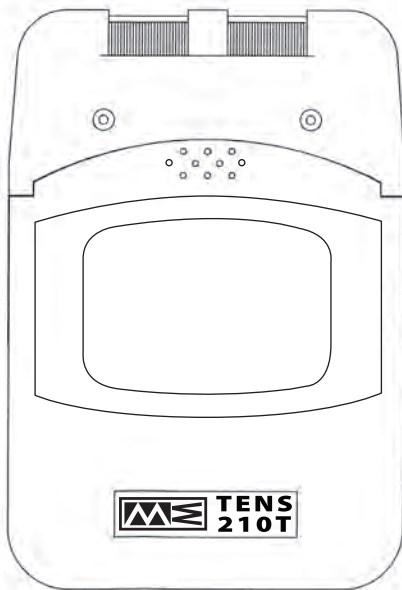


# Transcutaneous Electrical Nerve Stimulator

TENS 210 / TENS 210T



## Instruction Manual

Read Before Using



Mettler Electronics Corp.

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## **INTRODUCTION TO TENS**

### **What is Pain?**

Pain is the body's warning system. Pain is important because it signals an unusual condition in the body and alerts us before additional damage or injury can occur. However, long-lasting, persistent pain, often called chronic pain, once diagnosed serves no apparent purpose. TENS is developed to help relieve some types of chronic and acute pain.

### **How does TENS work?**

TENS is a method of treating pain that is non-invasive and non-narcotic.

The TENS device sends comfortable impulses through the skin that stimulate the nerve (or nerves) in the treatment area. In many cases this stimulation will greatly reduce or eliminate the pain sensation you feel by masking the original pain message sent to the brain.

It is also believed that TENS stimulation helps release endorphins into the blood stream thereby further reducing pain.

TENS devices are clinically proven useful in pain management for many patients. By reading this manual and carefully following the treatment instructions given to you by your clinician, you will attain the maximum benefit from you TENS device.

## **INDICATIONS AND CONTRAINDICATIONS**

Read the operation manual before using TENS

Federal law restricts the sale of this device to, or on the order of a physician, dentist, veterinarian or any other practitioner licensed by law of the state in which he practices.

### **INDICATIONS**

Transcutaneous Electrical Nerve Stimulation (TENS) may be used, with a physician's prescription, for the symptomatic relief and management of chronic (long term) pain and for the treatment of postoperative or posttraumatic pain.

### **CONTRAINDICATIONS**

- Patients with implanted electronic devices (for example, a pacemaker) or metallic implants should not undertake TENS treatment without first consulting a physician.
- Any electrode placement that applies current to the carotid sinus (neck) region.
- Any electrode placement that causes current to flow transcranially. (through the head).
- The use of TENS whenever pain symptoms are undiagnosed, until etiology is determined.

## **WARNINGS AND PRECAUTIONS**

### **WARNINGS**

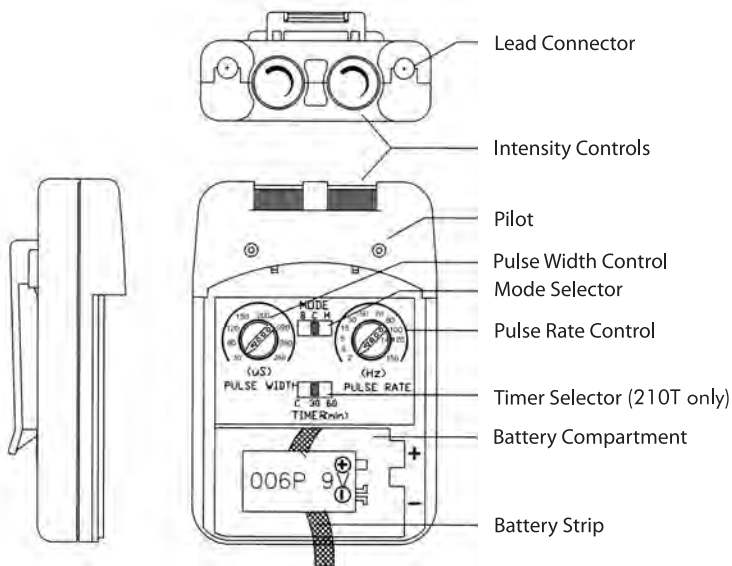
- TENS devices must be kept out of reach of children.
- The safety of TENS devices for use during pregnancy or delivery has not been established.
- TENS is not effective for pain of central origin(headaches).
- If TENS treatment becomes ineffective or unpleasant, stimulation should be discontinued until reevaluation by a physician.
- Avoid adjusting controls while operating machinery or vehicles.
- Always turn the TENS device off before applying or removing electrodes
- TENS may interfere with electronic monitoring equipment(ECG monitors/alarms)
- Electrodes should not be placed over the eyes, in the mouth, or internally
- TENS devices have no curative value
- TENS is a symptomatic treatment and as such suppresses the sensation if pain which would otherwise serve as a protective mechanism.

### **PRECAUTIONS/ADVERSE REACTIONS**

- Isolated cases of skin irritations may occur at the site of electrode placement during long term application
- Effectiveness is highly dependent upon patient selection by a person qualified in the management of pain patients.
- Skin irritation and electrode burns are potential adverse reactions.

## ABOUT THE DEVICE

Your TENS device is a battery operated device that includes two controllable output channels. This TENS device creates electrical impulses whose amplitude, duration, and modulation can be altered with the controls or switches. The TENS dial controls are very easy to use and the slide cover protects accidental changes in settings.



## **UNIT CONTROLS**

### **Panel Cover**

A cover conceals the controls for Pulse Width, Pulse Rate, Mode Selector and Modulation Selector. Press the top side of the cover and pull down in order to open the cover.

### **Intensity**

The Intensity knobs located on the top of the unit affect the strength of the stimulation and also function as ON/OFF controls.

### **Mode**

The Mode switch is used to select the type of treatment utilized. The three modes are Burst (B), Continuous (C), and Modulation (M).

### **Pulse Width**

The Pulse Width knob regulates the pulse width for both channels.

### **Pulse Rate**

The Pulse Rate knob regulates the number of pulses per second for both channels.

### **Time Control**

Treatment Time of TENS can be preset with timer control. This switch has 3 positions: 30, 60 minutes and C (continuous). Push the mode selector until engaged in position desired. (210T only)

### **Resetting the Time**

To resume operation or to reset the timer, simply turn the intensity control OFF and then ON again. (210T only)

## **Mode Functions**

**Burst (B)** releases individual bursts twice per second, pulse width is adjustable and the pulse rate is set at 100Hz per second.

**Continuous (C)** stimulation is delivered continuously at the settings determined by intensity, rate, and width knobs

**Modulation (M)** pulse width decrease from its setting by 60% and maintain the decreased width for 2 seconds before returning to the original width setting, which is maintained for 3.5 seconds. The cycle is then repeated. The intensity and pulse rate are adjustable.

## **ATTACHING THE LEAD WIRES**

The lead wires provided with the TENS device insert into the jack sockets located on top of the unit. Holding the insulated portion of the connector, push the plug end of the wire into one of the jacks; one or two sets of the wires may be used. After connecting the wires to the stimulator, attach each wire to an electrode.

Lead wires provided with the TENS device are compliant with mandatory compliance standards set forth by FDA.

**Note: Use care when you plug and unplug the wires. Pulling on the lead wire instead of its insulated connector may cause wire breakage.**

**Caution: Never insert the plug of the lead wire into an AC power supply socket.**

## **ELECTRODE SELECTION AND CARE**

Your physician should decide which type of electrode is best for your condition.

Follow application procedures outlined in electrode packaging to maintain stimulation and prevent skin irritation. The electrode packaging will provide instructions for care, maintenance and proper storage of your electrodes.



## **TIPS FOR SKIN CARE**

Good skin care is important for comfortable use of your TENS device.

- Always clean the electrode site with mild soap and water solution, rinse well, and blot dry thoroughly prior to any electrode application.
- Any excess hair should be clipped, not shaved, to ensure good electrode contact with the skin.
- You may choose to use a skin treatment or preparation that is recommended by your physician. Apply, let dry, and apply electrode as directed. This will both reduce the chance of skin irritation and extend the life of your electrodes.
- Avoid excessive stretching of the skin when applying electrodes. This is best accomplished by applying the electrode and smoothly pressing it in place from the center outward.
- When removing electrodes, always remove by pulling in the direction of hair growth.
- It may be helpful to rub skin lotion on electrode placement area when not wearing electrodes.

## **CONNECTING THE TENS DEVICE**

### **1. Prepare the Skin**

Prepare the skin as previously discussed and according to instructions provided with your electrodes. Before attaching the electrodes, identify the area which your clinician has recommended for electrode placement.

2. Connect lead wires to the electrodes  
Connect the lead wires to the electrodes before applying the electrodes to the skin.

**Note: Be sure both intensity controls for Channel 1 and 2 are turned to the "OFF" position.**

3. Place Electrodes on Skin

Place the electrodes on the skin as recommended by your clinician.

4. Insert Lead Wire Connector to TENS device

Plug end of lead wire into the channel output receptacle to be used, pushing plug in as far as it will go.

5. Select Treatment Settings

Check and be sure your unit is still set to the proper settings recommended by your physician.

6. Adjusting Channel Intensity Control

Locate the Intensity control knob at the top of the unit. Turn channel 1 or 2 clockwise. The indicator light will light up as long as the unit is in operation. Slowly turn the Channel control in a clockwise direction until you reach the intensity recommended by your medical professional. Repeat for the other channel if both channels are to be used.

If the stimulation levels are uncomfortable or become uncomfortable, reduce the stimulation amplitude to a comfortable level or cease stimulation and contact your physician if problems persist.

## **BATTERY INFORMATION**

When the yellow indicator light located on the front of the unit will no longer light, the battery has become too weak to power the unit. At this point the unit will shut off until a fresh battery is inserted.

Discard the old battery and replace with a fresh alkaline battery following the instructions below.

### **Changing the Battery**

1. Remove the Panel Cover by pressing the top and sliding down until it is completely removed from the unit this will reveal the battery compartment.
2. Remove the discharged battery from the device
3. Place new battery in compartment. Note the proper polarity alignment indicated on the battery and the compartment.

## **CARING FOR YOUR TENS DEVICE**

Your TENS device may be cleaned by wiping gently with a damp cloth moistened with mild soap and water. Never immerse the device in water or other liquids.

Wipe lead wires with a damp cloth as above if they become soiled.

To properly store the TENS device for extended period of time, remove the battery from the unit. Put the unit and accessories in the carrying case and store in a cool dry location.

## ORDERING INFORMATION

Therapy products and accessories are available from Mettler Electronics authorized Distributors. For information regarding either Mettler products or a distributor near you, please call toll free, (800) 854-9305 or phone (714) 533-2221 in areas outside the continental United States. Ask for Customer Service. Mettler Electronics is open from 7 AM until 5 PM Pacific Time for your convenience.

- 2101 One set of patient cables (lead wires) for either the TENS 210 or TENS 210T
- 2157 9-volt alkaline battery, Trio\*Stim (ME 215), TENS 210/210T or TENS 212
- 2702 V Trode -2" diameter round electrodes with lead wires, case of 10 packages (four electrodes/pkg.)
- 2703 V Trode -2.75" diameter round electrodes with lead wires, case of 10 packages (four electrodes/pkg.)
- 2704 V Trode -2" x 4" oval electrodes with lead wires, case of 10 packages (four electrodes/pkg.)
- 2705 V Trode -2" square electrodes with lead wires, case of 10 packages (four electrodes/pkg.)

## **TROUBLESHOOTING**

If the TENS device does not function properly:

1. Make sure the battery is properly installed or replace battery. Be sure to observe proper polarity markings when replacing the battery. If the yellow light on the front of the unit does not stay lit when the unit is turned on, replace the battery and check again.
2. If the ON/OFF Indicator Light is flashing and you still feel no stimulation, check that the lead wires are properly connected and the electrodes are in place. If the unit appears to be functioning and no stimulation, the lead wires or electrodes may need to be replaced.
3. If the battery appears to be charged and the unit is not functioning, turn both Intensity Control Knobs to the OFF position(counter clockwise). Then gradually turn the Intensity Control Knob to the on position.

If there is any other problem, please consult or return the device to your distributor. Do not try to repair a defective device.

## **SYSTEM COMPONENTS**

Your TENS device may include the following components or accessories:

- TENS unit
- Carrying Case
- Lead wires
- Electrodes
- Battery**
- Operation Manual

## **LIMITED WARRANTY**

The TENS 210 and TENS 210T stimulators are warranted against defects in materials and workmanship for a period of one year from date of purchase. During the applicable warranty period Mettler Electronics Corp. will, at its discretion, either repair or replace the Product without charge for these types of defects.

For service under this warranty, the Product must be returned by the buyer within the applicable warranty period to Mettler Electronics Corp.

**Shipping charges to Mettler Electronics Corp. under this warranty must be paid by the buyer. The buyer must also include a copy of the sales receipt or other proof of the date of purchase. If the Product is returned without proof of the date of purchase, it will be serviced as an out-of-warranty product at Mettler Electronics Corp.'s prevailing service rates.**

**Alteration, misuse, or neglect of the Product voids this warranty. Except as specifically set forth above, Mettler Electronics Corp. makes no warranties, express or implied, including without limitation any implied warranty of merchantability or fitness for a particular purpose, with respect to the Product. If any implied warranties apply as a matter of law, they are limited in duration to one year.**

**Mettler Electronics Corp. shall not be liable for any indirect, special, consequential or incidental damages resulting from any defect in or use of the Product.**

Any legal action brought by the buyer relating to this warranty must be commenced within one year from the date any claim arises and must be brought only in the state or federal courts located in Orange County, California.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to the buyer. This warranty gives the buyer specific legal rights, and the buyer may also have other rights which vary from state to state.

## TECHNICAL SPECIFICATIONS

|                      |   |
|----------------------|---|
| Channel:             | Dual, isolated between channels   |
| Modes of Operations: | Continuous, Burst, Modulation   |
| Pulse Intensity:     | Adjustable 0-80mA peak into 500 ohm load each channel, constant current |
| Pulse Rate:          | 2Hz-150Hz (adjustable)  |
| Pulse Width:         | 30uS-260uS (adjustable)   |
| Timer:               | Cont., 30 min, 60 min. (210T only)                                      |
| Burst Mode:          | Burst consist 2 burst per sec at 100Hz                                  |
| Wave Form:           | Asymmetrical Bi-Phasic square pulse                                     |
| Maximum Voltage:     | 40 Volts at 500 ohms  |
| Power Source:        | 9 volt battery  |
| Dimensions:          | 95(H) x 65(W) x 23.5(T) mm  |
| Weight:              | 115 grams (battery included)  |

## Output Parameters

| Mode       | Intensity (mA) | Width (uSec)  | Pulse Rate Freq (Hz)             | Cycle Time (Sec)   |
|------------|----------------|---|----------------------------------|--------------------|
| Continuous | Adj,0-80       | Adj, 30-260   | Adj, 2-150 Hz                    | N/A                |
| Burst      | Adj,0-80       | Adj, 30-260   | 100 Hz fixed<br>2 burst per sec. | N/A                |
| Modulation | Adj,0-80       | Modulates down from preset width setting by 60% then back to original setting | Adj, 2-150 Hz                    | 5.5 sec total time |

