

# **In-vivo and In-utero Electroporator SP-4a**

Optimized for in-vivo and in-utero applications



## **General Description**

Electroporator SP-4a is designed for in-vivo and in-utero applications to work in the bodies of living (certainly anaesthetized) animals; therefore the output voltage of this equipment is 200 V or 400 V, depending on your requirements.

Optimized for such applications, this equipment offers extremely high output current capability on an affordably secure voltage level.

## **Electrodes & Cables**

Nearly all kinds of applications require different, special shaped electrodes. There is a great commercial choice of various Electroporator electrodes – flat, pin, cuvette, tweezers, pinch, etc. – that is why Supertech does NOT offer electrodes for electroporation BUT provide appropriate, secure high voltage output cables for your preferred electrode as a FREE accessory.

## **Front panel controls**

**Mains:** Power switch, turns the unit ON or OFF.

**F(Function):** Use it in the menu as enter during the programming and parameter setup actions. In programming phase the Function button works as enter, the microprocessor automatically saves the newly selected value after pressing the key.

Working in a selected function, the Function button can be used as escape to inactivate and leave the current task and jump back to the main menu.

**Up and Down Buttons:** Use them to choose from menu items and configure values. When you see the cursor you can adjust the appropriate menu point or you can set that numeric value under the cursor.

**Liquid Crystal Display (LCD):** During normal operations, the blue-backlit LCD panel displays the set values.

**START event:** means either the START button was pressed or the Start Pedal was pushed. The two START event sources can be used together or independently any time.

**Pulse Amplitude Pot meter:** You can adjust the output voltage of the Electroporator with this 10-turn precision helical pot meter.

**4 mm red and black banana jacks:** are output connectors of the equipment. The polarity is written above them.

**ACTIVE DANGER LED:** shows the working actions of the Electroporator even in case of short circuit at the output connectors.

**Pure indicator LED:** shows the working actions of the Electroporator if real voltage appears at the output connectors. The brightness of the LED is proportional to the actual output voltage.



## Back side Connectors:

**AC input:** Universal grounded power input.

**Start Pedal connector:** a ¼ inch jack input used for connecting an optional, normally open pedal as the external START event source.

## Emergency Stop:

If you experience any unwanted effect (such as electric shock, parasite stimulating effect in the living tissue, coagulation, etc.) during the output pulse sequence, you can stop the current action of the Electroporator by pressing the 'F' button.

## Specifications:

**Output voltage ranges:** 0 – 200 V  
0 – 400 V

**Manual output voltage adjustment:** 10-turn precision helical pot meter

**Output impedance:** 33.6 Ohm

**Real (true, pure) output voltage indicator:**

LED on the front page

**Timing parameter controls:**

built-in RISC microcontroller

**Functions:**

Single Pulse Mode  
Burst mode

**Number of output pulses:**

1-99

**Pulse length:**  
(adjustable in 1 ms steps)

1-250 ms

**Pause between pulses:**  
(adjustable in 1 ms steps)

10-60 000 ms

**Mains voltage:** 100-120 or 220-240 VAC, factory set

**Manual Start or externally controlled activity**

**Double security insulation from mains**

**Emergency Stop capability**

**Dimensions (WxHxD):** 290 x 90 x 250 mm  
(11.42"x 3.54"x 8.84" )

**Weight:** 3.8 kg (8.3 lbs)

**Memory:** Flash program,  
non-volatile EEPROM

## Attention:

**This instrument is for experimental purposes only and is not intended for human use. Electrical safety measures of operating the 115/230 VAC main unit is the sole responsibility of the user.**

## Warranty:

Supertech Ltd gives you 5 years of full warranty for its electronical products against defects in materials or workmanship as long as the equipment has been subjected to normal and proper use. During this period, faulty products will be repaired or replaced free of charge provided they are returned to our workshop. (Postage prepaid by the Customer.) Supertech Ltd will undertake the servicing and calibration after the expiration of the warranty period for a nominal fee.