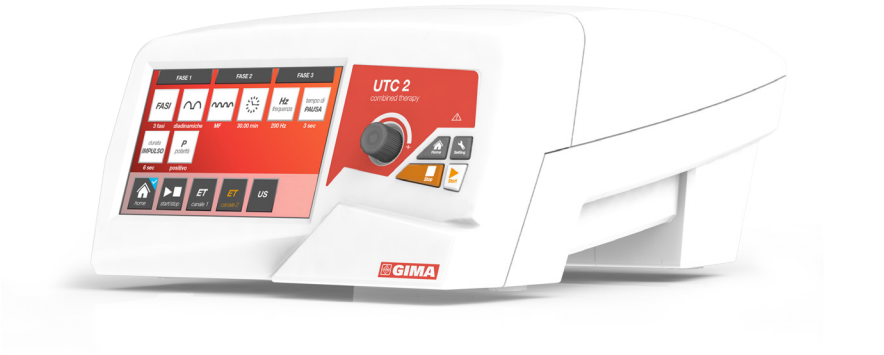
Manuale d'Istruzioni
Instruction's Manual
Manual de Instrucciones
Notice d'Emploi
Bedienungsanleitung
Manual de Instruções

ultrasound**therapy** + electro**therapy**

UTC2



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MA531_EN

IMPORTANTE

Queste istruzioni costituiscono una parte fondamentale dell'apparecchiatura, in quanto ne descrivono il funzionamento e l'uso, pertanto devono essere lette attentamente prima di iniziare l'installazione e l'uso dell'apparecchiatura. Tutte le istruzioni di sicurezza o note di avvertimento devono essere osservate. Siate certi che queste istruzioni operative siano fornite insieme all'apparecchiatura quando è trasferita ad altro personale operativo.

In caso di necessità di Assistenza Tecnica, o di altro tipo, contattare il proprio rivenditore.

IMPORTANT

These operating instructions form an integral part of the equipment and must be available to the operating personnel at all times. All the safety instructions and advice notes are to be observed. Be sure that these operating instructions are furnished together the equipment when this is transferred to other operating people.
In case of necessity of technical, or other type, assistance contact your own retailer.

IMPORTANTE

Es muy importante que este manual de instrucciones se conserve siempre con el aparato, para cualquier posible consulta, por lo que os rogamos leerlo atentamente antes de instalar y de utilizar el aparato. Si el aparato se vendiese o fuese transferido a otro proprietario, asegurarse de que el manual esté incluido, de manera que el nuevo cliente pueda estar al corriente de su función y de las relativas advertencias.

Si necesitase asistencia técnica, contacte a su revendedor.

IMPORTANT

Cette notice d'emploi fait partie intégrante de l'appareil et devra être constamment tenue à la disposition du personnel. Il est impératif de lire attentivement et de bien comprendre toutes les instructions et indications avant d'essayer de se servir d'une électrode active.Tous les avertissements et instructions concernant la sécurité devront être scrupuleusement observés. S'assurer que cette documentation est fournie avec l'appareil lorsque celui-ci passe à une autre équipe.

En cas de nécessité d'assistance technique, se mettre en contact avec le revendeur.

WICHTIGER HINWEIS

Die vorliegende Anleitung ist ein grundlegender Teil der apparat da sie deren Arbeitsweise und ihren Gebrauch beschreiben. Sie müssen deshalb vor Beginn der Installation und dem Gebrauch sorgfältig durchgelesen werden. Alle Sicherheitsanweisungen und Warnungen müssen eingehalten werden. Stellen sie sicher, dass diese Anleitungen bei der Übergabe des Geräts an anderes Bedienungspersonal mitgeliefert werden.

Wenn Sie technische Hilfe benötigen, wenden Sie sich bitte an Ihren Händler.

IMPORTANTE

Estas instruções de utilização formam parte integrante do equipamento e devem estar disponíveis para os utilizadores.Todas as instruções de segurança devem ser observadas. Certifique-se que estas instruções são fornecidas com o equipamento quando este for transferido para outros utilizadores.

No caso de necessidade de assistência técnica, contacte o fornecedor.

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UTC2

WARNINGS

It is very important that this instruction manual is preserved together with the equipment for any future consultation. If the equipment have to be sold or transferred to another user make sure that the manual is supplied together with the equipment, so the new user can know the equipment's working and warnings.

THESE WARNINGS HAVE BEEN WRITTEN FOR YOUR SAFETY AND FOR THE OTHERS ONE, SO WE ASK YOU TO READ THEM CAREFULLY BEFORE INSTALLING AND USING THE EQUIPMENT.

- After have removed the packing we make sure of the equipment's integrity. If there is a doubt do not use it and turn to qualified personnel.
- The electric security of the equipment is assured only when the same is correctly connected to an electric installation conformable to the standard norms. It is necessary to verify this fundamental requisite of security and, if there is a doubt, ask for a control by qualified personnel.
- Before connecting the equipment be sure that the rating (on the back panel) is in conformity to the electric system.
- If there is incompatibility between the wall socket and the supply cable of the equipment substitute it with another one. In general it is not advised the use of adapters, multiple wall sockets and/or extensions. If their use is essential it is necessary to use only simple adapters and extensions in conformity to the norms of safe.
- The use of any type of electric equipment requires the observance of some fundamental rules. In particular:
  - do not touch the equipment with wet hands or feet;
  - do not use the equipment with barefoot.
- Do not expose the equipment to atmospheric agents (rain, sun, etc.)
- Do not keep the equipment uselessly connected. Switch off the general interrupter when the equipment is not used.
- This equipment is destined only to the use for which it has been designed. Every other use is improper and so dangerous. The manufacturer cannot be considered responsible for possible damages caused by improper or unreasonable uses.
- It is dangerous to modify the characteristics of this equipment.
- Before carrying out any type of cleaning or maintenance, disconnect the equipment through the plug or switching off the mains switch.
- If there is a damage or the equipment doesn't work well, switch it off. For the repairing turn only to a qualified center of Technical Assistance and ask for the original spare parts. The missed respect of these things can be dangerous for the safety of the equipment and for the user.
- The use of this equipment is contraindicated:
  - carriers of pace-maker or of other electronic installed device, or in proximity of such carrier patient..
  - with cardiac illness.
  - with serious unbalances of the arterial pressure.
  - with serious illness of the nervous system.
  - with serious renal insufficiencies.
  - in state of pregnancy.
  - hemorrhagic.
  - epileptic.
  - carriers of metallic prosthesis.
  - with troubles of the thermic sensibility.

- markedly asthenic.

- It is besides contraindicated its application:
  - with troubles of the thermic sensibility.
  - markedly asthenic.
- It is besides contraindicated its application:
  - in the tumoral focuses.
  - on noble organs, like heart, vessels, gonads.
  - on neoplastic lesions.
  - in progress of contagious infectious illnesses (TBC).
  - in infanto-juvenile age.
  - in case of delays of consolidation or pseudorathrosis.
  - on the anterolateral intercostal zone, on the abdomen and on the segments with means of endotissual synthesis.
  - on the testicles.
  - on the eyes.
  - on the cartilages of growth.
  - in the thromboses and thromboflebitis.
  - on the abdomen, in all the cases of calculous or infiammation.
- There is danger of burns due to too high energy level or to the treatments in the continuous mode with static treatment head.
- A simultaneous connection of the patient to a high frequency electrosurgical unit can produce burns close to the electrodes of the equipment and it can be damaged.
- Working close to short wave or microwave therapeutic units can produce instability in the output.
- The unit has been designed to conform the actual Norms regarding the electromagnetic compatibility. If the unit is interfered or interferes with the functioning of other electronic units, we advise you to supply the unit from another socket or reposition the unit until the interference stops.
- Do not use wireless telephone near the unit to avoid interferences.
- Before every use, verify the state of the equipment and the accessories in order to discover any condition of electric danger. In particular to examine cables, the connectors and the head of treatment in order to find eventual leaks that they could concur the input of conductor liquid.
- Handle with care the transducer, a coarse manipulation can influence its characteristics negatively.
- Don't effect treatments to unconscious patient or with troubles of the thermic sensitivity.
- The unit does not fit explosive or gas environments.
- ***ATTE***NTION: This unit produces galvanic current. Hold in consideration the electrolytic effects produced by galvanic current.

INTRODUCTION

UTC2 is a programmable ultrasonic therapy unit (frequency of 1 to 3 MHz), electrotherapy (therapeutic current generator, for short-term use, suitable for transcutaneous nerve, neuromuscular and muscular electrical stimulation treatments) and combined therapy.

The equipment was produced with advanced electronic technologies and have a high luminosity graphic touchscreen display (size 7”). Control of the units is made through encoder and keys or through touchscreen and have ad intuitive icons interface with possibility to easy upgrading by USB port.

The equipment are supplied with a high number of stored protocols and can memorize programs.

The unit can be connected, in addition to the electrotherapy accessory, optional transducer handles working at different size can have connected to the unit, so that you have the chance to choose the one having characteristics that best fit to the treatment to performed. Transducers are a multi-frequency handle and they have the contact check system, that it stops the allocation of ultrasounds in the case it happen a wrong or missed contact between the probe and the patient. The check system could be activated or inactivated by the operator. L’unità presenta un sistema di controllo di sicurezza con disattivazione della corrente di uscita in caso di distacco accidentale dell’elettrodo.

The equipment has two output channels ET1 and ET2 both for electrotherapy and for combined therapy.

Destination of Use

UTC2 UTC2 is an active medical device for combined therapy of ultrasound therapy and / or therapeutic currents used for the rehabilitation of inflammatory states, post-traumatic chronic and postural traumatic states and ionophoreic and aspiration of active principles in the ambulatory and hospital environment by of physicians specializing in physical therapy.

UTC2
Standard and Optional Composition

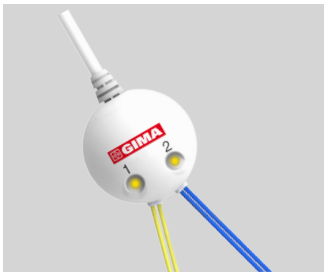
Code	Description	UTC2
00100.00	Power supply cable 2MT ITALIA-IEC	□
00100.01	Power supply cable 5MT SIEM-IEC	□
00100.03	Power supply cable 2MT SIEM-IEC	■ /1
00100.04	Power supply cable 2MT USA-IEC	□
00100.05	Power supply cable 2MT GB-IEC	□
GMAA35	Automatic frequency 1-3 MHz US handpiece–Ø35 mm	■ /1
GMA115	Automatic frequency 1-3 MHz US handpiece–Ø15 mm	□
BAG002	Physioled carring bag	□
TR003	Trolley 3 shelvees	□
TR004	Trolley 4 shelvees	□
TR005	Trolley 5 shelvees	□
00607.01	Conductive rubber electrode with synthetic buckskin 80 x 120 mm	■ /4
00607.02	Conductive rubber with synthetic buckskin electrode 45 x 60 mm	■ /4
00607.03	Conductive rubber electrode with synthetic buckskin 120x160 mm	□
00602.040	Fasting bandage size 8 x 40 cm	■ /2
00602.060	Fasting bandage size 8 x 60 cm	■ /2
00602.100	Fasting bandage size 8 x 100 cm	■ /1
GMAC12	1-2 Cables connection	■ /1

■/ Pz= STANDARD □= OPZIONALE

00100.03

GMA115 (opt)

GMAA35



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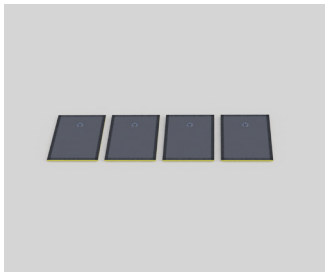

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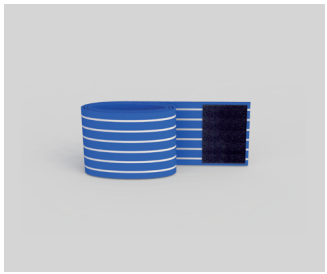
00607.02
00607.03



00602.040
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EN
English

UTC2
ULTRASOUNDS
Physical Elements

Ultrasonic waves are sound waves having frequency higher than to that perceivable from the human ear. The perceivable frequencies from the man are those between 16 and 20.000 Hz. The frequencies under 16Hz are denominated infra-sound, while those superior to 20kHz are being denominated ultrasounds.

As all the sonorous waves, ultrasounds require a solid, liquid or gaseous solid material to propagate. The propagation happens when some of the particles of the mean due to a perturbation start to oscillate and solicit the near particles, because of the molecular interactions. This provokes compressions and decompressions that propagate each other through the same mean. The sonorous waves are longitudinal, since the direction of the oscillations of the molecules of the mean is parallel to the direction of propagation of the wave.

Speed

The speed of propagation of a sonorous wave depends by elastic characteristics of the mean of transmission. For this reason, it is greater in the solid than in the liquids and it is greater in these last in comparison to the gases.

	Medium Speed(m/sec)
Water	1430
Aluminum	6400
Air	330
Fat	1450
Bone	4080
Blood	1570
Soft tissue	1540

Wavelength

The length of wave is the briefest distance between any two points in which the particles oscillate in phase.

Frequency

The move of a particle from a position and his/her return in the position of departure is defined as cycle. For frequency of a wave is the number of cycles in the unity of time. The unity of measure of the frequency is the Hertz (Hz).

Amplitude

The amplitude of a wave is the maximum value of the oscillation.

Power

The power is the energy transmitted by a wave in the unity of time.

Intensity

The intensity of a sonorous wave is the energy that crosses the unitary surface in the unitary time.

The unity of measure that one uses is W/cm^2.

Duty cycle (cycle of service) or modulation

This parameter has important in the pulsated erogations, that is when a perturbation of duration m is repeated after the time s. It is defined as ratio between the duration of the impulse m and the interval of time resulting by the sum of the duration of the impulse and the duration of the interval between two following impulses (m+s). It is given in percentage (%).

TRANSDUCERS

The devices that can convert a physical quantity of a certain nature in a different nature they are said transducers. In our case the transducer is able to change electric energy in ultrasound energy.

Very often the devices (transducers) they are able to work both as ultrasound generators (US), and as receivers. Ultrasound receivers are used for medical diagnosis.

Generally piezoelectric transducrers are used that, excited by an alternating current, they create some vibrations transmitted to the mean of contact. The frequency of vibration of the piezoelectric crystal determines the frequency of vibration of the ultrasounds. In the therapeutic use it is necessary to keep in mind that the depth of penetration is inversely proportional to the ultrasound frequency (1 MHz around 4/5 cm - 2 MHz around 2/3 cm - 3 MHz around 1/1,5 cm).

The handpiece having the transducer, to the purpose to avoid reflections of the beam, is generally put in contact with the skin through a GEL. This GEL has to have the followings requisite:

- it doesn't have to be easily assorbable from the skin;
- it doesn't have to have irritating effects for the derma;
- it has to be inactive chemicallly;
- it must have exempted from gas bubbles.

INTERACTIONS BETWEEN TISSUE AND ULTRASOUNDS

The intensity of an ultrasonic wave , that travels through a tissue, decreases when the crossed distance increase. This attenuation of the beam happens in how much energy is partly absorbed and partly lost for phenomenons of diffusion and reflection. Reflection occurs when the wave meets a surface of separation between two means in which, because of the different elastic characteristics, the sound is propagated with different speed. In correspondence of this separation a part of the wave is reflected and a part is transmitted to the second mean changing however of direction (refraction). Clearly the entity of the reflection depends on the acoustic impedances of the two means. To make an example there is a greater reflection in the passage from a soft tissue to the bone than viceversa.

Biophysic Effects

The interaction between ultrasounds and biological tissues produces thermal effects and not thermal ones (mechanics, chemical, cavitation).

Mechanical effect

This effect is due to the movement of the particles of the tissues crossed by an ultrasonic wave. In presence of lack of homogeneity, some variations of pressure are obtained that determine a movement of the liquids, an increase of the permeability of membrane and the distribution of the tissue due to separation of the collagen fibers. This movement, disregarding the rapidity, it is more intense than a normal manual or instrumental massage, both because it possesses concentrations of different strengths, and because of the frequency.The pressure and traction phenomenons with consequent phenomenons of contractions and expansions happen in the intimate structure of the tissues and they have separated from brief intervals, while in the ordinary massage it is the mass of the tissue that is moved.

Chemical effects

The notable strengths of acceleration of the particles of the tissue, submitted to the passage of the ultrasound wave, they provoke the modification of the local PH and the permeability of the cellular membranes with molecular changes.

Effects of cavitation

To the passage of the sonic wave in the liquids, depending from phenomenons of compression-decompression, some small bubble of air can be formed. When a determined volume is reached these bubbles, following the variations of pressure of the field, can gather and can oscillate in a stable beam (stable cavitation), or in a turbulent beam where, because of ample variations of volume they explode (unstable cavitation).

The cavitation provokes an increase of the flow of the liquids in proximity of the oscillations of the bubbles and it can be responsible of some therapeutic effects as well as of cellular damages. At therapeutic dose the destructive reactions would be verified just in presence of low cellular concentration to low viscosity of the mean, as at eyes and uterus level.

Thermal effects

When an ultrasonic wave crosses the biological tissue, part of the mechanical energy is converted into heat. The increase of the temperature depends on the absorbed energy and is proportional to the intensity of the ultrasonic beam and to the coefficient of absorption of the tissue. The temperature's increase changes with relation to the possibility of cooling of the tissue due to the circulation of the blood or to the movements of the transducer

The generation of a local diathermy in the treatment with ultrasound is not immediate. The appearance of the thermal phenomenon and expecially its perception by the patient they assume for this detail of not immediateness, a great importance in the respects of the concept " dose " during the treatment. This is generally implemented through a circular massage on delimited areas. Said phenomenon, when the " dose " is correct, it will in fact owe, to be revealed as a light pleasant feeling of heat after some minutes of treatment. The lack or the excessive delay of demonstrations of the phenomenon, denote an insufficiency of basic dose or wrong removal (on healthy tissue, for instance, rather than sick). The immediate appearance or the sense of excessive and troublesome heat, it points out the excessive basic dose and the pain in such case must be interpreted as synonym either of excessive heat, or of a probable diagnostic error in the evaluation of the state of acuteness of a pathological phenomenon, in the sense that the same is very more acute than the expectation.

Application's Mode

The therapy with ultrasounds can be applied with two different modalities: by direct contact of the emitter with skin or through water bath (by immersion).

Application by water bath

This mode is used when the surface to treat are irregular or small or when the zone is so aching to be prevent the direct contact. The part to treat is dipped in the water at the temperature of about 37°C and the emitter of ultrasound is placed to a distance of 2 -3 cm. Normally used intensity is 2-3 W/cm2 and the treatment lasts 10-15 minutes. Generally 10 sessions, one a day, are given to complete a treatment. With Classic model don't active the contact control in immersion treatment.

Direct contact

In the treatments with direct contact to the skin, a GEL is interposed between the emitter and the skin, in order to better the energy transmission. The treatments can be implemented in two different ways: with the emitter stationing on the treatment zone or with the emitter moving on the treatment zone.

Treatment with static emitter

The head of treatment is set on the zone from to treat sustained by a stativo that it maintains the head of treatment to contact with the skin for the whole duration of the therapy. The absence of movement and the zone of treatment very circumscribed it provokes rapid increases of temperature, therefore you/he/she is required a small intensity of power (0.5-1 W/cm2) and a pulsated issue (10-20%). The time of treatment is middly of 5-10 minutes with daily frequency for a total of ten sessions.

Treatment by moving the emitter

The emitter is moved on the treatment's zone in order uniformely distribute the energy on it. The emitter should bewell adherentto the skin. Avoid if possible the presence of little bubbles of air, so that wave reflection and consequent cutaneous overheating are prevented. Massage must be performed starting from an extreme of the treatment zone and slowly proceed toward the other extreme touching all the points of the area to be treated. The better way to do this is that to describe concentric circles, almost superimposed the one to the other, interesting a small zone a time, so to be certain to give it sufficient energy, before to pass to a surrounding zone. This method is said " micro-massage " and has to be performed slowly. The rotation speed should be one circle, having a diameter a little ampler than the diameter of the emitter, a minute . The pressure has to be homogeneous and not exaggerated . After few minutes of circular movement, the treated people warns, if the dose is correct, a light feeling of heat in the treated zone,this gives the certainty to have practised in that zone the correct relationship intensity-time that is an indicative factor of great importance. The time that lasts for having the thermal feeling, it depends bymany factors such the delivered power, the speed of the massage, the local anatomical conditions, the pathological state and the reflexes vegetative nervous system of the patient. The feeling of immediate pain, shold be avoided, since it is a sign, that the vibrations pass from a less dense mean to a more dense (bone) one, causing phenomenons of excessive refraction, that determine the irradiation of the periosteum. It is worthwhile in these cases, to vary the incidence of the beam and to reduce the power. Great importance has delivered energy, in case of treatment with fixed head, the power have to be reduced to around a tenthof the maximum, so that to avoid the painful feeling of which we have mentioned in precedence. Such phenomenon can be reduced by using the impulsive treatment, which allows of to radiate the same peak power without provoking an excessive heating of the treated part.

The medium used intensity for treatments with mobile transducer is 2-3 W/cm^2, the session lasting 10-15 minutes. Daily treatments is recommended up to a total of 10 sessions.

ELECTROTHERAPY

The electrotherapy is the use of electrical energy, in different forms, for a therapeutic aim.

The most commonly used currents are:

- The direct current, that cannot be modified in direction or in amplitude. The most used direct current is the galvanic one that is used for the galvanization and iontophoretic technique.
- The variable current, a generic term to indicate numerous wave forms. The different conformations, the pulse duration and the time of action and pause generate different therapeutic effects.

The use of electrical energy produces different effects on the organism with different clinical indications and principally: excitative-motor effect, antalgic effect and vehicular of drugs.

Excitative-motor effect	*Faradic currents*
	Rectangular currents
	Bipolar currents
	Impulsive currents
Antalgic effect	*Tens (Transcutaneous Electrical Nerve Stimulation)*
	Galvanic
	Diadynamic
	Interferential
Vehicular effect	*Iontophoresis*

Excitative-motor Effect

The aim of the electro-stimulation is to get a muscular contraction applying, such electric currents, above or close to the muscle.

Obviously the type of used current depends by the therapeutic program and by the characteristics of the muscle to treat.

Faradic Currents

The working can be described as follow: The muscle, or a group of muscles, under the effect of a potential of action caused by the electric impulse, contracts. To this principal effect there is another added effect, caused by the increase of treated tissues temperature due to a diathermic mechanism (Joule effect), that produces a vasodilatative effect.

The faradic current is characterized by the rectangular wave form and, generally, with impulse duration in the range from 0.1 to 1 ms and repetition frequency from 1 to 200 Hz (the lower frequencies in the range to obtain an excitative-motor effect and the higher frequencies to obtain a vasodilatative effect).

Thanks to the frequency characteristics and pulse duration, the faradic current is able to produce tetanic contractions and relaxations lasting 15 – 35 msec.

Faradic current is usually used for stimulation of normally innervated muscles.

The current level has set depending from the patient endurableness.

The negative electrode has fixed on the motor point, and the positive to a point close to it .

The daily treatments last 10 -20 minutes.

Rectangular currents

This currents are usually used for the muscular reinforcement, the prevention and the treatment of the muscular hypo trophy. Generally they are used in the rehabilitative and sport medicine,

Rectangular currents with different frequency are usually used in sequence. The treatment is divided in three phases:

phase of preparation: by stimulating the muscles with low frequency (5-30 Hz) current

phase of work: by stimulating the muscles with high frequencies (40 – 150 Hz) alternating the tetanic contractions time with rest time lasting twice the contraction time. During this phase it is important to start with low current level and increase it to obtain the stimulation of a greater number of muscular fibers.

Phase of short run: again low frequency muscles stimulation.

Treatments have usually three weekly sittings with a session time that varies from 20 minutes to some hours.

The two electrodes are positioned: one close to the motor roof plate of the muscle and the other one to the opposite extremity of the same muscle.

Bipolar currents

Among the sinusoidal currents the most used are the Kotz currents, that have lots of sinusoidal waves at mean frequency (2500 Hz) that can be compared to the faradic current measured with train impulses, but more endurable by the patient. The time of stimulation varies from 2 to 20 seconds, spaced out times of non-stimulation from 4 to 60 seconds.

The positioning is similar to that of biphasic rectangular current.

It is usually used for the stimulation of a normally innervated muscle.

Impulsive currents

Pulses having a constant growth of the intensity versus time, that is the right form to reduce the accommodation, are generally used for the stimulation of denervated or partially denervated muscles due to neuroplasia, axontomesis, or neurotomesis . Generally the use of this current should be suspended in case of an evident reappearance of an active contraction.

Time of applications varies from 10 to 30 minutes, with a number of settings that varies in relation to the therapeutic program.

To avoid the muscular weariness the pauses among the single impulses should be at least ten times longer than time's stimulation.

To obtain a good contraction the stimulus' intensity should be superior to the rheobase (the least-necessary intensity to obtain the contraction) and a very short time (100 – 500 msec).

Anyway it is better, placing caution to the cutaneous zones with a high sensibility, to use the largest intensity tolerated by the patient.

Avoiding to subject normally innervated muscles to the treatments it is important to be careful with the positioning of the electrodes, trying to use small electrodes.

It is advisable to carry out a curve intensity-time (answer to the stimulation).

Generally the techniques of applications are two:

Monopolar technique applying the negative in the muscular stomach where it is more evident the motor answer and the positive proximally.

Bipolar technique applying the electrodes to the extremity of the muscle.

Antalgic Effect

Tens

The Tens is an electric transcutaneous selective stimulation of peripheral nerves with consequent reduction of the symptomatology of pain.

The tens is used in all the pathologies where we need a reduction of pain.

The antalgic effect of transcutaneous stimulation have other factors:

- Selective stimulation of the nervous fibers with consequent inhibition of spinal neurons involved in the nociceptival transmission (theory of Gate Control);
- Liberation of endorphin that activate the cerebral circuits the transmission of pain to the level of the spinal marrow;
- Increasing of pain caused by the variation of the peripheral excitability to the level of receptor and nervous fibers. The receptors, for the pain caused by the stimulation settle themselves to a higher level, to be excited by stimulus only with a larger intensity than to the starting, so this effect increase the pain.

The antalgic effect of Tens current last for a long time also after the end of treatment, for some indirect effects, the variation of the neuronal conductibility caused by the same impulses and the neuronal excitability that causes the interruption of pain circuits. Obviously, it is a therapeutic treatment, so we have to be careful with the placebo effect.

The wave form can be monophasic or rectangular biphasic, symmetric, asymmetric or Spike with time that varies from 20 to 500 msec and the frequency from 2 to 200 Hz.

Using higher frequencies (50 – 200 Hz) and time of impulses between 50 and 10 msec the analgesic effects appear quickly to the stimulated metamer, but they don't last for a long time after the end of treatment. In this case we advise the intensity that produce swarming paraesthesia without provoking motor reactions.

Using lower frequencies (2 – 30 Hz) and times of impulses between 200 and 500 msec the analgesic effects appear after about 30 minutes of treatment, but they don't last for a long time after the end of treatment. This type of treatment can produce muscular fasciculation that can be annoying for the patient.

With the use of low and higher frequencies it is necessary to increase periodically the intensity's level for the appearance of accommodation proceedings.

Generally we advise to apply in sequence the two frequencies to overwork the antalgic effect (ex. 15 minutes at 100Hz frequency, followed by 15 minutes at 10Hz). It can be chosen stimulations of two or more points and different positions of electrodes, singly or in association, the most common are:

- local stimulation: the electrodes are in the painful zone or close to it; Very efficacious is the setting of the negative electrode in those points defined trigger point (painful points locatable with the palpation as a very small zones where the skin is more hardened for a located contraction and with the pain that can last for some minutes and spread to the near zones and in others).These zones are defined target areas and they are the points where we have to put the positive electrode;
- Stimulation at metameric level: the electrodes are fixed along the principal nervous trunks that are in metameric correspondence with the pain. Position distally the negative electrode and the positive one proximally. In this technique we advise to put at least one electrode at segmentary paravertebral level.

The time of a single sitting of TENS and of the whole therapy can vary from about 30 minutes a day for cycles of 10 – 15 sittings (if the antalgic effect is good and last after the end of treatment) until continuous treatments of one or more days for patients with chronic pain that have a good result to the antalgic therapy but short in time.

There is the possibility of spasms so it is better not to use the stimulation on the front surface of the neck as the lateral surface of the neck.

Galvanic

The galvanic or continuous current, thanks to the hyper polarization that creates itself to the positive pole, produces an antalgic effect.

For this aim the positive pole has to be fixed where we have to search for the reduction of pain.

The galvanic current is obviously a one-way current, that produces electrolytic effects so it has to be used with care because with low intensity's level supplied on electrodes with reduced surfaces can produce heavy burns on the skin. To avoid this we don't have to exceed the level 0,1 – 0,5 mA for cm^2 of used surface electrodes.

Diadynamic

Diadynamic current is a kind of low frequency antalgic electrotherapy.

	*MF: Diadynamic monophasic current with frequency 50Hz. Prevalently stimulating action.*

	*MFS: Spaced out diadynamic monophasic current with frequency 50Hz. Time of action equal to time of pause* *(1-2sec). Stimulating action.*
	*CP: 50 Hz monophasic diadynamic current alternated with 100 Hz diphase diadynamic current. Time of alternation 1-2 sec. Stimulating and trophic action.*
	*DF: 100 Hz diphase diadynamic current. Analgesic action.*
	*DFS: 50 Hz monophasic diadynamic current alternated with 100 Hz diphase diadynamic current. Time of alternation 5 sec. Analgesic and Relaxing action.*
	*LP: 100 Hz diphase diadynamic current. Time of action equal to the time of pause (1-2sec). Analgesic action.*

As we've seen, the therapeutic actions are excitative-motor, vasomotor and antalgic, in each of the various currents there is a prevalence of one therapeutic action in respect to the others.

The electrodes have to be fixed after cleansing of the skin and putting between the electrodes and the skin a wetted sponge .

The active negative electrode is placed on the painful zone or along the afferent nerves. The positive electrode has to be placed in the opposite side. The intensity's level has to be between the perception threshold and pain one. Also in this case, it is important to increase the level during the session to avoid the phenomenon of accommodation. Treatments, with daily frequency, last 15 – 20 minutes, and it is useful to invert the polarity to reduce the danger of ionization under the electrodes.

It is advisable to associate and alternate the different wave forms, starting the treatment with more tolerable currents (ex. diphase current), then use less tolerable currents (short period, long period).

Medium frequency and Interferential

The most used currents, among the sinusoidal ones, are the Kotz currents, that are lots of medium frequency (2500 Hz) sinusoidal waves) that can be compared with pulse trains of faradic current, but more endurable by the patient. The time of stimulation varies from 2 to 20 seconds, spaced out by non-stimulation time ranging from 4 to 60 seconds.

The electrode placing is similar to that of biphasic rectangular current. It is usually used for the stimulation of a normally innervated muscle.

The interferential currents are obtained from the interference of two medium frequency sinusoidal currents (2500 – 5000Hz), having constant intensity and little differences in their frequencies (1 – 100 Hz) .

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	100VA
Power fuses	2 x T2AL, 250V (mains voltage 180-240Vac)
	2 x T4AL, 250V (mains voltage 90-130Vac)
Treatment time ET	from 1 to 60 min
Treatment time US / COMBI	from 1 to 30 min
Ultrasound frequency	from 1.0 to 3.0 MHz
Duty Cycle	from 5 to 100%
Modulation waveform	Continued or Pulsed (squared)
Max output intensity	3 W/cm^2
Output power	depending of transducer
Number of phases	1 - 2 - 3
Max Output Voltage	100 V
Output current (impulsive/sinusoidal)	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*
Electric Safety class	I BF
IP transducers	IP 67
Dimensions (HxWxD)	170 x 315 x 390 mm
Weight	3.5 kg

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

EN
English

UTC2

Waveform	Modulation	Repetition (msec)	Pulse duration (msec)	Rendering Factor
continued	100%	500	500	1,00
modulated	90%	500	450	0,90
modulated	80%	500	400	0,80
modulated	70%	500	350	0,70
modulated	60%	500	300	0,60
modulated	50%	500	250	0,50
modulated	40%	500	200	0,40
modulated	30%	500	150	0,30
modulated	20%	500	100	0,20
modulated	10%	500	50	0,10
modulated	5%	500	25	0,05

Code	Frequency (MHz)	REA (cm^2)	Max power (W)	BNR
SNRA35	1.0-3.0 (automatic)	5	15 (1.0MHz) 10 (2.0-3.0MHz)	6
SNRA15	1.0-3.0 (automatic)	0,8	2.4 (1.0MHz) 1.6 (2.0-3.0MHz)	6

Characteristics of Available Currents

DIADYNAMIC

Mixing with galvanic current:		allowed
Polarity:		applicable
MF	Frequency:	5-100 Hz (step 5)
MFS	Frequency:	5-100 Hz (step 5)
	Time of Action:	1-10 sec (step 1)
	Time of Pause:	1 –10 sec (step 1)
CP	Frequency:	5-100 Hz (step 5)
	Time MP:	1-10 sec (step 1)
	Time DP:	1 –10 sec (step 1)
DF	Frequency:	10-200 Hz (step 10)
DFS	Frequency:	10-200 Hz (step 10)

	Time of Action:	1-10 sec (step 1)
	Time of Pause:	1 –10 sec (step 1)
LP	Frequency:	5-100 Hz (step 5)
	Time MP:	1-10 sec (step 1)
	Time DP:	1 –10 sec (step 1)

FARADIC

Mixing with galvanic current: allowed

Polarity: applicable

Rectangular	Impulse:	1 msec
	Frequency:	1-300 Hz ((1-10) step 1 / (10-300) step 10)
	Time of Action:	1-30 (step 1)
	Time of Pause:	0-30 (step 1)
Triangular	Frequency:	1-300 Hz ((1-10) step 1 / (10-300) step 10)
	Time of Action: 1-30 (step 1)	
	Time of Pause: 0-30 (step 1)	
Exponential	Frequency: 1-300 Hz ((1-10) step 1 / (10-300) step 10)	
	Time of Action: 1-30 (step 1)	
	Time of Pause: 0-30 (step 1)	
Neofaradic	Frequency: 1-300 Hz ((1-10) step 1 / (10-300) step 10)	
	Time of Action: 1-30 (step 1)	
	Time of Pause: 0-30 (step 1)	
Trabert	Time of Action: 1-30 sec (step 1)	
	Time of Pause: 0 –30 sec (step 1)	

GALVANIC

Polarity: applicable

Galvanic

Galvanic MF

IMPULSIVE

Mixing galvanic current: allowed *(not for Biphasic*)

Polarity: applicable

Rectangular	Impulse:	0.1-1000msec ((0.1-1) step 0.1 / (1-10) step 1 / (10-1000) step 10)

EN
English

		Time of Pause:	0 – 30 (step1)
	Triangular	Impulse:	1-1000 msec ((1-10) step 1 / (10-1000) step 10)
		Time of Action:	1-30 (1 step)
		Time of Pause:	0- 30 (step1)
	Exponential	Frequency:	1-300 Hz ((1-10) step 1 / (10-300) step 10)
		Time of Action:	1-30 (step 1)
		Time of Pause:	0-30 (step 1)
	Biphasic R.	Mixing galvanic current:	Not allowed
		Impulse:	30-500 µsec (passo 10)
		Frequency:	1-300 Hz ((1-10) step 1 / (10-300) step 10)
		Time of Action:	1-60 (step 1)
		Time of Pause:	0-60 (step 1)

T.E.N.S.

Mixing galvanic current:			not allowed
Polarity:			applicable
	Burst:	Frequency:	1-300 Hz ((1-10) step 1 / (10-300) step 10)
		Impulse:	30-350 µsec (step 10)
	Modulated:	Frequency:	1-300 Hz ((1-10) step 1 / (10-300) step 10)
		Impulse:	30-350 µsec (step 10)
		Time of Action:	1-60 (step 1)
		Time of Pause:	0-60 (step 1)
	Random:	Impulse: 30-350 µsec	(step 10)

BIPOLAR

Mixing galvanic current:			not applicable
Polarity:			not applicable
	Medium Freq	Frequency:	2500 – 5000 Hz (step 50)
		Time of Action:	1-60 (step 1)
		Time of Pause:	0-60 (step 1)
	Russian (Kotz)	Frequency:	2500 – 5000 Hz (step 50)
		Modulation:	5-100 (step 5)
		Time of Action:	1-60 (step 1)

	Time of Pause:	0-60 (step 1)
Bipolar IF	Frequency:	2500 – 5000 Hz (step 50)
	AMF:	1-200 Hz (step 1)
	Spectrum:	0-100 Hz (1)
	Spectrum Time:	minimum dependent by the Spectrum value 1-120 sec (step1)
	Spectrum's variation:	Step - Sweep
Tetrapolar	Frequency:	2500 – 5000 Hz (step 50)
	AMF:	1-200 Hz (step 1)
	Spectrum: 0-100 Hz (1)	
	Spectrum Time:	minimum dependent by the Spectrum value 2-120 sec (step2)
	Spectrum's variation:	Step - Sweep
Isoplanar	Frequency:	2500 – 5000 Hz (step 50)
	AMF:	1-200 Hz (step 1)
	Spectrum:	0-100 Hz (1)
	Spectrum Time:	minimum dependent by the Spectrum value 2-120 sec (step2)
	Spectrum's variation:	Step – Sweep
Vectorial	Frequency:	2500 – 5000 Hz (step 50)
	AMF:	1-200 Hz (step 1)
	Spectrum:	0-100 Hz (step 1)
	Spectrum Time:	minimum dependent by the Spectrum value 2-120 sec (step2)
	Vector Speed:	1-10 sec (step 1)
	Spectrum's variation:	Step – Sweep

ATTENTION

The operative information in this manual is not a guide, because the operative procedures are under the doctor's responsibility. Every information regarding procedures or protocols are given only for an informative aim, it is not conceived to substitute the treatment's modality that has to be indicated from the sanitary and qualified personnel. No responsibility is assumed by the supplier of the equipment and protocols, for consequences deriving from the use of both, without a good verification of fitness from the sanitary personnel.

All the treatments using electrical currents have to be carried out under the medical control. The application of the unidirectional current, galvanic, impulsive, unidirectional, faradic has to be avoided in patients:

- Using pace-maker or other electronic system. These patients have to be treated only after have obtained the assent of the attending doctor;
- suffering patients from heart disease;
- patients who have heavy pressure disease;

- patients who have problems with the nervous system;
- patients who have renal insufficiency;
- patients who are in pregnancy;
- hemorrhagic;
- epileptic;
- bringer of metal prosthesis;
- patients with thermo dolorific sensibility problems;
- asthenic.

The application is also contraindicated:

- in tumoral focus;
- on the abdomen in all the cases of calculosis or inflammation;
- in the cardiac area for the risk of ventricular fibrillation or syncope;
- in cutaneous zones where there are cuts, punctures, eczemas, etc.
- For the risk of burns because there are zones with low electrical resistance and so concentration of the current in those parts with increased thermal effect.

NOTE: Generally the right current's intensity for the iontophoretic giving is 0,02 – 0,05 mA for cm^2 of used surface electrodes, it must not exceed 0,1 mA for cm^2.

The supplied or optional electrodes have the following dimensions and surfaces:

REF 00607.01	DIMENSIONS 80 x 120 mm	SURFACE	96 cm^2
REF 00607.02	DIMENSIONS 45 x 60 mm	SURFACE	27 cm^2
REF 00607.03*	DIMENSIONS 120 x 160 mm	SURFACE	192 cm^2

**optional*

In the application of unidirectional variable currents there can be the presence of histothermic and histochemical effect similar to the galvanic current.

This effect can be obtained calculating the mean current value that depends on the applied wave form.

For a diadynamic monophasic current the mean value is equal to:

$$Im = Ip / \pi$$

where: Im (mA) is the mean current

Ip (mA) is the max current value

And so:

Im = circa 0,32 Ip

For a diadynamic biphasic current is equal to:

$$Im = 2 \times Ip / \pi = \text{circa } 0{,}63\ Ip$$

For a rectangular faradic current it can be calculated through the formula:

$$Im = I \times t \times f / 1000$$

where: Im is the mean current in mA

I is the pick current of the rectangular faradic impulse in mA

t is the time of impulse in millisecond

f is the frequency of repetition in Hz

Naturally if the emission of impulses is not carried out continuously but interrupted by pauses, we have to think about the multiplicative factor:

$$A / (A+P)$$

where: A is the time of action in seconds

P is the time of pause in seconds

For example for a faradic current of 30 mA applied continuously to the frequency of 100 Hz, with impulses of 1 msec we obtain:

$$Im = 30 \times 1 \times 100 / 1000 = 3 \text{ mA}$$

If the time of action is: A = 3 seconds

And the time of pause: P= 6 seconds

The multiplicative factor will be:

$$A / (A+P) = 3 / (3+6) = 1/3$$

And so the mean current will be:

Im / 3 = 1 mA

For a triangular current it can be calculated through the formula:

$$Im = I \times t \times f / 2000$$

where: Im is the mean current in mA

I is the pick current of the triangular impulse in mA

t is the time of impulse in milliseconds

f is the frequency of repetition in Hz

UTC2

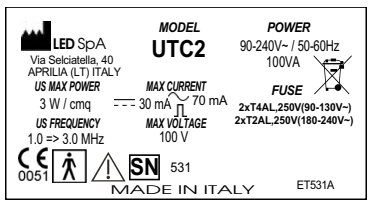
Meaning of Graphics Symbols

The meaning of the graphic symbols printed on unit's cabinet or data label is the following:

1- Level of protection against direct and indirect contact: Type BF (EN 60601-1).
2- Following instructions of use.
3- Conforms to European Directive 93/42/EEC and succ. Mod. 2007/47/EC
4- The product must not be disposed of in containers meant for urban waste but must rather be differentially dismantled.
5- Manufacturer
6 - Serial Number

					
1	2	3	4	5	6

Label Data



UTC2

INSTALLATION

- Inspect the equipment for damages during transport. Any damage should be reported to the carrier immediately.
- Unpack the equipment and carefully study the documentation and the operative instructions supplied. The equipment is available for feeding by mains voltage form 180 to 230V~ – 50/60 Hz. Please check the fuses and replace them with the value indicated in the label.
- Connect the supply cable to a socket having a good earth connection.

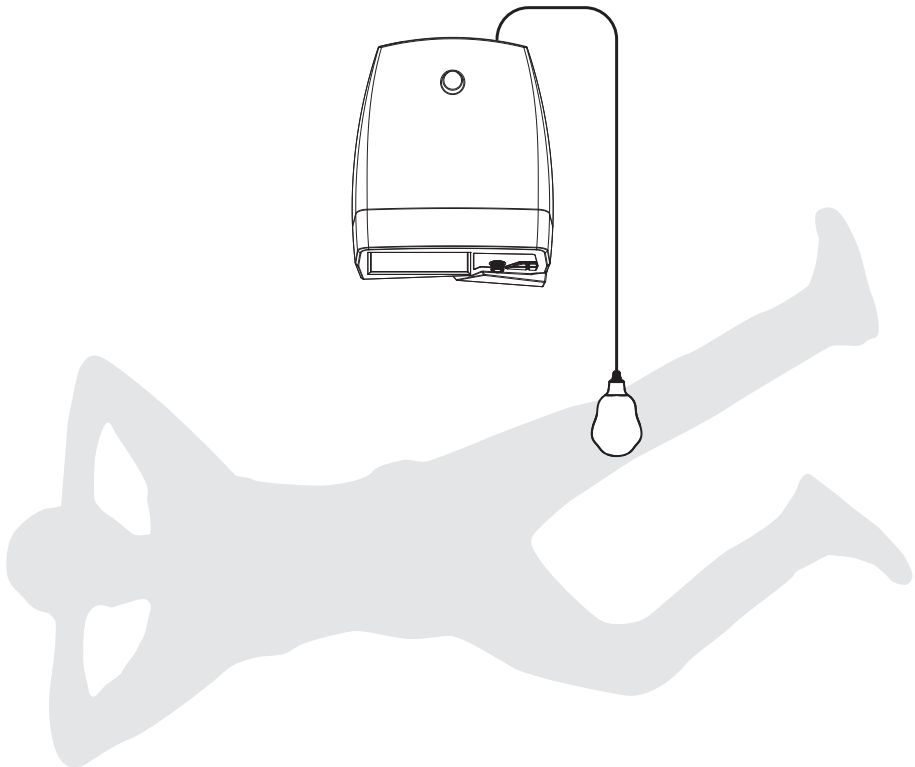
THE WORKING OF THE EQUIPMENT WITHOUT EARTH CONNECTION IS FORBIDDEN.

- Put the supply interrupter on O (turned off). Connect the supply cable in the wall socket.

The equipment has to be installed on a plane surface with dimensions corresponding to the base of the equipment. Around the equipment we have to leave at least 25cm of space.

FOR ULTRASOUND TREATMENTS:

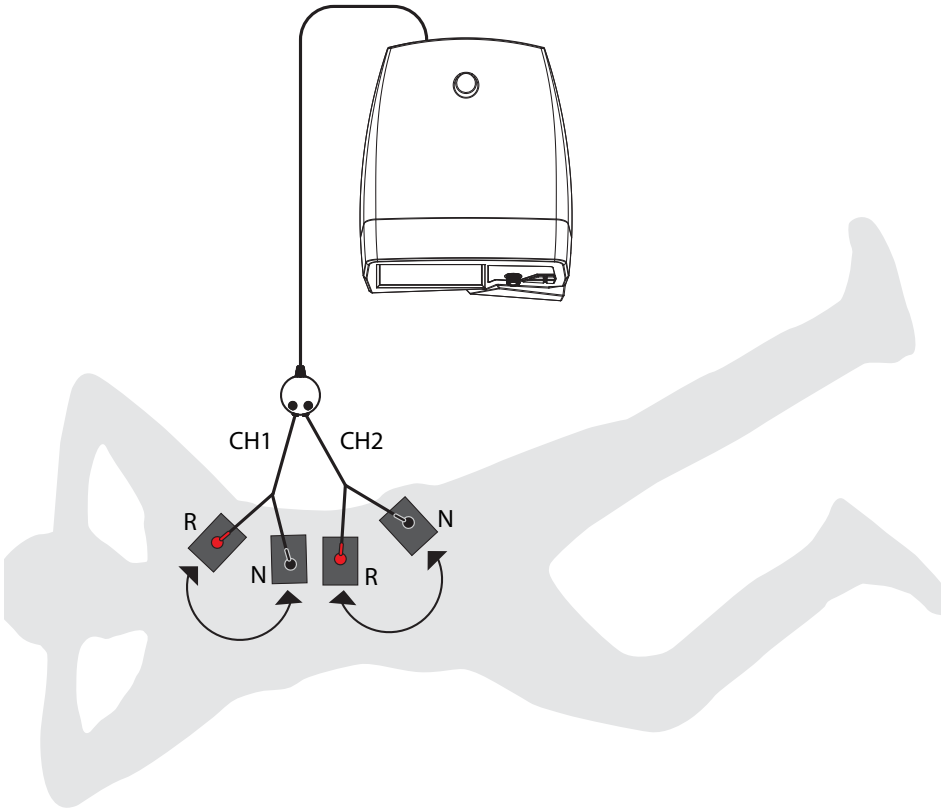
- Plug and tighten the transducer handpiece to the connector down in the front panel of the unit.
- Switch on the equipment, putting the supply interrupter on I (on).



UTC2

FOR ELECTROTHERAPY TREATMENTS

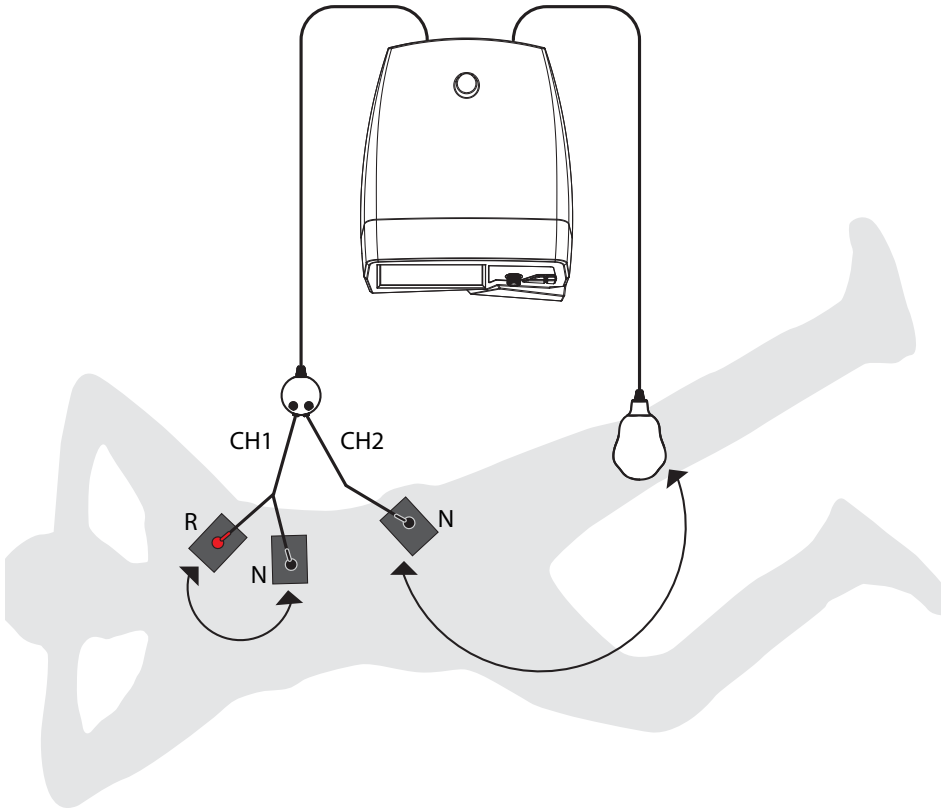
- Connect the cables OUTPUT for ET. Please consider that in treatments with unidirectional currents (diadynamic – faradic – pulse – tens) positive polarity is on the red outlet and negative polarity on the black one.
- Switch on the equipment, putting the supply interrupter on I (on).
- Connect to the supplied cables the electrodes.
- Clean the zone where the electrodes have to be applied.
- Wet the sponges with the ionic solution (only for iontophoretic and medical treatments) or with tap water. We advise to wet with warm water, to avoid an unpleasant thermo sensation to the patient.
- Connect firmly the electrodes to the patients, using the Velcro bands.



FOR COMBINED USE OF ULTRASOUNDS AND ELECTROTERAPY:

- Plug and tighten the transducer handpiece to the connector down in the front panel of the unit.
- Connect the cables OUTPUT for ET. Please consider that in treatments with unidirectional currents (diadynamic – faradic – pulse – tens) positive polarity is on the red outlet and negative polarity on the black one.
- Switch on the equipment, putting the supply interrupter on I (on).
- Connect to the supplied cables the electrodes.

- Clean the zone where the electrodes have to be applied.
- Wet the sponges with the ionic solution (only for iontophoretic and medical treatments) or with tap water. We advise to wet with warm water, to avoid an unpleasant thermo sensation to the patient.
- Connect firmly the electrodes to the patients, using the Velcro bands. Keep in mind that the circuit, for the ET2 channel, is closed when the transducer handpiece is applied to the patient.



UTC2

Equipment Description

1	**POWER SUPPLY MODULE**
a	*Mains voltage connector*
b	*Power On-Off switch*
c	*Fuses holder*
2	**USB 2.0 PORT**
d	*USB 2.0 Standard-B*
e	*USB 2.0 Standard-A*
3	**VENTILATION GRIDS**
4	**SECURITY LOCK**
5	**OUTPUT US PANNEL**
f	*OUTPUT US connector*
6	**PANNELLO DI USCITA PER ELETTROTERAPIA**
g	*Connettore OUT per accessorio ET*

1 POWER SUPPLY MODULE

This module is provided with mains voltage connector and line fuses.

WARNING: before switch on the unit, operator has to verify that requested mains voltage corresponds to the voltage available from the electrical net. (see chapter INSTALLATION).
a) *Mains voltage commector* is the connection point of mains voltage feeding to the unit.

b) The *power on-off switch* is the control to switch on the equipment. In “I” position the equipment is on and the interrupter is lit. In “O” position the equipment is turned off and the interrupter is not illuminated.

c) *Fuses holder* in this part there is power fuses.

2 USB PORT

For software updating on the rear unit are present two USB 2.0 ports.

d) *Standard-A*

e) *Standard-B*

3 VENTILATION GRID

The ventilating grilles keep the internal temperature condition compatible with the equipment’s characteristics so it is important that the same are not obstructed

4 SECURITY LOCK

In order to avoid I remove it non-authorized of the units is possible to connect the same ones to a compatible security system.

5 OUPTUT US PANNEL

f) *OUTPUT US connector* for transducer.

6 OUPTUT ET PANNEL

f) *OUTPUT connector* for electrotherapy cable.

1	**DISPLAY TOUCHSCREEN**
2	**ENCODER / SWITCH KEY**
a	*Encoder handle*
b	*Home key*
c	*Setting key*
d	*START key*
e	*STOP key*

1 DISPLAY TOUCHSCREEN

Display LCD touchscreen permits the visualization and controls of all the built parameters in a determinate procedure.

2 ENCODER / SWITCH KEY

a) Through the handle *encoder* we set up, vary and confirm all the variable parameters indicated on the LCD display.
b) *Home key* key has the aim to come back initial screen HOME
c) *Setting key* key has the aim to Setting
d) *START key* has the aim to start the treatment
e) *STOP key* has the aim to finish the treatment

Comands

The unit is directly controlled through the present icons on the display device touch screen, or through the present grip handle encoder and keys on the right part. In order to confirm a selection to press the icon directly or to press the grip handle encoder

In the modality with ENCODER the icon selected (through the spin of the grip handle) present on right the high side of the same icons is marked by the sign of celestial cue selecti.

Inside shielding in order to return to shielded the initial HOME to press a any part of the screen or, if visualized, to press the Home key.

In order to see the version of the installed software to press key INFO.

The HELP key permits the visualization of the summarizing information, useful for the right interpretation of indica-

tions on the display

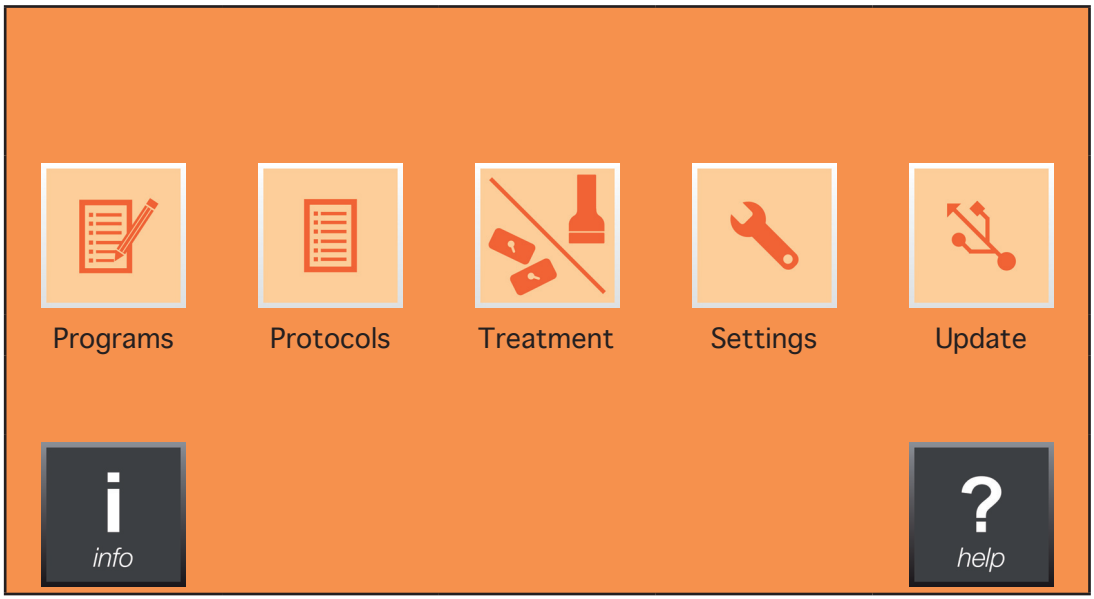
UTC2

LIGHTING

With the fed equipment, to ignite the interrupting present on the posterior part in the feeding module.

On the screen the initial shielded one appears that filler in the inferior part the evidence of the load of the installed software.

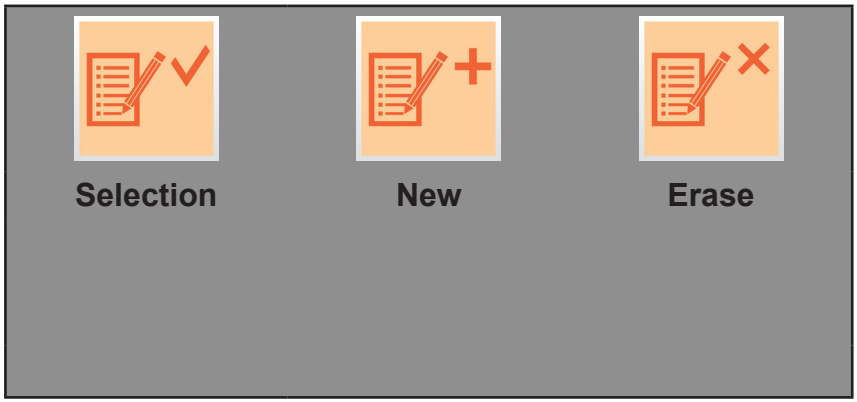
After HOME screen appaers.



In this HOME screen it is possible to choose and work with: personalized Programs, pre-set Protocols, in a traditional manner choosing the desired (Treatment), change the Settings of work or Update software through USB port.

PROGRAMS

From HOME choosing the option “Programs” through the successive popup it is possible: the insertion of a ***New*** program, the ***Selection*** of a memorized program and the ***Eras***ing of a present program.



Insertion of a New Program

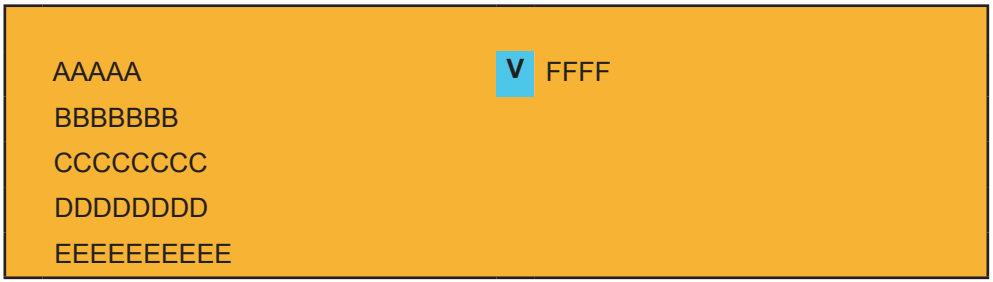
Select and confirm the “New” icon, through the next popup you can choose to work with: ***Ultrasound*** and ***Current***. Selecting and confirming one of the two icons, at which point the “Program Entry” screen appears to give a name to the program, the “Program Entry” screen is displayed to give a name to the program itself. Selecting and confirming the digit to be entered for the name composition, the name composition appears in the upper part of the viewer center. To finish filling the name, select the OK icon.

After naming the name, you must select the desired settings (refer to the TREATMENT chapter). When entering the processing parameters, the “current program storage” screen is displayed. After this phase, the equipment returns to the HOME screen.

UTC2

Selection of a Program

Selecting and confirming the “Selection” icon, you can choose to work with typical programs: Ultrasound, Currents, or both (Combi) using the next popup. Select and confirm one of the three icons, at which point the screen showing the list of programs that may be present in the drive’s memory is displayed. The list can be composed of multiple pages. To scroll through all the programs in the drive memory, rotate the knob or slide your finger directly on the display. A selected program is indicated by the blue check mark..



To choose the program, press the knob or tap the letter with your finger. Select the desired program for the equipment you have in the “Job Screen”, then press the START button to begin the treatment (refer to the TREATMENT chapter).

It should be noted that in the next “Working Screen” resulting from a Program, there are the editable parameters that are specific to the treatment to be performed.

Erasing of a Program

Select and confirm the “Erase” icon, using the next popup you can choose several icons: Ultrasound, Current. Select and confirm one of the three icons, at which point the screen showing the list of programs that may be present in the drive’s memory is displayed. The list can be composed of multiple pages. To scroll through all the programs in the drive memory, rotate the knob or slide your finger directly on the display. A selected program is indicated by the blue check mark.

To choose the program you want to delete, press the knob or tap the letter with your finger to delete the program by pressing the OK button. When this phase is over, the equipment returns the list again to delete any other programs, to exit this procedure, press HOME.

PROTOCOLS

From the HOME screen by selecting “Protocols” through the next popup you can choose to work with typical protocols: **Ultrasound (US)**, **Currents (ET)**, or both (**Combi**) protocols. Select and confirm one of the three icons, and then the screen showing the list of protocols in the drive memory is displayed. The directory its composed from more pages. In order to slide all the programs inserted in the memory of the unit, to rotate the grip handle or to slide directly with the finger on the display device. A selected protocol is indicated by the sign of blunts.

V	AAAAA	FFFFFFF
	BBBBBBB	GGGGGG
	CCCCCCCC	HHHHHH
	DDDDDDDD	KKKKKKK
	EEEEEEEEE	JJJJJJJJ

In order to choose the protocol to press the grip handle or to touch the written one with the finger. Chosen the wished protocol the equipment is arranged in the shielded one of job “Working Screen”, to this point, to press the key START for giving beginning to the treatment (sees chapter TREATMENT).

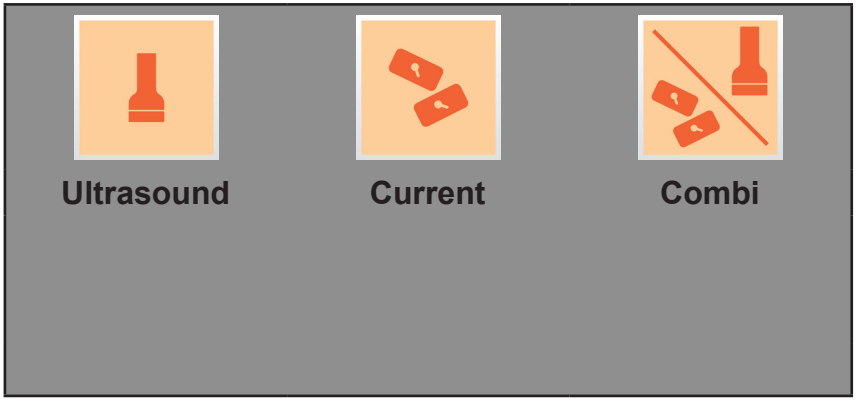
It should be noted that the next “Working Screen” resulting from a protocol contains the editable parameters, specific to the treatment to be performed.

IMPORTANT: Every information relative to the protocols is given only for an informative aim, it is not conceived to substitute the treatment’s modality that has to be indicated from the sanitary and qualified personnel. No responsibility of the equipment is assumed from the supplier still less the protocols, for consequences deriving from the use of the same, without a good verification of fitness from the sanitary personnel.

In “Current” mode, you can select any protocol for each channel (independent channels) or you can choose to use the channels in combination (each channel repeats the first protocol selected). In “Combi” mode, you can select the protocols for the ET1 channel and the associated ET2-US channel pair. (Refer to chapter SETTINGS “Canali Dependency”)

TREATMENT

From the HOME screen by selecting “Treatment” you can use the equipment in the traditional way. Through the next popup you can choose to work with: **Ultrasound**, **Current** or both (**Combi**).

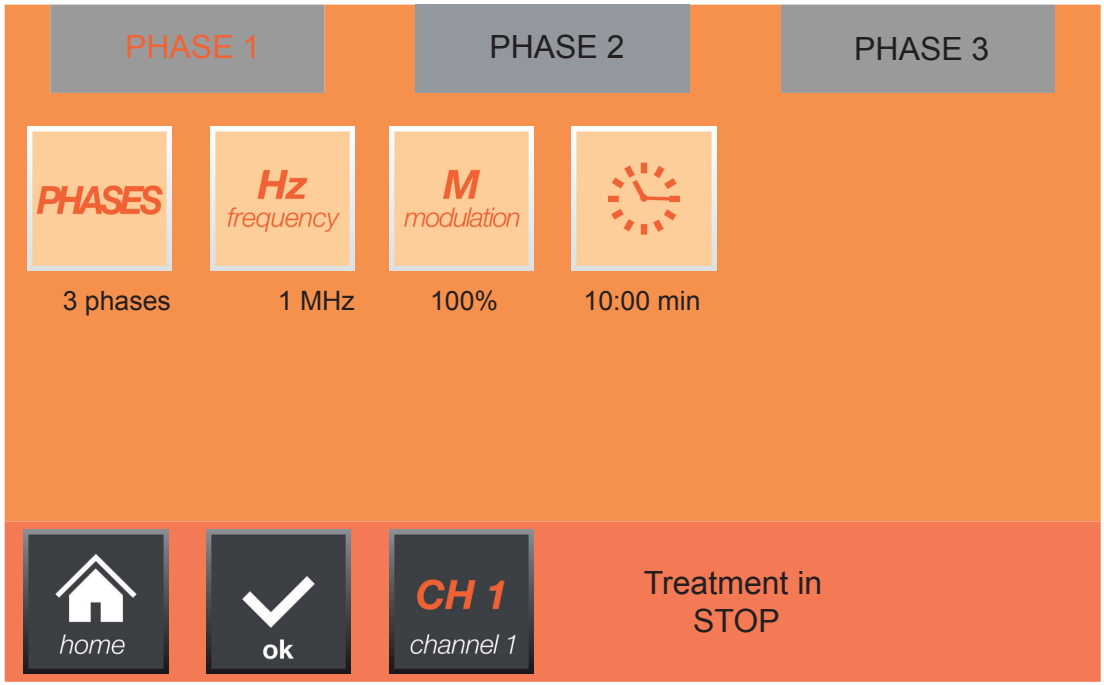


ULTRASUOND

From HOME choosing the option “Ultrasound” it is possible to use the equipment in a traditional manner.

NOTE: To enter in the option “Ultrasound”, it needed to connect the handle transducer, in the contrary case, it appears a warning message.

Selecting this manner it is required either to modify or to accept its changeable set up (number of phases, modulation, time of treatment, frequency etc.).



Phases

1, 2, 3 phases

Frequency

1, 2, 3 MHz

Modulation

5-100%

Time

1-60 min

To accept, select and confirm the icon OK. To modify the parameters, select and confirm through the encoder or through icons of variable parameters.

After have modified or accepted the characteristics one proceeds to the Working screen

EN
English

UTC2
WORKING SCREEN (Ultrasuond)

Press the key START to begin the treatment. In START condition, warned by the colour of P1 that change in yellow and by the writing “Treatment in START”, select the icone effective intensity (Watt/cm²), the ultrasound level will be regulated (the treatment time has calculated only when the output power is greater than 0.0 W).

Effective Intensity	*Frequency*	*Modulation*
W/cm² effective intensity	Hz frequency	M modulation
0.1 - 2.0 / 3.0	**1, 2, 3 MHz**	**5-100%**

In the case of active control contact (see “Contact Control” in Settings) must be push START and the handle must be well in contact with the area to treat.
Note: Increase slowly the output level so that the patient warns a light sense of heat without to feel any bother. It is preferable to move the handpiece circularly or with “coming and going” slow and uniform.

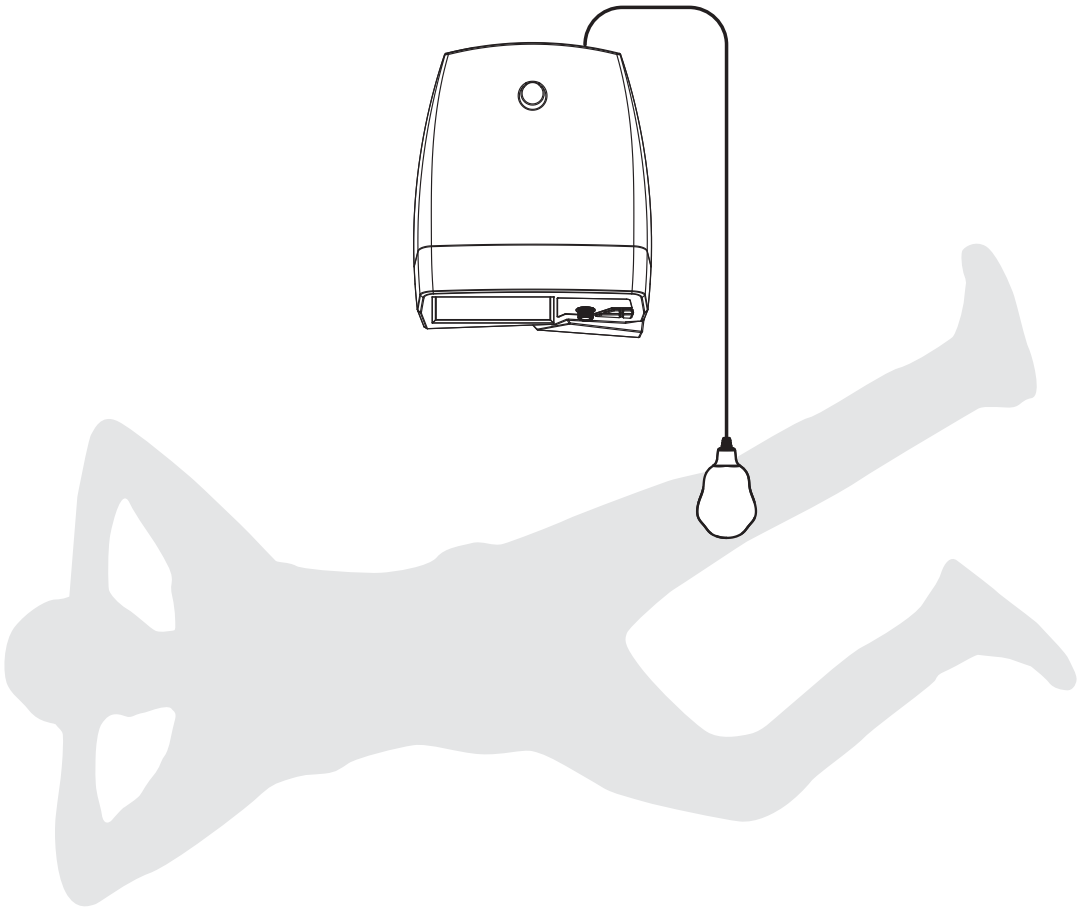
Pressing the key Stop (START/STOP) it is possible to interrupt the treatment. The timer and the power from the two outputs are stopped. To start again the treatment press the key START (START/STOP). To exit from the mask of work press the key HOME.
When the treatment time has elapsed the equipment’s screen give the message “Ended Treatment”, together with an

acoustic signal.

IMPORTANT: To avoid the danger of the formation of stationary waves it is necessary to move the handpiece with circular or coming and going slow and regular movement. In case of treatment with static handpiece, select a low modulation level (5/10%) and low intensity (0.5-1.0W/cm^2).

IMPORTANT: To avoid the damage of the ultrasound transducer, start the power delivery after having the handpiece in energy dissipative condition.

US Treatment Scheme (Ultrasound)



UTC2
CURRENT

From HOME choosing the option “Current” it is possible to use the equipment in a traditional manner.

NOTE: To use the option “Current”, it needed to connect the cable accessory, in the contrary case, it appears a warning message.

Selecting this manner for every channel (in the case we use the method of working with not associated channels, see SETTINGS “Channels dependence”), it is requested for every available channel to insert the number of phases where we desire using the same channel. *Note: using the interferential currents (IF Tetrapolar – IF isoplanar – IF vectorial) it is possible to use only one phase, apart from the number of selected phases.*

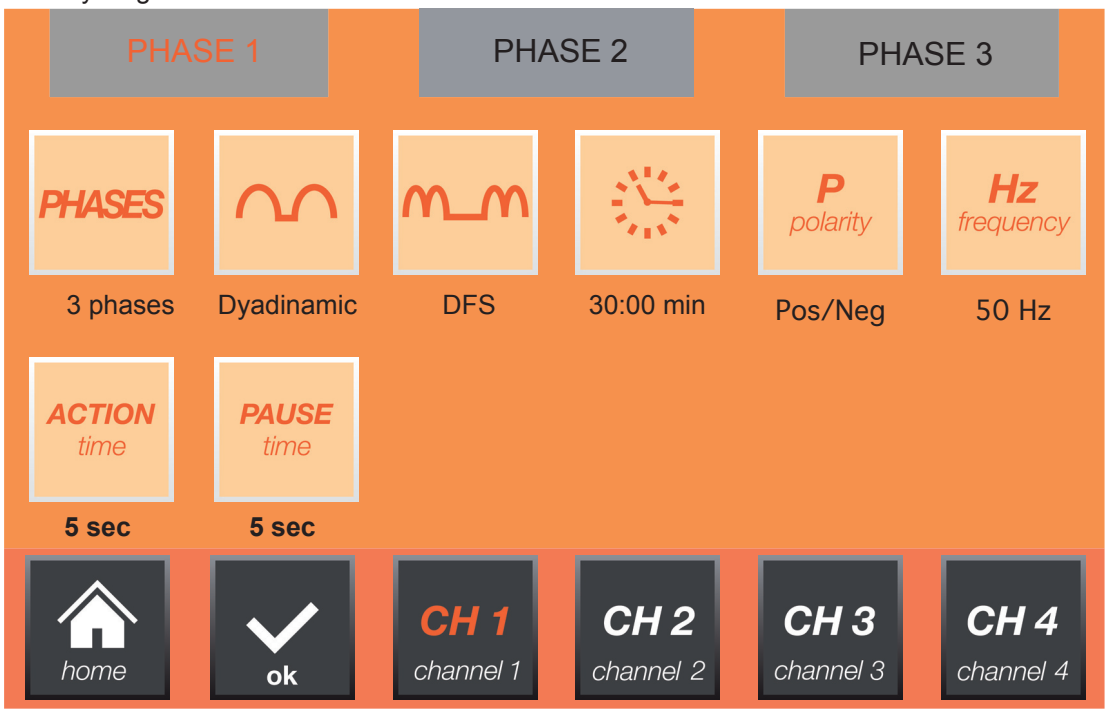
After have chosen the number of phases it is possible to insert for every channel the family of current we have to use and

requests the type’s choice (in the internal of the family) of current we have to use and to insert the time for every used phase.

After have chosen the current it is possible to modify or accept the characteristics (frequency, time of action, pause polarity etc.).

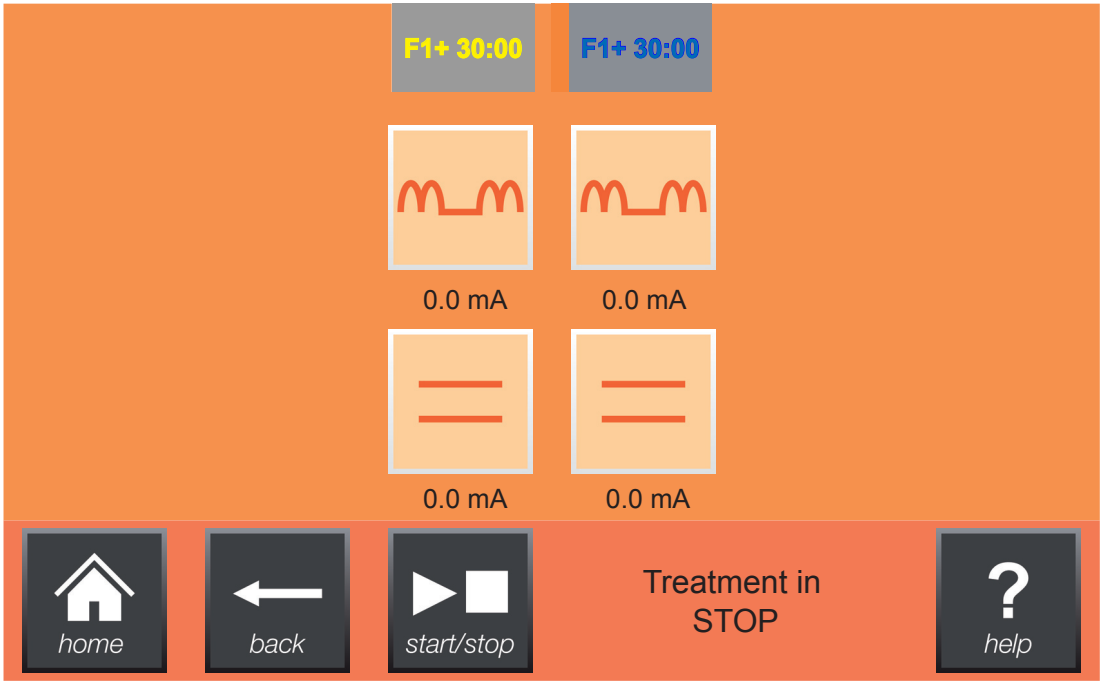
To accept, select and confirm the icon OK.. To modify the parameters, select and confirm respective icon, selecting this command appears one popup of variable parameters.

Repeat this for every single channel.



After have modified or accepted the characteristics one proceeds to the Working screen

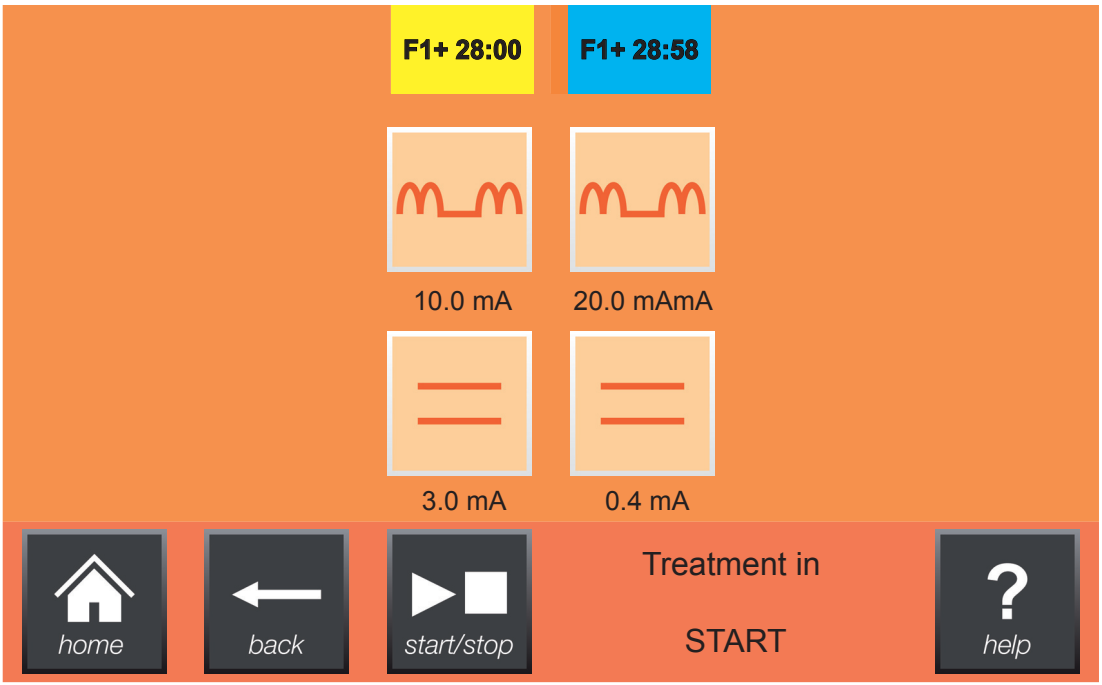
WORKING SCREEN (Current)



In this screen it is indicated, for the number of available channels the following information: the coloured channel (1(yellow) - 2 (blu) and 3 (violet) - 4 (green) only with Electra 4))) with, the number of phase (P1-P2-P3), indication of the polarity (+ / -) and time of treatment in minutes. On the central high part there is the icon of the current, with the indication of the output's level in mA. On the central low part (where it is applicable) there is the icon of the direct current, with the indication of the output's level in mA. To begin the treatment we have to press the key START.

HELP

In condition of START, pressing the key HELP, the screen visualizes the information relative to the treatment.



In START condition, indicated by the colour of P1 that change from gray to relative channel colour and by the writing "Treatment on START", select the icone current type, the current level will be regulated (the treatment time for every channel has calculated only when the output power is greater than 0.0 mA).

MPORTANT: when the levels raise, we have to consider the type of used current and the dimensions of electrodes, if their dimensions are small the current's intensity will be high. We have to pay attention also when the galvanic current is supplied.

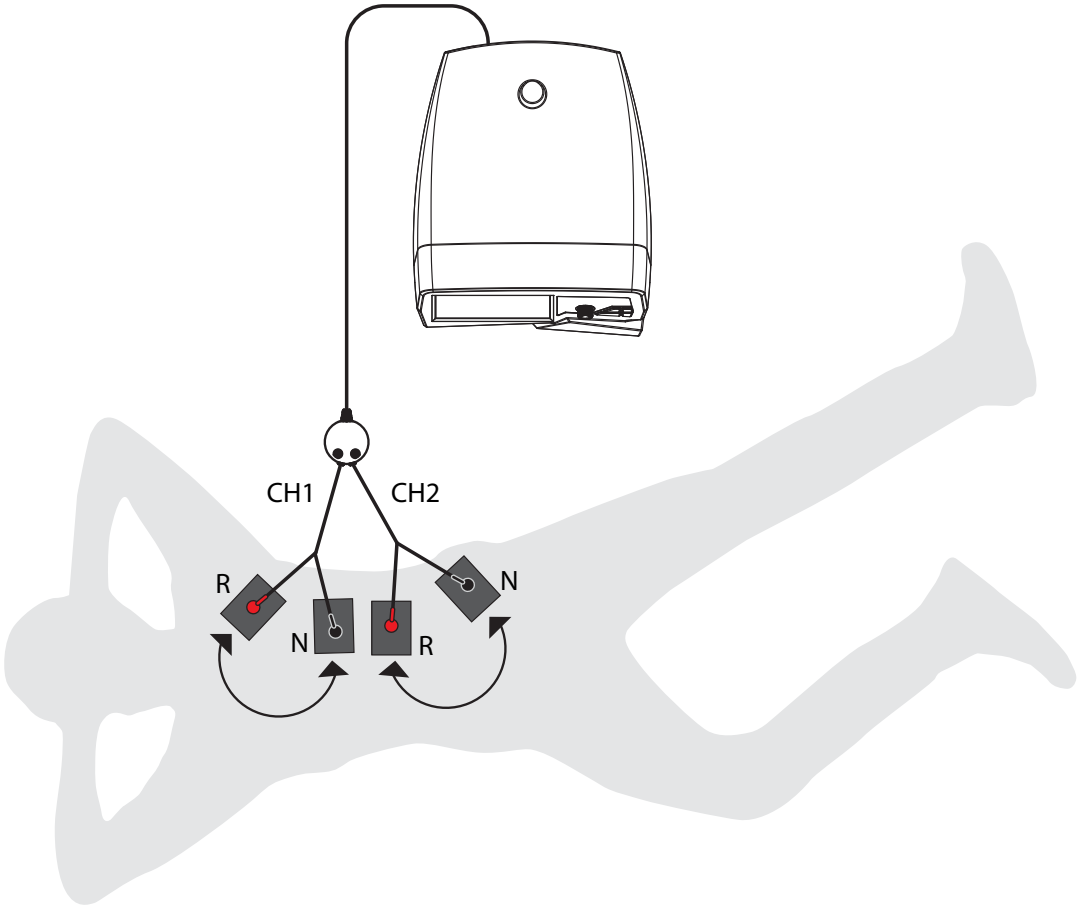
Pressing the key Stop (START/STOP) it is possible to interrupt the treatment. The timer and the power from the two outputs are stopped. To start again the treatment press the key START (START/STOP). To exit from the mask of work press the key HOME.

When the treatment time has elapsed the equipment's screen give the message "Ended Treatment", together with an acoustic signal.

INDICATION FAULT ELECTRODES

The option control of electrodes (see SETTINGS "Electrodes check") consents in case of bad connection to the patient, and in case of wear electrodes, to understand immediately the problem. The equipment will go in alarm at zero the output and indicating on the display the bad channel. In this situation, after have restored all the connections, raise again the output's level.

ET Treatment Scheme (Current)



UTC2
COMBI

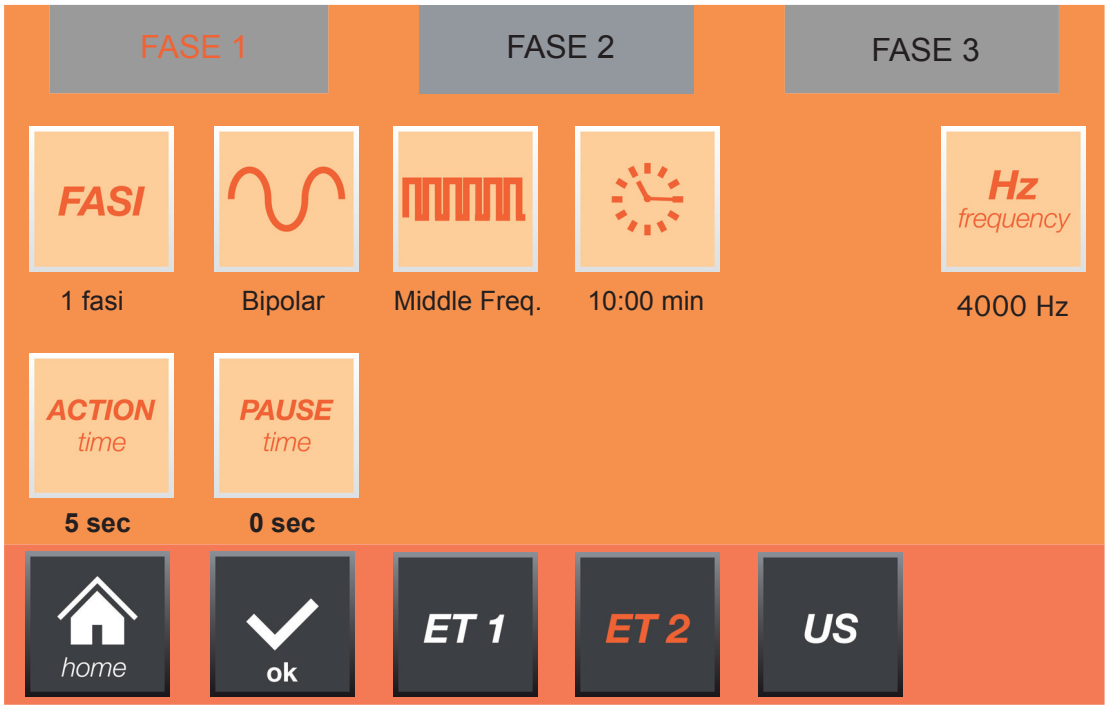
From HOME choosing the option “Combi” it is possible to use the equipment in combimred manner (US+ET).

NOTE: To use the option “Combi”, it needed to connect the cable accessory, in the contrary case, it appears a warning message.

.

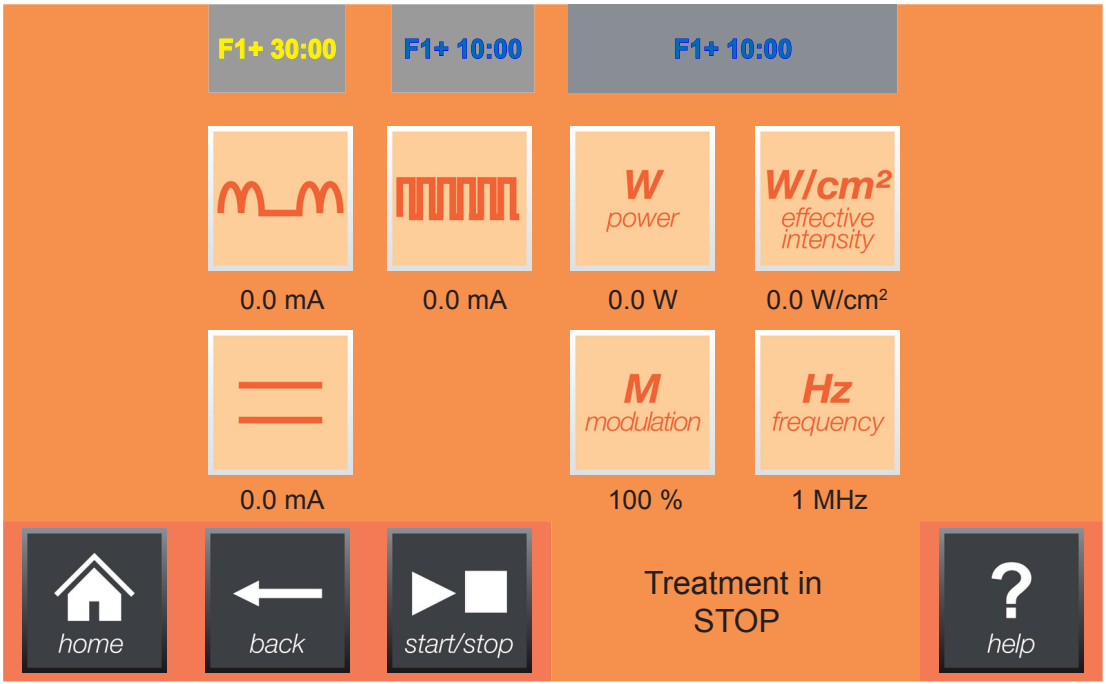
By selecting this mode, each channel (for ET1 and the associated pair ET2-US) is required to enter the number of phases and current family to use, the next step requires the choice of type (inside the family itself) of current to be used.

Choosing the current type can change or accept the set parameters (frequency, modulation, processing time, action, pause, polarity, etc.).



After have modified or accepted the characteristics one proceeds to the Working screen.

WORKING SCREEN (Combi)



The following information is indicated on this screen for the number of channels available: the colored channel (one in yellow and the other in blue), the phase number (F1-F2-F3), the polarity indication (+ / -) and the processing time in minutes. In the left area there are the current icons with the indication of the mA output level and in the right area the characteristic parameters of the ultrasound. Press the START key to begin the treatment.

HELP

In condition of START, pressing the key HELP, the screen visualizes the information relative to the treatment.

Nella condizione di START, indicata dal cambiamento di F1 dal grigio al relativo colore e dalla scritta “Trattamento in START”, selezionare l’icona del tipo di corrente per regolare il livello di corrente e l’icona di Potenza (W) o intensità effettiva (W/cm2) per regolare il livello di ultrasuoni (il conteggio del tempo di trattamento è attivo solo con livelli maggiori di 0.0mA o di 0.0 W).

Nel caso sia attivato il controllo contatto (vedi Impostazioni “Controllo Contatto”) deve essere premuto il tasto START ed il manipolo deve essere a stretto contatto con la zona da trattare.

MPORTANT: when the levels raise, we have to consider the type of used current and the dimensions of electrodes, if their dimensions are small the current’s intensity will be high. We have to pay attention also when the galvanic current is supplied.

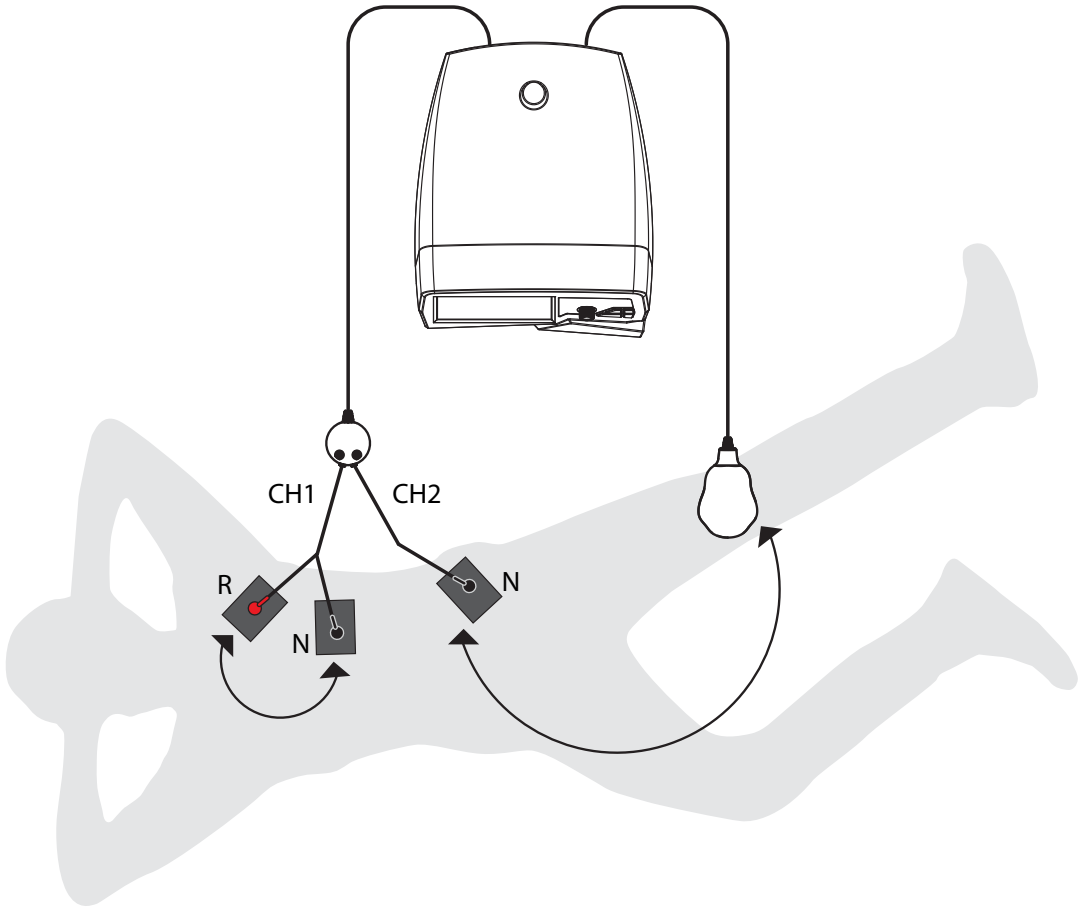
Pressing the key Stop (START/STOP) it is possible to interrupt the treatment. The timer and the power from the two outputs are stopped. To start again the treatment press the key START (START/STOP). To exit from the mask of work press the key HOME.

When the treatment time has elapsed the equipment’s screen give the message “Ended Treatment”, together with an acoustic signal.

INDICATION FAULT ELECTRODES

The option control of electrodes (see SETTINGS “Electrodes check”) consents in case of bad connection to the patient, and in case of wear electrodes, to understand immediately the problem. The equipment will go in alarm at zero the output and indicating on the display the bad channel. In this situation, after have restored all the connections, raise again the output’s level.

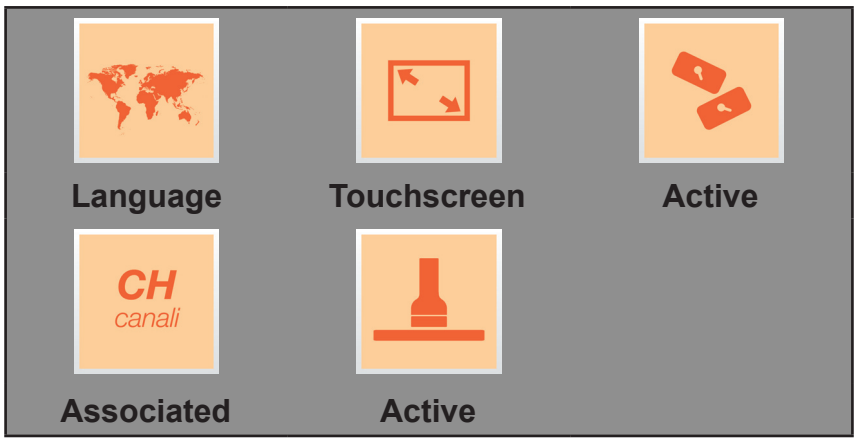
Combi Treatment Scheme



EN
English

UTC2
SETTINGS

From HOME choosing the option “Settings” or through Setting key through and the successive popup it is possible: select desidered **Language,** sensibility regulation of **Touchscreen**, active or disactive **Contact Control Electrode**, la ***dipendenza dei canali*** (ossia i canali presentano la stessa corrente con lo stesso tempo di trattamento oppure per ogni canale è possibile selezionare una corrente qualsiasi) e il **Contact Control** of US handle.



Language

Select “Language” and at the successive popup selected your desidered language.

Touchscreen

Select “Touchscreen” and to follow the show indications for the regulation.

Electrodes Check

The equipment permits to choose to active or not the checking of control contact between the electrodes and the patient. To fit in or fit out the checking, please select Contact control, then, choose the “Active” or “Not active” mode as you prefer.

Channels Dependence

The equipment permits to preselect the choice to use the channels in an independent way (it permits to select for every channel any type of current) or in associated way (that permits in automatic way to repeat on every channel the first chosen current).

In “Combi” mode, ET2 and US channels are always associated.

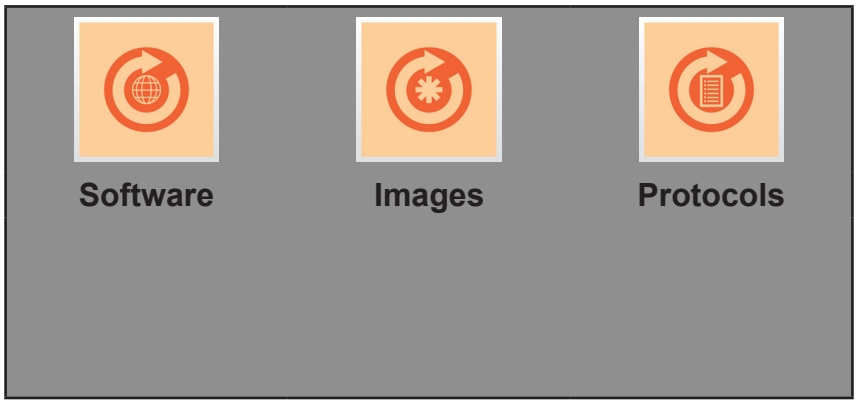
Contact Control

The equipment permits to choose to active or not the checking of control contact between the handle and the patient. To fit in or fit out the checking, please select Contact control, then, choose the “Active” or “Not active” mode as you prefer.

In the immersion treatment, don’t active the checking control contact.

UTC2
UPDATE USB

From HOME choosing the option “Update” and the successive popup it is possible updater: Software, Images and Protocols.



Software

To connect in the USB connector Standard A compatible device containing the compatible file of the software to update.

Select “Software” and the successive popup confirming this.

Follow show instructions.

Select Home to exit from procedure.

Images

To connect in the USB connector Standard A compatible device containing the compatible file of the images to update.

Select “Images” and the successive popup confirming this.

Follow show instructions.

Select Home to exit from procedure.

Protocols

To connect in the USB connector Standard A compatible device containing the compatible file of the protocols to update.

Select “Protocols” and the successive popup confirming this.

Follow show instructions.

Select Home to exit from procedure.

MAINTENANCE

Preventive Maintenance

BEFORE CARRYING OUT ANY TYPE OF MAINTENANCE, DISCONNECT THE ELECTRICAL CONNECTIONS.

The preventive maintenance consists in:

-the control before any using of the equipment and the accessories to examine the integrity of all cables, the insulation, the covers etc. designed to avoid the access to the parts under tension.

-the periodic cleaning of the equipment to keep the unit in good conditions of working.

-the periodical cleaning of the accessories.

Unit Cleaning

Clean the external container and command panels with a moist cloth: do not use abrasive products or solvents. Specifically to the command and output panel do not use ethyl alcohol or other solvents.

Do not immerse the unit in liquids. In case of penetration of liquids turn to the qualified personnel.

Cleaning of the Transducers

Clean the transducers with a soft detergents. Remove completely all the residuals of GEL from it.

Cleaning of the supplied Electrodes

Clean the electrodes with a moist cloth: do not use abrasive products or solvents. Do not use detergent. In case of using of detergents clean it with cold water, to eliminate every detergent's trace.

To avoid bacterial contamination or virus, the electrodes has to be used for a single patient.

For the cleaning we advise to use only cold water. In case of cleaning with detergents, rinse with care before the using to avoid every detergent's trace. Do not wash it in the washing machine.

.Cleaning of the supplied Velcro Bands

For the cleaning of the Velcro bands do not use hot water, in case of detergents, reins it carefully.

NOTE: The equipment, periodically (once a year), should be controlled by the qualified personnel to verify the electrical security values:

-a measure of dispersion of currents

-a measure of the resistance between the earth terminal and every conductive parts

- verification calibration unit and transducer/s.

Corrective Maintenance

If the equipment doesn't work well we advise to control that there is not a fault in the commands.

In case that the unit is submitted to mechanical and external solicitations, for example after a heavy fall, or if the equipment is submitted to liquids, or to a strong overheating (for example direct light of the sun, fire), or if some parts of the covering are broken, or if some connectors or cables are consumed, the equipment and the accessories should be controlled by the qualified personnel.

EMC DECLARATIONS

Guidance and manufacturer's declaration – electromagnetic emissions		
The **UTC2** is intended for use in the electromagnetic environment specified below. The customer or the user of the **UTC2** should assure that is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment - guidance**
RF emissions CISPR 11	Group 1	The **UTC2** uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The **UTC2** is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration – electromagnetic immunity			
The **UTC2** is intended for use in the electromagnetic environment specified below. The customer or the user of the **UTC2** should assure that is used in such an environment			
Immunity test	**IEC60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC61000-4-2	contact ± 6 kV air ± 8 kV	contact± 6 kV air ± 8 kV	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	< 5% U_T (>95% dip in U_T) for 0,5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (>95% dip in U_T) for 5 s	< 5% U_T (>95% dip in U_T) for 0,5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (>95% dip in U_T) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If the user of **UTC2** requires continued operation during power mains interruptions, it is recommended that the **UTC2** be powered from a uninterruptible power supply or a battery.

Guidance and manufacturer's declaration – electromagnetic immunity			
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment
NOTE U_T is the a.c. mains voltage prior to application of the test level			

Guidance and manufacturer's declaration – electromagnetic immunity

The **UTC2** is intended for use in the electromagnetic environment specified below. The customer or the user of the **UTC2** should assure that is used in such an environment

Immunity test	IEC60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC61000-4-6	3 Veff 150 kHz to 80 MHz	3 V	Portable and mobile RF communications equipment should be used no closer to any part of the **UTC2**, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** $d = 1,2\sqrt{P}$ $d = 1,2\sqrt{P}$ from 80 MHz to 800 MHz $d = 2,3\sqrt{P}$ from800 MHz to 2,5 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [a] should be less than the compliance level in each frequency range. [b] Interference may occur in the vicinity of equipment marked with the following symbol: 
Radiated RF IEC61000-4-3	3 V/m 80 MHz to 2,5 GHz	3 V/m	

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

[a] Le intensità di campo per trasmettitori fissi, come le stazioni base per radiotelefoni (cellulField strength from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the **UTC2** is used exceeds the applicable RF compliance level above, the **UTC2** should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the **UTC2**.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

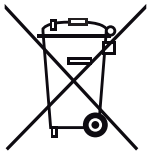
Recommended separation distances between portable and mobile RF communications equipment and the UTC2

The **UTC2** is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the **UTC2** can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the **UTC2** as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1,2\sqrt{P}$	80 MHz to 800 MHz $d = 1,2\sqrt{P}$	800 MHz to 2,5 GHz $d = 2,3\sqrt{P}$
0,01	**0,12**	**0,12**	**0,23**

Recommended separation distances between portable and mobile RF communications equipment and the UTC2			
0,1	**0,38**	**0,38**	**0,73**
1	**1,2**	**1,2**	**2,3**
10	**3,8**	**3,8**	**7,3**
100	**12**	**12**	**23**
For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.			
NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

Informazioni in base all'Art. 13 del D.Lgs. 151/05 del 25/07/2005 "Attuazione delle Direttive 2002/95/CE e 2003/108/CE, relative alla riduzione di sostanze pericolose nelle apparecchiature elettriche ed elettroniche, nonché allo smaltimento dei rifiuti.



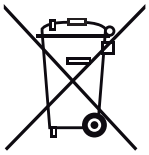
A fine vita il presente prodotto non deve essere smaltito come rifiuto urbano, lo stesso deve essere oggetto di una raccolta separata.

Se il rifiuto viene smaltito in modo non idoneo è possibile che alcune parti del prodotto (ad esempio eventuali accumulatori) possono avere effetti potenzialmente negativi per l'ambiente e sulla salute umana.

Il simbolo a lato (contenitore di spazzatura su ruote barrato) indica che il prodotto non deve essere gettato nei contenitori per i rifiuti urbani ma deve essere smaltito con una raccolta separata.

In caso di smaltimento abusivo di questo prodotto sono previste delle sanzioni.

Information about elimination of this product
(Applicable in the European Union and other European countries with separate collection systems)



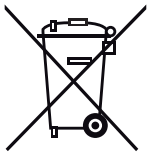
On the end of the life, the present product mustn't be eliminated as urban refusal, but it must be eliminated in a separated collection.

If the product is eliminated in unsuitable way, it is possible that some parts of the product (for example some accumulators) could be negative for the environment and for the human health.

The symbol on the side (barred dustbin on wheel) denotes that the products mustn't throw into urban refuses container but it must be eliminated with separate collection.

In case of abusive elimination of this product, could be foreseen sanctions.

Información sobre la eliminación de este producto
(Aplicable en le Unión Europea y en países europeos con sistemas de recogida selectiva de residuos)



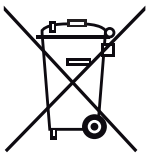
En el final de la vida, el actual producto no se debe eliminar como denegación urbana, sino que debe ser eliminado en una colección separada.

Si el producto se elimina de manera inadecuada, es posible que algunas partes del producto (por ejemplo algunos acumuladores) podrían ser negativas para el ambiente y para la salud humana.

Este símbolo indica que el presente producto no puede ser tratado como residuo doméstico normal, sino que debe entregarse en el correspondiente punto de recogida de equipos eléctricos y electrónicos.

En caso de eliminación abusiva de este producto, podrían aplicarse las sanciones previstas.

Informations sur l'élimination de ce produit
(Applicable dans les pays de l'Union Européenne et aux autres pays européens disposant de systèmes de collecte sélective)



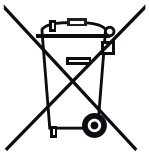
Sur la fin de la vie, on ne doit pas éliminer le produit actuel en tant que refus urbain, mais il doit être éliminé dans une collection séparée.

Si on élimine le produit de la manière peu convenable, il est possible que quelques parties du produit (par exemple quelques accumulateurs) pourraient être négatives pour l'environnement et pour la santé humaine.

Ce symbole (poubelle barrée sur la roue) indique que ce produit ne doit pas être traité avec les déchets ménagers. Il doit être remis à un point de collecte approprié pour le recyclage des équipements électriques et électroniques.

En cas d'élimination abusive de ce produit, ont pu être les sanctions prévues.

Umsetzung der Richtlinien 2002/95/EG und 2003/108/EG zur Reduzierung von gefährlichen Stoffen in elektrischen und elektronischen Geräten sowie zur Abfallentsorgung



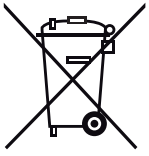
Am Ende seiner Lebensdauer darf das vorliegende Produkt nicht in den normalen Hausmüll gegeben, sondern muss einer getrennten Sammlung zugeführt werden..

Wird das Produkt in ungeeigneter Weise entsorgt, können einige seiner Teile (z. B. eventuelle Akkumulatoren) schädliche Auswirkungen auf die Umwelt und die menschliche Gesundheit haben.

Das nebenstehende Symbol (durchgestrichene Mülltonne mit Rädern) zeigt an, dass das Produkt nicht in die Hausmüllsammelbehälter geworfen werden darf, sondern einer getrennten Sammlung zugeführt werden muss

Eine rechtswidrige Entsorgung dieses Produktes ist strafbar.

Informação sobre a eliminação deste produto
(Aplicável na União Europeia e noutros países europeus com sistemas de separação de resíduos)



No fim da vida útil do produto, este não poderá ser eliminado com o restante lixo urbano, deverá ser eleiminado num centro de separação de reíduos.

Se o produto for eliminado de uma forma incorrecta, é possível que algumas peças do produto (por exemplo alguns acumuladores) possam ter um impacto negativo para o ambiente e para a saúde humana.
O simbolo na lateral (contentor em rodas) informa que o produto não pode ser descartado num contentor normal de lixo urbano, deve sim ser eliminado num centro de separação de resíduos

No caso de eliminação abusiva deste produto poder-se-ão aplicar sanções.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