OKM
GERMAN DETECTORS

OKM ROVER UC
MANUAL

INTRODUCTION

TECHNICAL SPECIFICATIONS

CONTROL ELEMENTS

ASSEMBLY & PREPARATION

OPERATING MODES

FILE TRANSFER

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TABLE OF CONTENTS

1 INTRODUCTION 4
1.1 PREFACE 4
1.2 IMPORTANT NOTES 5
1.2.1 General Notes 5
1.2.2 Possible Health Hazards 5
1.2.3 Surrounding Area 5
1.2.4 Voltage 5
1.2.5 Data Safety 5
1.3 MAINTENANCE AND SERVICES 5
1.4 DANGER OF EXPLOSION DURING EXCAVATION 6
1.5 CARE AND USE 6
1.6 PROTECTING YOUR INVESTMENT 6

2 TECHNICAL SPECIFICATIONS 7
2.1 TELESCOPIC PROBE 7
2.2 WIRELESS DATA TRANSFER 7

3 CONTROL ELEMENTS 8
3.1 TELESCOPIC PROBE 9
3.2 ANDROID SMARTWATCH 10
3.3 ROVER UC APP SCREEN OVERVIEW 11
3.3 BLUETOOTH HEADPHONES 11

4 ASSEMBLY AND PREPARATION 13

5 OPERATING MODES 14
5.1 ACTIVITY SCREEN 14
5.1.1 Pedometer Reset 15
5.1.2 Compass Calibration 15
5.2 3D GROUND SCAN 16
5.2.1 Preparing a 3D Ground Scan 16
5.2.2 Performing a 3D Ground Scan 18
5.3 MAGNETOMETER 20
5.3.1 Performing a Magnetometer Scan 20
5.3.2 Performing a Ground Balance 21
5.4 PINPOINTER 22
5.4.1 Performing a Pinpointer Scan 22
5.4.2 Performing a Ground Balance 23
5.4.3 Analyzing a Pinpointer Scan 23
5.5 FILE EXPLORER 24
5.6 SETTINGS 26
5.6.1 Language 26
5.6.2 Sound 26
5.6.3 Vibration 27
5.6.4 GPS 27
5.6.5 App Theme 27
5.6.6 Length Unit 27
5.6.7 Activation 28
5.6.8 Update 29
5.7 INFORMATION 29

6 FILE TRANSFER 30
6.1 PAIRING BLUETOOTH 30
6.2 IMPORTING SCAN DATA 32

INTRODUCTION

1 INTRODUCTION

1.1 PREFACE

Dear customer,

our engineers, sales, training and support staff at OKM GmbH would like to thank you for your purchase of the Rover UC.

The Rover UC detector works on the principle of Electro-Magnetic Signature Reading (EMSR). Besides the detection of metallic objects this device is also capable of detecting natural features of the earth like formations of strata, cavities, voids, faults, ground water and other non-metallic objects. Then, of course, this equipment is best suited for the detection of sepulchers, treasures, buried utilities, tanks etc.

The Rover UC is able to locate, document and analyze buried objects within various structures and vessels non-intrusively without having to excavate the area. Using EMSR is particularly useful in areas where detection is a must and excavation is not possible. The intuitive and flexible handling of the Rover UC can easily and quickly provide reproducible results.

With our team of specialists we guarantee that our products are under recurrent control. Our specialists try to implement new developments in terms of further quality improvements for you.

By purchasing or using our products, we cannot guarantee that you will be successful and have a find during the course of your research. The recognition of hidden and buried objects depends on a huge number of factors. As you well may know there are different soil types all over the world with different levels of natural attenuation. Variable soil properties can and will hamper and alter ultimate scan measurements. Areas with an extreme amount of ground water, varying clays, sands and wet soils make scanning more difficult and may reduce the maximum depth capabilities of the detection equipment, regardless of make or model.

For more information regarding where this equipment has been used and operated, please visit our website. Our equipment is constantly being tested. Improvements and upgrades are listed on our website.

It is necessary for our company to protect our developments and all of the information learned during the "Research and Development" phases in creating our technology. We strive to stay within the given framework of legislation, patents and trademark registration.

Please take your time to read this User Manual and familiarize yourself with the operation, functionality and how to utilize the Rover UC. We also offer training for OKM equipment in our headquarters and on-site. We strive to maintain a worldwide dealer network for assistance and support. Please visit our website www.okmdetectors.com for more information.

1.2 IMPORTANT NOTES

Prior to using the Rover UC and its accessories, please read these operating instructions carefully. These instructions give information on how to use the detector and potential sources where precautions should be taken.

The Rover UC and its accessories serve for the analysis, documentation and detection of subsurface anomalies and ground disturbances. The recorded data of the ground structure will be transmitted to a computer to give a visual representation using our proprietary software program. Any additional notes to the software should be observed. Please refer to the Visualizer 3D Studio Documentation!

1.2.1 General Notes

Being an electronic device, the Rover UC has to be treated with caution and treated with care as with any electronic device. Any failure to observe the safety precautions given or any use for purposes other than the ones it is designed for may result in damage or destruction of the processing unit and/or its accessories or connected components.
The device has a built in anti-tampering module which will destroy the unit if it is improperly opened. There are no consumer serviceable parts inside the unit.

1.2.2 Possible Health Hazards

If used properly this device usually does not pose any health hazards. According to current scientific knowledge, the high-frequency signals are not harmful to the human body on account of their low power.

1.2.3 Surrounding Area

When moving this unit from a cold place to a warmer place, watch out for condensation. Do not immediately operate the unit until any possible condensation could have evaporated. The unit is not weather proof and water or condensation can destroy the unit.

Avoid strong magnetic fields, which may occur in places where there are large electric motors or unshielded loudspeakers. Try to avoid using this equipment within 50 meters (150 ft) of this type of equipment.

Metallic objects on the ground such as cans, tin, nails, screws or debris can influence your scan data and present negative results regarding your scan data. Also it is a good habit to remove any metallic objects off of your person like cellular telephones, keys, jewelry, etc. Do not wear steel toe boots.

1.2.4 Voltage

The power supply can not be outside the indicated range of values. Use only approved chargers which are included within the delivery scope.

1.2.5 Data Safety

Data errors can occur if:

- the range of the sender module has been exceeded,
- the power supply of the device or the batteries are too low,
- the unit is operating to close to devices which sends out disturbances or
- atmospheric conditions (electrical storms, lightning, etc.).

1.3 MAINTENANCE AND SERVICES

In this section you will learn how to maintain your measuring instrument with all included accessories to keep it in good condition a long time and to get good measuring results.

The following list indicates what you absolutely should avoid:

- penetrating water
- strong dirt and dust deposits
- hard impacts
- strong magnetic fields
- high and long lasting heat effect

To clean your device please use a clean and dry soft rag or cloth. To avoid any damage you should transport the device and accessories always in an appropriate way.

Prior to using your Rover UC please be sure that all batteries are fully charged.

To charge the internal battery
use only the approved charger which are part of the delivery scope.

1.4 DANGER OF EXPLOSION DURING EXCAVATION

Unfortunately, the last two world wars and other local conflicts made the ground in many places of the world a potentially explosive scrap heap. A host of those lethal relics are still buried in the ground. Do not start digging and hacking for an object wildly when you receive a signal of a piece of metal from your device. Firstly, you might indeed cause irreparable damage to a truly rare find, and secondly, there is a chance that the object reacts in an insulted way and strikes back.

Note the color of the ground close to the surface. A red or reddish color of the ground is an indicator of rust traces. As regards to the finds themselves, you should definitely pay attention to their shape. Curved or round objects should be a sign of alarm, especially if buttons, rings or little pegs can be identified. The same applies to recognizable ammunition or bullets and shells. Leave ammonition where it is, do not touch it and, most importantly, do not take any of it home with you. The devices of war made use of rocker fuses, acid fuses and ball fuses. Those components have been rusting away in the course of time, and the slightest movement may cause parts of them to break and be Triggered. Even seemingly harmless objects such as cartridges or large ammunition are anything but that.

Moving such an object may cause those crystals to produce friction, leading to an explosion. If you come across such relics, mark the place and do not fail to report the find to the police. Such objects always pose a danger to the life of hikers, walkers, farmers, children and animals.

1.5 CARE AND USE

The Rover UC is a sturdy instrument, but it is not designed to withstand abuse. In caring for your ground scanner, there are several important DOs and DON'Ts to remember:

- DO NOT use to get rid of bushes, flatten area by swinging wildly or pry rocks loose.
- DO NOT drop the machine into water or use it while it is raining or wet.
- DO NOT leave it exposed at night where dew could form on it.
- DO NOT store it in places that could get extremely hot.
- DO NOT leave it in the trunk of a car where high temperatures could build up.
- DO NOT spray lubricants, or any type of cleaners, solvents, sealants or other chemicals into or onto the electronic parts, switches or controls.
- DO NOT attempt to modify or repair the detector's electronics as this will void your detector's warranty.
- DO clean your unit with a soft dry or slightly damp cloth to remove dust and residue from the previous use.
- DO use the device within the proper operating guidelines.

The warranty does not cover damage resulting from an accident, neglect or abuse.

1.6 PROTECTING YOUR INVESTMENT

Often detector users become disappointed when their new detector becomes less and less responsive and seems to have lost some of its original peak performance. You can help prevent this from happening to your detector by following these basic care and protection guidelines:

- Operate your detector exactly as recommended in this User Manual.
- Use only approved OKM chargers.
- Avoid hitting the probe against hard, solid objects and surfaces.
- Keep your probe slightly off of the ground, especially when using in gravel or hard, rocky dirt.
- If working in or near water, or if there is a possibility of rain, use a protective weather resistant pouch or plastic bag to cover the control housing. Make sure it can "breathe" in order to ensure against condensation buildup inside.
- After each use, clean the detector with a soft cloth to remove dust, moisture or other contaminants.
- When transporting the detector in a car during hot weather, store it on the floor of the passenger compartment if possible. Using the Protection case gives additional protection. In any case, never allow the detector to roll around unprotected in the trunk or back of a pickup truck.
- Protect your detector from dust, moisture, and extreme temperatures during storage.
- When shipping, use the original heavy-duty container (Protection case) and provide sufficient padding around all parts.
- Treat your detector as you would treat any sensitive electronic instrument. Though it is designed to withstand the demands of normal treasure hunting, proper care is essential.

2 TECHNICAL SPECIFICATIONS

The technical specifications are medial values. During operation slight variations are possible.

2.1 TELESCOPIC PROBE

Dimensions (L x W x H)	670 – 1380 x 65 x 80 mm
Weight	0.5 kg
Input Voltage (max)	5 V DC, 2 A
Charge time	3 h @ 10 – 30 °C
Operating time	approx. 48 h
CPU	Cortex-M0+, 24 MHz
Display	LCD, 80 x 160 Pixel
Sample rate	240 values / second
Measurement resolution	15 bit
Interconnect	Bluetooth 5.2, max. distance 8 m
Operating temperature	-5 – 60 °C
Storage temperature	-10 – 70 °C
Air humidity	5 % – 75 %
Technology	GST, EMSR
Sensor technology	SCMI-15-D
Compass	Yes
Pedometer	Yes
Waterproof	No

2.2 WIRELESS DATA TRANSFER

Technology	Bluetooth 5.2
Frequency range	2.4 – 2.4835 GHz
Maximum transfer rate	1 Mbps
Receiving sensitivity	-85 dBm
Maximum range	approx. 8 m (Line of Sight)

CONTROL ELEMENTS

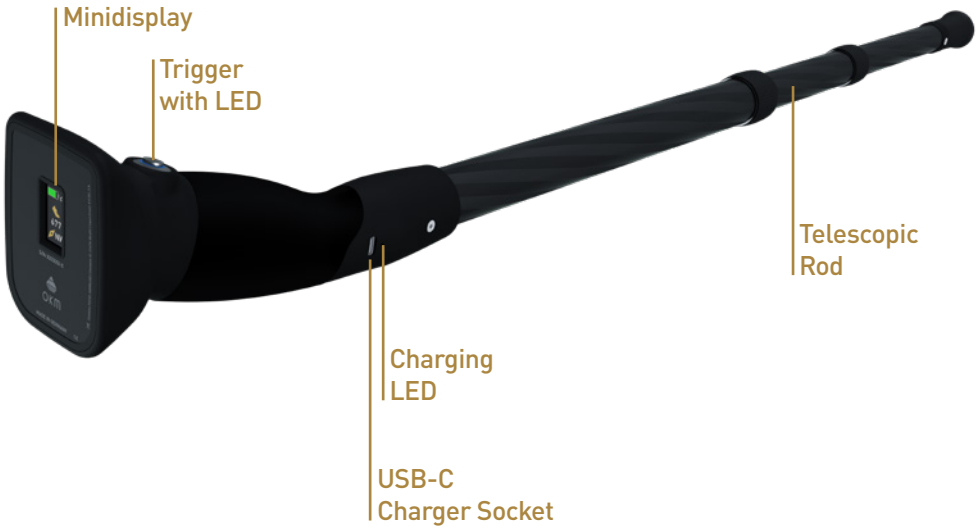
3 CONTROL ELEMENTS

In this section you learn more about the fundamental use of all control elements for this measuring instrument. All connections, inputs and outputs are explained in detail.

Telescopic Probe

Smartwatch

3.1 TELESCOPIC PROBE



Trigger with LED: The Trigger is used to power the detector on and off and to control the various operations. Depending on the activated function, this button will control further features which will be explained in detail in the corresponding chapters.

Push the Trigger to power on the device. The Trigger LED will illuminate in **green** color. Additionally, the Minidisplay will show indications about battery status, pedometer and compass.

If Smartwatch or Smartphone is not connected via Bluetooth and the detector is switched on, the Rover UC can be used as trekking pole with pedometer and compass.

Moreover, to enhance the detector's undercover functionality, press the Trigger once to switch off the Trigger LED ring and to dim the Minidisplay (**UnderCover Mode**). The detector is still powered on and ready for scans.

Trigger LED off	The Detector is powered off (unless in UnderCover Mode).
Trigger LED green	Detector is powered on, but is not connected to any Android device via Bluetooth.
Trigger LED blue	Detector is powered on and connected to an Android device (Smartwatch or Smartphone) via Bluetooth. The detector is ready to perform scans.

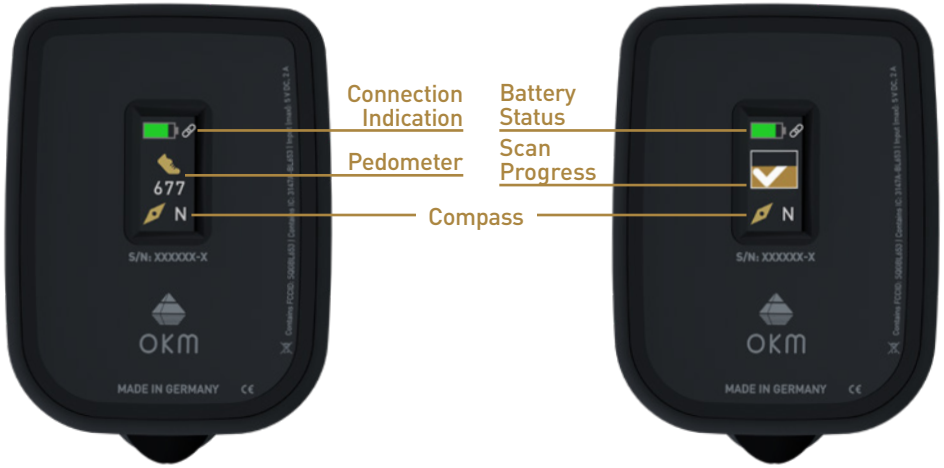
To power off the detector, press and hold the Trigger at least 3 seconds until the LED is no longer illuminated and the Minidisplay switches off, too.

USB-C Charger Socket with Charging LED: When the internal battery is too low, you have to recharge it by connecting the appropriate charger and USB-C cable to the USB-C Charger Socket. As long as charging is in progress, the Charging LED is **red**. As soon as the Charging LED turns **green**, the battery is fully charged.

When the device is powered on while charging, the Minidisplay shows the charging icon  but no additional indication of the charging progress itself.

Telescopic Rod: The Telescopic Rod can be extended or collapsed according to the user's height. To make it easier to transport the Rover UC, you can completely collapse every single section.

Minidisplay: The Minidisplay shows indications of the battery status and compass at any time while operating the detector.

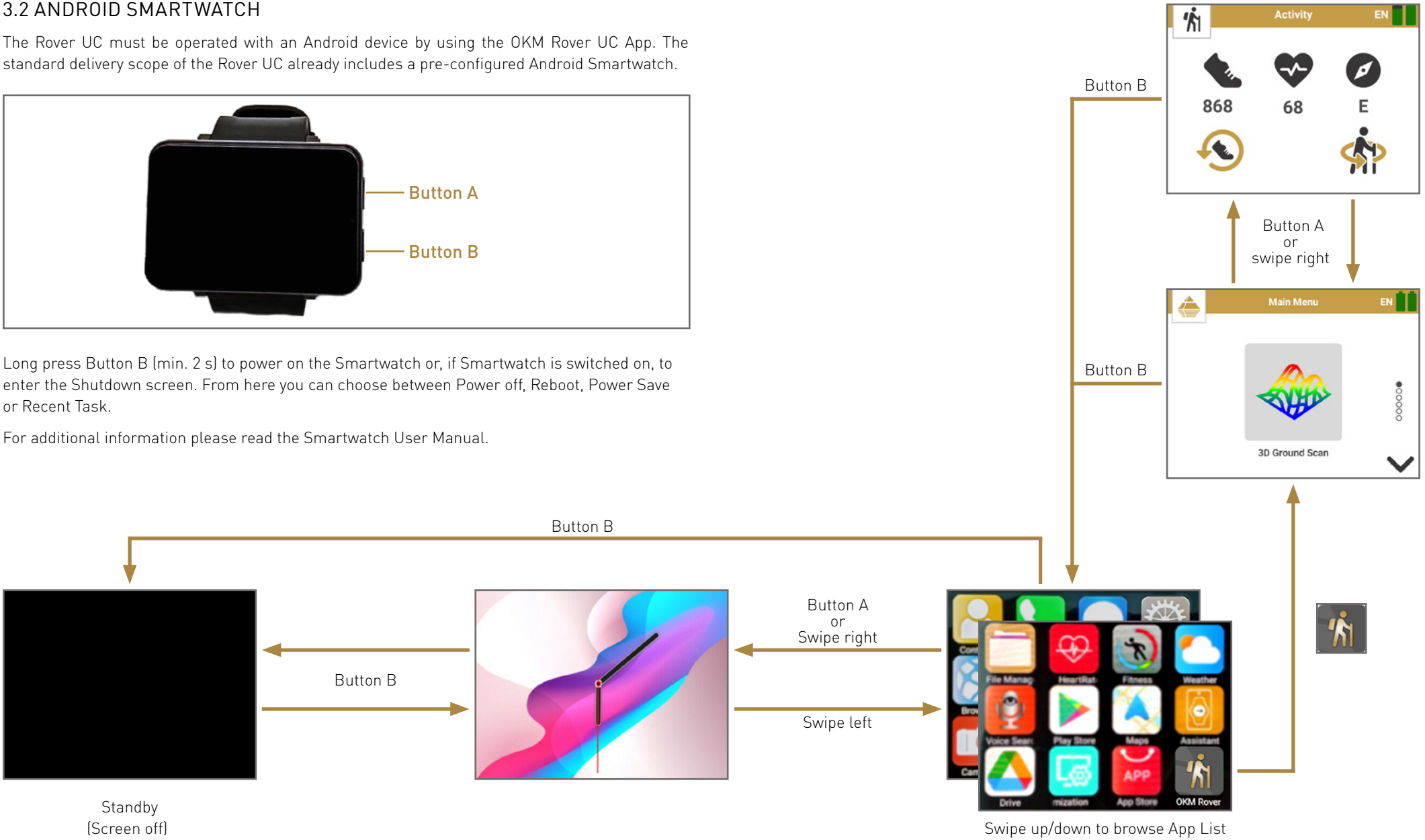


3.2 ANDROID SMARTWATCH

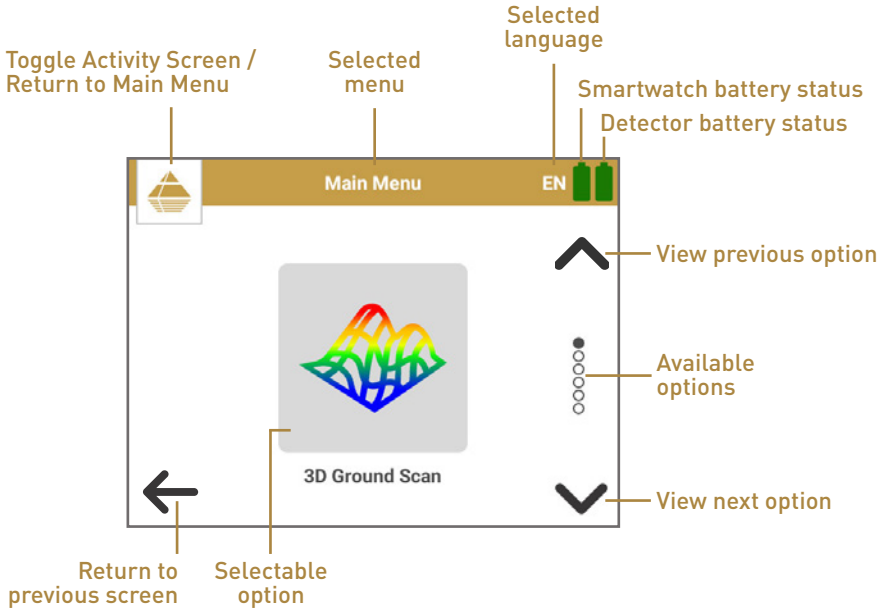
The Rover UC must be operated with an Android device by using the OKM Rover UC App. The standard delivery scope of the Rover UC already includes a pre-configured Android Smartwatch.

Long press Button B (min. 2 s) to power on the Smartwatch or, if Smartwatch is switched on, to enter the Shutdown screen. From here you can choose between Power off, Reboot, Power Save or Recent Task.

For additional information please read the Smartwatch User Manual.



3.3 ROVER UC APP SCREEN OVERVIEW



3.3 BLUETOOTH HEADPHONES

The Rover UC can be operated with any Bluetooth headphones available on the market. Your Rover UC already includes Bluetooth headphones.

To use the headphones with your detector, they must be paired with the Android device that you use to operate your detector via OKM Rover UC App. Connect your headphones according to the following steps:

1. Power on your headphones (Baseline HS).
2. From the App List select ***Settings*** > ***Connect*** > ***Bluetooth***.
3. Enable Bluetooth.
4. Scroll down to section ***Available devices*** and click on button ***Search***.
5. The entry ***Baseline HS*** will appear in the list. Select it to start pairing.
6. After the headphones are paired, the entry ***Baseline HS*** will appear in ***Paired devices*** and is ready to use.

For further information, please refer to the user manuals of your Android device as well as your headphones!

ASSEMBLY & PREPARATION

4 ASSEMBLY AND PREPARATION

Please follow these instructions to assemble your detector and get ready for your first scan.

Make sure to recharge the internal battery of the detector before going into the field.

Plug charger into detector to check the charge status:

- Charging LED **green** = fully charged
- Charging LED **red** = charging

Release the lock by turning the grip clockwise. Fully extend the lower part of the Telescopic Rod and lock it again.

Then adjust the upper parts of the Telescopic Rod to your height for maximum comfort.

Push the Trigger to power on the detector. The Trigger LED turns **green** and the Minidisplay turns on.

Start the OKM App on the Smartwatch and select the desired operating mode, see chapter 5 OPERATING MODES on page 14.

OPERATING MODES

5 OPERATING MODES

The detector is controlled by a Smartwatch (alternatively Smartphone) with pre-installed OKM Rover UC application. Power on the Smartwatch and select the OKM Rover UC App icon by tapping on it. The application will start and display the main menu.

The Activity Screen is accessible anywhere at any time:

- **Activity Screen:** Display the **UnderCover Screen** with pedometer and compass.

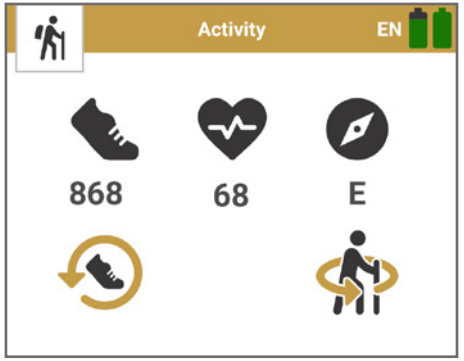
The following functions are started from the main menu:

- **3D Ground Scan:** Graphical 3D measurement for detailed analysis on a computer.
- **Magnetometer:** Acoustic magnetic field measurement to detect ferrous metals.
- **Pinpointer:** Basic target discrimination and real-time scan to locate potential targets.
- **File Explorer:** List of all scans that have been stored. The scan files can be viewed and analyzed directly on the Smartwatch as well as transferred to a computer.
- **Settings:** Adjust general settings like language, feedback, design etc.
- **Information:** View information like serial number and firmware version.

The choice of the operating mode depends on your planned project. Usually, you should use several operating modes one after another to explore an area. In that way you can obtain as many information as possible from the underground of the scanned area.

5.1 ACTIVITY SCREEN

If you aroused suspicion with the detector, click on the Smartwatch **Button A** to open the activity screen. This screen shows your steps taken (pedometer function), current heart rate and the current direction the detector is heading to (compass function). It may take a moment until the heart rate is displayed.



5.1.1 Pedometer Reset

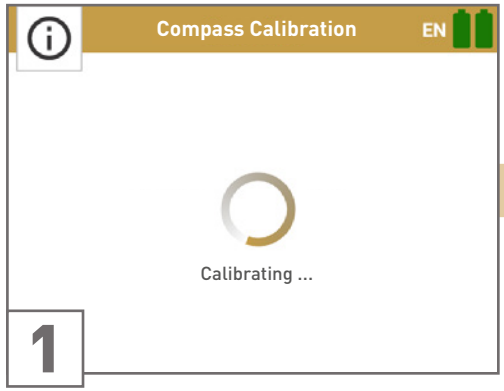
You can reset the pedometer at any time by clicking the reset icon

After clicking, you will be asked if you really want to reset the counter.
Confirm by clicking ✓ or cancel by clicking ✗

After confirming the pedometer will start counting beginning at 0.

5.1.2 Compass Calibration

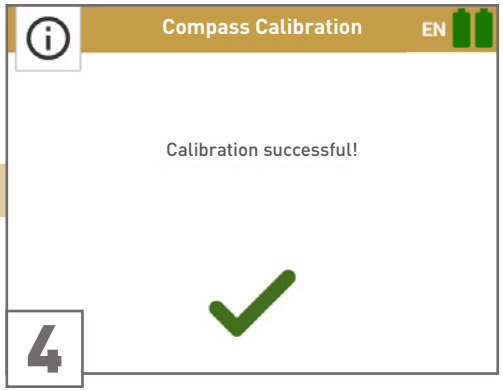
In order to calibrate the compass, click on the calibrate compass icon
Make sure that the probe is held vertically, avoid pivoting or swinging.



After clicking on the icon, the Rover UC App will start the calibration.

Rotate very slowly around your own axis (approx. 16 s for a complete 360° rotation) while the *Calibrating ...* screen is visible.

After finishing your 360° rotation, press the Trigger on the probe to finalize the calibration process.



As soon as the calibration is completed, the App will confirm with *Calibrating successful!* Press ✓ to finish.

If the calibration failed, please try again!

Reasons for failure may be:

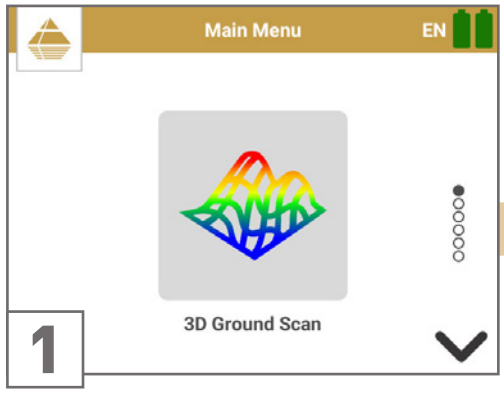
- You moved/rotated too fast.
- The probe was pivoted while calibrating.
- There are too many ferromagnetic interferences in the area (e.g. power lines).

5.2 3D GROUND SCAN

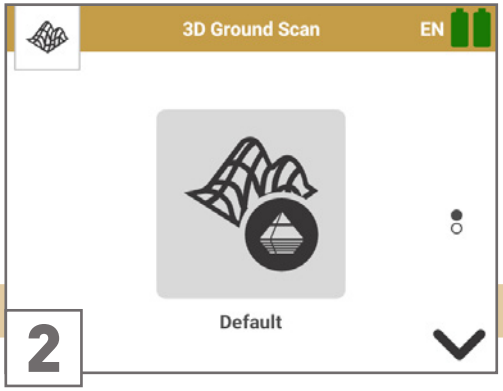
The operating mode ***3D Ground Scan*** provides a graphical measurement of any area for further analysis on a computer.

Get general information on performing a geophysical measurement in the "3D Ground Scan Guide" and find further information in the infobox on page 33.

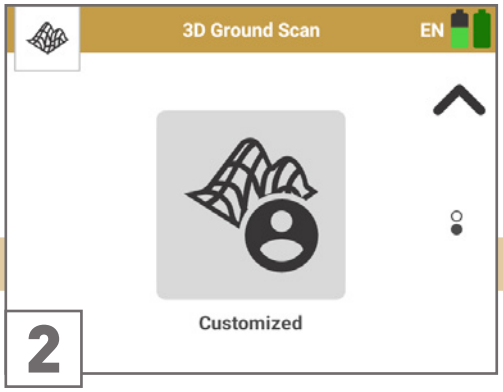
5.2.1 Preparing a 3D Ground Scan



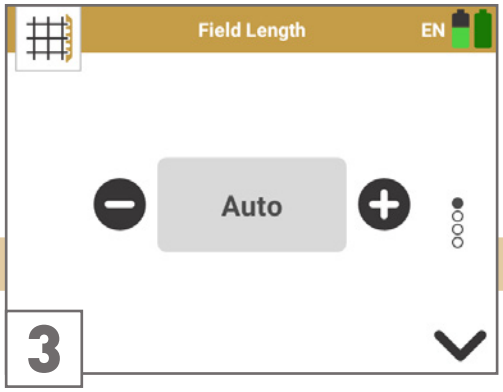
Start the OKM Rover UC App and select the operating mode ***3D Ground Scan*** from the main menu.



Select ***Default*** to use the preset parameters that we recommend for fast scans:
Field Length: Auto | Impulse Mode: Automatic | Scan Mode: Parallel



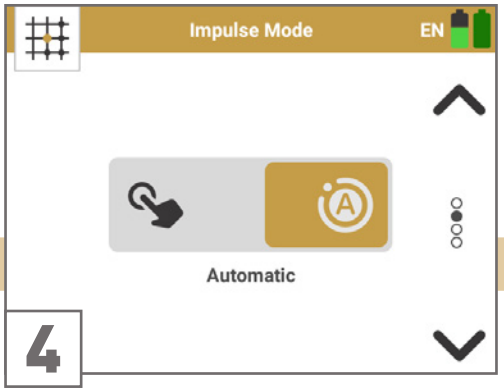
Select ***Customized*** to adjust the parameters individually.



Choose the Field Length.

Auto: Determine the length by pressing the Trigger at the end of the first scan line. All succeeding lines will stop automatically.

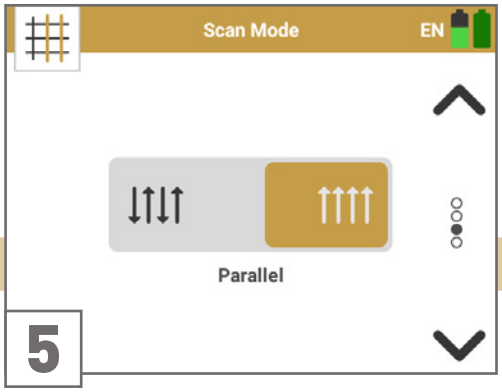
10m, 20m, ... : The length of the scan lines is defined before the scan. All lines will stop automatically.



Select the Impulse Mode to determine how the single impulses (scan values) will be released by the detector.

Automatic: All scan values will be recorded continuously line by line without any break.

Manual: Every single scan value will only be recorded by pressing the Trigger.

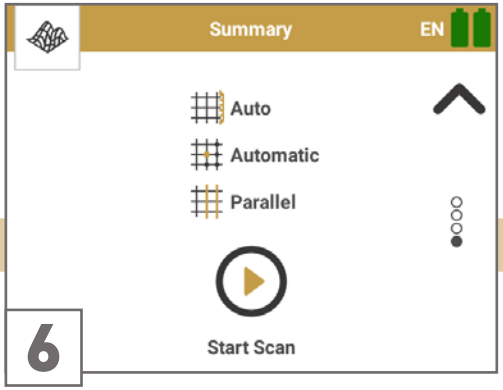


Select the Scan Mode to determine how to walk over the scan field while scanning:

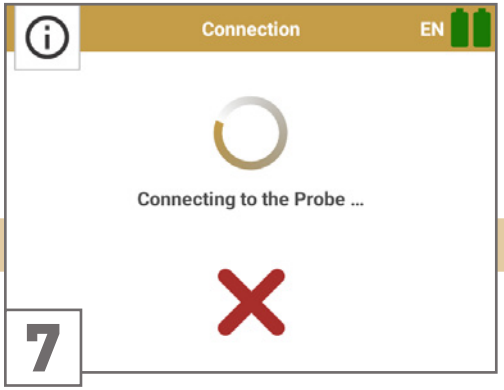
Parallel: Scan all lines in the same direction.

Zigzag: Scan all scan lines in zigzag style.

For further information please continue with section 5.2.2 Performing a 3D Ground Scan on page 18

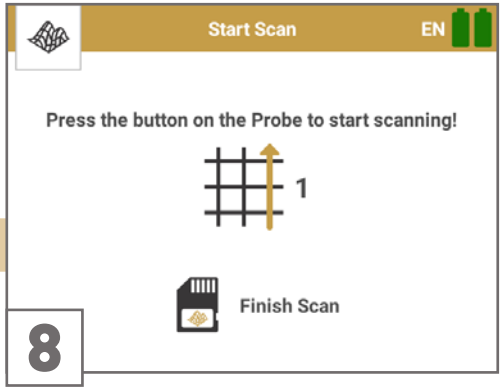


Confirm your settings by pressing ***Start Scan***.



The Bluetooth connection to the detector will be established automatically.

As soon as the Bluetooth connection is established successfully, the Trigger LED turns **blue**.



As soon as the Bluetooth connection is established, the App is ready to record the first scan line.

Continue with section 5.2.2 Performing a 3D Ground Scan on page 18

5.2.2 Performing a 3D Ground Scan

After all parameters have been adjusted, the Rover UC App is ready to start the first scan line. Go to your starting point of the first scan line and press the Trigger on the Probe.

Impulse Mode Automatic and Field Length Options

If you have selected the Impulse Mode Automatic, just keep walking until you have reached the end of the first scan line.

If you have set an individual **Field Length**, the App will stop automatically after reaching the selected field length.

If you have selected **Field Length Auto**, press the Trigger at the end of the first scan line.

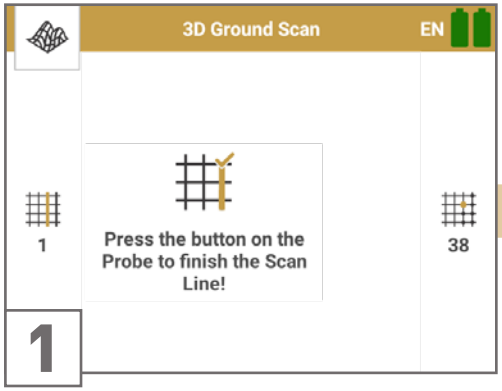
Then go to the starting point of the next scan line and press the Trigger again. The device will stop automatically at the end of all following scan lines of this measurement.

Impulse Mode Manual and Field Length Auto

If you have selected the Impulse Mode Manual, you have to release each single impulse manually one by one by pushing the Trigger on the Probe. This mode requires **Field Length Auto**.

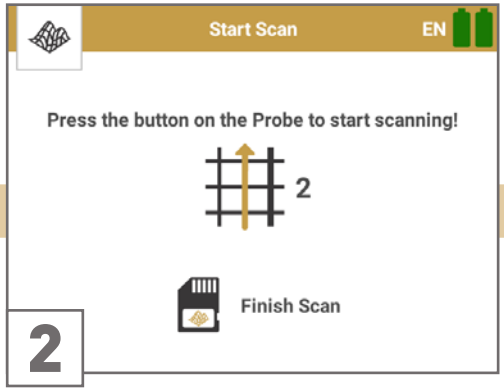
First, press the Trigger to start your measurement. Then, take a step forward and press the Trigger again to measure the next impulse. Continue in this way until you have reached the end of the first scan line. Press  to finish the first scan line.

Go to the starting point of your next scan line and push the Trigger again. Go another step forward and repeat this in the same way like you recorded the first scan line. The App will signalize automatically the end of the following scan lines.



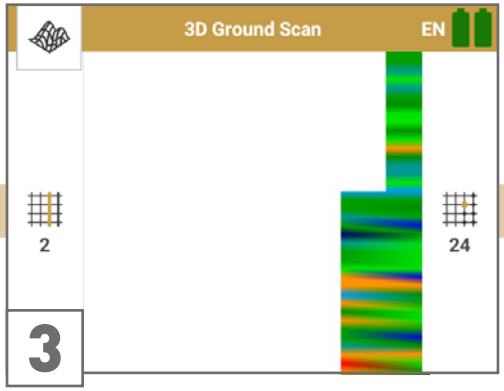
As soon as you press the Trigger on the probe, the detector will record scan values.

The display will indicate the number of the current scan line (left) and the number of measured impulses per scan line (right).



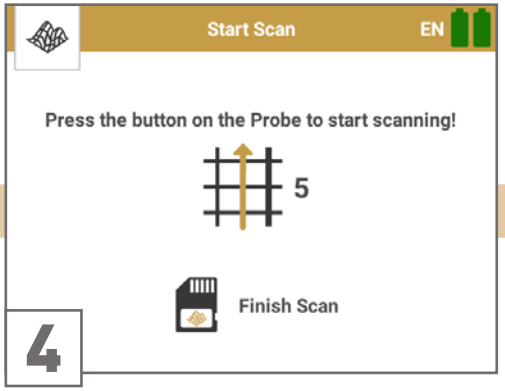
Go to the starting point of the next scan line and press the Trigger to start measuring.

Walk until you reach the end of the scan line.



The scan image will be generated during the measurement. This will help you to follow your progress while measuring.

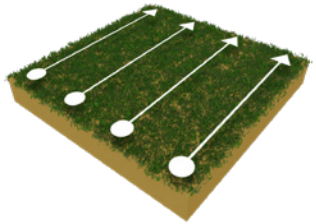
The first scan lines may look rather incorrect. The inconsistent scan image will stabilize in the course of the measurement.



Perform as many scan lines as you like by repeating Step 2.

Press  ***Finish Scan*** to finish your scan.

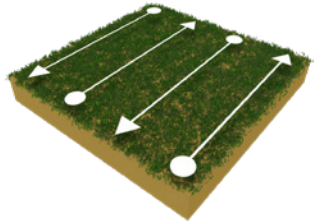
Scan Modes Parallel and Zigzag



If you have selected the Scan Mode Parallel, all scan lines head into the same direction.

Scan the first scan line to its end and then go back to the starting point without further scanning. Take one step to the left and scan the next line parallel to your first scan line.

Repeat this until you reached the last scan line.



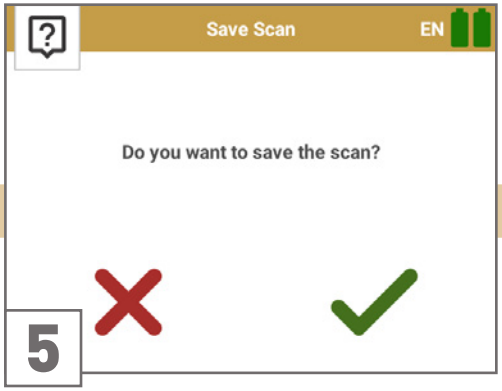
If you have selected the Scan Mode Zigzag, all scan lines must be scanned in zigzag style.

Scan the first scan line to its end, then take a step to the left and scan the second line in reverse. Step to the left again and scan the next line.

Repeat this until you reached the last scan line.

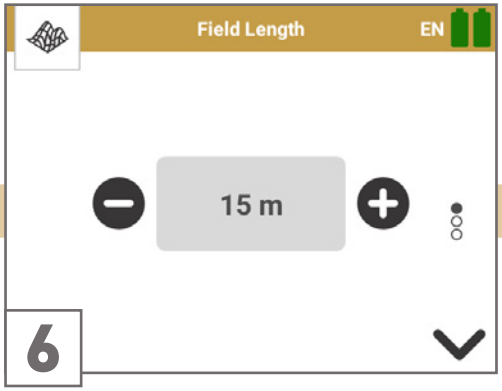
> Read more about the scanning procedure in the "3D Ground Scan Guide" (see infobox on page 33).

After finishing and saving your 3D Ground Scan, you can view your scan image directly on the Android device display (see section 5.5 FILE EXPLORER on page 24) or transfer the scan files to a computer for in-depth analyses (see chapter 6 FILE TRANSFER on page 30).

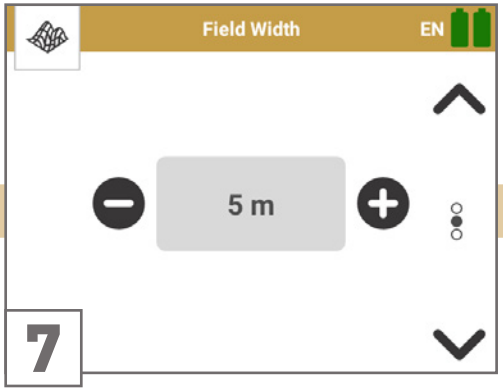


Press ✓ to save the scan.

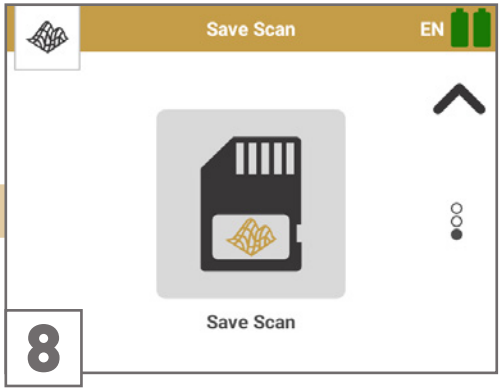
If you want to finish the scan without saving, click ✗.



Enter the correct field length.



Enter the correct field width.



Confirm by pressing ***Save Scan***

You can swipe up again (or use the navigation arrow on the right) to return to the previous screen to correct your information.

5.3 MAGNETOMETER

The operating mode Magnetometer allows to research the area in regard to ferromagnetic metals, e.g. iron, cobalt and nickel and other metals or objects which include traces of such metals. Primarily, this function is an acoustic mode that additionally generates a basic graphical representation to visualize the peaks.

As soon as you get an acoustic signal, the device has detected a potential metal target right below the position of the probe. In this way it is possible to find small metal objects near the surface like nails, screws, wires, seals and similar targets.

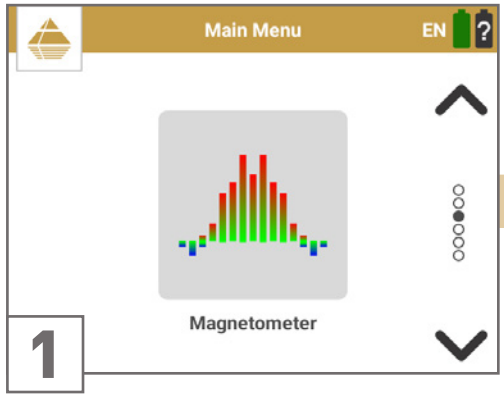
A general rule is:
The fewer small metal items in the soil, the deeper you can detect targets with 3D Ground Scan.

Thus, we recommend to use the Magnetometer to remove disturbing metal items from the area that you like to scan in detail. The less metals near to the surface, the better your result in the operating mode 3D Ground Scan.

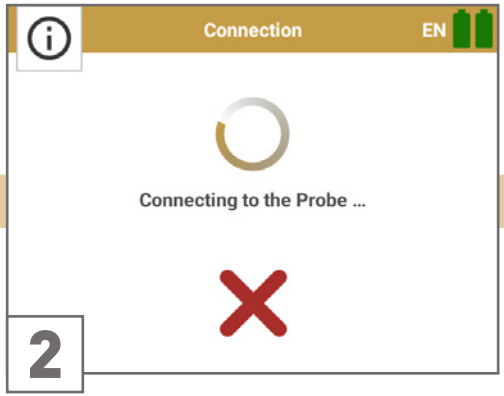
Moreover, Magnetometer can be used to pinpoint objects during excavation. If you have already dug a large hole and do not remember where exactly the detected object was situated, you can relocate fast and efficiently the target position.

5.3.1 Performing a Magnetometer Scan

In this operating mode all measured data will be directly displayed in the OKM Rover UC App.



Power on the detector and the Smartwatch. Start the Rover UC App and select the operating mode **Magnetometer**.

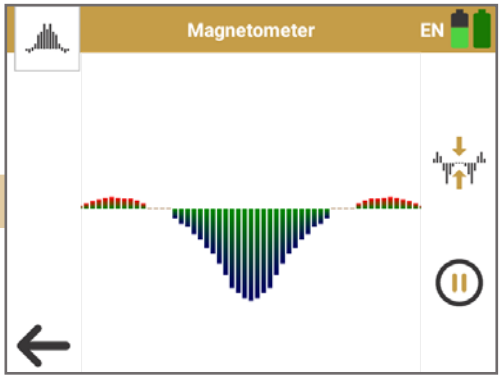


The Bluetooth connection to the detector will be established automatically.

As soon as the Bluetooth connection is established successfully, the Trigger LED turns **blue**.

Move the probe slowly in any direction: back and forth, to the left and to the right.

Make sure you hold the probe vertically to the ground, avoid rotating, pivoting and swinging.



The scan results are displayed in real-time on the Smartwatch screen.

As soon as a strong signal is detected, the values will reach its peak when the probe is directly above the detected object.

To pause the scan, tap on ⏸ and continue with ▶

To finish the scan and return to the App main menu, tap on the back arrow ←

Move slowly forwards, backwards and to the sides, but avoid turning the probe. The probe should always point vertical to the ground. **DO NOT** pivot, swing or rotate it.

5.3.2 Performing a Ground Balance

You may perform a Ground Balance if:

- you get any target indications right at the start even though you do not move the probe or
- your signal becomes unstable while scanning.

Press to perform a Ground Balance. Please note that the Magnetometer can also react on metallic trash or contamination laying on the surface or near to the surface. Make sure the probe is not above such an interference during ground balancing. Moreover, hold the probe vertically to the ground and do not move it.

Once the detector has re-balanced, you can continue with your scan.

The Ground Balance can be performed as often as you like.

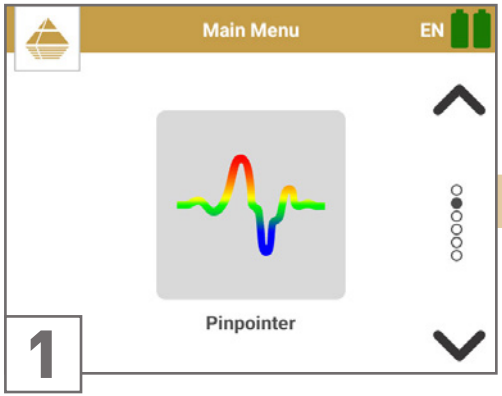
5.4 PINPOINTER

As the name Pinpointer already indicates, it allows you to pinpoint potential targets more precisely. Furthermore, it offers a basic target discrimination to discriminate between ferromagnetic and non-ferromagnetic metals as well as tunnels, voids and cavities.

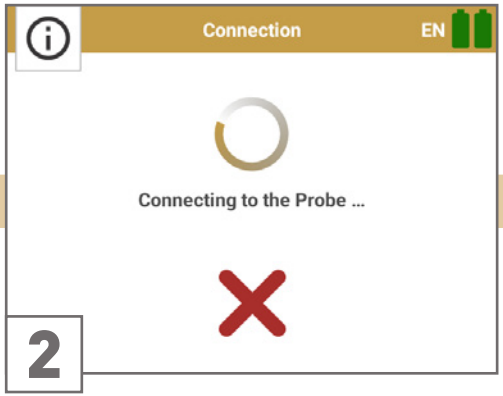
Usually, this operating mode is used after you have performed a complete measurement with the operating mode 3D Ground Scan. It is mainly used to analyze the detected structure in detail. Due to the analysis of the scan results in the mode 3D Ground Scan you can determine the position of a located object.

5.4.1 Performing a Pinpointer Scan

In this operating mode all measured data will be directly displayed in the OKM Rover UC App.



Power on the detector and the Smartwatch. Start the Rover UC App and select the operating mode **Pinpointer**.



The Bluetooth connection to the detector will be established automatically.

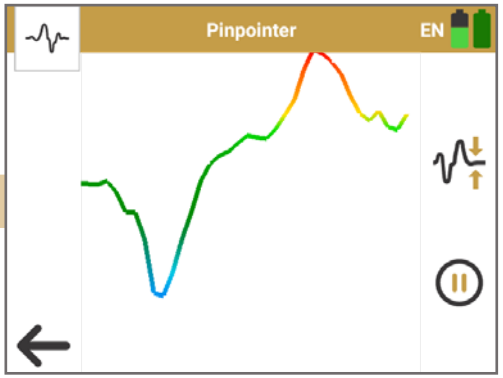
As soon as the Bluetooth connection is established successfully, the Trigger LED turns **blue**.

Move the probe slowly in any direction: back and forth, to the left and to the right.

Try to capture the complete object by measuring beyond its edges. Repeat this a few times to get a clear signature of your target.

Make sure you hold the probe vertically to the ground, avoid rotating, pivoting and swinging.

During pinpointing the probe must be held vertical to the ground. **DO NOT** turn, swing or pivot the probe!



The scan results are displayed in real-time on the Smartwatch screen.

As soon as a strong signal is detected, the values will reach its peak when the probe is directly above the detected object.

To pause the scan, tap on ⏸ and continue with ▶

To finish the scan and return to the App main menu, tap on the back arrow ←

5.4.2 Performing a Ground Balance

You may perform a Ground Balance if:

- you get any target indications right at the start even though you do not move the probe or
- your signal becomes unstable while scanning.

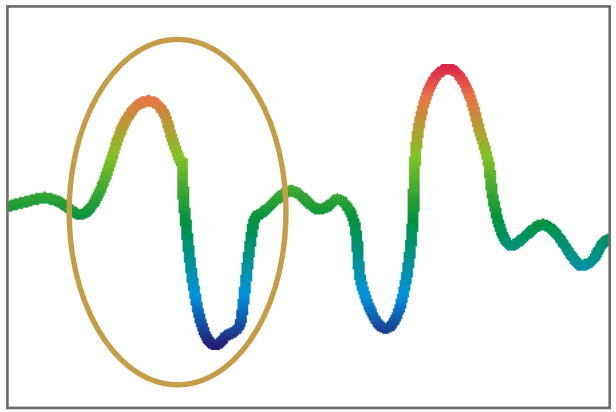
Press to perform a Ground Balance. Please note that the Pinpointer can also react on metallic trash or contamination laying on the surface or near to the surface. Make sure the probe is not above such an interference during ground balancing. Moreover, hold the probe vertically to the ground and do not move it.

Once the detector has re-balanced, you can continue with your scan.

The Ground Balance can be performed as often as you like.

5.4.3 Analyzing a Pinpointer Scan

While scanning in Pinpointer mode you might see one or more different signatures, from which you can recognize a specific characteristic of any target.

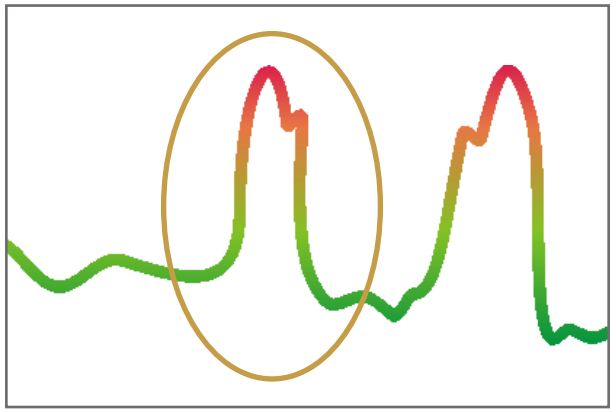


Ferromagnetic metals

Ferromagnetic targets have a positive-negative-signature.

The typical signature of a ferromagnetic metal like iron includes a positive (red) and a negative (blue) amplitude. When looking closely, you can see even 2 ferromagnetic signatures. The first signature starts with a positive amplitude and the second signature starts with a negative amplitude. The order is not important, it depends on the direction of movement of the probe. If you keep moving the probe from one side to another, these 2 signatures will change continuously.

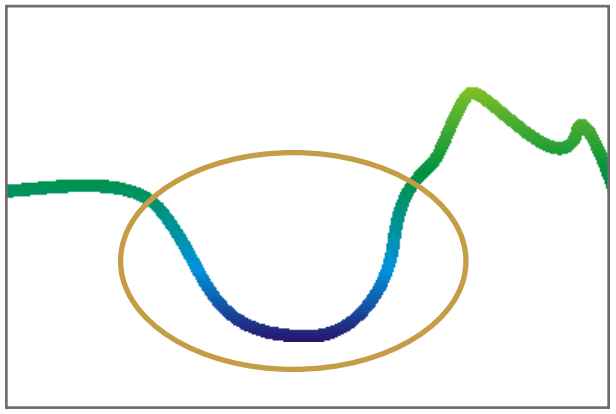
Move the probe slowly and at the same height above the ground to get clear signatures.



Non-ferromagnetic metals

Non-ferrous targets have a pure positive signature.

In a signature of a non-ferrous target you can recognize that there is only a positive amplitude (red). In addition to the main amplitude there is another small peak, which is typical for precious metals. Also, here the order of amplitude and the small peak is not important and depends on the scan direction.

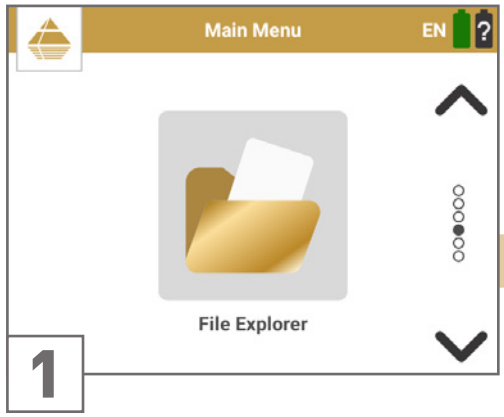


Non-metallic targets

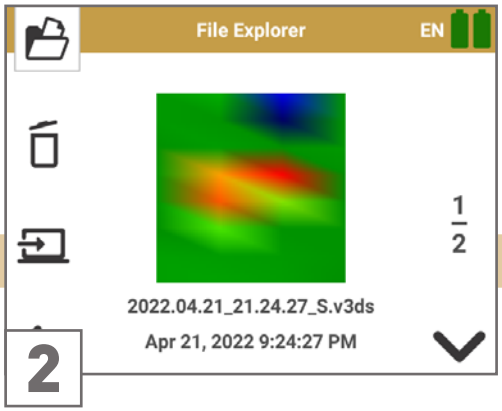
All non-metallic items have a pure negative signature.

The signature of all non-metallic targets and structures such as voids, tunnels or buried plastic pipes or boxes are represented as negative amplitude (blue) only.

5.5 FILE EXPLORER



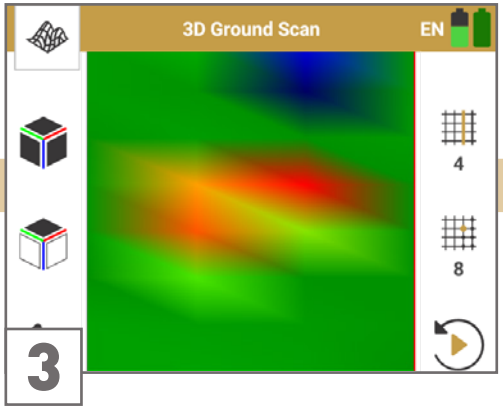
Power on the detector and the Smartwatch. Start the Rover UC App and select **File Explorer**.



Browse all saved scan files with ⌄ and ⌃.

The number of available scan files is indicated on the right.

Open Scan File



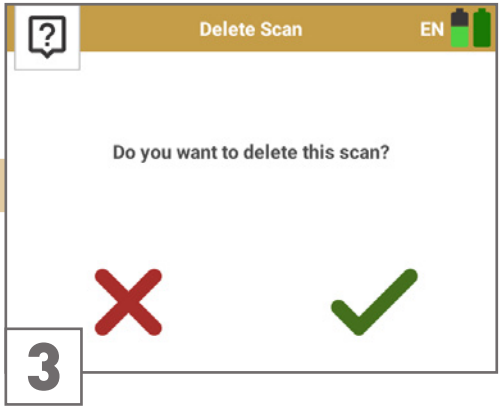
Open your scan for further analysis by tapping on the desired scan file. The file will be opened in Top View

Transfer Scan File

3 Continue with chapter

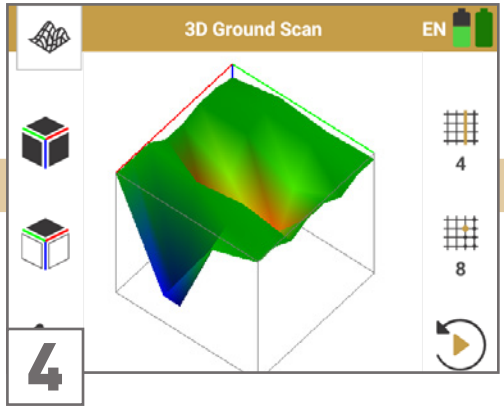
6 FILE TRANSFER on page 30

Delete Scan File

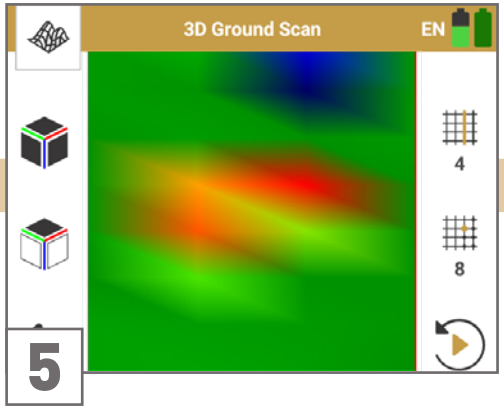


Delete the selected scan file by pressing

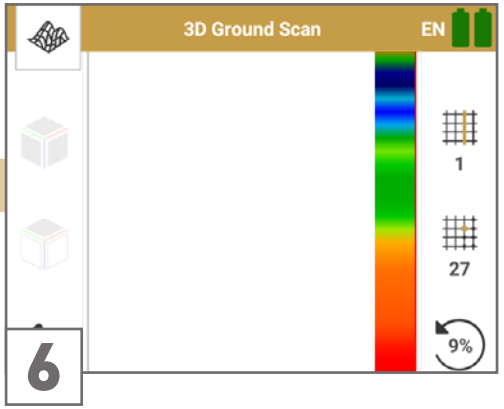
Confirm by pressing ✓ or cancel with ✗



Switch to Perspective View by tapping on or rotate and scale individually with intuitive finger gestures (pinch / drag).



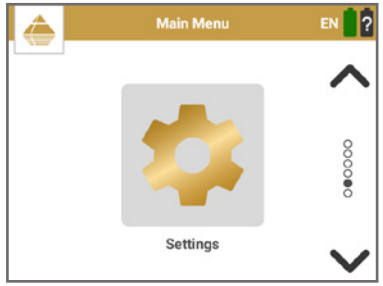
Replay your measurement by tapping on



The replay will show you the complete scan generated line by line.

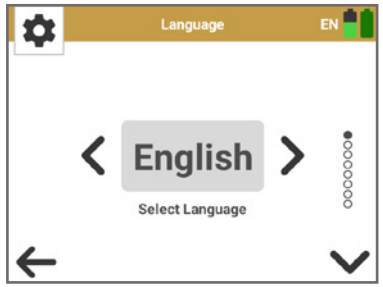
5.6 SETTINGS

The following settings can be adjusted from the settings menu:



- **Language**
- **Sound**
- **Vibration**
- **GPS**
- **App Theme**
- **Length Unit**
- **Activation**
- **Update**

5.6.1 Language



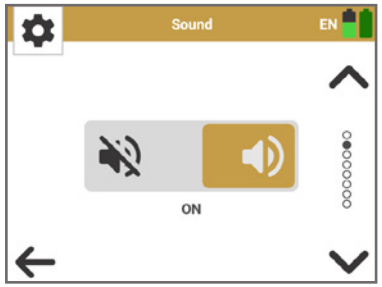
The Rover UC can be used in different languages to simplify the handling.

Use the ‹› buttons to loop through the languages. The selected language will automatically be applied.

After selecting your preferred language it will be indicated in the toolbar icon with the 2-letter-code according to ISO-639-1. Currently we support the following languages:

عربي (AR)	**Español (ES)**	**Polski (PL)**
български (BG)	**فارسی (FA)**	**Русский (RU)**
Deutsch (DE)	**Français (FR)**	**Türkçe (TR)**
Ελληνικά (EL)	**Italiano (IT)**	**中文 (ZH)**
English (EN)	**日本語 (JA)**	

5.6.2 Sound



Toggle between **ON** and **OFF**.

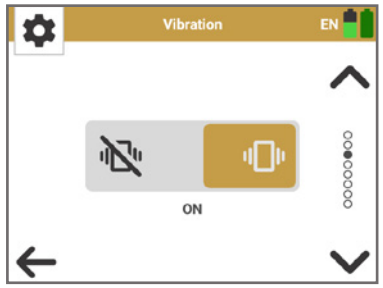
The operating modes 3D Ground Scan and Magnetometer provide an acoustic feedback (sound) that can be turned on or off.

You may use the included Bluetooth headphones to avoid attracting attention with sounds or turn the sound off.

Volume Settings of the Rover UC Operating Modes with acoustic feedback must be adjusted via the Smartwatch Settings!

- Adjust the Volume of the **Magnetometer** via the Smartwatch **Media Volume**: Android App List > Settings > Sound > Media volume
- Adjust the Volume of the **3D Ground Scan** via the Smartwatch **Ring Volume**: Android App List > Settings > Sound > Ring volume

5.6.3 Vibration



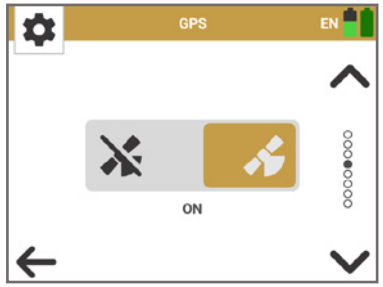
Toggle between **ON** and **OFF**.

The operating modes 3D Ground Scan and Magnetometer provide a haptic feedback (vibration) that can be turned on or off.

This is very useful when measuring undercover with sound turned off.

To save the battery, we recommend to switch off vibration.

5.6.4 GPS

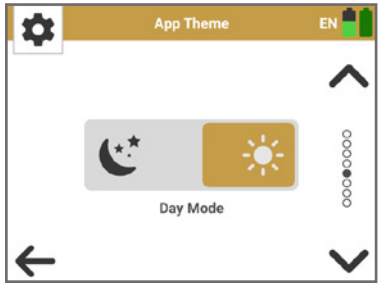


Toggle between **ON** and **OFF**.

You can log GPS coordinates for 3D Ground Scans. The location data will be saved with your scan file for further analysis and documentation in the **Visualizer 3D Studio** software.

If you do not want to log the GPS location, you can turn off GPS completely.

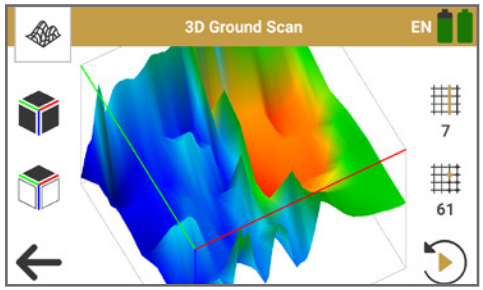
5.6.5 App Theme

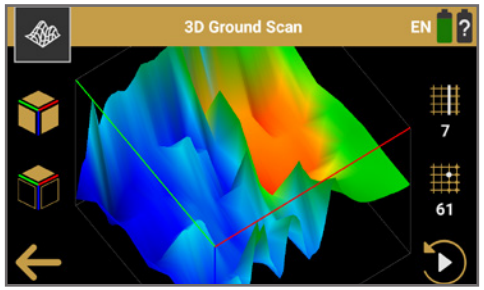


Toggle between the App Themes **Day Mode** and **Night Mode**.

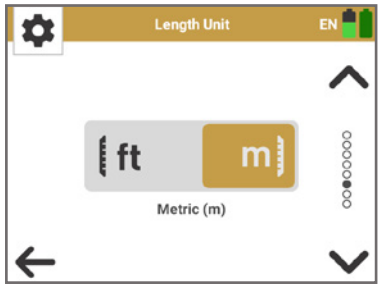
Day Mode is very useful on sunny days and in bright environments.

Night Mode is very useful at night and in dark conditions. Moreover, it allows to remain inconspicuous in the dark.





5.6.6 Length Unit

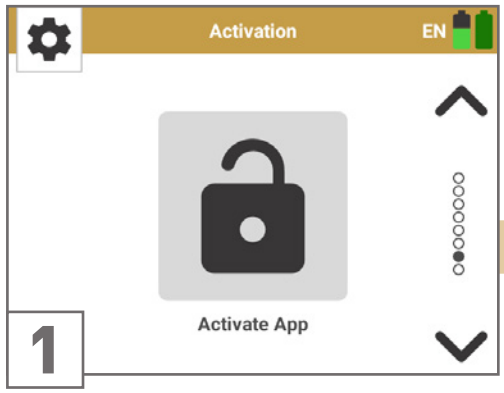


Toggle between the Length Units **Imperial** and **Metric**.

Imperial will indicate all dimensions in feet (ft).

Metric will indicate all dimensions in meters (m).

5.6.7 Activation

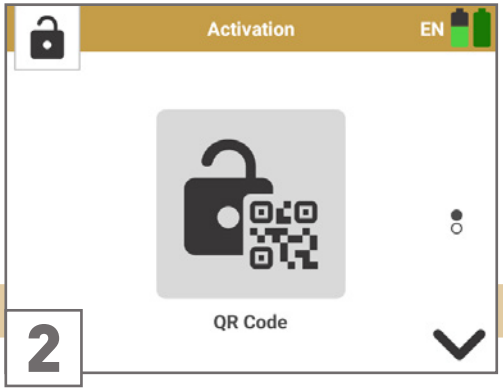


The OKM Rover UC App is usually pre-configured on the included Android device.

Activation may be necessary

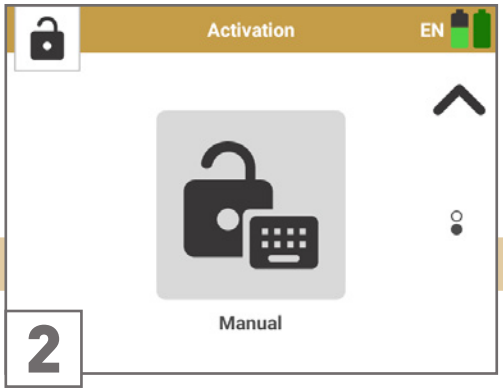
- if you want to use your own Android device
- if you want to add further Android devices
- if you need to reset the pre-configured device and need to install the App again.

Start ***Activate App*** from the Rover UC settings menu.

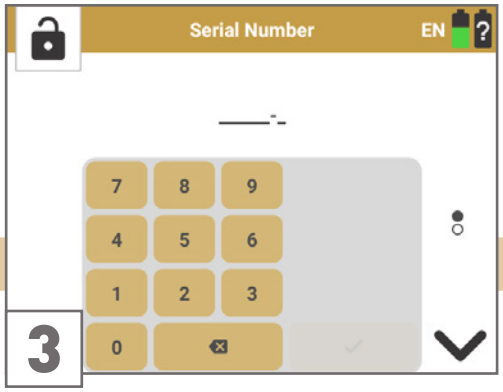


If you have received a QR Code from OKM for an automatic activation, select **QR Code**.

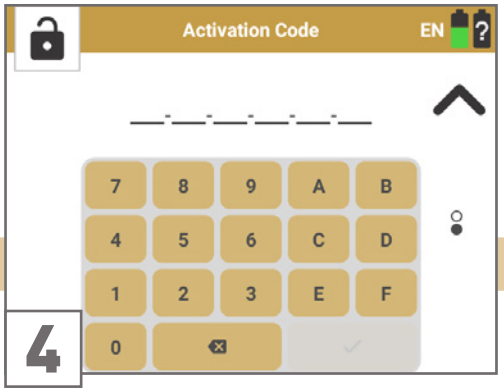
Use the Smartwatch camera to scan the QR Code that comes with the detector.



If you have problems using or you do not have a QR Code, select **Manual**.



In the next step enter the OKM Rover UC **Serial Number**.



In the next step enter the OKM Rover UC **Activation Code**.

Confirm the Activation by pressing ✓

If the activation failed, please try again and make sure that all entered data are correct.

5.6.8 Update

Make sure your Android Smartwatch Wi-Fi is enabled and connected to the internet.

Tap to search for new updates. This will take a few seconds.

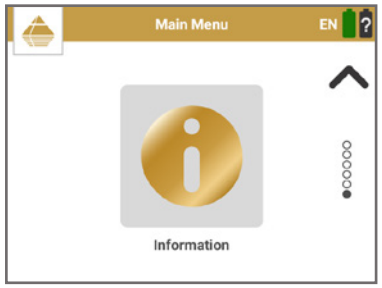
If you have the latest version, you will see the message "No new update available". Confirm with ✓

Otherwise, download and install the new update.

5.7 INFORMATION

This section shows information concerning the detector:

- App Version / Telescopic Probe Firmware
- Serial Number
- OKM contact information

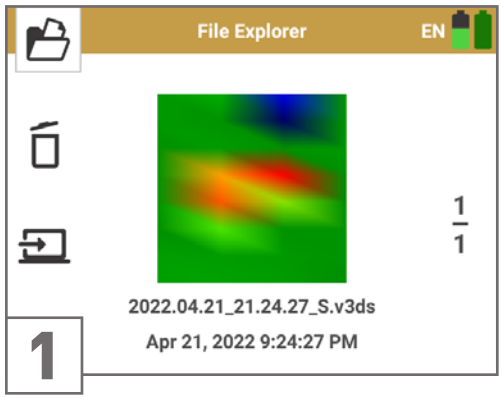


FILE TRANSFER

6 FILE TRANSFER

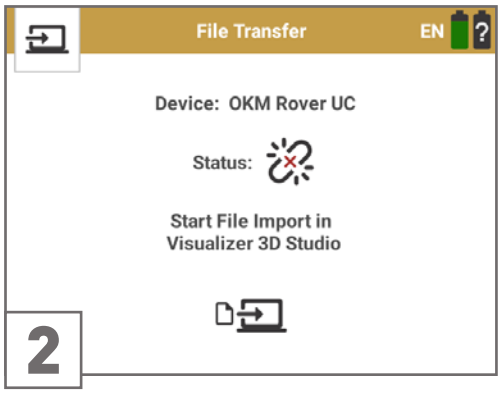
6.1 PAIRING BLUETOOTH

Prior to transferring scan data to the Visualizer 3D Studio software for the first time, your computer's Bluetooth must be paired with your OKM Rover UC App.



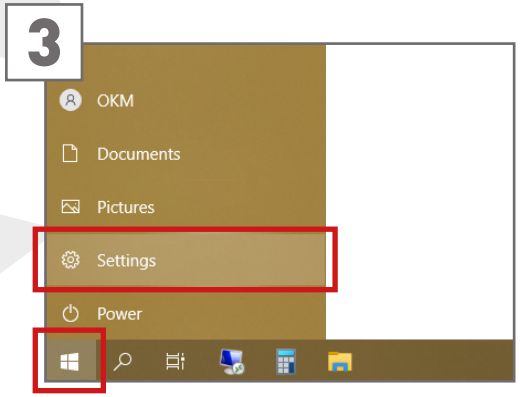
Power on the Smartwatch. Start the Rover UC App and select **File Explorer**.

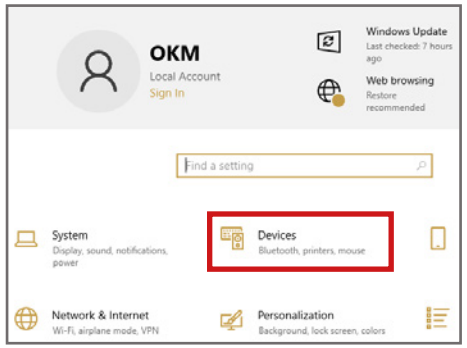
Tap on to start transferring scans.



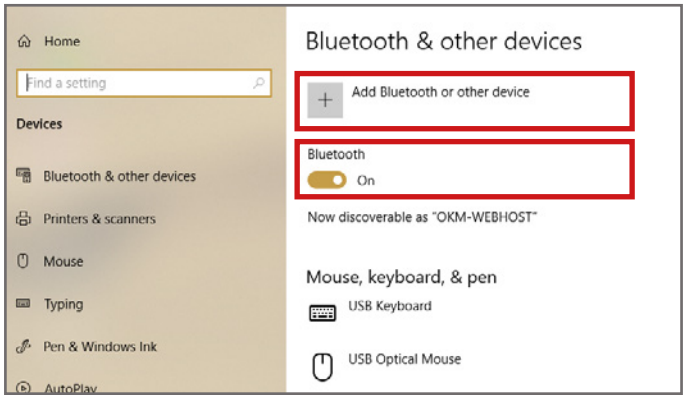
After starting the transfer, the App wants to establish a Bluetooth connection to the notebook with Visualizer 3D Studio.

When pairing Bluetooth for the first time, proceed with the following steps on the notebook:
Click on and open **Settings** > **Devices**:



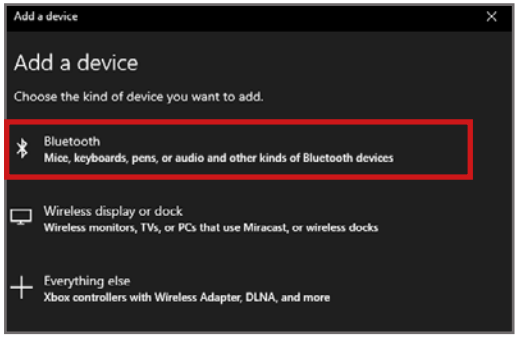


4



Make sure Bluetooth is enabled.

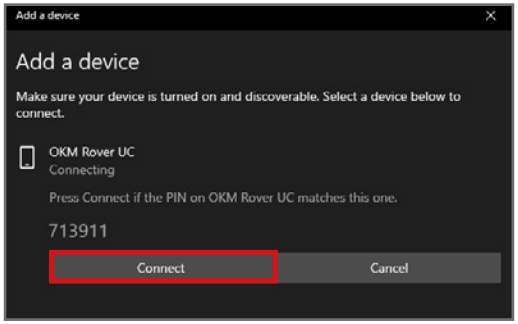
Then click on ***Add Bluetooth or other device***.



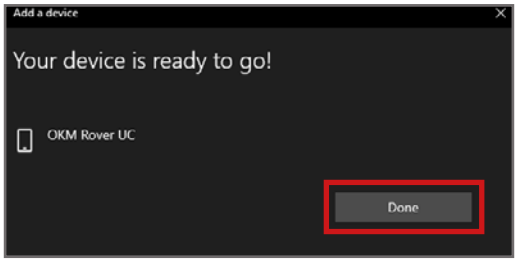
Then click on ***Bluetooth***.

5

In the "Add Bluetooth or other device" dialog select ***Bluetooth*** and ***OKM Rover UC***. In order to connect, confirm the PIN:



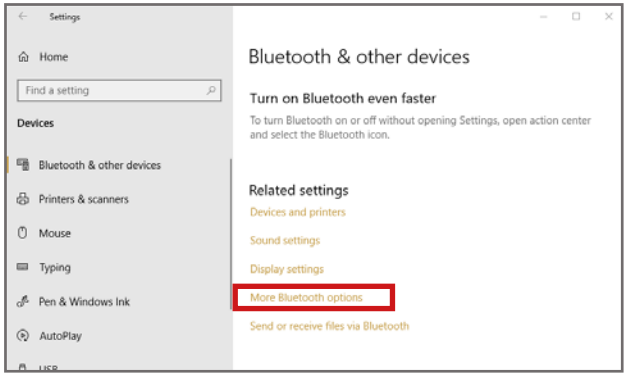
1. Click ***Pair*** on the Smartwatch.
2. Click ***Connect*** in the Windows dialog.



Confirm with click on ***Done***.

6

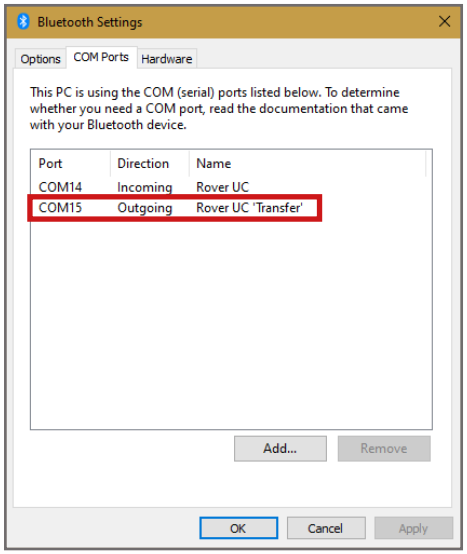
Scroll down in the dialog window and select ***More Bluetooth options***.



Make sure your device is powered on.

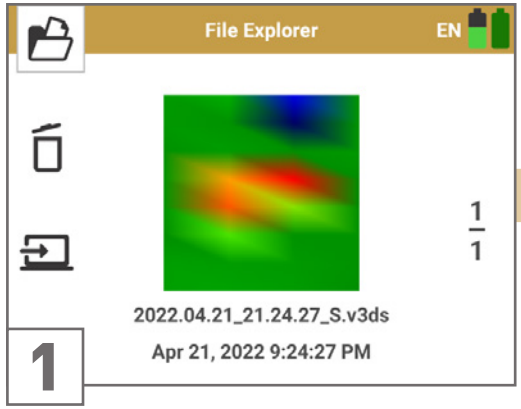
In the new dialog window select the tab ***COM Ports*** and note your port for ***OKM Rover UC 'Transfer'*** which is required for File Import

see section 6.2 IMPORTING SCAN DATA on page 32



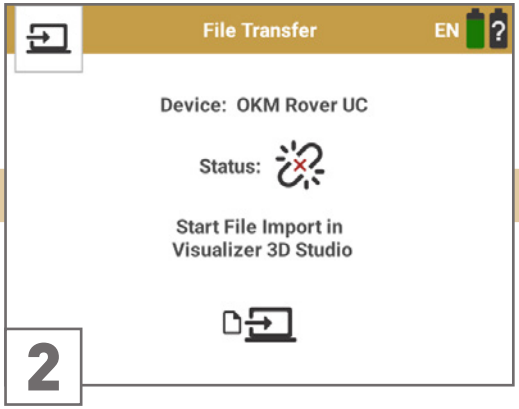
6.2 IMPORTING SCAN DATA

Make sure you have processed the steps from section 6.1 PAIRING BLUETOOTH on page 30



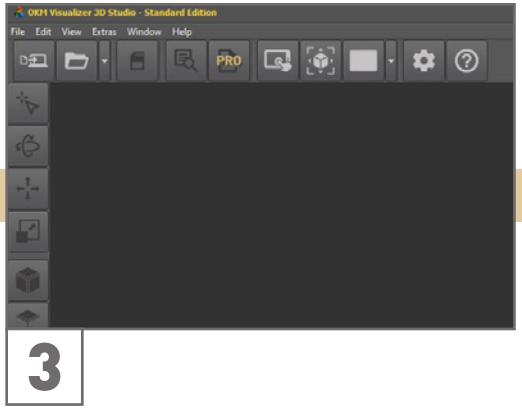
Power on the Smartwatch. Start the Rover UC App and select **File Explorer**.

Tap on to start transferring scans.

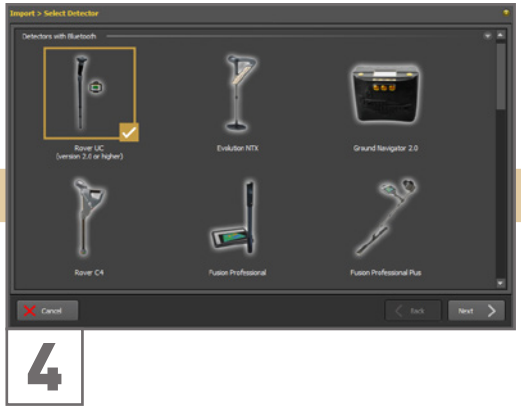


After starting the transfer, the App wants to establish a Bluetooth connection to the notebook with Visualizer 3D Studio.

When pairing the Rover UC App for the first time, please make sure you have processed the steps in section 6.1 PAIRING BLUETOOTH on page 30



After launching your Visualizer 3D Studio software, select **File > Import** from the menu or click the icon in the Main Toolbar.

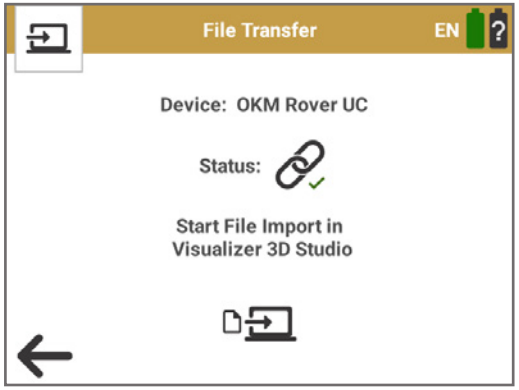


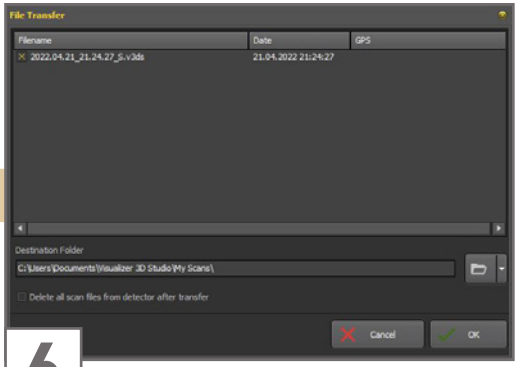
Select "Rover UC (version 2.0 or higher)" from the list and click **Next**.

5

Select the correct interface (COM port, see section 6.1 PAIRING BLUETOOTH on page 30 Step 6) and click ✓ **OK**.

The Bluetooth connection will be established.





6

Wait a moment until all files are listed.

Mark the scan files you would like to transfer to the notebook and import in Visualizer 3D Studio.

Right clicking the file list opens a popup menu with additional selection options.

Don't forget to choose an import directory for your files.

You can mark the checkbox "Delete all ..." if you want to delete all transferred scan files from the device after transfer.

Confirm with ✓ **OK** to finish the import.

For more information on handling your detector, optimizing 3D Ground Scans and conducting scan analyses, please refer to the following Documentations:

Rover UC Tutorials and Trainings
www.okmdetectors.com/blogs/videos-tutorials/tagged/rover-uc-2022
www.okmdetectors.com/youtube-playlist-rover-uc

3D Ground Scan Guide: Prepare, Perform and Optimize Scans
www.okmdetectors.com/ground-scan-guide

Visualizer 3D Studio Documentation: Analyze and Edit 3D Scan Images
www.okmdetectors.com/blogs/v3ds-documentation/analyzing-and-editing-3d-scan-images

OKM GERMAN DETECTORS

Based in Altenburg, Germany, we are developing and manufacturing geophysical detectors since 1998.
Our unique detection technology helps to visualize buried objects and structures.

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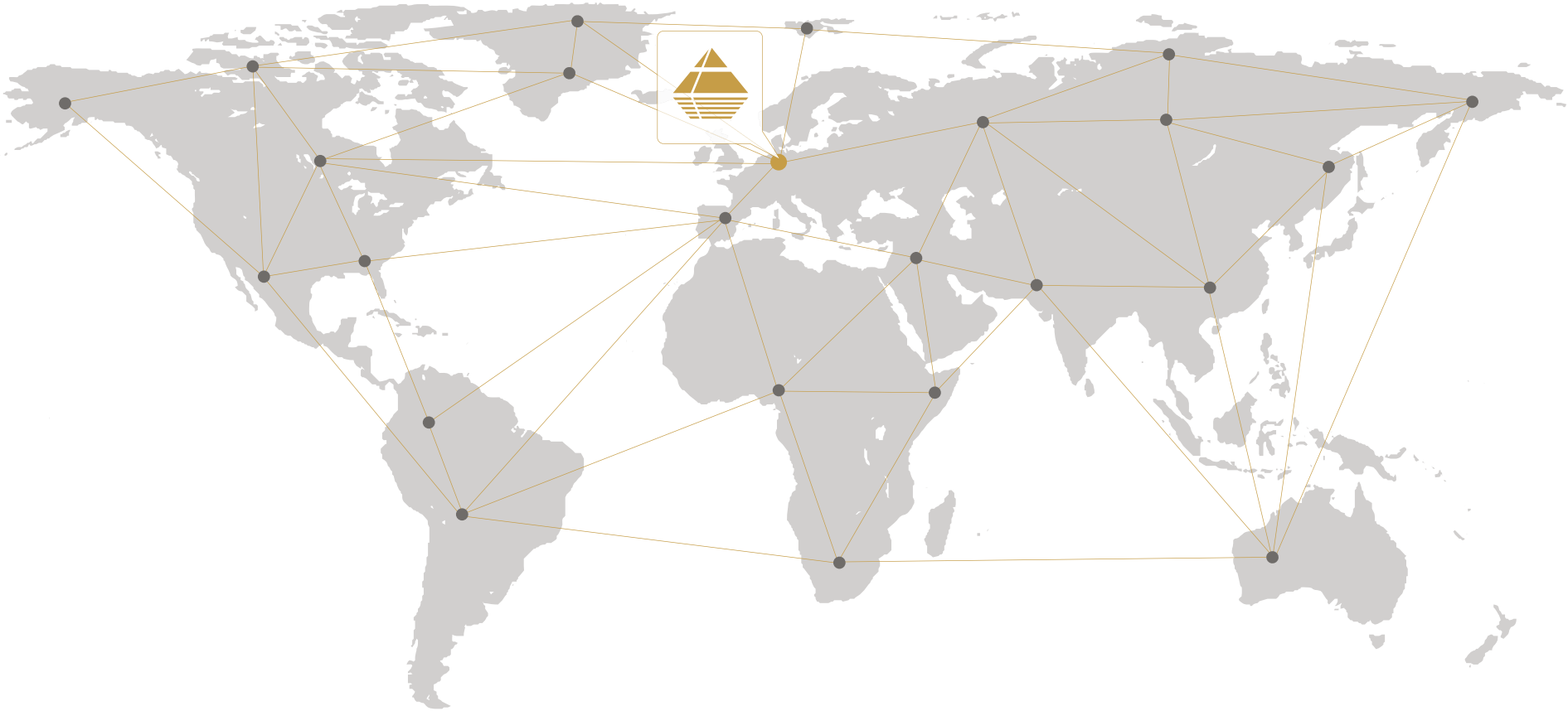

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