



# SIS MACHINES

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## Woessner Malter Cyclic AMP Stimulator

### TECHNICAL OPERATING MANUAL\_v1.1\_WMAMP

This operating manual is downloadable from <http://www.siselectromed.com/>

**CAUTION:** Due to periodic revisions, always check that you are reading the most up to date version of this manual.

**Please read this manual carefully before using the SIS equipment.**

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## DELIVERY AND UNPACKING

Please unpack the shipping package carefully and inspect contents immediately on receipt. You must check that all ordered equipment is included in the shipping box and notify SIS Manufacturing Ltd New Zealand immediately of any missing items from your order. Visible damage or tampering to shipping boxes must be recorded before signing the delivery receipt. Please take photographs of any received damaged items. Report the damage or tampering immediately to the shipping carrier. You must notify SIS Manufacturing Ltd immediately of any received damaged or tampered items or of any lost shipments.



## WARNING FOR BIOLOGICAL APPLICATIONS

THE WMcAMP STIMULATOR IS ELECTRONICALLY CALIBRATED WITH EXTREME PRECISION FOR THERAPEUTIC BIOLOGICAL ELECTRO-STIMULATION ONLY IN COMBINATION WITH ELECTRODES APPROVED FOR BIOLOGICAL CONTACT AND MEDICAL/THERAPEUTIC APPLICATIONS. READ THE CONTRAINDICATIONS AND SAFETY INSTRUCTIONS IN THIS MANUAL.

## DEVICE DESCRIPTION

The WMcAMP Stimulator is designed to facilitate the production and utilization of Cyclic AMP (3',5'-cyclic adenosine monophosphate) cellular second messenger, including for research, laboratory and experimental purposes. See 13. MANUFACTURER'S DECLARATION.

## OPERATIONAL MODE

The operational mode of the WMcAMP Stimulator is factory set.

### 1. POWER SOURCE

The WMcAMP Stimulator is powered by replaceable AAA type batteries (not included with delivery for air shipping regulations reasons). Rechargeable batteries *can* be used and do not compromise its correct function.

 Do not use zinc-carbon batteries, which can leak and damage the device.

## 1.1. Inserting AAA Batteries

- a. POWER OFF the device if it is operating.
- b. Remove the shockproof silicon cover from the casing.
- c. Remove the battery compartment cover.
- d. Insert 3×AAA batteries. Ensure correct polarity of the batteries—follow the battery diagram and  $\oplus$   $\ominus$  polarity symbols inside the battery compartment.
- e. Replace the battery compartment cover.
- f. Replace the shockproof silicon cover over the casing.

## 2. CONTROLS

### 2.1 POWERING THE DEVICE ON AND OFF

Hold down the Push Button Rotary Knob continuously for 2 seconds to power the device on (display activates). Hold down the Push Button Rotary Knob continuously for 5 seconds to power the device off (display de-activates).

### 2.2. OPERATIONAL MODE PROGRAMMING

The operational mode of the WMcAMP Stimulator is factory set.

### 2.3. OUTPUT SETTING

The Push Button Rotary Knob also adjusts the Output Voltage:

- (1) Press and release twice.
- (2) Rotate clockwise to increase the Output Voltage; rotate anti-clockwise to decrease the Output Voltage. The Output Voltage is shown on the display in units of millivolts (mV).
- (3) Press and release once to program the selected Output Voltage setting.

If no user input is detected during any 20 second period during this selection procedure then the option to re-program the device is terminated and must be begun again from step 1.

## 3. APPLICATION INSTRUCTIONS

### 3.1. ELECTRODES

A pair of electrodes is needed; the electrodes are physically interchangeable.

Two types of electrode can be used with the WMcAMP Stimulator:

- SIS silver-nylon cloth electrode. The SIS electrode contributes lower circuit resistance than TENS electrodes, and is superior for signal transmission of the WMcAMP Stimulator. Keep the SIS electrode wet during its application.

Check that the SIS electrode does not become discolored (12-72 hours lifetime); replace if necessary.

- High quality, self-adhesive transcutaneous electrical nerve stimulation (TENS) electrode.

Check that the hydrogel layer of the electrode remains moist (sticky) with use; re-wet or replace if necessary.

### 3.2. SELECTING ELECTRODE SIZE

Use electrodes that most closely match the anatomical size, geometry and planar (cross-sectional) direction of treatment of the target anatomical structure or tissue.

If SIS silver-nylon electrodes are used:

**DO** cut the SIS electrodes to size and shape as necessary.

**DO NOT** cut the SIS electrode wire inside the SIS electrodes.

### 3.3. ELECTRODE POSITIONING PRINCIPLE

Figure 1 illustrates the chief principle of electrode positioning for the WMcAMP Stimulator, using the adductor longus tendon as an example. The ⊕Positive and ⊖Return Electrodes are positioned along the anatomical line of the tendon; the direction of treatment in relation to the target anatomical structure (tendon) is cross-sectional in the transverse-sagittal planes.

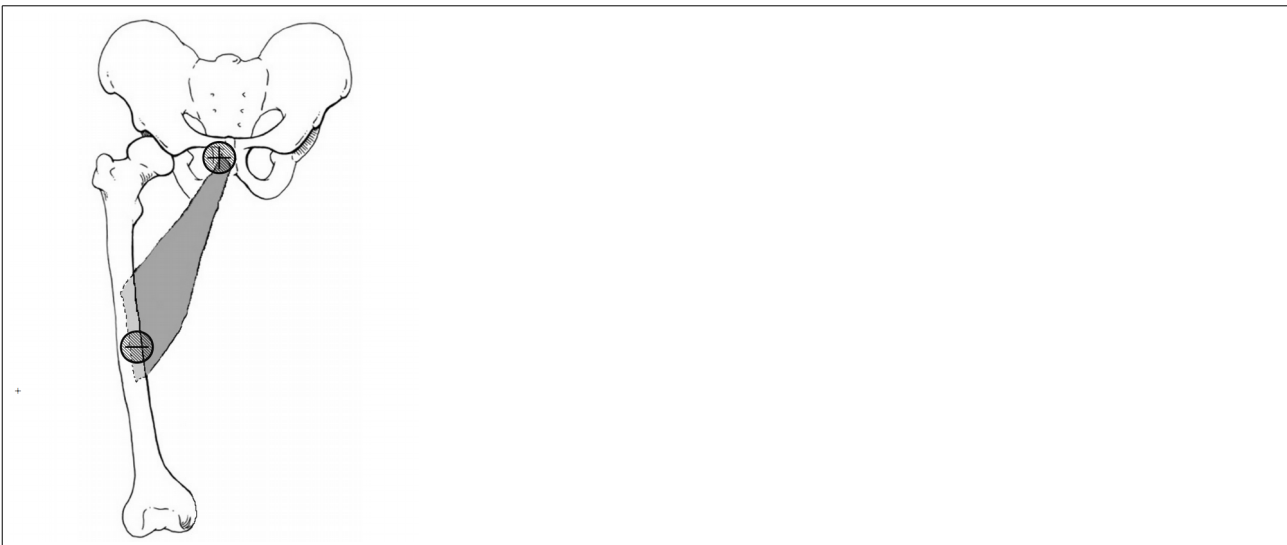


Figure 1: Anatomical planar cross-sectional treatment of the adductor longus tendon.

### 3.4. POSITIONING ELECTRODES

Depending on the chosen anatomical planar (cross-sectional) direction of treatment:

- a. Position the  $\oplus$ Positive Electrode onto intact skin directly over, across, or along the geometry/pathway of the target anatomical structure or tissue.
- b. Position the  $\ominus$ Return Electrode in relation to the  $\oplus$ Positive Electrode, onto intact skin on the anatomically opposite surface, across, or along the target anatomical structure or tissue.
  - Position the electrodes so that the target anatomical structure or tissue is aligned as much as possible between the center of the two electrodes.
  - If due to anatomical restrictions, both electrodes cannot be positioned close to the target anatomical structure or tissue, position the  $\oplus$ Positive Electrode closest to the target structure or tissue.

### 3.5. SECURING SIS ELECTRODES TO BODY

If SIS silver-nylon electrodes are used, use adhesive surgical or wound dressing tape (e.g. Fixomull®) and/or Velcro® or other stretch strap to affix or hold the SIS electrodes to the body. When securing an SIS electrode onto intact skin, extend the dressing tape beyond all edges of the electrode.

If self-adhesive TENS electrodes are used, apply directly to intact skin.

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## 3.6. CONNECTING ELECTRODE HARNESS (CABLE) TO WMcAMP STIMULATOR

Insert the harness connector plug into the WMcAMP Stimulator connection socket.

## 3.7. CONNECTING ELECTRODE HARNESS TO ELECTRODES

- The electrode that is connected to the **red** wire of the electrode harness is the  $\oplus$ Positive Electrode.
- The electrode that is connected to the **black** wire of the electrode harness is the  $\ominus$ Return Electrode.

Insert the two gold metal 'banana plugs' at the ends of the electrode harness into the two plastic connectors at the ends of the electrode wires; insert the 'banana plugs' all the way in until they are no longer visible.

NOTE: Do not tape the connections of the harness to the electrode wires.

## 4. DISPLAY

The user-programmed Output Voltage is displayed at all times.



Figure 2: Display shows Output Voltage in millivolts.

### 4.1 VISUAL ALERTS

<b>BATT</b>	<b>BAT</b> terries are low in charge; replace batteries.
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Table 1: Displayed WMcAMP Stimulator visual alert abbreviations.

## 5. SPECIFICATIONS

Parameter	Unit	Minimum	Typical	Maximum	Accuracy	Additional Notes
Input Battery Voltage	V	3.5	-	5	N/A	-
Output Voltage	V	0.05-0.25	-	2	±10mV	-
Input Current	mA	-	-	100	N/A	-
Output Current	mA	0	-	10	N/A	-
Internal Frequency	MHz			8		-
Operating Temperature Range	°C	-	-	-	N/A	-



## 6. CONTRAINDICATIONS AND SAFETY



**DO NOT** POSITION ELECTRODES OVER THE BRAIN. CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** POSITION ELECTRODES OVER THE HEART (CENTRAL AND LEFT SIDE OF CHEST). CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** POSITION ELECTRODES ON THE ABDOMEN IF THE SUBJECT IS PREGNANT OR MIGHT BE PREGNANT.

**DO NOT** POSITION ELECTRODES NEAR A PACEMAKER OR OTHER IMPLANTED ELECTRO-STIMULATOR. CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** POSITION ELECTRODES ACROSS THE EYES. CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** POSITION ELECTRODES ACROSS THE ANTERIOR NECK (CAROTID SINUS). CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** USE IF THERE IS A HISTORY OF SEIZURES. CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** USE IF THERE IS A SUSPECTED OF KNOWN SERIOUS INFECTIOUS DISEASE THAT REQUIRES HEAT OR FEVER TO BE SUPPRESSED. CONSULT WITH A SPECIALIST HEALTHCARE PROFESSIONAL BEFORE APPLICATION.

**DO NOT** EXPOSE THE WMcAMP STIMULATOR TO WATER. DISCONNECT ELECTRODES FROM HARNESS (CABLE) OR REMOVE FROM BODY WHEN ENTERING WATER.

**DISCONTINUE USE** IF SKIN IRRITATION OCCURS.

**FOR EXTERNAL USE ONLY.**

**KEEP AWAY FROM CHILDREN.**

## 7. MEDICAL DISCLAIMER

Information provided for education and research only. This manual contains general information about medical conditions and treatments. The information is not advice, and should not be treated as such. The information in this manual is made available on the basis that no professional advice on a particular matter is being provided, and should not be treated as such. No liability is accepted for any injury, loss or damage incurred by use of or reliance on the information provided in this manual. SIS Manufacturing Ltd New Zealand (NZ) makes no representations or warranties express or implied in relation to the medical information in this manual. Without prejudice to the generality of the foregoing statements, SIS Manufacturing Ltd NZ does not warrant that: The medical information contained within this manual will be constantly available, or available at all; nor that the medical information in this manual is complete, true, accurate, up-to-date, nor non-misleading. You must not rely on the information in this manual as an alternative to medical advice from your doctor or other professional healthcare provider. If you have any specific questions about any medical matter you should consult your doctor or other professional healthcare provider. If you think you may be suffering from any medical condition you should seek medical attention. You should never delay seeking medical advice, disregard medical advice, or discontinue medical treatment because of information in this manual. Nothing in this medical disclaimer will limit any of the liabilities of SIS Manufacturing Ltd NZ in any way that is not permitted under applicable law, or exclude any of its liabilities that may not be excluded under applicable law.

## 8. MAINTENANCE

### 8.1. DEVICE

The device is maintenance free. Only clean the external surfaces with a damp cloth. Do not use any kind of detergent or solvent. Avoid strong impacts on the device. Maintain the protective shockproof silicon cover on at all times during operation and storage. Avoid leaving the device exposed to direct strong sunlight without ventilation or air-conditioning. Do not leave on or next to heaters or other heat-emitting devices.

### 8.2. STORAGE

Remove the batteries from the device during long-term storage to prevent damage from battery leaks and to avoid very gradual draining of charge of the batteries.

Store the device in a dry place away from heat-generating sources.

## 9. WARRANTY

Each new SIS machine (“the Device”) carries a 3 year limited Warranty for defects in materials, components, assembly and operation of its electronic hardware. This Warranty is subject to all of the following exclusions and conditions. The Device enclosure is not opened except the battery compartment nor tampered with in any manner. No modifications or repairs are made to the Device other than by one of our engineers. No voltage or current source is applied to the harness connection socket or to anywhere else on the Device. No power supply other than specified in the operating manual is applied to the Device. For biological applications, the Device has not been used with non-SIS electrodes that are not approved for skin contact, therapeutic and medical applications. The Device is not used beyond its intended applications. You can experiment with the Device if you wish, but subject to all other Warranty conditions and exclusions and not in such a way that could reasonably be expected to damage the Device in any way as determined by our engineers. The casing (‘enclosure’) of the M200IP casing model was IP67 rated before minor manufacturing modification to receive the membrane keypad. The membrane keypad design and its seal to the casing has an anticipated IP65 performance (completely dustproof and waterproof to a 30kpa water jet). The M200IP model is therefore warranted for use up to the IP65 performance standard. The non-IP casing models (M100/M200/W200) must not be used in any manner that requires an IP rating above IP40 to protect them from ingress of dust or other sub-1mm particulate matter, or that requires protection from water or other liquids that can damage or interfere with the internal electronics of the Device. The SIS electrode harness (connecting cable) is included in this Warranty only for a period of three months, and only if it is not used in any way that contradicts the recommendations for use given in this operating manual. If a non-SIS electrode harness is used with the Device this warranty shall be void. This Warranty is expressly limited solely to the original purchaser of the SIS equipment and does not extend to any transferee or temporary user of the Device. This Warranty does not cover damage caused by improper connection of the components of the SIS equipment (harness, connectors, sockets, electrodes), damage caused by accident, abuse, misuse, neglect or improper maintenance, damage caused by unusual physical or electrical stress, routine cleaning or normal cosmetic and mechanical wear. Non-compliance to any degree with any one of these Warranty conditions shall automatically void this warranty completely. SIS Manufacturing Ltd New Zealand expressly disclaims all warranties not stated in this limited Warranty.

## 10. Returns

Each SIS machine unit is assembled and factory calibrated in Australia. In case of suspected malfunction of an SIS machine unit, please contact SIS Manufacturing Ltd, New Zealand. Contact details are available on the [siselectromed.com](http://siselectromed.com) website. Do not return any goods without obtaining prior approval and return instructions from SIS Manufacturing Ltd. Any SIS equipment delivered as a custom or special order cannot be returned. Any equipment that is returned due to ordering errors within 10 working days and in new condition will incur a 25% component restocking fee of the sale price. Please pack returned items securely to prevent damage during shipping. The Customer is responsible for paying return shipping expenses including sufficient insurance to cover original purchase prices. Please include your name, contact details and a full description of the faults you suspect or have experienced with the equipment. Please keep your proof of purchase.

If a device is found to be faulty, we will honor this Warranty as quickly and efficiently as we can and either repair or replace the defective device at our discretion. We will return to you a fully functional SIS machine that meets all of its design and functional specifications perfectly, as speedily as possible.

## 11. Disposal



In case of replacement of any SIS machine part due to repair, exchange or future upgrade, we will optimally recycle the SIS equipment.

## 12. MANUFACTURER'S DECLARATION

The device has not yet been tested for AS/NZS or international radiated emissions conformity.

The WMcAMP Stimulator is presently supplied for experimental and research purposes only.

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The specifications, descriptions and data within this document are subject to change without notice. This publication supersedes all previous publications on this subject.

The SIS machines, SIS electrodes and SIS technology are patent pending devices. The SIS machine logo and “SIS” letters are Registered Trade Marks.



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