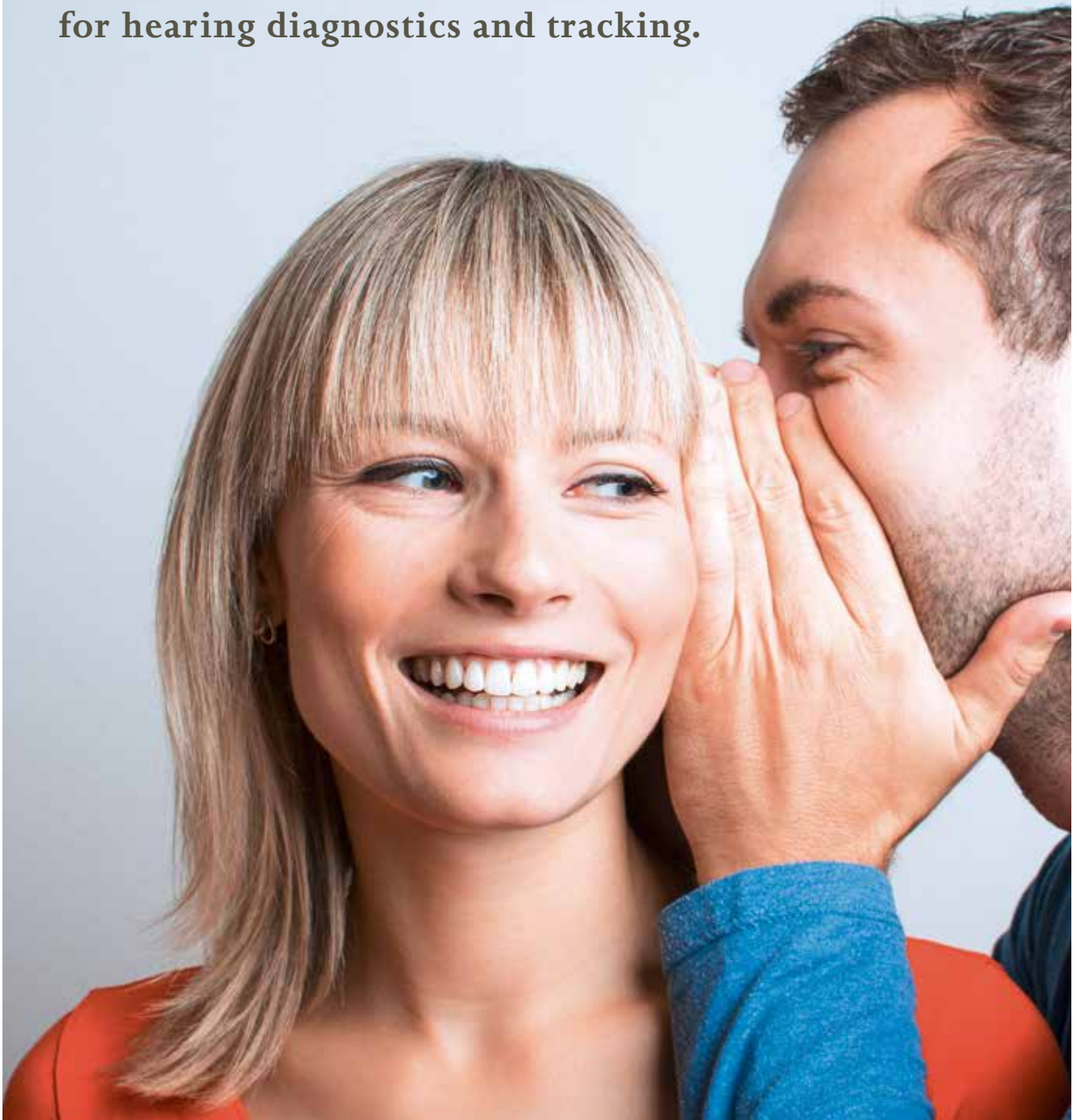


WE KEEP AN EYE ON YOUR EAR.

Innovative solutions
for hearing diagnostics and tracking.



THE SOUND OF SCIENCE.





**Excellent hearing registers every sound.
Excellent technology registers silence.**

Technologies that make an impact.

The ability to hear is one of our most precious senses. For us, it is also the most fascinating. From our early years, hearing as a way of perceiving the world has a profound effect on the development of speech and our ability to learn. In old age, it influences the way our memory works. However, many types of hearing impairment can be cured or treated if they are detected early on. PATH MEDICAL develops innovative solutions, which make audiological diagnoses simple for all age and risk groups. With these solutions, pathophysiological issues, which could later only be treated partially or with difficulty, can be prevented at an early stage.

Since 2007, PATH MEDICAL's highly qualified team of experts comprised of experienced scientists and young researchers has been developing new methods and technologies to evaluate the functionality of hearing in its different stages. The use of the most advanced measurement methods enables a reliable diagnosis of hearing impairment at an early stage. These methods include tympanometry, otoacoustic emissions, auditory evoked potentials, pure tone audiometry, speech intelligibility tests, hearing screenings and audiological tests for occupational medicine. Thanks to NHS Tracking, a reliable treatment is also ensured. It is not without reason that PATH MEDICAL is rated as one of the leading innovators in the market for audio logistics and used by research institutions, hospitals, medical practices and logopedics worldwide – with science made in Germany.



Dr.-Ing. Hans Oswald



Dr.-Ing. Andre Lodwig

Great innovations in a compact format.



Development of all PATH MEDICAL products is based on the latest scientific findings on the physiology and pathophysiology of hearing. The devices are available as two platforms each, a portable and a desktop platform. Every platform can make use of various acoustic, physiological and learning-conductive test modules. Thanks to the flexible test battery system and set configurations available, everything can be combined appropriately and efficiently for the relevant application.

SENTIERO

SENTIERO is the reliable audiometry specialist and the basic solution for early diagnostic examination of newborns and small children. SENTIERO combines physiological test methods with psycho-acoustical test methods: tone and speech audiometry, TEOAE, DPOAE, ABR and ASSR, which makes it particularly suited for NHS conformational diagnostics, neurological diagnostics and objective threshold estimation. This allows the user to have flexibility when reacting to patient needs. SENTIERO is simple to use with an optimized user interface and workflow – thus minimum testing time is guaranteed! Even the desktop version maintains SENTIERO's portability, while combining all the standard test modules for audiometry and tympanometry in a single device, thus significantly easing the tympanometry, acoustic reflexes and ETF tests in hospitals and medical practices.

SENTI

SENTI features all psycho-acoustical tests and was developed with easy to understand illustrations for auditory screening of pre-school children aged from 2 to 5. The SENTI DESKTOP, as a class 3 audiometer with many additional features, enables further investigations of auditory processing disorders in children and adults as well as speech in noise screening & diagnostic and image based speech tests.

PATHTRACK

Screening programs without a tracking system lack efficiency. Based upon wide experience, PATH MEDICAL offers a long-term, reliable and effective tracking system for preschool and newborn hearing screening. PATHTRACK systems enables quality-controlled screening and follow-up, and delivers evidence-based data for the evaluation of the program's effectiveness. Through the use of intelligent solutions, the workload for all parties is reduced to a minimum. In regions with limited access to health experts, PATHTRACK offers a complete solution for telemedicine procedures. PATHTRACK allows analysis of all recorded statistical data statistically – benchmarking and evidence based medicine is no longer a dream!

The PATH MEDICAL solutions

ABR / ASSR



SENTIERO
// ADVANCED

OAE



SENTIERO
// DIAGNOSTIC



SENTIERO
// SCREENING

Tympanometry



SENTIERO
// TYMP DIAGNOSTIC



SENTIERO
// TYMP SCREENING

Audiometry



SENTI
// DESKTOP



SENTI
// HANDHELD

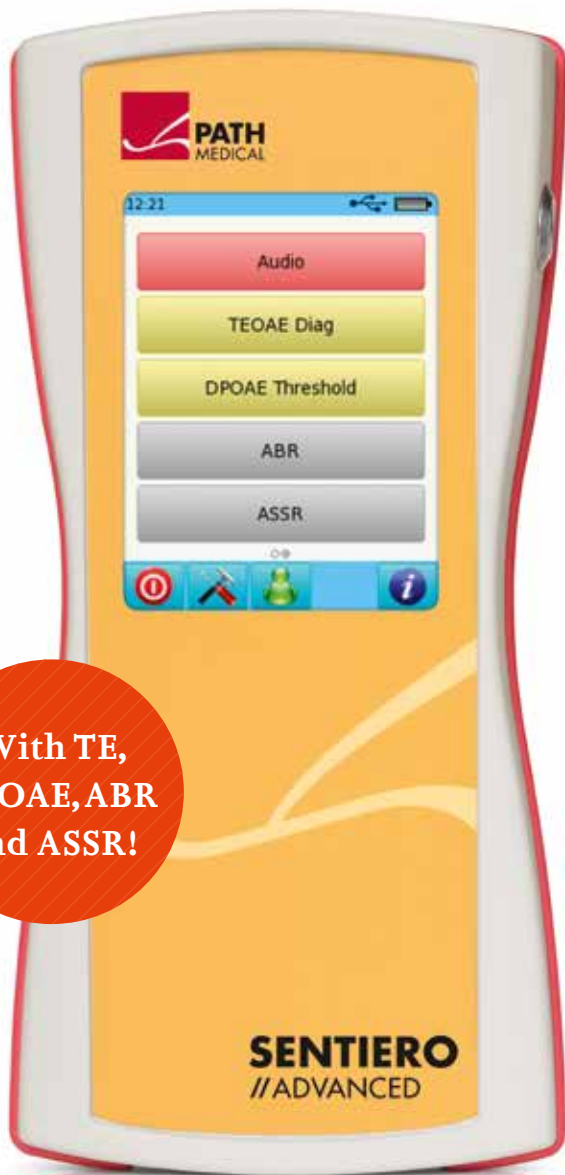
Tracking & Telemedicine



PATHTRACK

Our product portfolio offers a wide range of different sets that can meet any need – for audiology and ENT medicine as well as school-age screenings, GPs, newborn diagnostic and EP/OAE.

The all in one instrument for OAE, ABR, ASSR and Audiometry



With TE,
DPOAE, ABR
and ASSR!

The complete solution
for your audiology clinic!

For the first time a hand held, portable lightweight device combines Tone and speech audiometry, TEOAE, DPOAE, AEP (ABR & ASSR) in a selectable modular format. The emphasis is on test flexibility, ease of use, reliable diagnostics and minimum test time.

The new binaural diagnostic ABR is typically used for NHS conformational diagnostics, neurological diagnostics and objective threshold assessment.

Product Benefits

- Full Color Touchscreen!! (ease of use)
- Portability
- Flexibility
- Battery operated
- Long battery life (10 hours), fully charges in 4 hours
- Large memory (stores over 1000 tests)
- Screening and diagnostic capabilities
- Extremely fast due to cutting edge technology and patented methods
- Objective and subjective testing in one device
- Different sets available to provide either ABR alone or a combination of ABR, ASSR, OAE, tone and speech audiometry on a screening or diagnostic level.
- The option to combine ASSR and DPOAE hearing threshold estimation allows the acquisition of full audiogram from 125 Hz to 8 kHz in an objective and fully automated procedure!

All features of the SENTIERO 'Diagnostic and Screening' model are included as modules in the ADVANCED device. If necessary, all the SENTI features can be used with the SENTIERO.



ABR / ASSR Technical Data

- Binaural ABR, Click, chirp & frequency specific tone bursts
Polarity: Condensation, rarefaction, alternating
- User selectable stimulus type and levels up to 120 dB peSPL
- Stimulus rate: 10Hz to 90 Hz, optional jitter
- Recording window: 0 to 30ms
- Recording bandwidth: ABR recording bandwidth: 80 Hz to 2 kHz, ASSR: 15 Hz to 2kHz
- Sampling rate: 16kHz
- ASSR: Modulation frequencies: 40 and 80 Hz, stimulus levels: up to 100 dB HL, up to 4 simultaneous test frequencies per ear – adjustable maximum averaging time, artefact threshold and significance level
- Superior performance due to weighted averaging algorithm for different environmental settings
- Robust operation mode, automated digital filter 50/60 Hz
- Straightforward waveform analysis using automated peak markers
- Additional analysis options after recording and after data transfer from instrument to PC software MIRA
- Mira direct print to print a pdf report immediately from the instrument via USB
- Optional PC software MIRA allows additional reporting and export

Easy navigation & handling, menu guided

- Integrated OAE, Tone and Speech Audiometry modules available
- Design individual protocols & presets or use the factory presets
- Online help and navigation in different languages
- Up to 5 stimulus levels / waveforms per test sequence
- Automated storage of up to 1000 test results (max. 1000 patients) and quality parameters

MIRA PC Software

- Imports patients data test results and exports patients data and settings to the instrument via USB
- Multiple reporting options, printouts and export formats
- User management and patient management search functions
- Instrument configuration & firmware update
- View, compare, comment, print test results
- Archive and backup

OAE details: see page 8 & 9

Audiometry details: see page 12 & 13

All sets can be found on our website: www.pathme.de

Combining physiological and psycho-acoustical testings in a single device

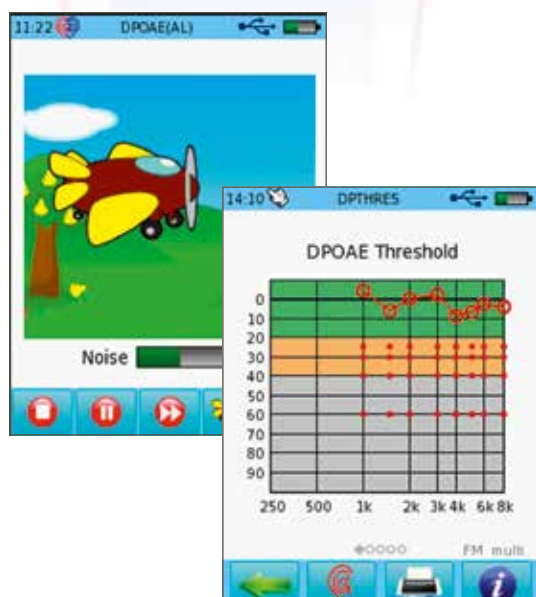


For the hearing diagnostics of preterms, risk babies or newborns it is essential to make use of all possible diagnostic options while having the comfort and simplicity of a handheld device! Recent epidemiological studies show a significant increase of hearing impairment in children. Depending upon the applied criteria the 'refer' rate varies but it shows to be significantly higher than the 'refer' rate in newborn hearing screening (NHS) programs. Speech and language acquisition delay is one of the most common neuro-development difficulties in early childhood. Early detection of hearing disorders is crucial for early treatment. Unlike to NHS, preschool hearing screening tests should provide more frequency-specific and quantitative information on hearing loss.

Otoacoustic Emissions

OAE can be measured in both ears simultaneously

- DPOAE Quick/Diagnostic Test modes: 800 Hz to 10 kHz, up to 30 points per octave high resolution. Time saving multiple channel stimulation and FMDPOAE™ (Frequency Modulated DPOAE)
- DPOAE Hearing Threshold Estimation (patented) - automated cochlear audiogram up to 50 dB HL. Stimulus levels from 20 dB HL to 65 dB HL. Frequency range: 1.0 kHz to 8 kHz
- TEOAE Quick/Diagnostic Test modes: 0.7 to 4 kHz Quick test/Diagnostic test with half octave bands with multiple SNR settings and stop criteria



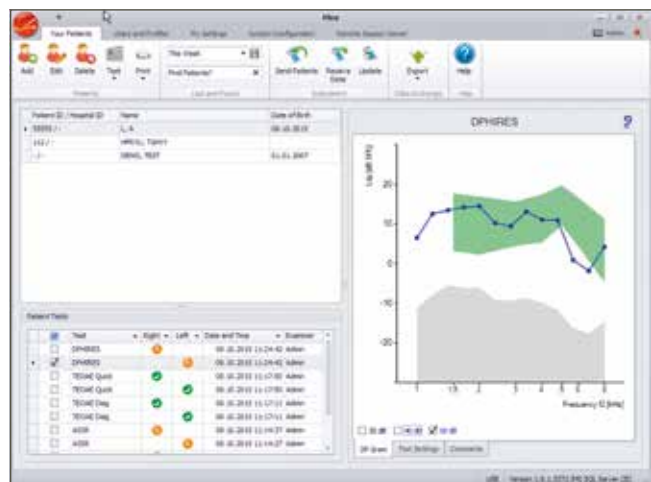
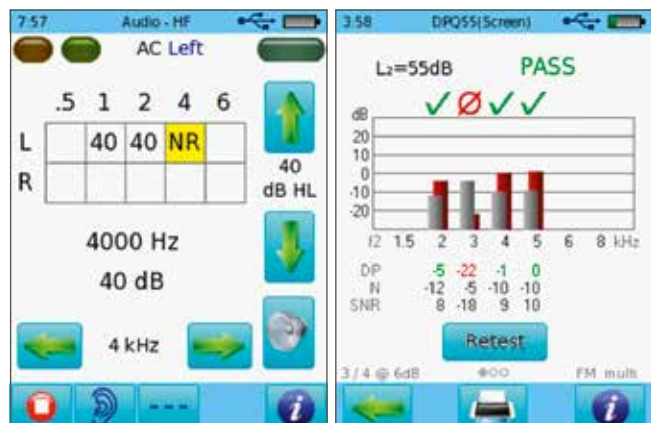
Audiometry details: see page 12 & 13
All sets can be found on our website:
www.pathme.de



The Sentiero Screener provides efficient and simple testing for all ages from 3 months onwards with the large touch screen and its unique time-saving multichannel (two frequencies simultaneous) testing technology. The patented FMDPOAE™ provides improved signal amplitude without losing frequency specificity.

Product benefits

- Quick screen (5, 4, 3, 2 kHz, pass 3 out of 4 as fast as possible, multichannel, FMDPOAE, 55/65 dB, SNR 6 dB)
- Standard screen (5, 4, 3, 2 kHz, pass 3 out of 4 as fast as possible, multichannel, FMDPOAE, 55/65 dB, SNR 6 dB)
- Pure tone audiometry (screening) tabular format, stimulus types include, tone, pulse and warble tone, stimulus levels from 0 dBHL to 70 dBHL. Frequencies: .05, 1, 2, 4, 6 kHz class 4 pure tone audiometry



The fastest and most reliable OAE and pure tone Audiometry screening combination!

MIRA PC-software

The all in one instrument for OAE, Tympanometry and Audiometry

Sentiero Desktop puts every middle ear, OAE and audiometry test at your fingertips! Middle ear testing is used to determine the overall health and function of the middle ear. These tests are essential in identifying perforations of the eardrum, abnormal pressure in the tympanic cavity, wax blockage in the ear canal, and possible conductive hearing loss. Diagnostic tympanometry, ipsilateral and contralateral acoustic reflex, pure tone audiometry and otoacoustic emissions in ONE portable lightweight device.



The world's first integrated OAE + Tymp + Audiometer

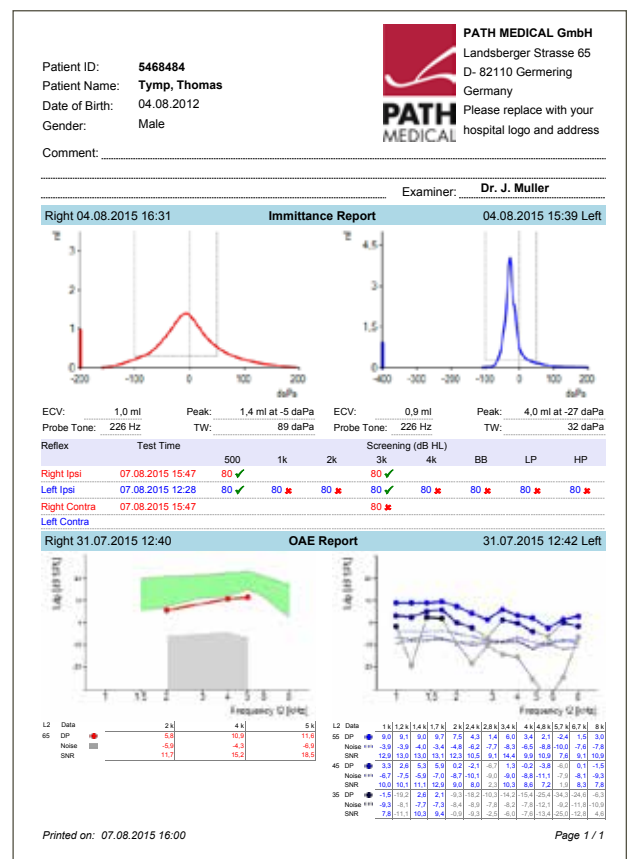
Class 1: diagnostic

Product Benefits

- Multichannel DPOAE testing (two frequencies at the same time)
- FMDPOAE (frequency modulated stimulus)
- OAE can be measured in both ears simultaneously and under your choice of a static pressure!
- DPOAE Threshold search (objective audiogram estimation) based on patented Scissor paradigm
- Sentiero Desktop is the only device combining Tymp and reflexes with OAE and Audiometry.

Tympanometry

- Frequency: 226 Hz. Optionally (class 1) 678 Hz, 800 Hz and 1000 Hz
- Level: 69 dB HL
- Air Pressure Control: Automatic (flexible start and stop pressure)
- Range: -600 to +400 daPa (-300 to +200 daPa for class 2)
- Pressure change rate: 50, 100, 150, 200 daPa/s, as-fast-as-possible
- Range: 0.1 to 8.0 ml at 226 Hz probe tone and 0.1 to 15 mmho at 678, 800 and 1000 Hz probe tone
- Acoustic Reflex Tone – Ipsi/Contra: 500, 1000, 2000, 3000, 4000 Hz, Noise (LP, HP, BB)

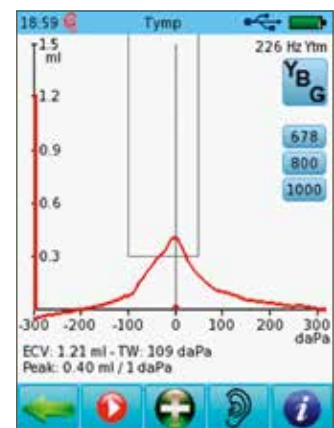
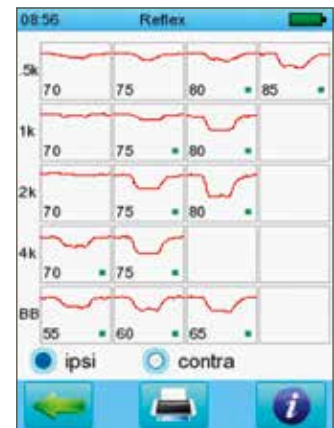


All psycho-acoustical SENTIERO methods can be included in your choice of modules in SENTI too!



Impedance / Tympanometry	Class 1	Class 2 +1000 Hz	Class 2
226 Hz tone	●	●	●
678, 800, 1000 Hz tones	●		
1000 Hz tone		●	
Multi frequency tympanometry (4 tones or 2 tones at once)	●	●	
Pressure range -300 to +300 daPa		●	●
Pressure range -600 to +400 daPa	●		
5 individually configurable presets	●	●	●
Y/B/G components view (admittance, susceptance, conductance)	●		
Auto Stop function (finish tympanogram recording if valid peak detected)	●		
Multiple trace memory (up to 3 traces in one measurement)	●		
Tymp + Reflex automatic sequence	●	●	●
Reflex			
500, 1000, 2000, 3000, 4000 Hz stimulus up to 100 dB HL (105 dB HL for some)	●	●	●
Broadband, High and low pass noise stimulus up to 90 dB HL	●	●	●
Ipsilateral reflex	●	●	●
Contralateral reflex	●	●	●
Automatic reflex threshold	●	●	●
Manual control	●		
Reflex decay testing	●		
Eustachian Tube Function (ETF)			
ETF – Non Perforated Eardrum	●		
ETF – Perforated Eardrum	●		
ETF – Patulous Eustachian Tube	●		

Class 2: screening and clinical



- 9 different combinations of OAE, Audiometry and Tymp modules available.
- OAE features: see page 8 & 9
- Audiometry features: see page 12 & 13

Pure Tone and Speech Audiometry, conventional and image based in ONE instrument



Pure Tone Audiometry is still the gold standard for assessing hearing loss. In Senti, it is available as class 3 audiometer (IEC 60645-1) with additional features: talk over, external input, high frequency audiometry up to 16 kHz. Speech recognition in noise and speech processing abilities are key skills for children and adults to interact with their environment. Senti features a speech in noise screening test, image based speech tests for children, screening tests for auditory processing disorders and much more!

The modular approach enables you to assemble yourself the best test battery in your Senti. It provides perfect matches for occupational health, general audiology, pediatrics as well as for a doctor's office.

All Senti features can be added in addition to the Sentiero features! Select the appropriate set to benefit from these possibilities!

Product Benefits

Audiometric tests

- Pure-Tone Audiometry with bone and air conduction, talk through, masking, free field and much more.
- Play audiometry MAGIC: Multiple-Choice Auditory Graphical Interactive Check

Speech tests in multiple languages

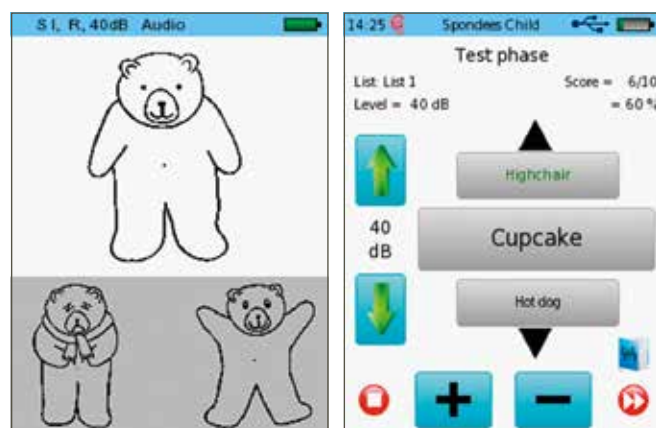
- SUN: Speech understanding in Noise screening test
- UST: Universal Speech Test adaptable to different languages
- MATCH: Mainzer audiometric test for children - image based speech test for children from 2-5 years
- MAUS: screening test for auditory perception and processing orders for children from 6-11 years

Additional modules available for your language and region

Pure Tone Audiometry

- Frequencies from 125 Hz up to 16 kHz (HDA 300 option)
- Levels from -10 to 110 dB HL in 5 dB steps
- Multiple options for accessories: HDA280, HDA200, HDA300, DD45 (similar to TDH39), B71, free field, insert earphones, patient response switch
- Bone and air conduction with masking
- Automated pure tone audiometry
- Screening audiometry and diagnostic audiometry

All sets can be found on our website:
www.pathme.de



All psycho-acoustical methods available on SENTI can be included in your choice of modules in SENTIERO too!

PATHTRACK

Intelligent solutions for tracking and telemedicine

pathTrack is a simple solution for data exchange between a central reporting site and the device. It is divided into pathTrack.Level1 (sending /receiving and exporting) and pathTrack.Level2 (tracking module). With pathTrack.Level1 any already existing tracking module can be interfaced.

The wireless radio modem technology ensures a secure, easy and direct data transmission between measuring devices and server. It is independent of existing IT infrastructures in a medical facility and can be promptly used with the installation of the modem.



The 'out of the box solution' for your central data management!

The system can be best compared with the use of a smartphone: using a SIM card in the modem, data will be sent and received, including with data protection compliant encryption. Instrument and receiving side are directly connected. The technology can be applied in addition to the hearing screening procedure in physician's offices or hospital groups with a central reporting site.

Why 2-way data transmission?

The bi-directional data exchange allows the central reporting site (e.g. a tracking center) the configuration of the remote device without on-site adjustments. No need to travel to remote sites – update the devices remotely! Changes to devices/presets are often necessary, e.g. when changing an examiner or the examiners data, after general changes of predefined comments or updates of the device firmware. In the field of telemedicine the system allows central analysis by experts. Even for maintenance and service the loaner instrument immediately receives the settings from your current device. Via the pathTrack.ClientConfigurator all configurations are created and distributed centrally. It simplifies the daily work for the user of the equipment as well as for the tracking center.

Product Benefits

- No conflicts with the local IT network and the hospital information system
- Ready to use and maintenance free
- Replacement units will immediately receive all existing settings
- Direct and encrypted connection between the instrument and receiver server
- No subsystems for transmission is needed, local storage in Mira PC software is possible
- Firmware updates and settings changes are performed automatically (no travel expenses)
- Simple update by changes for examiner data
- Site and facility management
- Loan-device management for annual service and maintenance (information by the tracking center for service intervall)
- Delivery receipt by the remote station
- Displaying of connectivity and signal strength
- Transmission duration of about 10 seconds
- works everywhere 'out of the box' similar to your smartphone
- Data transmission minimal, resulting in low maintenance costs

**Preschool
Screening**

**Newborn
Hearing
Screening**

Telemedicine

**pathTrack
Tracking Software**

Smart solution with bi-directional data transfer

Made in Germany



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