

Dual Channel differential high Impedance Amplifier Ex04

Overview

High impedance front-end amplifier for laboratory use. Useful as a high impedance input amplifier for Ph-electrodes, reference electrodes or selective anion and cation electrodes. A differential input enables potential free measurement and the output is a voltage signal which can be logged by a data logger or displayed with a multimeter. Using conventional inputs on electrochemical measurement electrodes will degrade these electrodes due to the relatively high measuring current. The inputs of this amplifier have an extremely high impedance resulting in a nil load on the measuring element and consequently a longer lifetime of the measurement probe



figure: input side of the EX04

Technical specifications

Input range	± 8 V
Input current	3 fA plus leakage current from connectors
Input impedance	$> 10^{15}$ Ω typical
Input offset	< 60 μ V typical
Input overload	Indication at ± 8.5 V
Output range	± 10 V
Output impedance	100 Ω
Gain error	< 0.2 % typical
Power requirement	12.0V/ 100 mA

Operation

Setting up the device

- Although the inputs of this device are protected for accidental voltage peaks, it is recommended not to exceed 20 Volts on the inputs. In order to prevent this, always first connect the ground terminal (outer connector from one or more BNC connectors), and only then connect the probes. Connect the ground terminal (outer ring from one or more BNC connectors) to a defined voltage, such as the ground of the system, or the Anode, cathode or just a conducting electrode in the medium.

- Ensure that the input levels are in the proper operating range. Connect the sensing elements to the input BNC connectors, middle pin is signal. The device subtracts the voltage on the (-) input from that on the (+) input and forwards it to the designated output connector. When a red indicator lights the corresponding input is overloaded and the input voltage can not be amplified correctly, resulting in an error.

- When the differential functionality is not required (you want to connect only one sensor, versus the ground signal) make sure that the other corresponding input is terminated with the green terminator units, or short that input by other means. Using the (+) input will then result in a 'times one' amplification to the output. Using the (-) input will result in a negative 'times one' amplification of the input signal.

- Connect the output to the desired equipment, such as a multimeter or a data logger.

- Connect the wall adapter to the power input. Do not use any other adapter than supplied.