

ADVANCED COMBINATION UST + TENS THERAPY



SMI-100

INSTRUCTION MANUAL

Sun Medisys Inc.
An ISO 9001:2015 Certified Company
An ISO 13985:2012 Certified Products

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SUN MEDISYS INC.



Welcome to the Sun Medisys Inc.

Thank you for trusting Sun Medisys Inc. and considering us.

CONGRATULATIONS for purchasing our next generation 1 MHz Ultrasound Therapy Unit Mini.

We understand what it takes to get this, and certainly there must have been lots of planning and research involved before the purchase.



Sun Medisys Inc., an independent family-run business, started its operation way back in 2000. With great integrity, high ethical values, stringent quality control, backed up by highly motivated employee force with tremendous efforts and disciplined activity business; we are a registered ISO 9001:2015 manufacturer.

We reassure you that what you have chosen is right.

Thanks

For Sun Medisys Inc.



INTRODUCTION

Congratulations for purchasing our next generation computerized Combination Therapy Unit. Model named SMI-100; the unit can deliver 1 MHz of Ultrasound Therapy as well as TENS Therapy from 4 independent output channels at the same time. It is designed to suit almost every clinical application to provide effective management for most of the Musculo-skeletal painful / inflammatory conditions including degenerative pathologies.

The unit comprises of digital pulses generator with versatile parameter settings as well as therapeutic ultrasound generator using the piezo-electric transducer, suitable for almost every clinical application. The integrated digital cut-off timer adds to precision and convenience of treatments. Conditions for which ultrasound may be used for treatment include the following examples: ligament sprains, muscle strains, tendonitis, joint inflammation, plantar fasciitis, metatarsalgia, facet irritation, impingement syndrome, bursitis, rheumatoid arthritis, osteoarthritis, and scar tissue adhesion.

Ultrasound is applied using a transducer or applicator that is in direct contact with the patient's skin. Gel is used on all surfaces of the head to reduce friction and assist transmission of the ultrasonic waves. Therapeutic ultrasound in physical therapy is alternating compression and rarefaction of sound waves with a frequency of 0.7 to 3.3 MHz. Maximum energy absorption in soft tissue occurs from 2 to 5 cm. Intensity decreases as the waves penetrate deeper. They are absorbed primarily by connective tissue: ligaments, tendons, and fascia (and also by scar tissue).

The unit comes with all necessary accessories for therapeutic application. Its user-friendly features offer best of the treatment parameters in its class. The unit comes with our traditional assurance of quality and safety standards.

1Mhz Ultrasound Machine would be appropriate for treating tissue that is between 2.3 and 5cm in depth – this would be great for pain relief for several conditions.

SALIENT FEATURES

- Machine can be operated from 90V to 240V AC 50/60Hz.
- Four independent TENS output channels with indicators.
- 0-80 mA pulse Amplitude on each channel.
- 6 TENS Modes with different frequency selectors.
- 1MHz Ultrasound therapy with digital output.
- 4 different Ultrasound output modes.
- 90 Minutes timer which can be varied within the interface.
- Combination of Ultrasound and TENS delivers all rounded therapy.
- Audio buzzer at end of treatment & for safety output control.
- Various Frequencies and Modes to choose from to meet the desired needs.

INDICATIONS FOR ULTRASOUND

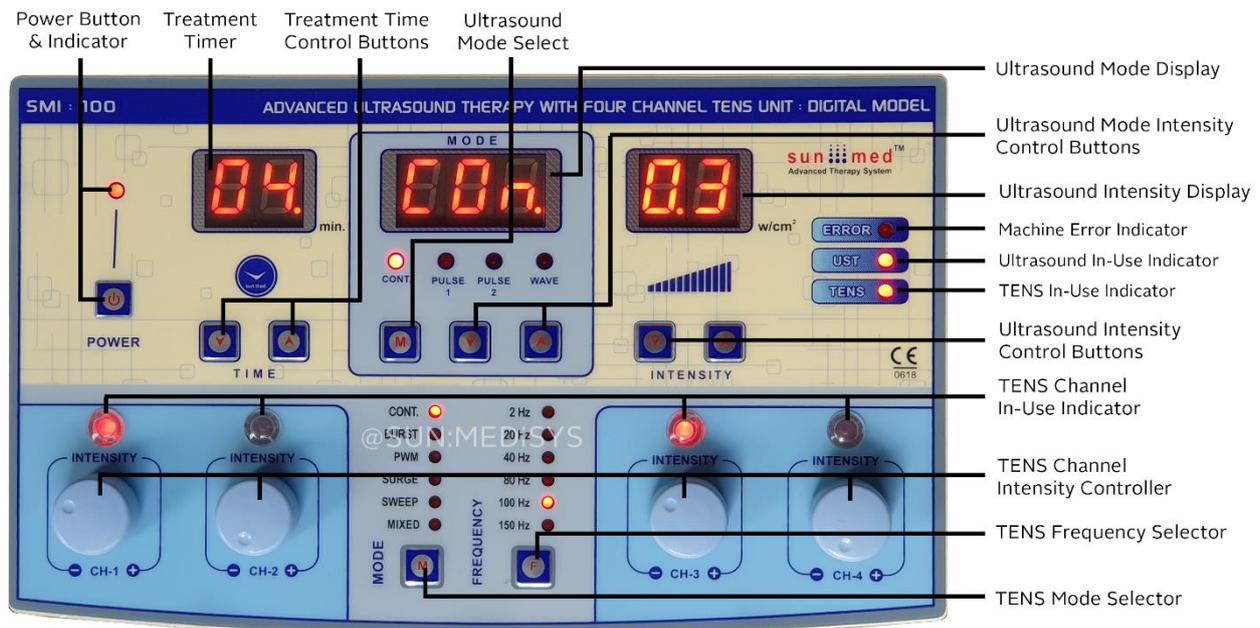
Acute soft tissue trauma (sprains, tendinitis, bursitis, strains).

- Joint contracture.
- Tenosynovitis.
- Tendinitis.
- Capsulate.
- Carpal tunnel syndrome

INDICATIONS FOR TENS

- | | | | |
|----------------------------|-----------------------|--------------------------|-------------------|
| • Arthritic Pain | • Sciatica | • Muscle Stimulation | • Neurogenic Pain |
| • Increased Blood Flow | • Degenerative Joints | • Reduction of Edema | • Placebo |
| • Acute soft tissue trauma | • Healing and Repair | • Denervation | • Edema |
| • SDC and other Testing | • Atrophy | • Joint contracture | • Tenosynovitis |
| • Tendinitis | • Capsulate | • Carpal tunnel syndrome | |

CONTROL PANEL & OPERATION GUIDE



1. Plug in the unit into a power socket and turn the power switch on.
2. When the POWER INDICATOR starts blinking, press the POWER BUTTON on the front panel.

NOTE: Ensure that all the intensity knobs are at off position, otherwise ERROR INDICATOR LED will light up and blink.

3. Once the unit is ON, enter treatment time, which will be common for both Ultrasound and TENS therapy.
4. In ULTRASOUND THERAPY, Press MODE(M) BUTTON to select your desired mode.
5. Increasing the intensity will start the therapy.

NOTE: Once the ultrasound treatment starts, time and mode cannot be changed. To change the mode and time, press power button on the front panel. This button acts as a pause/resume button.

6. In TENS THERAPY, select frequency and mode using TENS FREQUENCY and TENS MODE SELECTOR BUTTONS, then rotate TENS CHANNEL INTENSITY knobs in clockwise direction to start the therapy.

NOTE: In TENS THERAPY, it is possible to change the frequency and mode during the treatment.

7. When the treatment is completed, user will be notified by a buzzer sound.
8. After 1 minute of inactivity, the unit will go into sleep mode. User can wake the unit up by pressing the power button.

ULTRASOUND MODES DESCRIPTION

CONTINUOUS(CONT.): In Continuous mode, the ultrasound wave is delivered continually at a set intensity through the probe. Continuous Ultrasound generates thermal effects by stimulating the process of tissue regeneration, changing cell membrane permeability, and increasing intracellular calcium.

PULSED(PUL.): In Pulsed Mode, Ultrasound is delivered in Pulses i.e. short bursts of ultrasound over a period. Pulsed Ultrasound mainly produces non-thermal effects to increase tissue metabolism, enhance fibrous tissue extensibility and elevate pain.

- **Pulsed A:** in Pulsed A, the display will show the number of pulses in a second. 1, 10, 50, 100 corresponds to 1 pulse/second, 10 pulses/second, 50 pulses/second 100 pulses/second.
- **Pulsed B:** in Pulsed B, the display will show the duration of pulse in a period. 1.1, 1.2, 1.5, 1.7, 1.9 corresponds to 1:1(50ms on/50ms off), 1:2(33ms on/66ms off) and so on.

WAVE: In Wave Mode, Ultrasound is delivered continuously but the intensity will vary between the selected intensity to minimum 0.5w/cm² continuously. For this mode to work, the lowest intensity should be 0.6w/cm² . For example, if the set intensity is 1.5 w/cm² , the intensity will decrease to 0.5w/cm² in the set duration and then increase up to 1.5w/cm² in the set period. You can see the same reflected in the Wave Mode Display

METHOD OF APPLICATION

1. Inspect the skin for the presence of any cut, wound rashes or any skin diseases, if so treatment shall not be given on that particular area.
2. Clean the skin with tissue paper or cotton, preferably wet cotton.
3. Position the patient in such a way that the application area is well visualized, and a patient can sit or lay down during the treatment. The ease of patient is of utmost importance.
4. Bring the machine near the patient.
5. Place a good quantity of coupling medium on the area to be treated.
6. Activate the machine and set the timer and intensity after placing the electrodes on the skin of the patient.
7. Check that the electrodes are placed correctly and tied properly.

Remember the electrodes should be in good contact with the skin and enough coupling medium should be there. If it is needed to put more coupling medium. Switch the machine OFF, pour the coupling medium and then turn on the machine.

• **TREATMENT TIME:** There is no hard or fast rule for the treatment time and number to 10 minutes (depending on the area to be treated) for 5 days from the treatment plan. As the pain reduces, the dose or time can be reduced. Later, treatment can be given on alternate days and then stopped. High intensity should not be used.

• **COUPLING MEDIUM:** To make a fire contact between the skin of the patient and electrodes: jelly or olive oil or liquid paraffin is used. These are called coupling medium or coupling agents.

A coupling medium should have the following properties:

- Gel-like viscosity for ease of use
- Non-allergic
- Chemically inert
- Transparent
- Inexpensive

STANDARD ACCESSORIES

- | | |
|--|---------|
| 1. Rubber OR Self-Adhesive Electrodes: | 08 Nos. |
| 2. Electrode's Lead: | 04 Nos. |
| 3. Velcro Fixation straps: | 02 set. |
| 4. 1 MHz Applicator (Probe): | 01 No. |
| 5. Mains Lead: | 01 No. |
| 6. User's Manual: | 01 No. |

TECHNICAL SPECIFICATIONS

Power Source	90v to 240v AC 50/60 Hz, SMPS Supply
Fuse	1 Amp
Dimensions	30 x 24 x 10.2 cm
Weight	2.5 Kgs
TENS Specifications	
No. Of Channels	Four independent outputs
Waveform	Biphasic rectangular balanced wave
Pulse Modes	Continuous, Burst, PWM, Surge, Sweep, Mixed
Pulse Frequencies	2Hz, 20Hz, 40Hz, 80Hz, 120Hz, 150Hz
Pulse Amplitude	0-80 mA/channel
Pulse Width	150 us. (except PWM Mode)
Timer	0-90 min.
Ultrasound Specifications	
Emission Frequency	1 MHz ± 10%
Modes	Continuous, Pulse A: 1, 10, 50, 100(Pulses per second), Pulse B: 1:1, 1:2, 1:4, 1:7 & 1:10, Wave (variable intensity)
Ultrasound Power	2.5 W/cm ² in continuous, 3.5 W/cm ² in pulsed

CONTRADICTION

1. Patients who do not comprehend the physiotherapist's instructions or are unable to cooperate should not be treated.
2. Patients who are taking anticoagulation therapy or have a history of pulmonary embolism or deep vein thrombosis should not be treated with vacuum electrode applications.
3. Similarly, patients whose skin may be easily damaged or bruised.
4. Application should not be performed over:
 - the trunk or pelvis during pregnancy.
 - Active or suspected malignancy.
 - The eyes and the anterior aspect of the neck.
 - The carotid sinuses (stimulation in this area may cause a drop in blood pressure)
 - Patients with a pacemaker.
 - Dermatological conditions, e.g. - dermatosis, broken skin.
 - Danger of haemorrhage or current tissue bleeding (e.g. – recent soft tissue injury).
 - Active epiphyseal regions in children.

PRECAUTIONS

- The Unit must be grounded during application.
- Do not use this unit near other high frequency/electromagnetic devices.
- If there is abnormal skin sensation, electrodes should be positioned in a site other than that area to ensure effective stimulation.
- Patients who have abnormal circulation.
- For patients who have febrile conditions, the outcome of the first treatment should be monitored.
- Patients who have epilepsy, advanced cardiovascular conditions, or cardiac arrhythmias should be treated at the discretion of the physiotherapist in consultation with the appropriate medical practitioner.

- Only the supplied/recommended accessory must be used with the unit.
- Do not apply this unit in conditions of pregnancy.
- Keep the electrodes separate during the treatment.

MAINTENANCE

There is very little maintenance required for the UST Mini. If the ON/OFF switch lamp is not glowing steadily when the switch is put on, the problem could be due to a blown fuse.

To replace a burnt-out fuse, remove it from the fuse holder and replace it only with a 1A/250V Fuse.

DISCONNECT THE POWER TO THE INSTRUMENT BEFORE REMOVING THE FUSE FROM THE HOLDER.

There are no other user-serviceable parts inside the instrument. Refer all problems to the nearest dealer or write to us at our email: sunmedisys@gmail.com, you can Also Visit us and write your query at sunmedisys.com.

Replacement of Fuse

There is one mains fuse and one extra fuse within the mains fuse socket, to replace the mains fuse peel out the fuse socket with a fingernail and replace the fuse with the extra fuse - push the fuse back into the socket until you hear a click.

WARNING

- Before using the equipment, the user should read carefully the instructions contained in this manual.
- Before treating a patient, the user should familiarize himself with the operating modes and have a clear knowledge of indications & contraindications for the use of apparatus.
- Please ensure this manual is readily available at all times to the personnel authorized to use the apparatus.
- For safety purposes, the power cord has been fitted with an earthed plug.
- **ONLY USE AN EARTHED POWER SUPPLY SOCKET.**
- The unit must be connected to approve the power supply system.
- Do not use the apparatus close to SWD or MWD devices, which may cause instability in output and functioning in the program.
- Never leave the patient unattended during the treatment.
- The apparatus may not be used in so-called “wet rooms” (hydrotherapy rooms).
- Sun Medisys will not be responsible for Therapy Effects resulting from improper use of the apparatus.

Some of our other devices:



Ultrasound Therapy Devices



Various Therapy Devices

WARRANTY CERTIFICATE

Customer Name: _____

Address: _____

Equipment Name: _____

Serial No.: _____

Warranty Form: _____ **To** _____

The Instrument is warranted by the manufacturer for one year from the date of purchase and during this period, the defective parts shall be replaced or repaired, free of charges, if it is due to faulty material or workmanship, subject to the following Terms and Conditions.

- The Instrument should be used properly in accordance with the instructions as given in the instruction manual.
- The warranty does not cover the Instrument attended by others except our authorized service center/dealer.
- Replacement of parts made of Rubber Electrodes, Laser Probe, Laser Diode, enclosure and carry bag are not covered within this Warranty.
- The cost incurred bringing the machine to our dealer's premises or service center and back are to be borne by the customer.
- The Warranty does not cover the Instrument operated outside the range of stipulated Electric Supply.
- The decision of the manufacturer is final in all cases of warranty claims.

HERE CERTIFIED

Yours Truly

Sun Medisys Inc.

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