

## ACQUISITION DEVICE TO LIMIT LEAKAGE CURRENT IN ELECTROPHYSIOLOGICAL SIGNAL RECORDING DEVICES

### Patient need addressed

Neurological disorders

### The Solution

The present invention defines a device that limits the leakage current and at the same time allows the bias point control on electrophysiological signal recording systems, preferably neural signals. This device could be used with any kind of active transducer, but preferably with solution gated graphene field effect transistors (gSGFETs).

### Innovative Aspects

The implementation of electronic equipment for the clinical use of graphene transistors in neuronal interfaces has shown many advantages over current technologies based on metallic electrodes. Their ability to record very low frequency signals is one of them. Currently, these devices require a DC coupling in order to establish the optimal bias point control, which prevents compliance with the IEC60601-1 standards set to medical electronic equipment, which limits the maximum leakage current at low-frequency (DC) that can pass through a patient.



The device comprises an active transducer intended to contact a body tissue, such as a brain tissue, as well as three passive components which limit the leakage current in any case, even in the case of electronics breakdown.

The device limits the current to lower values than  $10 \mu\text{A}$  during normal operation, and lower than  $50 \mu\text{A}$  in case of simple breakdown.

The limitation of the leakage current allows the system to meet the IEC60601-1 standards set for electronic clinical equipment.

**Stage of Development:** Validation of the lab prototype and ready for clinical validation

### Intellectual Property

European patent application (Priority date: September 17, 2020)

International patent application, PCT (September 17, 2021)

Available for  
Licensing or Assignment



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