GONIO RXG Installation and User Manual

List of contents

1. Highlights

The CLS Goniometer is a very highly sensitive direction finder that provides the direction as well as an indication of the signal power of an Argos transmitter for field recovery. It is fully compatible with Argos-1/2/3 low data rate BPSK transmitters.

It can be used with two types of antenna:

- the Goniometer antenna
- a BNC (Bayonet Neill–Concelman) antenna

Mounted with the Goniometer antenna, the RXG-134 can be used as a direction finder as well as direct receiver. Depending on the Goniometer antenna altitude, the Argos platform transmission power and the environmental conditions, the Argos signal can be received by the RXG-134 from a few meters up to more than 100 km.

With a BNC antenna, the RXG-134 can only be used as a direct receiver. In this configuration, the Argos signal can be received by the RXG-134 from a few meters up to a few dozen km, depending on the transmission power.

In direct reception mode, GPS positions of the platform can be displayed directly on the Goniometer if the two conditions below are satisfied:

- the Argos platform is equipped with a GPS receiver,
- the message is not encrypted, and the latitude and longitude are coded simply

In this case, received Argos demodulated messages and Argos platform transmitter terminal (PTT) reception angle are displayed on the screen and available on the serial port.

An embedded GPS provides local positioning information. The CLS Goniometer is an autonomous device with up to 50 hours of operation.

GONIOMETER ANTENNA RECOMMENDATIONS

- Install the Argos Goniometer antenna as high as possible
- Don’t hold the antenna with your hands, only with a support
- Keep the antenna vertical during bearings searches
- Place the antenna pointer in your movement direction
- Wait for at least 3 collected signals before using a direction
- Be careful of incorrect measurements in noisy environments: multi path effects
- Don’t go directly in the bearings direction

PRECAUTION OF USE

- Store the Gonio in a dry place with temperature from -20°C and +50°C
- When charging the battery through USB, ensure that room temperature is from 0°C to 45°C
- Do not open or dismount the Gonio: doing so will cancel the warranty
- Use a microfiber cloth to clean the screen: ensure the Gonio is off. Do not use alcohol or detergent
- In case of salt water spray, clean with a microfiber cloth
- The battery should be fully charged before using the Gonio
- Do not bend the Goniometer antenna cable < 5cm radius, as it will add perturbation to the measurements

2. Product overview

Please ensure that all items listed in this section are in the case and have not been damaged during shipping.

2.1. List of supplies

Your Goniometer is delivered in a hard case with this user manual and :

Gonio hard case

①	**Gonio receiving antenna with 5 meter cables**
②	**Gonio receiver**
③	**Universal main power converter**
④	**USB Cable**
⑤	**Antenna mount**
⑥	**BNC antenna**

In addition, an USB key is also provided with the following documents and software :

- ReadMe.txt
- CLS-DT-MEMO-14-045 - Recommendations for using the RXG134 goniometer ENG.pdf
- GONIO RXG Installation and User Manual vvv.pdf (vvv : version number)
- Xerius_Driver.cat (for Windows 7 or XP only) (already included in the OS for Windows 10)
- Xerius_Driver.inf (for Windows 7 or XP only) (already included in the OS for Windows 10)
- RXG134 Communication Software xxx.exe (xxx : version number)

2.2. General view of the receiver

GPS antenna

Display screen

ON/OFF Indicator

Navigation button

ON/OFF - Navigation button

Circular control pad

Arrow buttons

Validation button

Front view

Connector for USB and charger cable

Receiving antenna connectors

GPS antenna

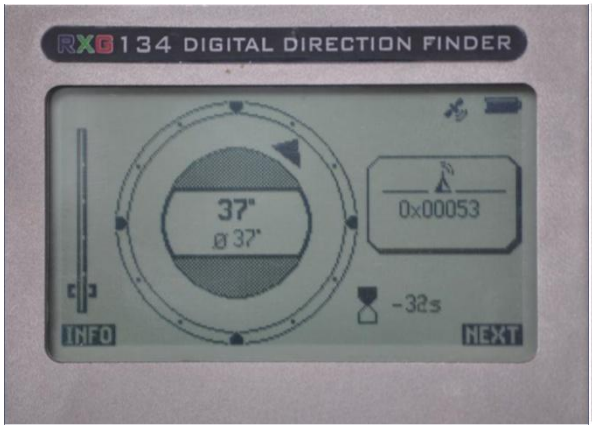
Top view

2.3. Turn on/off and main screens

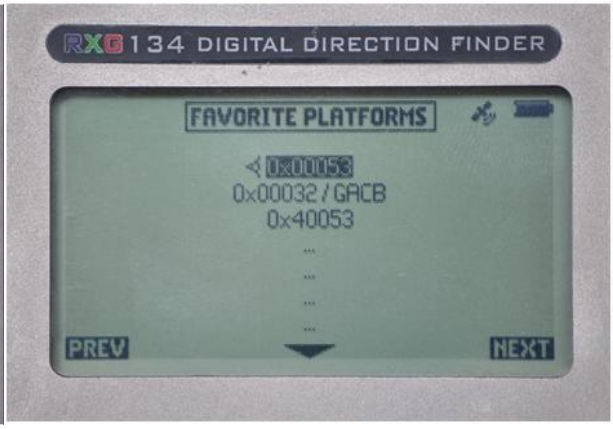
To turn ON/OFF the GONIO, press the right Navigation button close to the "ON/OFF" indicator until you hear a beep.

There are 4 main screens. They are given below in order of appearance after turning ON:

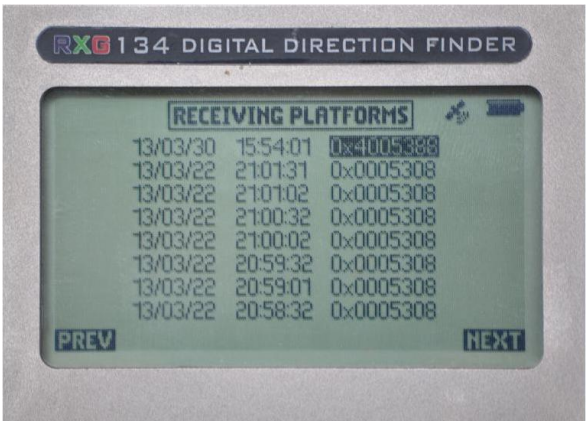
- *RECEPTION screen (default screen at turn ON)*
- *FAVORITES PLATFORMS menu*
- *RECEIVING PLATFORMS menu*
- *OPTION menu*



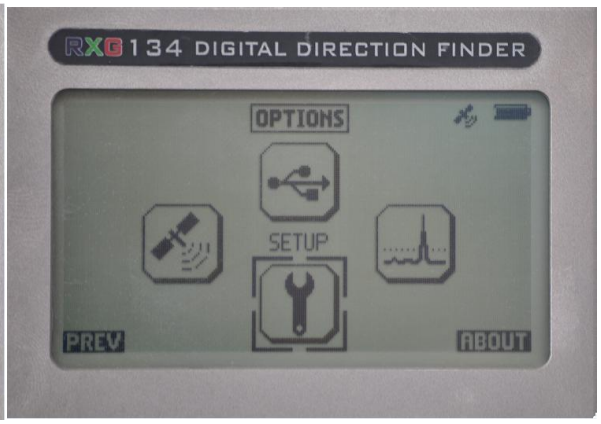
RECEPTION screen



FAVORITE PLATFORMS menu



RECEIVING PLATFORMS menu



OPTIONS menu

To go from one screen to another, press the Navigation button under the "NEXT" or "PREV" labels on the screen. Same for the "INFO" label on the RECEPTION screen.

You can navigate through the items in a menu by pressing the Arrow buttons (left, right, up and down).

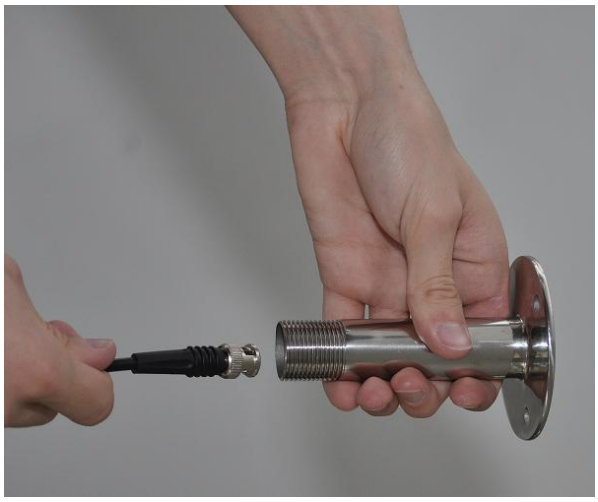
To select an item in a menu, press the Validation button in the middle of the control pad.

Details of the screens are given in chapter 5.

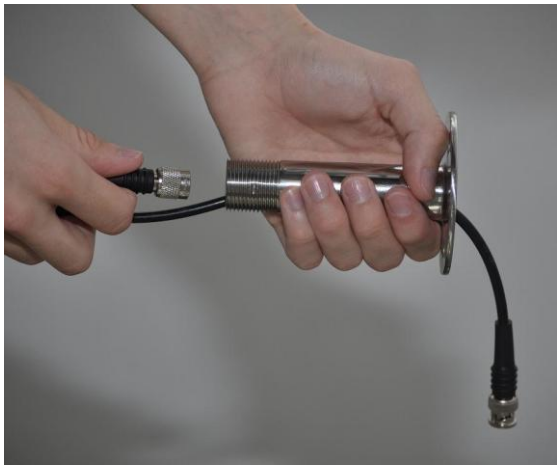
3. Antenna installation procedures

3.1. Goniometer antenna

1. Insert one of the two cables into the opening in the antenna mount.




2. Then insert the second cable.

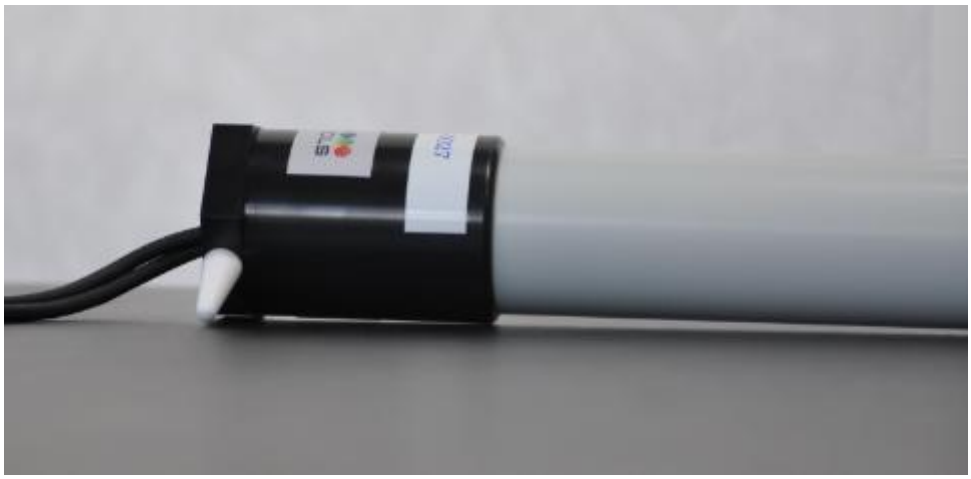



3. Screw the mount into the antenna.

You may also pass the cables through the hole on the side of the antenna mount.

4. Connect both cables to the receiver.

<u>Note:</u> The white pointer on the receiving antenna corresponds to the reference azimuth (0°) for the bearings received.



Important: keep the antenna vertical and avoid touching it with your hands to prevent interference when the GONIO is receiving.

3.2. BNC antenna

Connect your BNC Argos antenna as shown in the figure below.

Gonio RXG-134 with BNC antenna

4. Quick start guide

Here is a quick start procedure to setup and get signals from an Argos platform through your Argos Goniometer in:

- Goniometer mode
- direct reception mode

Information on both modes will be given in the procedure below.

The procedure is:

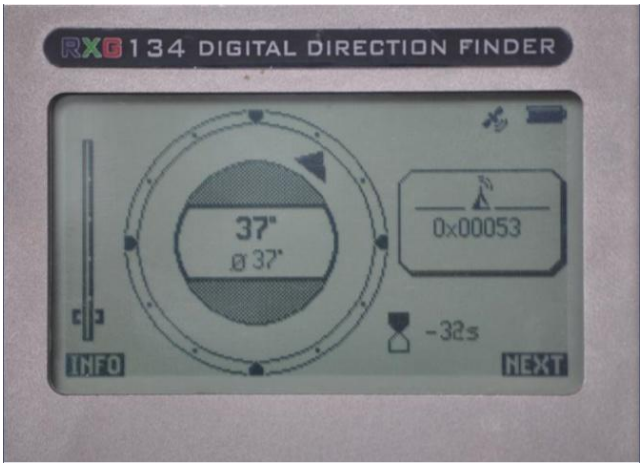
1. mount the antenna
2. power ON the GONIO RX
3. setup the configuration
4. select your ARGOS platform as a favorite
5. choose your platform from the favorite platforms list
6. check results displayed in the RECEPTION screen
7. platform recovery

4.1. Mount the antenna

Mount and connect the Goniometer antenna or the BNC antenna according to section 3.1 or 3.2.

4.2. Power ON the equipment

Power ON your Goniometer by pressing the Navigation button close to the ON/OFF indicator (red circle on the picture below) until you hear a beep. After the initialization process, the RECEPTION screen will appear.



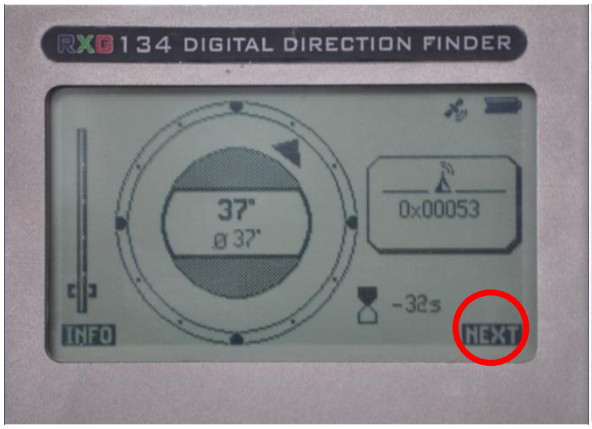
***Note**: When the GONIO is switched on for the first time, no information is displayed on the RECEPTION screen, in the FAVORITES PLATFORMS menu or in the RECEIVING PLATFORMS menu.*

4.3. Setup the configuration

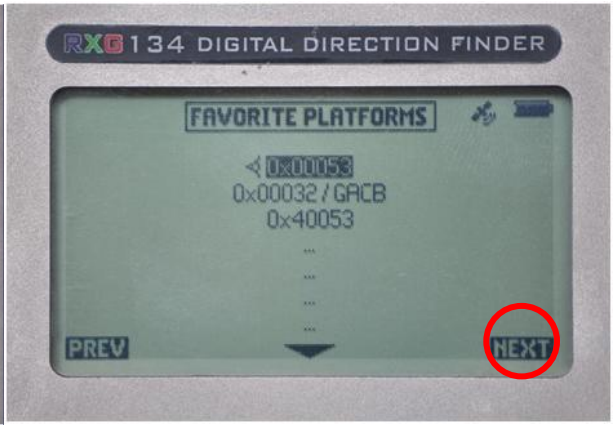
Configure the GONIO RX with the parameters given in the table below, according to the measurements mode.

Parameter\Mode (antenna type)	**Goniometer (Goniometer antenna)**	**Direct Reception (Goniometer or BNC antenna)**
GPS	ON (can be OFF)	ON
Direction mode	Gonio	GPS
Antenna mode	Gonio	Direct reception

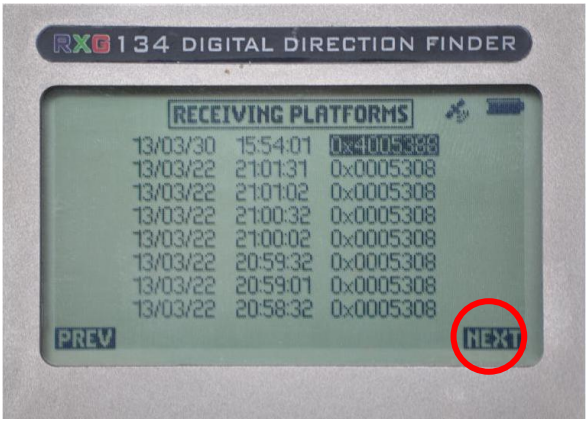
Go to the OPTIONS menu by pressing the Navigation button under the NEXT label on the RECEPTION screen, the FAVORITE PLATFORMS menu and the RECEIVING PLATFORMS menu.



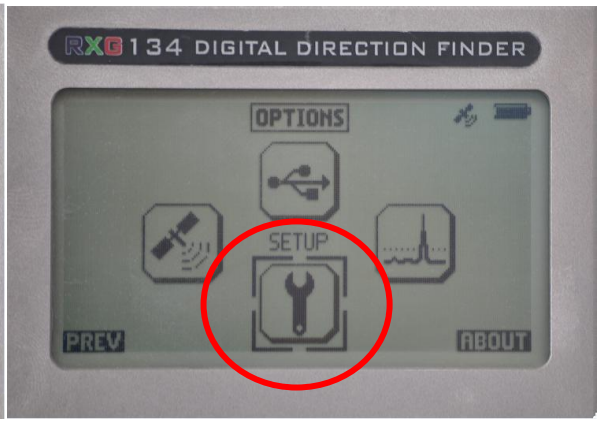
RECEPTION screen



FAVORITE PLATFORMS menu



RECEIVING PLATFORMS menu

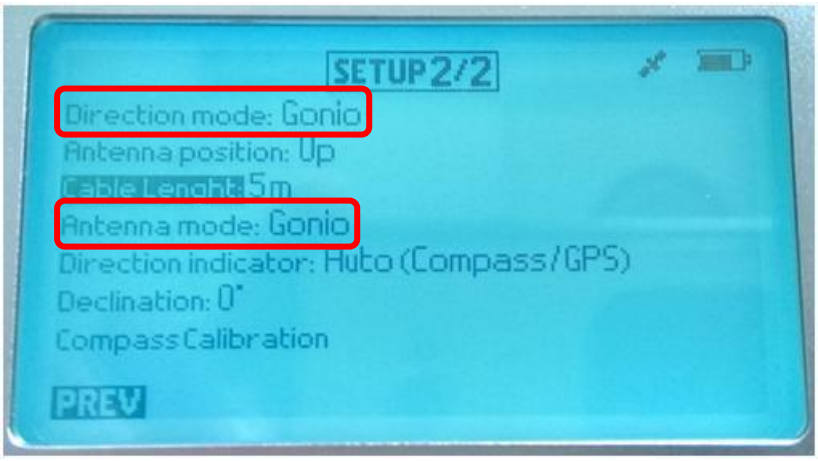


OPTIONS menu

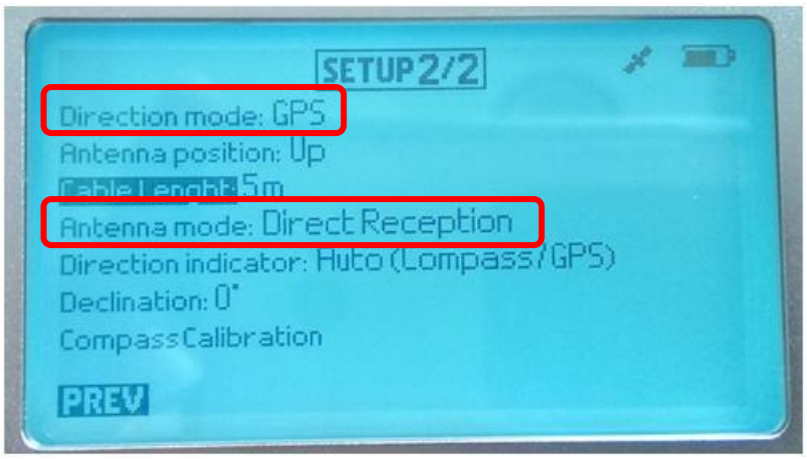
Enter the SETUP screens by selecting the SETUP option, using the Arrow buttons and the Validation button.

On the first screen of the SETUP menu, turn the Goniometer GPS ON by using the ARROW buttons and the Validation button.

Go to the second screen of the SETUP menu by pressing the Navigation button under the "NEXT" label.



Validate the setting by pressing the PREV button and save the parameters by pressing the Navigation button under the "YES" label. You will be taken back to the Screen 1 of the SETUP menu.

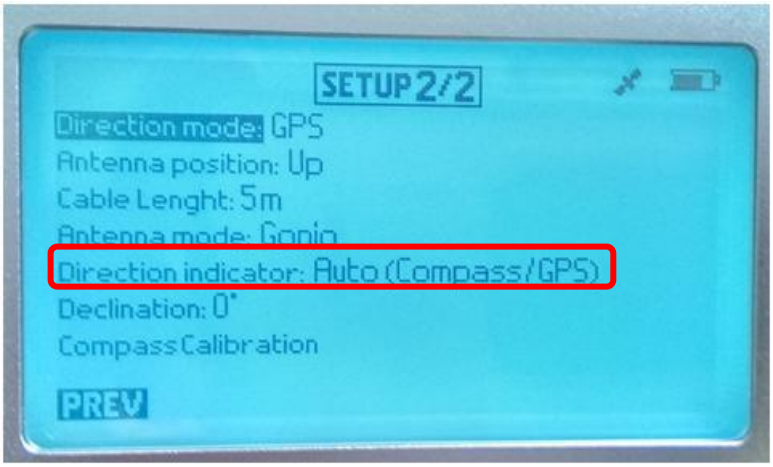


The setting for the direct reception is given above.

4.4. Compass feature

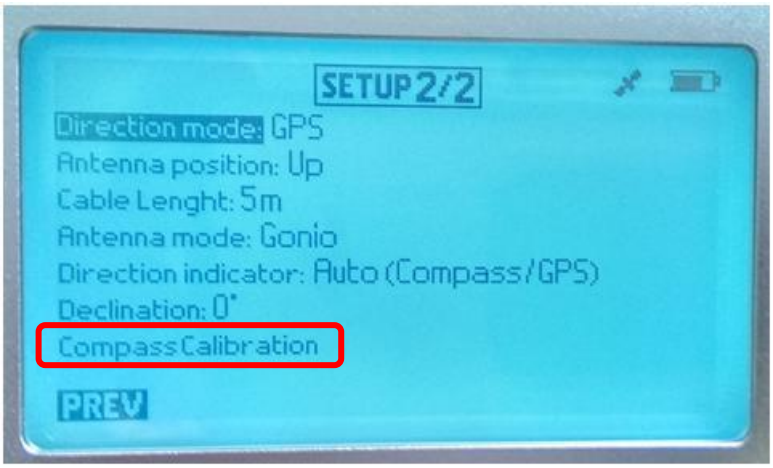
It is possible to have a compass activated and thus to have the magnetic north displayed on the reception screen.

The activation is performed in the "new" page 2 of the setup menu through the "Direction indicator" option by choosing Auto (compass/GPS) or Compass. The option "Fixed" means the Compass will not activated.

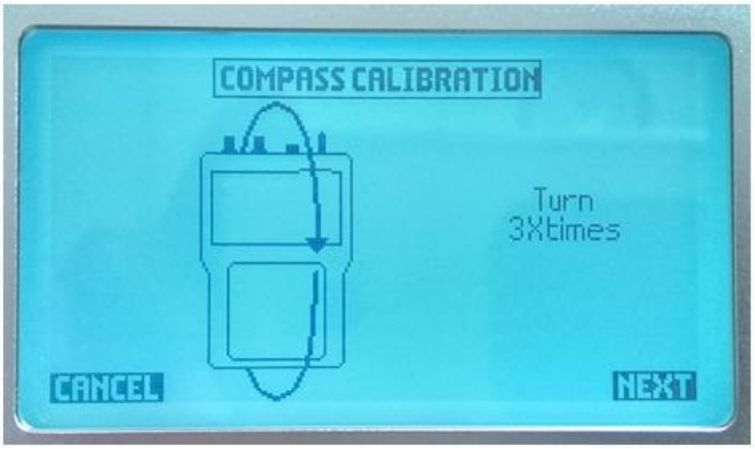


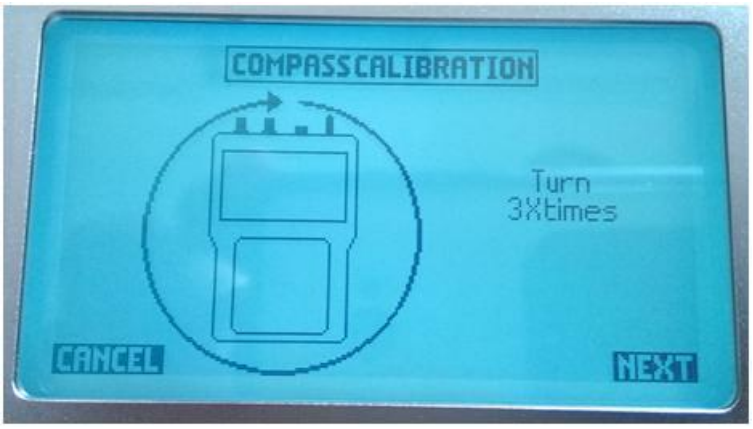
4.5. Compass calibration feature (new feature)

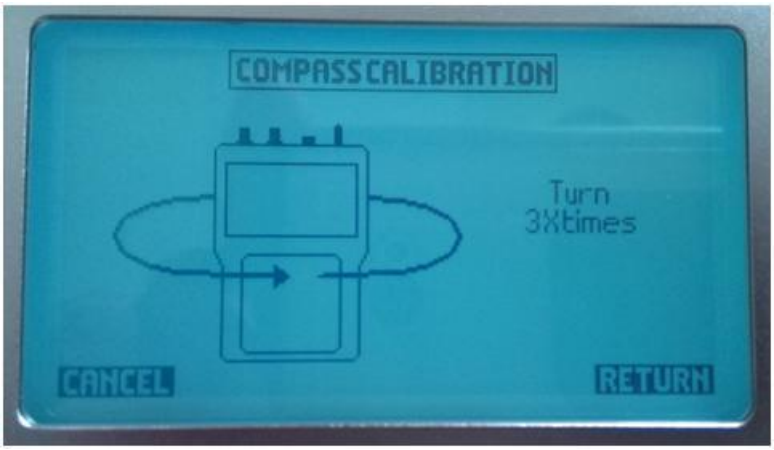
If too close from a magnetized surface or piece, you should use the “Compass Calibration” feature.



The procedure to calibrate the goniometer is intuitive and well described in the screens below.

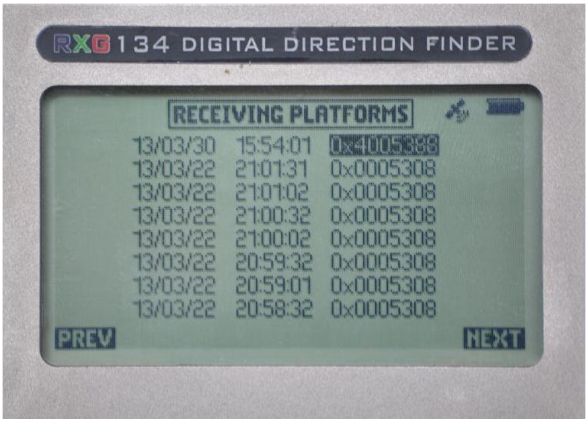






4.6. Select your ARGOS platform as a favorite

The *RECEIVING PLATFORMS* screen displays all Argos transmitters whose signals have been received, in real time. Select your Argos platform in the list by using the arrows and the validation button. *(Note: Only hexadecimal Argos IDs are displayed; you may get the hexadecimal ID of your Argos platform from your ArgosWeb account or ask your User Services Group (useroffice@cls.fr or userservices@clsamerica.com).*

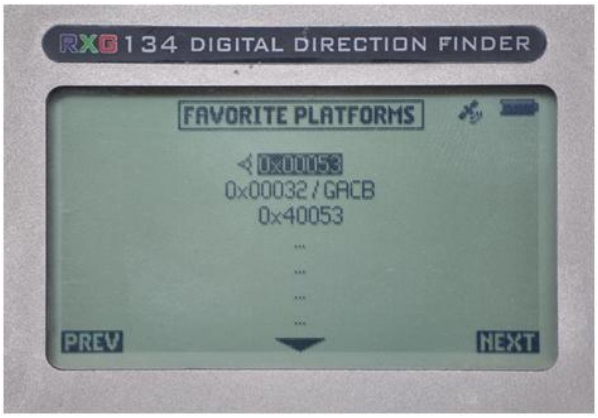


Once your Argos platform is selected you may access the *FAVORITES PLATFORMS* screen setup. We advise to setup the *Label* as the Argos decimal ID.

Once your favorite Argos platform details are setup, click on **VALID** to save.

4.7. Choose among the favorite platforms

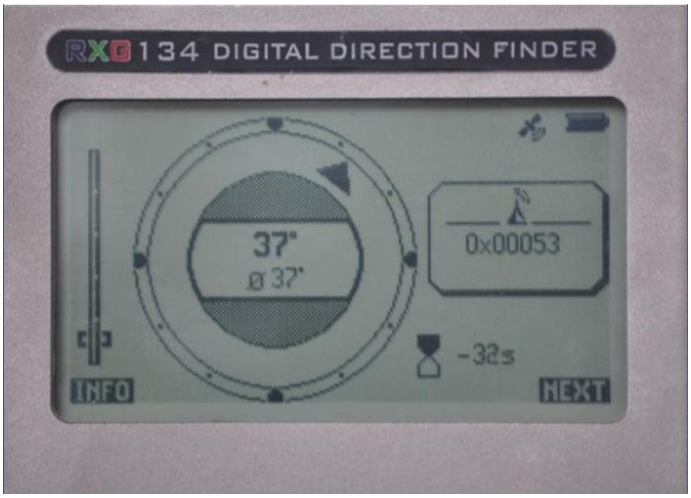
Go to the *FAVORITES PLATFORMS* screen, select your Argos platform in the list and click on **PREV** to access the *RECEPTION* screen.



4.8. RECEPTION screen

Platform information can be displayed on the RECEPTION screen in two different ways:

Goniometer mode and direct reception mode (direction mode in screen 2 of SETUP menu).



Gonio mode display
(Direction is provided relative to the Red (or White) pointer)

Direct reception mode display
(Direction is provided relative to the North)

4.9. The Argos platform recovery can start

Goniometer Mode

A. Place the white pointer of the receiving antenna toward your reference azimuth (0°). For terrestrial searches we suggest to place the white pointer toward the North, or for recovery at sea, place the white pointer on the bow axis.
B. Wait for at least 5 received signals before you start to move in a direction.
C. After 5 signals, you get an average bearing direction and signal strength.
D. Move forward with an angle from 30° to 60° with the average bearing direction.
E. When the signal strength gets higher, stop moving and wait for at least 3 received bearings. Then repeat actions from C. to E. until you recover your Argos platform.

Direct reception Mode

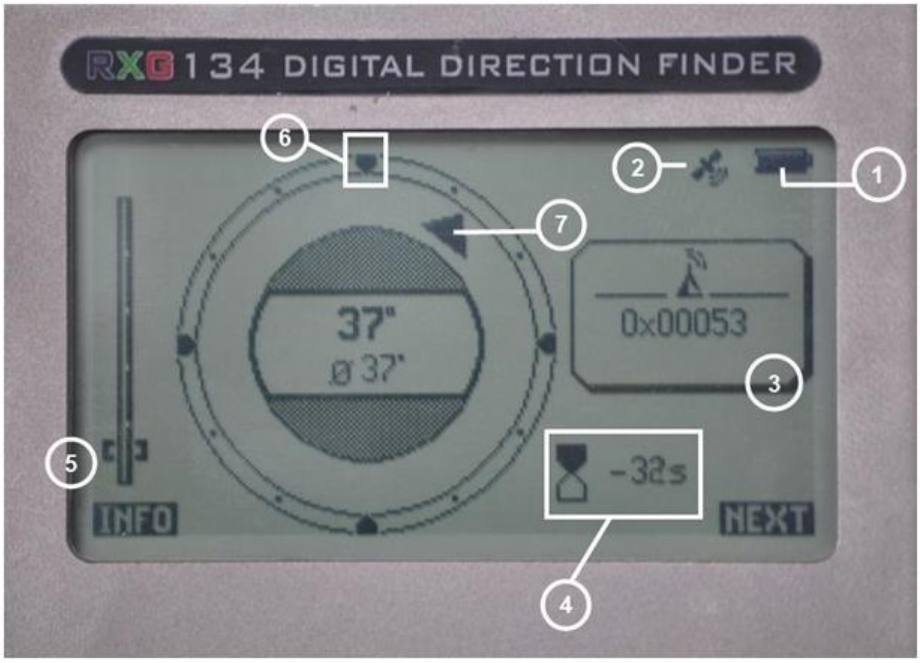
In the case of a GPS decoded platform, the distance and direction to the platform from the Gonio are displayed directly on the screen. Do not forget that the direction is given relative to the North.

5. Details of the screens

The screens are described in the following sections, in the order of appearance after turn ON.

5.1. RECEPTION screen

To turn ON the GONIO, press the ON/OFF button until you hear a beep. When initialization is complete, the *RECEPTION screen* is displayed:

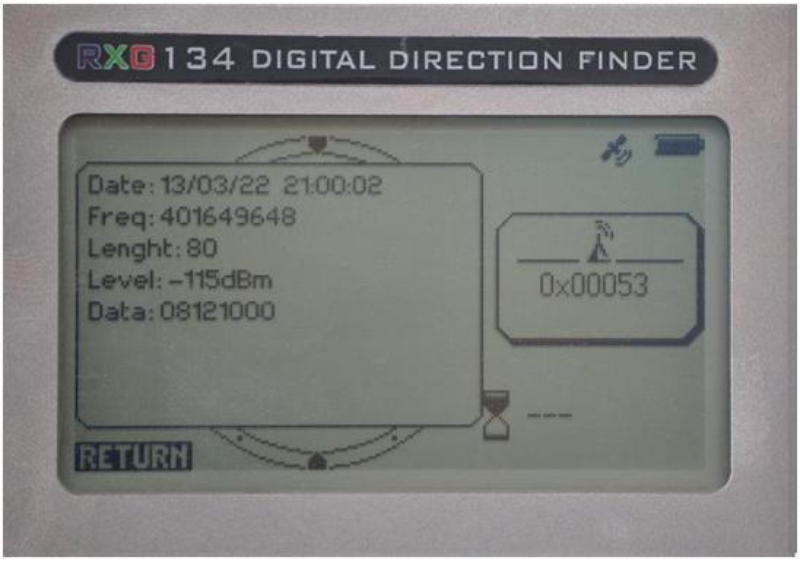


Reception screen (direction finder display)

This screen allows you to monitor the selected platform. The information displayed on the screen is as follows:

(1)	Battery level
(2)	Gonio GPS activation
(3)	Platform hexadecimal ID
(4)	Estimated time to next reception (negative time means the reception is overdue)
(5)	Received signal strength
(6)	Reference azimuth (red/white pointer at the bottom of the antenna)
(7)	Direction from the azimuth reference: 37° instantaneous direction, Ø 37° averaged direction

Press ***INFO*** (left navigation button) to display data on the last message received.



Argos message information screen

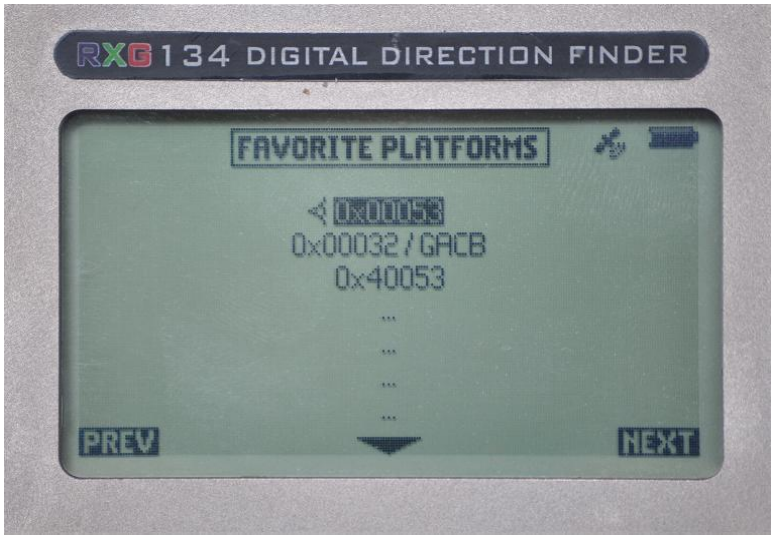
This screen provides details of the most recent message received:

- ***Date:*** Date and time the message was received
- ***Freq:*** Frequency of the received signal, in Hertz
- ***Length:*** Message length in bits, after Argos preamble (FFFE2F not included)
- ***Level:*** Level of the received power (Signal strength)
- ***Data:*** Useful data (raw message) contained in the Argos message

Pressing the *RETURN* button (left navigation button) takes you back to the *RECEPTION screen*.

5.2. FAVORITE PLATFORMS screens

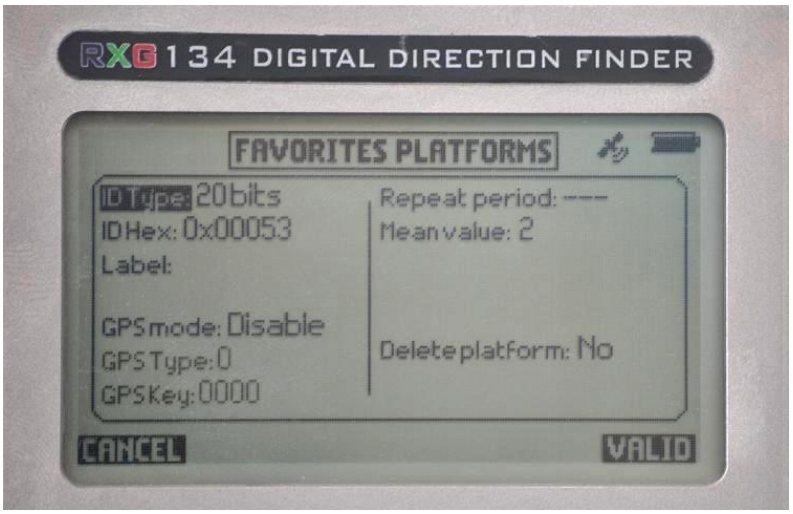
The screen below shows three platforms that have been saved as favorites. They can be selected using the up and down arrows on the control pad. Pressing the validation button takes you to the favorites configuration screen.



Favorite Platforms management screen 1

Press the ***PREV*** navigation button to begin searching for the platform.

The second screen of the FAVORITE PLATFORMS is obtained after selecting a platform in the RECEIVING platform screen.



Favorite Platforms management screen 2

This screen provides the following options:

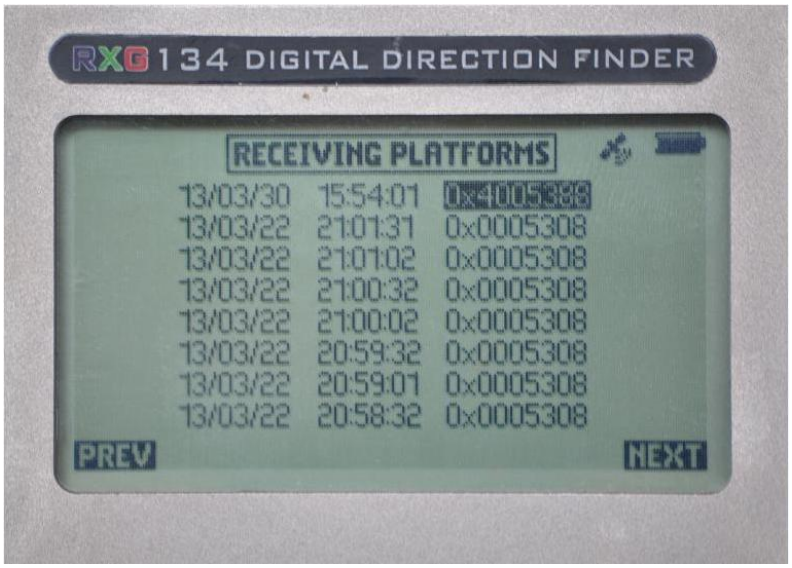
- ***ID Type:*** Choose the ID type: 20 or 28 bits
- ***ID Hex:*** ID in hexadecimal format
- ***Label:*** Set a name for the Argos platform or use the Decimal Argos ID as the label
- ***GPS Indications (mode, type, key) :*** Platform template informations for direction reception mode. In this case no template has been set for this platform. The setting of the platform is performed via the PC through the USB connection (see section 6.8).
- ***Repeat period:*** Configure the repetition period, if known, otherwise it will be calculated on reception
- ***Mean Value:*** Select the number of bearings required for the calculation of the average direction displayed on the screen.
- ***Delete platform:*** Delete the platform from the list of favorites

To edit a field, select it using the arrow buttons then press the validation button. Modify the field using the up and down arrows, then press the validation button to confirm the changes.

Once all the desired changes have been made, press the validation button to return to the Favorites screen.

5.3. RECEIVING PLATFORMS screen

Press the ***PREV*** navigation button from the *OPTIONS* screen to go to the *RECEIVING PLATFORMS* screen, which displays, in real time, all transmitters whose signals have been received.



Received Platforms screen

For each transmitter signal received, this menu displays the date and time the message was received (columns 1 and 2) and its hexadecimal ID number (column 3).

Select the desired platform using the arrows, and then press the validation button. This platform is now added to your favorites and can be customized.

5.4. OPTION Menu

In the main menu you will find the OPTION menu.

1. Select a menu using the arrows on the control pad, then press the validation button.

2. To return to the previous screen *(OPTIONS),* press the *PREV* navigation button.

The different menus displayed on the screen are:

OPTIONS menu

(1)	*USB menu:* to activate the USB connection (only available when connected to a PC)
(2)	*FFT menu:* to display the Argos band signals received (spectral analysis mode)
(3)	*Setup menu:* to configure the Goniometer's operating parameters
(4)	*GPS Info menu:* to display information about the GPS

5.4.1. SETUP menu

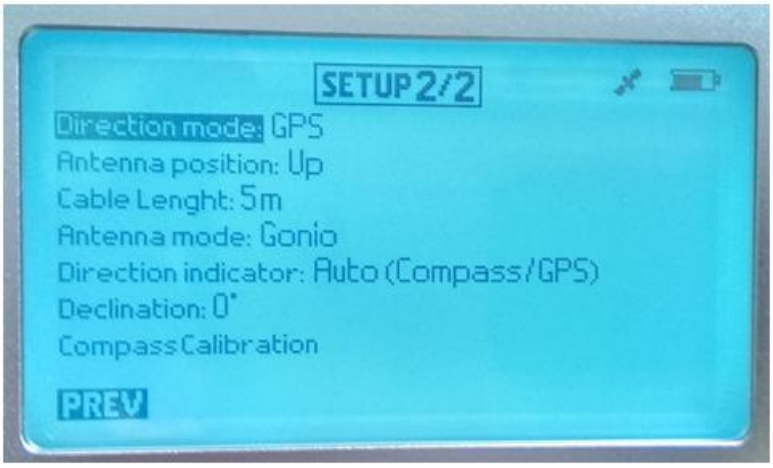
Setup screen page 1

Select the option you wish to change using the arrows on the control pad, then press the validation button. The setup menu is displayed on 2 pages.

<u>On page 1, the options are:</u>

- ***Audio:*** Activate or deactivate the beeps heard when pressing the buttons
- ***Backlight:*** Enable or disable the backlight
- ***Contrast:*** Change the contrast of the screen
- ***Acquisition GPS:*** Activate or deactivate the Goniometer's GPS
- ***GPS:*** Choose the GPS data format (decimal, degrees-minutes-seconds, degrees-minutes-decimal seconds)
- ***Distance:*** Select the unit of distance used (kilometer, nautical mile, mile)
- ***Direction Comp:*** Add an offset to the reference azimuth **To be left at 0°**
- ***Year, Month, Day, Hour, Minute:*** Set the date and time
  Note: If the Gonio GPS is activated, this parameter will be automatically updated and it will be in UTC.
- ***Temp:*** Measured temperature

- ***Vbat:*** Battery voltage level



Setup screen page 2

On page 2, the options are:

- ***Direction mode :*** Select GPS or Gonio Display mode:
    - ***Gonio:*** will display the instantaneous direction of the received signal and its average, on the RECEPTION screen. The reference for this direction is the red/white pointer at the bottom of the Gonio antenna.

    - ***GPS (for decoded GPS platforms only):*** will display differential direction between the Gonio position and the platform position, on the RECEPTION screen. The reference for this direction is North.

- ***Antenna position:*** Select the position of the antenna (up or down)
- ***Cable length:*** Indicate the length of the antenna cable used. By default, 5m.
- ***Antenna mode (type of computation to be performed):***
    - Gonio: select this mode if you are using the equipment as a direction finder. The Gonio antenna has to be connected for correct results. Ensure that the display mode is compatible with this option.
    - Direct reception: select this mode if you are using the equipment for direct reception. Both Gonio and BNC antenna can be connected. Ensure that the display mode is compatible with this option.
    - Gonio extended: for expert users (to be described later).
- ***Direction indicator (activation of the compass):***
    - Fixed : compass not activated.

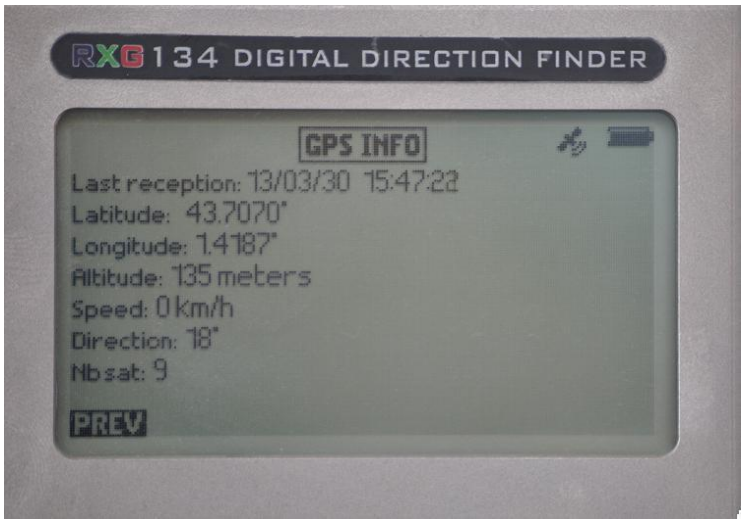
    - Compass or Auto (Compass/GPS) : compass activated. The principle of the two options will be described later

- ***Declination :*** indication the degree to be set to compensate for the magnetic north. Set to 0° by default.

- ***Compass calibration:*** This function allows you to calibrate the internal compass. You select the menu and turn the gonio several times on these three axes as you will do with your Iphone. The compass calibration is necessary when a magnet has been too close to the gonio.

5.4.2. GPS INFO menu

This menu displays GPS-related information of the Goniometer when it is locked onto the GPS network.



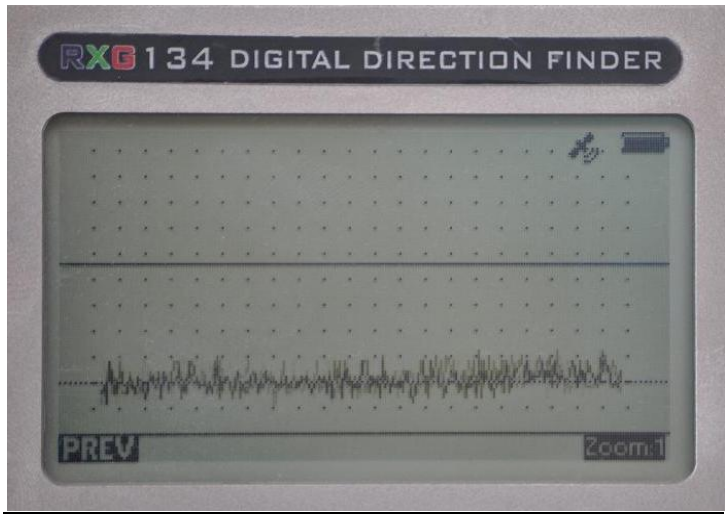
GPS Info menu screen

This menu displays information given by the GPS:

- ***Last reception:*** Date of the last GPS acquisition in YY/MM/DD HH:MM:SS format
- ***Latitude***
- ***Longitude***
- ***Altitude***
- ***Speed***
- ***Direction:*** GPS Heading computed by the GONIO RXG
- ***Nb sat:*** Number of GPS satellites within view of the GONIO RXG

5.4.3. FFT menu

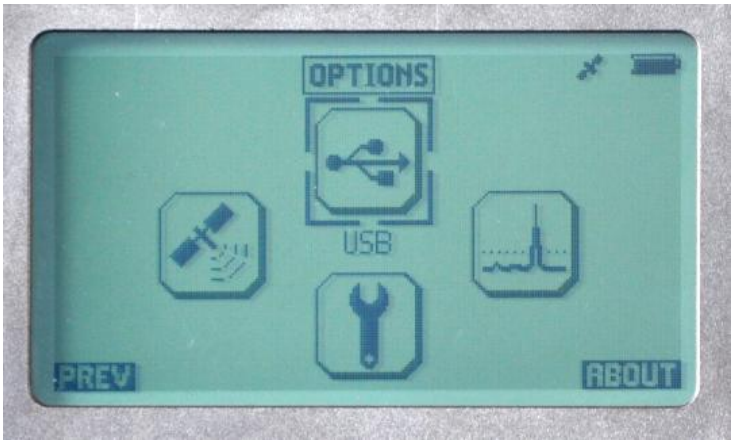
The FFT menu allows you to display a graph of the spectrum, once the frequency of the signal has been analyzed.



Example of FFT display

5.4.4. USB menu

Press on USB to connect to a PC. See chapter 6.



USB menu selection

6. PC connection (USB Communication mode)

You may connect your Goniometer to a PC through a USB link. The USB communication software will allow you to:

A. Load new firmware versions onto the Goniometer

B. Configure the Goniometer through a user friendly setup menu

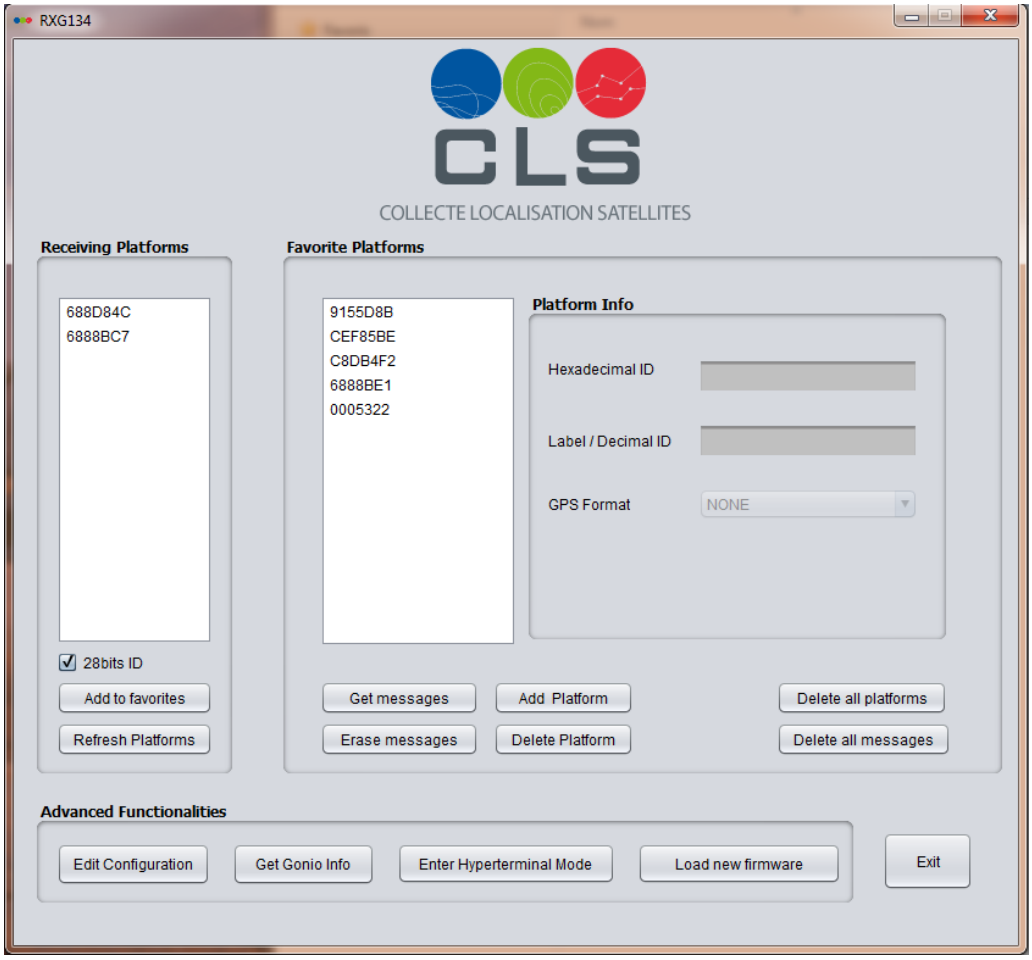
C. Export all messages received by the Goniometer for your favorite platforms, in XLS or CSV formats

D. Easily setup new Argos platforms in the Goniometer as favorites

E. Save all received Argos messages in a log file, in the *RXG-134 Comm Software* directory

F. Access the HyperTerminal mode: all the Argos platforms received by the Goniometer will be displayed in real time. Note that for the favorite platforms you can get the full Argos messages and only the hexadecimal Argos ID number for the others.

G. Choose a format for GPS position decoding (GPS positions transmitted in the Argos message may be decoded, in real time, by the Gonio)



Prior to the first connection, the following are necessary :

- be sure to have the latest version of Java software installed on your computer
- for PC running under Windows 7 or XP, you will have to install the Xerius driver (see below)
- install the *RXG-134 Comm Software o*n your PC (see below).

Note:

- All information displayed on the PC comes from the memory of the GONIO RX
- All settings performed on the computer will be transferred to the GONIO RX
- The Refresh Platforms action will not clear the Platform IDs from the Receiving Platforms screen on the Goniometer, it will only take place on the PC screen

Important :

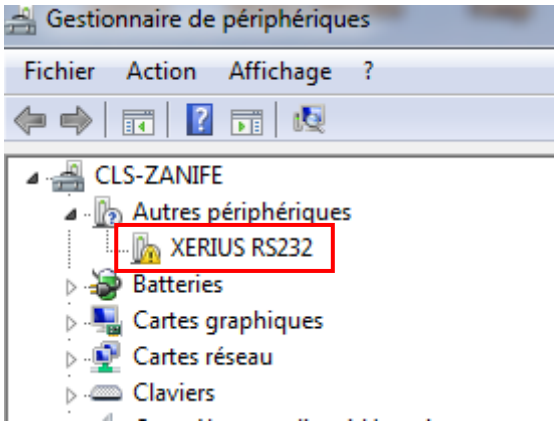
The XERIUS driver is compatible with windows XP, windows 7 but not with windows 8 nor Windows 10.

For Windows 10, the driver is already integrated in the OS, thus when connected to the PC through the USB, the goniometer will be detected and recognized.

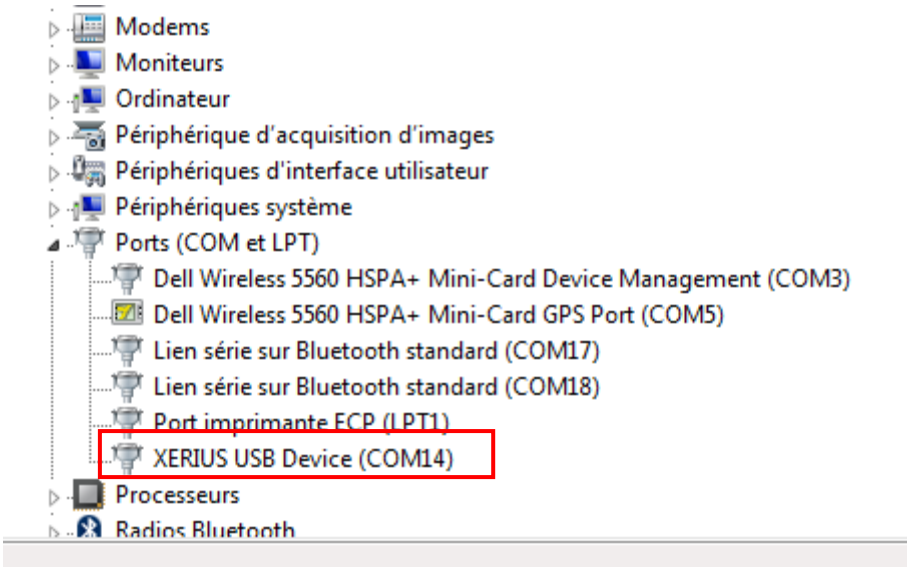
When using the USB connection please insure that the PC will not go to sleep, otherwise when happening, the connection will be cut.

6.1. Installation of XERIUS driver (Windows 7 and XP)

- Unzip the *RXG134 Comm Software.zip* file. *To get the latest version, send an email to useroffice@cls.fr or userservices@clsamerica.com.*
- Turn ON the Gonio
- Connect the Gonio to the PC using the USB cable
- On the Gonio, go to USB mode
- Open your configuration panel to peripheral management



- Right click on "XERIUS RS232"
- Update the driver by selecting the *RXG134 Comm Software* directory in which the driver is located (Xerius_Driver.cat, Xerius_Driver.inf)
- Once installed, the driver will appear in the Ports section



- Turn OFF the Goniometer

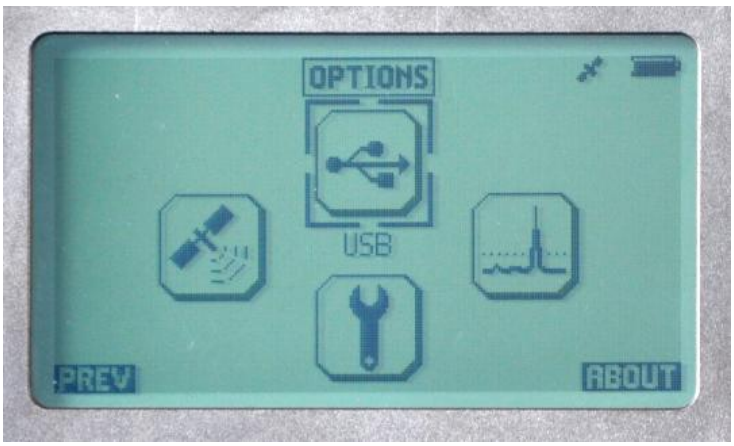
6.2. Installation of the USB Communication software

1. The USB communication software is on the USB key provided with the package.
2. Launch the communication software by double clicking on *RXG134 Communication Software.exe*
3. Follow the instructions
4. Once installed, quit the program

- If you acquired *the latest version, through email sent to useroffice@cls.fr or userservices@clsamerica.com*, unzip the *RXG134 Comm Software.zip* file.
- Change the *RXG134 Communication Software.txt* file extension to *RXG134 Communication Software.exe*
- then apply step 2 to 4

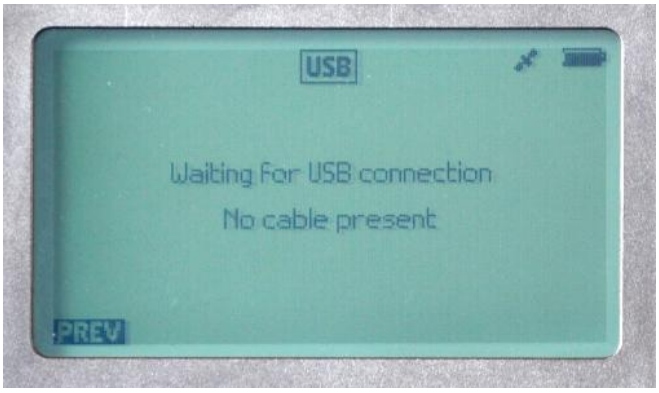
6.3. USB connection

1. Connect your Goniometer to the PC with the USB cable
2. Select the USB menu:



USB menu selection

USB active (Goniometer connected to PC)

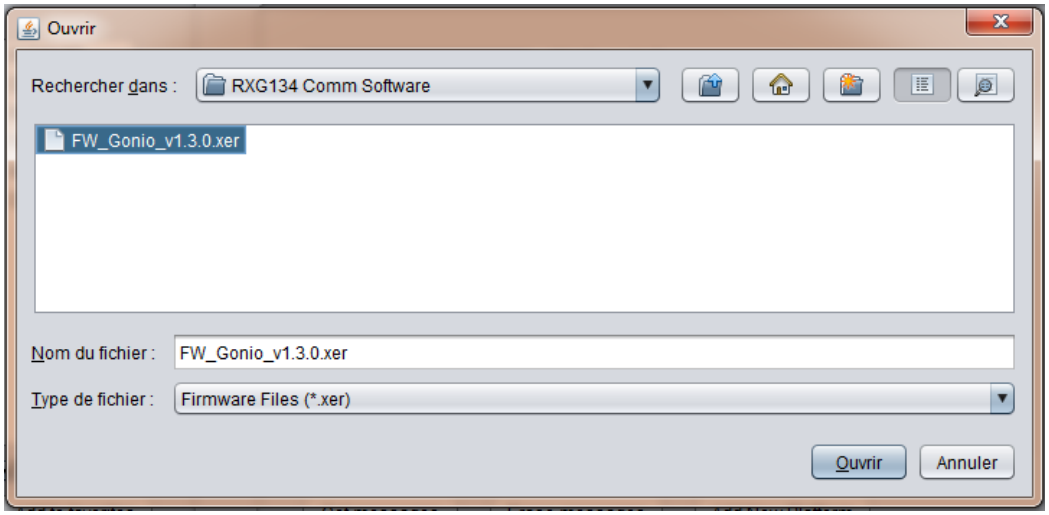


USB not active (Goniometer not connected to PC)

- Once in the USB mode, launch the *RXG134 Comm Software* on your PC.
- It will automatically recognize the port connected to the Goniometer.
- A screen similar to the one shown at the beginning of the chapter will appear on your PC.

6.4. Updating the Goniometer firmware

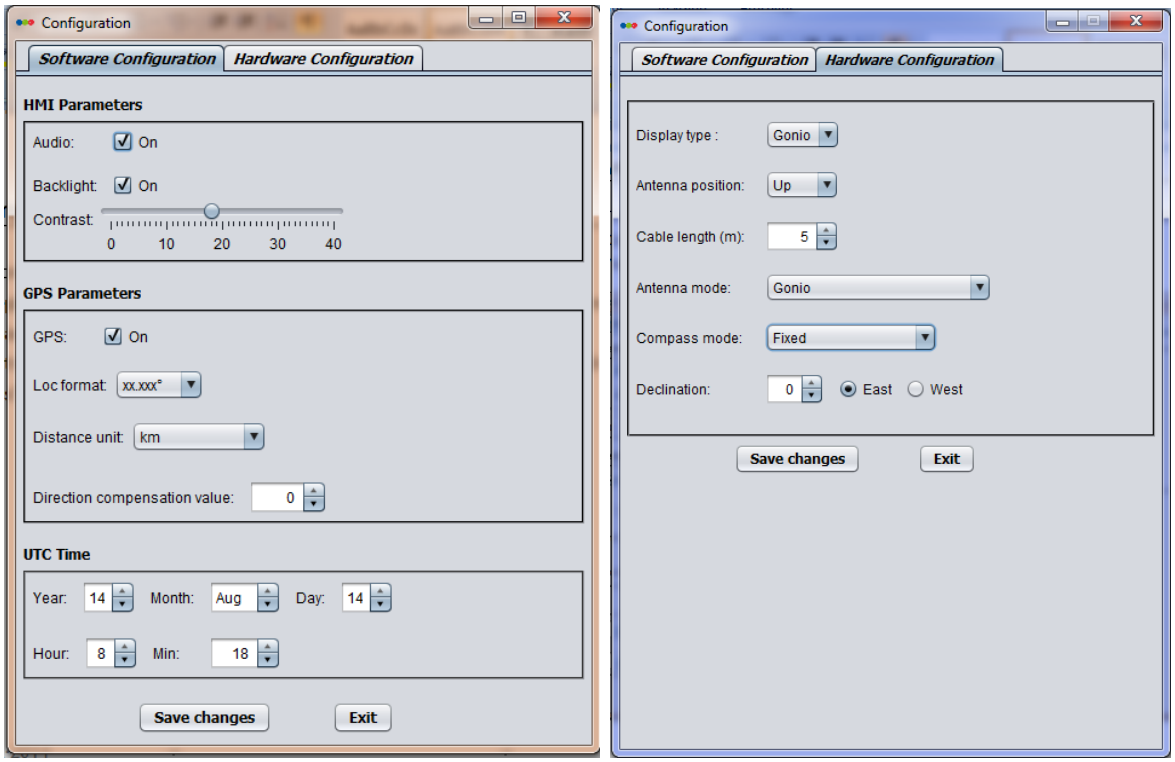
- To load a new firmware version click on "Load New Firmware version".
- A screen will allow you to go through the directory and select the firmware file as shown below.



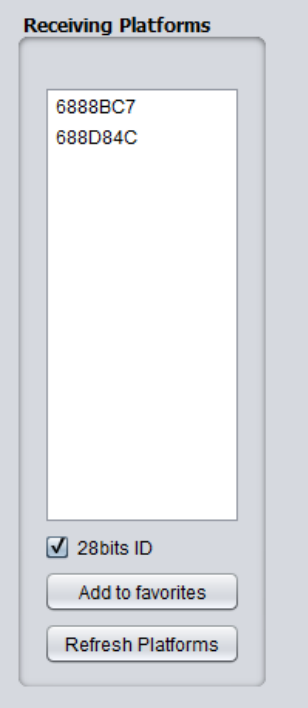
- Once you click "Open", the PC will start uploading the firmware to the Goniometer.
- The PC communication application will reboot and ask you if you want to load your saved data. Answer yes if you want to do so.

6.5. Configuring the Goniometer

- To configure the Goniometer (equivalent to the Setup Menu of the equipment) click on "Edit Configuration".
- You will have access to the two following configuration screens below.

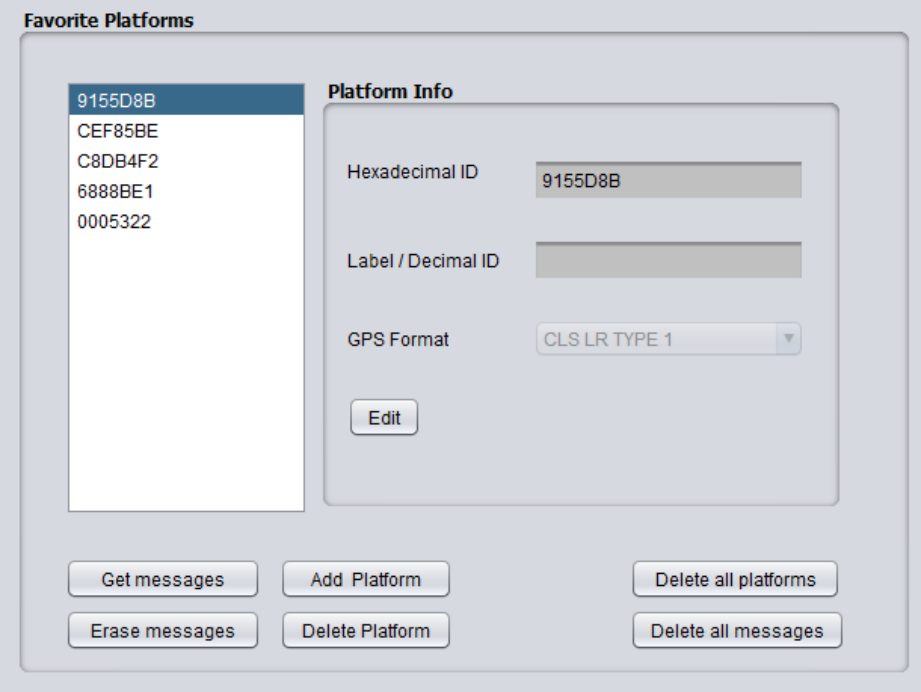


6.6. Receiving platforms

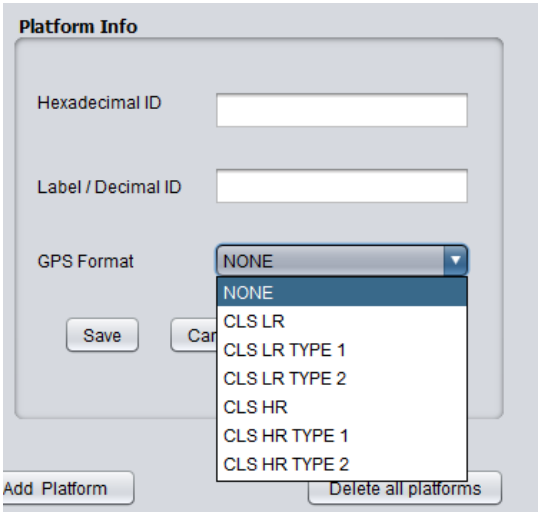


- All received platforms appear in the white frame under their hexadecimal number
- You may erase this list by clicking on the Refresh Platform button
- To add a platform to the favorite platforms:
    - select the platform
    - choose whether it has a 28 bit ID or not
    - click on Add to Favorites
    - the ID will move from this list to the Favorite Platforms list

6.7. Favorite platforms



- selecting a platform ID will allow you to:
  - enter a label or the decimal ID for this platform (limited to 19 characters)
  - choose a GPS format for direct reception mode
  - display the messages and eventually export them (see below)
  - erase the messages of this platform
  - delete this platform
- "Delete all platforms": all favorite platforms will be deleted
- "Delete all messages": all messages of all favorite platforms will be deleted
- "Add Platform": enter a new hexadecimal ID and it will appear in the list of your Favorite Platforms, once saved
- "Delete Platform": remove platforms from your list of Favorite Platforms



Examples of format declared in the gonometer

6.8. Template information for direct reception

The parameters displayed during the direct reception mode (bearing and distance to platform) are calculated using the GPS informations from the platform and the goniometer. The GPS information from the platform is extracted from the user message by the goniometer.

In order to have the format of your platform declared in the goniometer please contact CLS. Note that the messages of your platform shall not be encrypted.

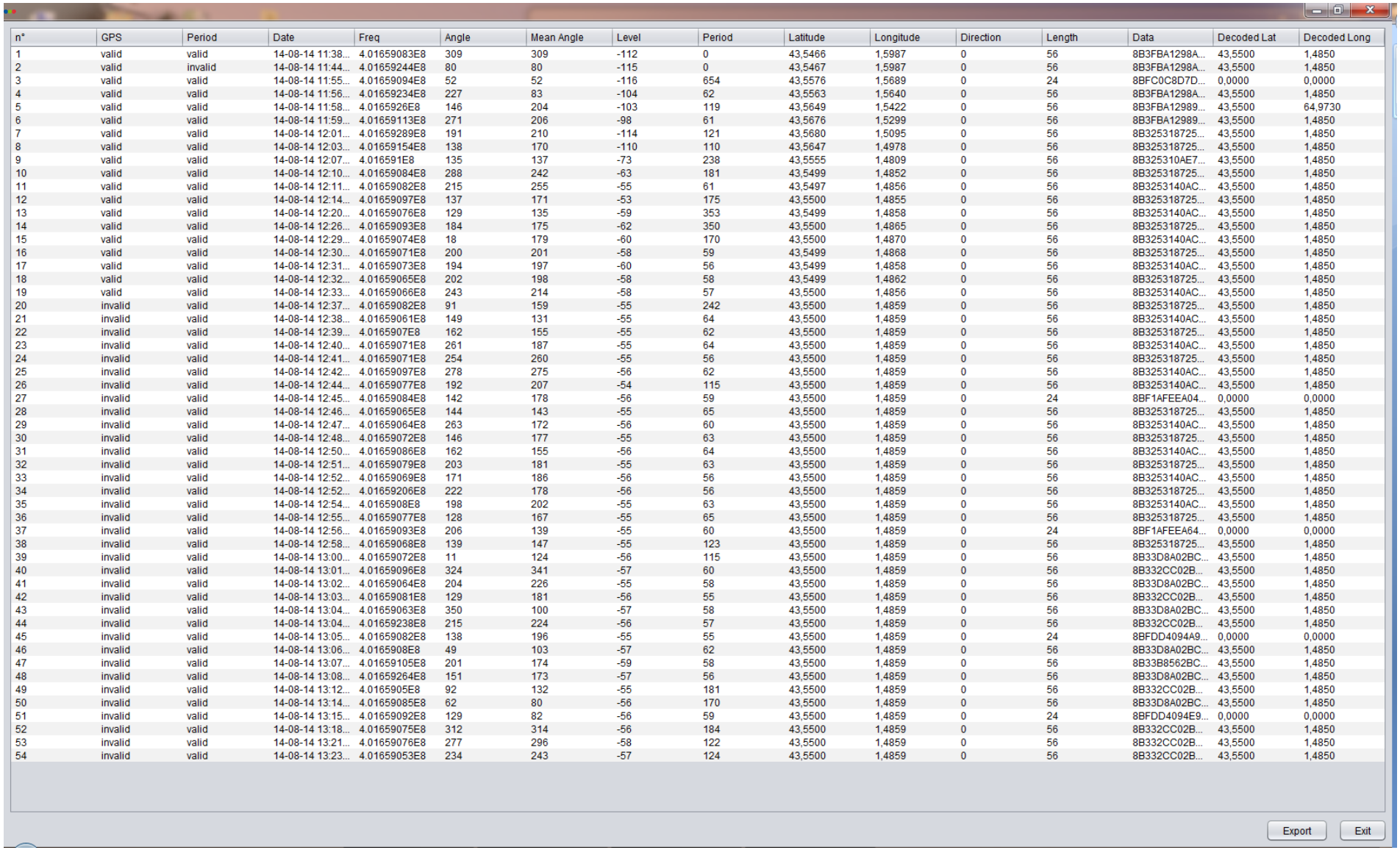
6.9. Viewing and Exporting data

- You may only view and export data from the favorite platforms.
- To add a platform to the favorites, select it in the "receiving platforms" and click "Add to favorites".
- To view the data from a favorite platform, select it and click "get messages", and you will see a screen like the one shown on next page.

Column description:

1. record index
2. status of GPS from direction finder (in this case the GPS was not on)
3. Period validity (integrity control)
4. Date
5. Frequency of platform (Hz)
6. Instantaneous direction relative to the Gonio antenna reference (deg.)
7. Mean direction relative to the Gonio antenna reference on a user defined window (deg.)
8. Signal level received from platform (dBm)
9. Transmission period (seconds)
10. Latitude of the Gonio (degrees)
11. Longitude of the Gonio (degrees)
12. Direction towards the platform relative to the north in direct reception (degrees)
13. Length of data, in bytes
14. Data content (message)
15. Decoded latitude in direct reception mode (degrees)
16. Decoded longitude in direct reception mode (degrees)

- To export the data to an Excel file click the "export" button. You will be able to choose a filename and a directory for the file to be saved. The columns in the Excel file will be the same as the columns shown above.

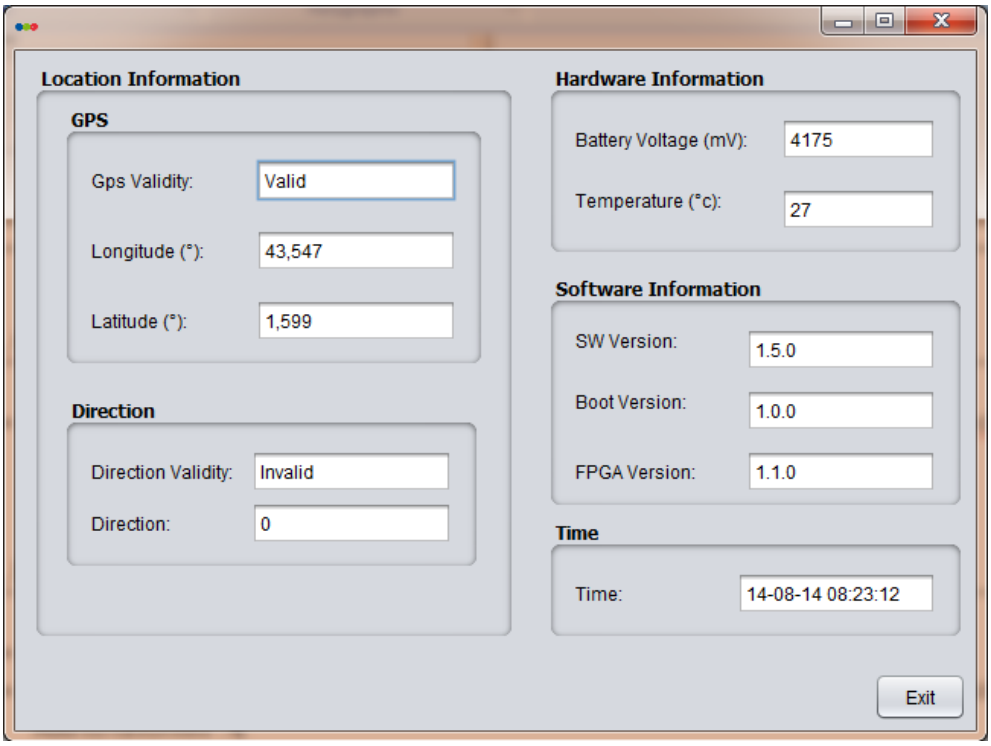


n°	GPS	Period	Date	Freq	Angle	Mean Angle	Level	Period	Latitude	Longitude	Direction	Length	Data	Decoded Lat	Decoded Long
1	valid	valid	14-08-14 11:38...	4.01659083E8	309	309	-112	0	43,5466	1,5987	0	56	8B3FBA1298A...	43,5500	1,4850
2	valid	invalid	14-08-14 11:44...	4.01659244E8	80	80	-115	0	43,5467	1,5987	0	56	8B3FBA1298A...	43,5500	1,4850
3	valid	valid	14-08-14 11:55...	4.01659094E8	52	52	-116	654	43,5576	1,5689	0	24	8BFC0C8D7D...	0,0000	0,0000
4	valid	valid	14-08-14 11:56...	4.01659234E8	227	83	-104	62	43,5563	1,5640	0	56	8B3FBA1298A...	43,5500	1,4850
5	valid	valid	14-08-14 11:58...	4.0165926E8	146	204	-103	119	43,5649	1,5422	0	56	8B3FBA12989...	43,5500	64,9730
6	valid	valid	14-08-14 11:59...	4.01659113E8	271	206	-98	61	43,5676	1,5299	0	56	8B3FBA12989...	43,5500	1,4850
7	valid	valid	14-08-14 12:01...	4.01659289E8	191	210	-114	121	43,5680	1,5095	0	56	8B325318725...	43,5500	1,4850
8	valid	valid	14-08-14 12:03...	4.01659154E8	138	170	-110	110	43,5647	1,4978	0	56	8B325318725...	43,5500	1,4850
9	valid	valid	14-08-14 12:07...	4.016591E8	135	137	-73	238	43,5555	1,4809	0	56	8B325310AE7...	43,5500	1,4850
10	valid	valid	14-08-14 12:10...	4.01659084E8	288	242	-63	181	43,5499	1,4852	0	56	8B325318725...	43,5500	1,4850
11	valid	valid	14-08-14 12:11...	4.01659082E8	215	255	-55	61	43,5497	1,4856	0	56	8B3253140AC...	43,5500	1,4850
12	valid	valid	14-08-14 12:14...	4.01659097E8	137	171	-53	175	43,5500	1,4855	0	56	8B325318725...	43,5500	1,4850
13	valid	valid	14-08-14 12:20...	4.01659076E8	129	135	-59	353	43,5499	1,4858	0	56	8B3253140AC...	43,5500	1,4850
14	valid	valid	14-08-14 12:26...	4.01659093E8	184	175	-62	350	43,5500	1,4865	0	56	8B325318725...	43,5500	1,4850
15	valid	valid	14-08-14 12:29...	4.01659074E8	18	179	-60	170	43,5500	1,4870	0	56	8B3253140AC...	43,5500	1,4850
16	valid	valid	14-08-14 12:30...	4.01659071E8	200	201	-58	59	43,5499	1,4868	0	56	8B325318725...	43,5500	1,4850
17	valid	valid	14-08-14 12:31...	4.01659073E8	194	197	-60	56	43,5499	1,4858	0	56	8B3253140AC...	43,5500	1,4850
18	valid	valid	14-08-14 12:32...	4.01659065E8	202	198	-58	58	43,5499	1,4862	0	56	8B325318725...	43,5500	1,4850
19	valid	valid	14-08-14 12:33...	4.01659066E8	243	214	-58	57	43,5500	1,4856	0	56	8B3253140AC...	43,5500	1,4850
20	invalid	valid	14-08-14 12:37...	4.01659082E8	91	159	-55	242	43,5500	1,4859	0	56	8B325318725...	43,5500	1,4850
21	invalid	valid	14-08-14 12:38...	4.01659061E8	149	131	-55	64	43,5500	1,4859	0	56	8B3253140AC...	43,5500	1,4850
22	invalid	valid	14-08-14 12:39...	4.0165907E8	162	155	-55	62	43,5500	1,4859	0	56	8B325318725...	43,5500	1,4850
23	invalid	valid	14-08-14 12:40...	4.01659071E8	261	187	-55	64	43,5500	1,4859	0	56	8B3253140AC...	43,5500	1,4850
24	invalid	valid	14-08-14 12:41...	4.01659071E8	254	260	-55	56	43,5500	1,4859	0	56	8B325318725...	43,5500	1,4850
25	invalid	valid	14-08-14 12:42...	4.01659097E8	278	275	-56	62	43,5500	1,4859	0	56	8B3253140AC...	43,5500	1,4850
26	invalid	valid	14-08-14 12:44...	4.01659077E8	192	207	-54	115	43,5500	1,4859	0	56	8B3253140AC...	43,5500	1,4850
27	invalid	valid	14-08-14 12:45...	4.01659084E8	142	178	-56	59	43,5500	1,4859	0	24	8BF1AFEEA04...	0,0000	0,0000
28	invalid	valid	14-08-14 12:46...	4.01659065E8	144	143	-55	65	43,5500	1,4859	0	56	8B325318725...	43,5500	1,4850
29	invalid	valid	14-08-14 12:47...	4.01659064E8	263	172	-56	60	43,5500	1,4859	0	56	8B3253140AC...	43,5500	1,4850
30	invalid	valid	14-08-14 12:48...	4.01659072E8	146	177	-55	63	43,5500	1,4859	0	56	8B325318725...	43,5500	1,4850
31	invalid	valid	14-08-14 12:50...	4.01659086E8	162	155	-56	64	43,5500	1,4859	0	56	8B3253140AC...	43,5500	1,4850
32	invalid	valid	14-08-14 12:51...	4.01659079E8	203	181	-55	63	43,5500	1,4859	0	56	8B325318725...	43,5500	1,4850
33	invalid	valid	14-08-14 12:52...	4.01659069E8	171	186	-56	56	43,5500	1,4859	0	56	8B3253140AC...	43,5500	1,4850
34	invalid	valid	14-08-14 12:52...	4.01659206E8	222	178	-56	56	43,5500	1,4859	0	56	8B325318725...	43,5500	1,4850
35	invalid	valid	14-08-14 12:54...	4.0165908E8	198	202	-55	63	43,5500	1,4859	0	56	8B3253140AC...	43,5500	1,4850
36	invalid	valid	14-08-14 12:55...	4.01659077E8	128	167	-55	65	43,5500	1,4859	0	56	8B325318725...	43,5500	1,4850
37	invalid	valid	14-08-14 12:56...	4.01659093E8	206	139	-55	60	43,5500	1,4859	0	24	8BF1AFEEA64...	0,0000	0,0000
38	invalid	valid	14-08-14 12:58...	4.01659068E8	139	147	-55	123	43,5500	1,4859	0	56	8B325318725...	43,5500	1,4850
39	invalid	valid	14-08-14 13:00...	4.01659072E8	11	124	-56	115	43,5500	1,4859	0	56	8B33D8A02BC...	43,5500	1,4850
40	invalid	valid	14-08-14 13:01...	4.01659096E8	324	341	-57	60	43,5500	1,4859	0	56	8B332CC02B...	43,5500	1,4850
41	invalid	valid	14-08-14 13:02...	4.01659064E8	204	226	-55	58	43,5500	1,4859	0	56	8B33D8A02BC...	43,5500	1,4850
42	invalid	valid	14-08-14 13:03...	4.01659081E8	129	181	-56	55	43,5500	1,4859	0	56	8B332CC02B...	43,5500	1,4850
43	invalid	valid	14-08-14 13:04...	4.01659063E8	350	100	-57	58	43,5500	1,4859	0	56	8B33D8A02BC...	43,5500	1,4850
44	invalid	valid	14-08-14 13:04...	4.01659238E8	215	224	-56	57	43,5500	1,4859	0	56	8B332CC02B...	43,5500	1,4850
45	invalid	valid	14-08-14 13:05...	4.01659082E8	138	196	-55	55	43,5500	1,4859	0	24	8BFDD4094A9...	0,0000	0,0000
46	invalid	valid	14-08-14 13:06...	4.0165908E8	49	103	-57	62	43,5500	1,4859	0	56	8B33D8A02BC...	43,5500	1,4850
47	invalid	valid	14-08-14 13:07...	4.01659105E8	201	174	-59	58	43,5500	1,4859	0	56	8B33B8562BC...	43,5500	1,4850
48	invalid	valid	14-08-14 13:08...	4.01659264E8	151	173	-57	56	43,5500	1,4859	0	56	8B33D8A02BC...	43,5500	1,4850
49	invalid	valid	14-08-14 13:12...	4.0165905E8	92	132	-55	181	43,5500	1,4859	0	56	8B332CC02B...	43,5500	1,4850
50	invalid	valid	14-08-14 13:14...	4.01659085E8	62	80	-56	170	43,5500	1,4859	0	56	8B33D8A02BC...	43,5500	1,4850
51	invalid	valid	14-08-14 13:15...	4.01659092E8	129	82	-56	59	43,5500	1,4859	0	24	8BFDD4094E9...	0,0000	0,0000
52	invalid	valid	14-08-14 13:18...	4.01659075E8	312	314	-56	184	43,5500	1,4859	0	56	8B332CC02B...	43,5500	1,4850
53	invalid	valid	14-08-14 13:21...	4.01659076E8	277	296	-58	122	43,5500	1,4859	0	56	8B332CC02B...	43,5500	1,4850
54	invalid	valid	14-08-14 13:23...	4.01659053E8	234	243	-57	124	43,5500	1,4859	0	56	8B332CC02B...	43,5500	1,4850

Export Exit

6.10. Gonio Info

- Goniometer information is provided using the "Get Gonio Info" button, which opens the following screen:

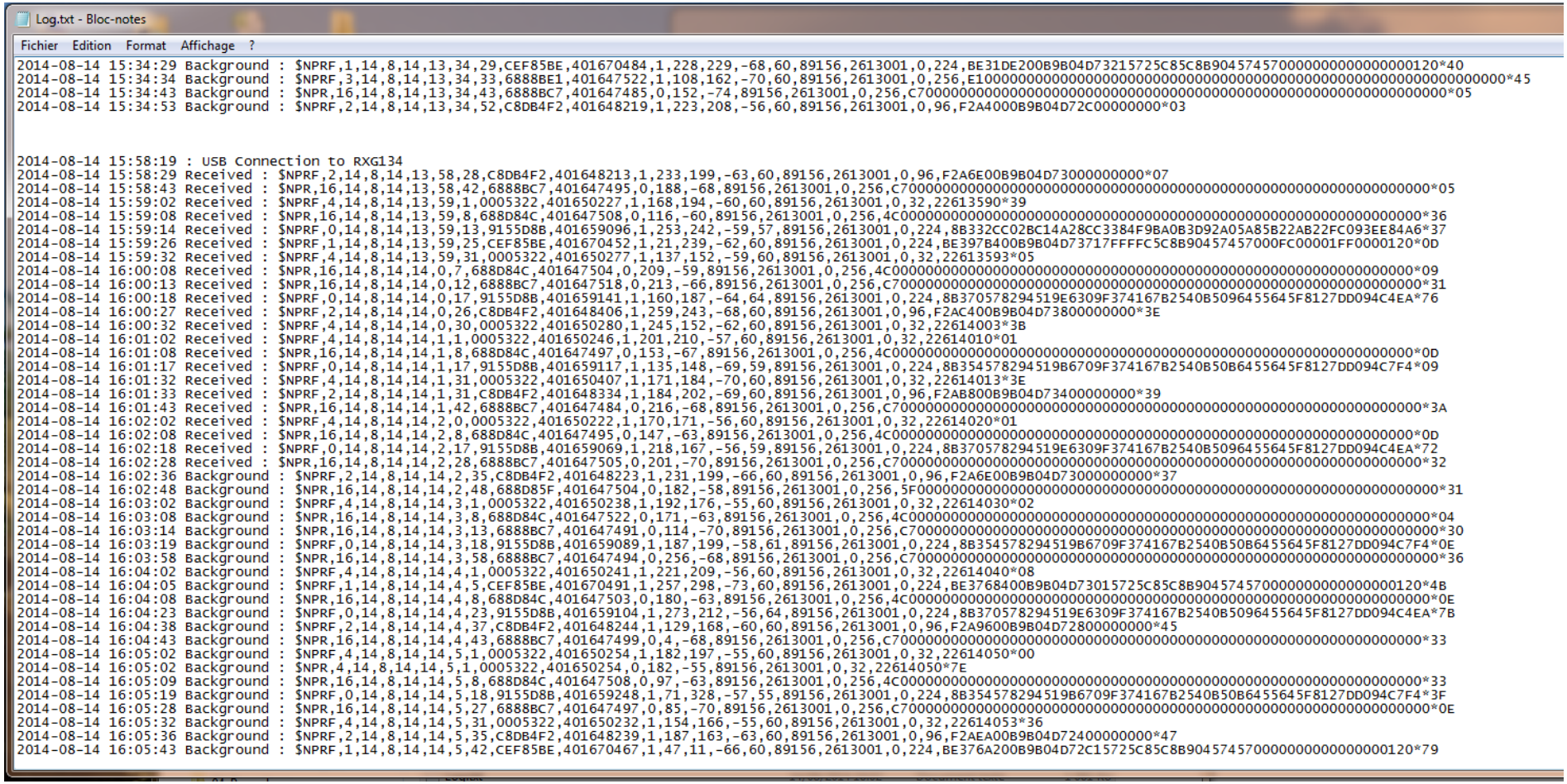


6.11. HyperTerminal mode and log file

Once the PC is connected to the Goniometer through the USB, all received ARGOS messages are stored in the log file which is located under the installation directory of the communication software. The name if this file is as follows "Log XXXX.txt", where XXXX is the goniometer number (example : 0027).

Below is an example of this file.

- the first record line will be the date, time at which you start the connection ("USB Connection to RXG134")
- then for each received ARGOS message you will have one line with:
    - date
    - time
    - type of reception (background or received when the HyperTerminal is opened)
    - the Goniometer command $NPR for a non favorite platform and $NPRF for a favorite platform, followed by several parameters which are explained below



Log.txt - Bloc-notes

Fichier Edition Format Affichage ?

```
2014-08-14 15:34:29 Background : $NPRF,1,14,8,14,13,34,29,CEF85BE,401670484,1,228,229,-68,60,89156,2613001,0,224,BE31DE200B9B04D73215725C85C8B90457457000000000000000120*40
2014-08-14 15:34:34 Background : $NPRF,3,14,8,14,13,34,33,6888BE1,401647522,1,108,162,-70,60,89156,2613001,0,256,E10000000000000000000000000000000000000000000000000000000000000000000000000000*45
2014-08-14 15:34:43 Background : $NPR,16,14,8,14,13,34,43,6888BC7,401647485,0,152,-74,89156,2613001,0,256,C70000000000000000000000000000000000000000000000000000000000000000000000000000*05
2014-08-14 15:34:53 Background : $NPRF,2,14,8,14,13,34,52,C8DB4F2,401648219,1,223,208,-56,60,89156,2613001,0,96,F2A4000B9B04D72C00000000*03



2014-08-14 15:58:19 : USB Connection to RXG134
2014-08-14 15:58:29 Received : $NPRF,2,14,8,14,13,58,28,C8DB4F2,401648213,1,233,199,-63,60,89156,2613001,0,96,F2A6E00B9B04D73000000000*07
2014-08-14 15:58:43 Received : $NPR,16,14,8,14,13,58,42,6888BC7,401647495,0,188,-68,89156,2613001,0,256,C70000000000000000000000000000000000000000000000000000000000000000000000000000*05
2014-08-14 15:59:02 Received : $NPRF,4,14,8,14,13,59,1,0005322,401650227,1,168,194,-60,60,89156,2613001,0,32,22613590*39
2014-08-14 15:59:08 Received : $NPR,16,14,8,14,13,59,8,688D84C,401647508,0,116,-60,89156,2613001,0,256,4C00000000000000000000000000000000000000000000000000000000000000000000000000000*36
2014-08-14 15:59:14 Received : $NPRF,0,14,8,14,13,59,13,9155D8B,401659096,1,253,242,-59,57,89156,2613001,0,224,8B332CC02BC14A28CC3384F9BA0B3D92A05A85B22AB22FC093EE84A6*37
2014-08-14 15:59:26 Received : $NPRF,1,14,8,14,13,59,25,CEF85BE,401670452,1,21,239,-62,60,89156,2613001,0,224,BE397B400B9B04D73717FFFFC5C8B90457457000FC00001FF0000120*0D
2014-08-14 15:59:32 Received : $NPRF,4,14,8,14,13,59,31,0005322,401650277,1,137,152,-59,60,89156,2613001,0,32,22613593*05
2014-08-14 16:00:08 Received : $NPR,16,14,8,14,14,0,7,688D84C,401647504,0,209,-59,89156,2613001,0,256,4C00000000000000000000000000000000000000000000000000000000000000000000000000000*09
2014-08-14 16:00:13 Received : $NPR,16,14,8,14,14,0,12,6888BC7,401647518,0,213,-66,89156,2613001,0,256,C70000000000000000000000000000000000000000000000000000000000000000000000000000*31
2014-08-14 16:00:18 Received : $NPRF,0,14,8,14,14,0,17,9155D8B,401659141,1,160,187,-64,64,89156,2613001,0,224,8B370578294519E6309F374167B2540B5096455645F8127DD094C4EA*76
2014-08-14 16:00:27 Received : $NPRF,2,14,8,14,14,0,26,C8DB4F2,401648406,1,259,243,-68,60,89156,2613001,0,96,F2AC400B9B04D73800000000*3E
2014-08-14 16:00:32 Received : $NPRF,4,14,8,14,14,0,30,0005322,401650280,1,245,152,-62,60,89156,2613001,0,32,22614003*3B
2014-08-14 16:01:02 Received : $NPRF,4,14,8,14,14,1,1,0005322,401650246,1,201,210,-57,60,89156,2613001,0,32,22614010*01
2014-08-14 16:01:08 Received : $NPR,16,14,8,14,14,1,8,688D84C,401647497,0,153,-67,89156,2613001,0,256,4C00000000000000000000000000000000000000000000000000000000000000000000000000000*0D
2014-08-14 16:01:17 Received : $NPRF,0,14,8,14,14,1,17,9155D8B,401659117,1,135,148,-69,59,89156,2613001,0,224,8B3545782945 19B6709F374167B2540B50B6455645F8127DD094C7F4*09
2014-08-14 16:01:32 Received : $NPRF,4,14,8,14,14,1,31,0005322,401650407,1,171,184,-70,60,89156,2613001,0,32,22614013*3E
2014-08-14 16:01:33 Received : $NPRF,2,14,8,14,14,1,31,C8DB4F2,401648334,1,184,202,-69,60,89156,2613001,0,96,F2AB800B9B04D73400000000*39
2014-08-14 16:01:43 Received : $NPR,16,14,8,14,14,1,42,6888BC7,401647484,0,216,-68,89156,2613001,0,256,C70000000000000000000000000000000000000000000000000000000000000000000000000000*3A
2014-08-14 16:02:02 Received : $NPRF,4,14,8,14,14,2,0,0005322,401650222,1,170,171,-56,60,89156,2613001,0,32,22614020*01
2014-08-14 16:02:08 Received : $NPR,16,14,8,14,14,2,8,688D84C,401647495,0,147,-63,89156,2613001,0,256,4C00000000000000000000000000000000000000000000000000000000000000000000000000000*0D
2014-08-14 16:02:18 Received : $NPRF,0,14,8,14,14,2,17,9155D8B,401659069,1,218,167,-56,59,89156,2613001,0,224,8B370578294519E6309F374167B2540B5096455645F8127DD094C4EA*72
2014-08-14 16:02:28 Received : $NPR,16,14,8,14,14,2,28,6888BC7,401647505,0,201,-70,89156,2613001,0,256,C70000000000000000000000000000000000000000000000000000000000000000000000000000*32
2014-08-14 16:02:36 Background : $NPRF,2,14,8,14,14,2,35,C8DB4F2,401648223,1,231,199,-66,60,89156,2613001,0,96,F2A6E00B9B04D73000000000*37
2014-08-14 16:02:48 Background : $NPR,16,14,8,14,14,2,48,688D85F,401647504,0,182,-58,89156,2613001,0,256,5F00000000000000000000000000000000000000000000000000000000000000000000000000000*31
2014-08-14 16:03:02 Background : $NPRF,4,14,8,14,14,3,1,0005322,401650238,1,192,176,-55,60,89156,2613001,0,32,22614030*02
2014-08-14 16:03:08 Background : $NPR,16,14,8,14,14,3,8,688D84C,401647522,0,171,-63,89156,2613001,0,256,4C00000000000000000000000000000000000000000000000000000000000000000000000000000*04
2014-08-14 16:03:14 Background : $NPR,16,14,8,14,14,3,13,6888BC7,401647491,0,114,-70,89156,2613001,0,256,C70000000000000000000000000000000000000000000000000000000000000000000000000000*30
2014-08-14 16:03:19 Background : $NPRF,0,14,8,14,14,3,18,9155D8B,401659089,1,187,199,-58,61,89156,2613001,0,224,8B354578294519B6709F374167B2540B50B6455645F8127DD094C7F4*0E
2014-08-14 16:03:58 Background : $NPR,16,14,8,14,14,3,58,6888BC7,401647494,0,256,-68,89156,2613001,0,256,C70000000000000000000000000000000000000000000000000000000000000000000000000000*36
2014-08-14 16:04:02 Background : $NPRF,4,14,8,14,14,4,1,0005322,401650241,1,221,209,-56,60,89156,2613001,0,32,22614040*08
2014-08-14 16:04:05 Background : $NPRF,1,14,8,14,14,4,5,CEF85BE,401670491,1,257,298,-73,60,89156,2613001,0,224,BE3768400B9B04D73015725C85C8B90457457000000000000000120*4B
2014-08-14 16:04:08 Background : $NPR,16,14,8,14,14,4,8,688D84C,401647503,0,180,-63,89156,2613001,0,256,4C00000000000000000000000000000000000000000000000000000000000000000000000000000*0E
2014-08-14 16:04:23 Background : $NPRF,0,14,8,14,14,4,23,9155D8B,401659104,1,273,212,-56,64,89156,2613001,0,224,8B370578294519E6309F374167B2540B5096455645F8127DD094C4EA*7B
2014-08-14 16:04:38 Background : $NPRF,2,14,8,14,14,4,37,C8DB4F2,401648244,1,129,168,-60,60,89156,2613001,0,96,F2A9600B9B04D72800000000*45
2014-08-14 16:04:43 Background : $NPR,16,14,8,14,14,4,43,6888BC7,401647499,0,4,-68,89156,2613001,0,256,C70000000000000000000000000000000000000000000000000000000000000000000000000000*33
2014-08-14 16:05:02 Background : $NPRF,4,14,8,14,14,5,1,0005322,401650254,1,182,197,-55,60,89156,2613001,0,32,22614050*00
2014-08-14 16:05:02 Background : $NPR,4,14,8,14,14,5,1,0005322,401650254,0,182,-55,89156,2613001,0,32,22614050*7E
2014-08-14 16:05:09 Background : $NPR,16,14,8,14,14,5,8,688D84C,401647508,0,97,-63,89156,2613001,0,256,4C00000000000000000000000000000000000000000000000000000000000000000000000000000*33
2014-08-14 16:05:19 Background : $NPRF,0,14,8,14,14,5,18,9155D8B,401659248,1,71,328,-57,55,89156,2613001,0,224,8B3545782945 19B6709F374167B2540B50B6455645F8127DD094C7F4*3F
2014-08-14 16:05:28 Background : $NPR,16,14,8,14,14,5,27,6888BC7,401647497,0,85,-70,89156,2613001,0,256,C70000000000000000000000000000000000000000000000000000000000000000000000000000*0E
2014-08-14 16:05:32 Background : $NPRF,4,14,8,14,14,5,31,0005322,401650232,1,154,166,-55,60,89156,2613001,0,32,22614053*36
2014-08-14 16:05:36 Background : $NPRF,2,14,8,14,14,5,35,C8DB4F2,401648239,1,187,163,-63,60,89156,2613001,0,96,F2AEA00B9B04D72400000000*47
2014-08-14 16:05:43 Background : $NPRF,1,14,8,14,14,5,42,CEF85BE,401670467,1,47,11,-66,60,89156,2613001,0,224,BE376A200B9B04D72C15725C85C8B90457457000000000000000120*79
```

The label “Background” is displayed in the log file when the HyperTerminal is OFF, and the label “Received” is displayed in the log file when the HyperTerminal is OPEN.

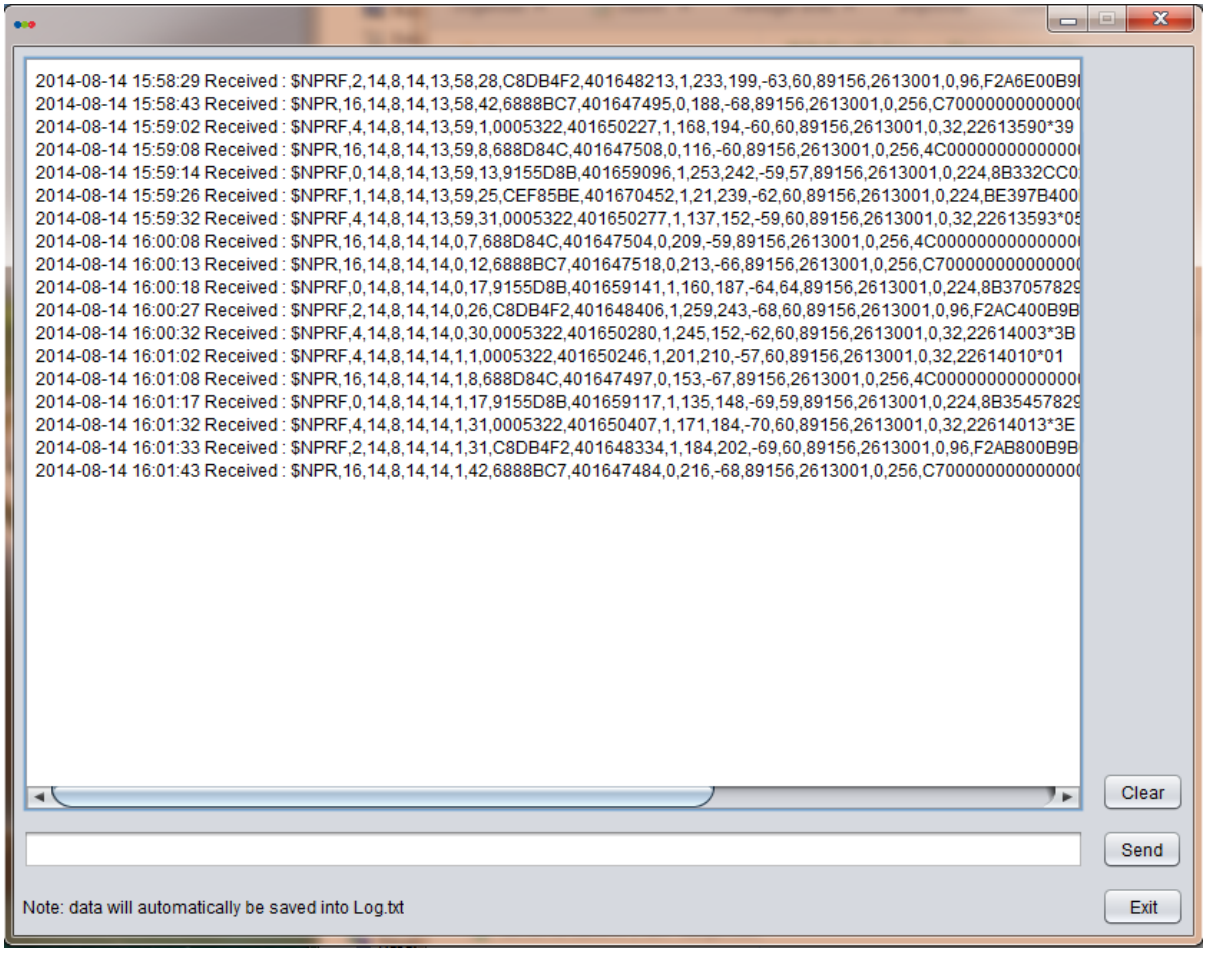
The commands and their parameters are as follows:

- NPR,i,y,m,d,h,mi,s,id,fr,f,ai,l,log,lag,dg,le,da
- NPRF,i,y,m,d,h,mi,s,id,fr,f,ai,am,l,p,log,lag,dg,le,da

where:

- i: index of the plaftorms in the Favorite platforms screen
- y, m, d, h, mi, s: year, month, day, hour, minutes, seconds
- id: hexadecimal ID (28 bits)
- fr: frequency (Hz)
- f: 8 bits validity parameter on Gonio direction, on GPS (0,0,0,0,0, validity Gonio direction, validity GPS, 0)
- ai, am: instantaneous angle and average angle
- l: level
- p: repetition period
- log, lag: latitude and longitude of the Gonio
- dg: Gonio direction (not implemented yet)
- le, da: message length and data message (in hexadecimal)

Below is a view when the HyperTerminal is opened. The recorded parameters are the same as in the log file.



7. Technical characteristics

RXG-134 receiver & AXG-134 antenna	
Frequency range	401.620 - 401.680 MHz
Bandwidth	± 30KHz to 0.5db
Frequency stability	±3.5ppm over the temperature range
Minimum detection sensitivity	-131dbm (63nVrms @50Ω)
Accuracy of angle measurement	±5°
Resolution of the measurement of the angle	±1°
Standard length of RG58 antenna cables	5m
Maximum length of RG58 antenna cable with extension	25m
Battery Charging Time (External Charger)	7h
Battery charging time via USB	15h
Internal Battery Capacity	6800mAh
Autonomy (USB & GPS OFF)	>50h @ 25°C
Temperature range	0°C to +45°C for battery charging -20°C to +50°C in use
Waterproof rating	IP 66
GONIO RXG 134 dimensions	135mm x 92.5mm x 34mm
GONIO RXG 134 weight	565gr
Dimension of AXG 134antenna	400mm x 65mm
AXG 134 Antenna Weight (without cable)	650gr