

TOF3D 

NEUROMUSCULAR MONITORING

A new Era!



mipm.com

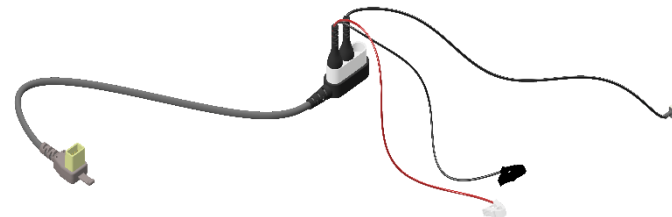
Product presentation_05/2025

TOF3D – NEUROMUSCULAR MONITOR

THE ALLROUNDER FOR NEUROMUSCULAR MONITORING



- + Two measurement methods
 - + AMG – Acceleromyography
 - + MMG – Mechanomyography



NEUROMUSCULAR MONITORING

METHODS – A QUICK REMINDER

Mechanomyography - MMG

- + Measures the muscle force (pressure sensor)
- + Preload of muscle is necessary
- + Mostly used for research and studies
- + Reference method for NMT monitoring
- + Considered as the research gold standard.
- + **NOW AVAILABLE FOR TOF3D!**

Electromyography – EMG

- + Measures the electric action potentials of the muscle
- + Digital signal processing
- + Provided a low noise level the signal quality and measurement results are close to MMG
- + Proper calibration is necessary
- + Susceptible to electric interferences, temperature and movement

Acceleromyography - AMG

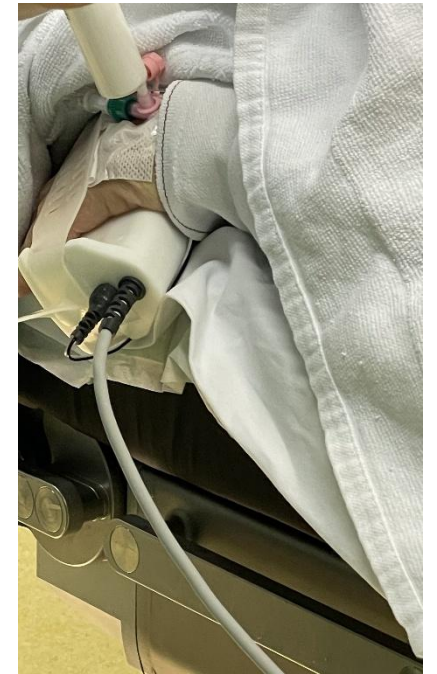
- + Measures acceleration of the muscle
- + 2. Newtons law: $F = m \times a$ (force = mass times acceleration)
- + Mass is constant – Force proportional to acceleration
- + Free movement of the respective muscle is necessary!
- + Precision is low if the hand setup is not correct.

NEUROMUSCULAR MONITORING

THE ALLROUNDER FOR NEUROMUSCULAR MONITORING

+ MMG Mode

- + The MMG adapter works even if the hands are tucked to the body or are covered with drapes.



TOF3D – NEUROMUSCULAR MONITOR - MMG

DIRECT MUSCLE FORCE MEASUREMENT

Easy application

The thumb is embedded in the measurement compartment.

No need for thumb movement. MMG determines the muscle force directly.

Use standard electrodes for the stimulation.

No cost for additional disposable accessories.



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 specific 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 susceptible to RF noise coming from various devices used in the OR.

TOF3D COMPETITORS

EMG vs. MMG

- + Both technologies show equally good measurement results.
- + TOF 3D  MMG Technology offers the same precision as EMG technology but without the problem of exploding cost.
 - + Reusable MMG Sensor
 - + Only standard electrodes for stimulation
- + EMG Technology = >25€ per case!
 - + Consider 10.000 anesthesia cases p.a.!



TOF3D COMPETITORS

EMG vs. MMG - A COST EXAMPLE

Forget about the cost of the monitor. It's the accessories driving the operating cost.

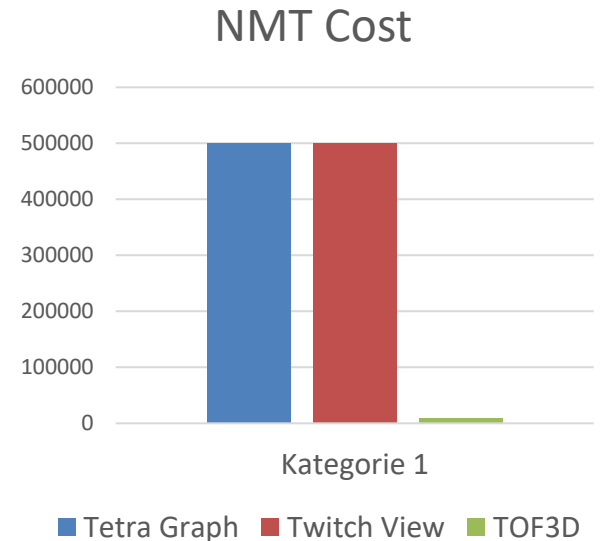
Consider:
20.000 anesthesia cases per year.

Customers will use expensive pads for stimulation – 0,25€ per pad.

+ Tetra Graph - Year 1
+ 25€ per disposable pad
+ Total cost for NMT monitoring: **500.000€**

+ Twitch View - Year 1
+ 25€ per disposable pad
+ Total cost for NMT monitoring: **500.000€**

+ TOF3D - Year 1
+ 0,50€ for disposable pads.
+ Total cost for NMT monitoring: **10.000€**



After **2** years the cost for **EMG** monitoring have accumulated to **1 MILLION €**. The cost for **MMG** monitoring accumulate to only **2%** of that amount.

In other words, **EMG** monitoring is **50 times more expensive** than **MMG** monitoring, giving the same result.

TOF3D


WHAT TO DO WITH EXISTING CUSTOMERS?

It is possible to upgrade existing monitors with the MMG function.

You will need the Updater cable (can be used for future software updates as well).

The update file is free of charge.

After the software upgrade has been completed the monitor will realize the MMG sensor.

5750123	Updater Cable TOF3D		300,00 €
---------	---------------------	---	----------

TOF3D

NEUROMUSCULAR MONITOR

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

If you have any further questions about our products or our company. Please contact us at mipm.com/en/product/tof-3d

Or ask your local MIPM sales partner – www.mipm.com/en/dealer-locator

