Infinite Input Impedance Biopotential Amplifier

Tech ID: 21018 / UC Case 2010-310-0

BACKGROUND

Existing contact-less biopotential sensor designs assume a large coupling capacitance, which assumes adequate mechanical force to press the sensing plate to the body. The relatively large input capacitance of commercially available amplifiers presents a significant design challenge for sensors that capacitively couple signals.

TECHNOLOGY DESCRIPTION

The amplifier design invented by UC San Diego researchers presents two major improvements: 1) a single amplifier with extremely high input resistance and low input capacitance (femto-farads) without the need for adjustment; and 2) self-biased with novel on-chip, low-leakage, low-noise structures.

APPLICATIONS

This invention is useful as a high-performance impedance converter bridging an ultra-high source impedance sensor or transducer with subsequent amplification and signal processing circuits. Applications include cellular microelectrode amplifiers, contact-less biopotential sensors, and free-space electric field sensors.

STATE OF DEVELOPMENT

A prototype circuit has been developed and demonstrated.

RELATED CASES

See also SD2010-311 for a related technology.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,360,501	06/07/2016	2010-310

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OTHER INFORMATION

CATEGORIZED AS

- Medical
  - Devices

RELATED CASES

2010-310-0, 2010-311-1