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IonFlow Bipolar electrophoretic equipment

In our choice there are three different electrophoretic (iontophoretic, ionophoretic) systems. This leaflet describes the **IonFlow Bipolar** iontophoretic equipment. Our other electrophoretic products are **IonFlow Modular**, and **IonFlow Pro** families. All of them are up-to-date, easy to use, highly reliable, microprocessor-controlled constructions. We manufacture three different ionophoretic families, because the three product lines are optimized for different application fields. Please read through the appropriate descriptions for the details.

IonFlow Bipolar is a single-channel, high-voltage, general purpose electrophoretic equipment for microelectrode research applications.

IonFlow Bipolar is optimized to apply tracer solutions in tissues, and tissue slices. Furthermore it is very effective for in-vivo, and in-vitro situations, and for single cell experiments. **IonFlow Bipolar** can be used efficiently to apply tracers, drugs, and any other solutions from micropipettes.

The electrophoresis (which collective word covers the effects of ionophoresis and electro-osmosis) offers a comfortable opportunity to pass medicines, and/or other chemical substances into any conductive organs (e.g. the human body through the surface of the skin, or directly into tissue cultures) in correctly measured small quantities with electric current. During ionophoresis the ions move due to an electric potential field. The non-ionic substances can be passed similarly with electro-osmosis. The substances, which are designed in the pharmaceutical factories for human electrophoretic purposes meet these requirement. The solutions used in research labs should be designed according to these facts. The quantity of substances passed from the electrode can be controlled exactly by two parameters: the current and time of the electrophoresis.

Our electrophoretic equipments offer high accuracy due to their microprocessor-based, fully digital internal electronic design. Since we use state-of-the-art electronic components, and extremely thorough quality checking during the manufacturing process, the reliability of our products is delicious. **IonFlow Bipolar** has got menu-driven internal software (firmware), so it is very easy to learn how to use it.

The power supply of **IonFlow Bipolar** is a highly sophisticated floating power supply. It is designed for such applications, where a signal recording task is running simultaneously with another microelectrode, which is located close to the electrophoretic electrode. The floating power supply is necessary to avoid the hum noise from the sensitive recording amplifiers.

Operating modes:

Positive External Control: free control capability from an external device (such as a computer), or from the Start push-button on the front panel

Negative External Control: same as Positive External Control function, with opposite polarity of output current

Positive Timer: Programmable interval timer running in software in the range of 10 sec to 990 sec, with 10 sec of resolution. The polarity of the output current is positive

Negative Timer: same as Positive Timer function, with opposite polarity of output current

Programmable Alternating: continuous, square wave, alternating current at the output. The positive, and the negative period in the cycle can be programmed in the range of 1 sec to 59 sec, with 1 sec of resolution. The positive, and the negative current amplitudes can be set independently of each other.

Technical data:

The selectable ranges of the output current: 0-1 μA
0-100 μA
0-10 mA

Compliance voltage of the current generator: 120 V

Worst-case error of the output current generator: < 5 %

The output current can be set independently for the positive, and for the negative polarity, with scaled, 10-turn, precision helical potmeters

Resolution of the helical potmeters: 0.1 %

True output current indicator: there is a floating LCD digital panelmeter, with backlight, on the front plate. It shows the real output current in the percents of the actual range (full scale readout is 100.0 %).

Resolution of the true output current indicator: 0.1 %

Worst-case error of the true output current indicator: < 5 %

Worst-case error of the timing parameters generated by the built-in microcontroller with firmware: < 0.2 %

Mains supply voltage: 115 VAC, or 230 VAC. It should be specified in the order. The actual supply voltage is sealed at the back side of the equipment.

Tolerance of the mains supply voltage referring to the nominal value: 10 %

Mains frequency: 50 – 60 Hz

Internal power supplies: mains frequency power supply with isolation voltage security of 4 kV (guaranteed by the manufacturer of the mains transformer), and an additional internal floating power source with isolation capacitance < 10 pF

Display: 2 x 16 characters alphanumeric LCD with bright green backlight

Programming: three function-buttons, and a Start push-button on the front plate, in menu system

Automatic internal diagnostic algorithm in the software

Flash program memory

Non-volatile EEPROM memory to store the parameters used last time

Dimensions of the instrument: 290 x 250 x 90 mm

Weight: 2.0 kg

We give you **5 years of full warranty** for **IonFlow Bipolar**.