electra 4

The produced electric fields cross in one point inside the target or the treatment. The difference in frequency of the two currents generate a new sinusoidal current that deep in the tissue produces its low frequency effect. The interferential currents don't cause polar effects on the tissues, and in this type of therapy there is no accommodation effect since there is a continuous frequency variation.The biologic effects that are obtained depend on the used frequency, with higher frequency we obtain an analgesic action, with lower frequency we obtain an excitative-motor effect.The electrodes are fixed in opposite sides generate perpendicular fields between them so that the central area is on the target zone. Generally, treatments with daily frequency, last for 20- 30 minutes.

Vehicular Effect

Iontophoresis

The Iontophoresis is used to transfer medicinal ions locally into tissue The ions are positively or negatively charged and they use the current flow to penetrate, through the cutaneous surface in the skin. To obtain the desired effects, it is important that the pharmacological substance is ionizable and has a very low molecular weight. We have to know the active charge of the medicine to put it correctly to the current's flow.The ions can be transmitted through cutaneous zones with minor resistance (canals' orifices of the sudoriparous and sebaceous glands). Through the regional circle there is a dispersion of the polar substances reaching the cellular membranes modify the electric charges, this polarization creates a long lasting antalgic effect.The medicine's penetration depends on the following factors: on the purity of the medicine by the bigness of electrodes (generally the electrode having the same polarity of the ion is smaller and the other electrode is bigger), by the current's intensity (0.1-0.5 mA/cm2), and by the time of treatment that has normally to be a little bit longer than a half hour.It is important to clean and prepare the skin carefully in order to obtain the pore opening. The medicine is diluted in demineralized water. The treated zone is put between the two electrodes. Be careful with the modality of treatment, because the direct current can damage the skin. Obviously the Iontophoresis doesn't have to be used with allergic patients.

TECHNICAL DATA

Mains voltage	90-240 V~ / 50-60 Hz
Max absorbed power	140VA
Power fuses	2 x T2AL, 250V (mains voltage 180-240Vac) 2 x T4AL, 250V (mains voltage 90-130Vac)
Treatment time	from 1 to 60 min
Number of phases:	1-2-3* (interferential currents (tetrapolar – Isoplanar – Vectorial) it is possible to use only one phase)) 100 V
Output current	0 – 70 mA (0-10 (step 0.2) / 10-70 (step 0.5))
Galvanic Output current	0 – 30 mA (0-10 (step 0.2) / 10-30 (step 0.5))
Impedance Range	100 - 1000 Ω
Polarity (where applicable)	Positive – Negative – Positive/Negative* – Negative/Positive* ** half time*
Electrical Safety class (IEC60601-1)	I BF
Medical Device class (MDR 2017/745/UE)	IIa
Dimensions (HxWxD)	170 x 315 x 390 mm
Weight	5 kg
EMC environment	A

Environmental characteristics

	WORKING	STORAGE
Temperature	from +10 °C to +40 °C	from –10 °C to +50 °C

Moisture	from 30% to 75%	from 10% to 85%
Atmospheric pressure	from 70kPa to 106kPa	from 50kPa to 106kPa

HARDWARE REQUIREMENTS

Microcontroller	ARM Cortex M4	SDRAM DDR2	512MB
Clock frequency	200MHz	Nand Flash	1Gb
Flash	2048KB	Peripherals	UART, I2C, SPI, Watch-dog timer, USB2.0
Ram	512KB	Visual	Display touchscreen 7” 800x480 px