ICM Impedance Conditioning Module

New Product Description and Features

INSTRUMENTATION AND MICROELECTRODES FOR NEUROSCIENCE RESEARCH

The **ICM Impedance Conditioning Module** gives the researcher accurate information about the integrity and electrical characteristics of metal microelectrodes. User-selectable readings of impedance, resistance, and capacitance provide a wider range of microelectrode information than has been previously available. The DSP digital signal processor technology executes complex math algorithms, providing accurate readings to two significant digits.

Built in adaptive line noise suppression and the driven-shield electrode cable provides seamless isolation from external noise sources and minimize stray capacitance artifacts in the measurement signal path. The line noise suppressor operates in continuous measurement mode and is particularly effective when performing in-vivo impedance measurements.

Electrode conditioning by the end user has been built into the ICM. User-adjustable conditioning parameters allow removal of small amounts of insulation from the tip to fine-tune electrode impedances that are found to be a little high.

Settings are manipulated through an intuitive pushbutton and adjustment knob interface. All cabling necessary comes in the accessory kit. The ICM is a software-upgradeable device. Its firmware is stored on a FLASH memory that can be reprogrammed with the latest code version, available on our support site www.neurocraft.com.

FEATURES:

- **Fast readout of electrode's impedance, resistance, or capacitance to two or three digits, depending on range**
- **A range of adjustable currents and frequencies allows user to perform electrode conditioning**
- **Selectable frequency and voltage/current allow measurement of complex electrode properties, like impedance spectrum, when interfaced to an external computer**
- **Provides optional line noise suppression on the measurement signal in noisy environments**
- **Intuitive knob and push button control of functionality**
- **All necessary cabling included in accessory kit**
- **Compact, modular, desktop or rack mountable**

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"Innovation through collaboration"

CERTIFIED ISO 9001

ICM Impedance Conditioning Module

Abbreviated Procedures, Specifications and Ordering Information

neuro/craft™

INSTRUMENTATION AND MICROELECTRODES FOR NEUROSCIENCE RESEARCH

ABBREVIATED PROCEDURES

Measuring Impedance/Resistance/Capacitance:

1. Connect leads: Black – Electrode, Red – Reference, Green – Common ground
2. Lower electrode tip in electrolyte solution approx. 1mm.
3. Press the "Activate" button once. The display will read "Meas…" while processing, and then display the impedance (Z) measurement (default) or the last measurement type used (impedance, equivalent resistance, or equivalent capacitance).
4. Pressing the "Z/R/C" button toggles through the last measured values of impedance Z, resistance, R, or capacitance, C.

Conditioning in Manual Mode:

1. Set up cable and immerse electrode.
2. Press the "Function" button to display the currently selected function and rotate the "Value Adjust" to toggle through the available functions (Meas., Cond. etc) until "Cond" is displayed. Press "Confirm" to select conditioning mode and adjust its parameters (frequency, duration, output current). The display will switch to "Freq" (frequency), which is the first conditioning parameter.
3. Rotate the "Value Adjust" knob if you want to select a different conditioning parameter.
4. Press "Confirm" to display the current parameter value or change it. To change the current value, turn the "Value Adjust" knob. When done, press "Confirm" to accept the displayed value. For instance, when adjusting the frequency, the ICM with briefly display "Freq Set" and will then go back to the parameter selection menu, displaying "Freq". To cancel the change, press "Function". The display will switch back to "Freq".
5. When back in the parameters selection menu, rotate the "Value Adjust" knob to select a different parameter for the conditioning (duration, output), then use the same procedure as described at previous step for the adjustment of the parameter value.
6. Press the "Activate" button once. The display will read "Cond" while processing, and then will perform an impedance measurement and display the impedance, resistance or capacitance (Z, R or C) depending on the selected display mode.
7. Follow steps 3 – 4 to make any changes to the conditioning settings.
8. Press the "Activate" button to perform further conditioning cycles.

SPECIFICATIONS

Measurement Accuracy: +-5% actual. Displayed to 2-3 digits, depending on range.

Measurement Applied Voltage: Adjustable 8% - 100% of 1.75Vpp sine wave, Default is 8%

Measurement Frequency: Adjustable from 50Hz to 4kHz

Impedance Range: 1kΩ to 100MΩ

Conditioning Voltage Range: Adjustable 10% - 100% of 3.5Vpp sine wave, Default is 100%

Conditioning Current Frequency: Adjustable from 50Hz to 4kHz

Display: 8 characters, 1cm height, red

Power Requirements: 100-240 VAC, 50-60Hz

Dimensions:

Height: 13cm (5.22")

Width: 10cm (4.20")

Length: 25cm (9.75")

Weight: 1.48 Kg (3.26 lbs)

Mounting Options: Tabletop, 4 rubber feet prevent sliding. Rack mountable with SAF Rack Frame (Cat. #55-11-0 Available separately)

Computer Interface: High-speed USB 2.0, backwards full-speed USB 1.1 compatible. (Computer needed for FLASH upgrade only)

ORDERING INFORMATION

55-70-0 ICM Impedance Conditioning Module

Includes: ICM Impedance Conditioning Module, ICM Accessory Kit Includes: Electrode Conditioning Cable, Rubber feet (use optional) , Calibrated Test Loads, User manual

Optional Accessory:

55-11-0 SAF Rack Frame for Stand-Alone Modules

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