

# Neuro 2 Sound Processor Product Information

## Neuro 2 – Where sound meets design

*The Neuro 2 sound processor combines design excellence with ease of use and premium sound quality. Designed with attention to detail, Neuro 2 provides quality and reliability for patients regardless of age and lifestyle. Sound quality is secured with a strong focus on supporting the way the brain works and to reduce listening effort. Supporting BrainHearing™, Neuro 2 is designed for a life of learning, interaction and active participation.*



### Design excellence

Neuro 2 is the smallest Behind-The-Ear sound processor ever, and just as important, it's slim over the ear where it matters most. Its smooth organic shape and design-integrated features show the attention to detail that has gone into its design. Its carefully-crafted features combine high quality engineering with a full focus on sound quality and usability.

### Easy to use and rely on

IP68 water and dust protection, retention options, rechargeable batteries, full connectivity and Swim kit\* give users of all ages the freedom to live their lives to the full. The voice-activated 'How are you?' self-check makes it easy to check that Neuro 2 is working correctly.

### Red Dot award winner

Neuro 2, with its unique design and function combined with its outstanding BrainHearing™ sound processing concepts, has been awarded the Red Dot Design Concept Award, a seal of distinction that acknowledges the quality innovation of Neuro 2 on the international stage.



reddot award 2017  
winner



### BrainHearing™

Built on the Inium Sense processing platform, Neuro 2 is designed to give the clearest, most intelligible speech signal in all listening situations – supporting the brain to make sense of sound and reduce listening effort. Neuro 2 uses Coordinated Adaptive Processing to dynamically deliver the perfect balance between its different sound processing technologies, and the unique Voice Guard post-processing compression system designed to preserve 95% of speech.

### Bimodal

Hearing with both ears is important for sound quality, spatial perception and speech understanding. Using an Oticon Dynamo or Oticon Sensei SP hearing aid together with Neuro 2 secures a balanced hearing based on the same Inium Sense chip platform and environment detection logic. They also share the same set of wireless accessories for easy control and audio streaming.



### Product features

- BrainHearing™
- Inium Sense chip platform
- Coordinated Adaptive Processing (CAP)
- Free Focus directionality
- Voice Guard speech enhancement
- Voice Track noise reduction
- Wind Noise Reduction
- IP68 water and dust protection
- Tamper-proof
- Low power nEARlink\* wireless technology – Oticon Medical Streamer XM and ConnectLine accessories compatible
- Disposable batteries: 2 x 675 Zn-Air
- Rechargeable batteries options: 120 mAh & 200 mAh
- Built-in telecoil
- Retention options
- Wearing options
- Decor options
- Protection options

### Product variants\*

- Neuro 2 (Zti) – compatible with Neuro Zti implant
- Neuro 2 (SP) – compatible with Digisonic SP implant

### Fitting

- Genie Medical CI
- CI-Link

\* Related to an upcoming product release. Availability subject to CE marking, local registration and commercial availability.

# Product Overview

## COLOURS AND DECORS

The Neuro 2 sound processor, antenna and magnets all come in 10 matching colours:



Pure White – C098



Silver – C044



Silver Grey – C091



Steel Grey – C092



Diamond Black – C063



Chroma Beige – C090



Terracotta – C094



Chestnut Brown – C093



Power Pink – C057



Aquamarine – C058

## Décor Kits\*

Decorate the Neuro 2 sound processor and antenna for fun or to match your style.



## Magnet caps\*

Protective magnet cap for decorating the antenna with stickers or own creations.



## Stickers\*

Fun stickers for kids.



## COMFORT

### Magnet strengths

- 0.5, 1, 2, 3, 4, 5, 6, 8, 10
- Tool-free removal



### Hooks

Hooks for adults and children



\* Related to an upcoming product release. Availability subject to CE marking, local registration and commercial availability.

# Product Overview

## Antennas, available in 3 types\* according to implant type and skin thickness

- Neuro 2 (Zti)
  - Zti LD (Long Distance): for most skin thicknesses
  - Zti SD (Short Distance): for thin skin
- Neuro 2 (SP)
  - SP: covers all skin thicknesses



## Antenna cable, available in 3 lengths and in 3 colours

- 60 mm, 100 mm, 280 mm



## USABILITY



- Filter-free microphone protection
- Dual push button fully configurable for volume, program, mute etc.
- Light indicator in 3 colours for clear indications to user, parents and care givers
- Implant pairing protects from using the sound processor on the wrong ear
- Left/right indication by a push of a button
- “How are you?” voice-activated system check
- Smart start-up in last used program for easier adaptation
- Program-lock preventing children from changing program
- Auto-off conserves power when not in use

## Powering options



Li-Ion battery charger



Li-Ion 200 mAh    Zn-Air 2 x 675    Li-Ion 120 mAh

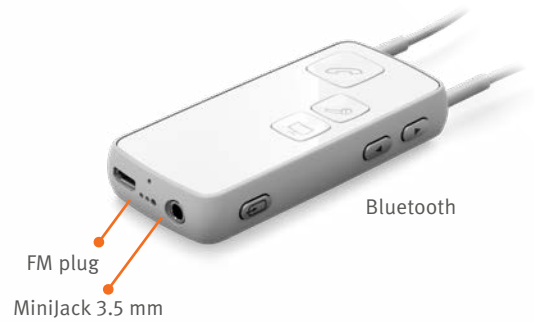
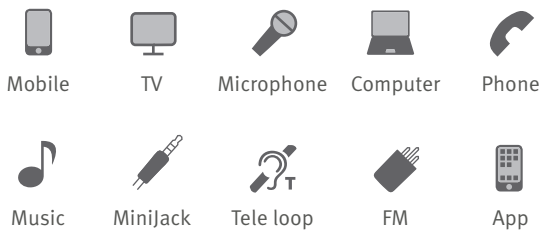
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# Product Overview

## WIRELESS

**Oticon Medical Streamer XM\***: Neuro 2 (Zti) integrates low power nEARlink\* technology making it compatible with the Oticon Medical Streamer XM. The streamer acts as a remote control of the Neuro 2 processor and allows access to the whole range of Oticon ConnectLine accessories, 2.4 GHz Bluetooth-enabled devices and FM receivers:

Use your Oticon Medical Streamer XM\* with:



## Built-in Telecoil

Neuro 2 (Zti) and Neuro 2 (SP) are both compatible with tele loop systems including Bluetooth-enabled devices offering alternative wireless connections to smartphones, TV and music.

## RETENTION – WEARING – PROTECTION

**Ear plug retention\*** helps securing the sound processor on the ear without the need for a custom mould. Comes with 4 soft ear pieces to match individual anatomy



**Clip\*** for wearing Neuro 2 on the clothes – for sports activities and kids playing



**Safety Line\*** preventing drop and loss of one or two Neuro 2s or hearing aids



**Thin Safety Line\***



**Swim Kit\*** provides full water protection for playing and swimming



\* Related to an upcoming product release. Availability subject to CE marking, local registration and commercial availability.

# Product Overview

## RELIABILITY

### The difference is in the details

The highest level of craftsmanship has gone into each and every detail of Neuro 2. It is designed to be thin and small but at the same time as robust and reliable as possible.



The highest classification against water and dust a securing peace of mind throughout the day

- Hand-sealed electronic components
- Fully hydrophobic coated interior and exterior
- Mechanical barriers (capillary barriers)
- Silicone rings



Ultra-thin enforced\*\* antenna cable  
Just pull and feel the robustness



Neuro sound processors undergo over 50 different reliability tests



Water resistance  
– 1 metre for 30 min.



Drop test – 2 m



Sweat, moisture and  
humidity test



Extreme temperatures  
– from -40°C to +85°C



Antenna cable pull  
– 35 N (3.5 kg)

## NEURO ZTI IMPLANT TECHNOLOGY

Neuro 2 is compatible with the latest generation of Neuro implants and is characterised by:

- Ultra-compact design\*
- Low-trauma fixation system\*
- Future-ready technology
- MRI peace of mind\*
- Proven atraumatic electrode arrays
- Focused stimulation



For further information, refer to the separate Product Information for Neuro Zti



\* Indicates an Oticon Medical unique technology or accessory in the CI industry at the time of this publication

\*\* The antenna cable is enforced with Aramid fibre (Technora™ – a next generation ‘Kevlar™’), a proven, highly resistant material commonly used in bulletproof jackets.

# Technical Information

## SOUND PROCESSING TECHNOLOGIES

**Coordinated Adaptive Processing** automatically delivers the perfect balance of the different sound processing technologies that support BrainHearing™. Whatever the environment, Neuro 2 draws on the technology needed in that situation to enhance listening and speech understanding.



### Free Focus – Directionality

Multi-band adaptive directionality comprising Surround, Split and Full directionality modes. Automatically zooms in on nearby voices with Auto (Tri-mode) and Auto (Dual-mode). The Speech Omni Surround mode enhances high frequency speech cues for an easier and less effortful perception of speech in quiet and low noise environments where users typically spend most time.

### Voice Guard – Speech enhancement

Unique multi-band adaptive post-processing compression system that prevents the distortions produced by conventional input AGCs (Automatic Gain Controls). Voice Guard dynamically adapts compression knee-points to preserve 95% of speech to maximise access to speech cues and to reduce listening effort. Soft voices are kept audible and loud voices comfortable.

### Voice Track – Noise reduction

Voice Track is a fast-reacting 64-band spectral noise reduction system designed to preserve speech details. Shields against unwanted noise to make conversations easier and listening more comfortable.

### Wind Noise Reduction

Automatically reduces wind noise to protect speech audibility outdoors.

### Clinical evidence supports

#### BrainHearing™

Studies\*\* indicate excellent speech understanding in both optimal and difficult listening situations, even for users with a long period of hearing deprivation.

## FITTING NEURO 2 – GENIE MEDICAL CI

Neuro 2 sound processors are fitted using Genie Medical CI fitting software.

Genie Medical CI is designed together with professionals to provide fitting efficiency for audiologists in the clinic and operating room through industry unique audiological fitting tools and automated objective measurements.



### Main fitting features

- Side by side bilateral fitting views
- Frequency-related thresholds display\*
- Direct, Smooth and Audiometric thresholds adjustments\*
- Thresholds adjustments based on acoustic frequencies selection\*
- Single tone, Sweep, and Live stimulation modes
- Sound level\*, stimulation and power consumption monitoring
- Stimulation pulse shaping with preserved stimulus levels
- Automated objective measures, including Impedance & Neuro ECAP 2.0
- Activity Analyser (data logging)
- MAP and session notes
- Progressive maps
- Special listening programs
- Session summary view & reporting
- Windows 7, 8 and 10 compatible
- CI-Link – high speed all-in-one programming interface
- Lockable programming adaptors



\*Indicates an Oticon Medical unique technology or accessory in the CI industry at the time of this publication

\*\* Monocentric data collection performed at the MHH Hannover Medical School in Germany in 2016 by A. Buchner et al.

Neuro 2 Specifications	
Size & weight	Maximum dimensions (height): 52.4 mm Weight with Zinc Air batteries: 10.3 g Weight with 120mAh Li-Ion battery: 9.1 g Weight with 200mAh Li-Ion battery: 11.7 g
Operating temperature	5°C to 40°C
Storage temperature	-30°C to 60°C
User interfaces	
Dual Push Button	Configurable for Program control (up to 4 programs), Volume control, Mute, Side indication, On/Off
Indicator lights	Configurable 3 colour LED for program selection, volume adjustment, battery status, boot, voice-activated self-check, implant connection, side indication, stimulation
Beeps	Configurable indications via electrode stimulation for program selection, volume adjustment, battery status and boot
Audio Inputs	
Telecoil	Built-in
nEARlink*	Supports Oticon Medical Streamer XM and ConnectLine Accessories
FM	Connects to Oticon Medical Streamer XM
Bluetooth	1. Using built-in nEARlink with Oticon Medical Streamer XM 2. Using built-in Telecoil with 3rd party systems
Microphones	
Microphones	2
Directionality	FreeFocus: Automatic Adaptive Directionality
Input Dynamic Range	83 dB
Input/output characteristics	
Sound capture	19-115 dB SPL (97 dB)/18 bits resolution
Input Frequency Range	Up to 7,937.5 Hz
Effective input sampling rate	16,667 Hz – 3 audio inputs with up to 2 parallel input sources
Stimulation Rate	47,500 pps – Software limited to 1000 Hz per channel
Stimulation method	Focused stimulation: duration modulated pseudo-monophasic electrical pulses with passive discharge
Sound processing	
Gain Control	Voice Guard adaptive multi-band post-processing compression
Coding Strategies	CRYSTALIS <sup>CAP</sup> , CRYSTALIS <sup>XDP</sup> , MPIS <sup>CAP</sup> , MPIS <sup>XDP</sup>
Noise Reduction	Voice Track, Wind Noise Reduction
Speech Enhancement	Voice Guard, Free Focus with Speech Omni
Diagnostic Tools	
Self-check	Voice-activated ‘How Are you?’ self-check plus boot and implant connection checks
Impedance	Checks system integrity and electrode-tissue contact
Neuro ECAP 2.0	Checks for ECAP neural response and threshold
Stapedius reflex	Checks for loud sound stapedius muscle trigger thresholds
Power options	
Zinc Air	Typically more than 3 full days
Rechargeable, 120 mAh Li-Ion	Full day at work or school
Rechargeable, 200 mAh Li-Ion	Typically 2 full days

\*Neuro 2 (Zti) only. Related to an upcoming product release. Availability subject to CE marking, local registration and commercial availability.


## Because sound matters

Oticon Medical is a global company in implantable hearing solutions, dedicated to bringing the magical world of sound to people at every stage of life. As part of the Demant group, a global leader in hearing healthcare with 14,500 people in over 130 countries, we have access to one of the world's strongest research and development teams, the latest technological advances and insights into hearing care.

Our competencies span more than a century of innovations in sound processing and decades of pioneering experience in hearing implant technology. We work collaboratively with patients, physicians and hearing care professionals to ensure that every solution we create is designed with users' needs in mind. We share an unwavering commitment to provide innovative solutions and support that enhance quality of life for people wherever life may take them. Because we know how much sound matters.



### Oticon Medical

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