

# ULTIMA NEO



Manufactured for:



## User's Manual

User Manual for Ultima Neo

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## PRESCRIBING INFORMATION

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### FOREWORD



Read this manual carefully before using your Ultima NEO unit.

The manufacturer strongly recommends carefully reading the "Warnings and Cautions", and subsequent chapters of this manual.

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## WARNINGS AND CAUTIONS

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### Prescription labeling:



Federal law restricts this device to sale or use by or on the order of a practitioner so licensed by the state.

### Contraindications:

1. Do not use this device on patients who have a cardiac pacemaker, implanted defibrillator, or other implanted metallic or electronic device, because this may cause electric shock, burns, electrical interference, or death.
2. Do not use this device on patients whose pain syndromes are undiagnosed.

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## WARNINGS

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1. Do not apply stimulation over the patient's neck or mouth because this could cause severe muscle spasms resulting in closure of the airway, difficulty in breathing, or adverse effects on heart rhythm or blood pressure;

2. Do not apply stimulation across the patient's chest, because the introduction of electrical current into the chest may cause rhythm disturbances to the patient's heart, which could be lethal;
3. Do not apply stimulation over open wounds or rashes, or over swollen, red, infected, or inflamed areas or skin eruptions (e.g., phlebitis, thrombophlebitis, varicose veins);
4. Do not apply stimulation over, or in proximity to, cancerous lesions;
5. Do not apply stimulation in the presence of electronic monitoring equipment (e.g., cardiac monitors, ECG alarms), which may not operate properly when the electrical stimulation device is in use;
6. Do not apply stimulation when the patient is in the bath or shower;
7. Do not apply stimulation while the patient is sleeping;
8. Do not apply stimulation while the patient is driving, operating machinery, or during any activity in which electrical stimulation can put the patient at risk of injury.
9. Consult with the patient's physician before using this device, because the device may cause lethal rhythm disturbances to the heart in susceptible individuals;
10. Apply stimulation only to normal, intact, clean, healthy skin.

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## PRECAUTIONS

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1. TENS is not effective for pain of central origin, including headache;
2. TENS is not a substitute for pain medications and other pain management therapies;
3. TENS devices have no curative value;
4. TENS is a symptomatic treatment and, as such, suppresses the sensation of pain that would otherwise serve as a protective mechanism;
5. Effectiveness is highly dependent upon patient selection by a practitioner qualified in the management of pain patients;
6. The long-term effects of electrical stimulation are unknown;
7. Since the effects of stimulation of the brain are unknown, stimulation should not be applied across the head, and electrodes should not be placed on opposite sides of the head;
8. The safety of electrical stimulation during pregnancy has not been established;
9. Some patients may experience skin irritation or hypersensitivity due to the electrical stimulation or electrical conductive medium (gel);
10. Patients with suspected or diagnosed heart disease should follow precautions recommended by their physicians;
11. Patients with suspected or diagnosed epilepsy should follow precautions recommended by their physicians.

12. Use caution when the patient has a tendency to bleed internally, such as following an injury or fracture;
13. Use caution following recent surgical procedures when stimulation may disrupt the patient's healing process;
14. Use caution if stimulation is applied over the menstruating or pregnant uterus;
15. Use caution if stimulation is applied over areas of skin that lack normal sensation.
16. Keep this device out of the reach of children;
17. Use this device only with the leads, electrodes, and accessories recommended by the manufacturer; and
18. Use this device only under the continued supervision of a licensed practitioner.

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### ADVERSE REACTIONS

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- Patients may experience skin irritation and burns beneath the stimulation electrodes applied to the skin;
- Patients may experience headache and other painful sensations during or following the application of electrical stimulation near the eyes and to the head and face; and
- Patients should stop using the device and should consult with their physicians if they experience adverse reactions from the device.

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### GENERAL WARNINGS

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1. Do not immerse the units in water.
2. Do not place the unit close to excessive heat.
3. Do not use any pad which size is less than 50mm X 50mm.
4. Use only the specified battery: 1x 3.7volt rechargeable lithium battery. The use of any other battery could damage the unit.
5. Remove battery if unit is not used for a long period of time.
6. Do not use the unit while asleep.
7. Keep the unit away from sources of high magnetic fields such as TV'S, microwave ovens and hi-fi speakers, as these may affect the LCD screen.
8. Temperature & R.H. of storage: -20°C--+80°C, 8%--80% R.H.
9. Temperature & R.H. of transportation: -20°C--+80°C, 8%--80% R.H.

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## CONTENTS

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Prescribing Information.....	1
Contents .....	6
Operating Instruction for Physician.....	7
Instruction For Use.....	9
How to Assemble Your Unit.....	10
After Use .....	14
Operation of the ULTIMA NEO Unit.....	16
Specification.....	19
Other Features.....	20
Electrodes Placement.....	24

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## OPERATING INSTRUCTIONS FOR PHYSICIAN

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### INTENDED USE

TENS/EMS/MIC/IF Model Ultima NEO combines the systems of a TENS (Transcutaneous Electrical Nerve Stimulator) device, an EMS or NMES (Neuro-Muscular Stimulator), a MIC (Microcurrent) stimulator and an IF (Interferential) stimulator.

#### How does TENS/EMS/MIC/IF work?

##### For the TENS system:

TENS is believed to work by stimulating your body's own natural defenses against pain. The unit produces a gentle stimulus that is communicated through pads normally placed over the area of pain. This stimulus helps the body to produce natural pain relievers called endorphins.

The correct positioning of the pads is important and we recommend correct placement through experimentation. Some people feel immediate benefit from EMS/TENS. However some may only achieve benefit after repeated treatment sessions and over an extended period of time.

##### For EMS system:

EMS is believed to work by applying stimulation pulses to stimulate the muscle. When the muscle receives the signal it contracts as if the brain has sent the signal itself. As the signal strength increases, the muscle flexes as in physical exercise. Then when the pulse ceases, the muscle relaxes and the cycle is repeated.

The goal of electrical muscle stimulation is to achieve contractions or vibrations in the muscles. The impulses stimulate the nerves to send signals to a specifically targeted muscle, which reacts by contracting, just as it does with normal muscular activity.

#### **For MIC system:**

Microcurrent (MIC) stimulation is a type of therapy in which very low current is sent into the cells of the body. Microcurrent is a very faint current that is so small it is measured in millionths of an amp (Microamps). Human cells generate a current that is in the micro amp range which is why you can't feel it – the current is so low it doesn't stimulate the sensory nerves.

Microcurrent is a physiological electric modality that increases ATP (energy) production in the cells of your body. This dramatically increases the tissue's healing rate. The immediate response to the correct microcurrent frequency suggests that other mechanisms are involved as well. The exact effects or changes in the tissue can be unmistakable; scars can suddenly soften; trigger points often become less painful within the "correct" frequency is applied. In many situations the changes can be long lasting and in many cases permanent.

#### **For IF system:**

Interferential Stimulation IF is an anti-inflammatory based treatment modality. Interferential stimulation is characterized by two alternating-current sine waves or square waves of differing frequencies that "work" together to produce an interferential current that is also known as

a beat pulse or alternating modulation frequency. One of the two currents is usually held at 4,000 Hz, and the other can be held constant or varied over a range of 4,004 to 4,160 Hz. Because of the frequency, the interferential wave meets low impedance when crossing the skin to enter deep into soft tissues. The interferential currents reportedly can stimulate sensory, motor, and pain fibers. These large impulse fibers interfere with the transmission of pain messages at the spinal cord level. This deep tissue penetration stimulates parasympathetic nerve fibers for increased blood flow and edema reduction. It utilizes the low electric-current to stimulate muscle nerves to achieve the symptomatic relief of chronic intractable pain, post-traumatic pain, and post-surgical pain.

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### **INSTRUCTIONS FOR USE**

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Your Ultima NEO has been designed to be simple and easy to use.

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### **CONTENT IN THE PACK**

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Your Ultima NEO pack should contain the following:

- 1 × Ultima NEO Unit
- 2 × Leads
- 4 × Self Adhesive Pads with Connectors  
(Size: 50mm × 50mm)
- 1 × 3.7V Rechargeable Lithium Battery (BL-6F)
- 1 × Charger with an adaptor and a charging cradle
- 1 × Instruction Booklet (which you are reading)

Having checked all the contents are correct please proceed to assemble the unit.

## HOW TO ASSEMBLE YOUR UNIT

Assembly of the Ultima NEO Unit is very simple and requires only five steps.

### STEP 1 BATTERY

Remove the battery cover and insert the battery, as shown on the diagram inside the battery compartment. Replace the battery cover.



Insert the battery



Replace the battery cover

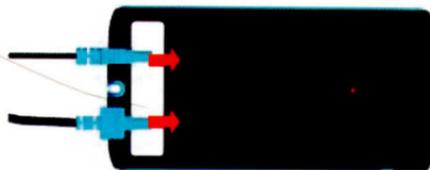
## CAUTION

There is a risk of explosion if the battery is fitted incorrectly. Replace with the 3.7 volt lithium battery. Do not dispose of the battery in a fire and keep them out of reach of children. The battery must be removed from the unit if unit is not used for a long period of time.

### STEP 2 LEADS

Decide whether you wish to use the unit with one lead or two.

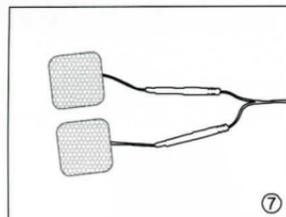
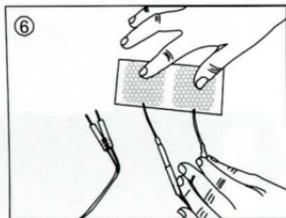
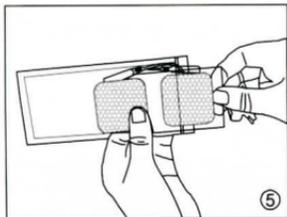
If using two leads, insert the plugs into both jacks on the plugs of the unit. If only using one lead, insert into one jack.



Insert the lead wires

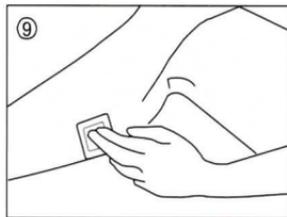
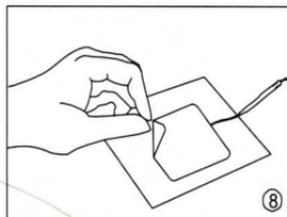
### STEP 3 PADS

Remove pads from the bag and connect to the leads.



### STEP 4 PLACEMENT OF PADS

Ensure wherever you intend to place the pads where skin is clean and thoroughly dry. Remove the pads from the clean plastic shield and position on your body as required.



### STEP 5 READING

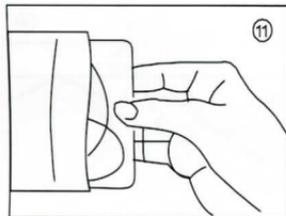
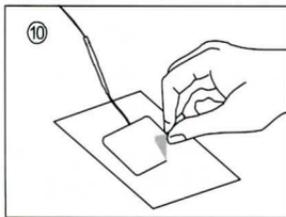
Read section on "Operation of the Ultima NEO Unit", and decide how to use the unit for the treatment.

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### NOTE: AFTER USE

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Always ensure that the unit is switched OFF before removing the pads. After use, return the pads to the clear plastic shields. There is no need to separate the pads unit from the leads and pads.



Life of the pads: When the pads initially lose their adhesive quality, it is possible to reactivate their adhesiveness by applying fine spray of water. Replace the pads when they lose their adhesive quality in order not to affect the efficiency of the unit.

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### CHARGING THE BATTERY

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The Ultima NEO is powered by a type BL-6F rechargeable Lithium battery. A separate Charging Cradle and Power Adaptor are included in the kit.

When the battery is running low, a low battery indicator will show on the screen (battery symbol). Although the display fades as the battery run down, the strength of the output does not change until the warning is shown.

When the battery is fully charged, the indicator light on the cradle will change from red to green.

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### NOTE

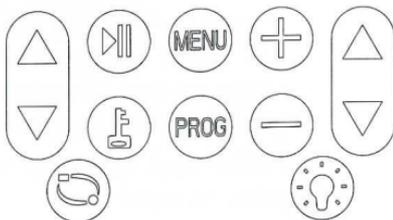
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1. Remove the battery from the Ultima NEO if the unit is unlikely to be used for a long period.
2. When the battery is running low, it has to be removed from the unit and charged in the charging cradle.
3. Use only the power adaptor and charging cradle supplied.

**USE OF OTHER CHAGERS COULD BE HAZARDOUS.**

## OPERATION OF THE ULTIMA NEO UNIT

Ultima NEO Unit is easy to operate by pressing the key as following diagram.



### WHAT DOES EACH KEY DO

 This key switches the unit on or off. Press once and the unit is on, the LCD display located at the front of the unit will light up, there will be no feeling from either lead at this point as the intensity always starts at zero. Press this key again and the unit will switch off.

 There are four stimulation types involve in Ultima NEO (TENS, EMS, Micro current and Interferential stimulation). Initially insert the battery and switch on the unit, the default stimulation type is TENS. Press and hold the "Prog" key at less 3 seconds, to switch to each other (TENS-EMS- MICRO- IFT). The symbol "TENS", "EMS", "MICRO" and "IFT" will display on the LCD accordingly. Once select the stimulation type, simply press this key to select related programs.

There are totally 40 programs available:

For TENS system:

Program 0-13 --- TENS Preset programs

Program 14-21 --- TENS Manual programs

For EMS system:

Program 22-31 --- EMS Preset programs

Program 32, 33 --- EMS Manual programs

For MIC system:

Program 34 --- Micro Preset programs

Program 35 --- Micro Manual programs

For IF system:

Program 36-39 --- IFT Manual program

Press "Prog" key you can select programs. When "Prog" key is pressed, the output level goes immediately down to zero.

 Press this key you can go through and select the following parameters one by one (manually selectable only):

FREQUENCY (Hz)

PULSE WIDTH (TENS and EMS -  $\mu$ s / Micro current-ms)

Waveform

Cycle time (Micro current mode and IF mode only)

SYNCHRONOUS/ALTERNATING (EMS P10 only)

RAMP UP TIME (EMS P10 only) (sec)

RAMP DOWN TIME (EMS P10 only) (sec)

CH1 ON TIME (EMS P10 only) (sec)

CH1 OFF TIME (EMS P10 only) (sec)

## CH2 DELAY TIME (EMS P10 only) (sec)

Treatment Timer (min)

Micro current Mode (P35):

FREQUENCY (Hz)

Treatment Timer (min)

IF Mode (P36-P39) :

FREQUENCY (Hz)

Treatment Timer (min)

 Press these keys to increase or decrease the value of the parameter, which has been selected by MENU key.

 Press these keys to adjust the intensity of channel 1 and channel 2. Left side is for channel 1; right side is for channel 2.

 Pause key: Press this key to make the unit pause; to continue it, press and hold down this key again.

 Press this key can LOCK or UNLOCK the parameters in toggle. When the unit is locked, only intensity and treatment timer can be adjusted, the  symbol indicates that the unit is locked is displayed in the LCD. By pressing Lock key for 3 seconds, you can LOCK or UNLOCK the parameters in Manual Mode. When the unit is locked, only intensity treatment timer and the number of the program can be adjusted.

## SPECIFICATION

Model:	Ultima NEO
Channel	Dual, isolated
<b>TENS:</b>	
Intensity	0-150mA zero to peak at 500ohm load
Frequency	1-150 Hz
Pulse width	50, 60, 70, 80, 90, 100 110, 120, 130, 140, 150 160, 170, 180,190, 200 210, 220, 230, 240, 250 $\mu$ s
Waveform	Symmetrical bi-phase rectangular Asymmetrical bi-phase rectangular Mono-phase rectangular
Treatment timer	Continuous, 15, 30, 45, 60, 90min

### EMS:

Intensity	0-150mA zero to peak at 1000ohm load each channel
Frequency	1-110 Hz
Pulse width	Positive phase: 50-400 $\mu$ s, in steps of 50 $\mu$ s
Waveform	Symmetrical bi-phase rectangular Symmetrical bi-polar rectangular
Ramp up time	0-5s in steps of 0.25s
Ramp down time	0-5s in steps of 0.25s
On time	1-60s in steps of 1s
Off time	0-60s in steps of 1s
Treatment timer	Continuous, 10, 20, 30, 45, 60, 90min

### Microcurrent:

Frequency	94Hz fixed (A)/ 0.5,8,80Hz(B)
Pulse width	250uS fixed (A),2.1ms fixed (B)
Wave form	Mono-phase rectangular

Treatment timer Continuous, 10, 20, 30, 45, 60, 90min

### **Interferential(IF):**

Carrier Frequency 4000Hz fixed (CH1)  
Modulating Frequency 4004-4160Hz,  
in steps of 4Hz (CH2)  
Phase width 125 $\mu$ s  
Wave form Symmetrical balanced Sine wave  
Treatment timer Continuous, 10, 20, 30, 45, 60, 90min

### **Programs:**

#### **1) P0-P21 TENS Preset programs**

Program 0-13 --- TENS Preset programs

Program 14-21 --- TENS Manual programs

#### **2) P22-P33: TENS Manual Modes**

Program 22-31 --- EMS Preset programs

Program 32,33 --- EMS Manual programs

#### **3) P34-P35: Microcurrent Modes**

Program 34 --- Micro Preset programs

Program 35 --- Micro Manual programs

#### **4) P36-P39: Interferential(IF) Modes**

Program 36-39 --- IFT Manual program

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## **OTHER FEATURES**

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1. When the unit is turned on, if any of the keys are not pressed within 5 minutes, it will automatically shut off.
2. When the unit is turned off and turned on again or the battery is removed, all parameters are remain unchanged except the intensity and treatment timer.

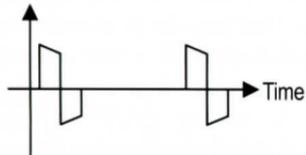
3. When the treatment timer has been set, it begins to count down one minute by one minute and is displayed in LCD, once it counts down to zero, the device automatically shuts off.
4. The treatment time will be accumulative recorded when the output level is above zero, by pressing "CH1▼" key and "Prog" key for 3 seconds, the treatment time accumulative in minute can be displayed, or return back to the previous normal display in toggle; by pressing "CH2▼" key and "Prog" key for 3 seconds will clear the treatment time to zero.
5. When program changes, the output level will go down to zero immediately.
6. When the unit is turned on, it will automatically enter the mode that the unit had worked in before the unit was turned off;
7. When the battery is low, the symbol of battery is flashing in 2 Hz indicating that the batteries should be replaced.
8. When one or both of the electrodes are not placed firmly on the skin or it is opened, the output level goes immediately to zero.

## Waveform Information

There are 5 types of waveforms:

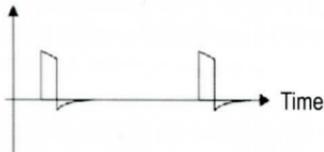
(1). Symmetrical Bi-Phasic rectangular waveform

Amplitude



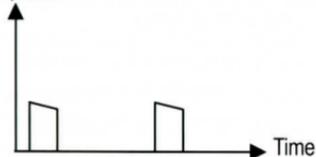
(2). Asymmetrical Bi-Phasic rectangular waveform

Amplitude



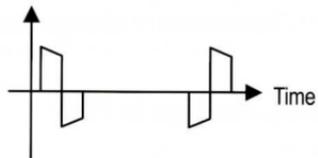
(3). Mono-Phasic waveform

Amplitude



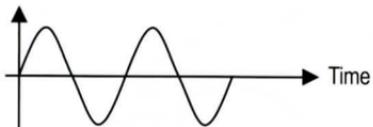
(4) Alternated Bi-Phasic rectangular waveform

Amplitude



(5) Symmetrical balanced Sine waveform

Amplitude



## ELECTRODES PLACEMENT

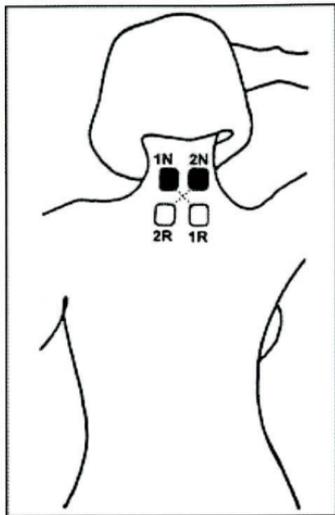
Please study the body maps in this guide, which show referential positioning of the electrodes depending on your symptoms.

### Examples of electrodes placement for TENS:

#### 1. NECK PAIN

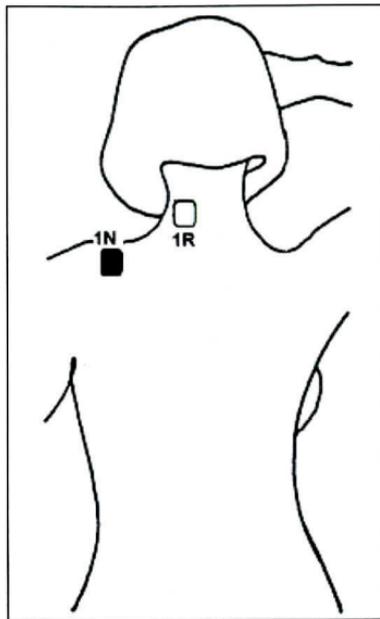
Using both leads, place the electrodes at the back of the neck and over the top of your shoulders.

Note: Do not place electrodes on the side or front of the neck.



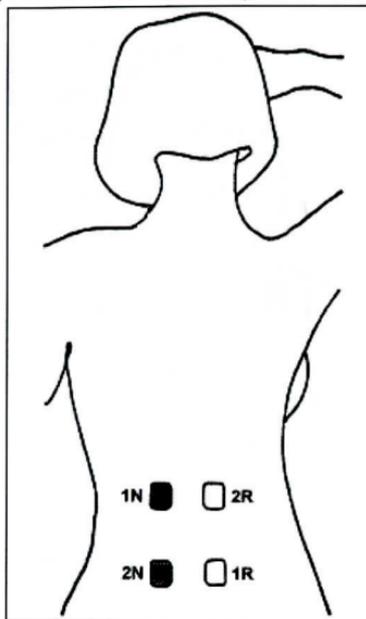
#### 2 - TORTICOLLIS

By using a single channel, place the couple of electrodes, over the area of maximum pain.



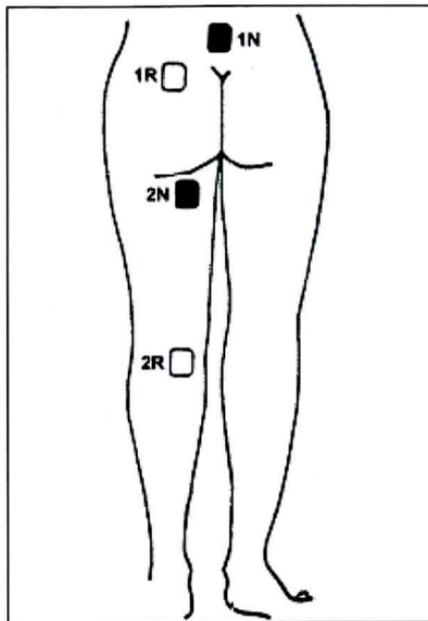
### 3 – LOW BACK PAIN

Using both leads, place electrodes either side of the spine, crossing the channels, at the site of pain.



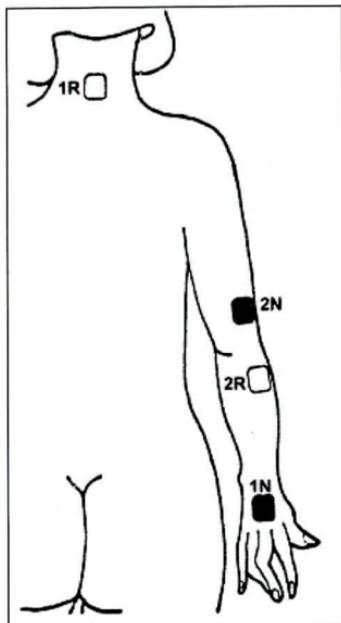
### 4 – SCIATICA

Using both leads, take the first lead and place the electrode with the black adapter on your lower back one side of your spine and the second electrode with the red adapter at the top of the back of you leg. Repeat for the second lead, placing the second electrode lower down the leg.



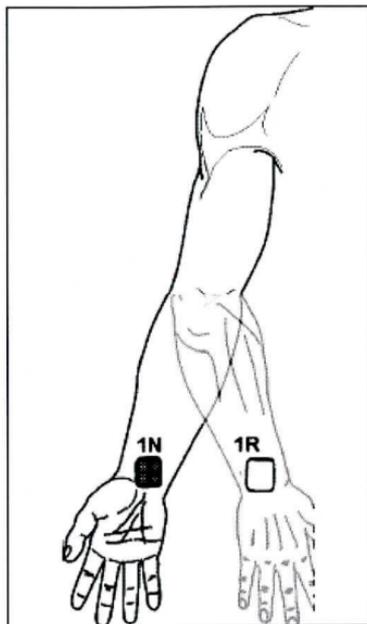
## 5 – EPICONDYLITIS

Using both leads, place electrodes either side of the elbow.



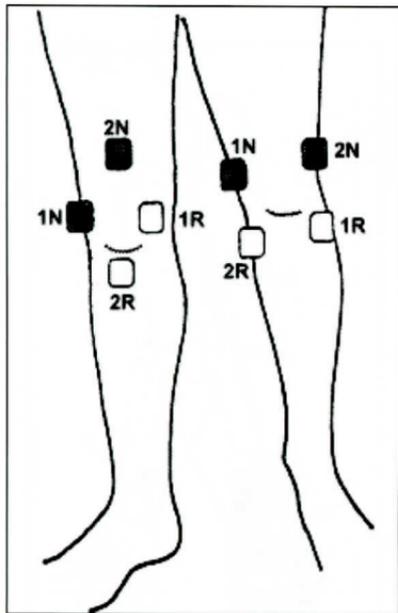
## 6 – WRIST PAIN

By using a single channel, place the couple of electrodes over the area of maximum pain, involving both sides of the wrist.



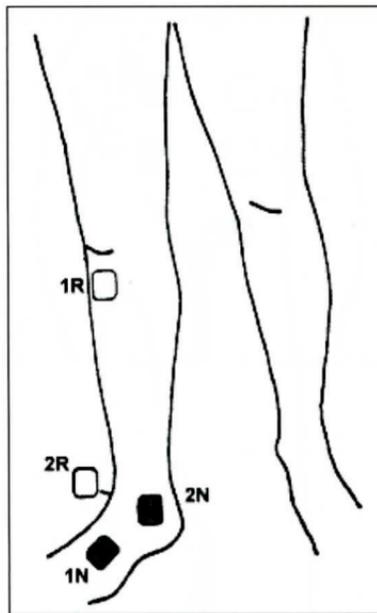
## 7 - KNEE PAIN (GONALGIA)

Using both leads, place electrodes over the top and base of the knee. Avoid to place directly on the kneecap.



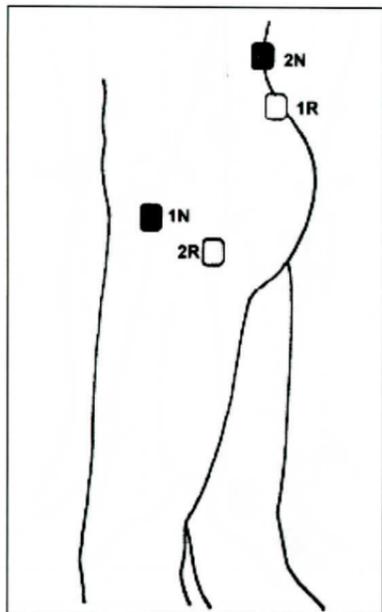
## 8 - ANKLE SPRAIN

Using both leads, place the electrodes from one lead either side of the spine, on your ankle, the other couple will be placed along the involve nerve.



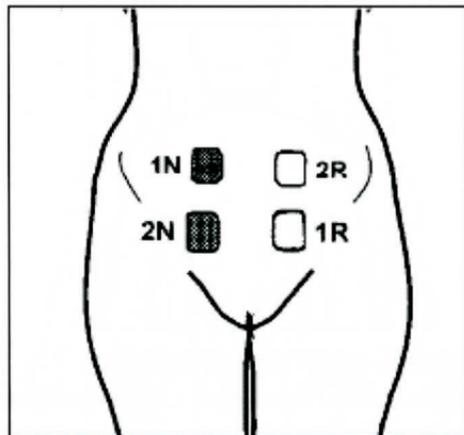
## 9 - HIP PAIN (COXALGIA)

Using both leads, place one electrode from each lead a side of the spine, on your lower back. The remaining electrodes must be placed on the area of pain, on your hip.



## 10 - MENSTRUAL PAIN

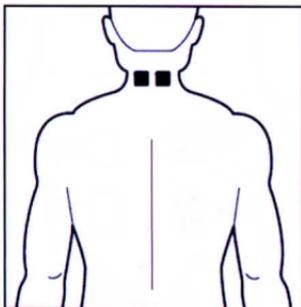
Using both leads, place electrodes over the tummy area.



## 11- MIGRAINE

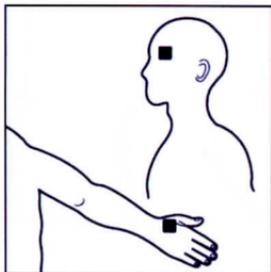
Using 2 pads only, place both pads on the back of the neck.

Note: Do not place pads on the side or front of the neck.



## MIGRAINE (ADDITIONAL POSITION)

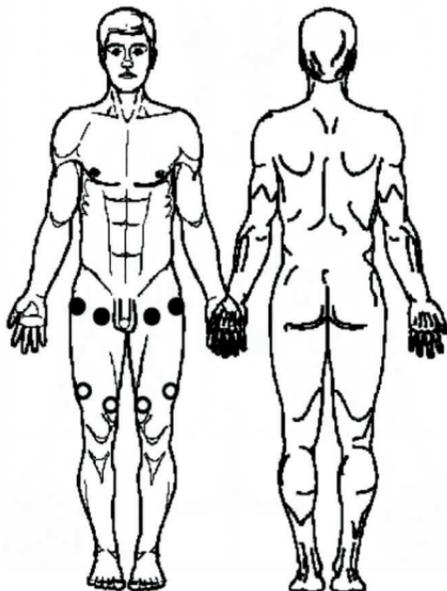
Using 2 pads only, place one pad on the left temple, and the other on the back of your right hand between your thumb and first finger.



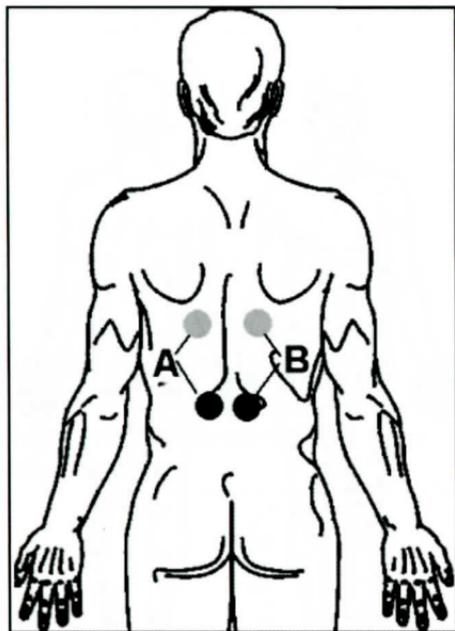
Note: If only 2 pads being used, connect both pads to the 2-lead single-channel lead wire.

## Examples of electrodes placement for EMS:

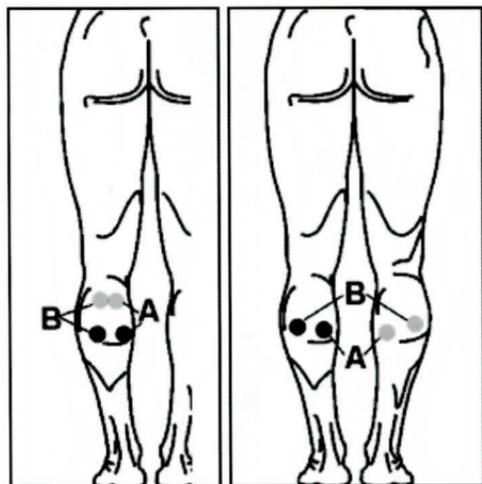
### 1- QUADRICEPS



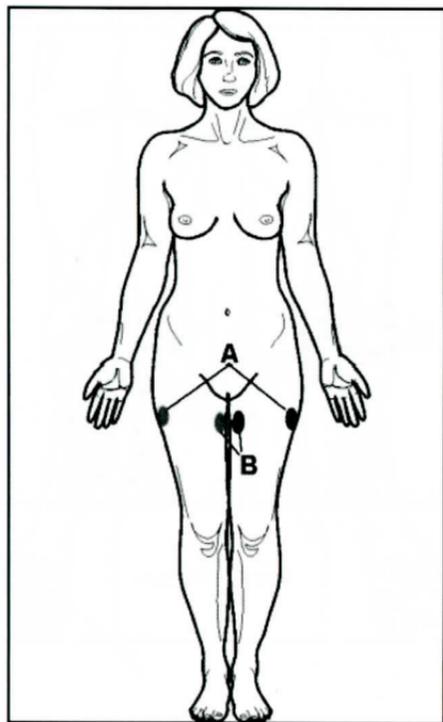
## 2 - SPINALIS MUSCLE (BACK)



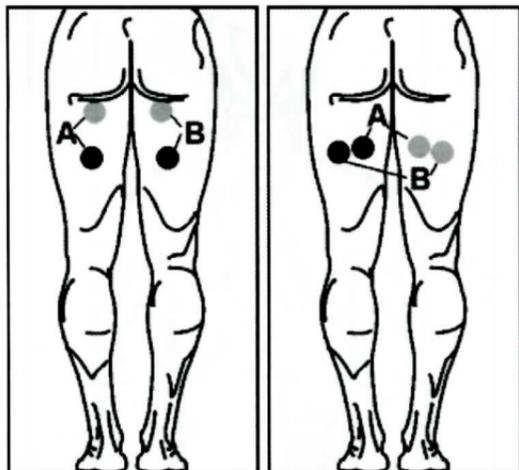
## 3- CALVES



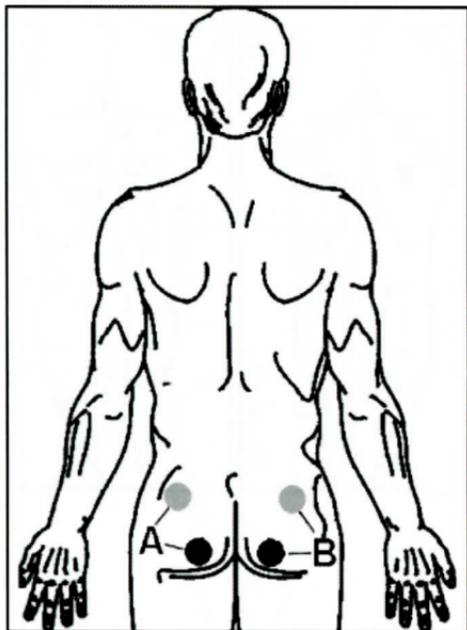
#### 4 - THIGHS



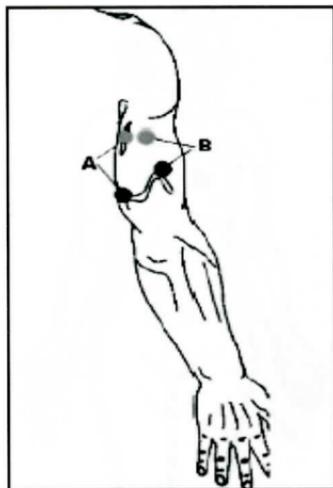
#### 5 - HAMSTRINGS



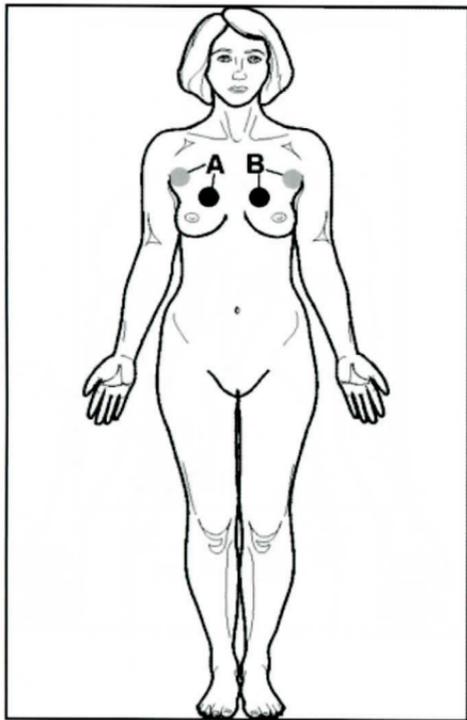
6 - GLUTEUS



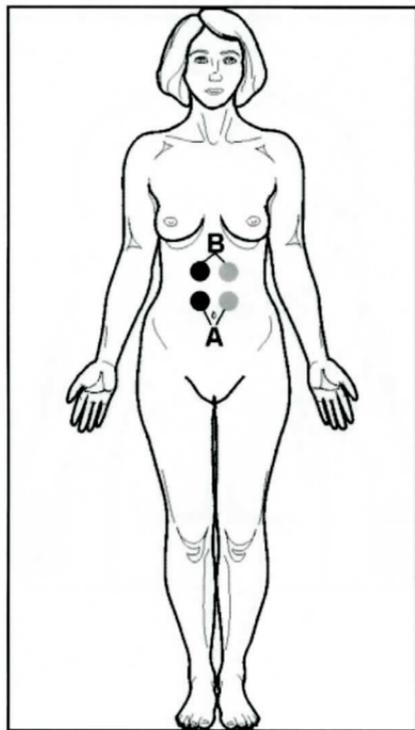
7 - TRICEPS



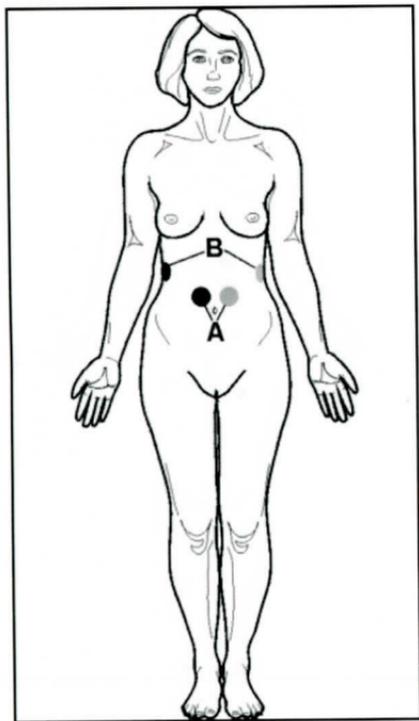
## 8- BREAST



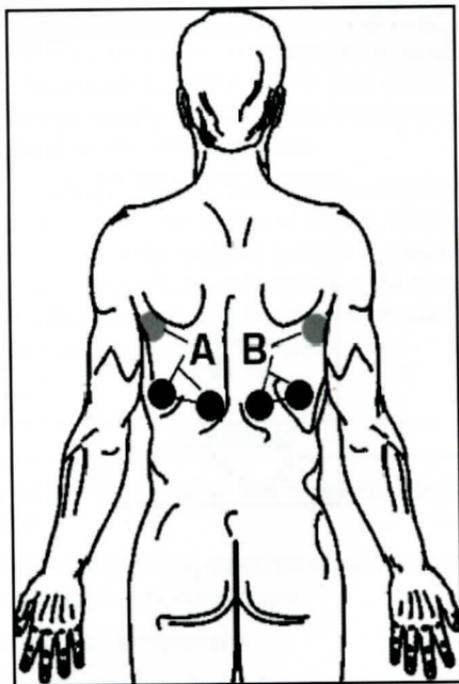
## 9 - ABDOMEN



10 - ABDOMEN + WAIST

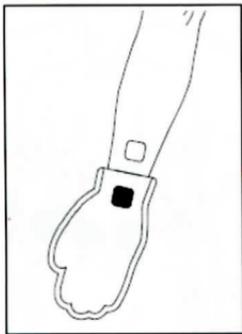


11 - LATISSIMUS DORSI



## 12 - HANDS

Using a single channel, one plug connects with the male snap of the glove, another connects with the electrode and places on the lower arm.



**NOTE: When the Micro current or Interferential stimulation is used, please consult your doctor for the advice about electrode placement.**

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## PADS

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The pads that are supplied with your ULTIMA NEO Unit are self-adhesive and can be used several times. Skin must be allowed to breathe, so the pads should be removed periodically. When not in use, the pads should be placed onto the clear plastic shield.

The condition of the pads does affect the conductivity and, therefore, the performance of the unit. When the pads initially lose their adhesive quality, it is possible to reactivate their adhesiveness by applying a fine spray of water. Once the pads have finally lost their adhesive quality, new pads should be purchased.

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## WARNINGS

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Do not use any pad which size is less than 50mm X 50mm.

Allergic reactions to the self-adhesive pads can occur, even though they are hypoallergenic:

- Do not apply to broken skin.
- Do not apply pads to skin that do not have normal sensation. If the skin is numb, stimulation will not be felt and too great an intensity might then be used accidentally.