EUROMAG 3D

vM25 M96C+

User Manual

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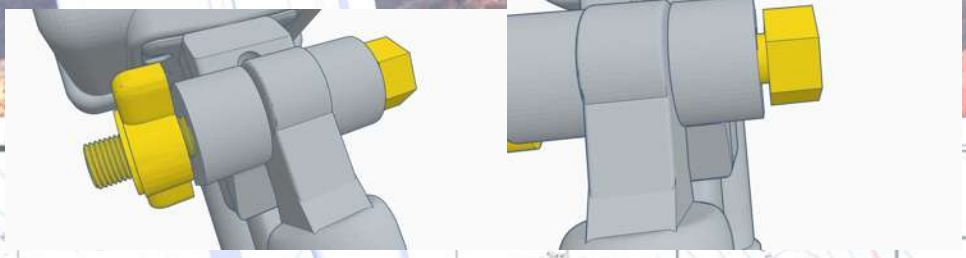
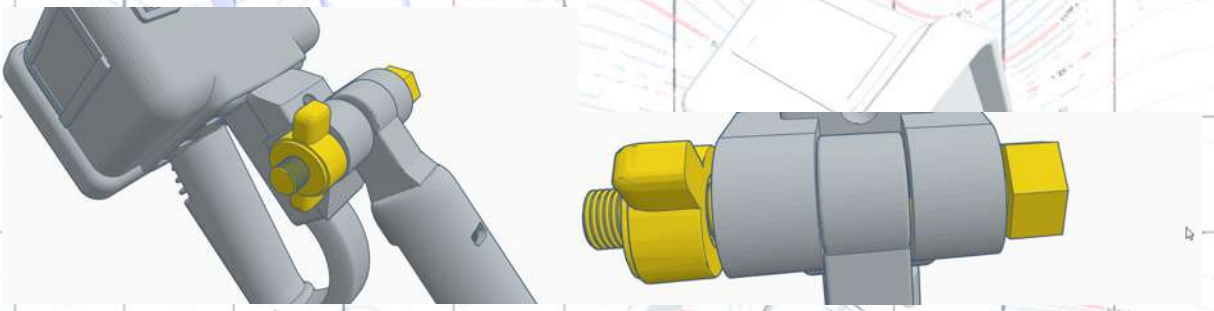
Assembly and precautions

Main assembly

Important precaution !

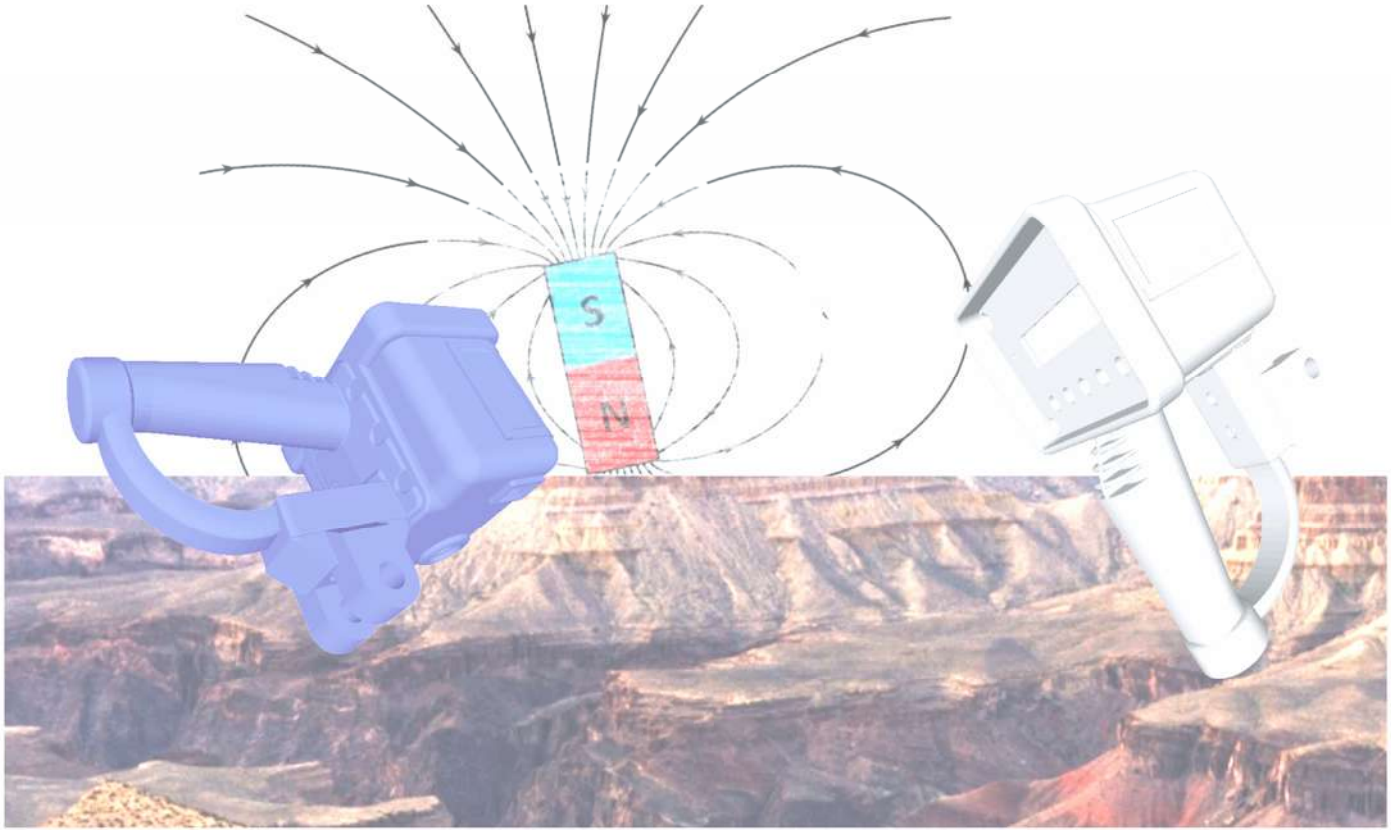




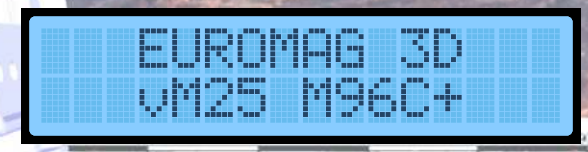
When fixing sensor pipe to device;

NEVER TIGHTEN THE NUT ON THE SCREW TO THE END!

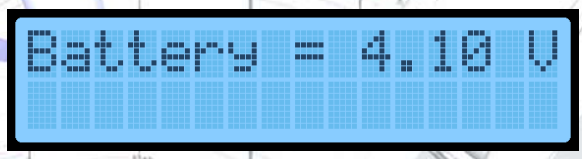
Leave it lose a bit. In order to allow that the pipe under the influence of gravity to maintain at 90 degrees in position relative to the surface of the soil.



Startup – welcome screen

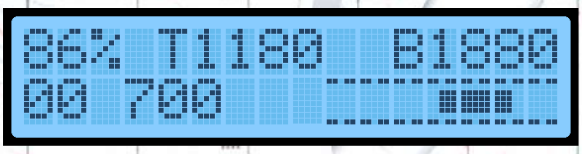


„EUROMAG 3D" – brand name
„vM25" – code version
„M96C+" – serial number



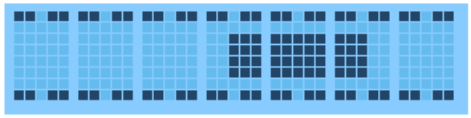
Battery status

Main screen – working screen



„86%" – Battery capacity
„T1180" – Top sensor value
„B1880" – Bottom sensor value
„00" – current number of samples in a column
„700" – difference between sensors

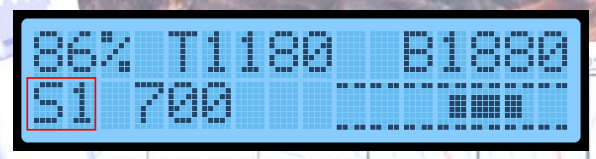
Bar scale display and meaning



negative anomaly | positive anomaly
zero point

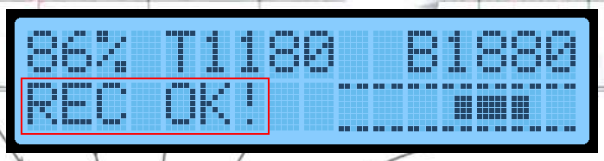
Key function in Main screen

Press on key shortly displays **„Sx"**

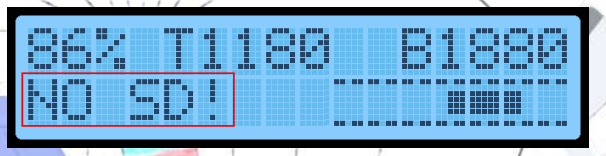


(where **„x"** is current value) and increase audio sensitivity by one. Minimum is **„S1"** and maximum is **„S9"**. When sensitivity is at **„S9"**; on next press it returns back to **„S1"**.

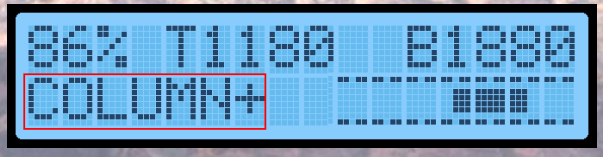
Press on key store current sample values in file on SD card. If SD card is inserted and valid it will display:



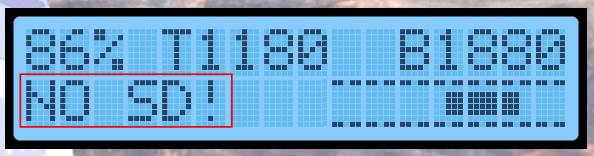
If SD card is not present or corrupted; it will display:



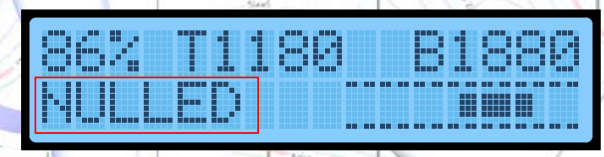
Press on will tell the code to store following samples in next column and it will shortly display:



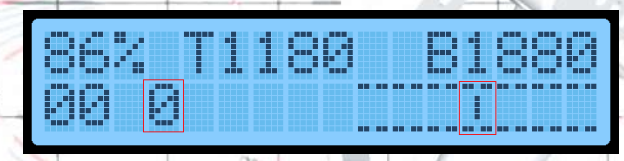
If SD card is not present or corrupted; it will display:



Press on ▼ will shortly display:

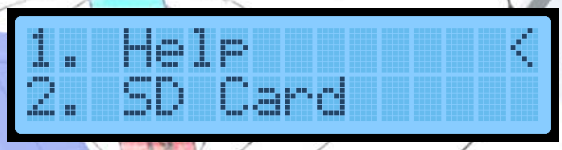


and than:



This means that difference value (*between sensor values*) is „**NULLED**" and present relation between sensor values will be taken as „zero" for further readings. Bar scale display will act accordingly.

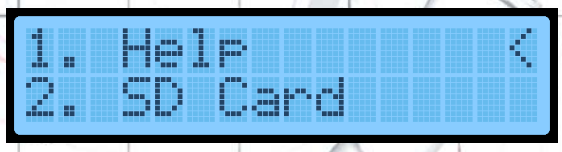
Press on ✔ (***OK*** *or* ***Menu*** *button*) will enter the **Menu mode**.



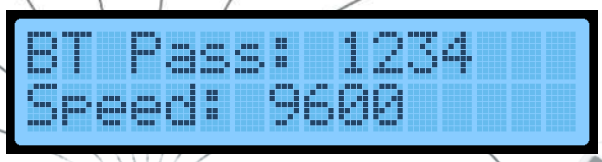
Symbol „<" points on item in Menu. To switch between the items (*choices, options*); scroll down or up by **pressing the ▲ or ▼ buttons.**

To exit from **Menu**; press the button.

Help

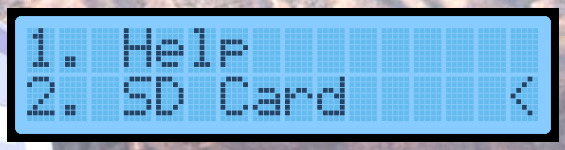


Press and it will display:

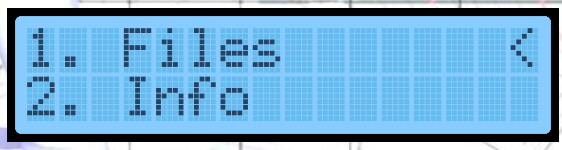


BT Pass: 1234 – „1234" is BT pairing password.
Speed: 9600 – „9600" Baud rate for Bluetooth.

SD Card



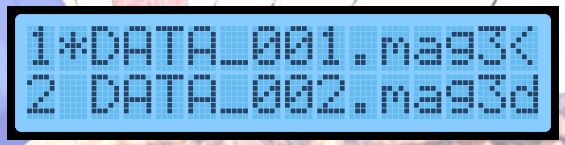
Press ✓ and it will display:



SD Card - Files submenu

List - option, list files on SD card.

Press ✓ and it will display:

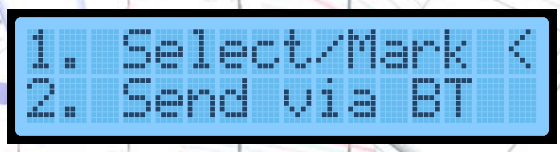


Scroll down or up through the file list by pressing the ▲ or ▼ buttons.

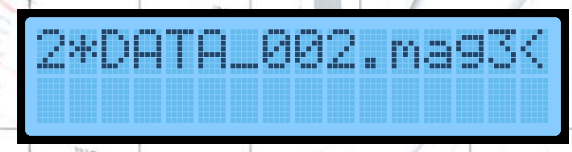
Symbol „<" on the right side points on position in list.

Symbol " * " on the left side indicates the "active" file for storing sampled data

To choose and manage the file; scroll **down** or **up** by pressing the or buttons to the file you want to mark and press button. New submenu will display:



Select/Mark - will mark the file as "***active***".



This marks the file as "***active***" for storing the data.

To return back through menus; press the button.

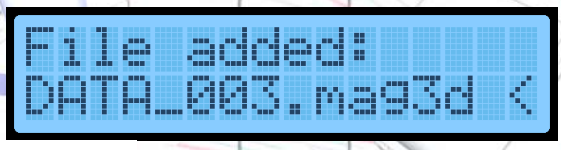
Notice

If empty SD Card is inserted; code will automatically generate the first file ("DATA_001.mag3d"), after the powering ON the device. Every next file is generated manually by user.

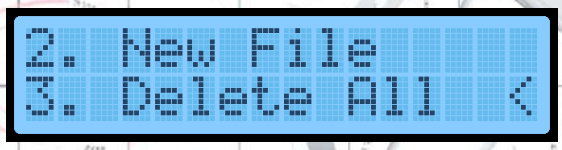
Send via BT - will send the file through BT when connection is established with pc computer.

New File - generate new file on SD card.

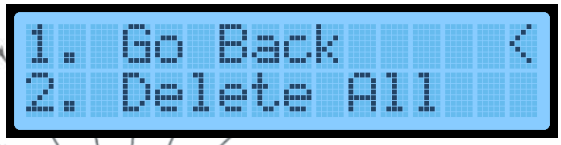
Press ✓ and it will display:



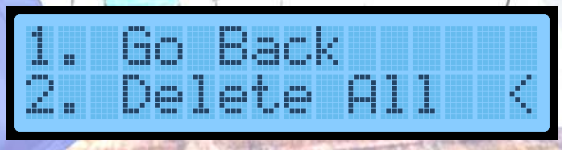
Delete all - submenu



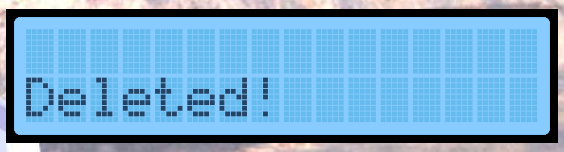
Press ✓ and it will display:



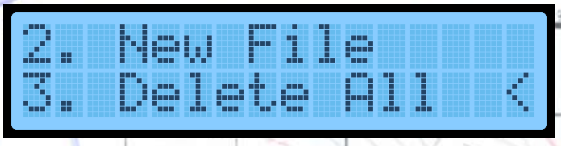
You can go back by pressing ✓ button, or press ▼



and press again ✓ **to delete all files from SD card**.
It will display:



and return to display:



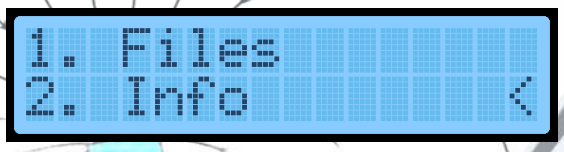
Notice

After the deleting all files from SD card; code will automatically generate first file ("DATA_001.mag3d").

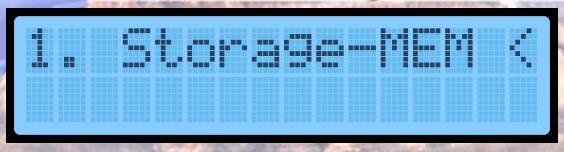
Every next file is generated manually by user.

To return back through menus; press the button.

Info

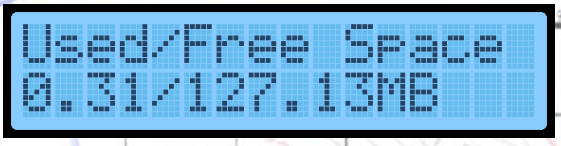


Press and it will display:



Press again and it will shortly display:

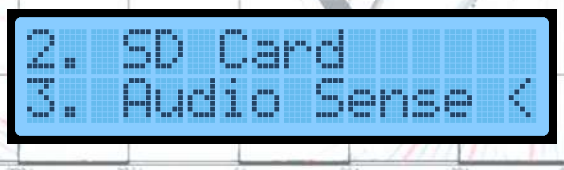
and than something like:



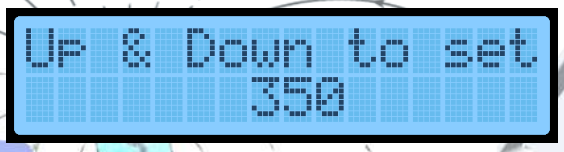
(*old 128MB SD card example*)

To return back through menus; press the button.

Audio Sense



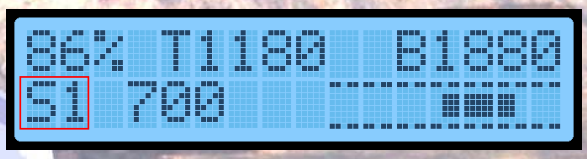
Press and it will display:



Press the or button to set the audio threshold.

(*this value is than stored in eeprom*)

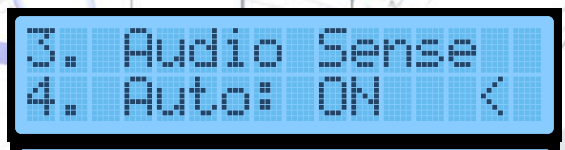
Audio treshold value is than multiplied with "***Sensitivity***" value, set on the main screen:

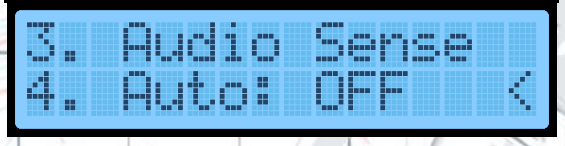


Notice

Both settings affects only audio behavior.

Auto (sampling/recording mode)





Press ✓ to change from „ON" to „OFF" and vice versa.
It sets the sampling mode to „automatic" or „manual".
Automatic mode of taking data from sensors will start to take samples at each second, without need for operator to press the button for each sample (record).

It will continue until next **press&hold** on button again.
To stop sampling (recording in this case), **press and hold for short** the button, until audio apears, indicating the stopping of recording/sampling .

Next press on button; it will continue with recording in the same column (*unless COLUMN+ was pressed in*

meantime to switch to next column and place further samples/records in it).

So, procedure for proper sampling/recording in „Auto" mode would be:

1) Stand on 1. row and 1. column on matrix.

2) Press button once to take the referent values („NULLED" appears shortly on LCD)

3) Press to start sampling/recording.

4) Start walking the current column, trying to keep the one second pace at each sample.

5) At last row of current column ***PRESS*** *and shortly* ***HOLD*** the button, **<u>until hear the confirmation sound.</u>**

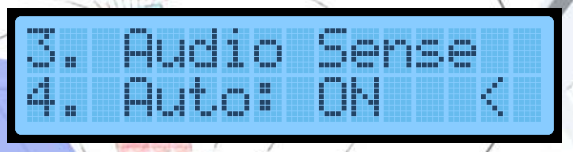
6)

a) In case of „zig-zag" scanning method (set in pc software); turn for 180 degress, step into next column (last row now) and manually rotate the sensor pipe for 180 degrees.

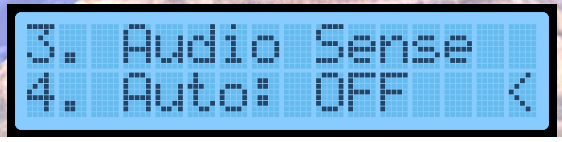
b) In case of „parallel" scanning method (set in pc software); walk back and stand on first row of next column.

Repeat from „3)" till „6)" until the whole matrix finished.

To switch off the „automatic" mode and put it in „manual mode", while in menu:



Press button and it will set and show:

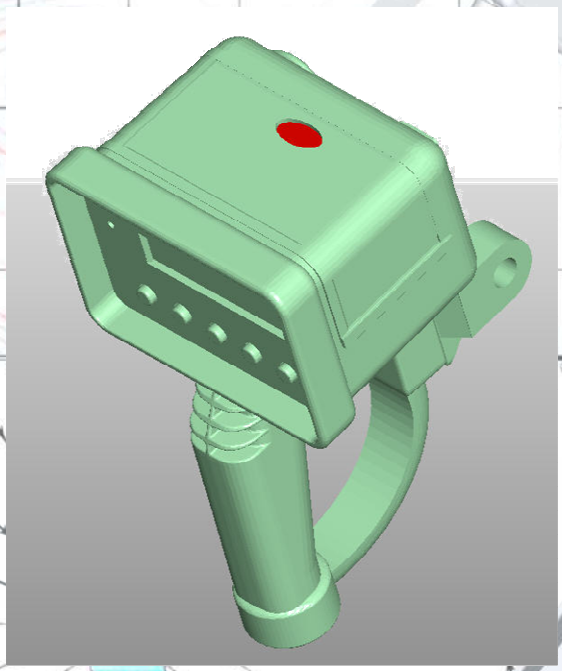


indicating that device is set to „manual" recording mode.

Notice

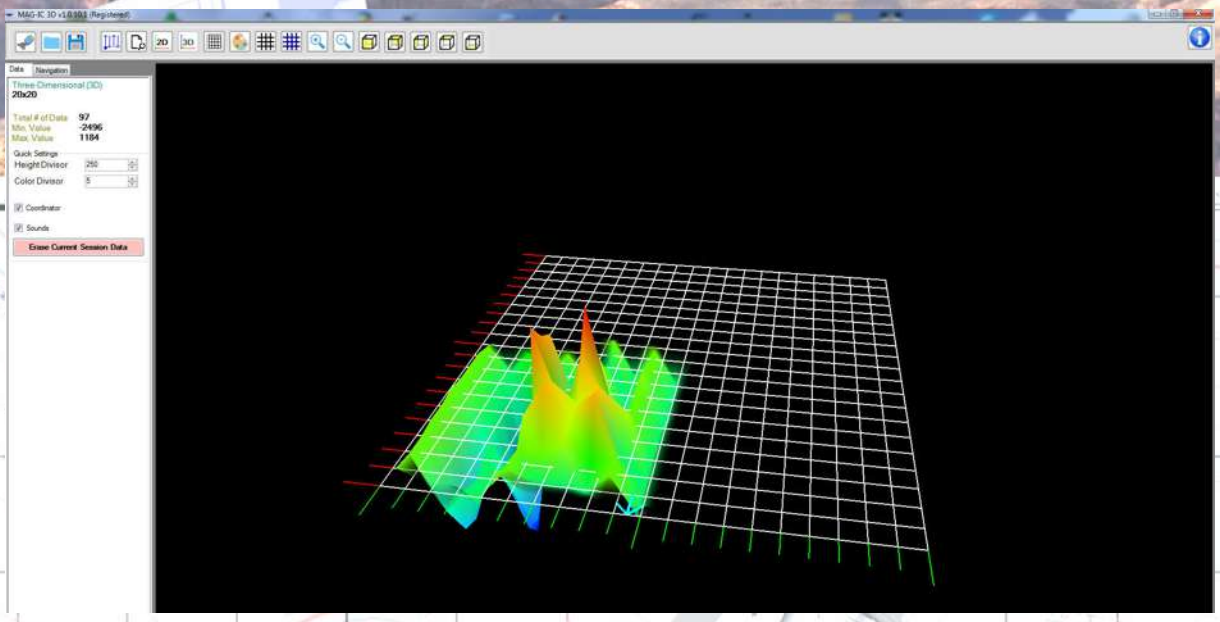
By default, „automatic" mode is set to ON when powering the device for the first time.

Charging window



Red = Charging
Green = Charged

EUROMAG 3D Windows PC software

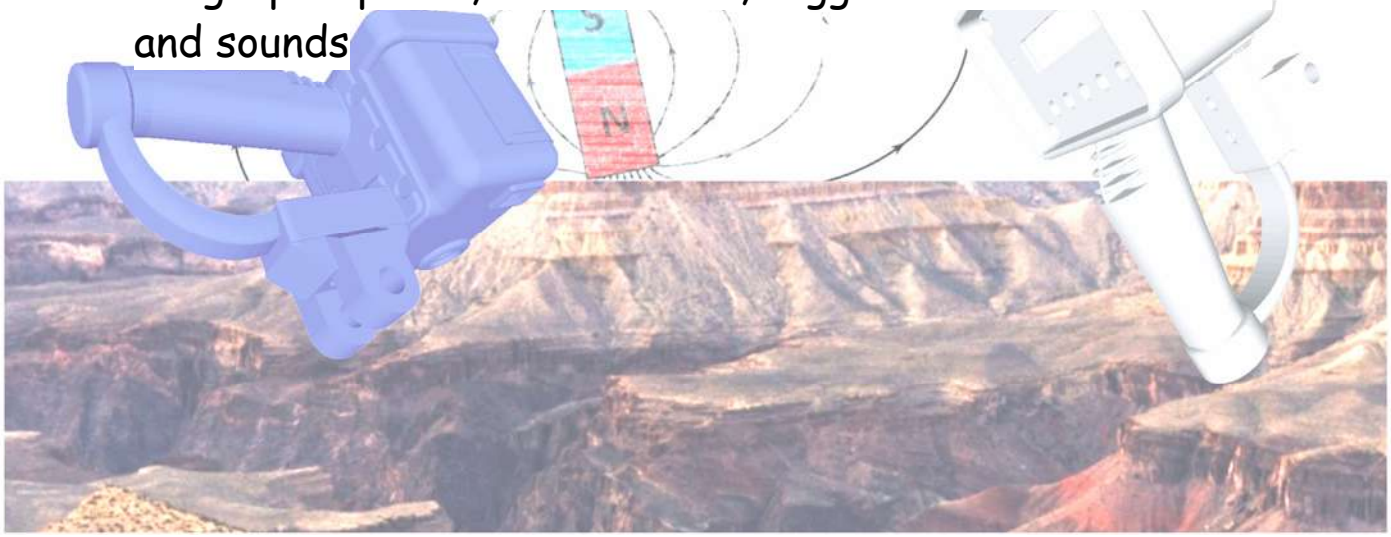


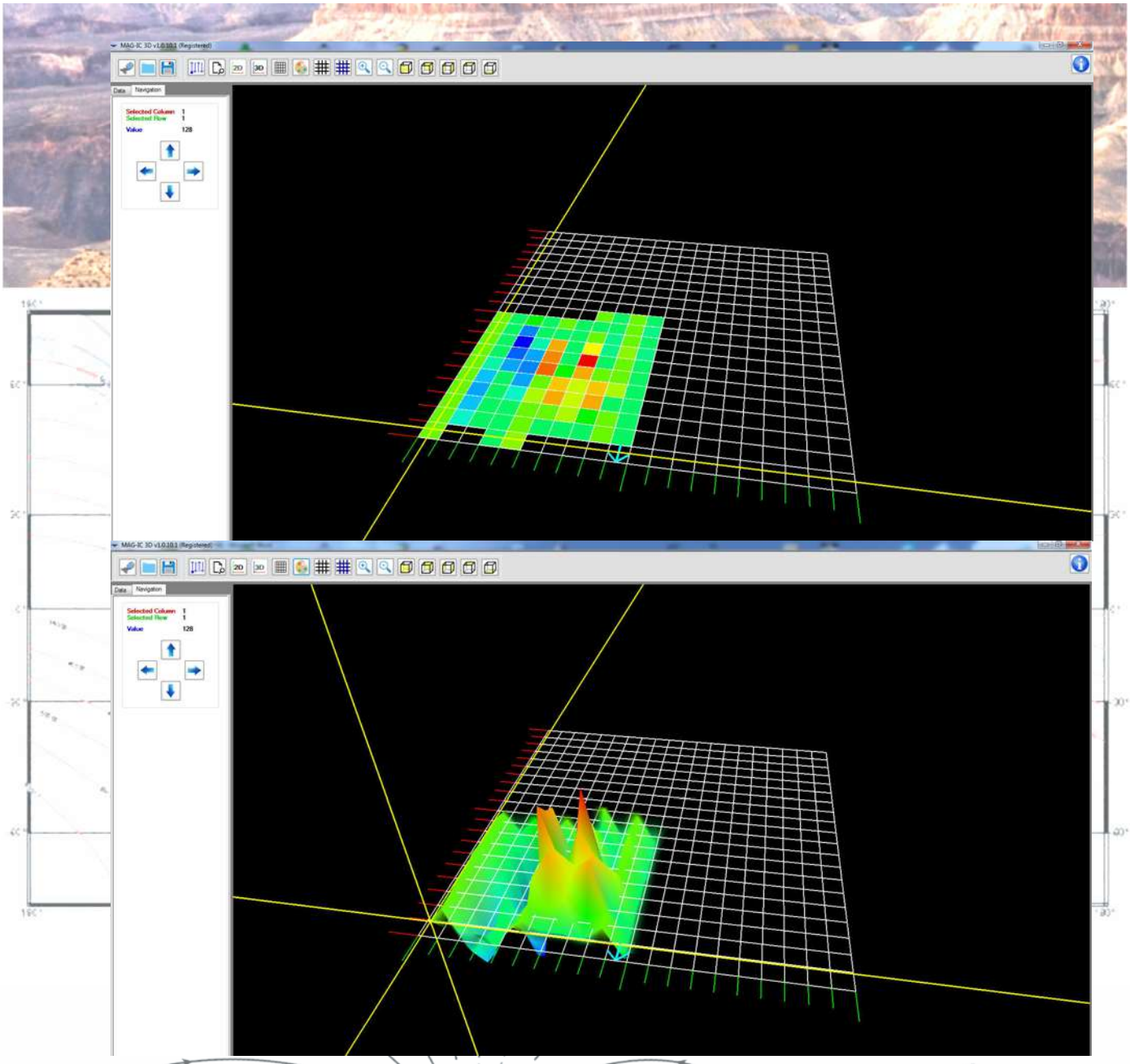
With EUROMAG 3D, you can view your terrain recordings in two-dimensional and three-dimensional graphic representations.

Load a recorded sample from a file or record it live by establishing communication between your device and the software.

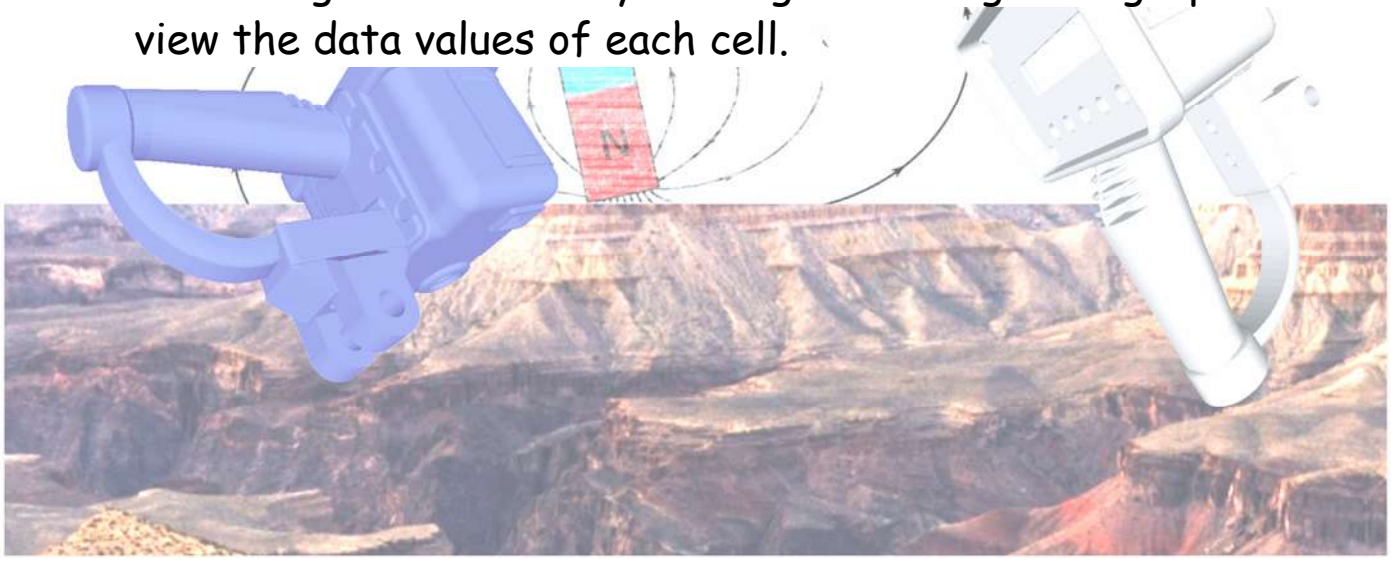
The graph is simple and can be customized for better appearance of your preference.

Use the quick settings tab to adjust proper height of the 3D graph's peaks, color divisor, toggle coordination arrow and sounds





The Navigation tab lets you navigate through the graph and view the data values of each cell.

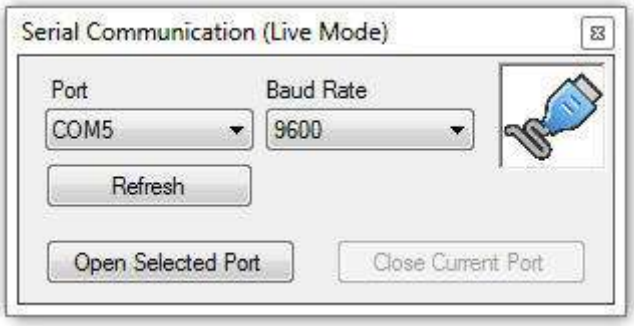


Tool bar

This is the main tool bar.

Serial Communication (Enter Live Mode)

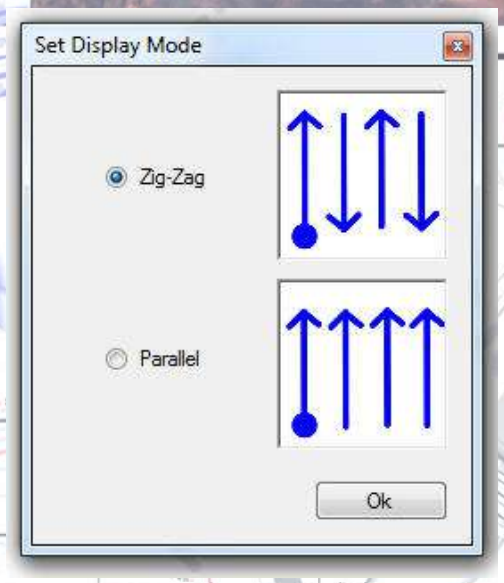
This will open a window for listing available Ports and opening them which will allow your software to communicate with your Bluetooth module.



Choose the port of your Bluetooth device that you've connected to your computer from the dropdown list and Open it which will put the program in Live Mode from where you can start recording your device's data or transfer already recorded files from your device to pc software. After you're done, you can either Close it from here or just exit the program.

Scanning method

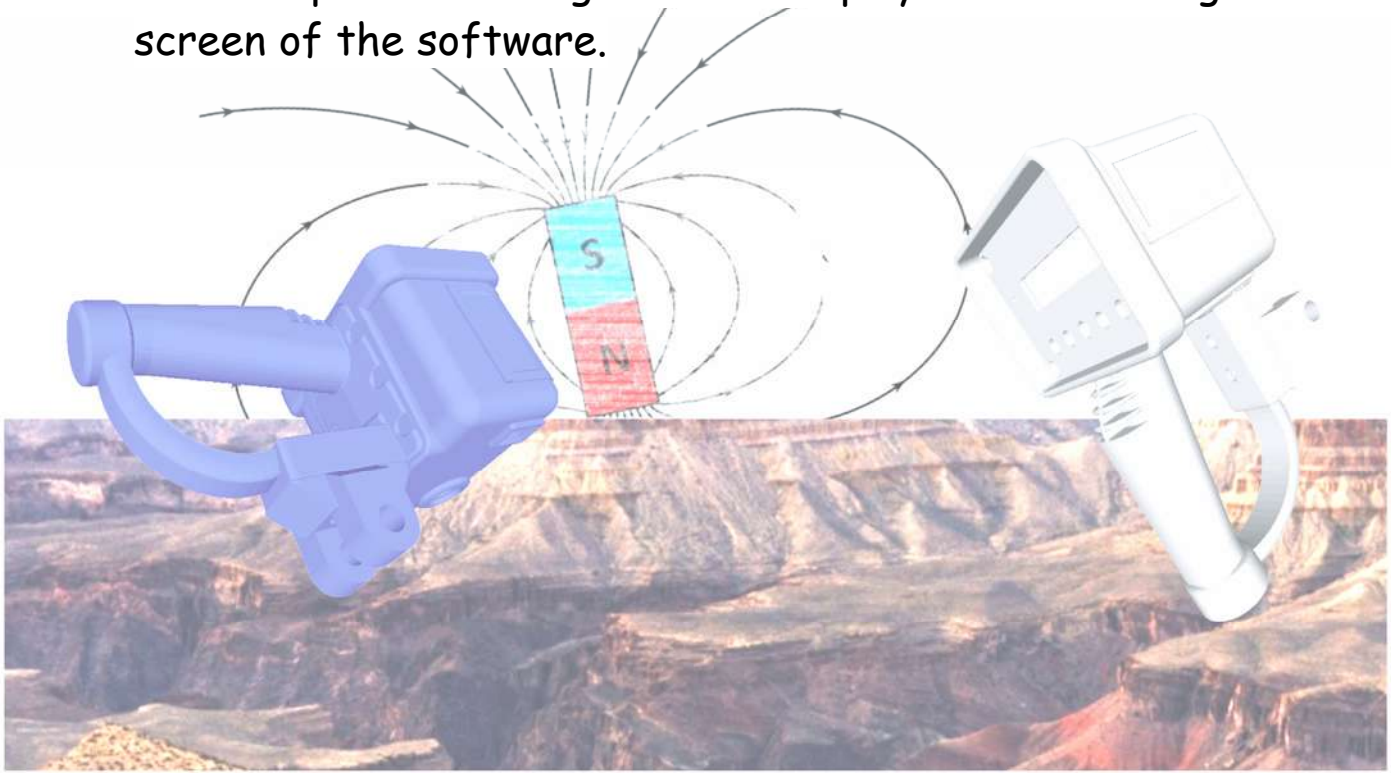
This will open a window:



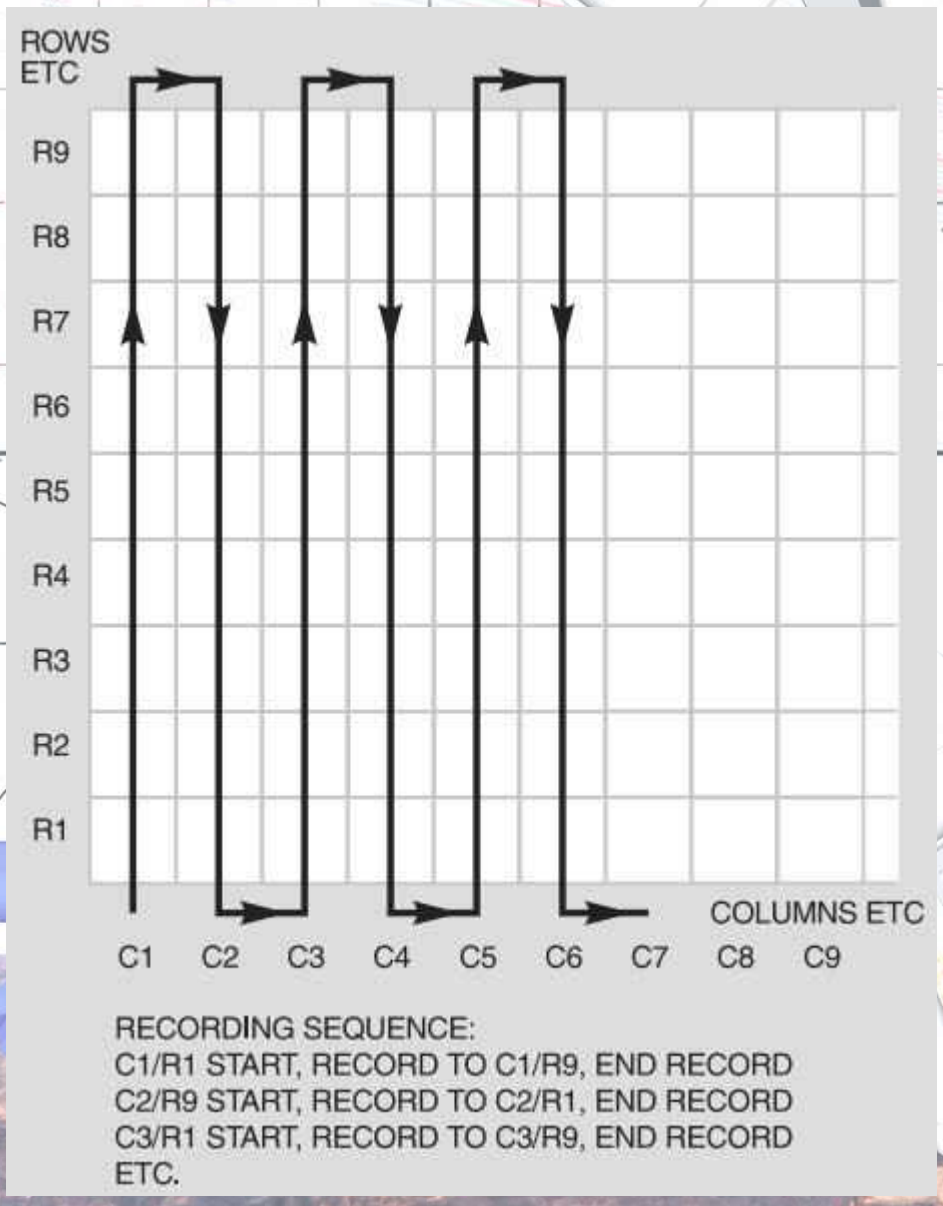
Offering you to choose between two scanning methods:

1) **Zig-Zag scanning method**
2) **Parallel scanning method**

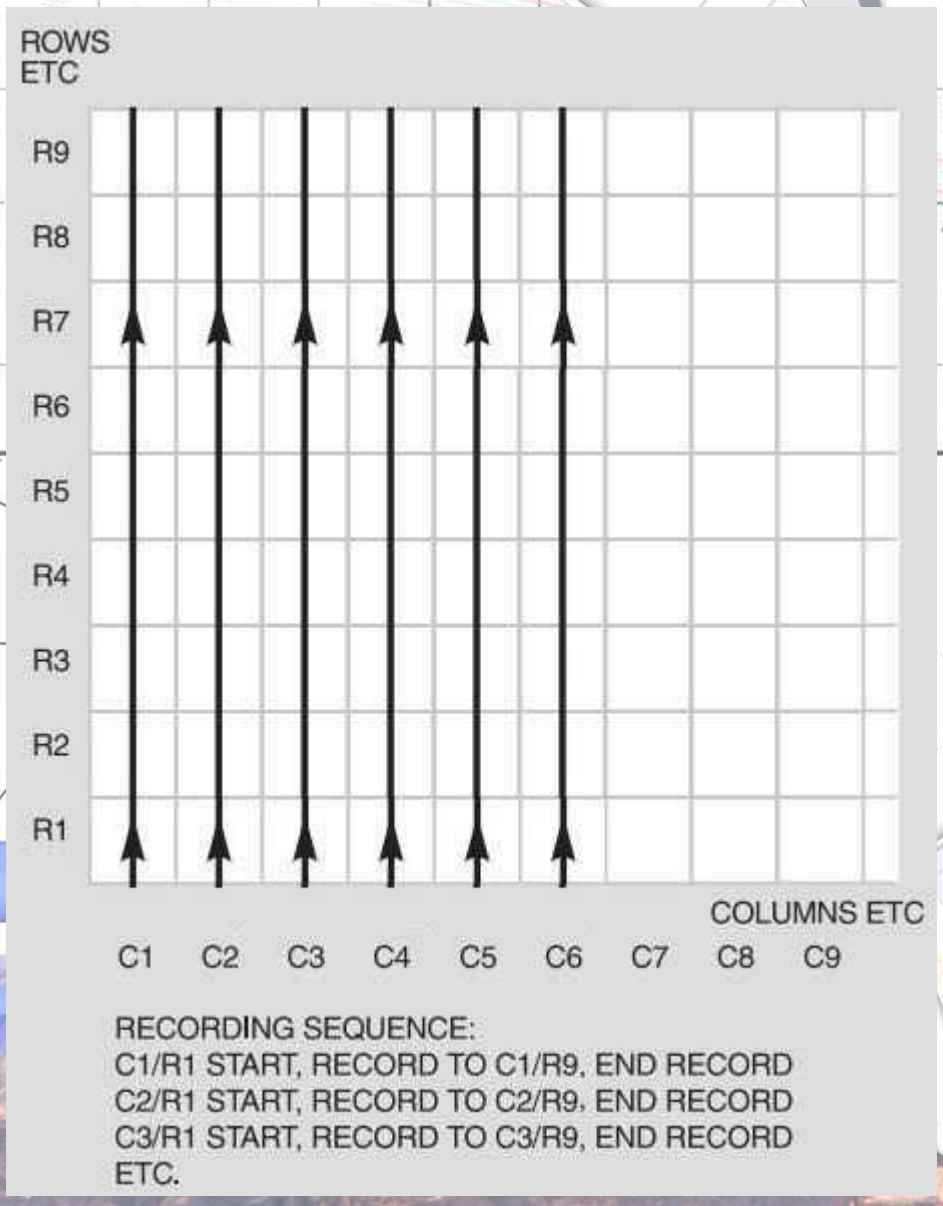
It sets up the data organisation display on the working screen of the software.



"Zig-Zag" method means that after you finish recording the current column by pressing the button: you will immediately step into next column, **turn for 180 degrees, manually rotate the sensor pipe for 180 degrees back** (to maintain the same pipe orientation as it was in last column) and than start recording the column by pressing the button.



„Parallel" method means that after you finish recording the current column by pressing the button:
you will walk back to the first row on matrix and step into next column (**not turning for 180 degrees and not rotating the sensor pipe**) and than start recording the column by pressing the button.



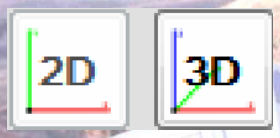
Open File / Save to File

Open a **.mag3d** format file that contains saved data and load it into your current session or save your current session to a file.

View data table

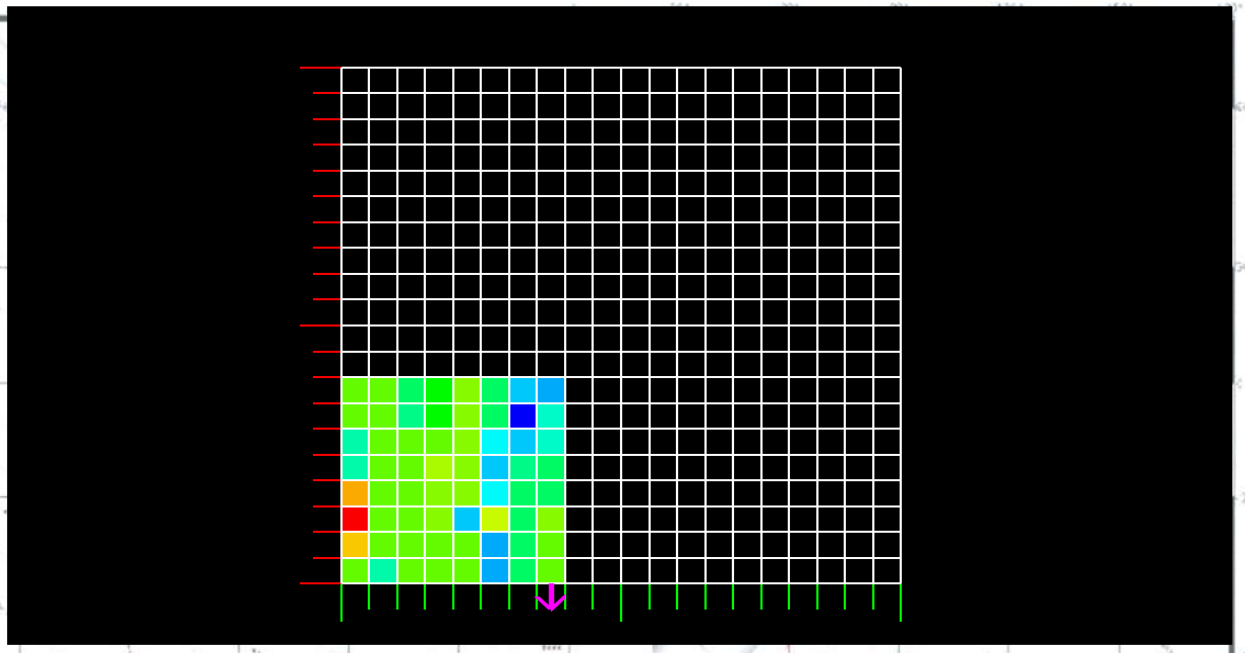
View the current session data in table form. The table is made of Rows and Columns like the graph, in current set Matrix Size and represent the data values.

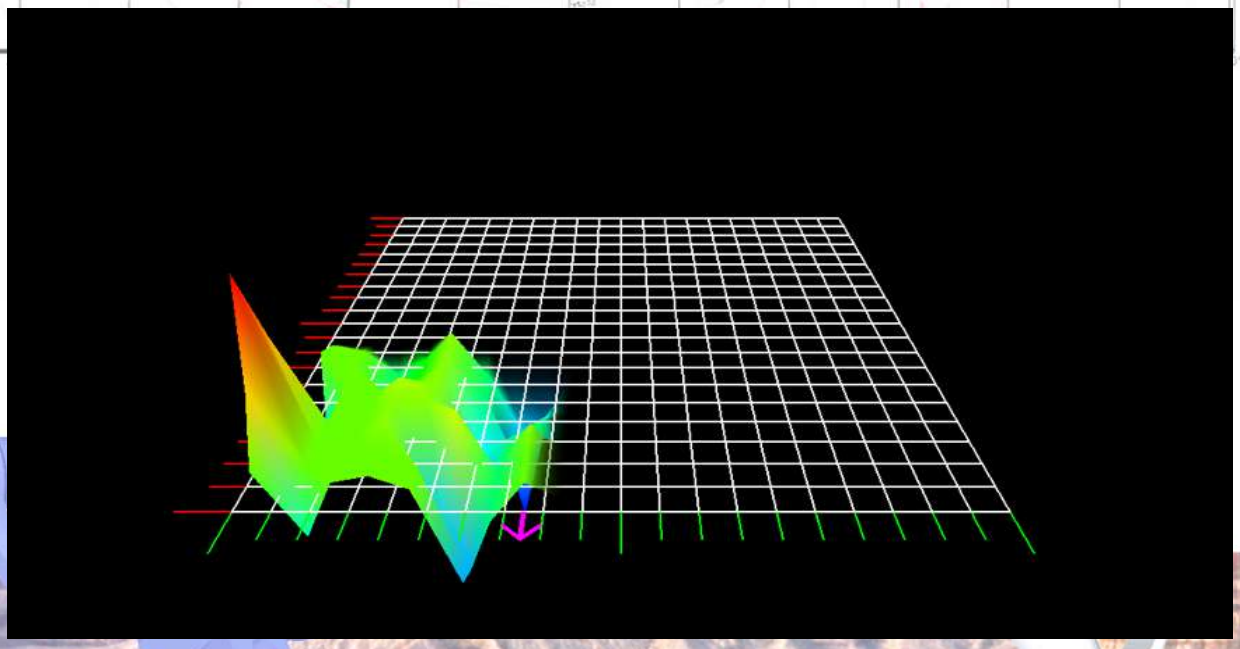
	1	2	3	4	5	6	7	8	9	10
1	256	768	1568	896	-416	-384	256	160	-	-
2	-384	96	96	96	96	128	128	96	-	-
3	160	160	64	32	32	32	-320	-160	-	-
4	224	256	320	320	352	32	0	0	-	-
5	96	64	-768	320	288	288	288	288	-	-
6	-896	-1056	416	-608	-768	-608	-192	-160	-	-
7	-224	-224	-224	-256	-288	-736	-1696	-832	-	-
8	160	224	288	-128	-96	-448	-448	-960	-	-
9	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-



Toggle View (2D and 3D)

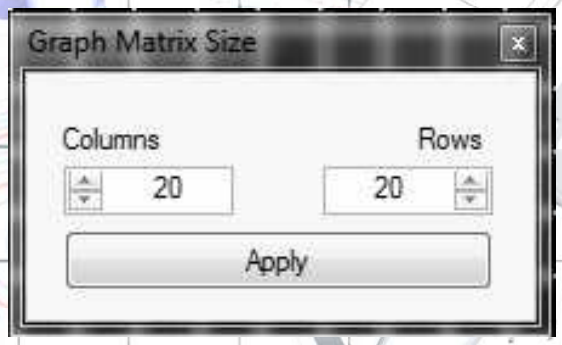
The graphic representation of your data can be represented in two and three dimensions.





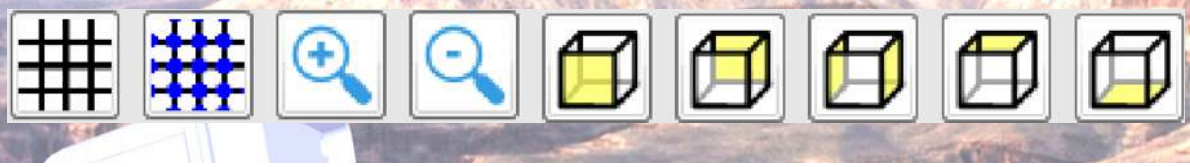
Matrix Size

Determine the size of your graph in Rows and Columns (Red axis and Green axis). The size of your graph defaults is 20x20, can't be smaller than 6x6 and greater than 40x40. This is used to determine how many matrices can be seen at an instance, you can load up to 1600 data maximum (40x40).

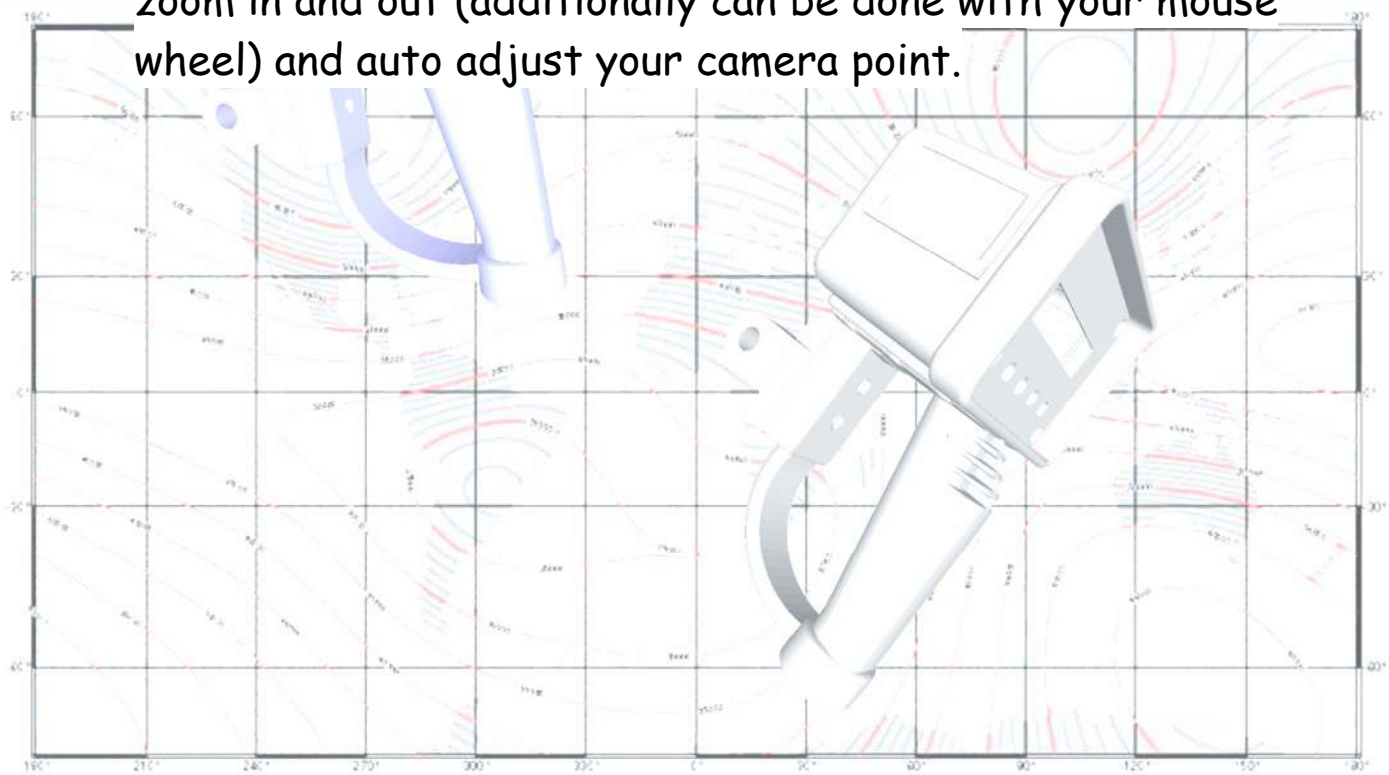


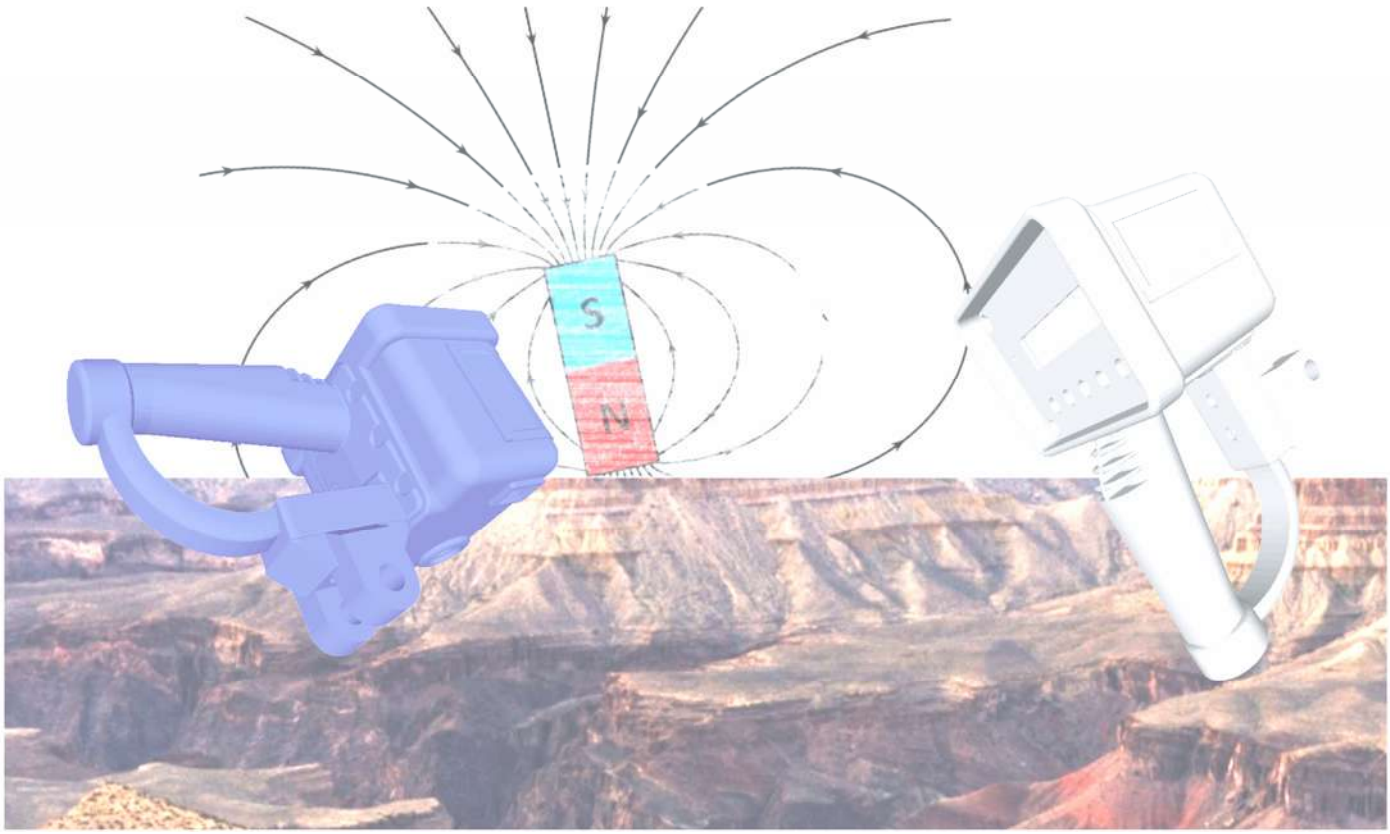
Palette

You can set different color combinations for your graph.



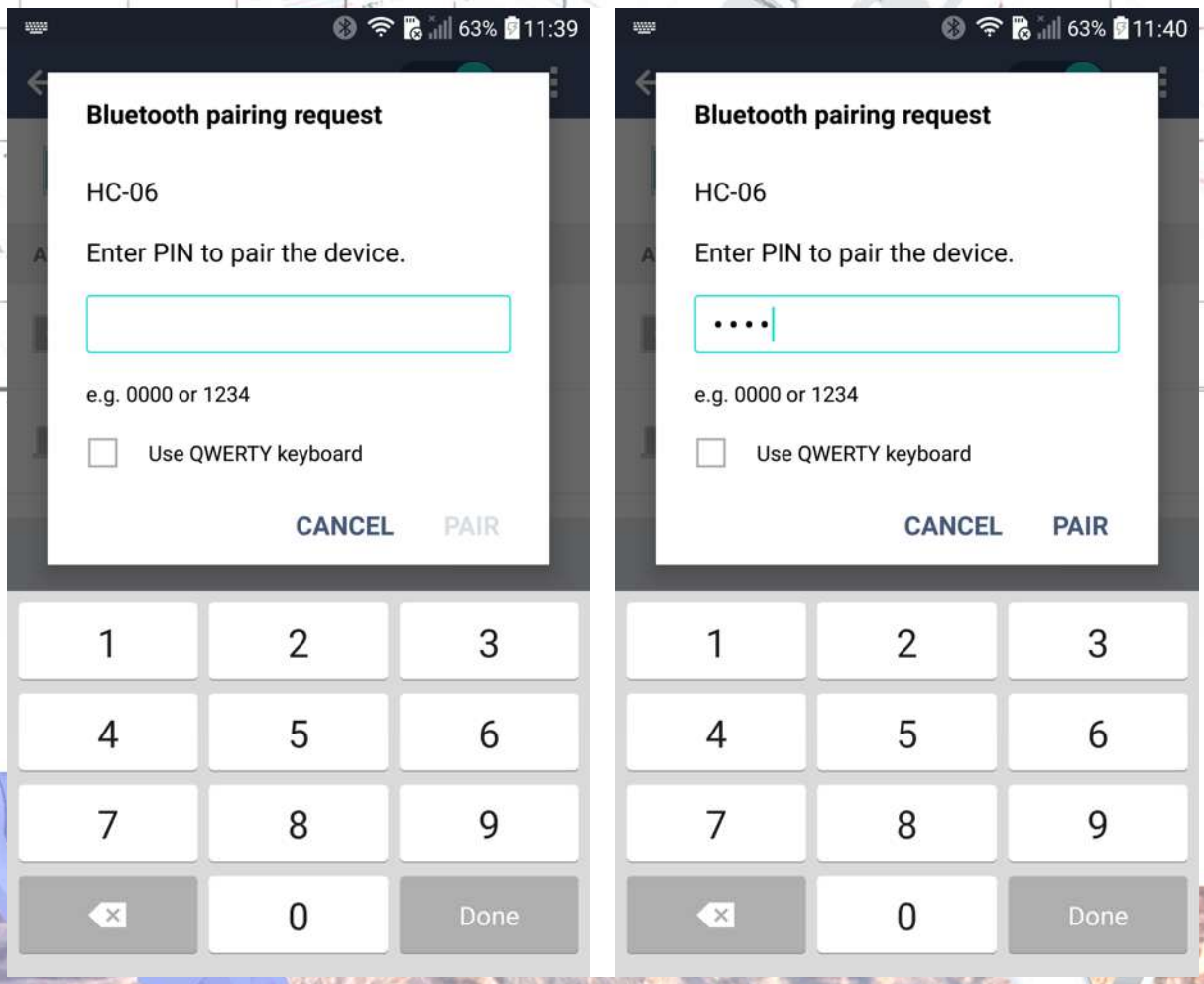
You can hide the grid and only show the "mesh" of your data, show points of the 3D geometry for better coordination, zoom in and out (additionally can be done with your mouse wheel) and auto adjust your camera point.





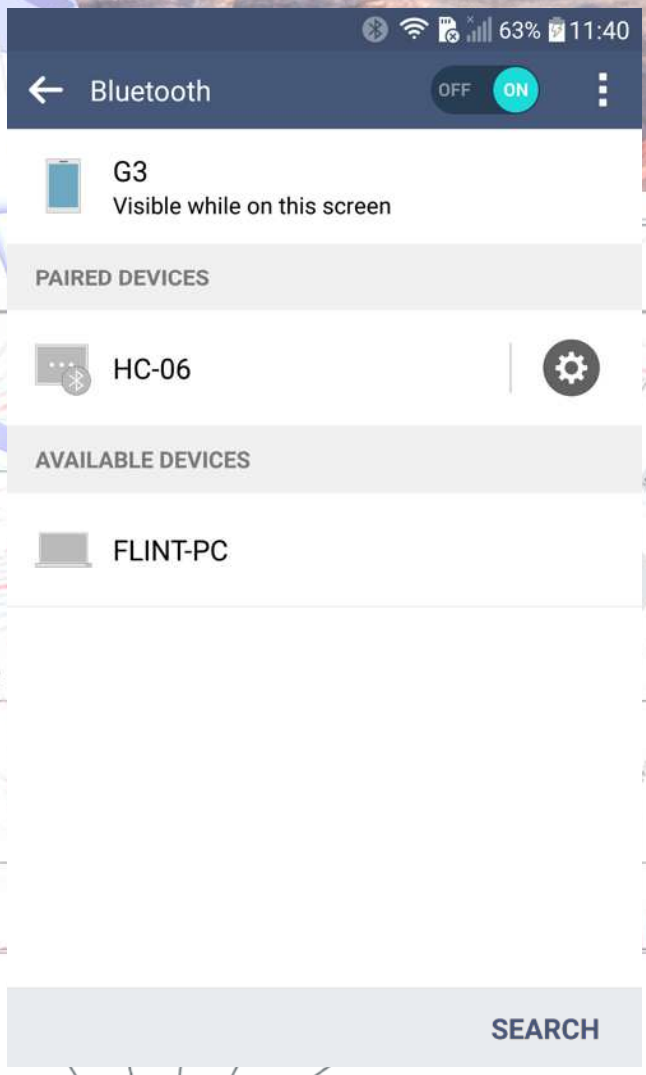
EUROMAG 3D Android application

In order to use magnetometer with Android application; first you have to connect magnetometer through the BT connection with your Android device.
Turn ON the magnetometer.
Enter the Settings on your Android and go to BT (Bluetooth) section of the Settings.
After a while magnetometer BT will appear in the list of BT devices. Tap on it. Choose "Pair" option.



It will ask for PIN (password). Type 1234 and than tap on PAIR.

Moment later it will appear in list of paired devices.

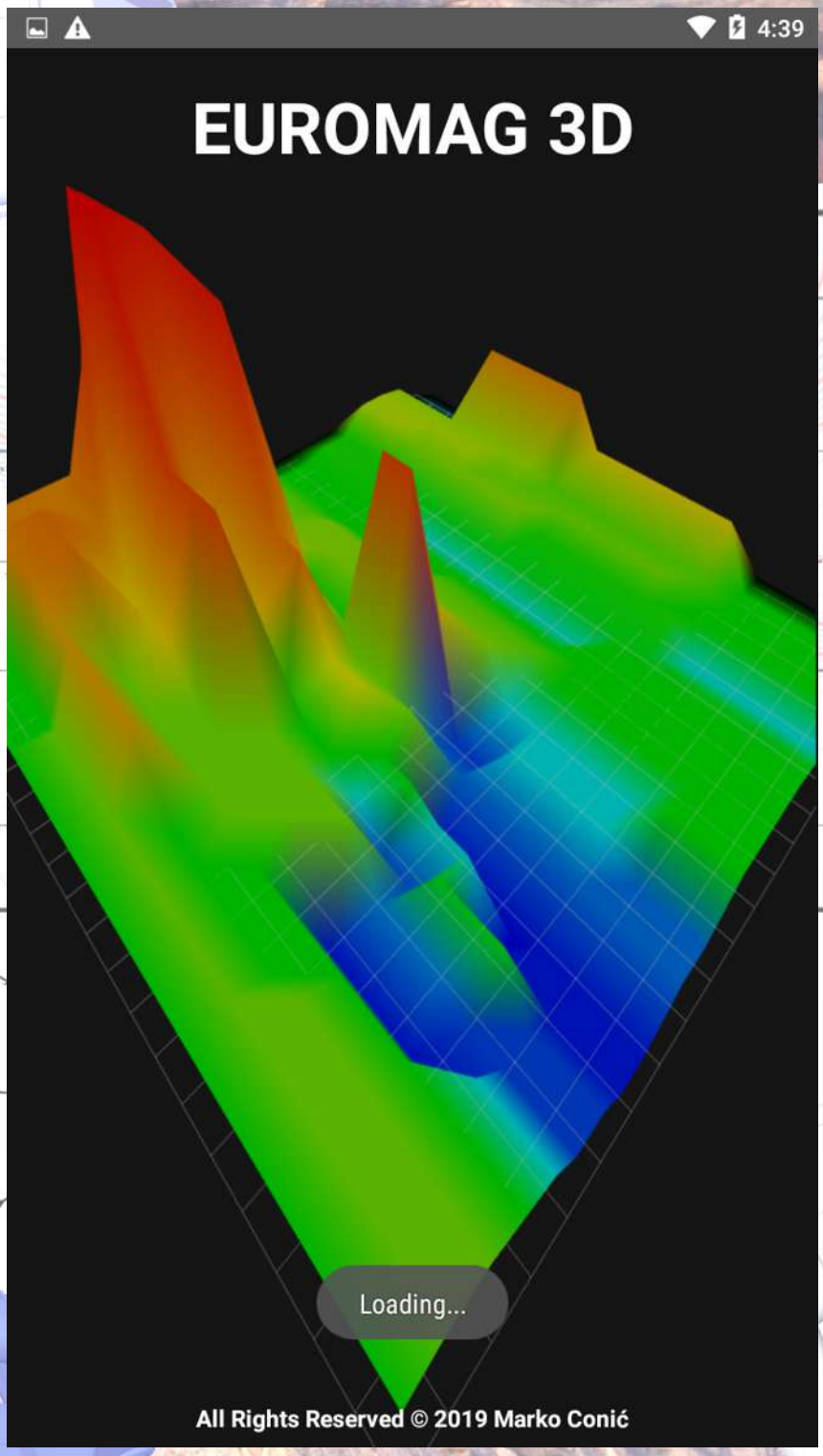


Now you can exit the Settings on Android device.
Magnetometer is "paired" to Android device on system level.
This part of connecting with the magnetometer you will have to do only once, initialy, at first use.

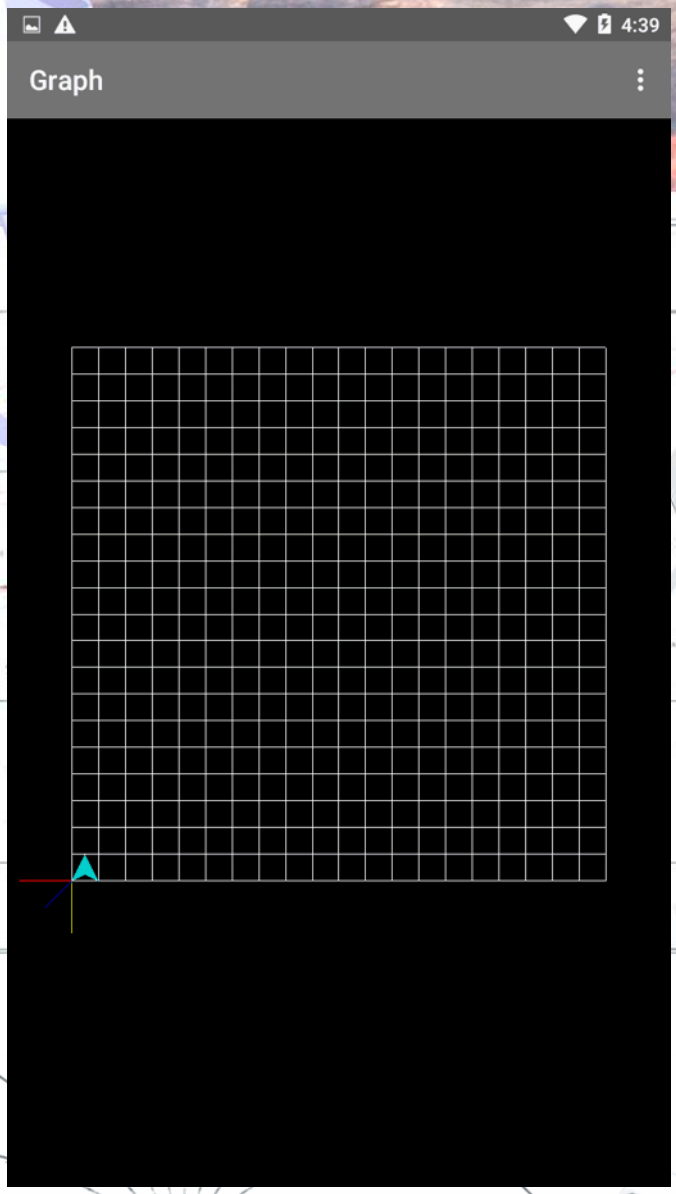
Notice

Android devices along with Android versions may vary in some details which will be displayed during this process.

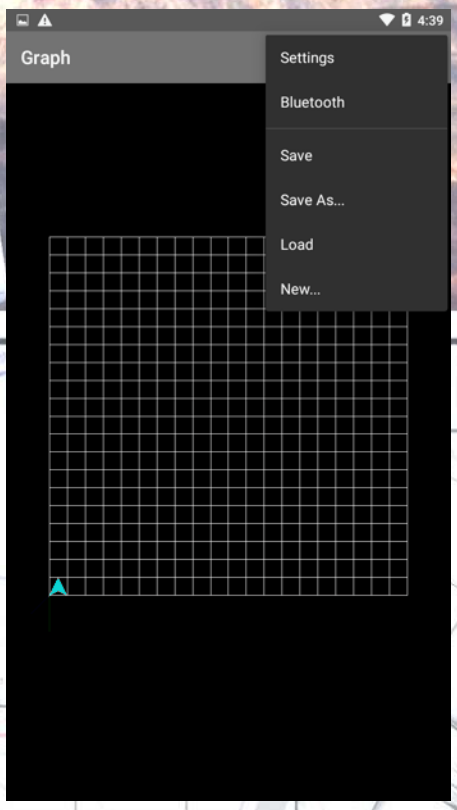
Now start the application:



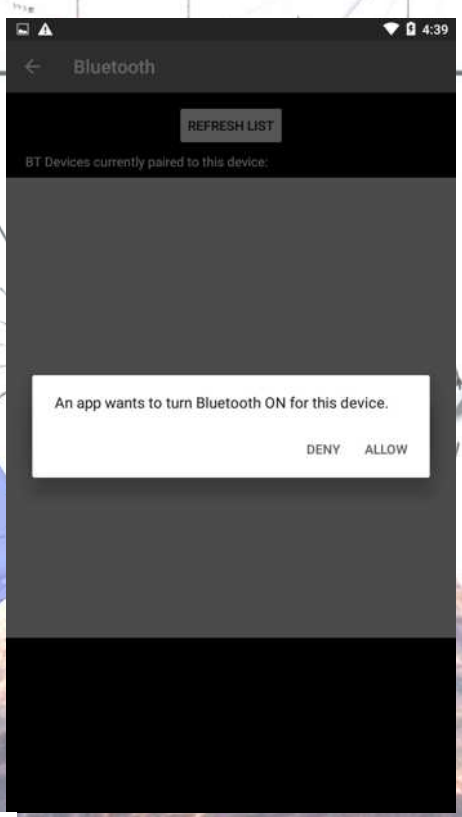
Main working screen will appear shortly:



First thing to do is to connect the software through already established connection of the BT with magnetometer.
There are 3 dots on upper right part of the screen.
Tap on them once.

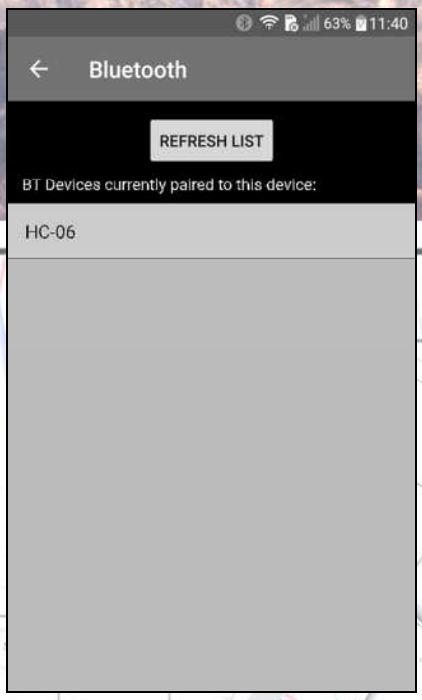


Drop-down Menu will appear. Tap on Bluetooth option. In case BT was switched off on your Android device; it will ask :

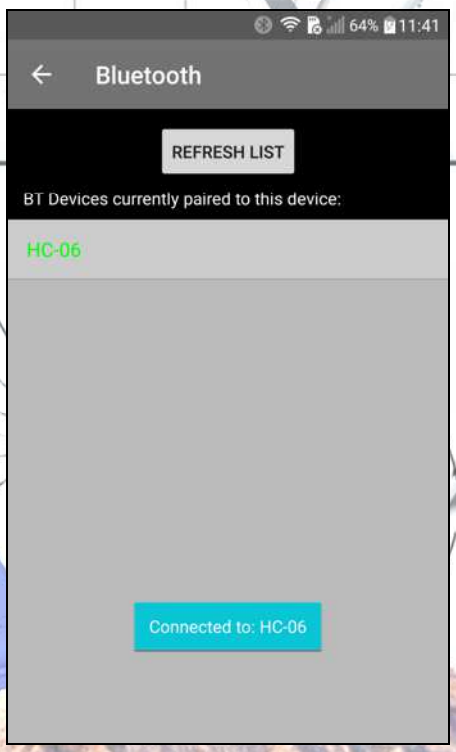


Simply tap on ALLOW.

Application will than show available BT devices:



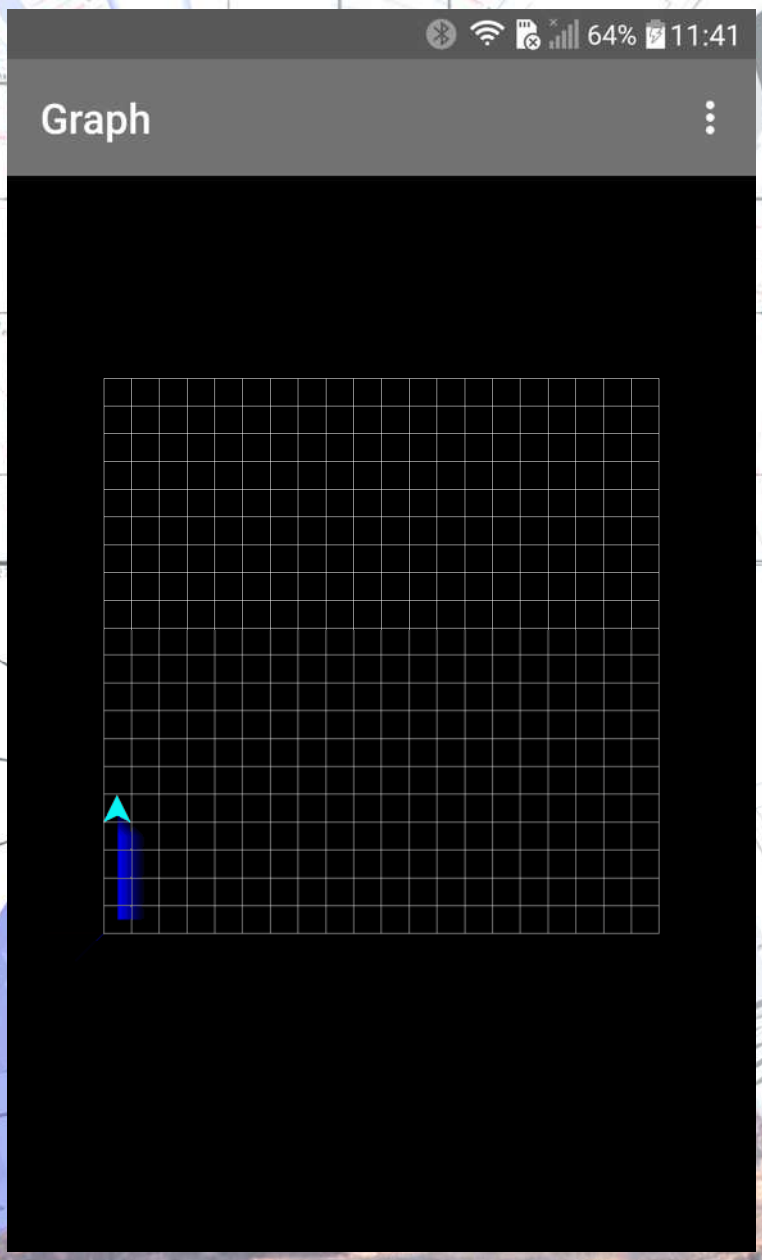
Shortly ONLY ONCE tap on HC-06 and wait.



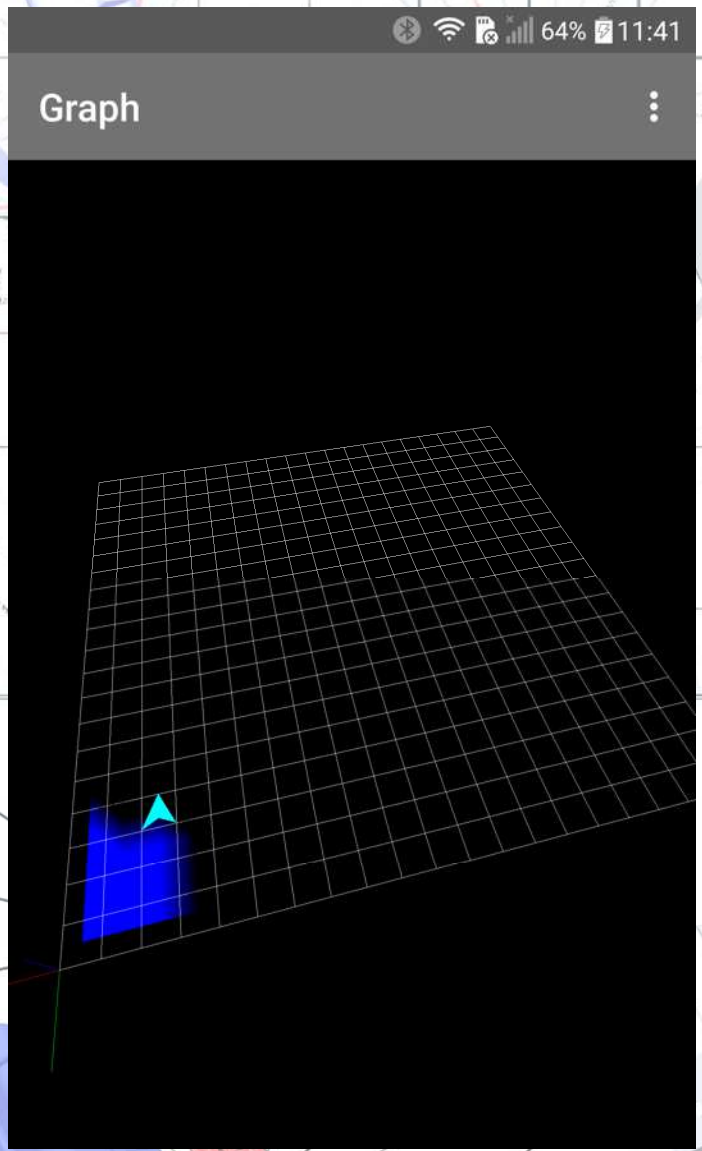
HC-06 will turn to green; HC-06 and at lower center part of the display it will write "Connected to: HC-06"

Back to main working screen with tapping on left arrow at the upper left part of the display.
Magnetometer is now directly connected to Android software in "Live mode".

If you press the button on magnetometer and take the sample; you can see the samples immediately displayed on the Android display, properly organized in matrix.

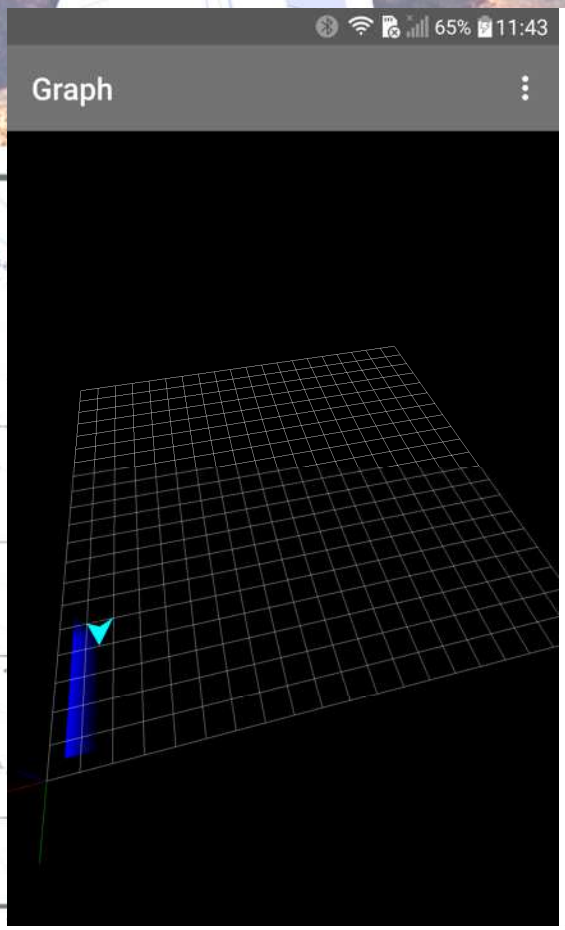


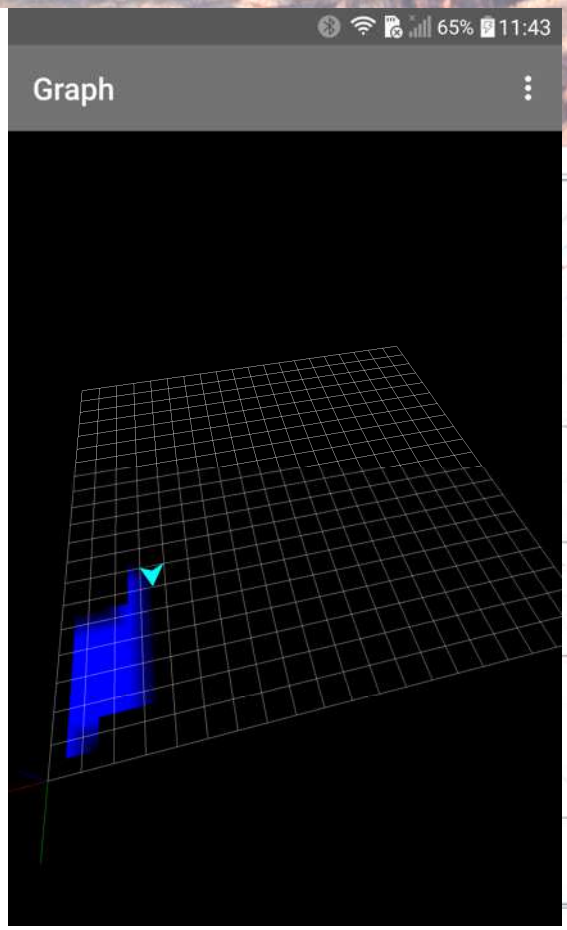
If you press the button on magnetometer; you will notice the change of current comun (COLUMN+ explained earlier). Further pressing on the button will store and display next samples in current column.

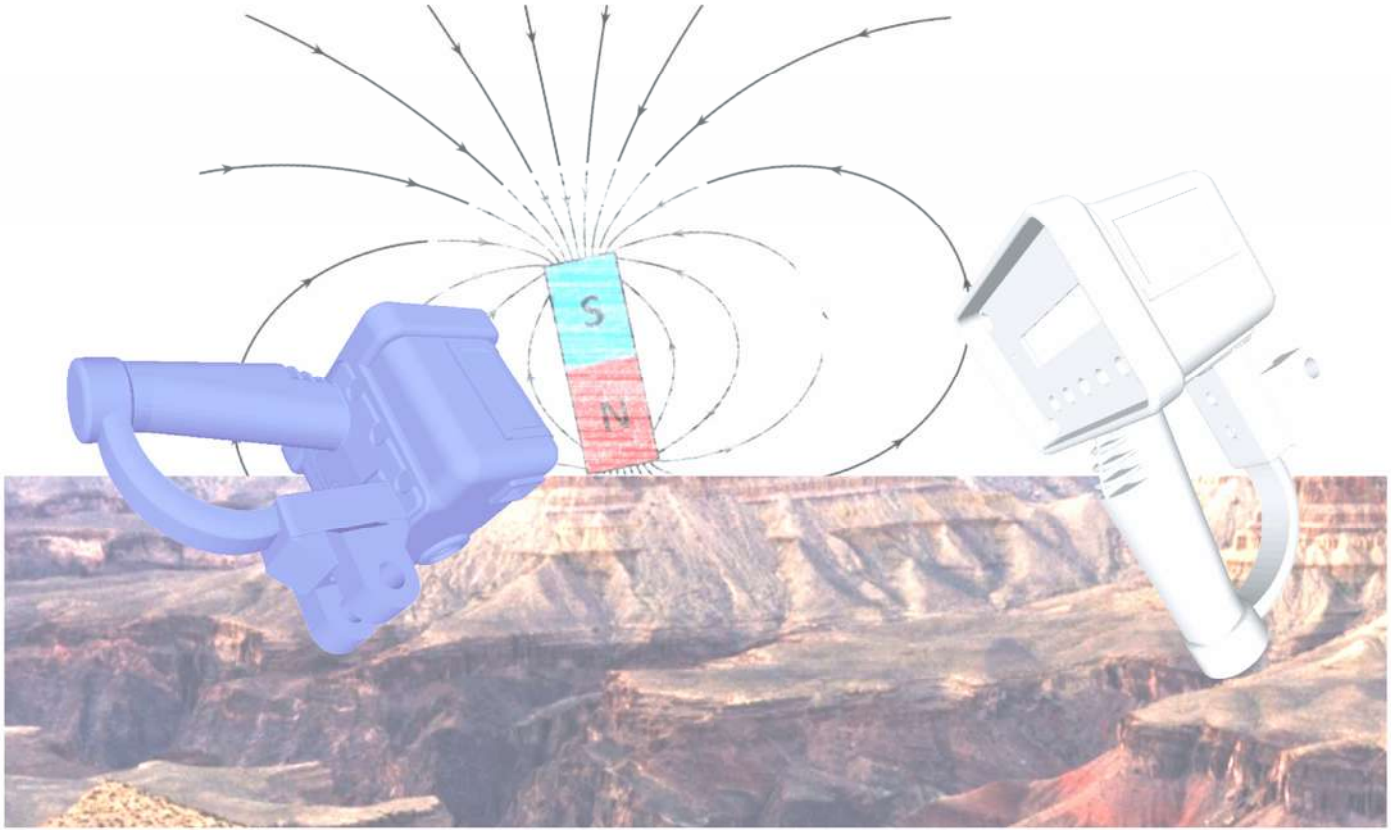


In this example in "Parallel" scanning mode fashion.

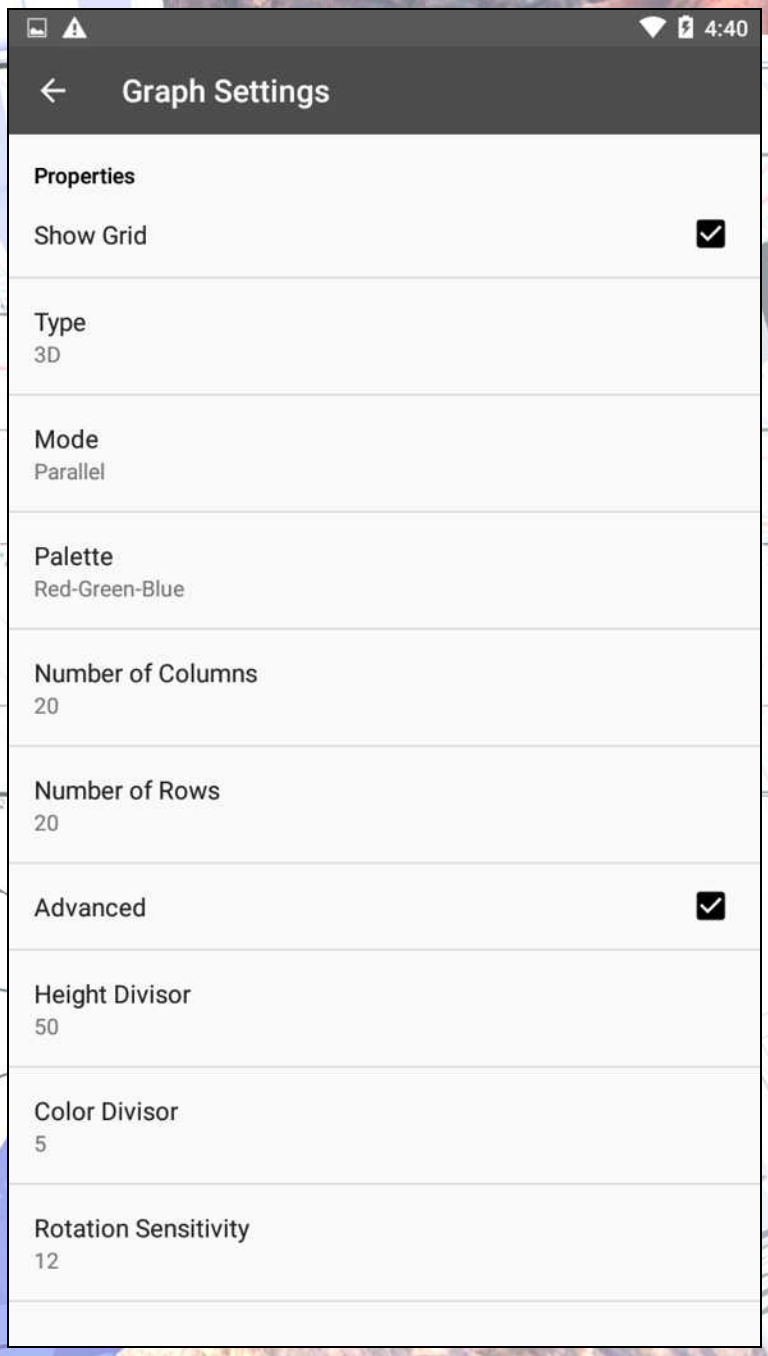
In "Zig Zag" scanning mode; the sampling will look like this:





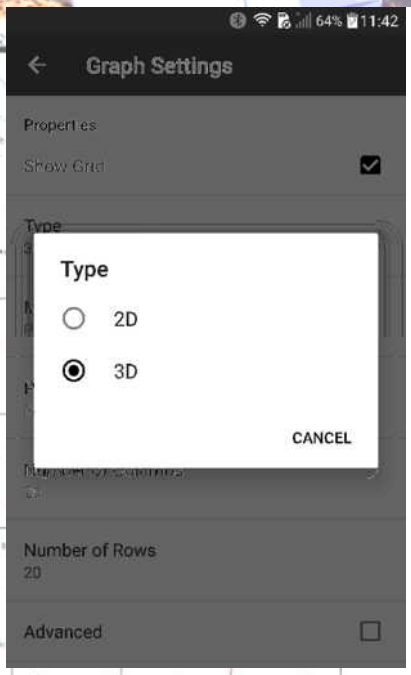


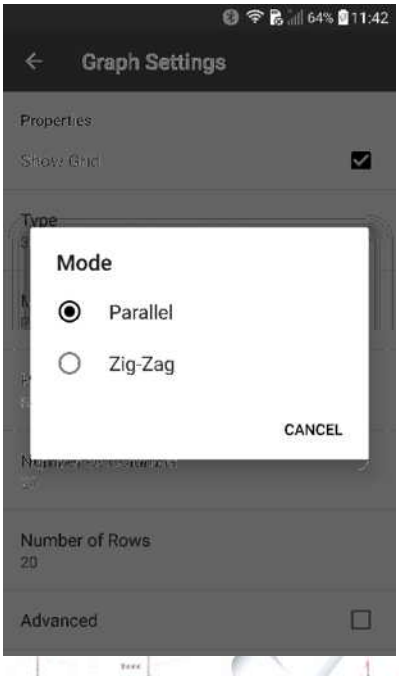
There are 3 dots on upper right part of the screen.
Tap on them once. Again drop-down will appear.
Tap once on Settings at the top of the list.

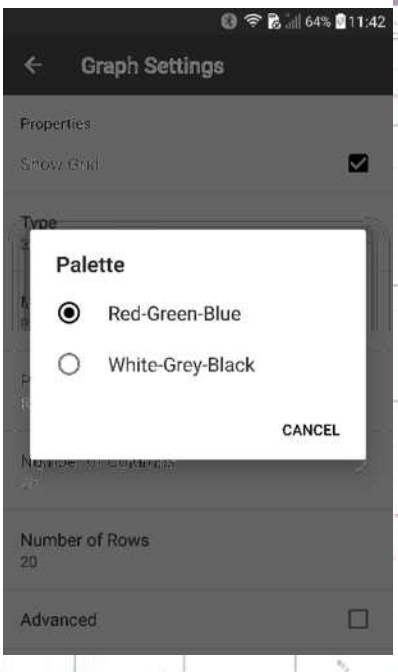


New menu will appear with other options which you can change and adjust further.

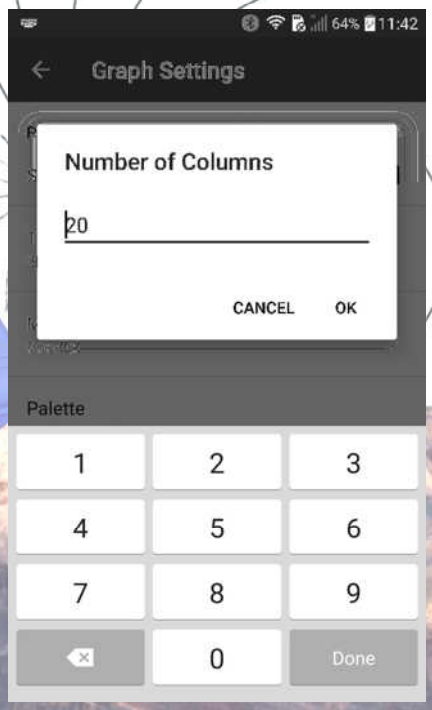
Options are pretty much self-explanatory.
"**Show grid**" will turn On or OFF the grid on main working screen.
"**Type**" allows you to pick between 2D and 3D display on main screen.
"**Mode**" allows you to pick between "Zig Zag" and "Parallel" scanning methods.



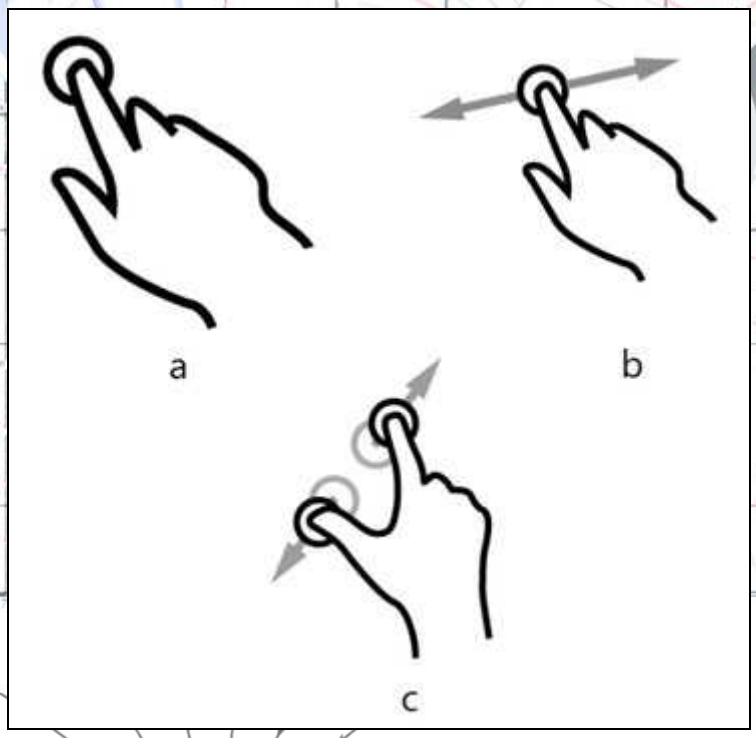


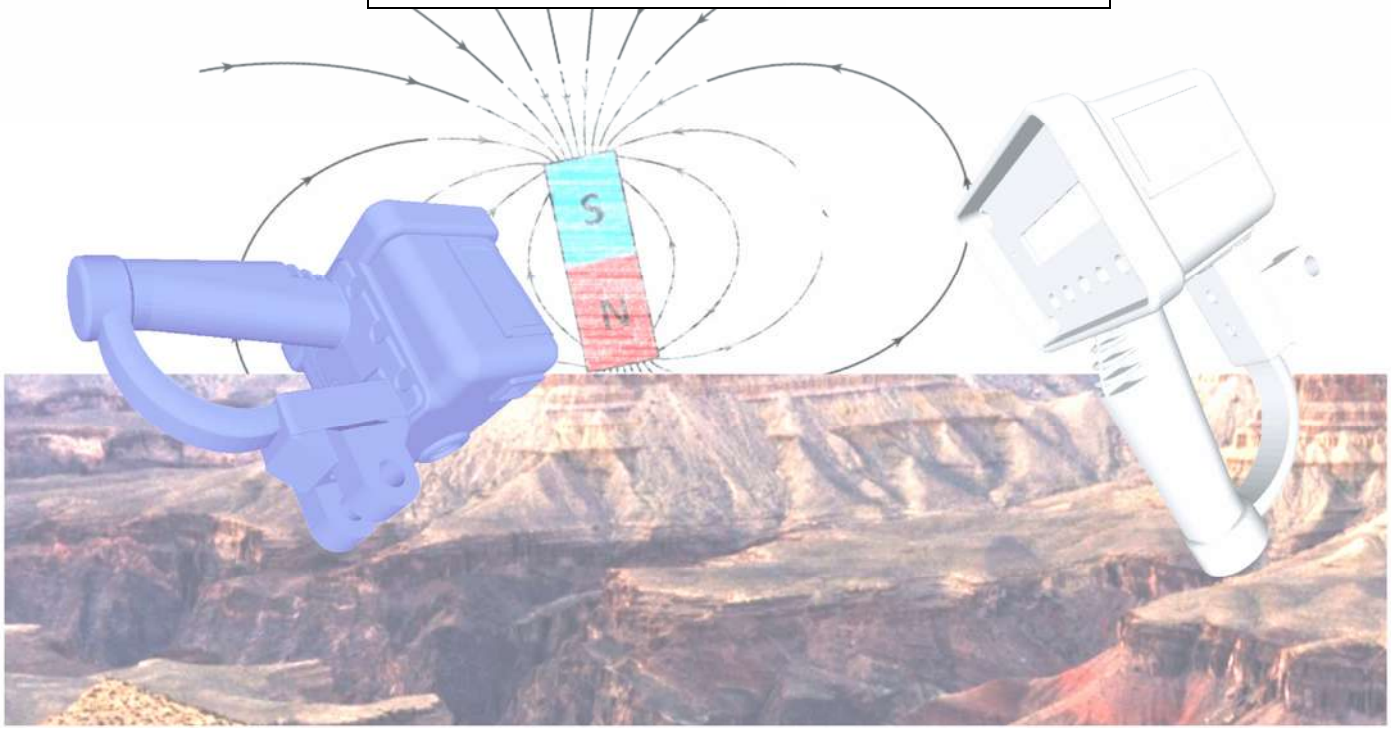


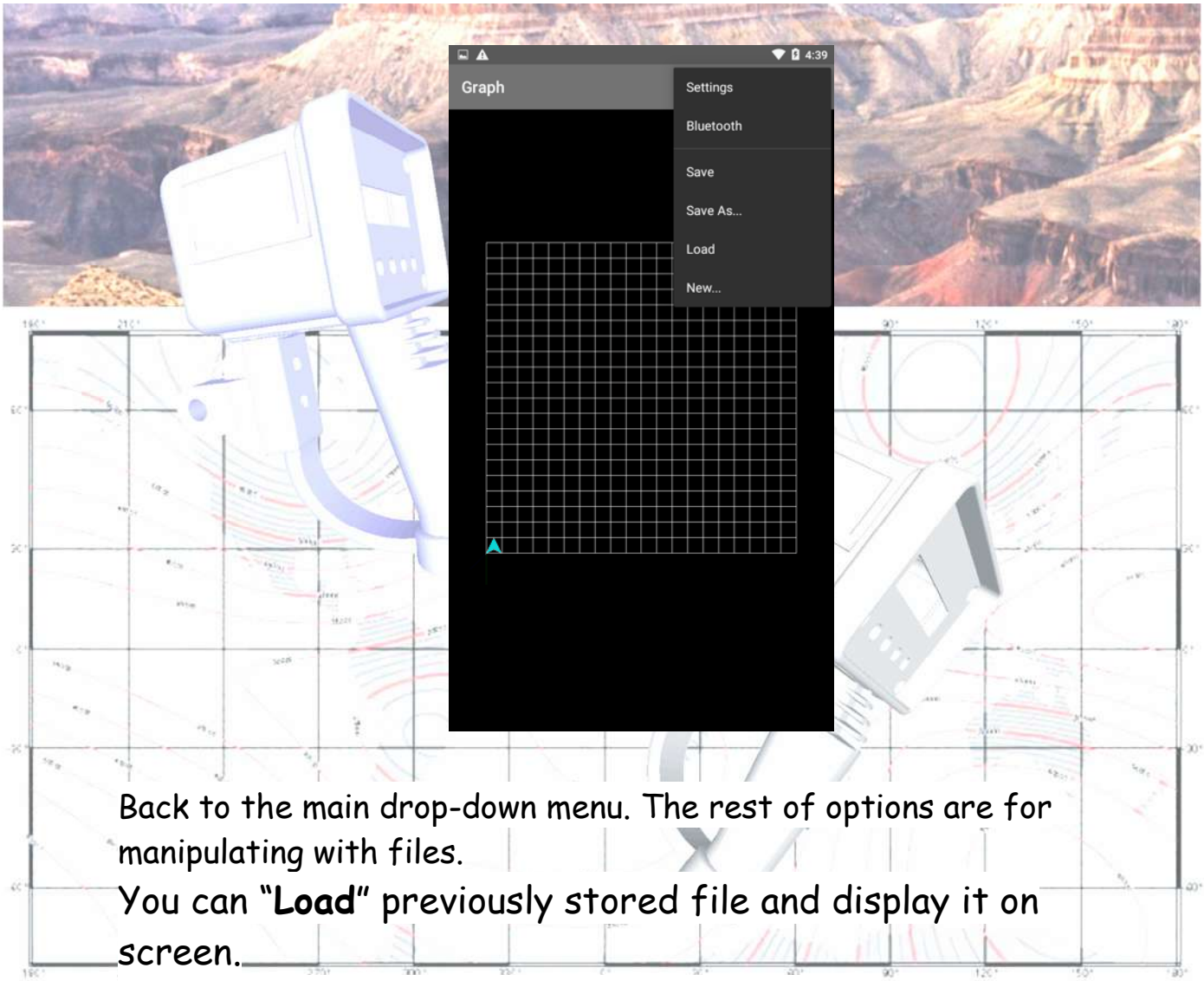
"**Pallete**" allows you to switch between available color palletes.
"**Number of columns**" allows you to adjust number of columns.
"**Number of rows**" allows you to adjust number of rows.



If Advanced options are activated;
"**Height divisor**" will alow you to adjust and adapt displaying of singal amplitude.
"**Color divisor**" will allow you to adjust between different color schemes.
"**Rotation sensitivity**" is to set the sensitivity of response when you **pintch**, **move** and **rotate** 3D content on the display with finger(s).





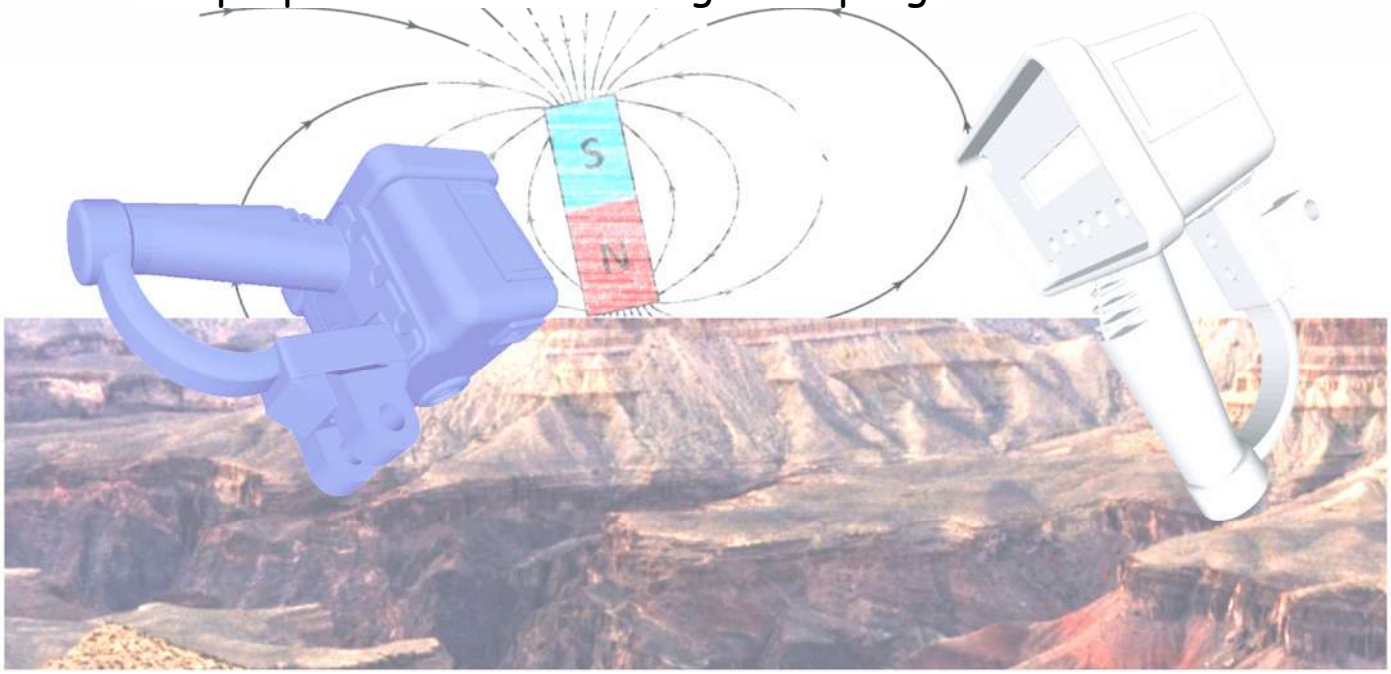


Back to the main drop-down menu. The rest of options are for manipulating with files.

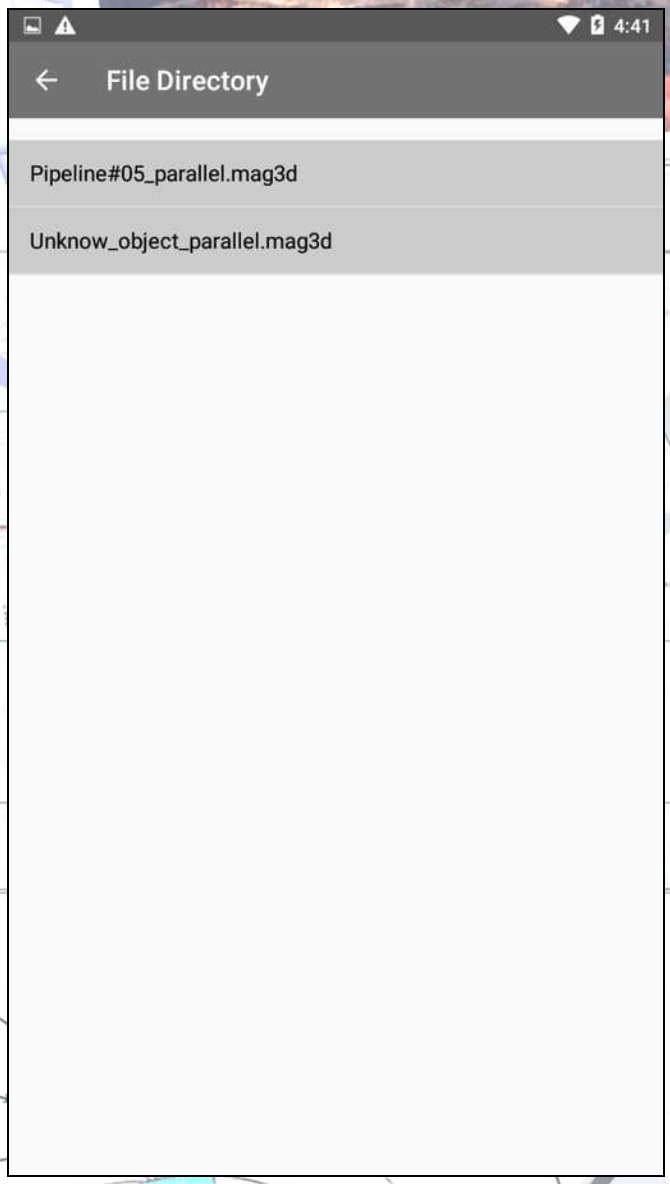
You can "**Load**" previously stored file and display it on screen.

You can "**Save**" current records in new file.

Option "**New**" will clear the content of main working screen and prepare for new scanning / sampling.

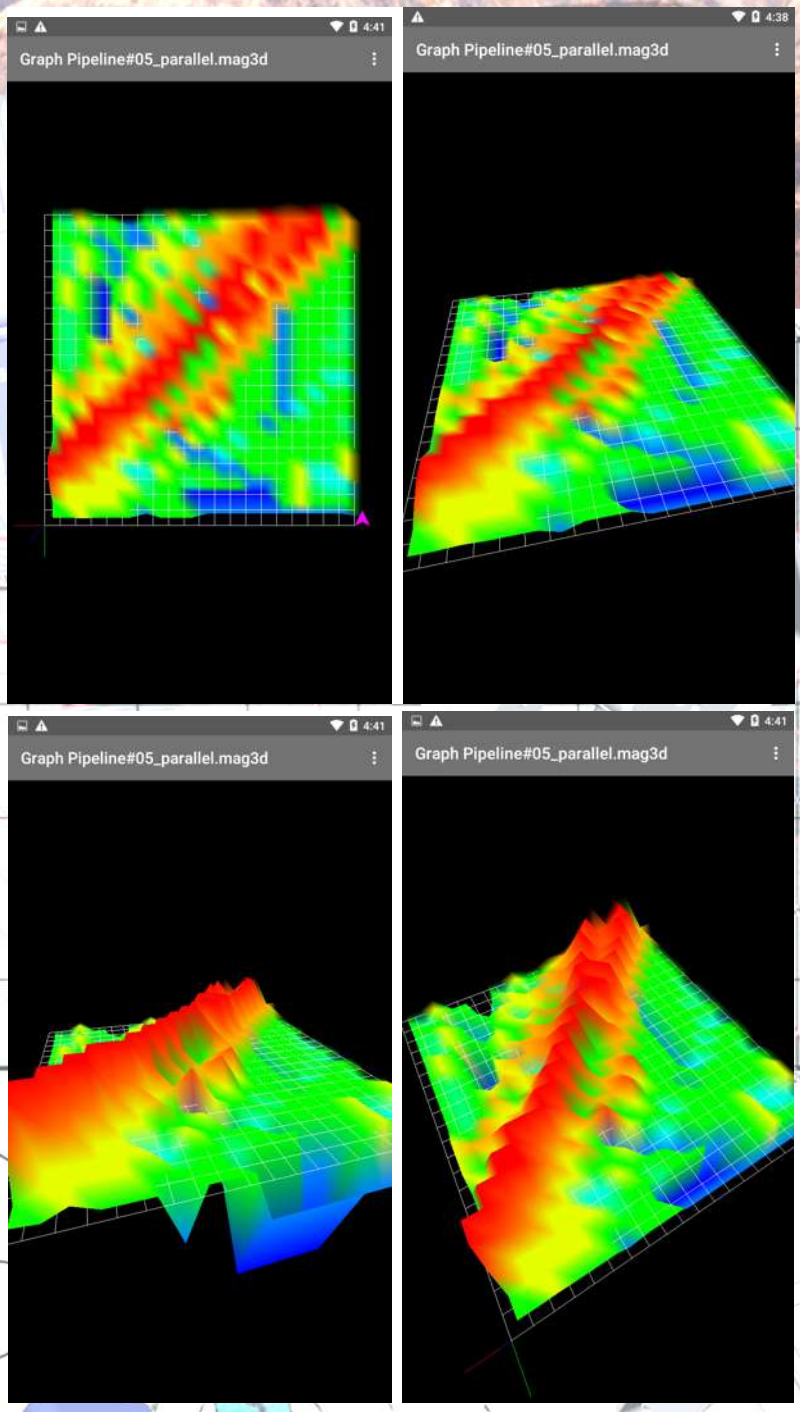


Tap on "Load" option and it will open new "File directory" screen, with listed all the existing files.



Tap once on the first file,
the "**Pipeline#05_parallel.mag3d**" to open it.
Since it is generated in "**Parallel**" sampling mode; before you load it: make sure that "**Parallel**" sampling mode is previously activated.

Moment later file will be loaded and displayed on the main application screen:



Now you can pintch, pull and rotate the display with fingers.
To be able to see all 3 dimensions of the record.
With previously mentioned options you can readjust the height (amplitude) and pallete of displaying.
With "**Show grid**" to **On** or **Off** you can show or remove the grid behind the records.

Once you finish the sampling (recording) the whole or only desired part of matrix; you can save collected data into a file.