User Manual

GeoMax Zenius08

English

Version 1.0

Introduction

Purchase

Congratulations on the purchase of the GeoMax Zenius08.

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.

The content of this document is subject to change without prior notice. Ensure that the product is used in accordance with the latest version of this document.

Updated versions are available for download at the following Internet address:

https://geomax-positioning.com/partner-area

Product identification

The model and serial number of your product are indicated on the type label.

Always refer to this information when contacting your agency or GeoMax authorised service centre.

Trademarks and Licenses

- Android™ is a trademark of Google Inc.
- *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.

Available documentation

Name	Description/Format		
GeoMax Zenius08 Quick Guide	Provides an overview of the product together with technical data and safety directions. Intended as a quick reference guide.	✓	✓
GeoMax Zenius08 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.	-	✓

Refer to the GeoMax website for all Zenius08 documentation/software.

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.

Additional symbols

	Warning against explosive material.
	Warning against flammable substances.
	Product must not be opened or modified or tampered with.

Indicates the temperature limits at which the product may be stored, transported or used.

1.2 Definition of Use

Intended use

- Remote control of product
- Data communication with external appliances
- Recording measurements
- Computing with software

Reasonably foreseeable misuse

- Use of the product without instructions
- Use outside of the intended use and limits
- Disabling of safety systems
- Removal of hazard notices
- Opening the product using tools, for example a screwdriver, unless this is permitted for certain functions
- Modification or conversion of the product
- Use after misappropriation
- Use of products with recognisable damage or defects
- Use with accessories from other manufacturers without the prior explicit approval of GeoMax
- Inadequate safeguards at the working site
- Controlling of machines, moving objects or similar monitoring applications without additional control and safety installations

1.3 Limits of Use

Environment

Suitable for use in an atmosphere appropriate for permanent human 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 and power adapter.

Environment

Suitable for use in dry environments only and not under adverse conditions.

1.4 Responsibilities

Manufacturer of the product

GeoMax AG, CH-9443 Widnau, hereinafter referred to as GeoMax, is responsible for supplying the product, including the user manual and original accessories, in a safe condition.

Person responsible for the product

The person responsible for the product has the following duties:

- To understand the safety instructions on the product and the instructions in the User Manual
- To ensure that the product is used in accordance with the instructions
- To be familiar with local regulations relating to safety and accident prevention
- To stop operating the system and inform GeoMax immediately if the product and the application become unsafe
- To ensure that the national laws, regulations and conditions for the operation of the product are respected
- To ensure that radio modems are not operated without the permission of the local authorities on frequencies and/or output power levels other than those specifically reserved and intended for use without a specific permit. The internal and external radio modems have been designed to operate on frequency ranges and output power ranges, the exact use of which differs from one region and/or country to another.
- This product must be installed on building and construction machinery only by an appropriately trained and qualified specialist.

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.

CAUTION

Dropping the product

Risk of personal injury and/or mechanical damage.

Precautions:

- Secure the Zenius08 properly during operation.

NOTICE

Remote control of product

With the remote control of products, it is possible that extraneous targets will be picked out and measured.

Precautions:

- When measuring in remote control mode, always check your results for plausibility.

NOTICE

Improper shut down of the system

This could lead to a loss of essential system information.

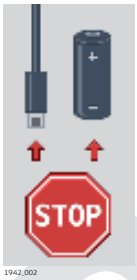
Precautions:

- Always ensure proper shut down of the system. Do not force shut down of the system.
- Release the power switch as soon as the shut-down splash screen appears.

NOTICE

Removal of battery during operation or shutdown

This can result in a file system error and data loss!



Precautions:

- Do **NOT** remove the battery during operation of the instrument, or during the shutdown procedure.
- Always switch off the instrument by pressing the On/Off key, and wait until the instrument has shutdown completely before removing the battery.

CAUTION

Keeping the device too close to the human body during operation

Health risk

Precautions:

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

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.

DANGER

Risk of being struck by lightning

If the product is used with accessories, for example on masts, staffs, poles, you may increase the risk of being struck by lightning. Danger from high voltages also exists near power lines. Lightning, voltage peaks, or the touching of power lines can cause damage, injury and death.

Precautions:

- Do not use the product in a thunderstorm as you can increase the risk of being struck by lightning.
- Be sure to remain at a safe distance from electrical installations. Do not use the product directly under or close to power lines. If it is essential to work in such an environment contact the safety authorities responsible for electrical installations and follow their instructions.
- If the product has to be permanently mounted in an exposed location, it is advisable to provide a lightning conductor system. A suggestion on how to design a lightning conductor for the product is given below. Always follow the regulations in force in your country regarding grounding antennas and masts. These installations must be carried out by an authorised specialist.
- To prevent damages due to indirect lightning strikes (voltage spikes) cables, for example for antenna, power source or modem should be protected with appropriate protection elements, like a lightning arrester. These installations must be carried out by an authorised specialist.
- If there is a risk of a thunderstorm, or if the equipment is to remain unused and unattended for a long period, protect your product additionally by unplugging all systems components and disconnecting all connecting cables and supply cables, for example, instrument - antenna.

WARNING

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 it, discharge the batteries by 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/conductive objects.

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.

☞ The following advice is only valid for battery charger and power 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 authorised GeoMax Service Centres are entitled to repair these products.

WARNING

Damaged battery

If batteries are damaged or are heated strongly, they can explode and cause poisoning, burning, corrosion or environmental contamination.

Precautions:

- Protect the battery against mechanical damages.

WARNING

Damaged battery housing

There is a risk of fire. In case skin or eyes have come into direct contact with electrolytes leaking from the battery, rinse them thoroughly with clear water. Immediately contact a doctor.

Precautions:

- Stop using the battery.
- Turn off any charging in action.
- If any electrolytes should leak from a damaged battery, avoid skin contact and direct inhalation of gases.

WARNING

Improper battery handling

Risk of fire, explosion or burn.

Precautions:

- Only replace battery with supported type.
- Prevent heating the battery above 70 °C.
- Never throw battery into fire.
- Do not disassemble, crush, or modify the battery.

WARNING

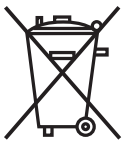
Improper disposal

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 GeoMax distributor.

WARNING

Improperly repaired equipment

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

Precautions:

▸ Only authorised GeoMax Service Centres are entitled to repair these products.

NOTICE

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

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.

CAUTION

Electromagnetic radiation

Electromagnetic radiation can cause disturbances in other equipment.

Precautions:

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

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 GeoMax.

▸ When combined with the product, other accessories must meet the strict requirements stipulated by the guidelines and standards.

▸ When using computers, two-way radios or other electronic equipment, pay attention to the information about electromagnetic compatibility provided by the manufacturer.

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, GeoMax cannot completely exclude the possibility that the function of the product may be disturbed in such an electromagnetic environment.

Precautions:

- Check the plausibility of results obtained under these conditions.

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, the permitted level of electromagnetic radiation may be exceeded and the correct functioning of other products may be impaired. For example, external supply cables or interface cables.

Precautions:

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

WARNING

Use of product with radio or digital cellular phone devices

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

Precautions:

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

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2 Box Content

Container for Zenius08 instrument and accessories

a	Zenius08 box	e	USB cable
b	Zenius08	f	Hand strap
c	USB charger	g	Zenius08 Quick guide
d	Country specific AC plugs	h	ZBA256 Battery

3 Description of the System

3.1 Overview

System components

26663_001

3.2 Terminology

Zenius08 general description

Zenius08 is a collective term describing the various models of the tablet.

3.3 System Concept

3.3.1 Power Concept

General

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

Power options

Power supply
Internally by ZBA256 battery, OR
Externally by ZCH250 power supply, OR
If an external power supply is connected and the internal battery is inserted, then the external power is used. The internal battery is charged.

Charging Modes

The main charging method for the tablet is by USB-C.

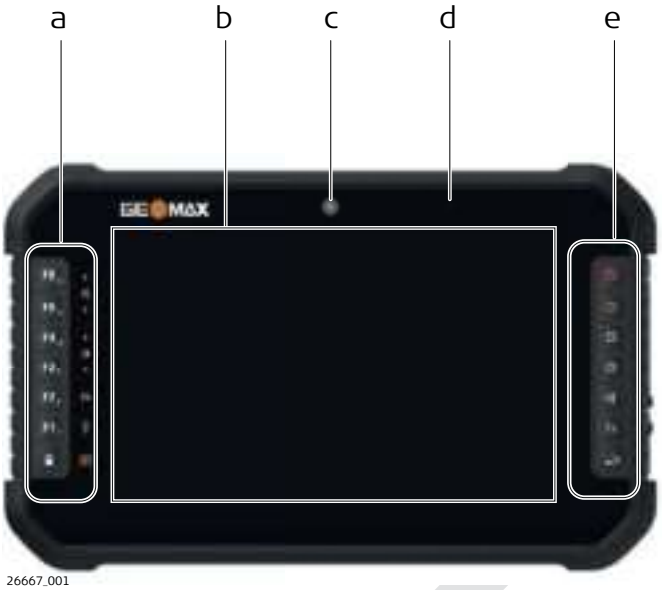
Alternatively, USB-A can also be used for charging but will be at a slower rate.

3.3.2 Data Storage Concept

☞ Removing the microSD card or USB stick while the tablet is turned on can cause loss of data. Only remove the microSD card or USB stick or unplug connecting cables when the tablet is switched off.

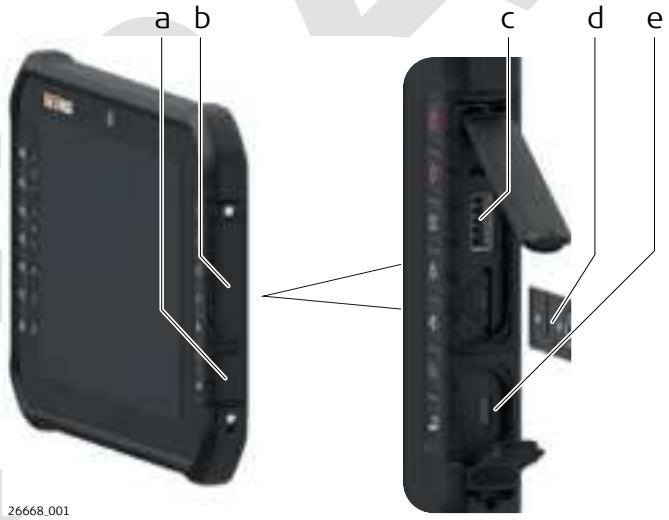
3.4 Zenius08 Components

Upside



a Keypad: Function keys, System keys, Touch panel lock
b Screen
c Front camera
d Light sensor
e Keypad: Main keys

Side



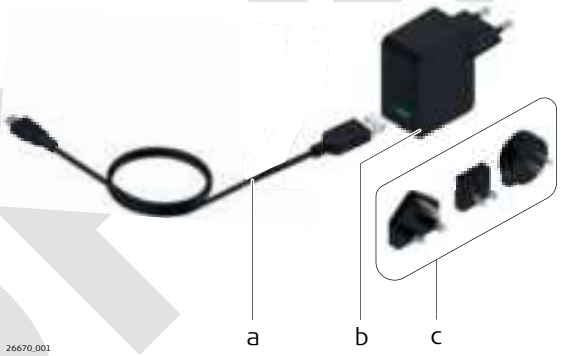
a Protection cap for USB-C port
b Protection cap for USB-A port and microSD/SIM card slot
c USB-A port
d microSD/SIM card slot with card frame
e USB-C port

Underside

a	Microphone	f	Battery
b	Camera	g	Speaker
c	LED flash	h	Battery lock (2 ×)
d	Battery cover	i	Battery locking lever
e	Battery cover lock (6 ×)		

3.5 Battery Charger

Components



a	USB-C to USB-A cable
b	Power supply
c	Country specific AC plugs

4 First-time Use

General

Use this checklist to set up your new Android tablet.

Insert battery

Please refer to 6.2.1 Operating Principles and 6.2.2 Changing the Battery for further information.

Insert SIM card

The SIM card is a removable chip that stores identification information to access a specific mobile network. Typically, the SIM card is provided by the service provider.

For most Android users, a SIM card lets the tablet:

- Have internet services and other functions that rely on an internet connection, like features for specific apps and services.
- Receive Android OS updates when the tablet is not connected to Wi-Fi or a tethered device.
- Send or receive text messages.
- Synchronize or share data among others with the help of a cloud service.
- Keep applications up to date.

How to insert the SIM card.

☞ Many devices will automatically approve the carrier services after the SIM card is inserted. If the device shows an error message or if there are any issues with the SIM card or carrier services, please contact your service provider.

1.	Find the SIM card.
2.	Open the SIM tray on the device.
3.	Place the SIM card in the SIM tray.
4.	Put the SIM tray back into the device.

☞ Please refer to 6.4.1 Working with the microSD Card and Nano SIM Card for further information.

Turning on the Zenius08 step-by-step

☞ Place the Zenius08 on a flat and stable surface or hold the device in your hand. Ensure that either the device is connected with the AC power adapter or the battery is charged up.

1.	Press and hold Power key until the Zenius08 boot screen appears.
2.	When the lock screen is displayed, the Zenius08 is ready to use. The operating system needs usually about 30 seconds for booting up.

Connect to Wi-Fi

Set the tablet to automatically turn on Wi-Fi and connect to a trusted network if needed. When Wi-Fi is turned on, the tablet connects to nearby networks which have been connected to before. If Wi-Fi is turned off, the device can only connect to the internet through the mobile carrier.

Connect to the internet to get internet services and other functions like:

- Android OS updates, when the device is not connected to the mobile carrier's internet service or a tethered device.
- Features for specific apps and services that rely on an internet connection.

How to turn on and connect to Wi-Fi

☞ Some of these steps require to tap the screen.

1. Open the device's **Settings** app.
2. Tap **Network & internet** and then **Internet**.
3. Tap a listed network. Networks that require a password have a Lock.

☞ After connecting, the network is "Saved". When the tablet is near and Wi-Fi is on, the tablet automatically connects to this network.

Copy apps and data

To personalize your new device, copy apps, text messages, contacts, photos, and other info from your old device. Verify your Google Account during this process if needed.

To copy apps and data, backup and restore data on your old device first.

Tips:

- Copy apps and data may take several hours. Apps and data are not removed from the old device.
- Apps that are only available on iOS are not copied to the Android.
- If your transfer apps and data:
  - Wirelessly: The device must be connected to the internet the entire time.
  - With a cord: The device must be connected to the old device for the entire transfer process.
- If you don't copy your apps and data:
  - Download and install apps manually from the Play Store.
  - Text messages sent and received on the old device are not saved.
  - Manually add the saved contacts.
  - Photos are not transferred.

Add a Google Account

The Google Account enables to automatically sync photos, messages, email, and data with other devices that are signed in to with the Google Account.

Sign in to the Google Account to:

- Download apps, books, movies, and shows via Google Play.
- Set up backup and restore.
- Set up other Google apps and services like Gmail and Google Pay.

You can add multiple Google Accounts to your device.

☞ It is advised that if the device is used among multiple users or in rental situations to create an administrator account to avoid having a locked device in case passwords or pin codes are lost.

Create a screen lock

Set up a screen lock to help secure the Android device if needed.

Each time the device is switched on or the screen is woken up, a prompt appears to unlock the unit using a PIN, pattern or password. On some devices, it's possible to unlock with your fingerprint.

☞ Some of these steps require to tap the screen.

Set or change a screen lock

Important: To ensure the automatic and manual backups are encrypted with the screen lock, use a PIN, pattern, or a password.

- Open the tablet's **Settings** app.
- Tap **Security**.
- To pick a kind of screen lock, tap **Screen lock**.
  If a lock is already set, enter the PIN, pattern, or password before picking a different lock.
- Tap the desired screen lock option. Follow the on-screen instructions.

Screen lock options

- No lock
  - **None:** The tablet stays unlocked. This gives no protection, but allows getting to the Home screen quickly.
  - **Swipe:** Swipe with a finger across the screen. This gives no protection, but allows getting to the Home screen quickly.
- Standard locks
  - **Pattern:** Draw a simple pattern with the finger.
  - **PIN:** Enter 4 or more numbers. Longer PINs tend to be more secure.
  - **Password:** Enter 4 or more letters or numbers. A strong password is the most secure screen lock option.

Add the tablet manufacturer or carrier account

Some carriers offer specific apps and services to users who are signed in to their carrier account. For more info, get help from your service provider.

5 User Interface

5.1 Keyboard

Main keys

Key	Function
	Touch Panel Lock
	Power
	ALT key
	Android Overview
	Android Home
	Android Back
	2nd Function
	Enter key

Function keys

Key	Key Combination
F6	(**Fx + F6 = F12**)
F5	(**Fx + F5 = F11**)
F4	(**Fx + F4 = F10**)
F3	(**Fx + F3 = F9**)
F2	(**Fx + F2 = F8**)
F1	(**Fx + F1 = F7**)

Usability

Quick Links	While being in the HOME screen, the function keys can be linked to applications for quick access. Go to **Settings** - **System** - **Key map** to define which application should be linked to each individual key.
Application	When an application is open, the function keys work the same way as you would normally press the F1 to F12 keys on a physical keyboard. The functionality for each key will depend on the implementation of those keys within the application.
Webbrowser	Most web-browsers on an Android platform have some support for function keys. The most common function keys that are supported are: • F3: Search for text on page • F5: Refresh Page

System keys

Icon	Key Combination	Description
	+ **F6**	Volume Up
	+ **F5**	Volume Down
	+ **F4**	Brightness Up
	+ **F3**	Brightness Down
	+ **F2**	Camera
	+ **F1**	Flashlight/Torch
	+	Screenshot

Turning on the Zenius08 step-by-step

☞	Place the Zenius08 on a flat and stable surface or hold the device in your hand. Ensure that either the device is connected with the AC power adapter or the battery is charged up.
1.	Press and hold Power key until the Zenius08 boot screen appears.
2.	When the lock screen is displayed, the Zenius08 is ready to use. The operating system needs usually about 30 seconds for booting up.

Turning off the Zenius08 step-by-step

1.	Press the Power key for at least 1 second to open the Power off menu. Within the menu, the following options are available: • **Power off**: The operating system shuts down and the Zenius08 is turned off. • **Restart**: The operating systems shuts down and will restart the system again. • **Emergency mode**: Make an emergency call.
2.	To turn off the device, select the option **Power off**.
☞	After turning off the Zenius08, wait for at least 5 seconds before turning on the device again.

Resetting the Zenius08 step-by-step

If the Zenius08 stops responding and does not respond when you press any key, it is necessary to start a hard reset. To start a hard reset, do the following:

1.	Press and hold the Power key for 14 seconds to switch off the Zenius08.
2.	After turning off the Zenius08, wait for at least 5 seconds before turning on the device again.
3.	Press and hold the Power key for 14 seconds to switch on the Zenius08 again.

Standby mode activation step-by-step

To activate the standby mode of Zenius08 do the following:

☞	The Zenius08 must be switched on.
1.	Press the Power key. *The Zenius08 enters the sleep mode.*
2.	Press the Power key again to resume operation.
3.	Swipe upwards on the screen to unlock the Zenius08.
☞	Any incoming call ends the standby mode.
☞	If the Zenius08 has been idle for a time, the screen automatically turns off and goes into standby mode.

Working with the touch-screen

Action	Description
Tap	Touch the screen once to open items and select options.
Select and hold	Select and hold an item. *A pop up menu with a list of available subfolders or options opens.* Tap the subfolder you want to open or the action you want to perform.

Action	Description
Flick	Flick the stylus or finger to scroll a page or a list up and down.

5.3 System Main Interface

Home screen

The home screen with multiple panels is the starting place for accessing all functionalities of the Zenius08.

Access

1. Turn on the Zenius08. Refer to 5.2 Operating Principles.
   The boot screen appears.
2. Slide the screen upward to unlock and access the home screen.

If the touch screen does not respond to swiping from bottom to top, then please verify that the LOCK SCREEN functionality is not active by pressing the LOCK button.

Areas of the home screen

a Status bar
b Display area
c Shortcut panel

Using the notification panel

Action	Description
Open the notification panel	When new notification icons appear in the notification area of the status bar, hold the status bar and drag down to open the notification panel.

Action	Description
Hide the notification panel	Drag the bottom border of the panel upwards to hide the panel again.

Customise the shortcut panel

Action	Description
Remove a shortcut icon	Tap and hold the shortcut icon and drag it to the top of the screen to remove
Add a shortcut icon	Tap and hold the icon on the home screen and drag it to the shortcut panel.

Expanding the home screen

Action	Description
View the multiple panels of the home screen	Swipe left or right on the screen to view the multiple panels with all the included applications.
Return to the home screen	Press the Home screen key to close it and return to the home screen.

Icons and directories on the home screen

Action	Description
Add an icon	Tap and hold the icon and drag it to an empty area on the home screen.
Move an icon	Tap and hold the icon on the home screen and drag the icon to the desired location on the home screen.
Remove an icon	Tap and hold the icon on the home screen and drag the icon to the top of the screen to remove.
Create and open a directory	To create a directory, drag an icon onto another icon. Tap the new directory to open it.
Rename a directory	Tap the label of the directory to rename it.

Status icons

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

Battery status icons

Icon	Description
	Battery has full charge: 100%
	Battery has high charge: 80%
	Battery has medium charge: 50%

Icon	Description
	Battery has low charge: 20%
	Battery has less than 15% charge.
	Connected to AC. Battery is charging.

Speaker status icons

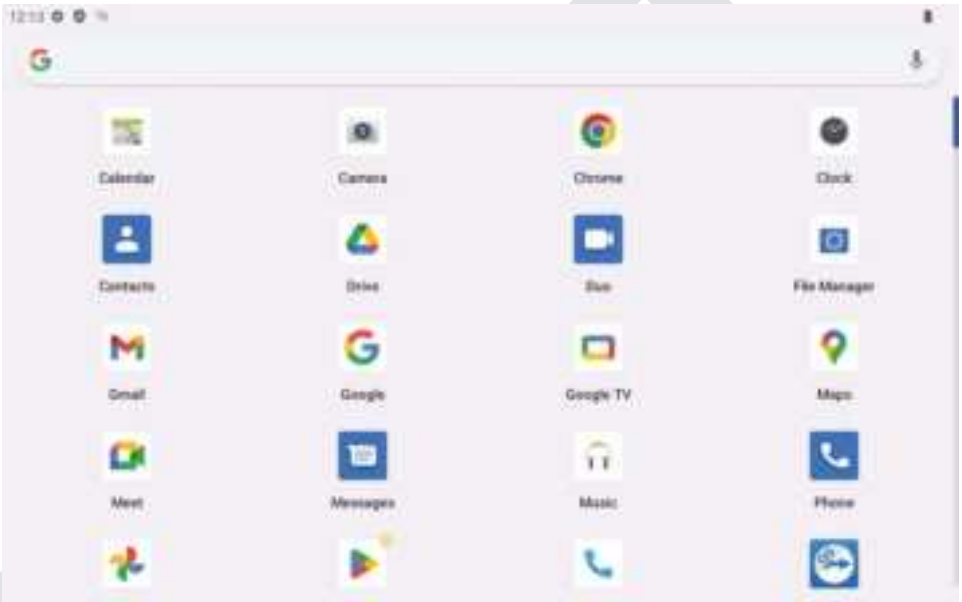
Icon	Description
	Volume on.
	Volume off.
	Volume mute.

Network and modem status icons

Icon	Description
	Bluetooth connected.
	Bluetooth disabled.
	Bluetooth searching.
	Wi-Fi radio on.
	Wi-Fi radio off.
	Maximum signal strength of cellular modem.

Icon	Description
	Cellular modem OFF.
	No cellular service available.
	No SIM card.

Application screen



The appearance of the application screen depends on the installed applications and is subject to change.

Access

1. Swipe up from the bottom of the screen to the application screen.
2. Tap and hold a program icon to open an application-related menu.

6 Operation

6.1 Equipment Setup

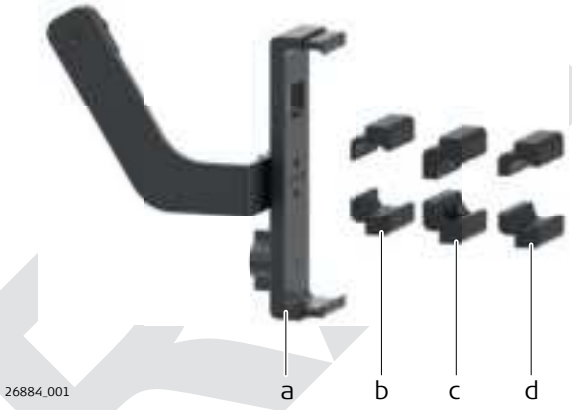
6.1.1 Fixing the Tablet to a Holder and Pole

Components of the ZHR07 holder

The ZHR07 holder consists of the following components:

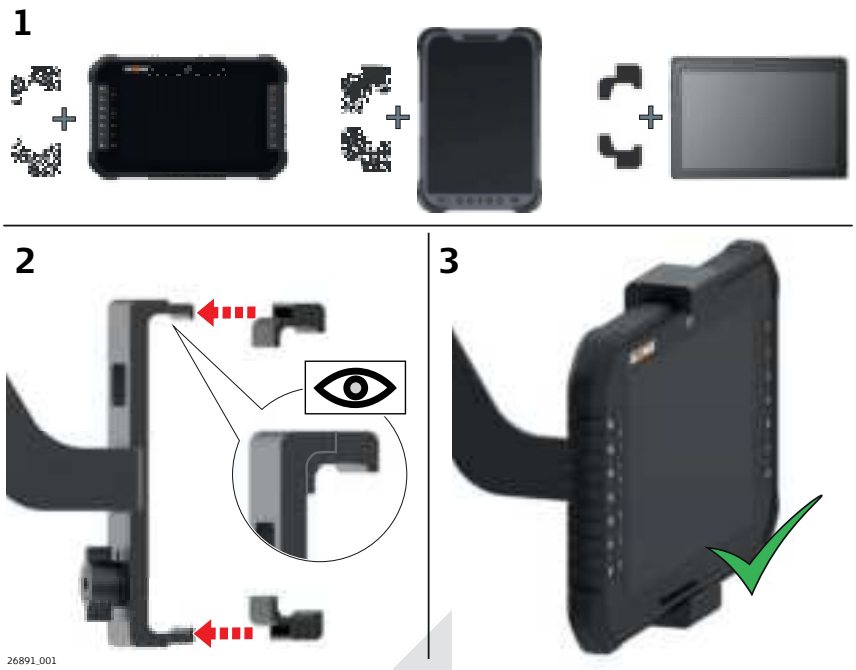
a Plastic sleeve
b Clamp knob
c ZHR799 pole clamp
d Zenius08
e Mounting plate
f Mounting arm
g Clamping lever

Rubbers for use with ZHR07 holder



a ZHR07 holder
b Rubber for GeoMax Zenius08
c Rubber for GeoMax Zenius800
d Rubber for various 3rd party tablets

How to attach the rubbers step-by-step



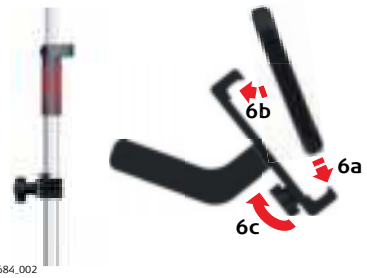
☞ Attach the correct rubber to the ZHR07 holder before use.

1.	Choose the correct rubber.
2.	Attach the rubbers. ☞ Make sure that the rubbers are correctly attached to ensure that the tablet can not fall off.
3.	Tablet correctly attached.

Fixing the tablet to a pole step-by-step

☞ For an aluminium pole, fit the plastic sleeve to the pole clamp.

1.	Insert the pole into the clamp hole.
2.	Attach the holder to the clamp using the clamp knob.
3.	Adjust the angle and the height of the holder on the pole to a comfortable position.
4.	Tighten the clamp with the clamp knob.
5.	Hold the Zenius08 tablet above the holder and lower the end of the Zenius08 tablet into the mounting plate.
6.	Apply slight pressure in a downward direction and then lower the top part of the Zenius08 tablet until the unit is clicked into the holder. Tighten the holder with the clamp screw at the bottom of the unit.



Detaching the tablet from a pole step-by-step

1. Unscrew the bottom clamp screw.
2. Place your palm over the bottom of the tablet.
3. While in this position, lift the bottom of the tablet from the holder.

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6.1.2 Replacing the Display Foil on the Zenius08

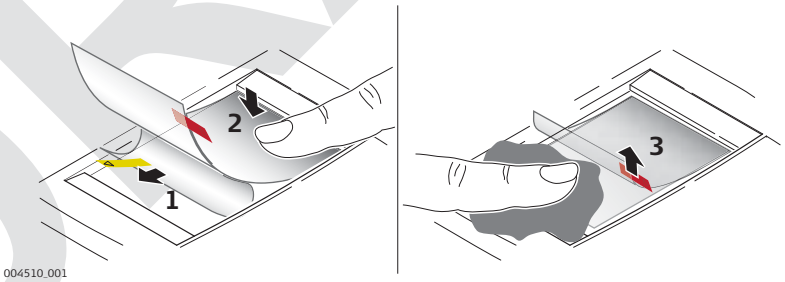
☞ On delivery, the display of the Zenius08 is covered by a foil to protect the display against scratches and dirt and to guarantee a trouble-free function of the touchscreen in extreme and humid weather conditions. We strongly recommend to use this display foil and to replace it with a ZPF5 screen protection foil for Zenius08, if necessary.

Preparation

- Remove the old display foil.
- Ensure that the display is free of dust and grease.
- Use the provided microfibre cloth to clean the display.
- Look for a dust free and dry atmosphere surrounding while fixing the display foil. The recommended conditions are:
  Temperature: approx. 21°C
  Humidity: < 55%

Fixing the display foil step-by-step

The display foil lies between two thin carrier foils. The display foil has a silver-coloured sticker to peel away the carrier foil from the actual display foil.



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1. Touch the yellow-coloured sticker with two fingers and pull it slowly upwards. The carrier foil is peeling away.
   ☞ Do not peel the carrier foil more than 2 cm - 3 cm away.
2. Fix the adhesive underside of the display foil on the display edge.
   Peel away the carrier foil slowly and smooth it out gently onto the display.
3. Remove the additional layer foil which has a red-coloured sticker.
4. Potential air bubbles between display and display foil have to be smoothed out using the included microfibre cloth.
   ☞ Do not use sharp objects!

5. In case of remaining dust or grease under the display foil or the need to replace the display foil, lift it again with some adhesive tape.

6.2 Batteries

6.2.1 Operating Principles

First-time use/ charging batteries

- The battery must be charged before using it the first time, because it is delivered with an energy content as low as possible or might be in sleep mode.
- 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 GeoMax, it is not possible to charge the battery once the temperature is too high

Operation/discharging

- The batteries can be operated from –20 °C to +55 °C/–4 °F to +131 °F.
- Low operating temperatures reduce the capacity that can be drawn; high operating temperatures reduce the service life of the battery.

6.2.2 Changing the Battery

Change the battery step-by-step

☞ Ensure that the tablet is turned off.

1.	Push the six locking mechanisms of the cover to the unlock position.
2.	Remove the cover of the battery compartment.
3.	Push the two locking levers and the locking mechanism of the battery to the unlock position.
4.	Remove the battery.
5.	To insert the battery, attach the connector side of the battery into the compartment at an angle and then lower the other side to engage the connector.
6.	Push the two locking levers and the locking mechanism of the battery to the lock position.
7.	To reattach the cover of the battery compartment, insert the side with the latches first.
8.	Push the six locking mechanisms of the cover to the lock position. ☞ The IP rating is only ensured if the battery compartment is attached correctly!
9.	Turn on the tablet.

6.2.3 Charging the Battery

Charge battery step-by-step

6.3 Power Functions

Turning the tablet on and off

1.	To turn on the device, firmly press and hold the top right power key until the boot screen appears.
2.	To turn off the device. Tap and hold the power key. Select the Power off option to shutdown.
3.	With the device turned on, press the power key to turn off the screen and go into sleep mode. Press the power key again to wake the device. Swipe upwards on the screen to unlock.
☞	If the device has been idle for a period of time, the screen will automatically turn off and go into sleep mode.

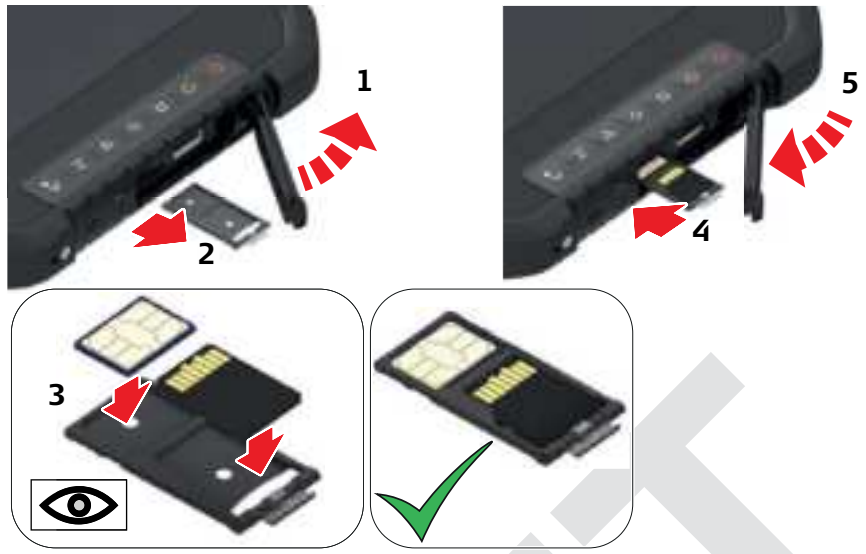
6.4 Working with the Memory Device

6.4.1 Working with the microSD Card and Nano SIM 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.

Insert and remove the microSD card and Nano SIM card step-by-step



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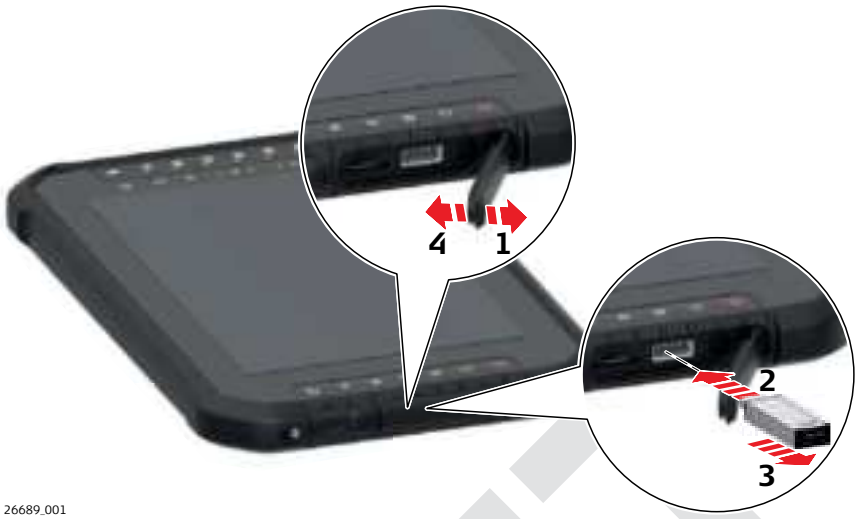
☞	Inserting/removing a card while the Zenius08 is turned on can result in permanent damage to the card. Only insert/remove a card when the Zenius08 is switched off.
☞	Switch off the tablet.
1.	Open the protection cap of the card compartment.
2.	Remove the SIM and microSD card holder.
3.	Place the cards into the card holder, the chips facing downwards.
4.	Insert the card holder to the card compartment.
5.	Close the protection cap of the card compartment. ☞ The IP rating is only ensured if all protection caps on the device are properly closed. No water proofing and dust proofing can be guaranteed if the protection caps are not properly closed.

6.4.2 Working with a USB Memory Stick

Insert a USB stick step-by-step



☞ The USB stick can be inserted into a slot on the right small side of the tablet. Refer to 3.4 Zenius08 Components.

1.	Open the protection cap of the card compartment.
2.	Insert the USB stick into the slot.
3.	After working with the USB stick, remove the USB stick.
4.	Close the protection cap of the card compartment. ☞ The IP rating is only ensured if all protection caps on the device are properly closed. No water proofing and dust proofing can be guaranteed if the protection caps are not properly closed.

6.5 Working under different environmental conditions

Working under different environmental conditions

The device is capable to work under extreme environmental conditions.
However, it might be necessary to fine-tune the touch behavior to guarantee optimal working conditions.

To adjust the touch screen sensitivity go to
Settings - **Accessibility** - **Touch mode options**.

Touch mode options are:
- **Normal mode:** Maximum 10 point touch support
- **Glove mode:** Maximum 5 point touch support
- **Rain mode:** Maximum 2 point touch support

Under severe conditions where the touch technology will simply reach the end of its limits, it is possible to lock the touch-panel completely by pressing the **LOCK** button on the bottom left corner and use an USI 2.0 compatible active stylus which is active under all 3 modes. (Stylus not provided with the unit)

7 Care and Transport

7.1 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 and secure it.

For products for which no container is available use the original packaging or its equivalent.

Shipping

When transporting the product by rail, air or sea, always use the complete original GeoMax 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.

7.2 Storage

Product

Respect the temperature limits when storing the equipment, particularly in summer if the equipment is inside a vehicle. Refer to 8 Technical Data for information about temperature limits.

Li-Ion batteries

- Refer to 8 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

7.3 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.

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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.

Battery charger

Use only a clean, soft, lint-free cloth for cleaning.

Keypad, touch screen and labels

To clean ink marks from the keypad, touch screen or from labels, use isopropyl alcohol.

8 Technical Data

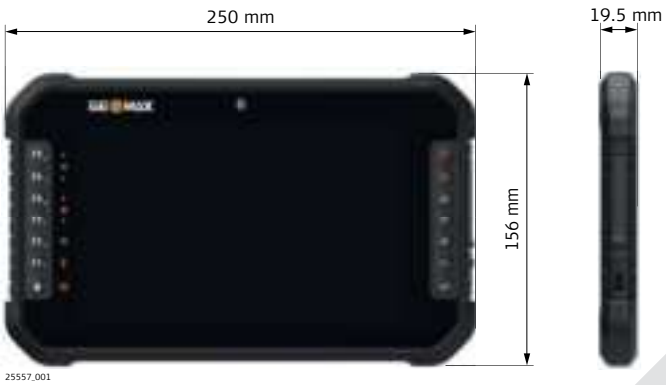
8.1 Zenius08

Control unit

Type	Description
Operating system	Android 12
Processor	Qualcomm SM4350-AC
Graphics	Qualcomm Adreno 619 GPU
Display	8" IPS screen WUXGA 1200 × 1920 sunlight readable screen 500 nits brightness
Touch technology	Multi capacitive screen Supported operations Finger USI 2.0 active stylus
Sound	Integrated sealed speaker with dual noise reducing microphones
Camera	
Rear	32 MP, auto focus lens with dual LED flash light
Front	8 MP, fixed focus lens
RAM	8 GB LPDDR4X
Internal storage	256 GB Flash UFS 2.2
External storage	
MicroSD	Maximum 256 GB
USB Type-C	USB3.1, Charging, OTG
USB Type-A	USB2.0 Host
GNSS	Dual Frequency receiver supporting Beidou Galileo GLONASS NavIC GPS QZSS
WLAN	802.11 a/b/g/n/ac (2.4 & 5GHz)
Bluetooth	BT5.1 BLE with enhanced filtering
Cellular	5G FR1 N1/3/20/28/41/77/78/79 FDD B1/2/3/4/5/7/8/12/13/17/20/25/28 TDD B38/39/40/41 3G B1/B2/B5/B8

Dimensions

Zenius08



Weight

Type	Weight [kg]
Zenius08 tablet	0.730

Memory devices

Data can be stored on the microSD card, USB stick or on the internal memory.

Power

Type	Consumption [A]	External supply voltage
Zenius08	0.7	Input: 100-240 V~50/60Hz Output: 5.0V/3.0A or 9.0V/2.0A or 12.0V/1.5A

Internal battery

Type	Battery	Voltage	Capacity	Operating time, typical*
ZBA256	Li-Ion	3.8 V	8200 mAh	> 8 h (using a new battery)

* Operating time depends on use of wireless communication devices, display use and brightness, processor drain and ambient temperature.

Interfaces

Type	USB Host	Bluetooth	RF antenna pass-through	WiFi
Zenius08	• USB Type A (v2.0) • USB Type C (v3.1)	• Class 1 BT V5.1	• WWAN GNSS • WLAN	• 802.11 a/b/g/n/ac (2.4 & 5 GHz)

8.2 Conformity to National Regulations

Labelling Zenius08

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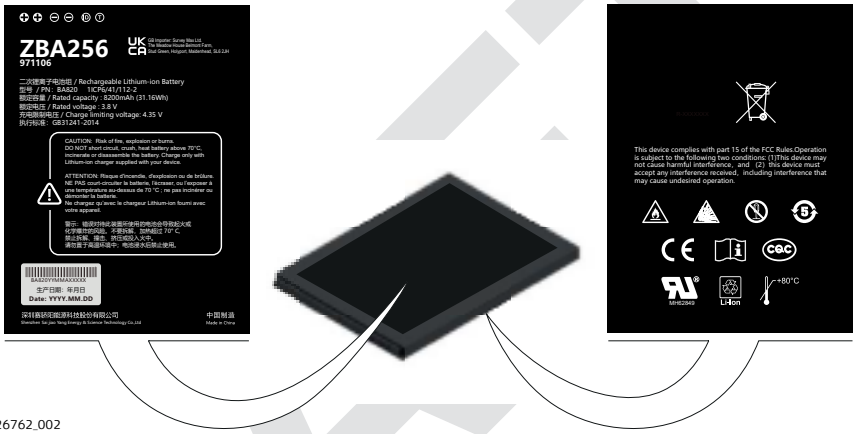
Labelling ZBA256



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Antennas

Type	Antenna	Gain [dBi]
WLAN	Flexible Planar Inverted F Antenna (FlexPIFA)	2
Bluetooth	Flexible Planar Inverted F Antenna (FlexPIFA)	2

Product characteristics

Hardware version	Software version
PCB V1.02	RLC00.50.B8.01

Power range

Restriction: WLAN 5150 MHz – 5250 MHz, only for indoor use.

Non-European radio frequency bands and/or technologies supported by the equipment were not part of the assessment and are marked in *italic*.

UMTS / LTE part

Mode		Characteristics
Frequency band(s)	WCDMA	(FDD I, *II*, *XIX*)
	LTE	(FDD 1, *2*, 3, *4*, *5*, 7, 8, *12*, *13*, *17*, 20, *25*, 28) (TDD 38, *39*, 40, *41*)
Power class	WCDMA LTE	3

Frequency bands, output power

Type	Frequency band [MHz]	Output power[1)] [dBm]	Country restrictions
Bluetooth	2402–2480	5.90	
Bluetooth LE	2402–2480	4.74	
WLAN 2.4 GHz	2412–2472	16.23	
WLAN 5.2 GHz	5180–5240	18.00	See Japan
SRD 5.8 GHz	5745–5825	13.74	See Japan
WCDMA Band I	1920–1980	23.03	
WCDMA Band III	1710–1785	24.77	
WCDMA Band VIII	880–915	23.17	
LTE Band 1	1920–1980	23.15	
LTE Band 3	1710–1785	23.01	
LTE Band 7	2500–2570	23.29	
LTE Band 8	880–915	23.04	
LTE Band 20	832–862	23.66	
LTE Band 28	703–748	23.66	
LTE Band 32 (down-load only)	1452–1496	n/a[2)]	
LTE Band 38	2570–2620	23.16	
LTE Band 40	2300–2400	22.71	
GPS L1	1575.42	n/a[2)]	
GPS L2	1227.6	n/a[2)]	
GLONASS L1	1598.0625 - 1605.3750	n/a[2)]	
GLONASS L2	1242.9375 - 1248.6250	n/a[2)]	
Galileo E1	1575.42	n/a[2)]	
Galileo E5a	1176.45	n/a[2)]	
BeiDou B1	1575.42	n/a[2)]	
BeiDou B2	1176.45	n/a[2)]	
NavIC L5	1176.45	n/a[2)]	
QZSS L1	1575.42	n/a[2)]	

Radiation Exposure Statement

This device meets the government's requirements for exposure to radio waves. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons regardless of age or health.

The SAR limit of USA (FCC) is 1.6 W/kg averaged. Device types: Zenius08 (FCC ID: 2AUW9-ZENIUS08) has also been tested against this SAR limit. SAR information can be viewed online at http://www.fcc.gov/oet/ea/fccid/. Please use the device FCC ID number for search. This device was tested simulation typical 0mm to body.

To maintain compliance with FCC RF exposure requirements, the use of accessories should maintain a separation distance between the user's bodies mentioned above, the use of accessories should not contain metallic components in its assembly, the use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.

For body worn operation, this device has been tested and meets the IC RF exposure guidelines when used with an accessory designated for this product or when used with an accessory that

1) Conducted power for mobile technologies and EIRP for other technologies.

2) Not applicable

contains no metal and that positions the handset a minimum of 0mm from the body. Noncompliance with the above restrictions may result in violation of RF exposure guidelines.

SAR limits EU

The maximum results of Specific Absorption Rate (SAR) have found during testing are as follows:

Frequency band	Body (0mm Gap)	SAR_{10g} Limit [W/kg]
	Maximum SAR_{10g} [W/kg]	
GSM	0.721	2.0
WCDMA	0.915	2.0
LTE	0.880	2.0
NR	0.088	2.0
EN-DC	0.560	2.0
WLAN (2.4GHz)	0.160	2.0
WLAN (5GHz)	0.317	2.0
Bluetooth	0.057	2.0
Simultaneous Transmission	1.372	2.0

SAR limits USA

The maximum results of Specific Absorption Rate (SAR) have found during testing are as follows:

Frequency band	Body (0mm Gap)	SAR_{1g} Limit [W/kg]
	Maximum SAR_{1g} [W/kg]	
GSM	0.747	1.6
WCDMA	0.723	1.6
LTE	0.783	1.6
5G NR	0.094	1.6
5G NR EN-DC	0.673	1.6
WLAN (5GHz)	0.392	1.6
WLAN (2.4GHz)	0.160	1.6
Bluetooth	0.054	1.6
Simultaneous Transmission	1.528	1.6

EU

Hereby, GeoMax AG declares that the radio equipment type Zenius08 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: https://geomax-positioning.com/partner-area.

The low band 5.15 - 5.35 GHz is for indoor use only.

AT, BE, BG, CH, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MT, NL, PL, PT, RO, SE, SI, SK, TR, UK

CAUTION

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

USA

FCC ID: 2AUW9-ZENIUS08
Part 15 B/C/E, 22, 24, 27

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

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

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

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

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

However, there is no guarantee that interference does not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

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

Canada

CAN ICES-003 B/NMB-003 B
IC: 9950A-ZENIUS08

Canada Compliance Statement
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

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

Canada Déclaration de Conformité
L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

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

Japan

5.2 GHz / 5.3 GHz band is restricted to indoor use due to the Radio Law.

- This device is granted pursuant to the Japanese Radio Law (電波法) and the Japanese Telecommunications Business Law (電気通信事業法).
- This device should not be modified (otherwise the granted designation number will become invalid).

Others

The conformity for countries with other national regulations has to be approved prior to use and operation.

8.3 Environmental Specifications

Environmental specifications

Temperature

Type	Operating temperature [°C]	Storage temperature [°C]
Zenius08	–20 to +60	–40 to +70

Protection against water, dust and sand

Type	Protection
Zenius08	IP66 & IP68 (IEC 60529) ☞ Zenius08 is in compliance with IP68 only when protection caps and battery cover are closed. IP6x: Dust tight. IPx6: Water projected in powerful jets. IPx8: Protected against continuous immersion in water. Tested for 1 hour in 1.50 m depth.

☞ The IP rating is only ensured if all protection caps on the device are properly closed. No water proofing and dust proofing can be guaranteed if the protection caps are not properly closed.

Pollution degree

Type	Pollution degree
Zenius08	4 Electrical equipment for indoor and outdoor use.

Humidity

Type	Protection
Zenius08	0 - 95% RH, non-condensing

Altitude

Type	Usage	Range (above sea level)	
		[m]	[ft]
Zenius08	Operation	-1000 to 8848	-3280 to 29028
	Storage	-1000 to 16000	-3280 to 52493

Sound level

Type	Value
Zenius08	< 70 db(A)

9 Software Licence Agreement/Warranty

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 GeoMax. Such software is protected by copyright and other laws and its use is defined and regulated by the GeoMax 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 GeoMax Software Licence Agreement.

Such agreement is provided together with all products and can also be referred to and downloaded at the GeoMax home page at http://www.geomax-positioning.com/swlicense or collected from your GeoMax distributor.

You must not install or use the software unless you have read and accepted the terms and conditions of the GeoMax 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.

Appendix A Appendix

A.1 Appendix A: Operating Frequencies EU (CE)

2G (EU)

Description	Type	Details
Supported Networks	GSM GPRS EDGE	
Supported Bands Frequency range [MHz]	GSM900 Transmit Receive DCS1800 Transmit Receive	 880 - 915 925 - 960 1710 - 1785 1805 - 1880
Nominal conducted power [dBm]	GSM900 GSM1800 EDGE900 EDGE1800	33 29 26 26
Modulation type	GMSK 8PSK	
Antenna type	FPC	
GPRS/EDGE Class	12	

3G (EU)

Description	Type	Details
Supported Networks	WCDMA HSDPA HSUPA	
Supported Bands Frequency range [MHz]	Band 1 Transmit Receive Band 8 Transmit Receive	 1920 - 1980 2110 - 2170 880 - 915 925 - 960
Nominal conducted power [dBm]	Band 1 Band 8	24 25
Modulation type	BPSK QPSK 16QAM	
Antenna type	FPC	

4G (EU)

Description	Type	Details
Supported Bands	E-UTRA Band	FDD Band 1 FDD Band 3 FDD Band 7 FDD Band 8 FDD Band 20 FDD Band 28 TDD Band 38 TDD Band 40
	E-UTRA CA Band	TDD Band 38 TDD Band 40
Frequency range [MHz]	FDD-LTE Band 1 Transmit Receive	 1920 - 1980 2110 - 2170
	FDD-LTE Band 3 Transmit Receive	 1710 - 1785 1805 - 1880
	FDD-LTE Band 7 Transmit Receive	 2500 - 2570 2620 - 2690

Description	Type	Details
	FDD-LTE Band 8 Transmit Receive	 880 - 915 925 - 960
	FDD-LTE Band 20 Transmit Receive	 832 - 862 791 - 821
	FDD-LTE Band 28 Transmit Receive	 703 - 748 758 - 803
	TDD-LTE Band 38 Transmit Receive	 2570 - 2620 2570 - 2620
	TDD-LTE Band 40 Transmit Receive	 2300 - 2400 2300 - 2400
	TDD-LTE CA Band 38 Transmit Receive	 2570 - 2620 2570 - 2620
	TDD-LTE CA Band 40 Transmit Receive	 2300 - 2400 2300 - 2400
Nominal conducted power [dBm]	FDD-LTE Band 1 FDD-LTE Band 3 FDD-LTE Band 7 FDD-LTE Band 8 FDD-LTE Band 20 FDD-LTE Band 28 TDD-LTE Band 38 TDD-LTE Band 40 TDD-LTE CA Band 38 TDD-LTE CA Band 40	23 23 24 24 24 23 23 24 22 24
Modulation type	QPSK 16QAM	
Antenna type	FPC	

5G (EU)

Description	Type	Details
Supported Bands	SA Band	N1 N3 N20 N28 N41 N77 N78
	NSA Band	DC_1A_N28A DC_1A_N77A DC_1A_N78A DC_3A-N28A DC_3A-N77A DC_7A_N28A DC_8A_N77A DC-28A_N78A DC_3A-N1A DC_8A-N1A DC_1A-N3A DC_8A-N3A DC_20A-N3A DC_1A-N41A DC_3A-N41A DC_40A-N1A DC_40A_N78A
Frequency range [MHz]	N1 Transmit Receive	 1920 - 1980 2110 - 2170

Description	Type	Details
	N3 Transmit Receive	 1710 - 1785 1805 - 1880
	N20 Transmit Receive	 832 - 862 791 - 821
	N28 Transmit Receive	 703 - 748 758 - 803
	N41 Transmit Receive	 2496 - 2690 2496 - 2690
	N77 Transmit Receive	 3300 - 4200 3300 - 4200
	N78 Transmit Receive	 3300 - 3800 3300 - 3800
Nominal conducted power [dBm]	N1 N3 N20 N28 N41 N77 N78 1A_N28A 1A_N77A 1A_N78A 3A_N28A 3A_N77A 7A_N28A 8A_N77A 28A_N78A	24 24 24 23 28 27 27 23 25 25 25 24 24 24 24
Modulation type	UL & DL up to 256QAM	
Antenna type	FPC	

Bluetooth® (EU)

Description	Type
Radio Technology	Bluetooth V5.1
Frequency range [MHz]	2402 - 2480
Nominal conducted power [dBm]	7
Modulation type	GFSK π/4-DQPSK 8DPSK
Antenna type	FPC

WiFi 2.4 GHz (EU)

Description	Type	Details
Supported Standards	802.11b/g/n (HT20) 802.11n (HT40)	
Frequency range [MHz]	802.11b/g/n (HT20) 802.11n (HT40)	2412 - 2472 2422 - 2462
Nominal conducted power [dBm]	13	
Modulation type	CCK OFDM QPSK BPSK 16QAM 64QAM	
Antenna type	FPC	

WiFi 5 GHz (EU)

Description	Type
Supported Standards	802.11a 802.11n (HT20/40) 802.11ac-VHT80
Frequency range [MHz]	5745 - 5825
Nominal conducted power [dBm]	12
Modulation type	QPSK BPSK 16QAM 64QAM 256QAM
Antenna type	FPC

A.2 Appendix B: Operating Frequencies US/CAN

2G (US/CAN)

Description	Type	Details
Supported Networks	GSM GPRS EDGE	
Supported Bands Frequency range [MHz]	GSM/GPRS/EDGE 850 Transmit Receive GSM/GPRS/EDGE 1900 Transmit Receive	 824 - 849 869 - 894 1850 - 1910 1930 - 1990
Nominal conducted power [dBm]	GSM850 GSM1900 EDGE850 EDGE1900	34 31 28 27
Modulation type	GMSK 8PSK	
Antenna type	FPC	
GPRS/EDGE Class	12	

3G (US/CAN)

Description	Type	Details
Supported Networks	WCDMA HSDPA HSUPA	
Supported Bands Frequency range [MHz]	WCDMA Band 2 Transmit Receive WCDMA Band 5 Transmit Receive	 1850 - 1910 1930 - 1990 824 - 849 869 - 894
Nominal conducted power [dBm]	Band 1 Band 8	24 25
Modulation type	BPSK QPSK 16QAM	
Antenna type	FPC	

4G (US/CAN)

Description	Type	Details
Supported Bands	FDD-LTE	Band 2 Band 4 Band 5 Band 7 Band 12 Band 13 Band 17 Band 25
	TDD-LTE	Band 38 Band 40 Band 41
Frequency range [MHz]	FDD-LTE Band 2 Transmit Receive	 1850 - 1910 1930 - 1990
	FDD-LTE Band 4 Transmit Receive	 1710 - 1755 2110 - 2155
	FDD-LTE Band 5 Transmit Receive	 824 - 849 869 - 894
	FDD-LTE Band 7 Transmit Receive	 2500 - 2570 2620 - 2690
	FDD-LTE Band 12 Transmit Receive	 699 - 716 729 - 746
	FDD-LTE Band 13 Transmit Receive	 777 - 787 746 - 756
	FDD-LTE Band 17 Transmit Receive	 704 - 716 734 - 746
	FDD-LTE Band 25 Transmit Receive	 1850 - 1915 1930 - 1995
	TDD-LTE Band 38 Transmit Receive	 2570 - 2620 2570 - 2620
	TDD-LTE CA Band 38 Transmit Receive	 2570 - 2620 2570 - 2620
	TDD-LTE Band 40 Transmit Receive	 2305 - 2315 2305 - 2315
	TDD-LTE CA Band 40 Transmit Receive	 2350 - 2360 2350 - 2360
	TDD-LTE Band 41 Transmit Receive	 2496 - 2690 2496 - 2690
	TDD-LTE CA Band 41 Transmit Receive	 2496 - 2690 2496 - 2690

Description	Type	Details
Nominal conducted power [dBm]	FDD-LTE Band 2 FDD-LTE Band 4 FDD-LTE Band 5 FDD-LTE Band 7 FDD-LTE Band 12 FDD-LTE Band 13 FDD-LTE Band 17 FDD-LTE Band 25 TDD-LTE Band 38 TDD-LTE CA Band 38 TDD-LTE Band 40 TDD-LTE CA Band 40 TDD-LTE Band 41 TDD-LTE CA Band 41	24 24 24 24 23 24 24 24 23 22 25 24 23 23
Modulation type	QPSK 16QAM	
Antenna type	FPC	

5G (US/CAN)

Description	Type	Details
Supported Bands	SA Band	N41 N77 N78
Frequency range [MHz]	N41 Transmit Receive	 2496 - 2690 2496 - 2690
	N77 Transmit Receive	 3450 - 3550 3450 - 3550
	N77 Transmit Receive	 3700 - 3980 3700 - 3980
	N78 Transmit Receive	 3450 - 3550 3450 - 3550
	N 78 Transmit Receive	 3650 - 3700 3650 - 3700
	N78 Transmit Receive	 3700 - 3800 3700 - 3800
Nominal conducted power [dBm]	N41 N77_3450 - 3550 MHz N77_3700 - 3980 MHz N78_3450 - 3550 MHz N78_3650 - 3700 MHz N78_3700 - 3800 MHz	25 24 24 25 23 24
Modulation type	DFT-s-OFDM	PI/2 BPSK QPSK 16QAM 64QAM 256QAM
	CP-OFDM	QPSK 16QAM 64QAM 256QAM
Antenna type	FPC	

Bluetooth®
(US)

Description	Type
Radio Technology	Bluetooth V5.0 (BLE mode)
Frequency range [MHz]	2402 - 2480

Description	Type
Nominal conducted power [dBm]	6
Modulation type	GFSK
Antenna type	FPC

Bluetooth® (CAN)

Description	Type	Description
Radio Technology	Bluetooth V5.0 (BLE mode)	Bluetooth V5.0 (BR/EDR mode)
Frequency range [MHz]	2402 - 2480	2402 - 2480
Nominal conducted power [dBm]	6	9
Modulation type	GFSK	GFSK π/4-DQPSK 8DPSK
Antenna type	FPC	FPC

WiFi 2.4 GHz (US/CAN)

Description	Type	Details
Supported Standards	802.11b/g/n (HT20) 802.11n (HT40)	
Frequency range [MHz]	802.11b/g/n (HT20) 802.11n (HT40)	2412 - 2462 2422 - 2452
Nominal conducted power [dBm]	16	
Modulation type	CCK OFDM QPSK BPSK 16QAM 64QAM	
Antenna type	FPC	

WiFi 5 GHz (US/CAN)

Description	Type	Details
Supported Standards	802.11a 802.11n (HT20/40) 802.11ac-VHT80	
Frequency range [MHz]	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac-VHT80	5150 - 5250 5250 - 5350 5470 - 5725 5725 - 5850
Nominal conducted power [dBm]	15	
Modulation type	QPSK 16QAM 64QAM 256QAM	
Antenna type	FPC	

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Original text

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