Guideline Geo

MALÅ Controller App

User guide

Our Thanks...

Thank you for choosing Guideline Geo and MALÅ! The very core of our philosophy is to provide our users with excellent products, support, and services. Our team is committed to providing you with the most efficient and easy-to-use solutions that can meet your needs for efficiency and productivity.

Whether this is your first MALÅ product or an addition to the MALÅ collection, we believe that a small investment of your time to familiarize yourself with the product by reading this manual will be rewarded with a significant increase in productivity and satisfaction.

Please let us know about your use and experience of our products, in addition to the contents and usefulness of this manual. We're excited to be part of your journey!

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Items needed

- A compatible Android handheld device. Please contact your Guideline Geo representative for more information on recommended units.
- An App-Enabled antenna. Contact support@guidelinegeo.com with your antenna serial number for information on compatibility or required upgrades.
- The MALÅ Controller App package: **Scan the QR code for download**
- A power bank can be used to extend the recommended tablet's survey time.

APP-ENABLED

Install MALÅ Controller App

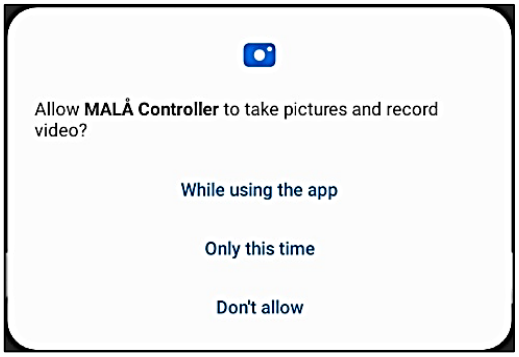
Copy the installation file (APK) to your mobile device storage and install the app.

Note: If installation fails, please uninstall any previous versions of the MALÅ Controller App and try again.

Note: If you receive a security warning for unknown apps, enter SETTINGS and allow installation from this source.

When opening the MALÅ Controller App for the first time, allow the app to access:

- Location
- Photos, media and files
- Record video, take photos, and record sound.



Set up a mobile hotspot

To set up the mobile hotspot (for communication between a MALÅ Wi-Fi enabled antenna and the mobile device), you will need the serial number (s/n eight digits) from the MALÅ antenna to be used.

This is found on a label, at the right rear corner (for EL Core), close to the battery (for GX antennas), on the short end (for GD80) or on the long side (for GD600).



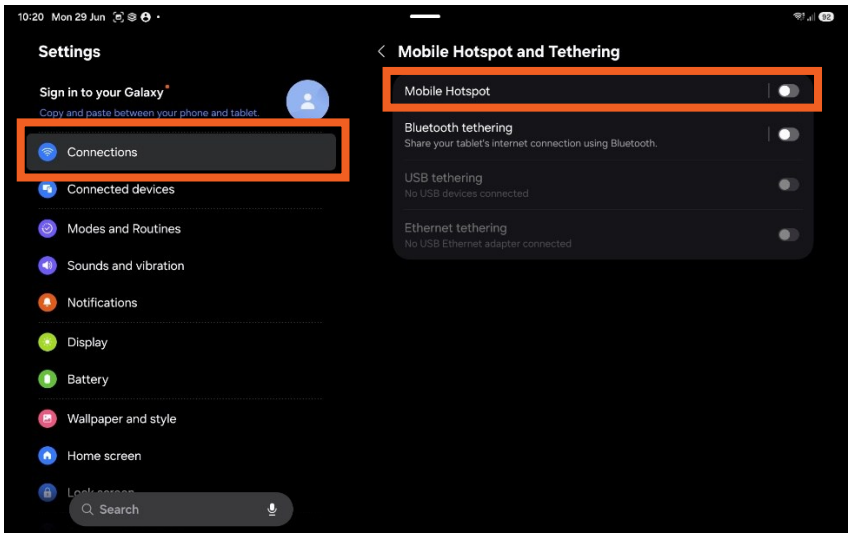
Settings for a Samsung Galaxy Tab Active5 Pro 5G

Note: Remember to change the time-out settings; see the instructions below.

On your mobile device, enter:

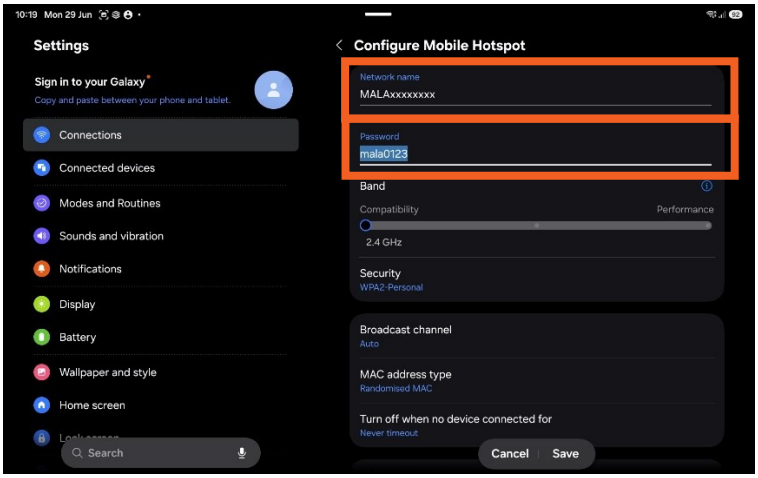
- *Settings* ->
- *Connections* ->
- *Mobile Hotspot or Tethering.*

And then choose *Mobile Hotspot.*



Change the network name (SSID) to **MALAxxxxxxxx**, where xxxxxxxx will be replaced with *all eight digits* from the antenna serial number.

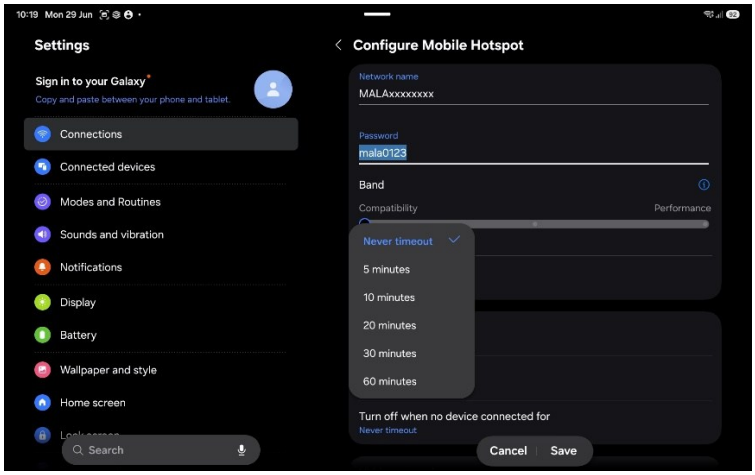
Change the password for the mobile hotspot to **mala0123**.



Set the *Turn off* when no device is connected to *Never Time Out*.

Change the Mobile hotspot timeout settings (*Turn off when no device is connected for*) to *Never timeout* to avoid corrupting the measurements due to mobile hotspot deactivation by the Android system.

Press *Save*.



Settings for Getac ZX-10

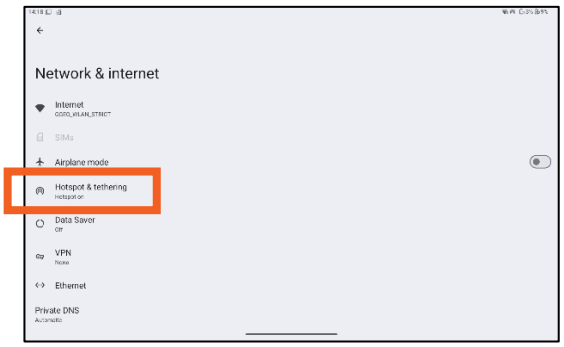
Note: Remember to change the time-out settings, to never time out.

On your mobile device, enter:

- *Settings* ->
- *Network & Internet* ->
- *Hotspot & Tethering*.



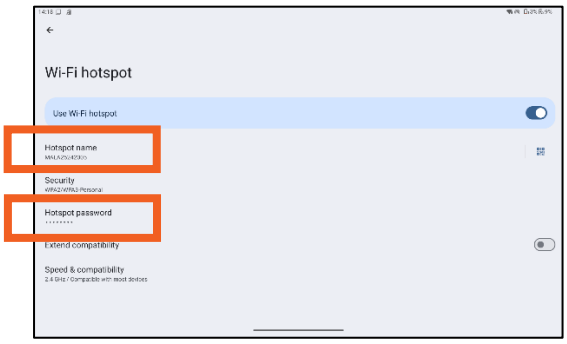
And then choose *Mobile Hotspot*.



Choose *Wi-Fi Hotspot* and Change the network name (SSID) to **MALAxxxxxxxx**, where xxxxxxxx will be replaced with *all eight digits* from the antenna serial number.



Change the password for the mobile hotspot to **mala0123**.



Wireless connection

To communicate between the GPR antenna and the MALÅ Controller App, Wi-Fi (mobile hotspot) is used. When communication is working, the antenna model is displayed to the left in the status bar in the MALÅ Controller App, and the battery and positioning status.



A successful connection between MALÅ Controller App and antenna



No connection between MALÅ Controller App and antenna

It is essential to have a stable mobile hotspot connection between the mobile device and the GPR antenna for effortless data collection. The MALÅ Controller App has advanced features to minimize the impact of difficult Wi-Fi conditions while you measure, such as automatic sync to recover data during interruptions.

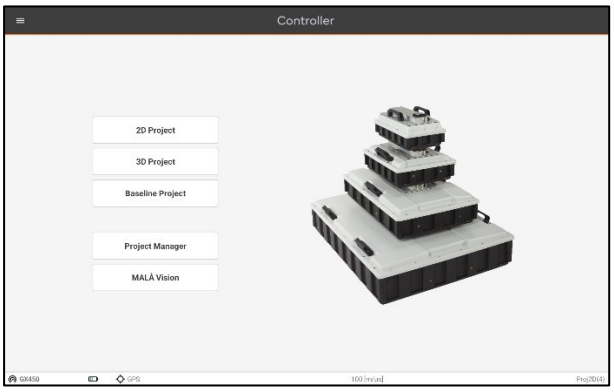
Unstable Wi-Fi connections are typically caused by wireless interference. This can occur in apartment complexes or other dense areas with several nearby Wi-Fi networks.

If you have issues with the wireless connection, please follow the troubleshooting guide in Chapter *Troubleshoot and Maintenance.*

Start a project and Main Menu

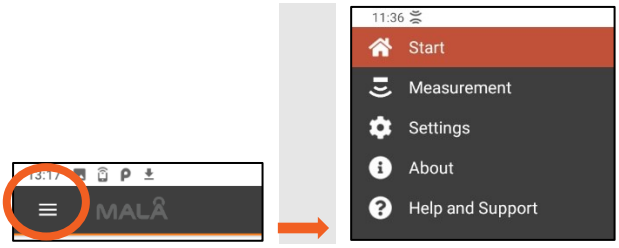
On the start page, you have the option to:

- start a new *2D Project* (single profiles).
- start a new *3D project* (grid measurements without GNSS).
- start a new *Baseline Project* (2D profiles connected to a common baseline, without GNSS)
- enter the *Project manager* to open, continue or delete already created projects.
- export or open data in *MALÅ Vision.*

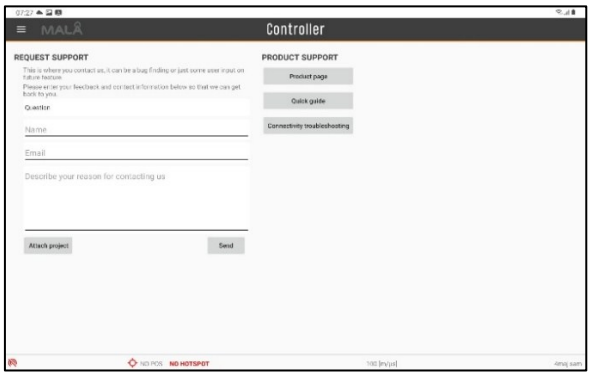


The main menu can be found in the upper left corner. Here, you can navigate between:

- Start page.
- Measurement page.
- *Settings page* (measurement settings such as depth, trace interval, trigger type, GNSS, etc.)
- *About* page, giving information on the connected antenna, the app itself, and a tour of new features.



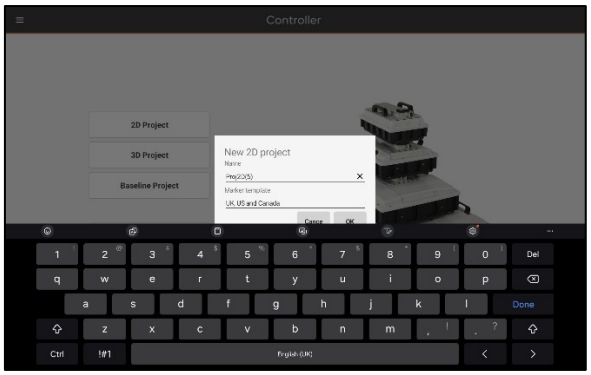
- *Help and Support*, where you can contact and upload data (*Attach project*) directly to our support team. Here, you also find links to product support as user guides.



You can change or keep the automatically assigned name when choosing a new project (2D or 3D).

You can also choose between two marker templates for utilities, one for UK/US/Canada and one for Australia.

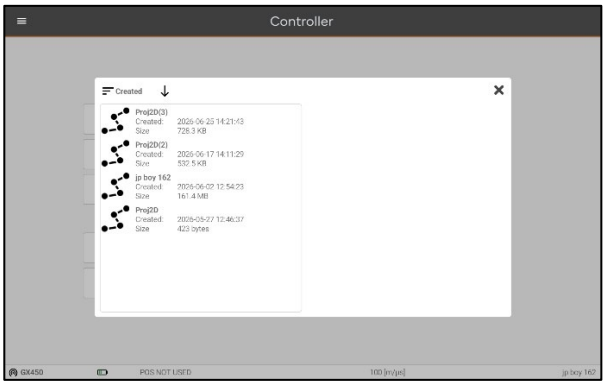
When done, the app opens the Measurement page. See Chapter *Measurements*.

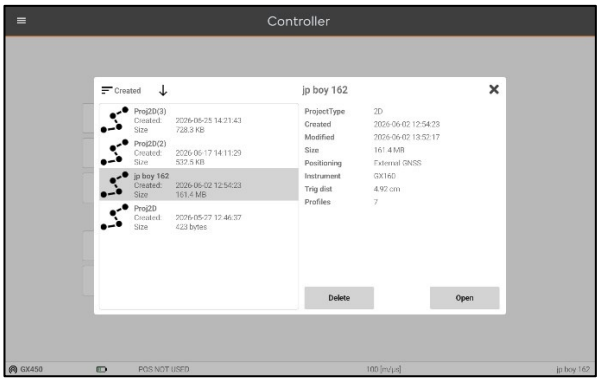


If you select the *Project Manager* icon 

, you can open and continue or delete previously made projects. The list of projects can be sorted by creation date, date of modification, name, size or number of profiles. This list can further be sorted as increasing or decreasing.

When a project is selected, the project information is displayed on the right-hand side, and you can open or delete the same.





On the bottom status bar of the app, the following information is displayed:

When the hotspot is disabled, a red icon indicates no connection with the antenna and the text NO HOTSPOT is shown.



If the hotspot is enabled but the antenna is turned off or not yet connected, only the red antenna icon (on the left) is seen.

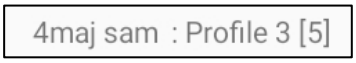


When contact is made with the antenna (this can take approx. 90 sec), a black antenna icon is shown with information regarding the connected antenna (the name and battery status).



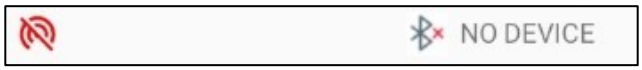
Note: If using an EL Core, two battery indicators are seen, one for each battery in the antenna.

The name of the current project and the profile number for the last recorded profile (if any) are also shown in the bottom bar. The total number of profiles in the current project is demonstrated in the brackets [x].



You can toggle between measured profiles in the project by tapping once on the project name (bottom right). This opens a Select Profile pop-up where you can choose the profile to be opened. When tapping on the profile name (bottom right corner), the present profile information is highlighted, and you can delete that single profile.

The positioning symbols in the bottom bar represent:



The No Bluetooth device symbol is displayed if no Bluetooth device (such as GNSS or Total Station) is connected



The user selected Positioning mode None (i.e., no positioning was used)



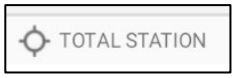
The positioning device has no fix acquired



GNSS device has fix quality but not RTK (Normal, DGPS, Float RTK)



GNSS device has fix quality RTK



Total Station is used and connected

Measurement settings

Select *Settings* in the Main Menu ☰. Here, the following can be adjusted:

Measurement

- Numbers of Samples to set the investigation depth. The estimated investigation depth will also show if the vertical scale is set to Depth. If the vertical scale is set to *Time*, the number of ns (nanoseconds) will be displayed.
- Distance, Time, Manual or MALÅ Motion Trig. Distance triggering uses the encoder wheel to give a fixed distance between traces, e.g. 5 cm. With time triggering, the traces are collected at a time-defined spacing, e.g. 0,1 sec. With manual triggering, you decide when to measure by clicking the data collection button in the measurement view of the MALÅ Controller App. One click will trigger the collection of one radar trace. This is, for example, useful when you want to measure an uneven distance between your traces. If you have a MALÅ GeoDrone 600, GeoDrone 80 or GX antenna* connected to the system, you can also trigger the data using the MALÅ Motion Trig option. This option utilizes the movement of the internal GPS to trigger the data collection, giving equidistant traces without encoder wheels being connected to the antenna.

Note: See Appendix 1 for more information on MALÅ Motion Trig

- Encoder type and Manage wheels (add, recalibrate, reset and delete wheels). Choose the wheel you are going to use from the drop-down menu.
- Trace interval, in cm (feet) or sec.
- Max speed will give the maximum investigation speed according to the measurement settings.
- Automatic or Manual zero-level setting. If selecting Manual, please set the number of samples for the zero level.
- Auto-stack limit, defines how many measurements are used to create the final trace. MALÅ Controller App will auto-stack up to the set limit.
- Sound for AI markers. If ON, a beeping sound will be heard when AI markers appear. See also section *MALÅ AI*.

*The GX antenna needs to be App enabled (produced after December 2020) and then updated after May 2025 or purchased after May 2025. If you are uncertain, contact support@guidelinegeo.com.

Positioning

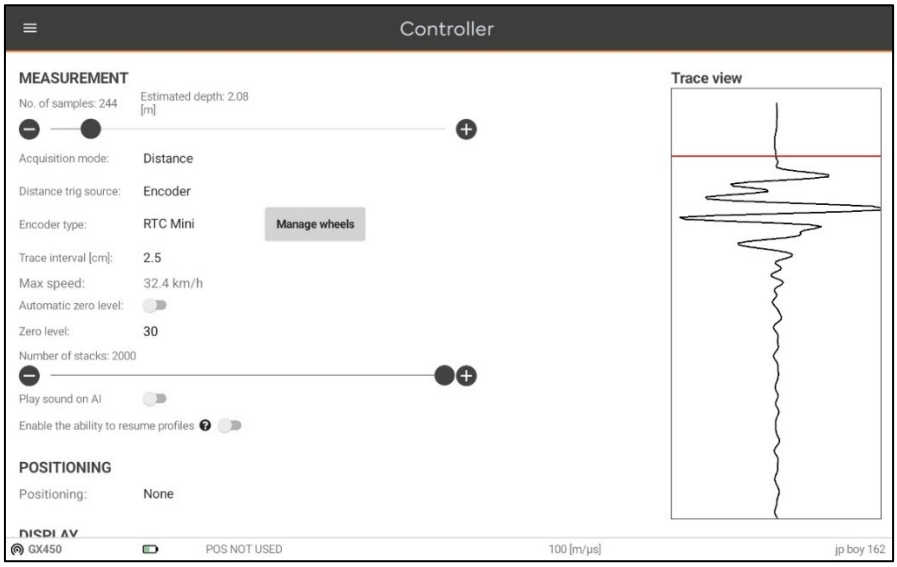
Positioning and GNSS offset (see section Positioning below).

Display

- Vertical scale: Time or Distance.
- Vertical axis placement: Choose between left, right or both.
- Measurement Units: Metric or imperial.
- Language: English, Chinese, French, German, Japanese and Spanish. You need to restart the app when changing language.

Advanced

This menu can be found by scrolling down and is used for data recovery (see section *Data recovery* below).



Measurement setting screen, upper part

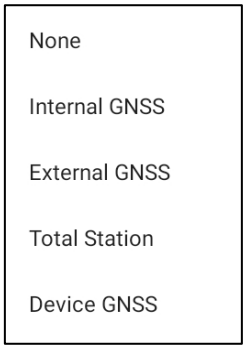


Measurement setting screen, lower part

Note: The settings are automatically saved; the same settings will be used if the application is restarted.

Positioning

In the Measurement settings, you will also find the options for the collection of positioning data:



- *None*: No positioning data is collected.
- *Internal GPS*: Positioning data is collected from internal GNSS in the antenna and is stored in a cor-file.

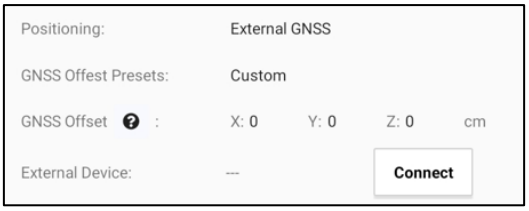
Note: When using a MALÅ GeoDrone antenna, always choose Internal GNSS. Positioning data from an external GNSS antenna can be synced in the post-processing.

- *External GPS*: Positioning data is collected from an external GNSS with a Bluetooth connection and is stored in a cor-file. When choosing External GPS, you will get a pop-up window with the available, paired GNSS antennas. See section Positioning with external GNSS.
- *Total Station*: Positioning data is collected from a Total Station via Bluetooth connection, and data is stored in a corc-file. See section Positioning with Total Station.
- *Device GNSS*: Positioning data is collected from the tablet's internal GNSS device. This feature is also helpful for soft GNSS solutions such as Trimble Catalyst or as an extra positioning alternative.

Note: When measuring a 3D project, the MALÅ Controller App creates temporary coordinates for the relative positioning of the measured profiles in the grid, if no GNSS is in use. The grid will have the start coordinates 0/0, and the local coordinate output will be stored in the corc-file.

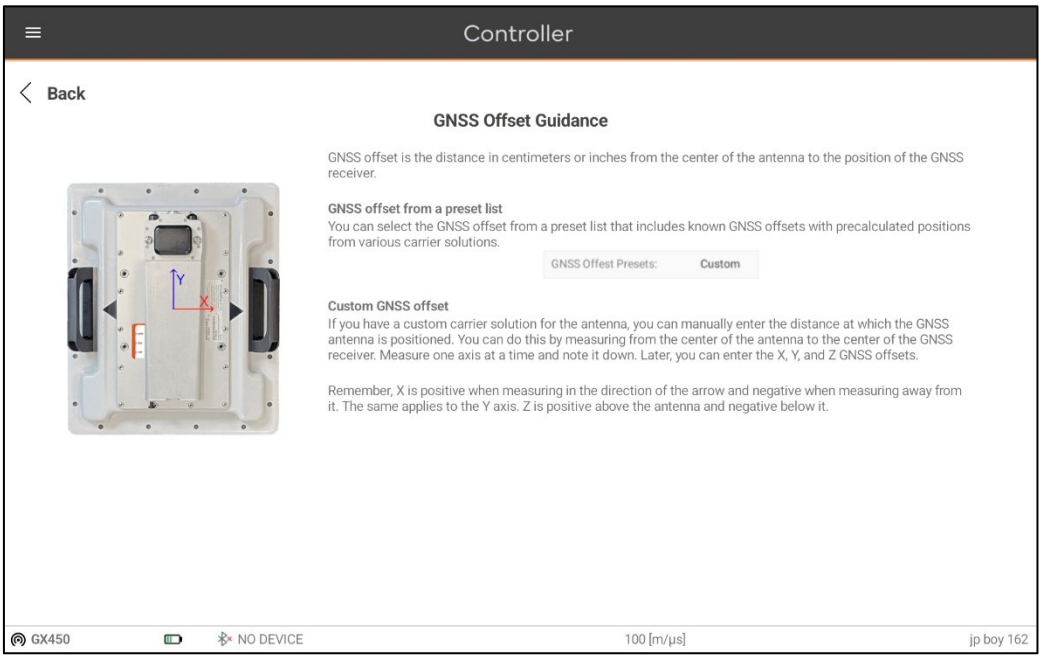
GNSS Offset

The GNSS offset option becomes available when using External GNSS or Device GNSS. This enables you to place your GNSS antenna where it is most convenient if not using MALÅ standard GNSS devices.



You can choose from a preset list (*GNSS Offset Presets*) or enter your own offset values for X, Y and Z.

Press ? for more guidance:


Controller
Back
GNSS Offset Guidance
GNSS offset is the distance in centimeters or inches from the center of the antenna to the position of the GNSS receiver.
GNSS offset from a preset list
You can select the GNSS offset from a preset list that includes known GNSS offsets with precalculated positions from various carrier solutions.
GNSS Offset Presets:
Custom
Custom GNSS offset
If you have a custom carrier solution for the antenna, you can manually enter the distance at which the GNSS antenna is positioned. You can do this by measuring from the center of the antenna to the center of the GNSS receiver. Measure one axis at a time and note it down. Later, you can enter the X, Y, and Z GNSS offsets.
Remember, X is positive when measuring in the direction of the arrow and negative when measuring away from it. The same applies to the Y axis. Z is positive above the antenna and negative below it.
Y
X
GX450
NO DEVICE
100 [m/µs]
jp boy 162

Positioning with external GNSS

The output from the external GNSS should be in NMEA0183 and have an output frequency (output rate) of at least 5Hz (one point every 0.2 sec). The positioning with an external GNSS can be carried out in two ways:

External GNSS with RTK correction by the base station.



Note: It is essential to set up the base properly to achieve a good positioning result.

External GNSS with mobile RTK correction.



If an external GNSS with mobile RTK-correction is used, carry out the following steps to connect between the MALÅ Controller App and the GNSS:

1. Use a mobile phone (with 4G/5G) and set up a hotspot to share the internet with your GNSS antenna. Then, the RTK-GNSS correction can be done through your mobile phone´s internet connection.
2. Connect/pair your mobile device (tablet, with MALÅ Controller App installed) by Bluetooth to your GNSS antenna.
3. Set up a hotspot on your mobile device (tablet, with MALÅ Controller App installed), as explained in Chapter *Installation*, to connect the GPR antenna with your mobile device.
4. When starting the MALÅ Controller App, choose External GPS and select the GNSS antenna to connect.

Note: Depending on the mobile device and mobile phone used, it is good to ensure that any unnecessary Wi-Fi and Bluetooth connections are turned off.

Positioning with Total Station

The output from a Total Station should be in pseudo-GGA, and the positioning with Total Station can be done in two different ways:



Total Station



Prism and hand unit on GPR antenna

1. Output of pseudo-GGA through Bluetooth. Connect the tablet, with the MALÅ Controller App installed, to the Total Station hand unit by Bluetooth. For the first time, it is advisable to connect the hand unit to a PC by Bluetooth and verify the output using a terminal emulator (such as TeraTerm or Putty). It should only be a pseudo-GGA message transferred.



Total Station



Prism and hand unit with Bluetooth adapter on GPR antenna

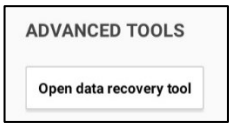
2. Output by the serial port on the hand unit. Use a Bluetooth-to-serial adapter and connect the serial cable from the hand unit to this adapter. The Bluetooth adapter is then connected (by Bluetooth) to the tablet with the MALÅ Controller App. The following Bluetooth adapter is compatible with the MALÅ Controller App: IOGEAR GBC232A. It requires power, which an external battery can quickly supply. Ensure the hand unit is configured to output pseudo-GGA through the serial interface.

Note: Specifications for setting up Total Stations are not covered in this manual; please see details from the manufacturer.

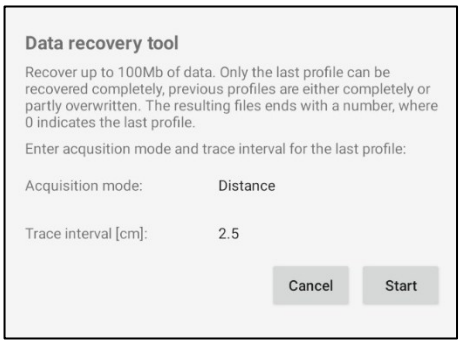
Data recovery

Data is automatically stored on the antenna if the connection between the MALÅ Controller App and the EL Core or GX antenna is lost. This data is also automatically recovered when contact is established again. For more significant amounts of missing traces, the recovery starts when the profile is stopped. If this fails for any reason, e.g., due to power loss, the Data Recovery tool in the MALÅ Controller App can recover the data. The latest profile will be fully recovered, whereas older profiles will only be partly recovered. In total, 100MB of data can be recovered.

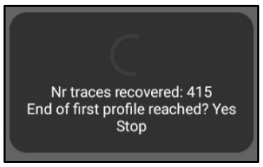
Press the *Open data recovery tool* in the Settings menu / Advanced.



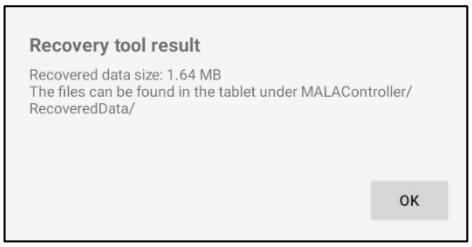
Set the acquisition mode (distance or time) and the trace interval you used during the data collection, and press *Start* to start the data recovery process.



During the process, progress can be followed.



When the recovery is ready, the following screen is displayed:



Note: The data recovery tool can be slow, depending on the file size, so please be patient.

Note: If the file to recover is greater than 100 MB, only the parts up to 100 MB will be recovered.

Measurements

2D Project measurements

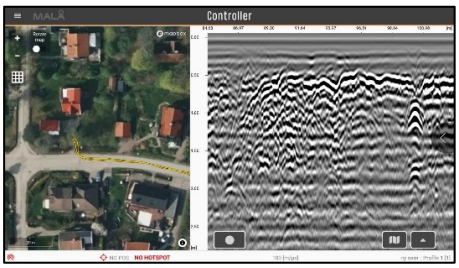
Press  in the Measurement tab to start a new profile.

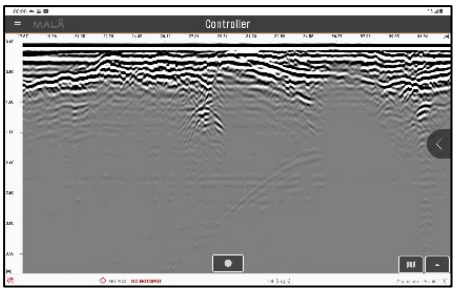
Press  to stop a profile.

Data is automatically stored in the mobile device.

Toggle between the three views (map + radargram, only radargram or only map) by pressing .

For the Dynamic Grid feature  see the section on *Dynamic Grid*.





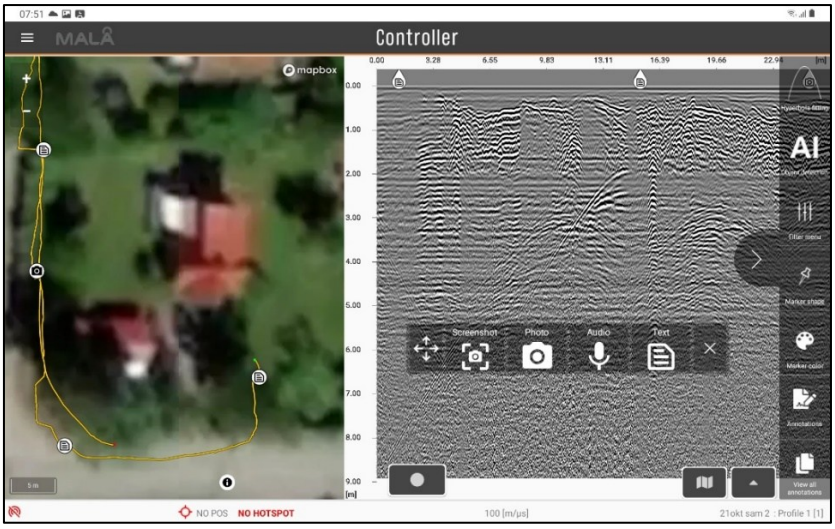


Note: If the red "start profile" dot is grey, there is no connection to the GPR antenna; check the antenna and the hotspot connection.

Note: Previously used measurement settings are saved; if you are satisfied, the measurements can be started immediately.

During a measurement, you can:

- Use hyperbola fitting to set velocity or change velocity directly.
- Use MALÅ AI to aid in hyperbola identification.
- Apply filters such as background removal, AGC and gain.
- Add object markers anywhere in the radargram by tapping the screen. The object markers can be of different shapes, colors (following the set template) and sizes.
- Add surface markers (at the location of the antenna)
- Add annotations (screenshots, photos, audio recording and text).

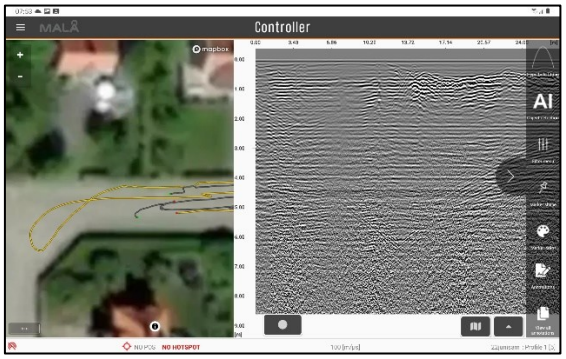


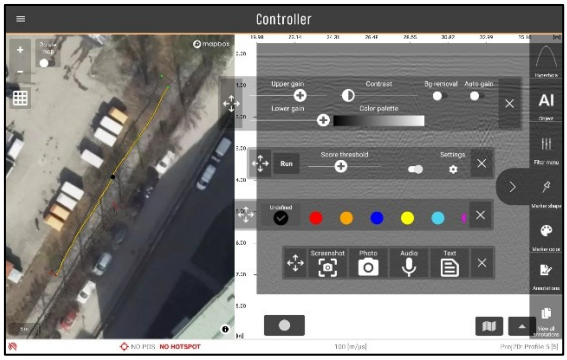
These options can be accessed by opening the slide-out menu . Slide out or click on the arrow to open and slide in or click to close.

Each dynamic menu in the slide-out menu opens as a floating panel, which can be placed anywhere in the MALÅ Controller App window.

Use  to move the panels around and close the panel with .

The functionality of the floating panels is described in detail below.





Note: You can also toggle between measured profiles in the project by tapping once on the project name (bottom right). This opens a Select Profile pop-up where you can choose the profile to be opened.

When tapping on the profile name (bottom right corner), you will see the present profile info, and then you can delete that single profile.

Note: When going backwards with the measurement wheel, the backtrack function is the same as on any other MALÅ device. A vertical yellow line indicates the current position of the antenna.

Note: If the connection between the GPR antenna and the MALÅ Controller App is lost during measurements, the collected data will be buffered in the internal memory of the antenna and retransmitted to the MALÅ Controller App once the connection is re-established.

If the number of missing traces is large, the MALÅ Controller App will request all missing traces during a sync function; this will be executed after each measurement. This sync function starts automatically when you press Stop profile.

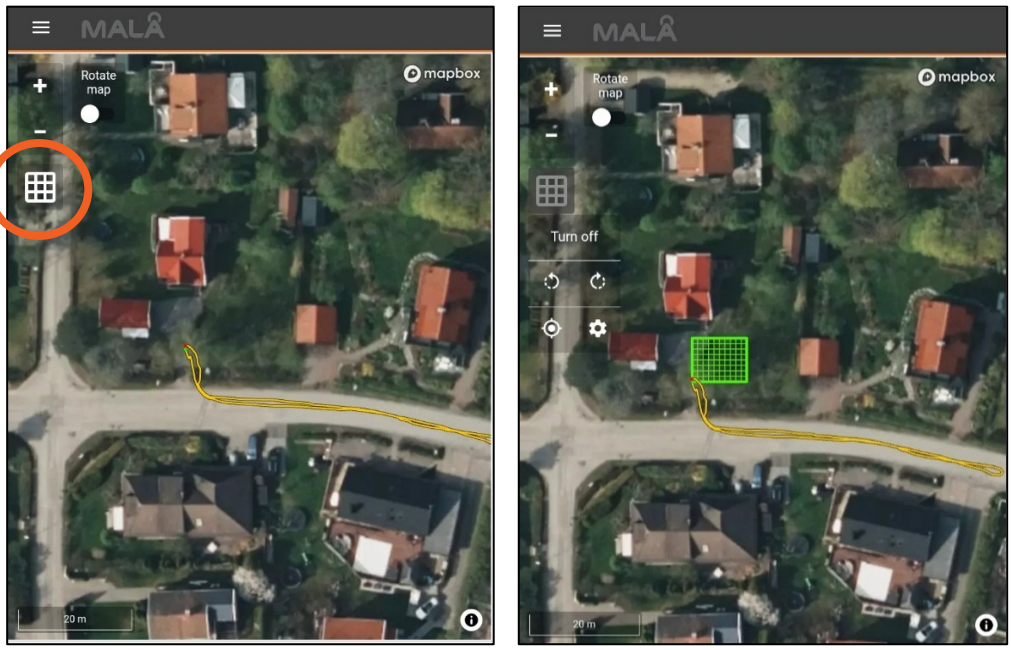
If this sync fails due to power loss, use the Data Recovery Tool explained in the Measurement Settings section.

Dynamic grid

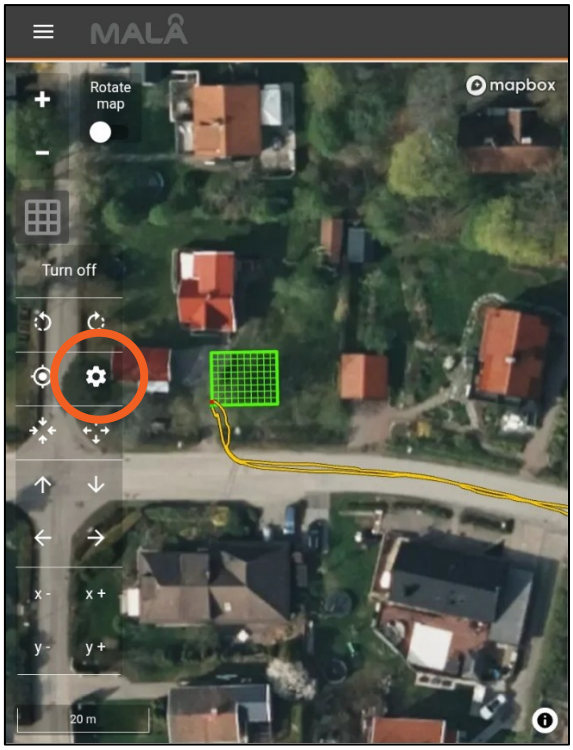
The feature Dynamic grid allows you to add a virtual survey grid on top of your background map, so you can simplify the fieldwork by following dense parallel virtual gridlines instead of using tape measures and guidelines.

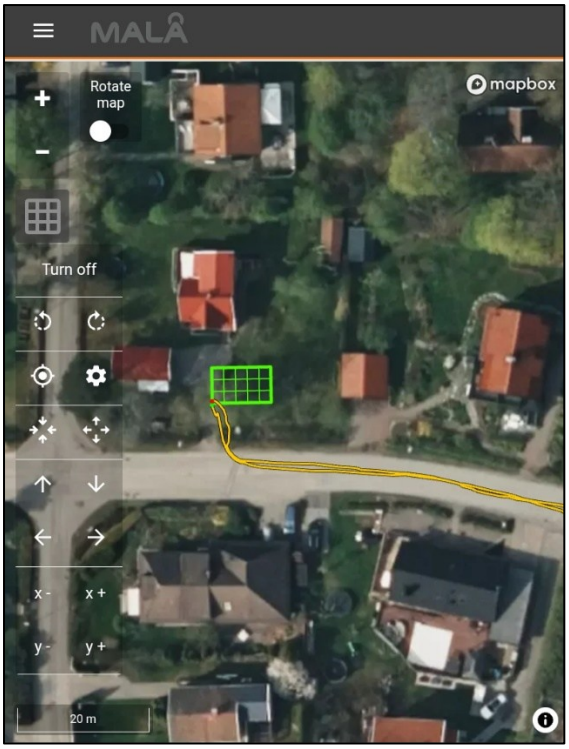
Note: Using the Dynamic Grid requires precise positioning, with RTK-GNSS or Total Station positioning, to achieve a good result.

Press the Grid icon on the map to create the grid and open the grid settings pop-up. The grid will be displayed in green on the map view. You can easily tilt the grid to the left or right with the two turn icons.



To make more adjustments to the grid, press the cogwheel .







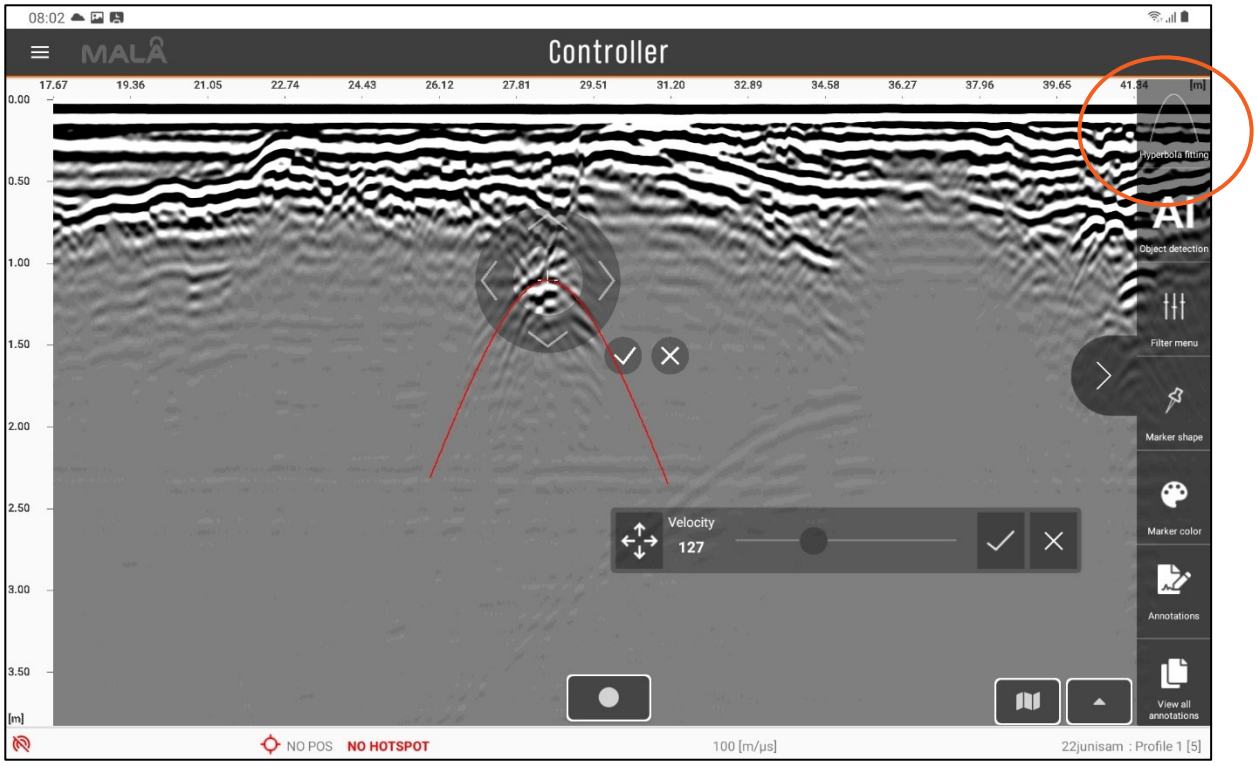
The following settings for the Dynamic grid are available:

- Turn off the Dynamic grid.
- Tilt the grid to the left or right.
- Open or close the Dynamic grid settings with the cogwheel.
- Decrease or increase the line spacing. The spacing is shown as a pop-up.
- Move the grid up, down, left or right.
- Decrease or increase the number of lines along the x-axis.
- Decrease or increase the number of lines along the y-axis.

Hyperbola fitting

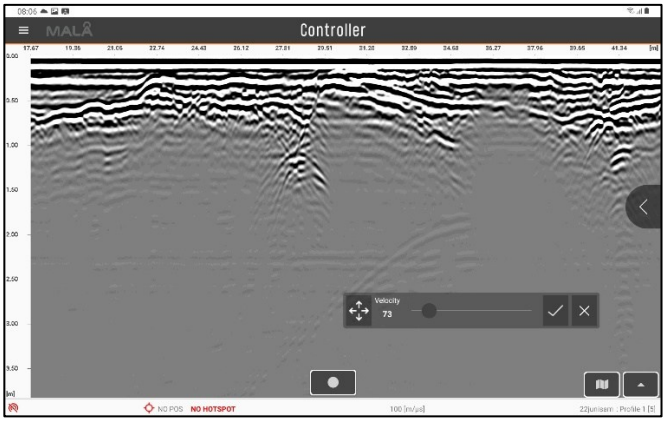
The global velocity can be set with the hyperbola fitting tool. Press *Hyperbola fitting* and place the hyperbola tool on top of your measured hyperbola. Fine adjustment of the location can be done with the arrows.

Change the velocity (and the shape of the hyperbola) using the slider.



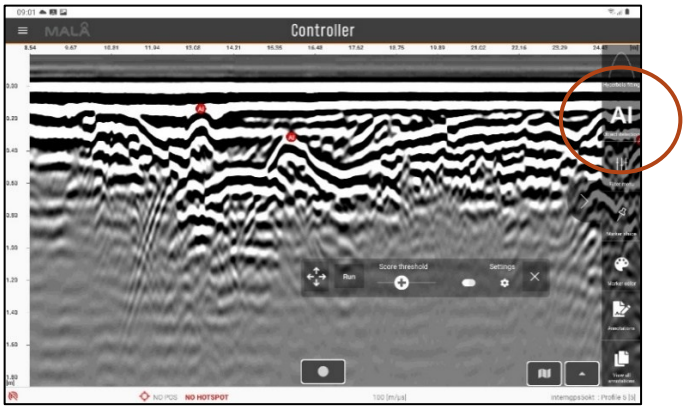
The selected velocity is visible in the status bar (below the radargram) and can be changed directly during the measurement.

By pressing the velocity, a velocity slider appears for easy velocity adjustment.



MALÅ AI

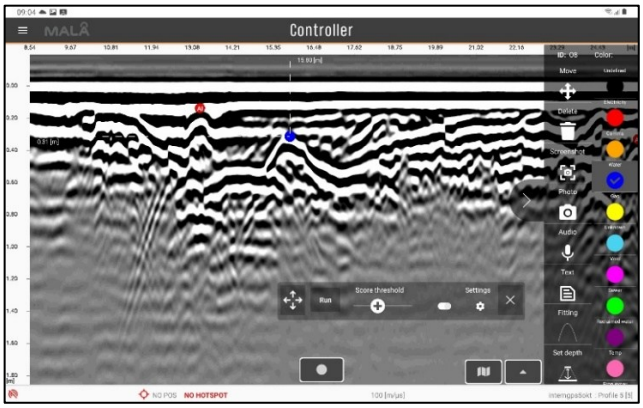
With MALÅ AI, you get real-time assistance in identifying and marking hyperbolas in your data.



Activate the AI Object detection floating panel option and adjust the sensitivity using the score threshold slider.

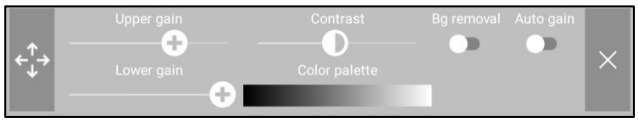
In the settings menu ⚙, the search depth can be adjusted.

The AI markers are quickly turned into object markers. Click on the AI marker and choose the wanted color on the right-hand side of the screen.



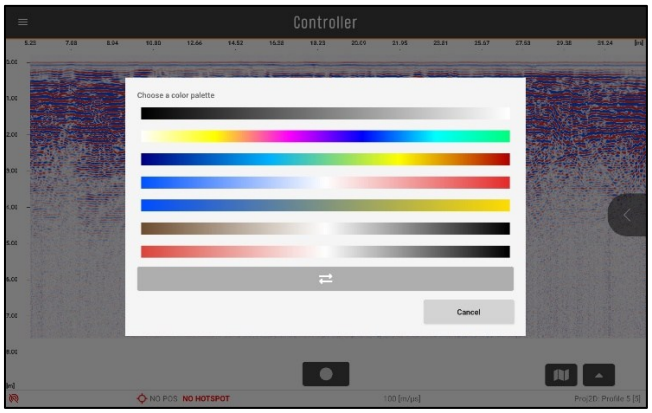
Filters

You can adjust gain and contrast in the filters panel and apply background removal or auto gain.



Use the sliders to increase or decrease the contrast or gain (Upper and Lower). The gain sliders are disabled if the Auto gain is turned ON.

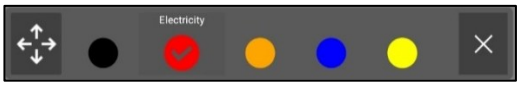
Use the option Color palette if you want to change the color for the radargram:



Marker type and colors

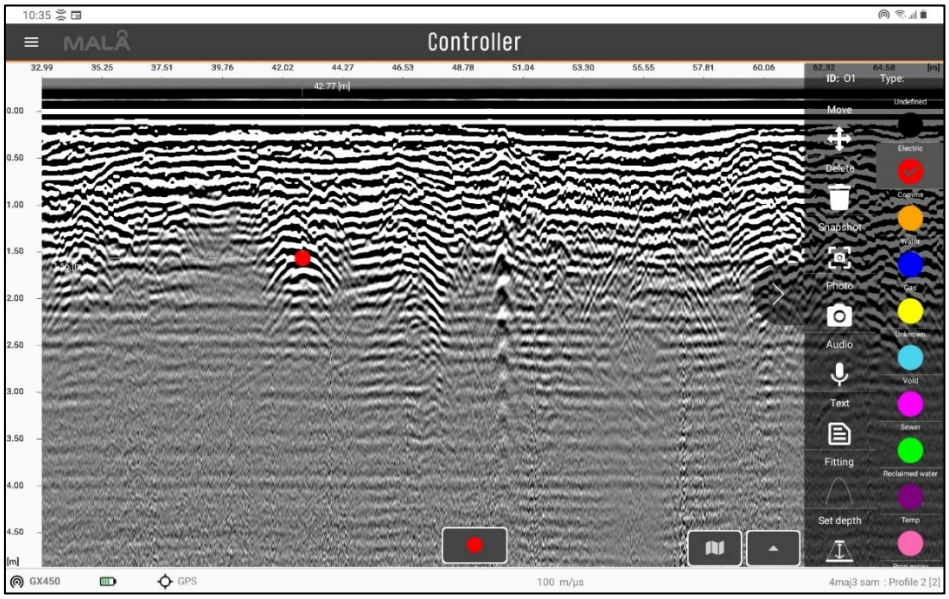
The type and color of the marker can be set in the Marker type/size and Marker colors panels. The colors are based on a template in the measurement settings menu.



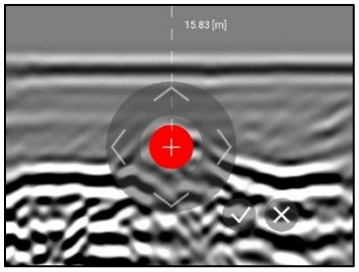


The set marker can be edited with a short press on the marker. In a slide-out menu, you see the marker ID, and you can:

- Move the marker
- Delete the marker
- Take a Screenshot
- Take a Photo
- Record Audio
- Write a text annotation
- Carry out hyperbola fitting
- Set the depth of the marker



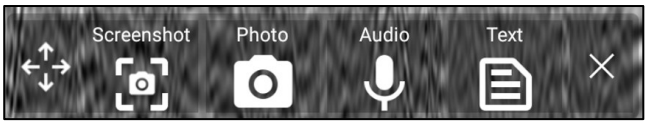
Options for marker edit. The slide-out menu will appear with a short press on the marker



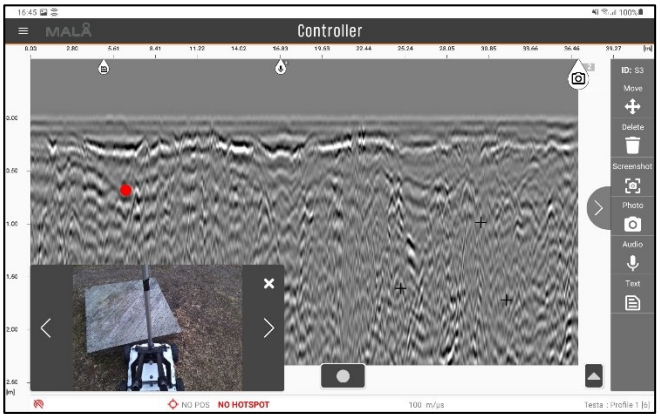
With the option Move, use the arrows for precise positioning or drag

Annotations

In the annotation menu, you can add screenshots, photos, audio recordings and text and tie them to specific markers in your profile. The annotation is placed at the last measured trace if you are in active measurement mode.

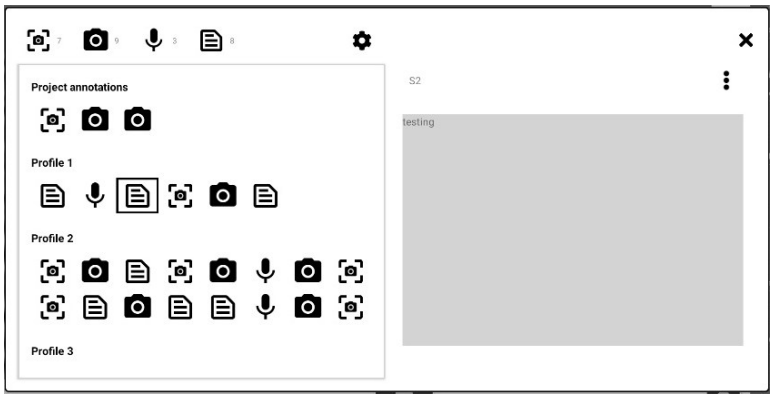


In the example to the right, a photo annotation has been added, and a preview of the collected photo is shown.



If you have stopped a profile and added an annotation, it will be linked to the project instead of to a profile.

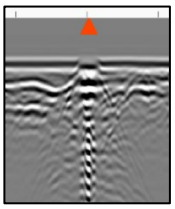
With the option *View all annotations*, you see an overview of the added annotations for the project and each profile. When clicking the annotation, it will open in the right-hand window.



The annotations viewer can be sorted in different ways, and this can be controlled by tapping the settings cogwheel in the top middle part of the window. You can also sort the annotations by type. Click one (or several) of the annotation type icons in the top left row to view the selected type/s.

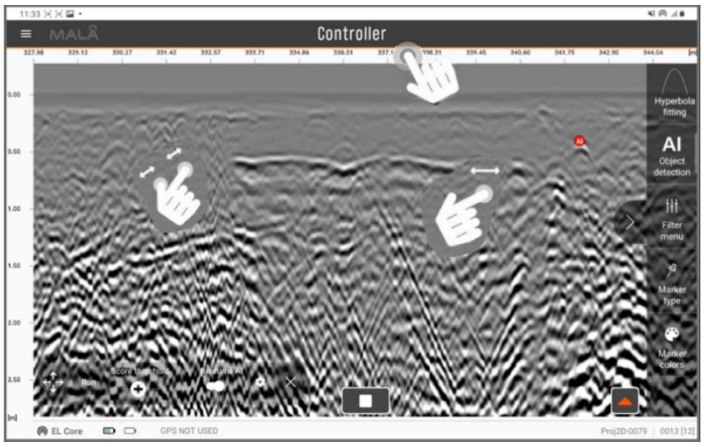
Surface marker

The option Surface marker places a marker on the surface at the last measured trace.



With a short press on the marker, a slide-out menu appears where you can add text, photos, screenshots and audio annotations to the marker. You can also move or delete the surface marker.

Pan, zoom and stretch.



During measurement, you can also pan, zoom and stretch the data.

Pan: Press one finger and move to pan in the profile left/right/up/down

Zoom: Pinch and use two fingertips to zoom in and out of the data. The data will be zoomed proportionally for x and y.

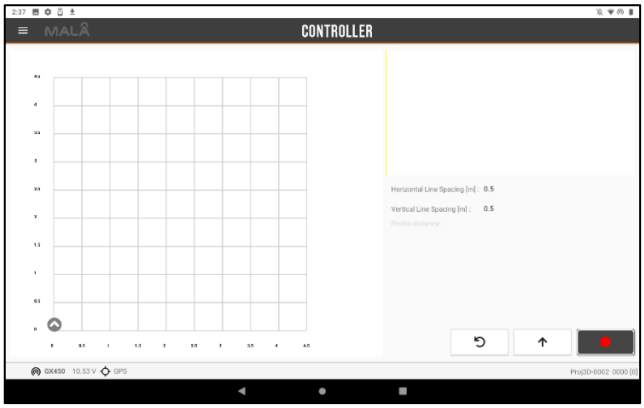
Stretch: Use two fingertips to zoom vertically (down or up) or horizontally (left or right).

The set zoom will remain during your measurements.

To return to the standard settings (regular aspect ratio), double-click either the x- or y-axis.

3D Project Measurements

The 3D project is useful when working in a local grid, e.g., without GNSS positioning. The project is started by defining the desired horizontal and vertical line spacing between your profiles in the grid.



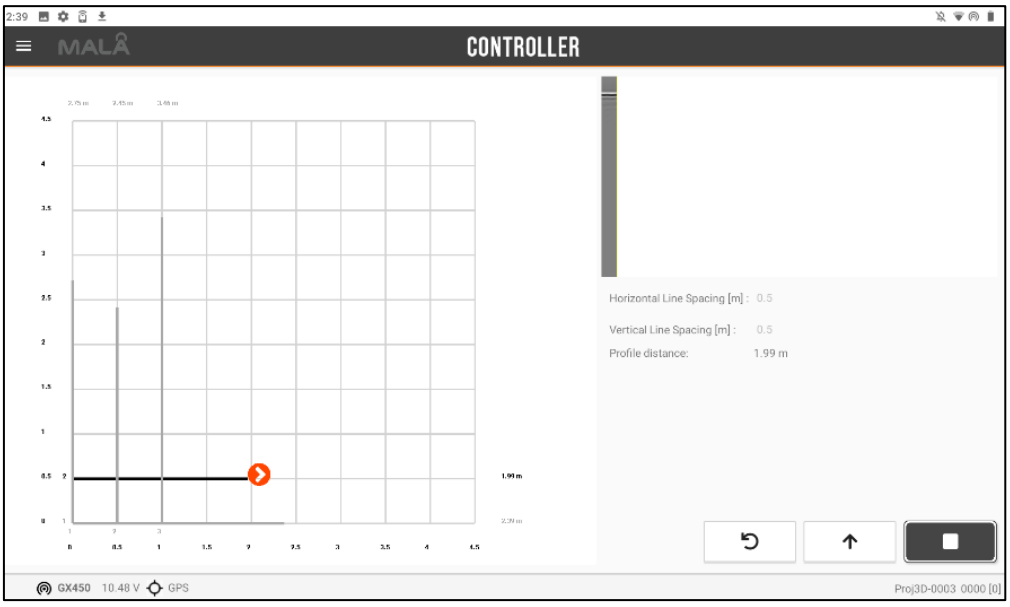
Measure as many lines (in any length) as you wish. Data can be collected in both X and Y or either X or Y direction, but data collection needs to start from either the southern or western baseline for each profile.

When data collection is started, the radargram is displayed in the upper right corner, and the profile is indicated with a darker grey in the grid on the left side. The length of the profiles is also displayed on the grid. See picture below.

Each line is started and stopped by  and . You can zoom in and out in the radargram view during measurement.

If you need to undo the last line, press . Change profile direction data with  and .

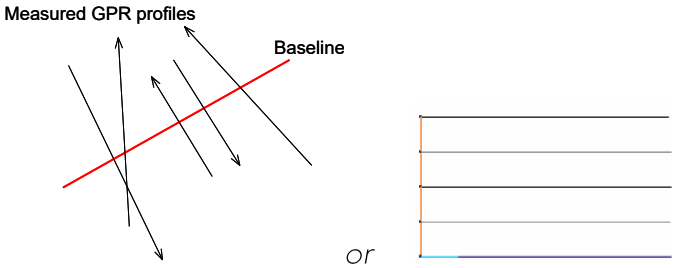
Note: The grid is only a visualization tool and will not change if profiles are made longer. The profile length is seen above or on the right-hand side of the current profile and underneath the radargram view.



Baseline Project Measurements

A Baseline Project is a tool to easily handle and interpret radar profiles acquired with the MALÅ Controller App, where a number of radar profiles are linked to one or several common baselines.

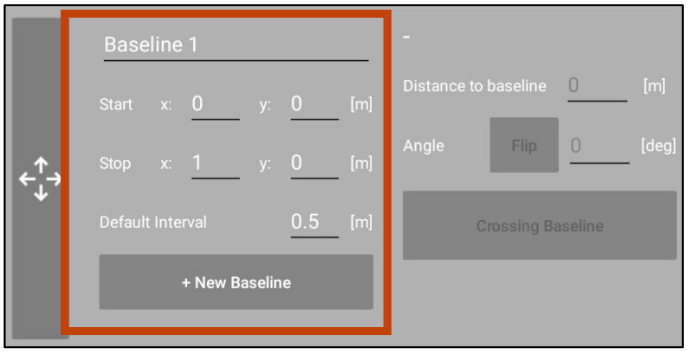
Baseline projects are measured without any positioning (such as GNSS or TS). So, choose the option *None* in the Positioning pop-up on the Settings Page.



Example of baseline projects.

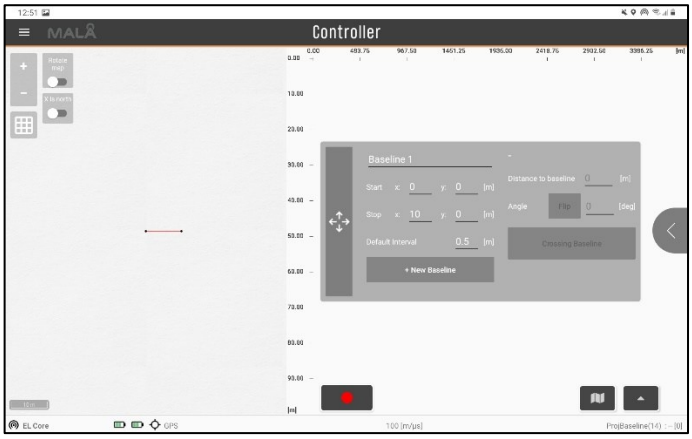
Set up the baseline

When you start a Baseline Project, you get a pop-up window on the measurement screen, where the length of the baseline is defined by adding start and stop positions.



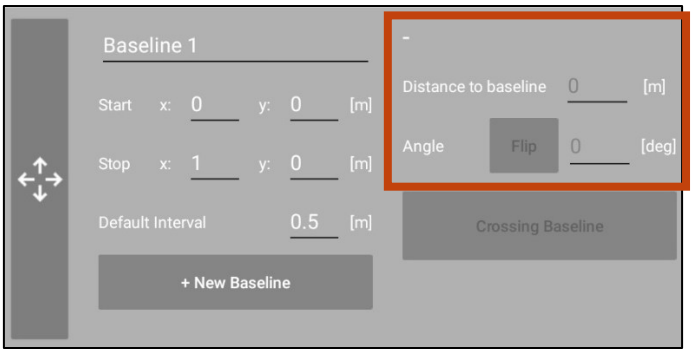
A default value for the profile spacing can be defined in the *Default Interval box*.

The defined baseline is shown on the Site Map view.



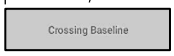
Baseline measurements

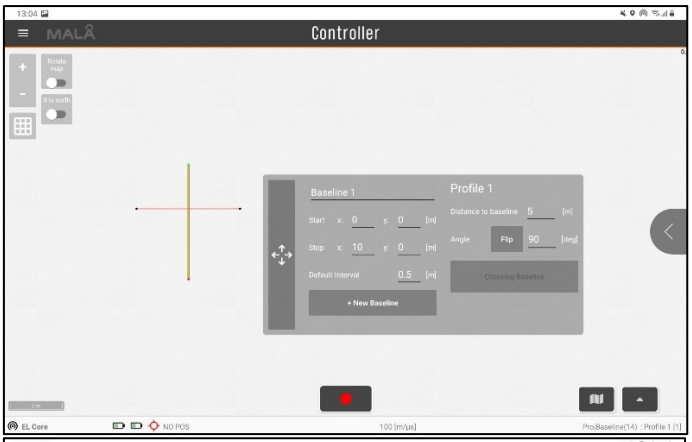
Before starting the measurement enter the distance to the baseline start for your profile, as well as the angle of the profile. See definition below.



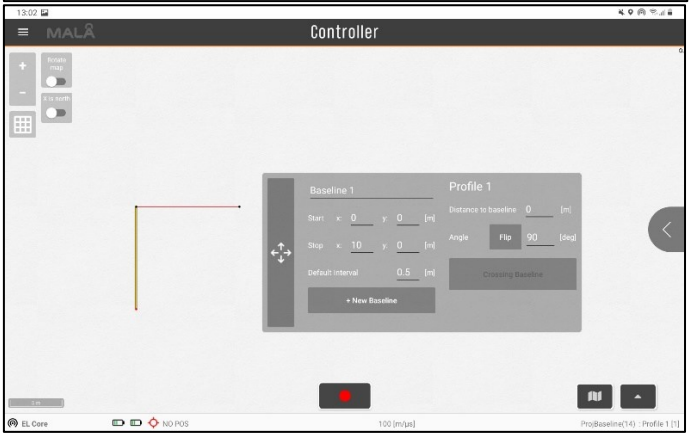
The angle of the profile can also be set when confirming the baseline, see below.

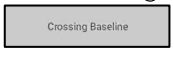
The start and stop position of the profile can be easily flipped if needed.

Press start,  to start your GPR profile, and set a baseline crossing with , when the profile crosses the baseline during the measurement.

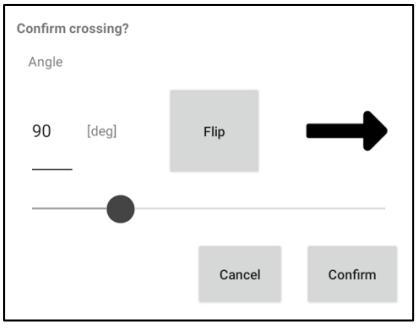


If you start your profile on top of the baseline, it is not necessary to use the . The system will automatically set the profile to start on the baseline. However, remember to check the *Distance to baseline*. This is entered when the profile is started 



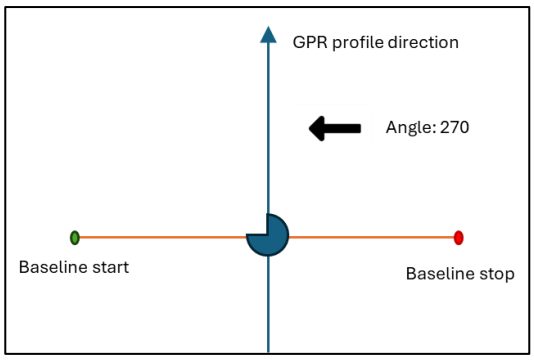
For each baseline crossing that is located elsewhere than at the start of the profile, the crossing needs to be confirmed. When choosing  the Confirm crossing pop-up appears.

Here you can easily flip the profile and set the angle of the same, with the slide bar or enter the correct number.

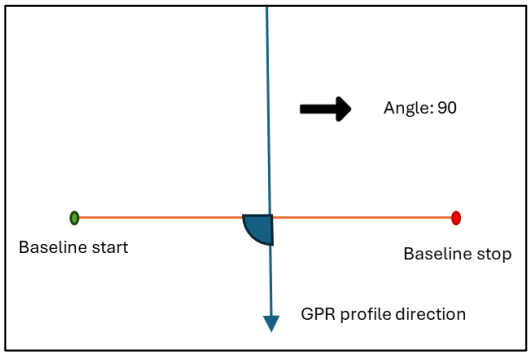


The angle is set as a compass arrow, from your starting point and direction to the baseline start.

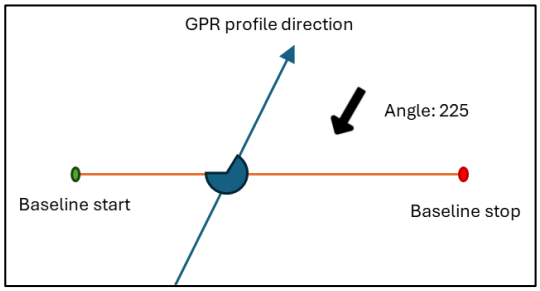
Slide the degrees, from North (the direction of the profile) to the Baseline start point.



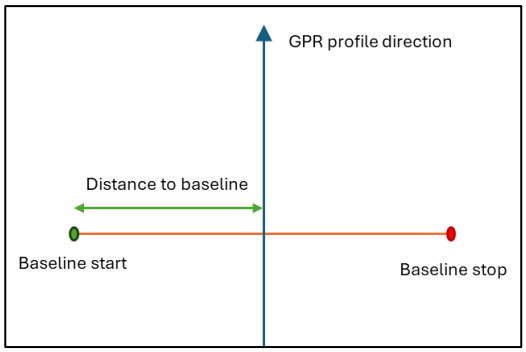
Example 1



Example 2



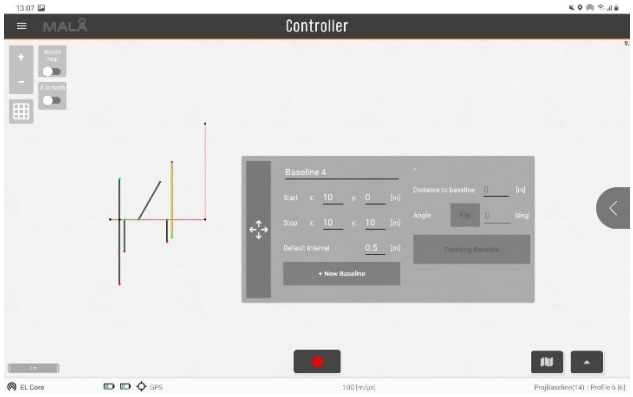
Example 3



Distance to baseline

You can add an additional baseline by using the *+ New Baseline button*. Define the location of the new baseline by adding information on start and stop positions and giving it a name.

If you need to add profiles to a previously made baseline, click on the baseline name and choose the correct baseline to use in the Select Baseline pop-up.

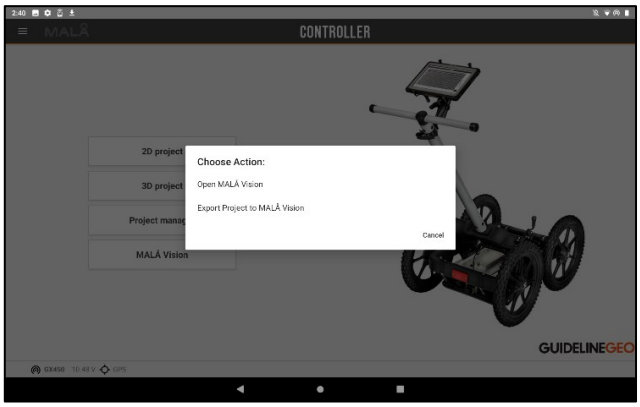


When you are ready with your profiles, press stop and upload the data to MALÅ Vision.

Note! Use  to toggle between different views; map only, map + GPR data, or GPR data only.

Upload and data transfer.

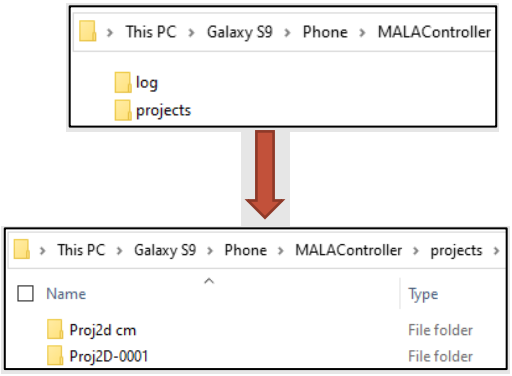
Export of data to MALÅ Vision is seamless and straightforward. Make sure your mobile device is connected to the Internet. This can be done by directly connecting the mobile device to Wi-Fi or 3G/4G via a SIM card or sharing the Internet on another mobile device, for example, a mobile phone.



Press the MALÅ Vision button on the Main screen and choose if you want to Open or Export data.

Select the project to be uploaded.

Data can also be transferred by connecting the mobile device directly to a computer, using the built-in sharing functionality in your Android device or through a third-party service such as Dropbox or OneDrive.



The MALÅ Controller App creates a MALA Controller folder; all created projects can be found in this folder.

The following data files are created:

- .rd7 files (raw data)
- .rad files (header file)
- .mrkj files (marker file with support for templates)
- .mrk files with Surface markers.
- .cor and .corc-files with positioning information. The .corc-files are created for 3D Grid projects collected without GNSS (or when collecting data with a total station) and can be opened and viewed in MALÅ Vision.
- .obm-files are created for Baseline projects. This file defines the baselines and how the profiles are connected to the baseline. Baseline projects can be opened in MALÅ Object Mapper as well as in MALÅ Vision Web.

Troubleshoot connectivity issues

Below is a troubleshooting guide for connectivity issues. Always check our website, guidelinegeo.com, for the latest news and updates. If you can't find a solution to your connectivity issues, we recommend you contact Guideline Geo support (support@guidelinegeo.com) or your closest Guideline Geo sales representative. You can also contact support directly by going to the Help and Support page of the main menu. Add your name, email, a description of your issues, and your data if you wish. Click send. Guideline Geo support will contact you soon to resolve your problem.

If you can't connect to the antenna at all, make sure you follow the workflow described in this troubleshooting workflow. *Make sure everything is configured exactly as described.*

1. Ideally, you should set up your system in an *area with minimal Wi-Fi interference* to reduce potential problems.
2. Ensure that no other hotspots with the same network names (SSID) are running on another nearby mobile device. Do this by turning off the hotspot and by searching for Wi-Fi networks. Make sure there are no other Wi-Fi networks with the same SSID as you have set up.
3. Disable Wi-Fi on your mobile device and then turn off and turn on the hotspot again.
4. Make sure you're using the *correct SSID* for the hotspot (MALAxxxxxxxx). The xxxxxxxx indicates the serial number of your GPR antenna. Also, check the password, which should be *mala0123.*
5. Make sure that the antenna *batteries are charged.* The battery indicator should have at least two bars for Easy Locator Core. The LED may be on despite insufficient battery power to initiate a connection to the MALÅ Controller App.
6. If that doesn't work, *restart the MALÅ Controller App* on your mobile device and wait for at least 30 seconds. This is done by "Close all" or swipe off the app in the Recent view (button with three lines or a square).
7. Restart the tablet and then open the *MALÅ Controller App* again.
8. Easy Locator Core specific: If you still cannot get a connection or lose connection to the antenna, press the *ON/OFF* button on the antenna 5 times within 5 seconds. This will reinitialize the antenna and reset the connection. Please note that this reactivation process may take up to 2 minutes.
9. If that doesn't work, press and *hold the ON/OFF button* to turn the antenna off completely, then power it on again.

Appendix 1 MALÅ Motion Trig

The MALÅ Motion Trig option utilizes the movement of the internal GNSS to trigger the data collection, giving equidistant traces without encoder wheels being connected to the antenna. MALÅ Motion Trig is currently available for the following MALÅ products:

- MALÅ GroundExplorer range of antennas
- MALÅ GeoDrone range of antennas
- MALÅ MIRA Compact
- MALÅ MIRA Flex

Traditional triggering methods, such as pulse encoder (survey wheel) and time triggering have certain limitations:

- Wheel-based triggering relies on physical ground contact to measure the distance. While accurate on smooth, firm terrain, this method becomes less reliable under challenging conditions, such as uneven or highly undulating terrain situations where ground contact is impossible or applications involving drone-mounted or suspended systems.
- Time triggering collects traces at fixed time intervals rather than fixed distances, making trace spacing dependent on survey speed. While a constant speed provides relatively uniform spacing, speed variations result in unevenly spaced traces. Since tools such as hyperbola fitting and MALÅ AI require equidistant traces, time triggering prevents their use. Additionally, pauses in movement lead to excessive data accumulation at a single location.

These limitations can be overcome with MALÅ Motion Trig, which enables distance-based triggering without the need for a survey wheel or physical ground contact.

Key benefits of MALÅ Motion Trig:

- Consistent, equidistant trace spacing regardless of survey speed
- Reduced collection of redundant traces
- Flexible survey operation without the need to maintain a constant speed
- Compatibility with hyperbola fitting tools and - MALÅ AI hyperbola detection
- No need for survey wheels or cables
- Reliable triggering in applications where ground contact is difficult or impossible, including drone-mounted, marine, and suspended systems

MALÅ Motion Trig is particularly well suited for:

- Open-field and forest surveys
- Marine and bathymetric surveys
- Drone-based GPR surveys
- High-speed mobile mapping
- Rough, uneven, or densely vegetated terrain
- Surveys where a consistent survey speed can be maintained.

Like other triggering methods, MALÅ Motion Trig has certain limitations. It is less suitable for surveys conducted under the following conditions:

- Indoor environments where GNSS satellite reception is poor or unavailable
- Areas with limited satellite coverage, where fewer than four satellites are detectable (at least four are required for reliable motion detection)
- Very low survey speeds
- Surveys requiring backtracking, where the backtracking function (yellow line) is needed
- Surveys involving frequent starts and stops, such as when navigating traffic, obstacles, or challenging terrain
- Surveys with significant speed variations, involving frequent acceleration or deceleration

Note: MALÅ Motion Trig and Time trigger independently of the direction of movement. To ensure correct positioning of the recorded data, maintain a constant travel direction throughout each swath/profile.