZ209

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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

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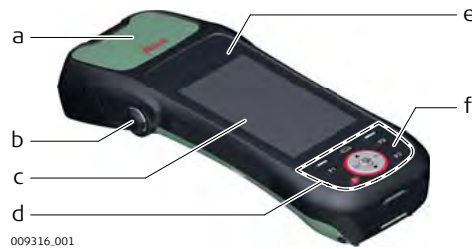
a	Internal GNSS Antenna and Board
b	External GNSS Antenna Connector
c	Screen
d	Keypad
e	LED Indicators
f	Microphone

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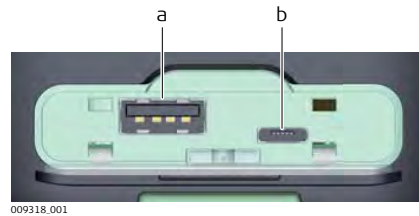
a	USB A Host Port
b	Micro USB Host Port, works also as Power Socket

Battery Compartment

009319_001

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

3 User Interface

3.1 Keyboard

Keypad

009320_001

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)
⌖ Camera Key	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.
F1 F1	Programmable hot keys.	Programmable hot keys.
F2 F2		
F3 F3		

☞ For detailed information on the programmable hot keys, refer to "5.2 Hot Keys".

How to Use the Power Key

If the Zeno 20 is turned off:

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

If the Zeno 20 is turned on:
- To put the device into stand-by mode, press the Power key for maximally 4 s. If you press the Power key again, the device 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**, **Soft Reset** or **Hard Reset**. Select **Cancel** to close the Shut-Down menu and return to normal operation. Refer to "5.4 Resetting the Zeno 20 Device" for more information about resetting the Zeno 20.

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.

Operation	Description
To select an item	Tap on the item.
To start the edit mode in editable fields	Tap on the editable field.
To highlight an item or parts of it for editing	Drag the supplied stylus from the left to the right.
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.

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 **L**ight **E**mitting **D**iode 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 Handheld Step-by-Step

009802_001
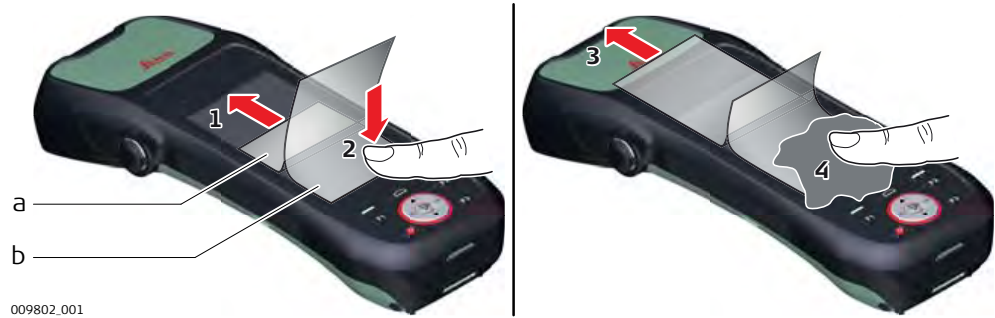
☞	Ensure that the display of the Zeno 20 is free of dust and grease.
☞	The non-reflecting display foil (b) has a carrier foil (a) with the name of the foil printed on it.
1.	Peel away the carrier foil from the display foil. ☞ Do not peel the carrier foil more than 2 cm - 3 cm away.
2.	Fix the laid open 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
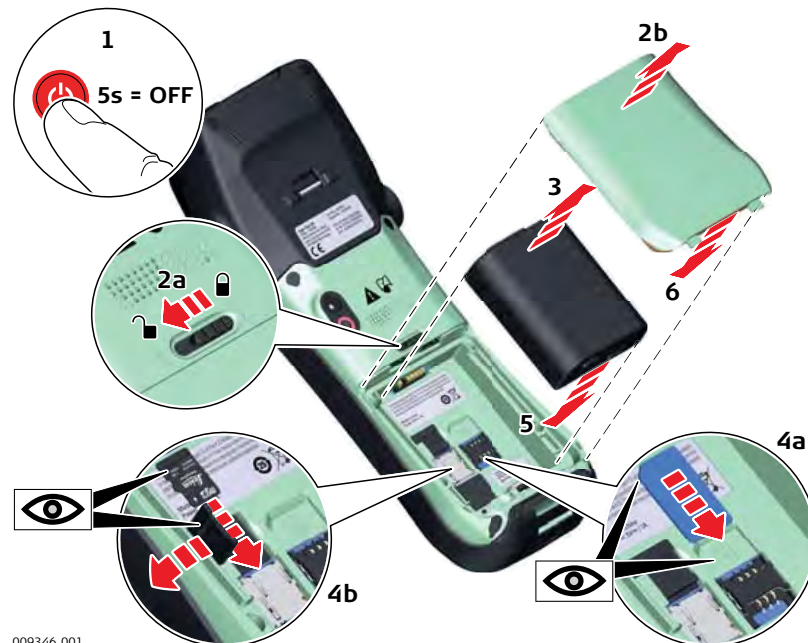
009346_001

|	
☞	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**

009334_001
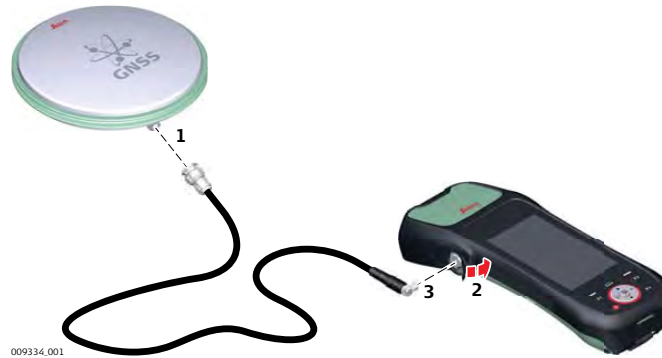
1.	Connect the antenna cable to the AS10/AS05 antenna.
2.	Open the protector cap of the external antenna connector on the left side of the Zeno 20 device.
3.	Plug the antenna cable into the external antenna connector.
	☞ If you use Zeno Field, Zeno Connect or Zeno Mobile, attaching the antenna cable 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

009327_001

☞ 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

009329_001
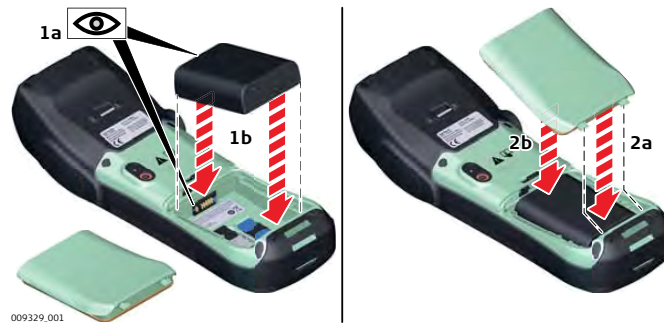
☞ To open the battery compartment, follow the instructions of the previous paragraph.

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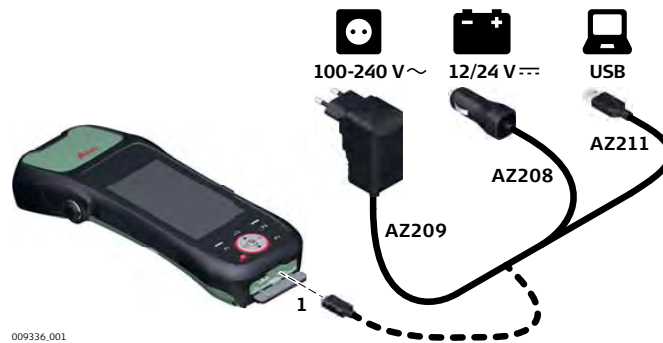
Precautions:
- ▸ If the product becomes humid, it must not be used!
- ▸ Use the product only in dry environments, for example in buildings or vehicles.

- ▸ Protect the product against humidity.

Charge Battery Step-by-Step

009336_001

☞	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 Zeno 20 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, the following options are available: • **Power Off**: The operating system shuts down and the device is turned off. • **Soft Reset**: Refer to "5.4 Resetting the Zeno 20 Device" for more information. • **Hard Reset**: Refer to "5.4 Resetting the Zeno 20 Device" for more information. • **Cancel**: Close the Shut-Down menu and return to the main screen.
	3.	To turn off the device, select the option **Power Off**.
	☞	After turning off the Zeno 20, wait for at least 5 seconds before turning the device on again.

4.4 Connecting the Zeno 20 to PC via Windows Mobile Device Center

Connecting the Zeno 20 to a Computer: Step-by-Step

Windows Mobile Device Center is the synchronisation software for Windows Embedded Handheld devices.
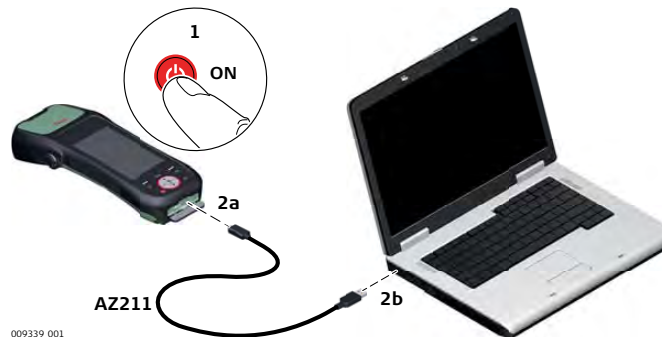
|		
	☞	Ensure that the Windows Mobile Device Center software is installed on the computer.
	1.	Turn on the Zeno 20.
	2.	Connect the device to the computer using the Micro-USB cable. *If the synchronisation software is installed on the computer, Windows Mobile Device Center starts automatically.*
	3.	After synchronisation, you can access the data stored on the Zeno 20 directly from the computer.
	☞	If an SD card is inserted into the Zeno 20 and the device is connected to a computer, you can also access the data 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.
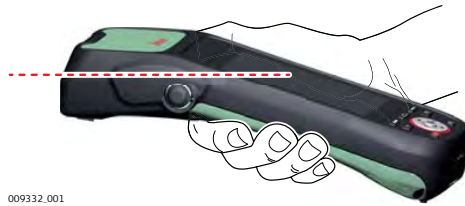
4.6 Setting up the Zeno 20 with a Disto S910

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 Today Screen

Today Screen

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

008560_001
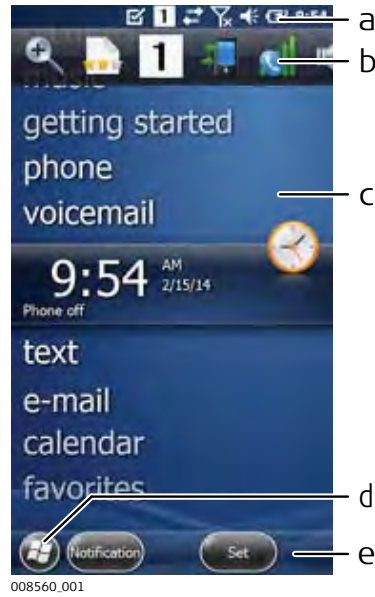
a   Status bar with icons
b   Pop-up navigation bar
c   Default list of applets such as phone and voicemail
d   Start key (Windows key)
e   Softkeys

Status Icons

The icons within the status bar indicate the current status of the main system functions.

008561_001
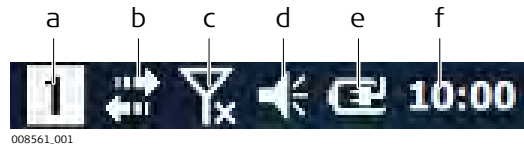
a   Numeric keypad
b   LAN / Bluetooth mode
c   Modem (Phone) connection mode
d   Current volume setting
e   AC connection mode
f   Current time

Icon	Description
008572_001	Wi-Fi connection in progress Wi-Fi is activated Bluetooth connection in progress Bluetooth is activated
008571_001	Phone is deactivated No Phone connection No SIM card inserted

Icon	Description
008573_001	Volume ON Volume OFF Vibration mode
008927_001	Connected to AC, battery is charging Remaining battery capacity

Navigation Bar

The pop-up navigation bar provides access to the main system functions and programs.

☞ To display the navigation bar, tap on the status bar at the top of the screen or slide down the top of the screen.

☞ To display all icons of the navigation bar, tap and drag to the left.

Icon	Description
	Tap on the icon to zoom in/out.
	Indicates numeric keypad.
	Tap on the icon to access the bluetooth settings.
	Tap on the icon to access the Wireless Manager.
	Tap on the icon to access the phone settings.
	Tap on the icon to access the volume settings.
	Tap on the icon to access the battery control panel.
	Tap on the icon to access the Clock & Alarm control panel

Softkeys

The softkeys at the bottom of the **Today** screen are for navigation. For example, the **Start** key provides access to everything you need to work within Windows Embedded Handheld 6.5.

5.2　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 **Start⇒Settings⇒System⇒Program Buttons** to open the "ProgramButtons Properties" window. In the **Program Buttons** tab, a list with application keys is displayed. There are three different types of key functions: • Default: The default function is assigned to the key. • No Action: There is no function assigned to the key. • Application: A specific application is assigned to the key.
2.	Select a key from the list for which you want to define a specific function.
3.	To assign an application to the selected key, tap on **Open...** and select an application.
4.	To exit the window, tap **OK** in the command bar or press the OK key on the keypad.

Alternative:

☞	You can also apply a key definition file with already defined key functions.
1.	Tap on **Start⇒Settings⇒System⇒Program Buttons** to open the "ProgramButtons Properties" window.
2.	Tap on the **Key define** tab.
3.	To select a key definition file, tap **OPEN**.
4.	To apply the selected key definition file, tap **Apply**. To reset the key definition file to default, tap **Default key definition file**.
5.	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 Field. There are predefined functions for Zeno Field. For information on these key functions refer to the according software documentation.

5.3　Reinstalling the Operating System

Reinstall the Operating System Step-by-step

☞	A reinstallation of the operating system deletes all files on the Zeno 20. Backup all important data before starting a reinstallation! After reinstallation, you need to download licenses and software files from myWorld and install them again.
☞	Ensure that the battery is fully charged.
☞	You need a Micro SD card for this process.
1.	Copy the Operating System files on the SD card.
2.	Put the device into stand-by mode or shut it down.
3.	Insert the SD card into the card slot within the battery compartment.
4.	Turn on the Zeno 20.
5.	On the device, open the SD card folder.

6.	Tap on the file **SelfUdpate**.
	The SelfUpdate window is displayed.

7.	To start the installation of the operating system, press **OK**. The installation process is executed. When the process is finished, the Windows start-up screen is displayed.
	☞ Do not interrupt the installation process.

5.4   Resetting the Zeno 20 Device

Performing a Hard Reset/Soft Reset Step-by-step

Soft Reset:

☞   A soft reset does not delete any user data.

Perform a soft reset for the following situations:
- The Terminal is not responding.
- The installation of a software application requires a reboot.
- You changed certain system settings.
- You want to install new CAB or REG files.

During a soft reset, the following actions are executed automatically:
- The terminal is rebooted without deleting any RAM data.
- All running applications are terminated.
- The operating system is reloaded.
- The Auto-Install is launched to re-initialise any CAB or REG files in the folder **/AutoInstall/Cabfile**.

Hard Reset:

☞   A hard reset deletes all files on the Zeno 20. Backup all important data before performing a hard reset! After a hard reset, you need to download licences and software files from myWorld and install them again.

During a hard reset, the following actions are executed automatically:
- All data and applications stored in the RAM memory are deleted.
- The operating system is reloaded.
- The Auto-Install is launched to install any CAB or REG files in the folder /**AutoInstall/Cabfile**.

1.	Press the Power key for at least 4 s to open the Shut-Down menu.

2.	Within the Shut-Down menu, select a reset option to perform either a soft reset or a hard reset.

☞   If the terminal has stopped working, you can perform a hard reset in this way: Press and hold the Power key for 8 s until the terminal starts rebooting.

Performing a Factory Reset Step-by-step

☞   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, Windows (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 download licences and software files from myWorld and install them again.

	1.	Perform a hard reset. *The terminal reboots automatically and the booting screen is displayed.*
	2.	When the version information is displayed, press the keys **Up**, **Left**, **Down**, **Right** to enter the bootloader menu.
	3.	To perform the factory reset, press one by one the keys **F1**, **F2** and **Satellite/GNSS**.
	4.	After reset and cold boot are completed, the device is ready for use again.

5.5 Radio Control

Activate a Radio Step-by-step

☞	You need to activate Bluetooth, Wi-Fi and Phone before you can use these radios.
1.	Slide down the top of the screen to open the navigation bar.
2.	Tap on the phone icon or the bluetooth icon. *A settings window is displayed.*
3.	Tap on the link **Wireless Manager** to display the Wireless Manager.
4.	Within the Wireless Manager, tap on a radio to activate or deactivate it.

5.6 Establishing a Modem Connection

Establish a Modem Connection Step-by-step

☞	You need to switch on the modem and enter a correct pin before you can establish a connection.
1.	Slide down the top of the screen to open the navigation bar.
2.	Tap on the icon of a radio (Phone, Bluetooth, Wi-Fi) to open the respective settings window.
3.	Within the settings window, tap on the link **Settings**.
☞	Each radio has its on configuration program. You need to have specific information about the wireless network you want to connect to.
4.	Within the configuration program, enter the necessary information and start the connection process.
☞	A successful connection depends on your network infrastructure. Ask your network administrator for detailed information.

5.7 Establishing a WLAN Connection

Establish a WLAN Connection Step-by-step

☞	Open the Wireless Manager as described in "5.5 Radio Control".
1.	Tap on the softkey **Menu** and select **Wi-Fi Settings**.
2.	Tap on the **Config** tab.
3.	If you want to use an existing SSID from the list, proceed with step 8. **OR** If you want to create a new SSID, tab on the button **NEW**.
4.	Within the network window, enter the new SSID.
5.	According to the access point, select a specific security method from the drop-down list.

6.	According to the security method, select an encryption method.
	☞ Depending of the selected method you have to enter additional information, such as WEP keys or passwords.
7.	To save the new SSID, tap on **OK** in the command bar. The new SSID is displayed in the list within the **Config** tab.
8.	Select the SSID and tap on the **Connect** button.
☞	Within the **Status** tab, the connection status is displayed.
9.	To close the network window, tap on the softkey OK.

5.8 GNSS Antenna Power Management

Define a Switch-off Time for the Antenna

In order to save battery power when working in the field, you can define a switch-off time for the antenna. The antenna automatically switches off when not being used for the defined length of time.

☞ You can define the switch-off time within **Start⇒Settings⇒System⇒GPS ⇒Power Management**.
Alternatively, you can control the antenna power within Zeno Field or Zeno Connect. When disconnecting from the antenna in the Leica Zeno software, the antenna is switched off automatically to save battery power.

5.9 Customising the Start-Up Screen

Using the "CustomLogoEditor"

009177_001

You can customise the start-up screen of the Zeno 20 device by using the app "CustomLogoEditor.exe". You can find this app in the folder **Windows/CustomLogoEditor**.

1. To change the start-up screen, place the desired image file in a folder on the device.
   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 "CustomLogoEditor" app, tap on the button and open the File Explorer. Select **Windows/CustomLogoEditor** to start the app.
3. To select the image file that you want to install as start-up screen, tap on **Open** and browse for the file in the respective folder.
   To switch back to the default Leica start-up screen, tap on **Delete Logo**.

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.
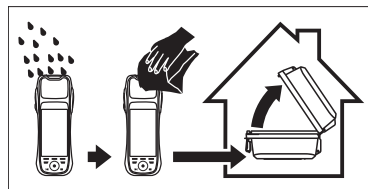
Cables and plugs
Keep plugs clean and dry. Blow away any dirt lodged in the plugs of the connecting cables.

Connectors with dust caps
Wet connectors must be dry before attaching the dust cap.

7　Technical Data

7.1　Zeno 20

Control unit

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

System

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

Dimensions

Length [m]	Width [m]	Thickness [m]
0.27	0.099	0.050

Weight

Type	Weight [kg]/[lbs]
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.

Power

Type	External supply voltage
Zeno 20	Nominal voltage 5 V DC (⎓)

Internal battery

Type	Battery	Voltage	Capacity	Operating time, typical*
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

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

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)[1]	
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[2] (SBAS or external source)[3]	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[2]	RTK with AS10, L1/L2:	2 cm + 1 ppm
	RTK with internal, L1/L2:	‹10 cm + 1 ppm

Type	Values	
Post-processing accuracy static mode[2]	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[4]	Typically ‹ 45 s	

[1] WAAS available in North America, EGNOS available in Europe, GAGAN available in India & MSAS available in Japan only.

[2] Requires the Zeno L1/L2 option

[3] 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.

[4] 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.

  $C \in$ 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

7.3 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**.

☞ 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.

8 Software Licence Agreement

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, Governing 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 http://leica-geosystems.com/about-us/compliance-standards/legal-documents 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 Agreement. 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.

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- when it has to be **right**

Leica
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