



Microstim DB3

Supramaximal Nerve Stimulator

Product Application Details



Peripheral nerve stimulator designed for use during anaesthesia

- Easy to use
- Low cost
- Compact

The Microstim provides a means of assessing, on demand, the depth or degree of muscle relaxation achieved during anaesthesia.

What is the Microstim?

Muscle relaxants, often used with general anaesthetics during surgery, block neuromuscular transmission (the communication process whereby a nerve impulse produces muscle contractions), and therefore the sensation of feeling.

The Microstim is a peripheral nerve stimulator used to monitor this block by simulating a stimulus from the brain to the muscle.

Any resultant muscle contraction indicates the patient's level of paralysis, the anaesthetist can then evaluate the neuromuscular block (and therefore the sensation of feeling), and take appropriate action.

Where is the Microstim used?

The Microstim is typically used by Anaesthetists to monitor the patient's level of paralysis during surgery, in the operating theatre.

Why is the Microstim used?

The safe and rational use of powerful muscle relaxant drugs requires appropriate and objective monitoring. This can be assisted by the use of the Microstim.

Monitoring this blockade helps the anaesthetist:

- Use optimal doses of muscle relaxant and antidote
- Administer these drugs at the right time, e.g. identify when it is safe to administer the antidote
- Identify the type of drug in effect

How do you use the Microstim?

The monitoring site is chosen, usually the ulnar nerve at the wrist, and the response is felt or observed as a contraction of the thumb.

Two ECG electrodes are placed on the site either along the nerve or straddling it.

The leads are then connected and the intensity set to half scale using the dial on the top of the unit.

The anaesthetist will then decide on the most appropriate pattern of stimulation (Train of Four, Double Burst Stimulation, Post Tetanic Count, Continuous 1Hz) for the assessment required.

The response to the stimulus is felt or observed as a contraction of the thumb.

The intensity of the stimulation can be adapted using the intensity dial, as appropriate.

Stimulation Patterns of the Microstim

When a short current pulse electrically stimulates a peripheral motor nerve the response is seen as a contraction of the muscle or a twitch.

The Microstim delivers a constant current ensuring the desired current is actually delivered and therefore the muscle responses are comparable throughout the entire operation, even if skin resistance changes.

There are four settings available:

1. Train of Four (TOF)

Four single pulses at a frequency of 2Hz, at half second intervals.

Using this stimulation pattern, Fade is monitored by comparing the amplitude of the fourth with the first twitch. The TOF is commonly run repeatedly throughout an operation to provide a continuous assessment of moderate degrees of neuromuscular block in effect.

2. Double Burst Stimulation (DBS)

Consists of two short bursts of pulses with an interval of 0.75 seconds between bursts.

This stimulation pattern produces what appear to be only two twitch responses. The DBS detects Fade, by comparing the amplitude of the first and second response. Because this stimulation is more sensitive than a single twitch or a TOF it is typically used to assess the degree of recovery at the end of a case.

3. Post Tetanic Count (PTC)

Designed to quantify profound neuromuscular blockade when a very high proportion of receptors are blocked the TOF or DBS stimulation is completely aborted.

The PTC will deliver a sequence of pulses; 50 Hz for 5 seconds, a 3 second pause, followed by 1Hz stimuli. The degree of blockade is quantified by counting the number of facilitated 1Hz twitch responses. This stimulation is used in deep relaxation where there is no twitch response to TOF.

4. Continuous 1Hz (Single Twitch)

Consists of a single stimulus applied repetitively at a frequency of 1Hz.