

INSTRUCTION MANUAL (direction of use)

MODEL AWQ-104LT

Transcutaneous Electrical Nerve Stimulation

Electronic (Display & 4 channels)



INSTRUCTION MANUAL

TABLE OF CONTENTS

| | |
|----------------------------------|-------|
| Contents | 3 |
| Introduction | 3 |
| Safety Precautions | 4-5 |
| Features | 6-7 |
| Battery Information | 8 |
| Indications and Controls | 9 |
| Operation of Controls..... | 10-14 |
| Waveform Pictures | 15-16 |
| Instructions For Use | 17-19 |
| Accessories & Packing | 20 |
| Maintenance and Cleaning..... | 20 |
| Technical Specifications | 21 |
| Trouble Shooting | 22 |
| Storage and Transportation | 23 |
| Warranty | 24 |

Contents of the AWQ-104LT TENS

| | |
|--|------|
| Model AWQ-104LT | 1 pc |
| Hard carrying case | 1 pc |
| Pointer probe with hand grip electrode | 1 pc |
| Connecting wire | 4 pc |
| 9V battery (PP3, 6F22 or its equivalent) | 1 pc |
| Instruction manual | 1 pc |

Introductions

The model AWQ-104LT TENS with 4 outputs is a newly designed device. It features a display to show the frequency of stimulation during operation. This device is fully equipped with distinguished features in appearance, circuitry and accessories. It is one of the most powerful stimulators available on the market.

The AWQ-104LT TENS is designed for TENS treatment used by Practitioners. Before using the system, carefully read this manual so that your patient will obtain maximum benefit, as well as full usage of the system.

SAFETY PRECAUTIONS: Warnings

Heart Patient-Adequate precautionary measures should be considered prior to stimulating patients suspected of having heart disease. Current clinical data cannot sufficiently rule out the possibility of adverse results for such patients.

Carotid sinus-Do not stimulate over the carotid sinus nerves, especially in patients with known sinus reflex sensitivity.

Neck Stimulation-Severe spasm of the laryngeal and pharyngeal muscles may occur when the electrodes are placed across the neck or the mouth. This may be strong enough to close off the airway.

Cardiac Pacemakers- Stimulation will inhibit the output of some demand cardiac pacemakers and therefore, it is not recommended for patients with this type of pacemaker.

Pregnancy-The safety of electrical nerve stimulation for use during pregnancy or delivery has not been established.

Other-Electrical nerve stimulation, as presently understood, is a symptomatic treatment and as such may suppress the progress of pain which would otherwise serve as a protective influence on the outcome of a disease process. The potential for physical and/or psychological dependence upon nerve stimulation as a means of relieving pain has not yet been determined.

It has been noted that some patients find the sensation of electrical stimulation extremely unpleasant and should probably be excluded from further use of the stimulator.

Do not apply electrical nerve stimulation when pain syndromes are undiagnosed until etiology is established.

Do not apply electrical nerve stimulation current transcerebrally.

Electrical nerve stimulation devices should be used only under the continued supervision of a Practitioner.

Electronic monitoring equipment (such as EKG monitors and EKG alarms) may not operate properly when electrical nerve stimulation is in use.

Avoid use in post-operative recovery rooms when a heart monitor is on.

Keep out of reach of children.

FEATURES:

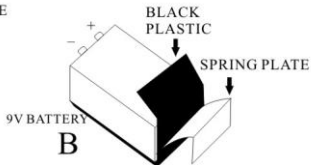
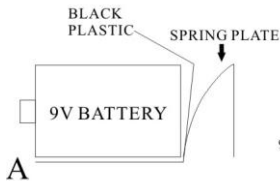
The model AWQ-104LT TENS is a device used in TENS treatment. It has the following features:

- 1) Digital display to show the working frequency during treatment. When the Therapeutic switch is set at the "Channel 1+" position, the yellow LED light is illuminated indicating that the probe is activated.
- 2) Polarity change-over switch which allows user to reverse each output channel polarity easily and without reversing lead wires during treatment. In doing this, the output intensity should be turned down first in order to avoid a sudden increase of intensity.
- 3) TENS treatment through the 4 output channels, which emit electric stimulation via the connecting wires. Set the Therapeutic switch to "Channels 1-4" position and the green "Ind" indication LED will illuminate, to show power on and display frequency of the device.
- 4) Therapeutic switch "Channel 1+" which allows immediate stimulation on a point. Simply move the switch to the "Channel 1+" (stimulation) position. The "Channel 1+" indication LED will illuminate yellow in this setting.

- 5) Multiple transmit message so that 3 different kinds of waves can be performed. Their frequency varies from 0-100 Hz (or 10-999 Hz at x10 setting), with continual adjustment and free combinations. By varying the combinations of these multiple messages, a large number of stimulating conditions can be obtained to prevent adaptation and enhance therapeutic efficiency.
- 6) High intensity of output, divided in 'high' and 'low' ranges, smooth adjustment, high stability and low power consumption.
- 7) Improved design of accessories, wires which provide very sturdy and convenient connection to needle, probe for electric stimulation, and optional accessories which expand its function to a powerful T.E.N.S device.
- 8) Professional design, portable and elegant.
- 9) Equipped with a battery low indicator. Yellow low battery lamp illuminates when battery power drops to about 5.1V. Replace battery when this indicator lights up.

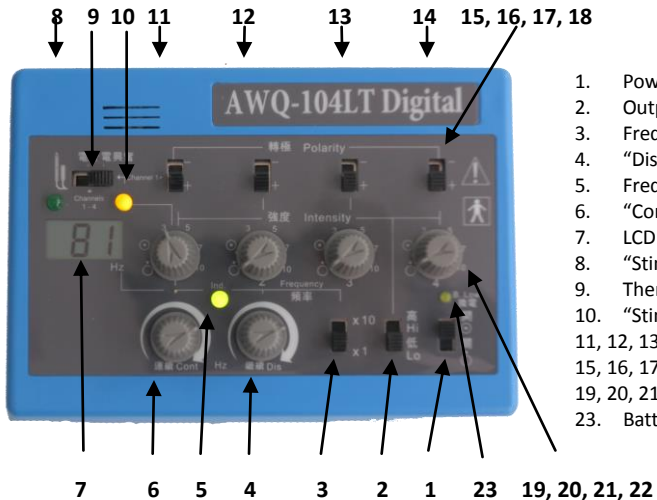
Battery Information:

Your device requires one 9V battery, use PP3, 6F22 or its equivalent type of battery. The battery is replaced by opening the battery door on the bottom side of the Device. Slide the battery door off, remove the old battery and insert the new one. Insert the battery correctly with the polarity according to the below diagrams (a, b, c) shown in the battery compartment label. Make sure the directions of the positive and negative poles of the battery inserted are correct and be sure you are using a fresh battery. Close the battery door. Battery life is 4 to 20 treatment hours depending on how high the current is set and how long each treatment session is. Many short treatment sessions give longer battery life than fewer longer sessions.



- To avoid battery leakage, remove the battery if the device will not be used for an extended period of time.

Indications and Controls.....



1. Power supply ON / OFF
2. Output Hi/Low switch
3. Frequency switch x1 x10
4. "Dist" frequency selection
5. Frequency indication
6. "Cont" frequency selection
7. LCD display
8. "Stim" socket
9. Therapeutic switch
10. "Stim" indicator
- 11, 12, 13, 14 Stimulating socket output
- 15, 16, 17, 18 Polarity change over switch
- 19, 20, 21, 22 Output intensity control
23. Battery low indicator

Operation of Controls:

The device consists of the following controls:

- ON/OFF switch - on the bottom right corner of the device.
- Hi/Lo switch - next to the ON/OFF switch, this switch is to select either a High range or Low range of intensity for the output channels.
- x1 x10 multiplier switch - next to the Hi/Lo switch, this switch is to select the frequency of the output in normal range of 1 ~ 100 Hz, or multiplies 10, i.e. 10 ~ 999 Hz. (Maximum).
- "Cont" and "Dis" (Hz) frequency controls - located at the lower middle part of the device. These two knobs control and select different waveforms and frequencies.
- 4 output channel control knobs located in the center of the device. These 4 knobs control the output intensities of channels 1, 2, 3, 4 respectively.
- 4 Polarity change-over switches located at the top of the device. These 4 switches change the polarity of individual output channels.
- Therapeutic switch- output channels 1,2,3,4 will function and deliver electric pulses

when adjusting the output control knobs when the switch is in the 'Channels 1-4' position. When the switch is in "Channel 1+" position, this output channel works as an electric stimulation output by connecting the stimulation probe to the device. The output intensity of this channel is controlled by the Channel 1 control knob.

On top of the On/Off switch is the battery low pilot lamp indicator (yellow in color). When this lights up, the voltage of the battery inside the device is too low to operate the device. Replace the battery with a new one and continue use.

There is a green pilot lamp indicator "Ind" between the two frequency switches. This indicator shows the frequencies of the device you have selected. When the frequency is low (under 3 Hz), the indicator flashes on for about one second and off for about 1 second. At higher cycles the flashing is much faster. That speed is still visible to the eye and is obviously flashing. At the high frequency settings of 30 Hz to 999 Hz, the light appears to be a solid light because it is flashing too fast for the eye to discriminate the flashes.

There is one pilot lamp indicator on the left upper corner of the device. This yellow LED is illuminated when the device is in the "Channel 1+" position.

A display is located under the Therapeutic switch. This is to show the frequency of stimulation during operation.

The display will show the frequency from 1 to 100 when setting is at "Channels 1-4" and "Channel 1+", with the multiplier switch at x1 position.

The display will show the frequency from 10 to 999 when setting is at " Channel 1+", with the multiplier switch at x10 position.

OUTPUT JACKS

There are 5 output jacks on the top front side of the device. The output jack on the left hand side marked 1+ is for the direct stimulation "Channel 1+" function. The Stimulation probe is inserted into this jack for electric stimulation (when in "Channel 1+" position). The rest of the 4 output jacks are channel outputs and are in use when the switch is set to the 'Channels 1-4' position. Each output channel is individually controlled by the intensity control knob aligned with the jack.

THERAPEUTIC SWITCH

When this switch is in the 'Channels 1-4' position, channel 1+ is disabled. LCD display will show working frequency at the desired setting. All other output channels 1-4 work normally and deliver an electric pulse.

When this switch is in "Channel 1+" setting, channel 1+ functions as a direct electric stimulation channel when the stimulation probe is inserted into this jack. LCD display will show the working frequency setting. All other output channels will be disabled during this function.

- 1) Push the "ON/OFF" switch in the "ON" position i.e. turn on the power.
- 2) Select the Therapeutic switch to "Channel 1+" by sliding the switch.
- 3) Select the desired "Hi/Lo" switch by sliding the switch.
- 4) Select the desired "X10/X1" switch by sliding the switch.
- 5) Select the desired Frequency mode by turning the frequency knobs.
- 6) Plug in the wires & connecting pads onto the skin/treatment part.
- 7) Lastly turn on the "Intensity" knobs slowly to do the treatment.

Please find a summary and explanation as follows:

| Channel | Middle Position ("Channels 1-4") | Right Position ("Channel 1+") |
|----------------|---|--|
| 1+ | No function, no output. LCD shows working frequency. | Output in Hi setting, Intensity is controlled by Channel 1. x1-x10, polarity switch is in function for Channel 1. LCD shows working frequency. |
| 1 | Output normal. Hi-Lo, x1-x10, polarity switches all in function. | No function, no output (disabled). |
| 2 | Output normal. Hi-Lo, x1-x10, polarity switches all in function. | No function, no output (disabled). |
| 3 | Output normal. Hi-Lo, x1-x10, polarity switches all in function. | No function, no output (disabled). |
| 4 | Output normal. Hi-Lo, x1-x10, polarity switches all in function. | No function, no output (disabled). |

Wave Form Pictures:

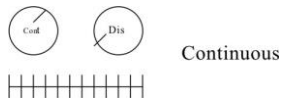
The adjustment of the stimulating wave forms and frequencies are controlled by:

Cont = fixed frequencies Dis = variable frequencies x1 x10 = multiplier

There are two positions on switch "x1" and "x10". The frequency of output impulse, can be adjusted within two different ranges, (0-100 Hz and 10-999 Hz). There are 3 different forms of combinations by using "Cont" and Dis".

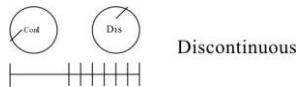
(1) When "Dis" is at 0 (fully counterclockwise), by adjustment "Cont", a continuous wave is obtained.

Figure A : continuous wave



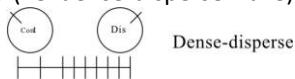
(2) When "Cont" is at 0 (fully counterclockwise), by adjusting "Dis", a discontinuous wave is obtained.

Figure B : discontinuous wave



(3) By adjusting "Cont" and "Dis", but keep "Cont"< "Dis", a composite wave of alternating frequencies "Cont" and "Dis" is obtained (i.e. dense-disperse wave).

Figure C : dense-disperse wave



LCD DIGITAL DISPLAY - FREQUENCY SETTING

The operating frequency of the device will be displayed on the LCD digital display when the Therapeutic Switch is set at the "Channel 1+" position, and by adjusting the "Cont" & "Dis" frequency knobs. The correct frequency reading will be displayed for about 2 seconds (sampling time) after the adjusting of the frequency knobs.

When "Cont" knob is adjusted, but keeping the "Dis" knob at zero (fully counterclockwise) position, the frequency will show a continuous pulse rate reading, such as 5..60..90..Hz etc.

When "Dis" knob is adjusted, but keeping the "Cont" knob at zero (fully counterclockwise) position, the frequency will show a discontinuous pulse rate reading, such as 5, 0.. 60, 0... or 90, 0...Hz etc.

When both "Cont" and "Dis" knobs are adjusted, the frequency will show a dense-disperse pulse rate reading, such as 5, 20... 30, 65... 50, 90... Hz etc.

Instructions For Use

Operation Instruction

To use the Simulation probe and Channel 1+:

Insert the Stimulation probe (with hand pole) in the "1+" socket. If point will be stimulated by the probe head, keep the probe head touching the located point, set Therapeutic Switch to "Channel 1+" position (the yellow LED pilot lamp will turn on at this position) and adjust the intensity knob of Channel No. 1. The preset waveform and frequency will be provided by the probe head. (figure E)

ELECTRIC STIMULATION

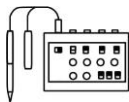



Figure E

To use Channels 1 through 4 to produce stimulating impulses:

1. Ensure battery is inserted correctly (see battery information). Turn on the device by switching the ON/OFF switch to "ON  " position and set the Therapeutic switch to the "Channels 1-4" position.

2. The adjustment of the stimulating wave forms and frequencies is controlled by the following knobs and switches :

Cont = fixed frequencies

Dis = variable frequencies

x1 x10 = multiplier

There are two positions on switch x1 and x10. The frequency of output impulse, x1 x10, which can be adjusted within two different ranges, (1-100 Hz and 10-999 Hz). There are 3 different forms of combinations by using Cont and Dis.

(1) When Dis at 0, by adjustment Cont continuous wave is obtained.

(2) When Cont is at 0, by adjusting Dis, a discontinuous wave is obtained.

(3) By adjusting Cont and Dis, but keeping Cont < Dis, a composite wave of alternating frequencies Cont and Dis is obtained (i.e. dense-disperse wave).

See figure A, B, C for the illustration of different wave forms. Select the desired wave forms and frequencies for treatment.

- (1) Set "intensity" knob to zero and switch to "Hi" or "Lo" position as required.
- (2) Insert connecting wires into 1, 2, 3 & 4 sockets and connect with pads
- (3) Set the desirable waveforms and frequencies with knobs Cont, Dis and x1/x10.
- (4) Adjust intensity to appropriate degree. The current of each output channel can be adjusted from 0 to 18mA r.m.s (when "Hi-Lo" at "Lo" position) or from 0 to 40 mA r.m.s. (when "Hi-Lo" at "Hi" position) using the knob labeled INTENSITY 1, 2, 3, 4 respectively. Rotating the knob clockwise will first turn on the output channel and then increase the current output. The "Hi" position is the high intensity range and the "Lo" position is the low intensity range.
- (5) Polarity of each channel can be reversed with "polarity" switch by switching to "-" or "+" position. When doing this, all output intensities should be turned down to zero first, in order to avoid a sudden increase of intensity to patient discomfort to change of polarity.

Accessories & Packing:

- | | |
|---|--------|
| 1. Output connecting wire | 4 pcs. |
| 2. Stimulation probe with hand grip electrode | 1 pc. |
| 3. 9V battery (PP3, 6F22 or its equivalent) | 1 pc. |
| 4. Instruction manual | 1 pc. |

The device and its accessories are packed in a carrying case

MAINTENANCE

Maintenance of the device is limited to cleaning the battery contacts and wire replacement.

The device operates on a 9 volt battery. When adequate stimulation can no longer be maintained, change the battery. Remove the old battery and replace it with a new battery.

The system will provide stimulation only if the battery is properly installed.

CLEANING

DO NOT IMMERSER THE DEVICE IN ANY CLEANING SOLUTION.

The device should be periodically wiped clean using a damp cloth and a solution of mild soap and water. Use of other cleaning solutions may damage the case.

The wires should be wiped clean with a cloth dampened with a mild soap solution and then wiped dry.

Technical Specifications:

| | |
|-----------------|--|
| Color | : Blue/White |
| Channel | : Four outputs |
| Output Channel | : 0~18 mA (low) r.m.s. (on 500 ohm load), adjustable 0~40 mA (high) r.m.s. (on 500 ohm load), adjustable |
| Pulse Rate | : X1 - 1 ~ 100 Hz adjustable X10 - 10 ~ 999 Hz adjustable |
| Pulse Width | : at X1 - 350 μ s at X10 - 40 μ s |
| Pulse Shape | : Biphasic Rectangular Wave |
| Digital Display | : Frequency at X1 setting shows 1~ 100Hz at X10 setting shows 10 ~ 999Hz (max) |
| Indicator Lamp | : Green lamp to show power and pulse rate speed for all channels, a yellow low battery lamp which is to illuminate when battery power drops to about 5.1 V. Another Yellow lamp on the left top corner of the device lights on when switch from "Channels 1-4" function to "Channel 1+" function, indicates that the channel is now worked as a stimulation channel. |
| Wave form | : Adjustable, dense-disperse, and intermittent |
| Polarity | : Changeable from positive to negative or vise versa |
| Power Source | : 9V battery, type PP3, 6F22 or its equivalent |
| Output Jack | : 5 output jacks |
| Dimensions | : 155 x 105 x 60 (mm) |
| Device Weight | : 330 gm (body only) |
| Accessories | : Stimulation probes and hand grip probe, 4 connecting wires alligator type, 1 pc. 9V battery (PP3, 6F22 or equivalent), 1 artificial leather carrying case, 1 instruction manual |
| Operation Temp. | : +16 $^{\circ}$ C to +40 $^{\circ}$ C or +61 $^{\circ}$ F to +104 $^{\circ}$ F |

ELECTRICAL SPECIFICATIONS ARE +-20% WITH 500 OHM LOADING.

TROUBLE SHOOTING

If your device seems to be functioning improperly, check the procedures shown below to determine what may be wrong.

If none of these measures correct the problem, the device should be serviced. Do not attempt to repair the device by yourself! Return the device to your local authorized dealer or to the manufacturer as listed in this manual for repair or service.

| | PROBLEM | PROBLEM | PROBLEM |
|----------|--|---------------------------------|---------------------------------|
| | Indicator lights up but device does not functioning properly. | Low battery lamp illuminates. | No indicators light up. |
| SOLUTION | a. Check control settings, are they set to values prescribed as desired. b. Check if frequency control is turned on (not too low, or at zero setting) d. Check connecting wire. Make sure all pads are firmly connected. e. Replace connecting wire with another to check for broken wires. | Replace battery with a new one. | Replace battery with a new one. |

1. Battery replacement - Battery should be replaced whenever sufficient stimulation cannot be maintained.
2. Care of Device - The device and connecting wires should be kept clean. The device should not be immersed in any liquid. Avoiding rough use will help prevent premature failure.

Storage and Transportation

Store the device in a dry location free from dust and contamination where the temperature remains fairly constant and within the range of -16°C to $+40^{\circ}\text{C}$ (3.2°F to 104°F).

Do not drop, mishandle, or expose to temperature or humidity extremes <outside the range of -16°C to $+40^{\circ}\text{C}$ (3.2°F to 104°F), 15-95% RH non-condensing>. Do not use if the device malfunctions or has been damaged in any manner.

Disposal: Please follow the local environment requirement when disposing of the device.

Limited Warranty

This warranty is in lieu of any other warranty expressed or implied:

This AWQ-104LT TENS is warranted to the initial purchase. (" purchases") and to no other person against any defects in material and workmanship for a period of one year from the date of purchase. If the device is found to be defective within the warranty period, it will be repaired or replaced if returned prepaid to an authorized service center. This warranty does not cover damage caused by rental, misuse, negligence, accident, abuse, alteration, or modification of the device. Repairs after the warranty period will be made and charged to the customers on the basis of rates which are available on request. Except for personal injury, no liability is held in either tort or contract for any loss or damage, direct, consequential, or incidental arising out of the use, misuse, or inability to use this product.

Serial No. _____
(located on the rear side of the device, next to the battery compartment door)

Date Purchased _____
Customer : Please record this information

Date of Manufacture : see device

Manufactured for : Lhasa OMS,
Weymouth, MA. USA
1-800-722-8775