



NeuroNexus

Reduce Noise in Recording System

Acute and Chronic Experiments

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Table of Contents

Table of Contents	2
Recommendations for Reducing Noise in Electrophysiology Setup	3

Recommendations for Reducing Noise in Electrophysiology Setup

One of the most common noise problems is 50 Hz (Europe) or 60 Hz (US) 'ground' noise, that can be reduced by properly grounding the electrophysiology setup and thereby avoiding ground loops between instruments. Higher frequency noise sources might arise from the computer, monitor, room lights, digital oscilloscope, or instrument power supplies.

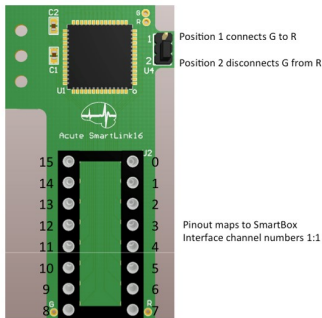
It is important is to connect all equipment to the same ground, since different sockets may not be at the very same voltage level. From a single wall socket, connect a power strip that will ground all equipment.

To reduce noise, try each suggested method alone or combined with other steps to achieve the desired level of noise. Using suggested methods, you would be able to capture very clean signal with a very low level of noise, however, every set up is different and suffers from unique noise issues. Then, please contact support@neuronexus.com for more information.

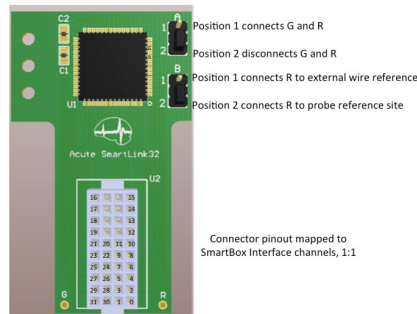
- Use a heavy, grounded metal plate (connected to the main electrical socket) on the bottom of the Faraday cage, often helps to contain ambient noise in a recording setup. Connect the Faraday cage, microscope, stereotaxic frame, manipulator, etc. to the ground metal plate using heavy gauge wires. Attach a single wire from the plate to the best possible main ground
- Check if your Faraday cage is grounded
- Check if your SmartBox Pro is grounded
- If your animal is in the stereotaxic frame during recording, add extra alligator clips from stereotaxic frame to the Faraday cage
- Turn off camera or light on top of the microscope
- Check microscope earth
- Turn off any high-power machine close to your recording setup
- Unplug all other devices except SmartBox Pro from the main outlets
- Add extra needle as a probe grounding wire to the nuchal musculature and using alligator clips attach the needle to the Faraday cage
- Check thermal noise from the headstage if you have used the recording set-up non-stop in one day

If you were not able to remove noise by following these steps, then change ground and referencing on the headstage.

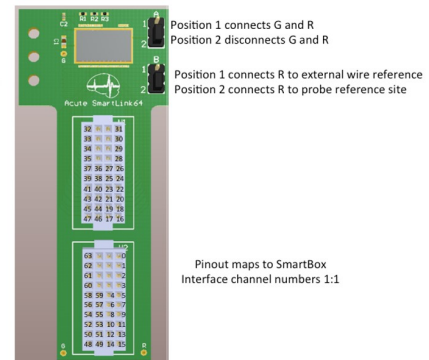
Acute SmartLink 16



Acute SmartLink 32

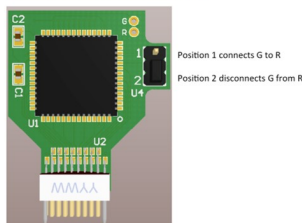


Acute SmartLink 64

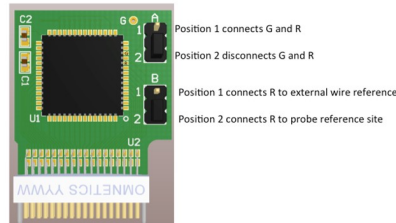


Smartlink headstages are designed with jumpers to allow the user more flexibility in getting the cleanest signal possible. Jumper A is related to the headstage referencing and grounding level and jumper B is for referencing the probe level.

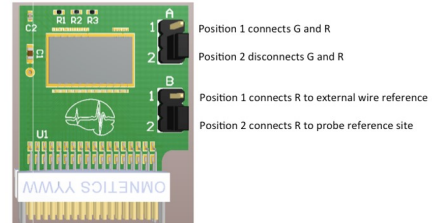
Chronic SmartLink 16



Chronic SmartLink 32



Chronic SmartLink 64



- Jumper A, position 2, is the default configuration that is expected to give you the lowest noise level. In this case as we explained before, you need to add 2 separate bone screw to the skull and separately attached the reference and ground wires to them
- For jumper B, most customers prefer to use position 2 to use electrodes that come with a big reference site on the probe shank. If you want to use an external reference, switch jumper B from position 2 to position 1