

ADVANCED 1&3 MHZ

ULTRASOUND THERAPY



INSTRUCTION MANUAL

Sun Medisys Inc.

An ISO 9001:2015 Certified Company

An ISO 13985:2012 Certified Products

17, Pocket-10, Sector-21,
Rohini, New Delhi-110086 (INDIA)
Email: sunmedisys@gmail.com
www.sunmedisys.com

SUN MEDISYS INC.



Welcome to the Sun Medisys Family.

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

CONGRATULATIONS for purchasing our next generation Digital or LCD unit.

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

SunMedisys 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

The method of treatment for various conditions falling in the preview of physiotherapy using a specific frequency of sound is called **ULTRASOUND THERAPY**.

The sound waves which can be heard by human ears are called audio waves (about 20 to 20000 Hertz) and which cannot be heard (above 20 Kilo Hertz) are called Ultrasound waves. The vibration below 20 Hertz are called infrasonic or Infrasound. The meaning of word sound and sonic are same.

When the electric potential is applied on the Quartz or Barium titanate or Zirconate titanate crystal of a specific size, it starts vibrating and produces sound. If the potential is increased, the sound cannot be heard and thus ultrasound is produced. It is called Piezoelectric phenomena. This piezoelectric is used in both Diagnostic and Therapeutic Ultrasound machines. The probe or head through which ultrasound are subjected into the body is called Transducer. In diagnostic ultrasound (sonology) the transducer has an array of sonar of detected which send the signal to microprocessor based circuit of machine where the sound is converted in to digital picture of the area scanned. This detector array is not present in case of therapeutic ultrasound machines.

Therapeutic ultrasound refers generally to any type of ultrasonic procedure that uses ultrasound waves for therapeutic benefit.

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).

INDICATIONS FOR ULTRASOUND

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.

What is the difference between 1 & 3 MHz Ultrasound?

The difference between both frequencies in Ultrasound is to do with the depth the sound waves penetrate, which is important when deciding which machine would work best for you.

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.

3Mhz Ultrasound Machine would be appropriate for treating tissue at depths between 0.8 cm and 1.6 cm – this is usually fantastic for scar tissue, cellulite reduction and skin conditions.

EFFECTS OF ULTRASOUND

When ultrasound enters in to the body there were two effects on the tissues called thermal and non thermal effects:

- **THERMAL EFFECTS:** When ultrasound travels through the tissue of the body some of its energy is absorbed by the tissue and create heat with in the tissue as result of absorption. The quantity of Ultrasound absorption depends on the vascularity, nature of tissue and frequency of Ultrasound. The absorption is more in tissues of high protein contents. While the tissues have high fat contents absorb less. A therapeutic thermal effect can be achieved if the temperature of tissue is raised between 42 to 48 degree C for 5 minutes and pain relief decrease in joint stiffness and increased blood flow can be obtained. Structures which are heated by the ultrasound are periosteum, superficial bone, menisci joint, skeletal muscles, tendon, major nerve roots.
- **NON-THERMAL EFFECTS:** There are many situation when Ultrasonic produces therapeutic result without involving raise in the tempera ture, like in stimulation of generation, soft tissue repair, blood flow in chronic tissue and repair. It is possible to increase the rate of repair of fractures using 1.5 MHZ or greater in pulse mode. The treatment should be given for 5 minutes for 4 times a week. The most effectivetreatment were found during the first 2 weeks of bone repair.

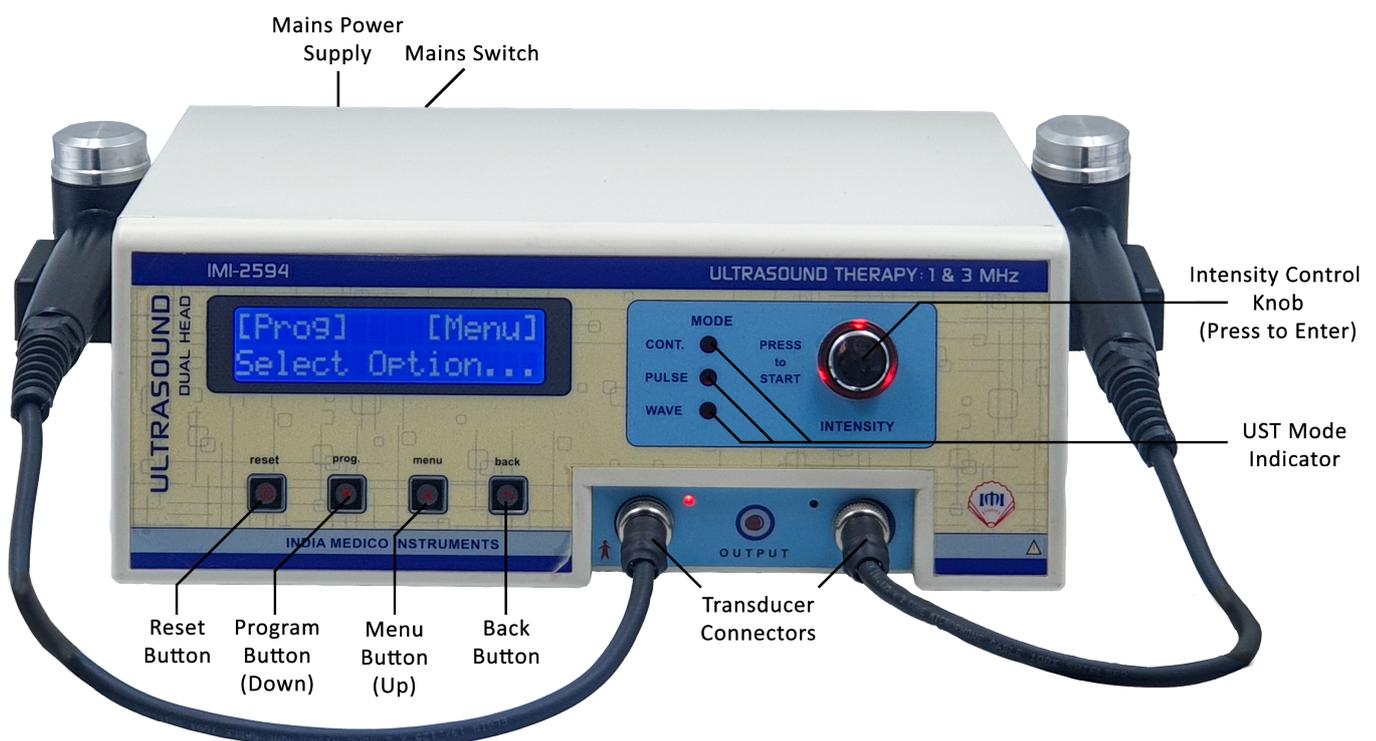
It should be noted that the attenuation of therapeutic Ultrasound increases with the quantity of portion present in structure under the treatment, and attenuation decreases with water contents. In the highvascular tissue like mused there will be fast heat dispersion (dissipation) resulting in to nonsignificant raise of temperature. But the tissuelike tendons, ligaments and connective tissue high and fast temperature raise occurs as they possesses less water and are less vascu lar. Heating of tendons, scars, ligaments and joint capsule etc. cause increase of flexibility and thus the stiffness of these is decreased.

CAVITATION

When ultrasonic therapy is applied on the body, after 30 to 60 second small bubbles are formed inside the tissue due to the vibration, this phenomena is called cavitation. These bubbles are about one micron is diameter. The cavitation is of two types- stable and unstable. Stable cavitation is of therapeutic importance. When the cavitation results into the formation of bubbles of the increasing diameter, which after few seconds implode and damaging to the tissue, is called transient which generally occurs at high intensity.

QUICK START GUIDE

- Connect power cable with Ultrasound Unit as well as Mains power plug.
- Connect Ultrasound probes(for example, 1 MHz probe to 1 MHz output socket) to Ultrasound output sockets.
- Flip the mains switch situated at the back of the unit to 'ON' position.
- To skip the introduction screen, press Intensity Control button, you will be taken to main screen.
- Now you can either select the Program or Manual(Menu) mode by selecting through Prog. and Menu Buttons then pressing the Intensity Control Button:
 1. Program Mode: Press the DOWN/prog. button to select the program option. now you can scroll through all the available programs that come with this unit. Select the desired program by pressing the Intensity Control Button. The treatment will automatically start
 2. Manual(Menu) Mode: upon selecting the Menu mode, You will have to select the time of the treatment, output frequency(1 or 3 MHz), and lastly the Ultrasound Mode(Continuous/Pulse/Wave). The treatment will start once you select all these parameters and press the Intensity Control Button.
- If you make a mistake while selection of parameters, use the BACK button to go to the previous window/parameter.
- Once the Blue light will glow under intensity button. It means the unit is ready for treatment.
- Now increase the intensity by rotating intensity control clock wise, and the therapy will start. During treatment you can also pause treatment by pressing intensity control button and parameters can also be changed.
- By pressing again intensity control unit will start with set parameters.
- To administer Ultrasound, check METHOD OF APPLICATION on next page.
- At the end of therapy output will become Zero and the buzzer will sound.
- Unit will go to sleep mode for few second after end of therapy.
- You can start over at any time by pressing the RESET Button(not preferable during therapy).



METHOD OF APPLICATION

1. Inspect the skin for the presence of any cut, wound rashes or any skin diseases, if so ultrasound treatment shall not be given on that particular area.
2. Clean the skin by tissue paper or cotton, preferably wet cotton.
3. Position the patient in such a way that the application area is well visualized and 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 good quantity of coupling medium on the area to be treated.
6. Activate the machine, set timer and intensity after keeping the transducer on the skin of patient.
7. Ultrasound are being delivered into tissue, now keep the head of transducer at 90 degree to the patient skin and make small circular movement throughout the treatment. The most painful area should be focused.

Remember the head should be in well contact with the skin and sufficient quantity of coupling medium should be there. If it is need 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 treatment plan. As the pain relieves dose or time can be reduced. Later on ultrasound be give on alternate days and then stopped. High intensity dose not be used after 5 day.
- **COUPLING MEDIUM:** To Make a fire contact between skin of patient and transducer: jelly or olive oil, or liquid paraffin is used. These are calls coupling medium or coupling agent.

A coupling medium should have the following properties:

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

ULTRASONIC DOSE RANGE:

Low Intensity : 0.1 to 0.8 Watts/cm²

Medium intensity : 0.8 to 1.5 Watts /cm²

High intensity : 1.5 to 3.0 Watts /cm²

STANDARD ACCESSORIES:

The Ultrasound Therapy Unit will be supplied with the following accessories:

1. Main Ultrasound Unit 1 No.
2. 3 MHz Applicator (Probe) 1 No.
3. Applicator Wire 1 No.
4. Main Cable 1 No.
5. User's Manual 1 No.
6. 1 Amp Fuse (Extra) 1 No.
within the Ac Socket

TECHNICAL SPECIFICATIONS

Mains Voltage	110/230v AC 50/60 Hz ±10%
Maximum Power Consumption	40 VA
Treatment Time	99 Minutes
Emission Frequency	1 MHz/3 MHz ±10%
Modes	Continuous; Pulse i.e. 1:2, 1:4, 1:7 & 1:10; Wave
Ultrasound Power	2.5 w/cm ² in continuous 3.5 w/cm ² in pulsed
Fuse	1 Amp (within AC socket) 3 Amp (for ultrasound output)
Weight	
Packing Dimensions	

MAINTENANCE

There is very little maintenance required for the UST 1&3. If the ON/OFF switch lamp is not glowing steadily when the switch is put on, the problem could be due to 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 finger nail and replace the fuse with the extra fuse, then push the fuse back into the socket until you hear a click.

WARNING

- Before using the equipments, 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 clear knowledge of indications & contraindications for the use of apparatus.
- Please insure this manual is readily available at all times to the personnel authorized to use the apparatus.
- For safety purpose, the power cord has been fitted with an earthed plug.
- ONLY USE AN EARTHED POWER SUPPLY SOCKET.
- The unit must be connected to approved power supply system.
- Do not use the apparatus close to SWD or MWD devices, may cause instability in output and functioning in program.
- Never leave the patient unattended during the treatment.
- The apparatus may not be used in so called “wet rooms” (hydro therapy rooms).
- SunMedisys will not be responsible for Therapy Effects resulting from an improper use of the apparatus.

WARRANTEE CERTIFICATE

Customer Name: _____

Address: _____

Equipment Name: _____

Serial No.: _____

Warranty Form: _____ To _____

- The Instrument is warrantee 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 excepting our authorised service centre / 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 dealers premises or service centre and back are to borne by the customer.
- The Warranty does not cover the Instrument operated outside the range of stipulated Electric Supply i.e. below 198 volts and above 242 Volts.
- The decision of the manufacturer is final in all cases of warranty claims.

HERE CERTIFIED

Your's Truly

Sun Medisys Inc.