



Selectronik - 2

SELECTIVE CURRENT GENERATOR



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The selective current generator SELECTRONIK-2 is a modern electronic device used in treatment with the use of currents in physiotherapy.

CAUTION: The device is a specialist product and should be operated only by trained medical personnel.

The device is equipped with two processors enabling precise current pulse shaping. The solution of this type enables to preserve the same shape of the pulse regardless of the ageing of the electronic elements. The built-in 12 bit analog-to-digital converter measures directly the peak current value.

The buttons to control the current volume enable very precise adjustment of the desired intensity.

Selectronik is additionally equipped with a number of protective devices. The short-circuit protection - reduces current during the electrode shorting to its set value.

The circuit-breaker protection (varistor) - protects against current supply damage

The anti-electric shock protection - protects against the damage of the transformer or exposure of the generator to liquids

The standard protection (fuse) - protects against the damage of the transformer

Caution: Without any fear the electrodes can be connected and by regulation of current with the buttons [+] and [-] the working of the whole device can be tested.

Technical features:

Power supply 230V AC/ Power consumption: max 10W (version 120v is available by request)

The extra-high electrode voltage: 60V DC

The maximum output current: 60mA

Control: 128 steps scale

The recommended temperature of operation: from +5 to +40 Celsius Degree

The exterior safety device: 220V/200mA time-delay cut-out

The currents pulses have trapezium-like shape. The frequency depends on the chosen sub-range and amounts approximately to:

O=0.6 Hz, SVU=0.8Hz, S=3Hz, PS=10Hz, NF=50Hz

Front panel



Select pulse shape and frequency with the buttons [NF], [O], [SVU], [S], [PS]. After it is switched on the generator sets itself on PS. During the minor operation the buttons are not active. The current selection can be carried out only when the indicator shows 0.0 mA.



The choice of the maximum current value is made by the use of the button [Range] setting 60 or 6 mA. To change the polarization of pulses use the key [Polar]. When the Norm position is set on the output of the generator, plus is in the red socket. During the minor operation the buttons are not active.



The buttons [+] and [-] enable precise, segmented setting of the current intensity. Single pressing causes the one-step change. The holding of the button causes serial, segmented current change. The [Stop] button causes the current to gradually decrease until it is completely switched off (during this time the red diode flashes).

When during the increasing of the intensity the green diode turns on permanently above the [+] sign this means that the intensity on the electrodes has reached the maximum value of 60 Volt and the resistance of epidermis does not allow the further increase of the current intensity. For the patient's security the further current increase is blocked. The current setting is regulated in 128 steps.

For the range 6 mA single pressing will cause the change of about 0.05mA. For the range 60 mA single pressing will cause the change of about 0.5mA.

The change of current is smaller than the display's resolution; therefore, two or three pressings of the buttons the display can still show the same value despite the minimal increase of current. To switch off sound press simultaneously two buttons [+] and [-] for 2 seconds (however, when current reaches the value 0 the sound will be still produced). To completely switch off the sound all three buttons [+] and [-] and [stop] have to be pressed simultaneously.



The digital indicator shows the peak current or the time remaining to the end of the minor operation. With the button [disp] switch over the device to set the time or current. If the red diode shines the indicator is set to measure current, the buttons [+] and [-] change its value.

When the green diode shines, then the indicator shows (in minutes) the time which is left to the end of the minor operation. The time can be changed with the [+] and [-] buttons. A whole minute is counted from the last pressing of the [+] and [-] buttons. The flashing of the diode signals the counted seconds by the time meter during the minor operation. The maximal setting of the time meter accounts to 99 minutes.

Example 1: If the red diode shines during the minor operation it means that the indicator shows the present current value and the time meter is not on.

Example 2: If the red diode flashes during the minor operation it means that the indicator shows the present current value and the time meter is on. Time can be controlled with the use of the button [disp].

Back panel



On the back panel there are: feeder cable, fuse, power supply switch and sockets where electrodes are connected. Every device is numbered and has a guarantee seal at the back.

The electrodes' sockets are adapted to banana plugs. Every accidental disconnection of electrodes during the minor operation will cause automatic setting of the current to 0.0 mA value and will be signaled by a double sound. Such a solution prevents from mistakes in setting of the current during the next minor operation.



The differential-current switch which is inseparably integrated with the device is an additional protection. The intentional separation of the differential-current switch is intended as a protection against electric shock, for example when the generator will be exposed to liquid during carrying out the minor operation. The switch should be fixed, for example, on the wall. The switch should be also controlled once a half a year by pushing the test button which is situated at the casing of the switch.

The order of conduct while using the product:

1. Switch on the device with the power supply switch.
2. Check whether the display unit shows the value [0.0].
3. Set the type (e.g. PS), range (e.g. 60mA) and the proper polarization of current.
4. Put the electrodes against the patient's body.
5. Connect the electrodes to banana socket.
6. Increase the value of current until the desired value is reached (appropriately to the patient's sensitivity).
7. Turn on the time meter pushing the [disp] button and using the [+] and [-] button set the duration of minor operation.
8. If we the time meter is not used after the finished operation decrease the current value using the [-] key until the value will reach [0.0] or push the [stop] key.
9. Take out the electrodes from the banana sockets.
10. Take away the electrodes from the patient's body.
11. Turn off the device using the power supply switch.

Nickel Electrodes

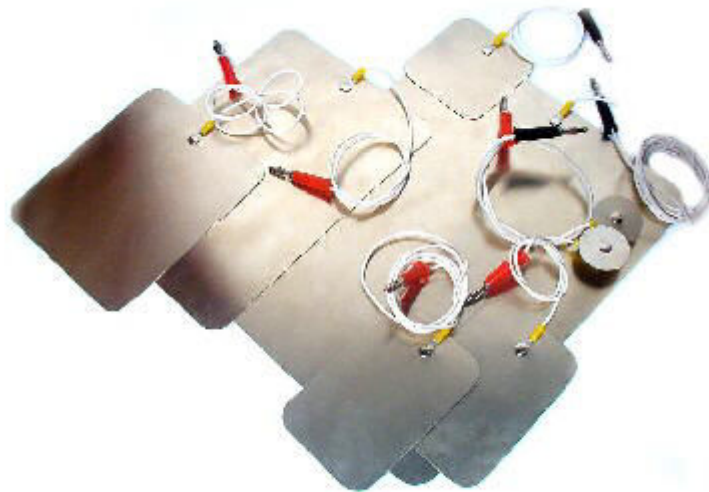
The set of electrodes made from high-nickeled brass and titanium is designed to be used together with the selective current generator SELECTRONIK.

The measures of electrodes which are in the set:

1. 98 x 64mm –two pieces (titanium)
2. 68 x 68mm (titanium)
3. 98 x112mm (titanium)
4. 136 x 190mm (nickel)
5. 194 x 247mm (nickel)
6. 32x32mm – two pieces (nickel)
7. Connector with banana plugs and having banana sockets from the other end.



The electrodes are finished with high quality banana plugs enabling connecting electrodes in any configurations that are desired. Every plug has a hole that is used to connecting it. After being connected the plugs look like in the photograph.



During the use of the product the brass which the electrodes are made from is influenced by moisture and the flowing current. In consequence, it covers with dark patina. The electric properties of the electrodes are not changed.

Warning

The electrodes cannot touch the patient's skin directly because of the danger of burn! A layer of wet bandages of minimum 1 cm should be placed between the patient's body and an electrode.

Notes on using Selectronik

The product is not waterproof. It should be protected from moisture. Precipitation, high humidity and liquids can cause the corrosion of electrical elements. Only the electrodes made from resilient nickel or titanium sheet metal are resistant to chemicals. The metal sheet covers with natural platinum during the minor operations. The device should not be used in places severely affected by steam, humidity or dust or in locations subject to extremely high temperatures. Caustic chemicals, solvents, strong determents must not be used to clean the device. The casing is made from resistant material (ABS).

This product is guaranteed by the producer for a period of 12 months after the date of the purchase.

The guarantee is not valid for mechanical damage

Stamp, date and signature