TOF 3D

NEUROMUSCULAR MONITORING

From the creators of Watch*

HOMINUM SALUTI MEDICINAM EXERCENS ®

MIPM

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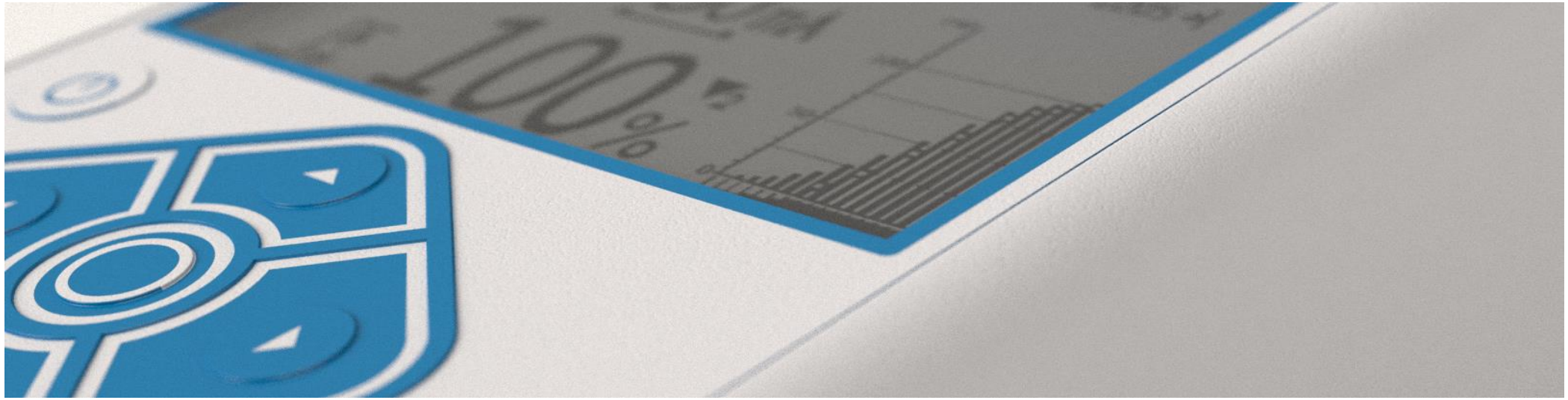
*TOF Watch is a registered trademark of Merck Sharp & Dohme B.V.

TOF3D – NEUROMUSCULAR MONITOR

RELIABLE – EASY TO USE – COST EFFICIENT

- Compact design
- Big clearly arranged 4,4” display
- Adjustable continuous measurement
- Calibration mode for precise results
- Various stimulation modes
  - TOF, PTC, TET, DBS, Single Twitch
- Connection to patient monitors



TOF3D – NEUROMUSCULAR MONITOR

THE ALLROUNDER FOR NEUROMUSCULAR MONITORING

- Tabletop use or mounted to an IV pole
- Battery powered – 1500 hours continuous operation
- Simple user interface
- Alarm management
  - Set alarm limits for TOF levels
- Operation via patient monitor
- Robust, reusable accessories
- Cost effective

TOF3D – NEUROMUSCULAR MONITOR

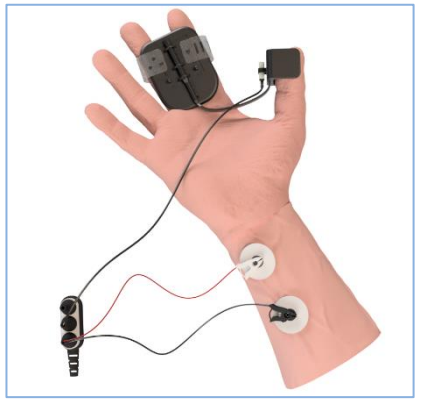
VARIOUS ACCESSORIES MAKE THE MONITOR SETUP EASIER – IT'S UP TO YOU!

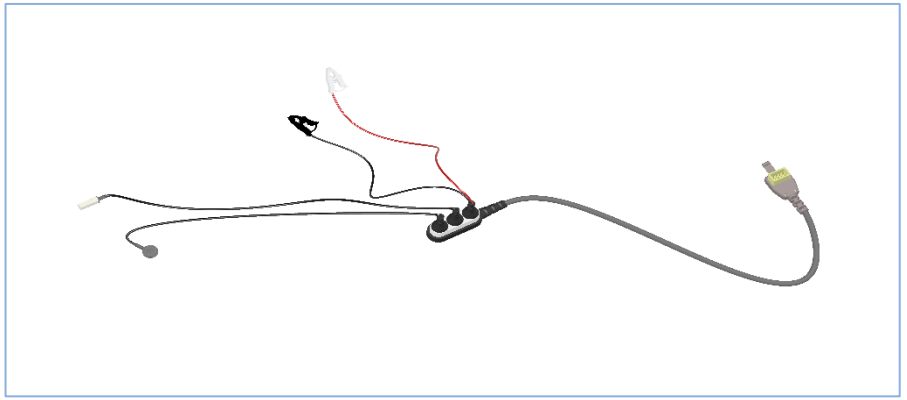
With TOF3D you are free to use the monitor according to your preferences.
Use the hand or thumb adapter or fix the acceleration sensor directly to the thumb.

There is no need for expensive disposables! Just use regular electrodes for the stimulation.

The sensors and cables can be separated from the main cable.
Even if one part breaks you don't need to replace the complete cable.

4 standard AA batteries give you up to 1.500 hours continuous stimulation.





TOF3D – NEUROMUSCULAR MONITOR

3 DIMENSIONAL ACCELERATION MEASUREMENT

Easier placement of the acceleration transducer due to 3D measurement.

Precise measurement even if the sensor is not aligned with the direction of movement.

Alternative sensor placement if the thumb is poorly accessible or the hand is tucked to the body.

TOF3D – NEUROMUSCULAR MONITOR

TECHNICAL SPECIFICATIONS

Device Dimensions	Height : 198 mm Width : 141 mm Depth : 65 mm
Display	Size: 4,4‘‘ – 90 x 67 mm Type: LCD Resolution: 240 x 320
Battery	Technology: Alkaline, NiCd/NiMH Type: 4 x 1,5V AA Operating Time: ≈ 1500 hours of constant TOF monitoring
Electrical Specification	Internally powered handheld device Continuous operation IPX3 Operating Voltage: 4 – 6 Volt Max. current: 330 mA Power consumption: max. 2,5 Watt
Stimulation	Waveform: Monophasic rectangular wave Pulse width: 200 µs or 300 µs Constant Current: 0 – 60 mA Load: 100 Ω – 5kΩ
Data Storage	Online Data dump: Yes Data storage in device: Yes Memory capacity: ≈ 45,000 records (e.g. 180 hours of TOF recording)

TOF3D - COMPETITORS

COMPETITORS WITH AMG TECHNOLOGY

StimPod - Xavant

TOFscan – idmed (Dräger)

TOF3D COMPETITORS

COMPETITORS WITH AMG TECHNOLOGY

- Both competitors offer all available stimulation modes.
- TOF 3D offers highest resolution display – better readability from greater distances.
- Battery Live! Assuming 5 hours surgery per day. TOF3D gives you almost one year of operation without battery change.
- TOF3D Alarm Management - Set Alarm Limits for upper and lower TOF Rates.

Competitors claim: No calibration needed.

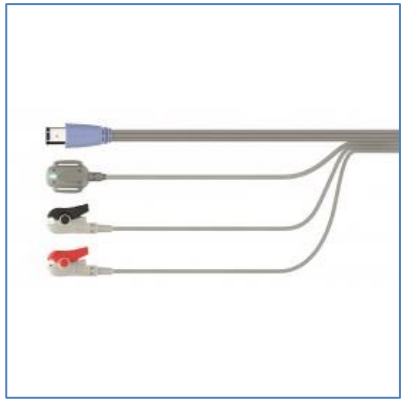
This is not true!

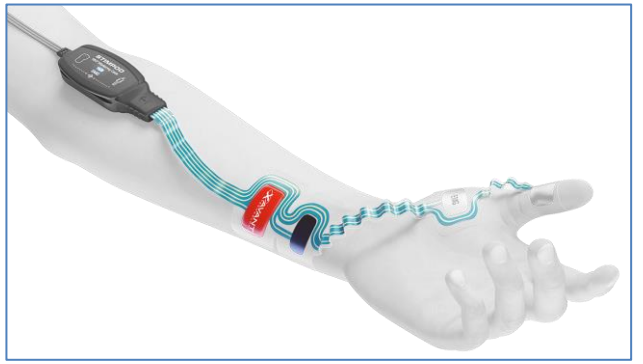
Modern sensors can compensate variations in the sensitivity (connected to acceleration sensor placement). However the major part of variations in measurement comes from the different patient responses (patient variation). To overcome the variation in patients' responses and ensure correct measurement TOF monitors should always be calibrated.

TOF3D COMPETITORS

STIMPOD - XAVANT

- Handheld device
- Complete stimulation part is manufactured in one cable. If one part brakes the complete cable needs to be replaced.
- Sensor can only be used at the thumb – not suitable for Eye stimulation
- Relatively small display.
- No trend display
- No hand adapter
- Integrated nerve mapping function
- Optional EMG function
    - BUT! Single use electrodes – Very expensive
    - EMG susceptible to RF noise





TOF3D COMPETITORS

TOFSCAN – IDMED (DRÄGER)

- Very small display.
- Rechargeable battery that can only be recharged in the device.
- Complete cable is made of one piece. If one part breaks the complete cable needs to be replaced.
- Different sensor for every measurement place
    - To measure at all potential places 3 sensors are required.

TOF3D COMPETITORS

COMPETITORS USING EMG

Tetragraph - Senzime

TwitchView – Blink DC

TOF3D COMPETITORS

EMG TECHNOLOGY VS. AMG TECHNOLOGY

EMG devices offer one big advantage compared to AMG based devices.

EMG technology does not depend on free moving muscles as they pick up the muscle's electric potential that is generated independent of the muscle's movements.

However EMG is linked to extremely high cost since the monitors can only be used with a special single use electrode.

A comparison between cost of AMG based monitoring and EMG based monitoring showed that using EMG increases cost for neuromuscular monitoring up to **2.000%** p.a. depending on the number of cases.

Moreover EMG is susceptive to RF noise coming from various devices used in the OR.

TOF3D COMPETITORS

AMG MODULES

- Some Monitor manufacturers have launched integrated NMT modules.

- Philips
- Nihon Kohden
- Dräger (external – connected to TOFscan)
- Mindray

- Typically the modules are very expensive and can only be connected to the top monitor models of the respective manufacturer.
- The modules only work in connection with the patient monitor.

TOF3D

NEUROMUSCULAR MONITOR

TOF3D – https://www.youtube.com/watch?v=0V2KcqHCG6M

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