

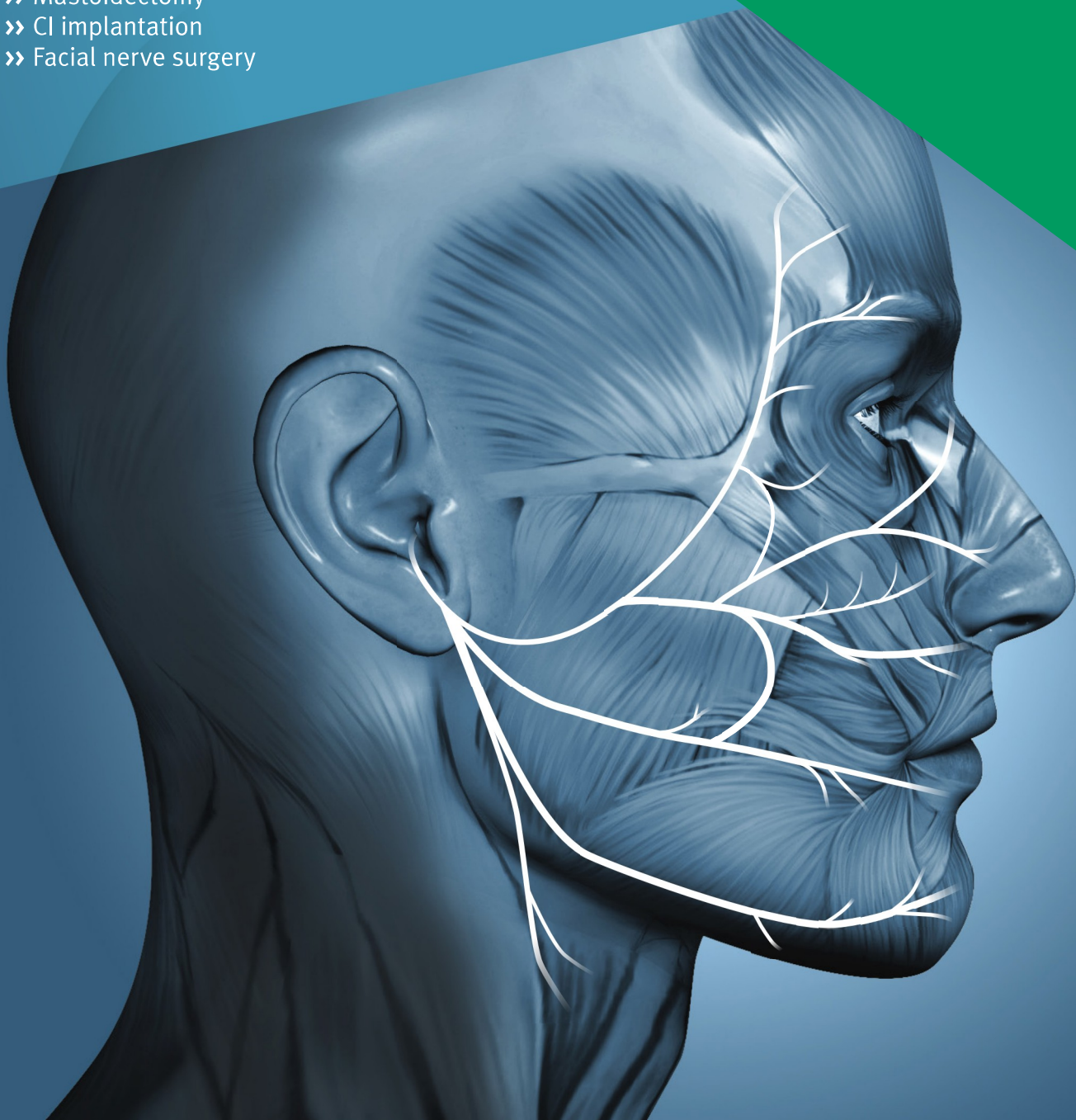
C2 NerveMonitor

APPLICATION FIELD

Ear, Nose and Throat surgery

- » Parotid surgery
- » Tympanoplasty
- » Mastoidectomy
- » CI implantation
- » Facial nerve surgery

Facial Nerve Monitoring



C2 NerveMonitor

Neuromonitoring in ENT surgery

In parotid surgery, iatrogenic injury can be significantly reduced by neuromonitoring

Otorhinolaryngological surgery is delicate, complex and highly precise, as for example in surgery of the parotid gland. Protection of the branches of the facial nerve, which pervade the parotid in a fan-like arrangement, presents a special challenge to surgeons.

For many years, intraoperative neuromonitoring (IONM) has been a well-established method to help surgeons to monitor and localise nerve fibres in the surgical area and control their function to increase patient safety.



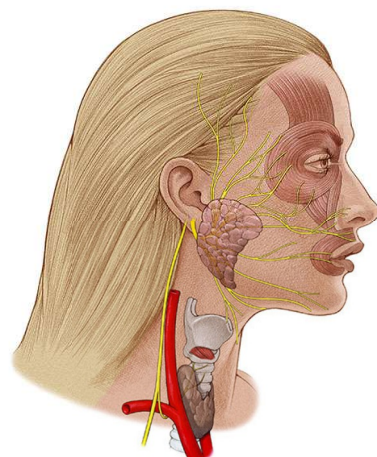
Saving Nerves – Minimising Risks

In parotid surgery, the facial nerve is at risk. Thanks to facial nerve monitoring, damage to the delicate nerve branches within the parotid and its immediate surroundings can be avoided.

Neuromonitoring is used in **two ways**:

- » Signals and spontaneous activities resulting from contact of the surgical instruments with the nerve branches and from mechanical manipulation of the nerves are displayed acoustically and visually.
- » Hand-held probes can be used for localisation and visualisation of individual nerve branches within the parotid. These instruments stimulate the nerves electrically. The resulting muscle contractions are reported visually and acoustically.

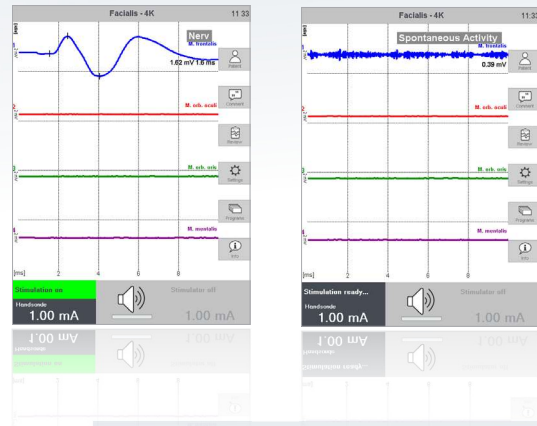
Where tympanoplasty is performed or a cochlear implant inserted, inomed's neuromonitoring is a useful tool that helps to prevent nerve injury during milling near the bony facial canal. During mastoidectomy procedures, neuromonitoring techniques are used to reduce the risk of nerve injury during milling in the vicinity of the bony facial canal.



Measurement mode

Using a hand-held stimulation probe, the nerve branches are localised during surgery, and their function is monitored throughout the procedure.

Bipolar probes are highly selective and can be used to monitor nerve branches and their function in the immediate vicinity, whereas monopolar probes have a wider field of action. For recording of electrophysiological signals, electrodes are placed in the corresponding indicator muscle. If there is any significant change in amplitude or latency of the muscle responses during the course of the surgery, the surgeon will be alerted visually and acoustically. Same in case of occurrence of spontaneous activity. Any detected spontaneous activity will be automatically recorded and can be annotated for documentation.



HL7-Ready



Network communication based on the **HL7 standard** for synchronization with the hospital management system.



or



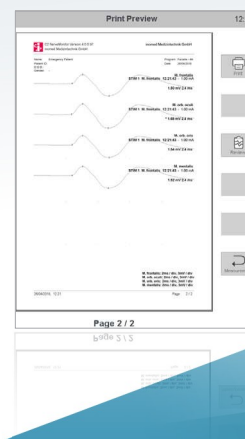
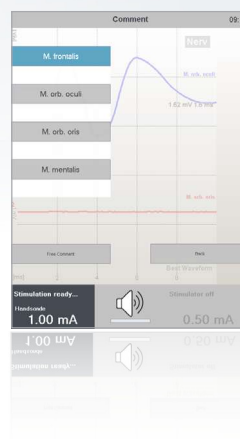
Channel Ident

Intuitive channel identification thanks to individual acoustic output.

The different channels can be clearly identified acoustically by their sound. The channel with the highest detected EMG amplitude is always the one to give acoustic signal. The user can freely choose whether the sounds are to be assigned to the channels from high to low or from low to high. The Channel Ident function is available for triggered EMG signals.

Documentation

Thanks to the intuitive comment function of the C2 software, all relevant events can be controlled at any time, also retrospectively.



ENT Accessories



Art. No. 508 240

C2 NerveMonitor 4-channel system

Art. No. 508 280

C2 NerveMonitor 8-channel system
for intraoperative nerve monitoring.
Easy to use EMG monitor with two
integrated stimulation channels,
including loudspeaker, footswitch
and mains lead.

Art. No. 540 425

EMG-Electrode mini box

4 channels with ground
1.5 mm touchproof connector
› Delivered non-sterile
› Non-autoclavable



Art. No. 510 025

Mute sensor

to suppress HF interference signals,
cable length 5 m
› Delivered non-sterile
› Disinfectable



› Stimulation

Art. No. 522 610

Micro Fork Probe straight

fork distance 2 mm,
fork length 3 mm,
1.5 mm touchproof connector,
work element length 45 mm,
cable length 3 m
› Single use
› ETO sterilised



Art. No. 522 603

BCS Probe,

bipolar concentric, angled 30°
1.5 mm touchproof connector,
work element length 45 mm,
cable length 3 m
› Single use
› ETO sterilised



Art. No. 525 603

Stimulation Probe, monopolar, angled 30°

active tip 2 mm,
with SDN counter electrode,
1.5 mm touchproof connector,
work element length 45 mm,
cable length 3 m
› Single use
› ETO sterilised



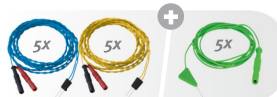
› Recording

2-channel set for 5 applications

Double Needle 2-channel set
with SDN Trigon electrode green,
5 electrodes each, blue/yellow
or blue/red,
1.5 mm touchproof connector,
needle length 12 mm
needle distance 2.5 mm
› Single use
› ETO sterilised

Art. No. 534 641

electrodes blue/yellow



Art. No. 534 671

electrodes blue/red



4-channel set for 4 applications

Double Needle 4-channel set
with SDN Trigon electrode green,
4 electrodes each blue, yellow, grey,
violet
1.5 mm touchproof connector,
needle length 12 mm
needle distance 2.5 mm
› Single use
› ETO sterilised

Art. No. 534 643

electrodes blue, yellow, grey, violet



Pioneer and partner
in neuromonitoring



Intraoperative Neuromonitoring
Functional Neurosurgery
Pain Treatment
Neurological Diagnostics

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ALM

inomed

C2 NerveMonitor

APPLICATION FIELD

Thyroid surgery

ALM

ADVANCED LARYNGEAL MONITORING



8
CONTACT RECORDING



C2 NerveMonitor

Neuromonitoring in Thyroid surgery

ULTIMATE RELIABILITY IN RECURRENT LARYNGEAL NERVE MONITORING

Advanced Laryngeal Monitoring

Smart technology for a new dynamic
monitoring in thyroid surgery

Combining the synergistic effects of individual key technologies, the unique **ALM technology** provides the highest reliable complete solution for RLN monitoring.

With 8 long measuring contacts, instead of the conventional 2 or 4 contacts, the **ALM tube** offers optimal signal recording of the M. vocalis. The 360° surface sensor coverage ensures ultimate signal stability, independent from tube rotation. The innovative and user-friendly **Channel Select Software** always selects and displays the strongest signal precisely. All signals are displayed acoustically and visually via the **C2 NerveMonitor**. The C2 NerveMonitor is known as a smart specialist for various surgical applications, and is the result of inomed's several years of experience and intensive research in the field of intraoperative neuromonitoring. Especially developed for use in thyroid surgery, it offers ultimate reliability and best signal quality in RLN monitoring.

These pioneering key technologies build an intelligent end-to-end solution for an innovative and seamless monitoring procedure.

Together with more than 25 years of expertise, ALM represents the most innovative cutting-edge technology in thyroid surgery to date.

NEUROMONITORING

Recommended by guidelines

Neuromonitoring is expressly recommended for redo-operation in thyroid surgery by the German Society for General and Visceral Surgery – German Association of Endocrine Surgeons.¹ Therefore, documenting the monitoring process and implementing it as rapidly and intuitively as possible are of critical importance in thyroid surgery.

The C2 NerveMonitor offers a barcode scanner to quickly read patient data, effortless integration of data into the patient management system, and many other possibilities for straightforward and fast reporting. The documentation process is supported by an integrated database, on which all measurement and patient data is stored on a long-term basis. The data can be subsequently recalled at any time.

¹ Deutsche Gesellschaft für Allgemein- und Viszeralchirurgie e.V. (DGAV), Leitlinie Operative Therapie benigner Schilddrüsenerkrankungen, Oktober 2015



› RECORDING



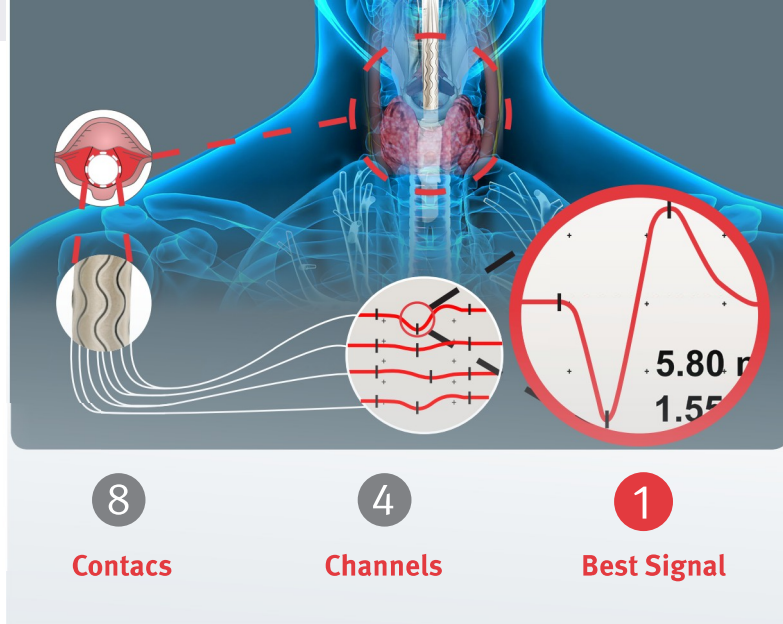
ALM Tube

- › **Multifunctional combination** of a clear PVC ET tube and a surface electrode delivers the best possible EMG signal recording from the vocal cords.
- › **Easy placement** of the recording electrode at the vocal cords is supported by an extended length of the sensor pads
- › **Ultimate signal stability** resulting from 360° surface sensor coverage with 8 long electrode contacts, even if the tube is rotated or shifted vertically
- › **Clearly visible blue inflation line and pilot balloon** to prevent accidental cutting
- › **Standard sized latex and DEHP free tube**
- › **Low profile surface and smooth bevelled tube tip** to avoid trachea injuries
- › **Simple connection to monitoring system**, thanks to a single connector
- › **Multiple depth markers**
- › **Cylindrical high volume, low pressure cuff**



Laryngeal Electrode Select

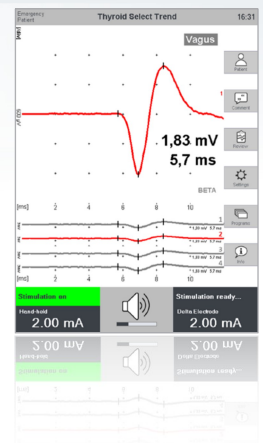
- › **Reliable signal recording** resulting from the **360 degree** sensor surface with 8 electrode contacts
- › **Signal stability** due to multiple channel recording and the automatic signal selection by the Select Software
- › **Extended recording surface** allows easy placement at the vocal cords
- › **Extraordinary value for money**
- › Can be used **universally** on all PVC tubes



› SYSTEM

Channel Select

- › **Reliable detection** of muscle responses even under poor signal conditions
- › **Automatic selection** of the optimal trace from the four recording channels of the Laryngeal Electrode Select



HL7-Ready



- › Network communication based on the **HL7 standard** for synchronization with the hospital management system

ALM Technology



Smart trend function

Continuous recurrent laryngeal nerve monitoring made simple. Trend and alarm functions help to **detect nerve irritations** and early signs of possible nerve impairment. The new nerve detection sound technology provides intuitive feedback for hand-guided stimulation and vagus monitoring. Vagus nerve monitoring may be performed during bipolar electrocautery without artifact sounds.

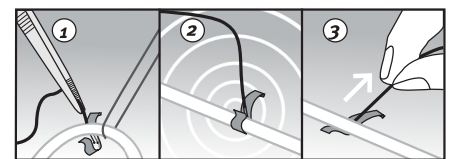
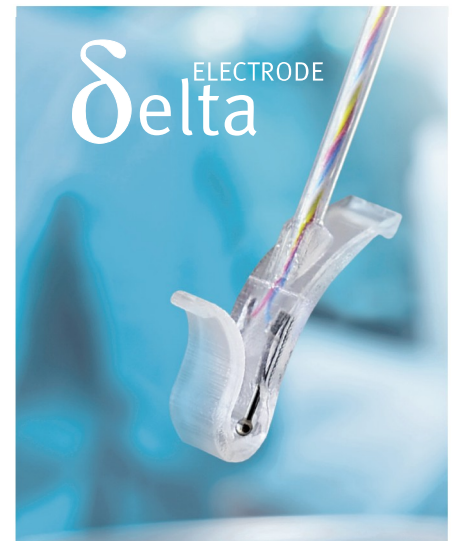
Up to three alarm thresholds for amplitude and latency can be individually set up in the trend settings. If the limits are exceeded, the user will be notified about the signal changes visually and acoustically. The threshold values can be configured individually with relative or absolute values.



» STIMULATION

delta electrode

- » **Easy positioning** on the vagus nerve
- » **Simple and secure application** on the vagus nerve ensures good contact resulting in a stable signal for continuous monitoring
- » **Easy removal from the vagus nerve** thanks to an optimized shape and elasticity of the electrode body

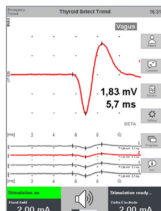


Features at a glance

8 contact **Laryngeal Electrode Select** for EMG signal recording at the vocal cords.

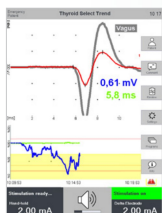


ALM Tube for ultimate signal stability – 8 recording contacts and automatic selection of the optimal channel due to the C2 NerveMonitor.



The C2 NerveMonitor with its **Channel Select Software** – acquires, selects and displays the optimum muscle signal.

Stable and reliable continuous vagus monitoring thanks to the specially designed **delta Electrode** from inomed.

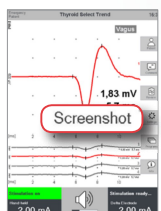
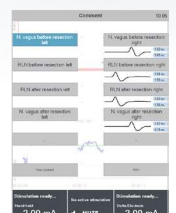


Smart trend software feature including free configurable alarm thresholds for continuous vagus monitoring.



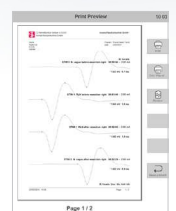
All stimulation responses are automatically stored on a long-term basis. Waveforms can be selected for the report during use via the intelligent **comment function** of the C2 NerveMonitor.

For the comment allocation, comments that have already been set are displayed in an intuitive manner.



The **Screenshot function** allows easy and quick creation of screenshots.

Following the surgery, a **patient report** can be created to be filed in the patient record at the press of a button. Reports can be generated with or without a trend graph.



ALM Accessories

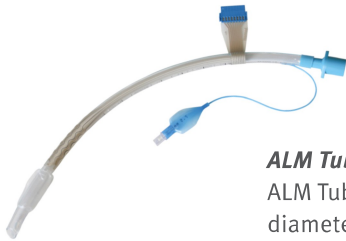
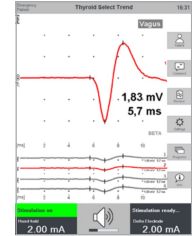


Art. No. **508 240**
C2 NerveMonitor 4-channel-system

Art. No. **508 280**
C2 NerveMonitor 8-channel system
for intraoperative nerve monitoring.
Easy to use EMG monitor with two
integrated stimulation channels,
including loudspeaker, footswitch
and mains lead

Art. No. **508 510**
Channel Select Software
Module for C2

for automatic selection and
display of the optimal trace
for the C2 EMG software,
applicable for C2 software
version 1.4.0



ALM Tube
ALM Tube with a variety of inner
diameters for EMG recording,
4 channels with ground electrode,
clear PVC tube, Murphy type, latex free
› single-use
› ETO sterilised

Art. No. **530 845**
ALM Tube inner diameter of 7 mm

Art. No. **530 846**
ALM Tube inner diameter of 7.5 mm

Art. No. **530 847**
ALM Tube inner diameter of 8 mm



Art. No. **522 620**
delta Electrode
for continuous vagus monitoring
in thyroid surgery
› single-use
› ETO sterilised



Art. No. **530 855 / 530 856**
Laryngeal Electrode Select,
4 channel, small / large
for endotracheal tubes with
inner diameter of 6-7 mm / 7-9 mm
› single-use
› ETO sterilised



Pioneer und Partner
in neuromonitoring



Intraoperative Neuromonitoring
Functional Neurosurgery
Pain Treatment
Neurological Diagnostics

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