Quick Manual for Asalab and equipment for ECoG

This manual is not a complete description of ANT equipment for recording and Asalab software. It was made in order to help for a quick use with basic knowledge of the software and equipment. For more details there is the manual of the software in the help tab in Asalab and for the equipment there is all the ANT documentation in the laboratory.

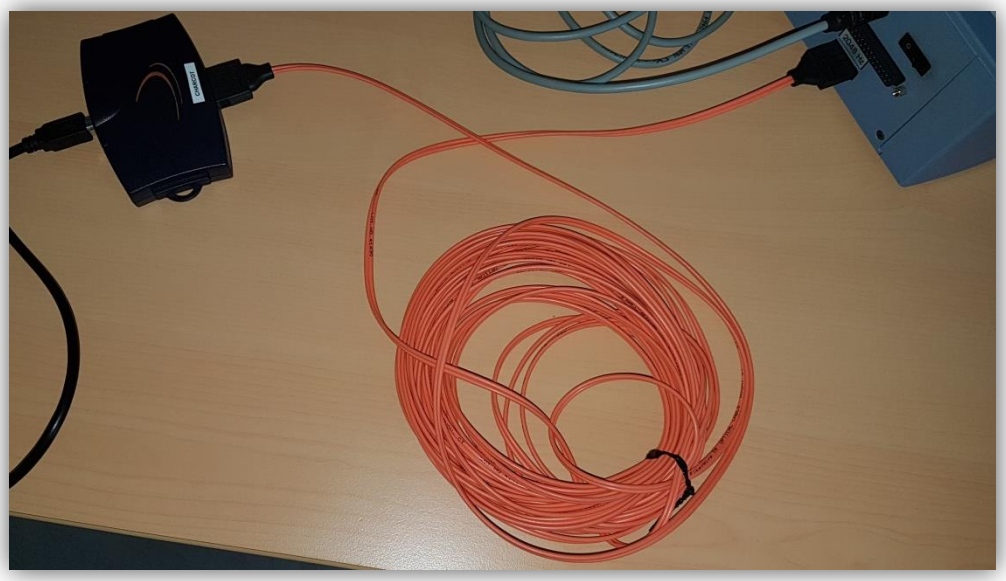
1) Equipment

a- Amplifier and cables

In Figure 1, here is the amplifier with all the cables to connect it to a computer:

This is the FUSBI, it's an interface between glass fiber and USB port:

This orange cable is the glass fiber. The must not be bent or folded!!!

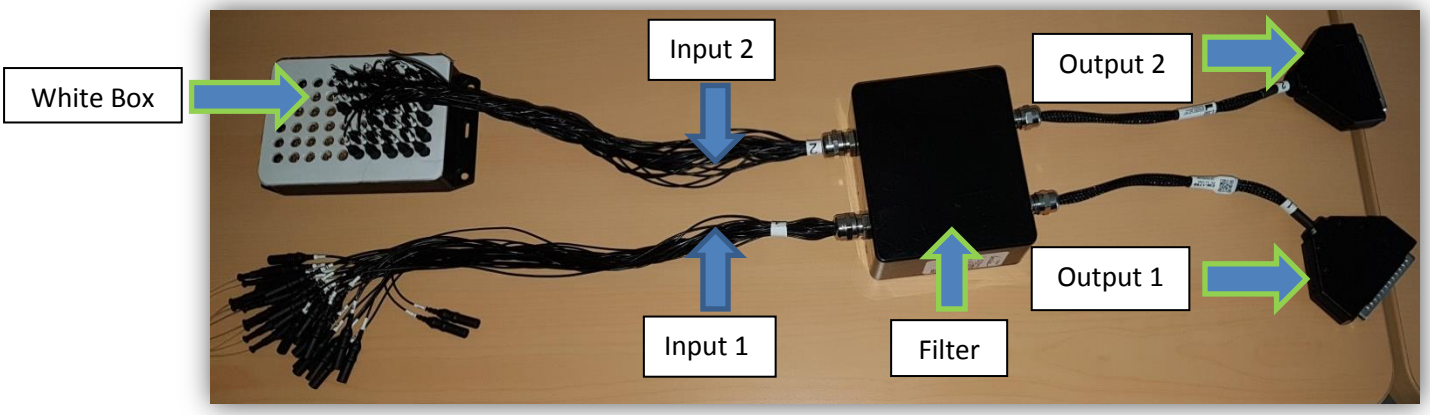


The blue box is the amplifier power supply box.

This blue box is connected to the amplifier by the grey cable.

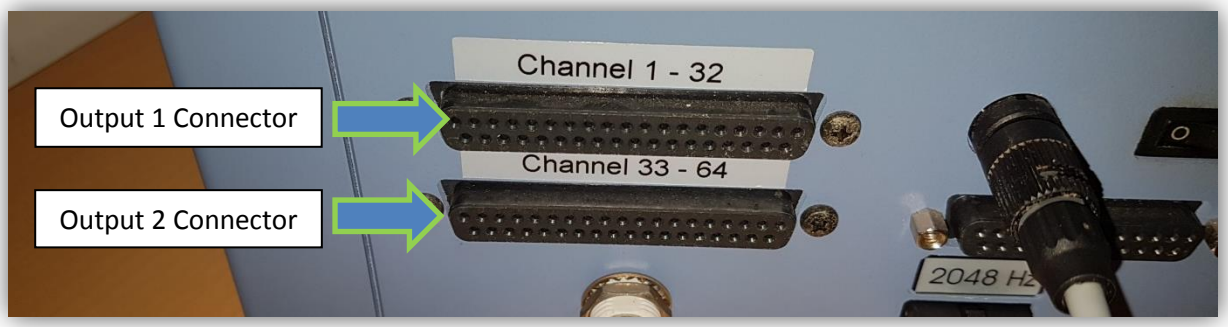
b- Filter

It's an high-pass filter in front of the normal analogue input. We will use this filter because the electrode on ECoG grids are made from Platina, whereas other metals on the body may be used for example Ag/AgCl. And it may cause drifts on the signal.
It is an RC filter (resistance capacity) and its cut-off frequency is 1.6 Hz. For more details, see Annex 1.



In case of recording only 32 channels, Input 2 and Output 2 might be unused. In this case it is recommended to short circuit all pins on the input connector of the filter bank. The white box function is to short circuit all these empty connectors. (The output 2 connector must not be connected to the amplifier in this case).

In the next pictures, we can see the connector where the filter outputs are connected.



2) Software Asalab

Before opening the software, check that the amplifier is connected to the computer (USB part of the Fusbi) and that it's switched on.

When the amplifier is switched on, you can see a green LED on it.

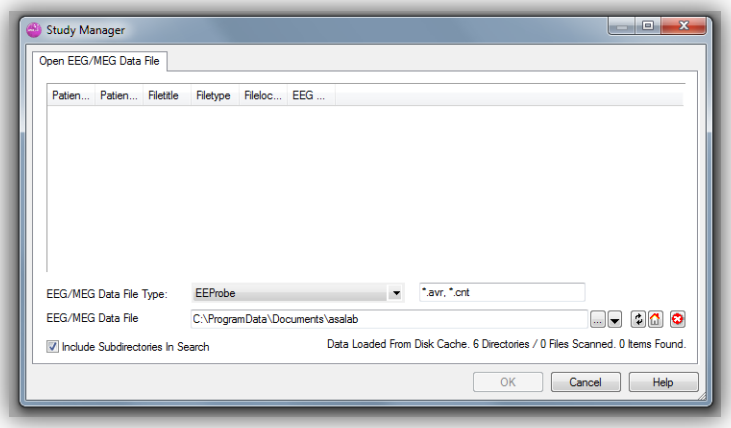
a- The USB key for the licence

This USB key (dongle) is necessary to open the software. Don't forget to connect it!

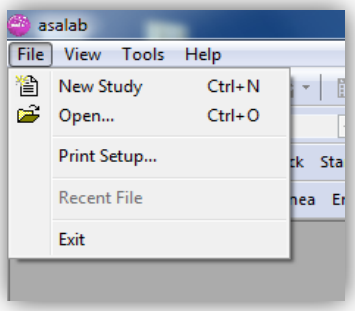
b- How to use Asalab to make an acquisition

Open Asalab.

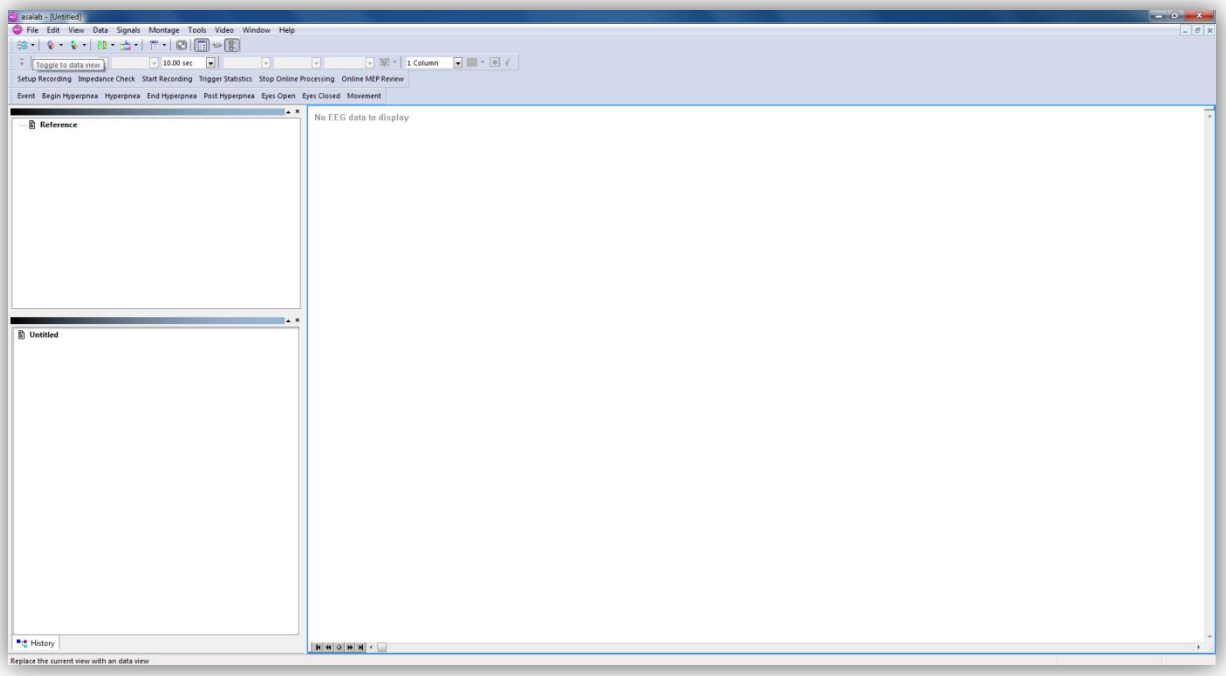
When you open Asalab you have this window:



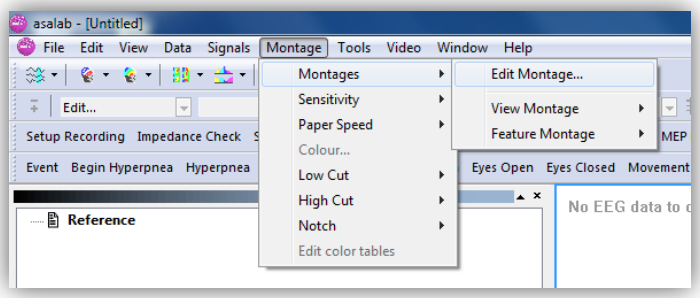
Click on Cancel (because you want to make a new acquisition). Click on File and open a New Study.



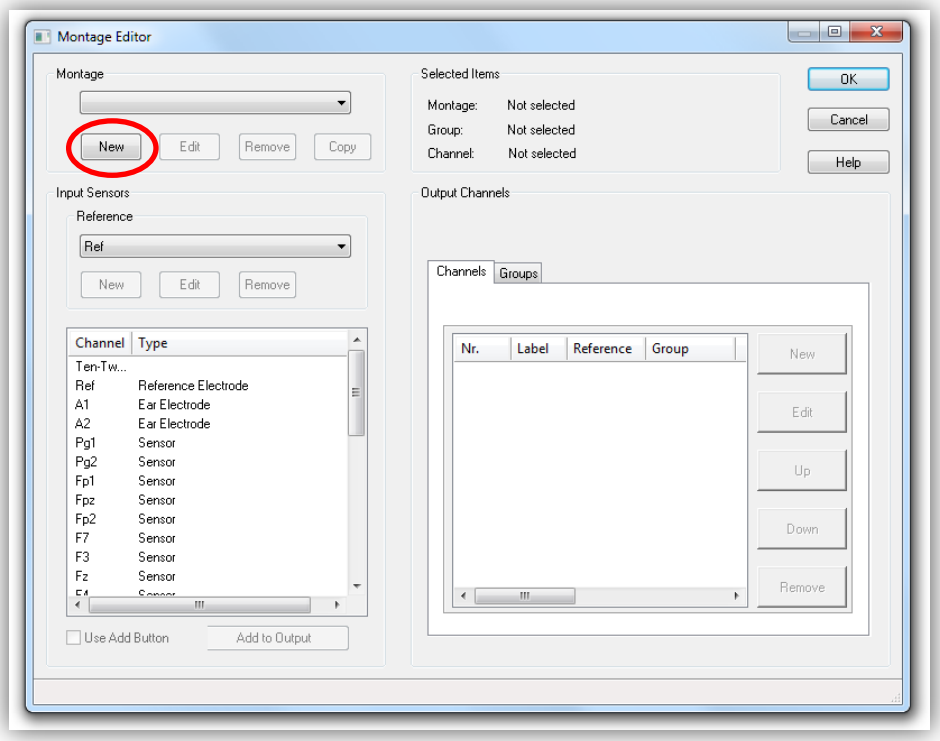
Now you have this screen:



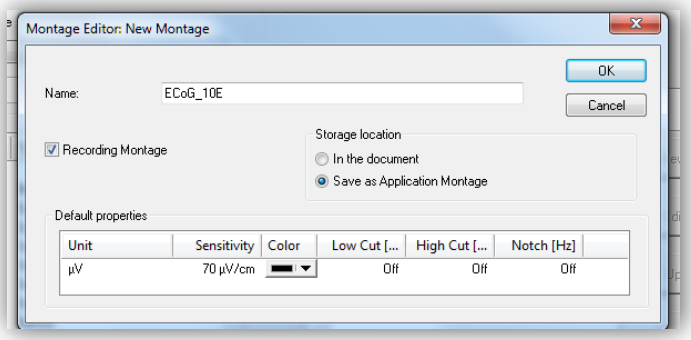
Now if this is the first time you use this software, you have to create your own Montage. To create your montage click on Montage -> Edit Montage.



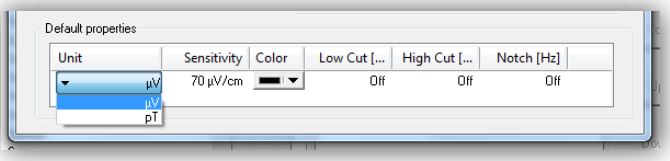
This window appears:

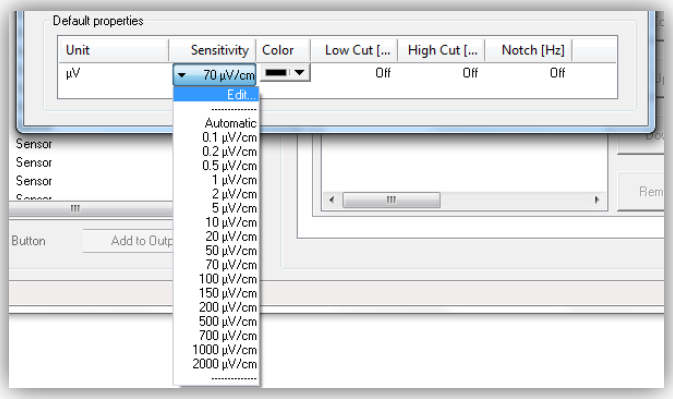


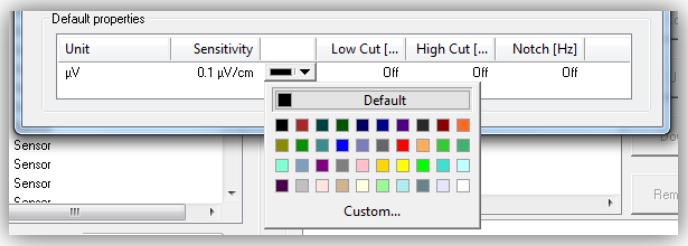
Click on New and a new window appears:

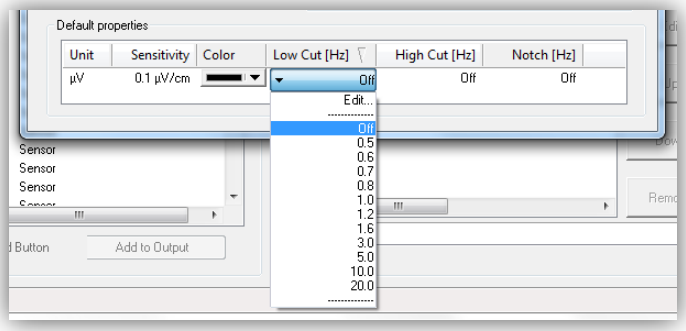


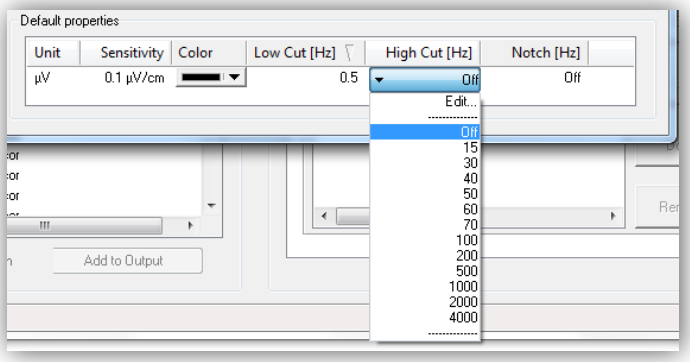
Choose a Name (Here I choose ECoG_10E because my montage is for ECoG studies and I have 10 electrodes). Check the box Recording Montage and choose the option Save as Application Montage. In the section Default properties you can choose the Unit, the sensitivity, the colour, the different filters.

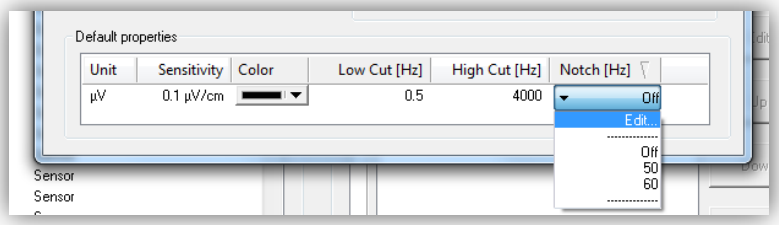

Default properties
Unit
Sensitivity
Color
Low Cut [...
High Cut [...
Notch [Hz]
µV
70 µV/cm
Off
Off
Off
µV
pT

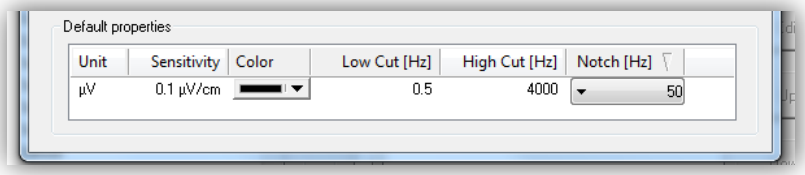

Default properties
Unit
Sensitivity
Color
Low Cut [...
High Cut [...
Notch [Hz]
µV
70 µV/cm
Off
Off
Off
Edit...
Automatic
0.1 µV/cm
0.2 µV/cm
0.5 µV/cm
1 µV/cm
2 µV/cm
5 µV/cm
10 µV/cm
20 µV/cm
50 µV/cm
70 µV/cm
100 µV/cm
150 µV/cm
200 µV/cm
500 µV/cm
700 µV/cm
1000 µV/cm
2000 µV/cm
Sensor
Sensor
Sensor
Button


Default properties
Unit
Sensitivity
Low Cut [...
High Cut [...
Notch [Hz]
µV
0.1 µV/cm
Off
Off
Off
Default
Custom...
Sensor
Sensor
Sensor


Default properties
Unit
Sensitivity
Color
Low Cut [Hz]
High Cut [Hz]
Notch [Hz]
µV
0.1 µV/cm
Off
Off
Off
Edit...
Off
0.5
0.6
0.7
0.8
1.0
1.2
1.6
3.0
5.0
10.0
20.0
Sensor
Sensor
Sensor
Button
Add to Output

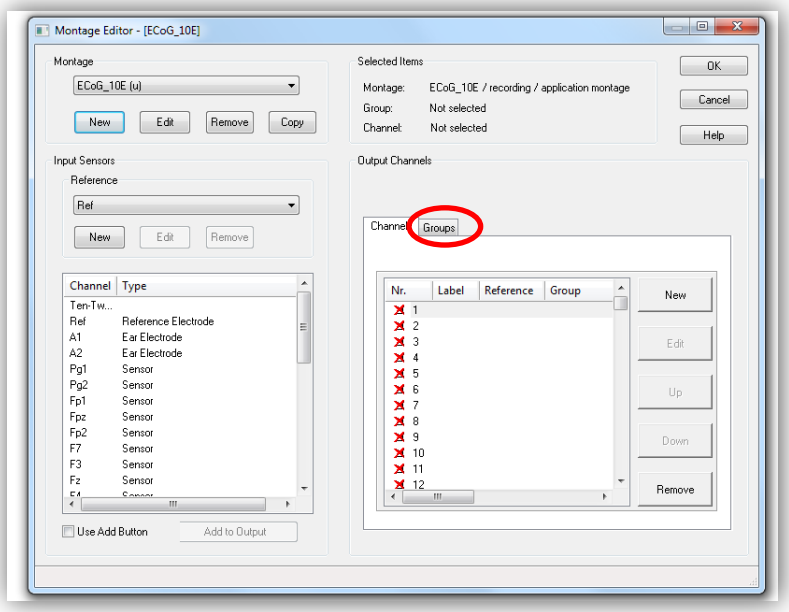

Default properties
Unit
Sensitivity
Color
Low Cut [Hz]
High Cut [Hz]
Notch [Hz]
µV
0.1 µV/cm
0.5
Off
Off
Edit...
Off
15
30
40
50
60
70
100
200
500
1000
2000
4000
Add to Output



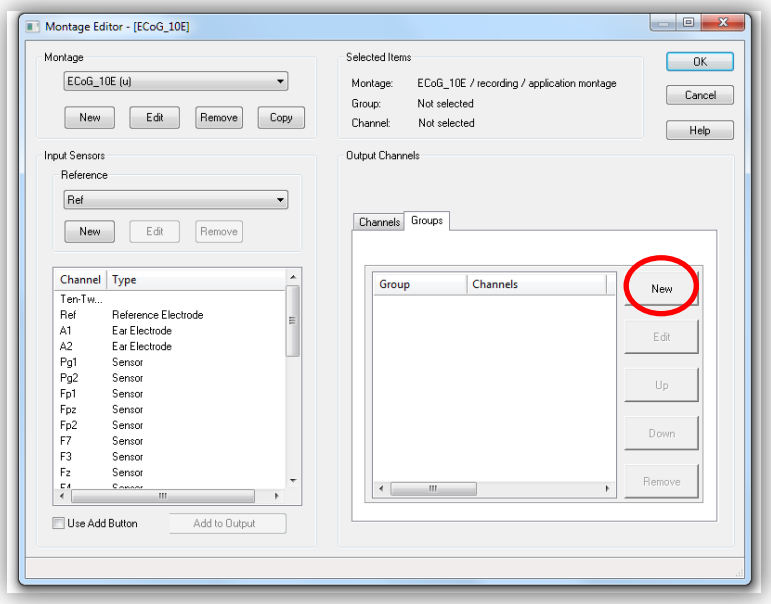


When all parameters are chosen. Click on OK.

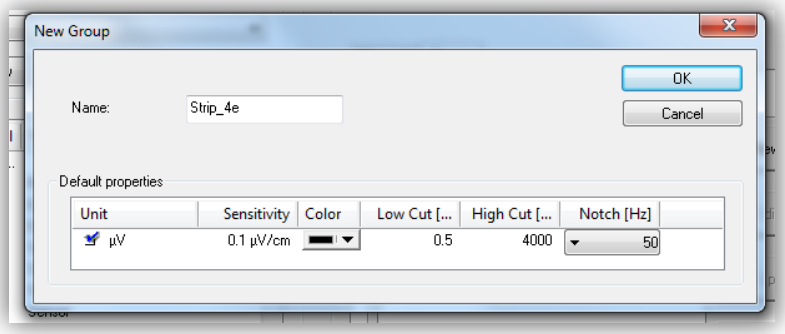
Now you have this window on your screen:

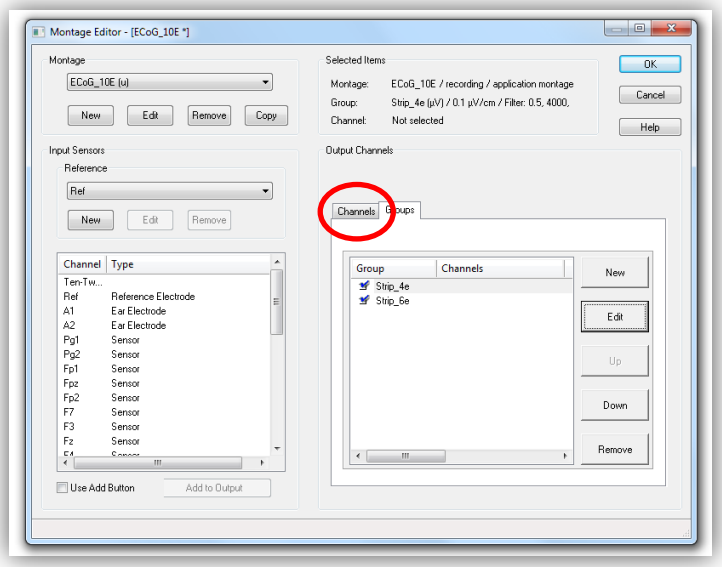


Now we will see how to create different groups to be able to distinguish the different strips of electrodes. Click on Groups and Click on New.

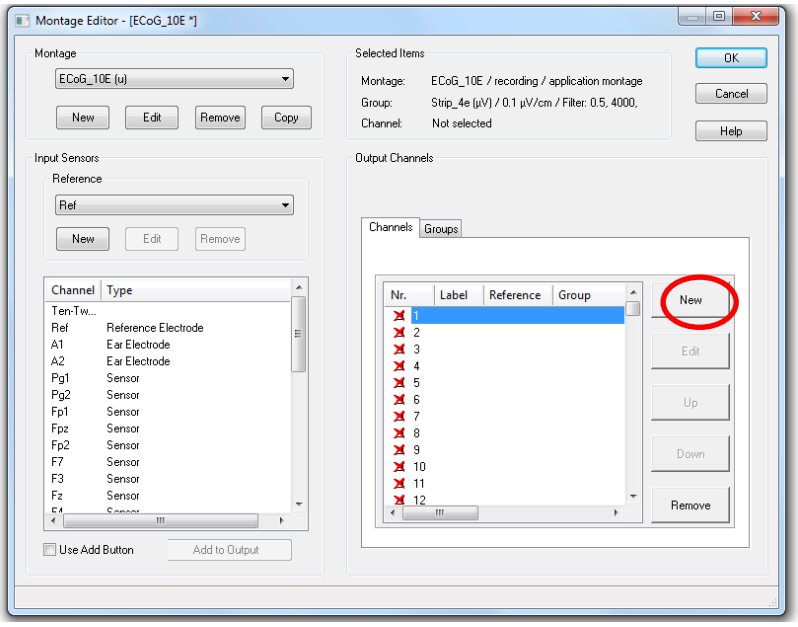


A new window appears. Choose a name (Strip_4e and Strip_6e for me because I have 2 Strip: one with 4 electrodes and the second with 6 electrodes). You can choose all parameters (colours, filters, sensitivity…)

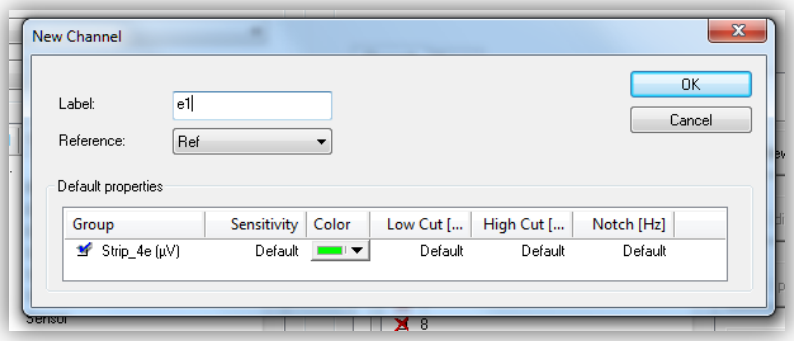


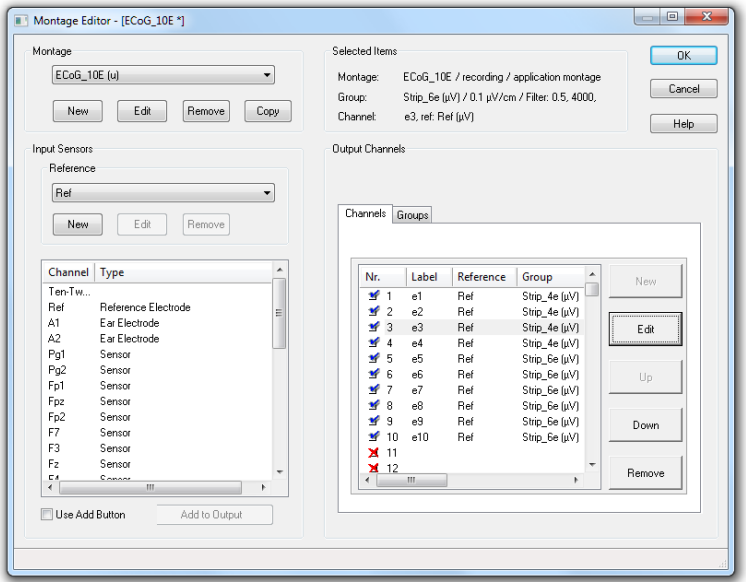


For each group, we will create electrodes (6 in Strip_6e and 4 in Strip_4e). Select Channels.

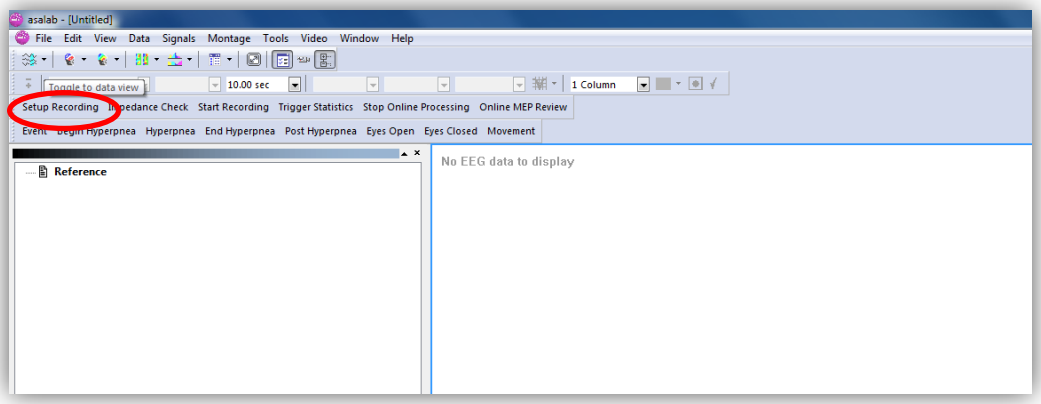


Select the first line (= the first electrode) and click on New. Write a label for the electrode and choose the group to apply to this electrode. If you choose default for each parameter (color, sensitivity, filter) the electrode will have all the group parameters that you chose before.

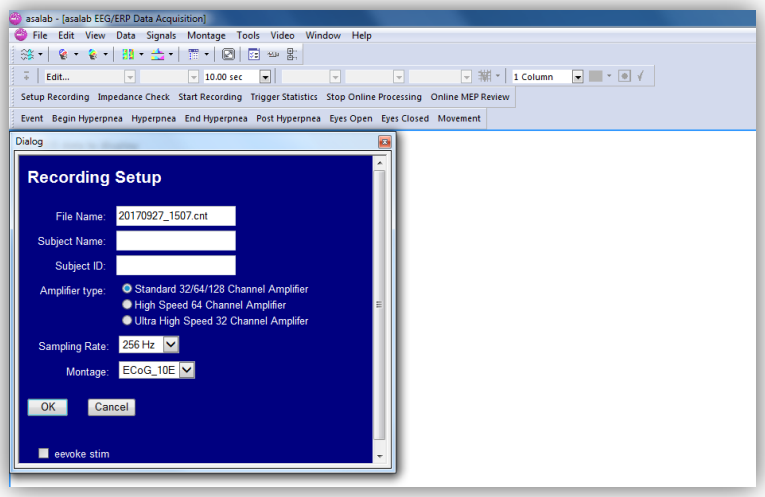


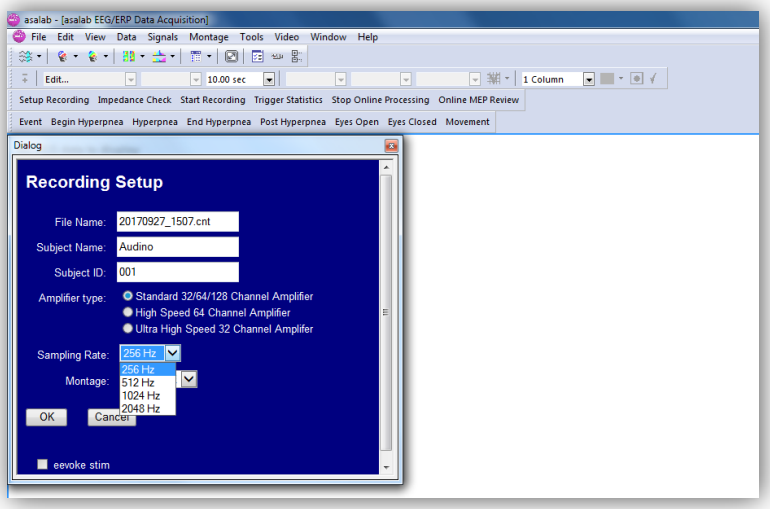


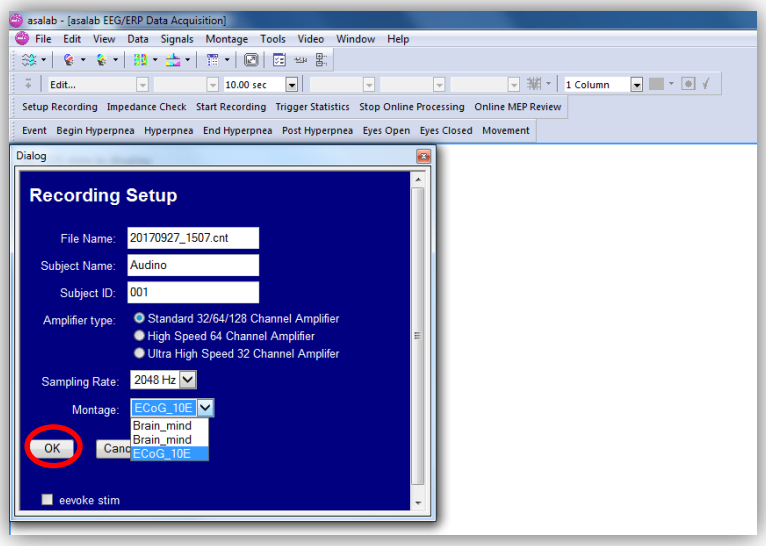
Now we can record signal. To record signal click on Setup Recording.



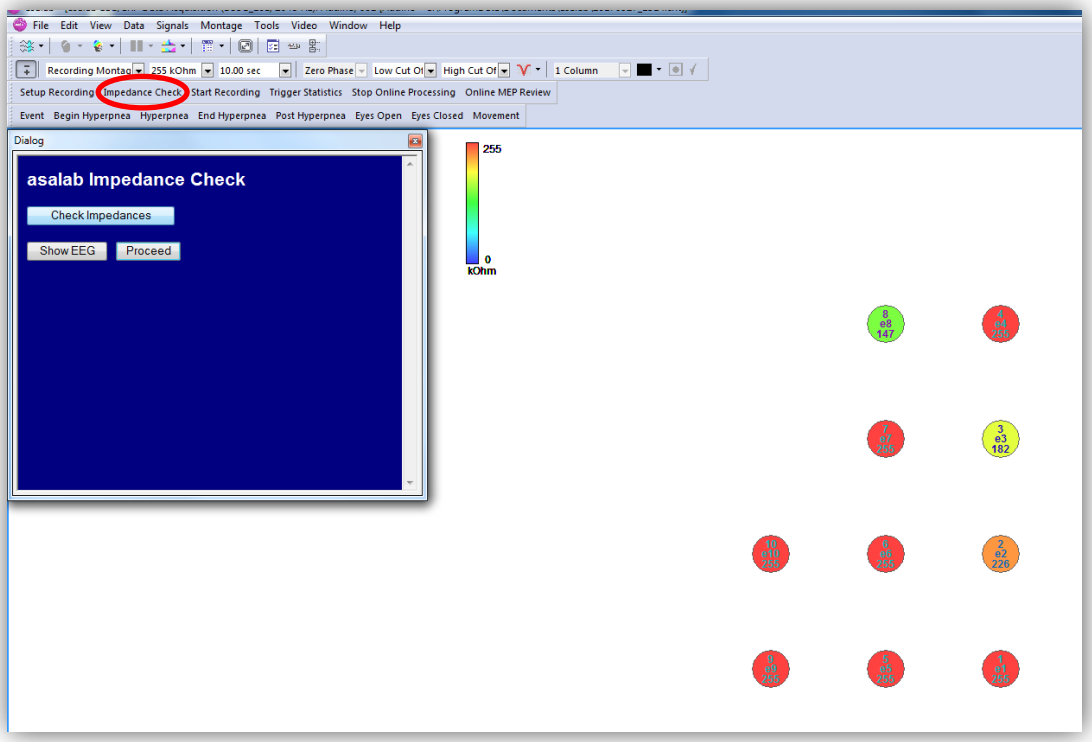
A new window appears. Choose the parameters. Your new montage appears in the section Montage.



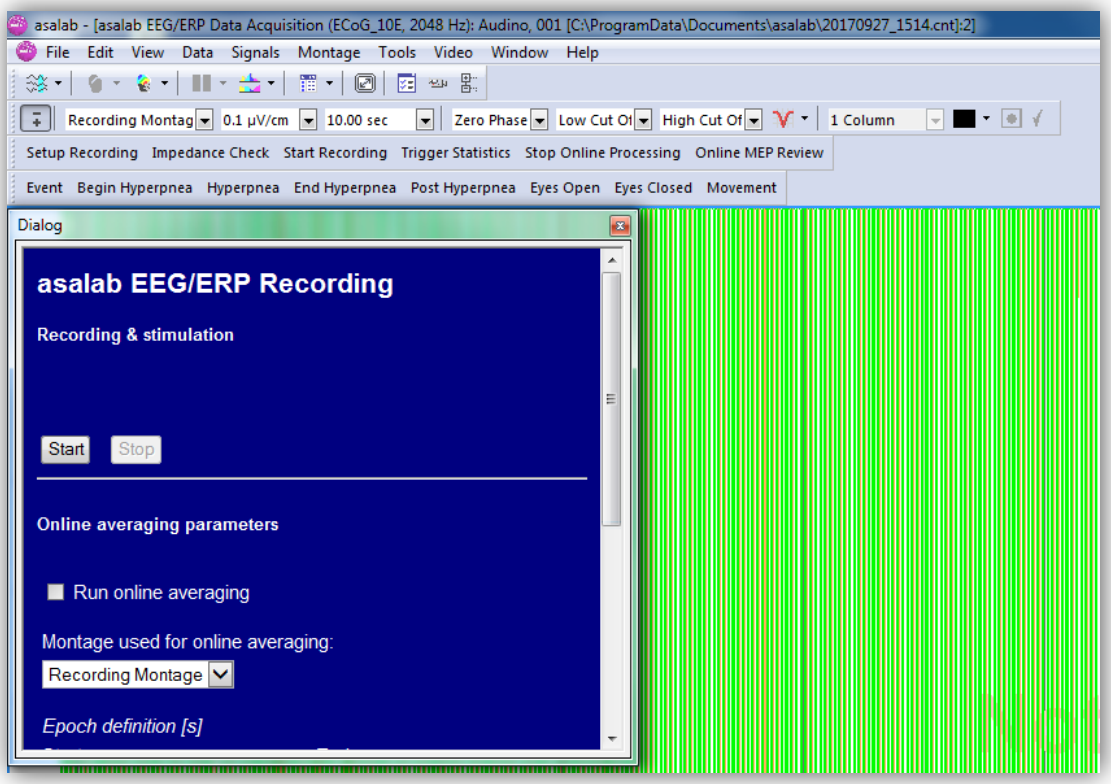


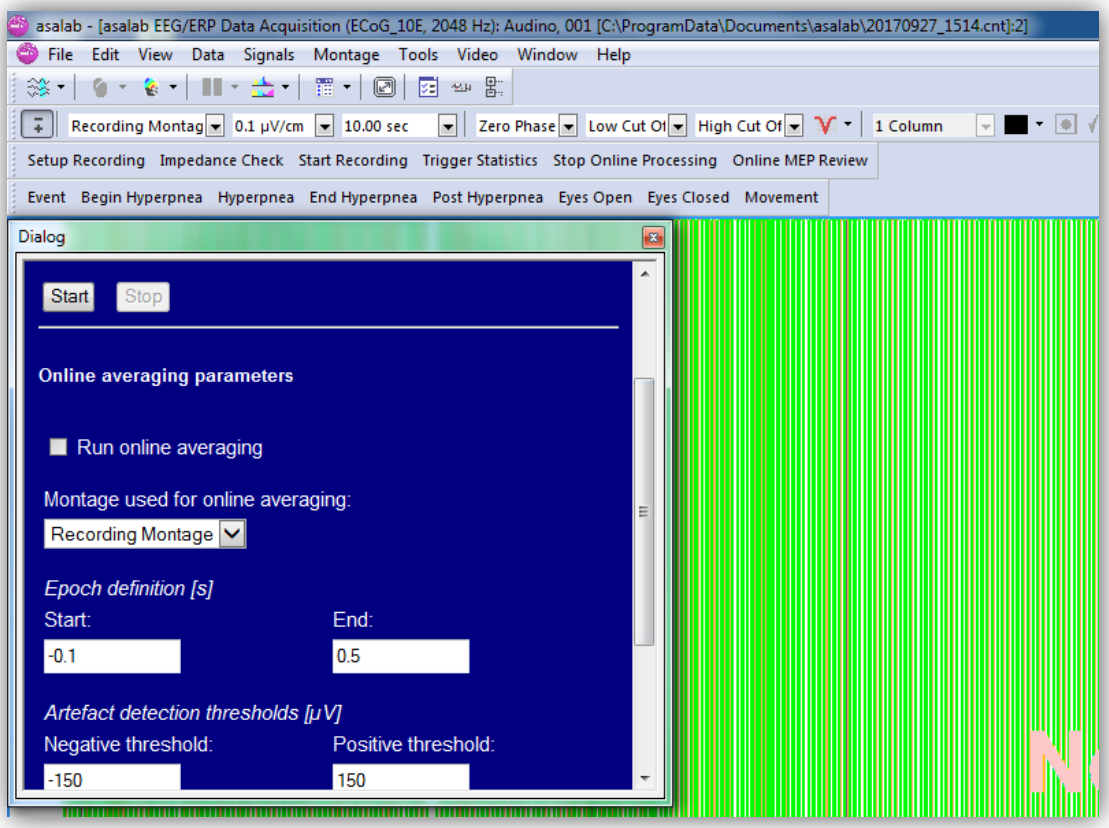


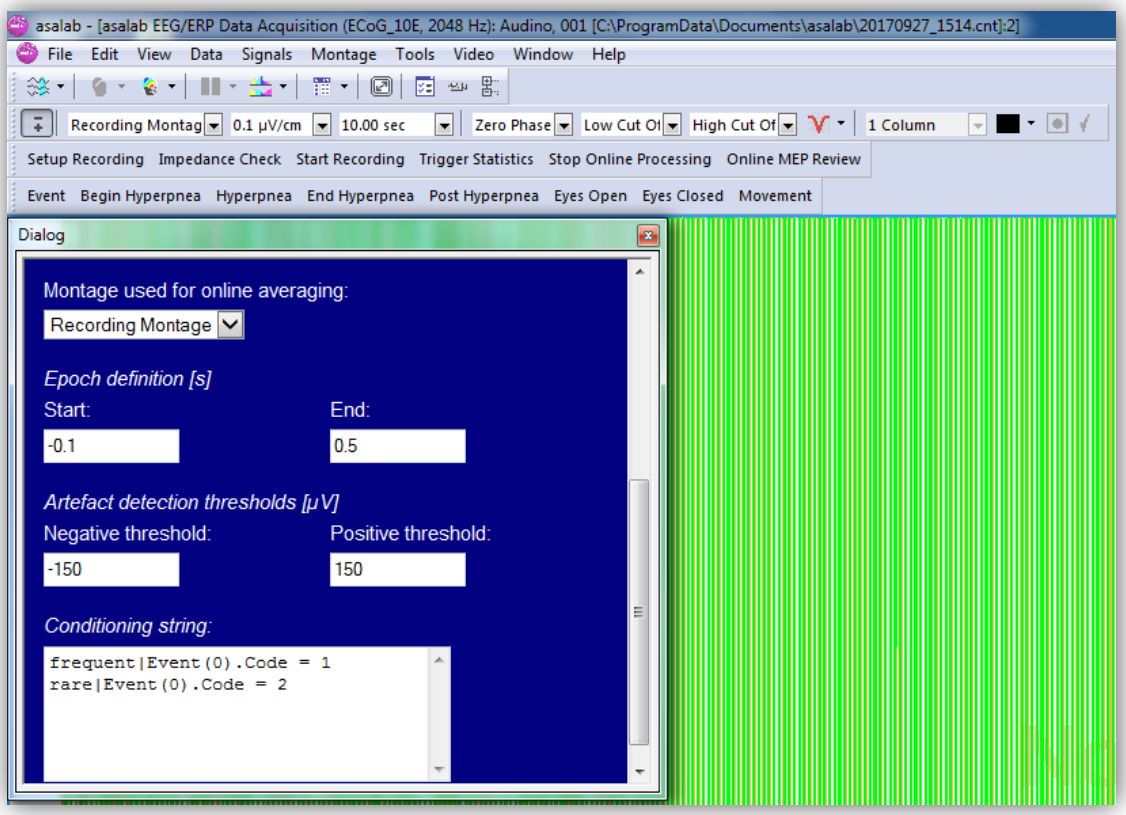
When you chose all the parameters click on OK. To check impedance, Click on impedance Check

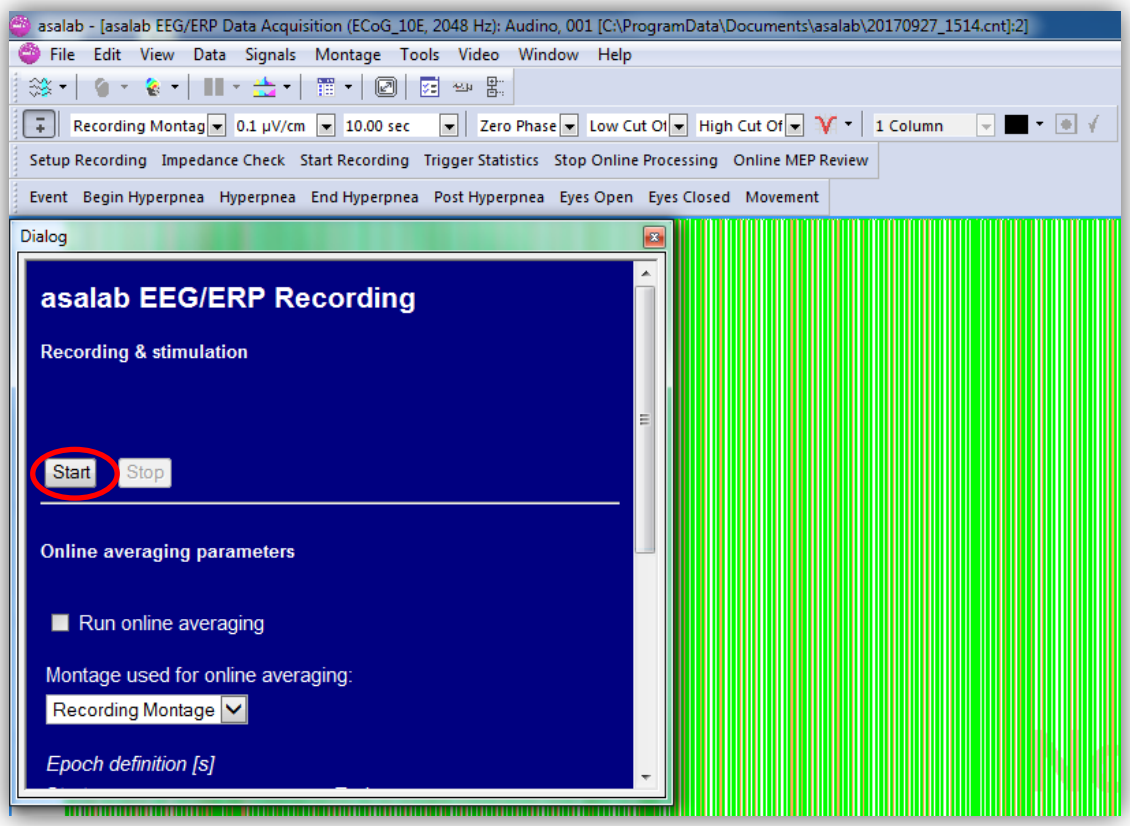


When the impedance is good, the colour is green. Now we can record. Choose all the parameters and you click on start :


asalab - [asalab EEG/ERP Data Acquisition (ECoG_10E, 2048 Hz): Audino, 001 [C:\ProgramData\Documents\asalab\20170927_1514.cnt]:2]
File Edit View Data Signals Montage Tools Video Window Help
Recording Montag 0.1 µV/cm 10.00 sec Zero Phase Low Cut Of High Cut Of 1 Column
Setup Recording Impedance Check Start Recording Trigger Statistics Stop Online Processing Online MEP Review
Event Begin Hyperpnea Hyperpnea End Hyperpnea Post Hyperpnea Eyes Open Eyes Closed Movement
Dialog
asalab EEG/ERP Recording
Recording & stimulation
Start
Stop
Online averaging parameters
Run online averaging
Montage used for online averaging:
Recording Montage
Epoch definition [s]

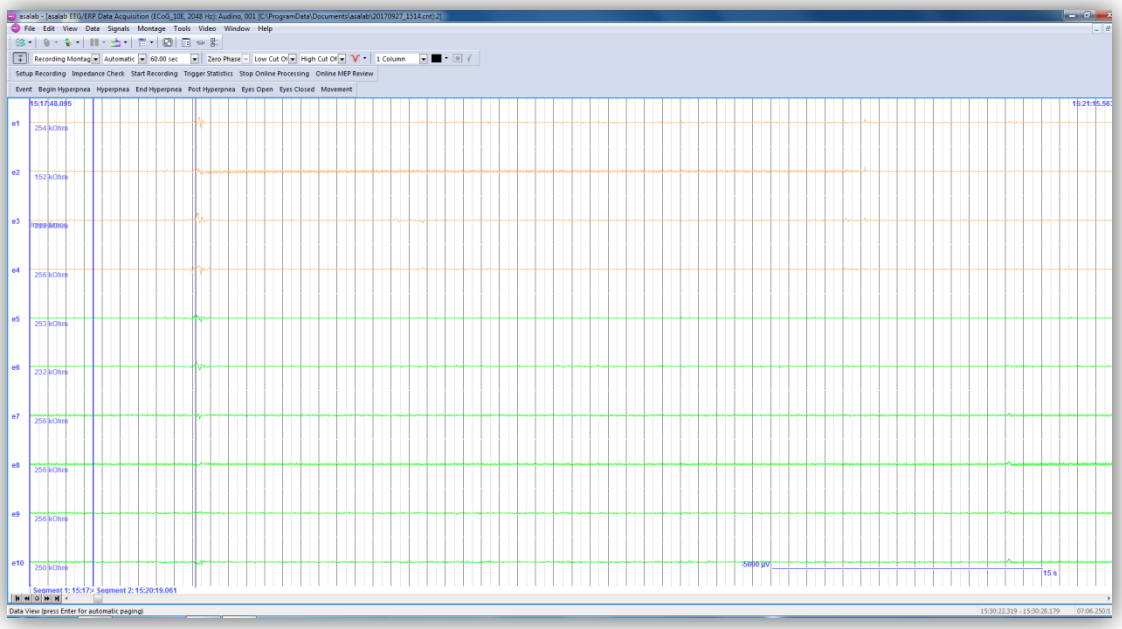

asalab - [asalab EEG/ERP Data Acquisition (ECoG_10E, 2048 Hz): Audino, 001 [C:\ProgramData\Documents\asalab\20170927_1514.cnt]:2]
File Edit View Data Signals Montage Tools Video Window Help
Recording Montag 0.1 µV/cm 10.00 sec Zero Phase Low Cut Of High Cut Of 1 Column
Setup Recording Impedance Check Start Recording Trigger Statistics Stop Online Processing Online MEP Review
Event Begin Hyperpnea Hyperpnea End Hyperpnea Post Hyperpnea Eyes Open Eyes Closed Movement
Dialog
Start
Stop
Online averaging parameters
Run online averaging
Montage used for online averaging:
Recording Montage
Epoch definition [s]
Start:
End:
-0.1
0.5
Artefact detection thresholds [µV]
Negative threshold:
Positive threshold:
-150
150



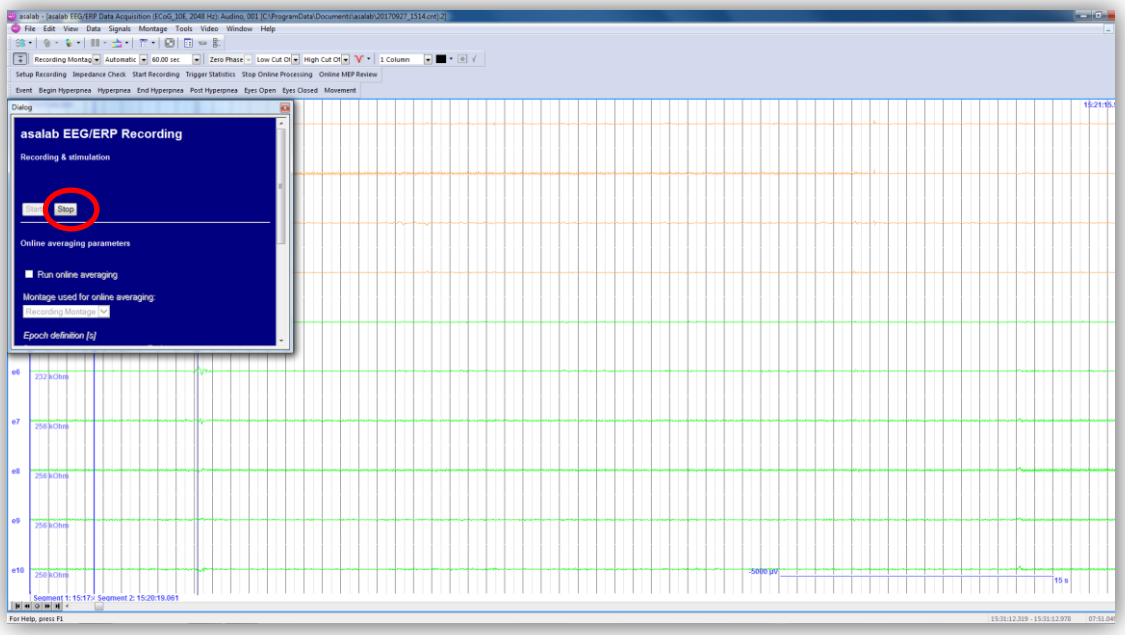


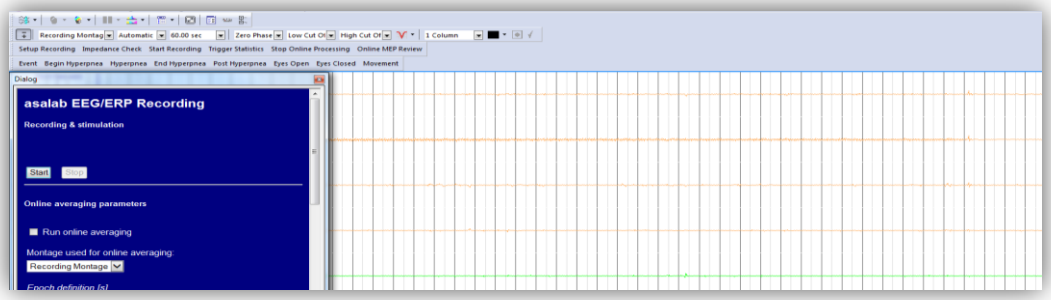
When your signal is as you can see in the background, you have to change the sensitivity.

Now you have this signal:

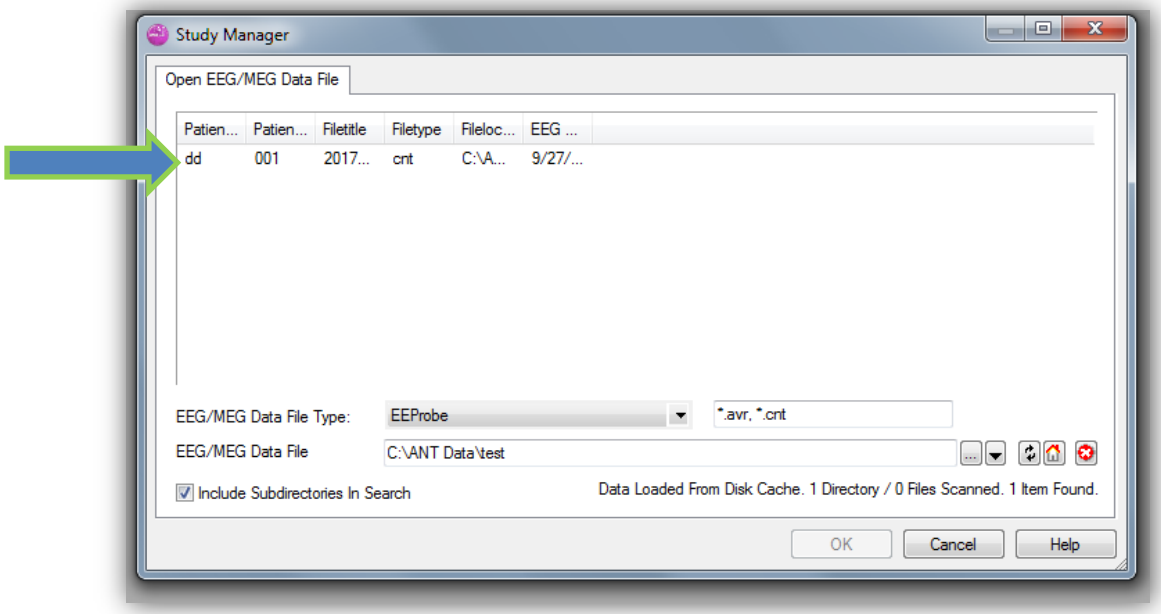


To stop Recording click on Stop.





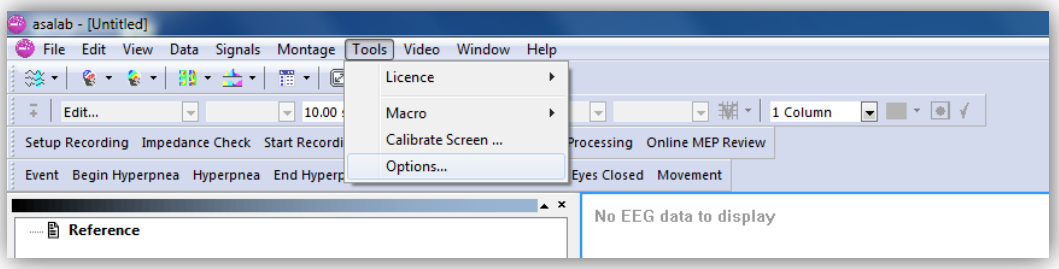
If you want to open your acquisition file, when you will open asalab, in the first window opened, you will select you file:



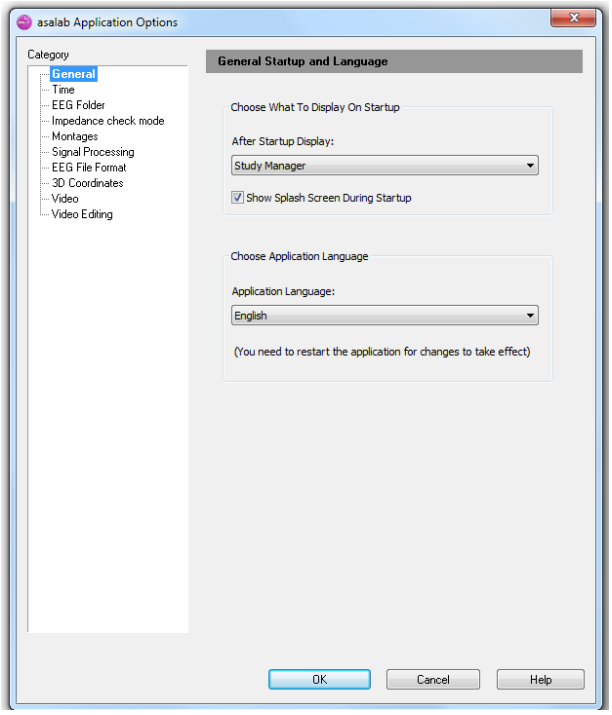
c- Software parameters

This part is just to explain the main and important options.

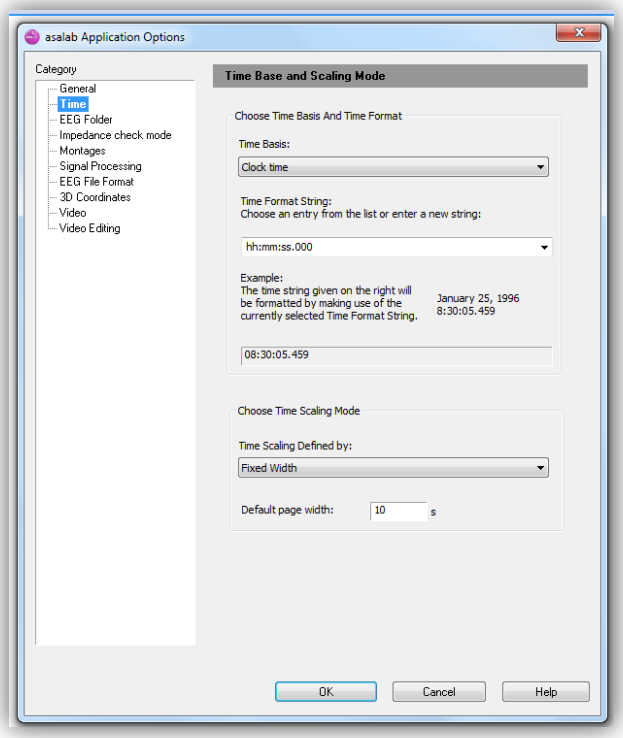
Select Tools -> Options…

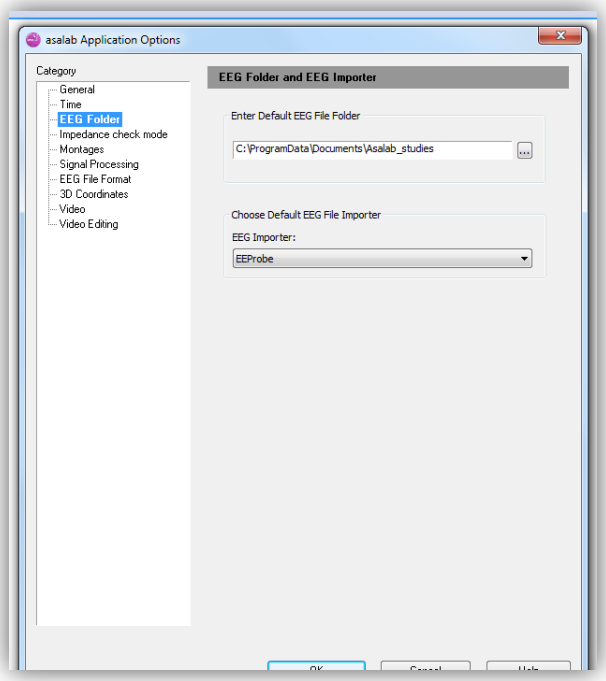


This window appears:

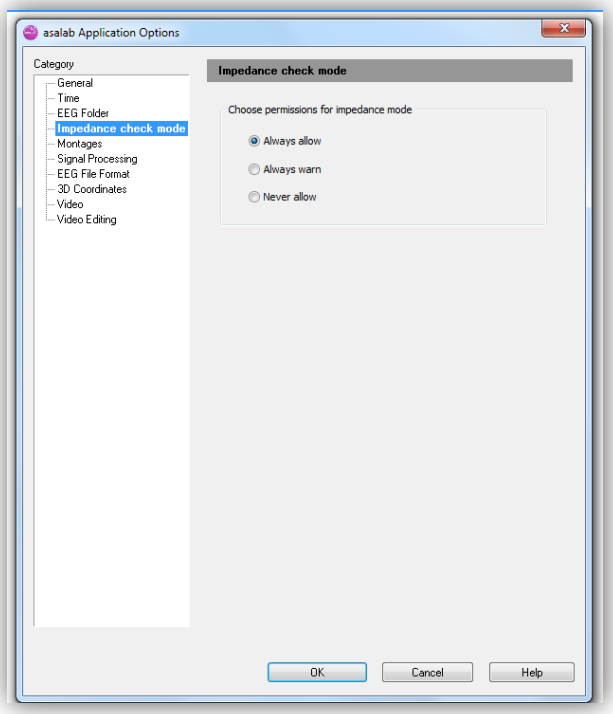


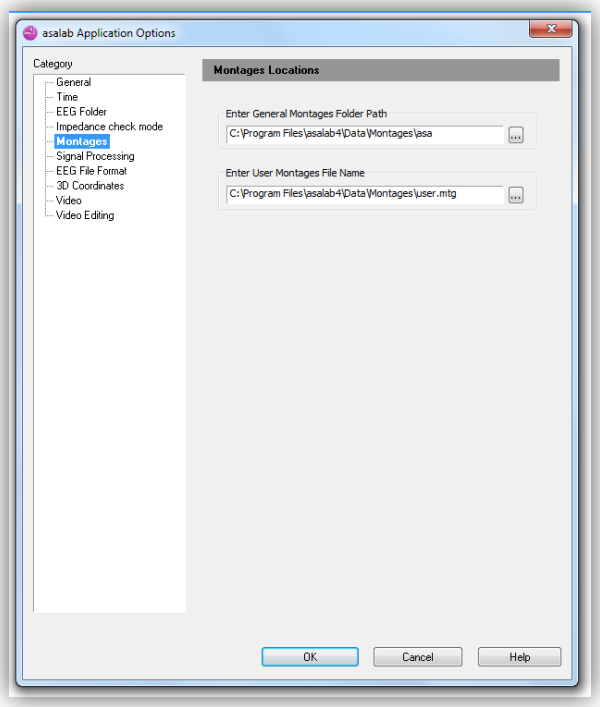
If you click on each element of the tree (to the left), you will see all the options.

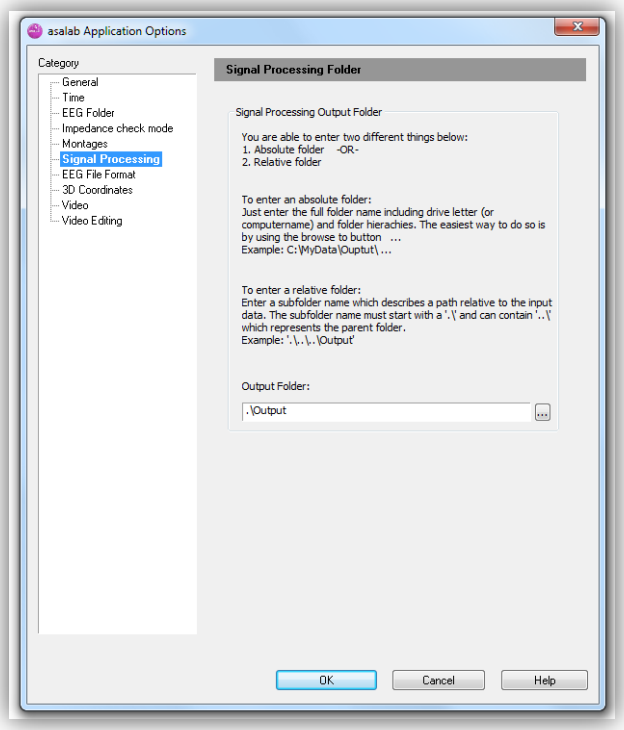


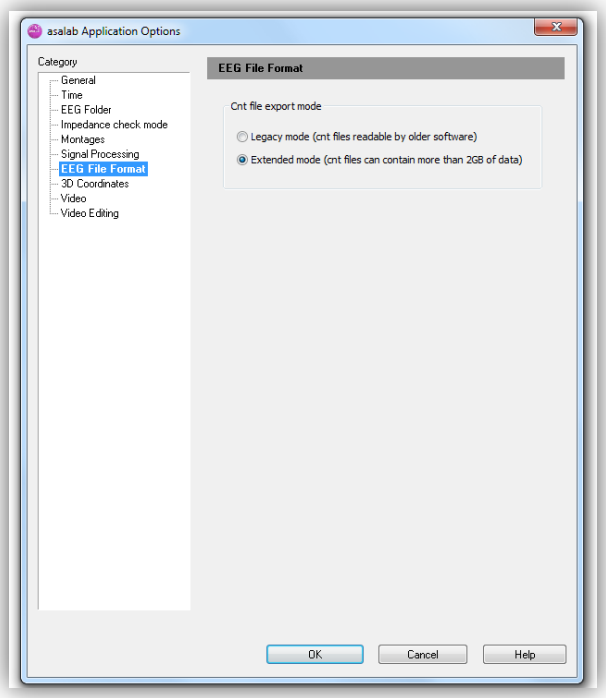


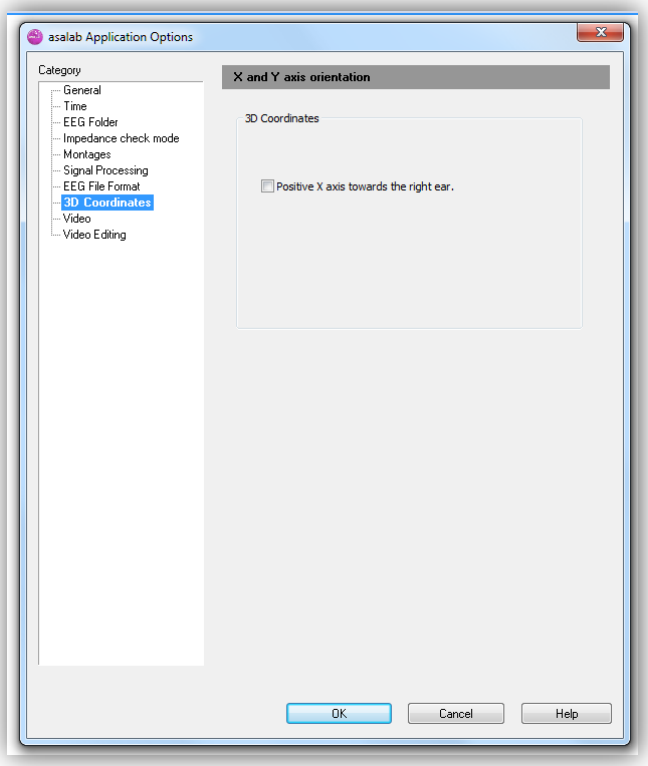
The folder in which the recordings are saved (EEG Folder) must not be modified (or it must be checked that the desired folder has all possible permissions).

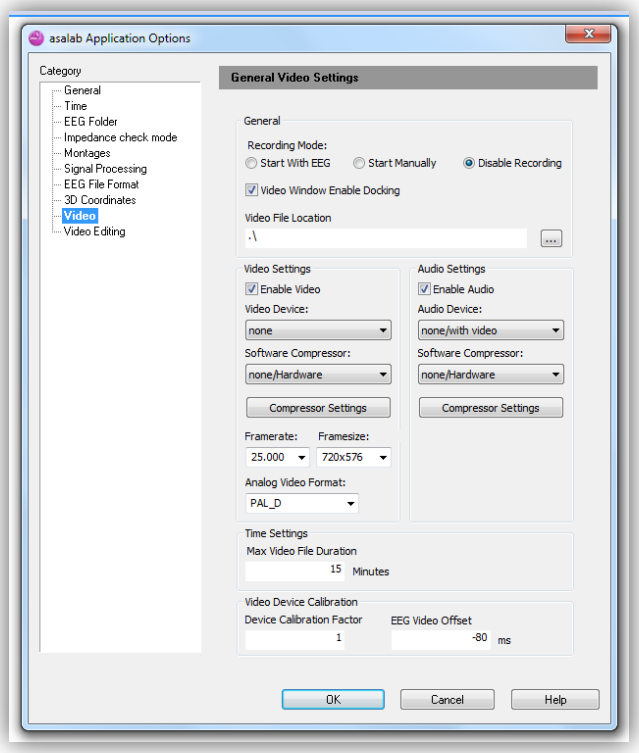


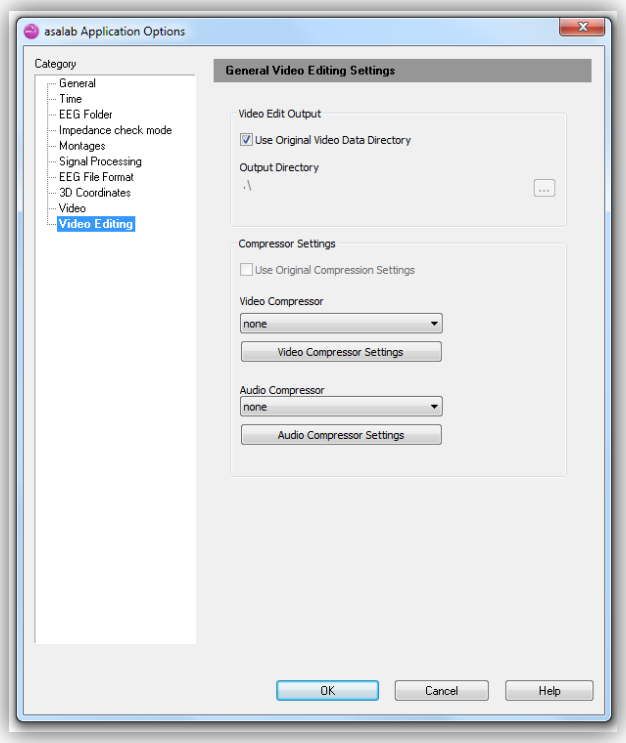

asalab Application Options
Category
General
Time
EEG Folder
Impedance check mode
Montages
Signal Processing
EEG File Format
3D Coordinates
Video
Video Editing
Montages Locations
Enter General Montages Folder Path
C:\Program Files\asalab4\Data\Montages\asa
Enter User Montages File Name
C:\Program Files\asalab4\Data\Montages\user.mtg
OK
Cancel
Help


asalab Application Options
Category
General
Time
EEG Folder
Impedance check mode
Montages
Signal Processing
EEG File Format
3D Coordinates
Video
Video Editing
Signal Processing Folder
Signal Processing Output Folder
You are able to enter two different things below:
1. Absolute folder -OR-
2. Relative folder
To enter an absolute folder:
Just enter the full folder name including drive letter (or computername) and folder hierachies. The easiest way to do so is by using the browse to button ...
Example: C:\MyData\Ouptut\...
To enter a relative folder:
Enter a subfolder name which describes a path relative to the input data. The subfolder name must start with a '.\' and can contain '..\' which represents the parent folder.
Example: '.\..\..\Output'
Output Folder:
.\Output
OK
Cancel
Help


asalab Application Options
Category
General
Time
EEG Folder
Impedance check mode
Montages
Signal Processing
EEG File Format
3D Coordinates
Video
Video Editing
EEG File Format
Cnt file export mode
Legacy mode (cnt files readable by older software)
Extended mode (cnt files can contain more than 2GB of data)
OK
Cancel
Help


asalab Application Options
Category
General
Time
EEG Folder
Impedance check mode
Montages
Signal Processing
EEG File Format
3D Coordinates
Video
Video Editing
X and Y axis orientation
3D Coordinates
Positive X axis towards the right ear.
OK
Cancel
Help


asalab Application Options
Category
General
Time
EEG Folder
Impedance check mode
Montages
Signal Processing
EEG File Format
3D Coordinates
Video
Video Editing
General Video Settings
General
Recording Mode:
Start With EEG
Start Manually
Disable Recording
Video Window Enable Docking
Video File Location
.\
Video Settings
Enable Video
Video Device:
none
Software Compressor:
none/Hardware
Compressor Settings
Framerate:
25.000
Framesize:
720x576
Analog Video Format:
PAL_D
Audio Settings
Enable Audio
Audio Device:
none/with video
Software Compressor:
none/Hardware
Compressor Settings
Time Settings
Max Video File Duration
15
Minutes
Video Device Calibration
Device Calibration Factor
1
EEG Video Offset
-80
ms
OK
Cancel
Help


asalab Application Options
Category
General
Time
EEG Folder
Impedance check mode
Montages
Signal Processing
EEG File Format
3D Coordinates
Video
Video Editing
General Video Editing Settings
Video Edit Output
Use Original Video Data Directory
Output Directory
.\
Compressor Settings
Use Original Compression Settings
Video Compressor
none
Video Compressor Settings
Audio Compressor
none
Audio Compressor Settings
OK
Cancel
Help

3) Issues

a- With Asalab

When we installed the software, the first time, some modules did not install correctly and the problem we faced was that we could not make acquisitions. To solve this problem it was necessary to reinstall the software.

b- With amplifier

We don’t know why but when we connect the amplifier by a USB port with the computer, sometimes it is not recognized by the computer. To solve the problem change the USB port.