DPOAE (order #100110):
- Leak check: analysis of feedback signal (440 Hz probe tone)
- Probe check: limit of maximum sound pressure (stimulus), comparison across speakers (symmetry), leak check (probe fit)
- Calibration: influence calibration with external volume adjustment
- Noise detection: narrow band noise around 20 Hz
- Residual noise calculation: weighted averaging, summed weighting factors, artifact rejection: weighted averaging
- Response detection: Fourier, Fourier at a single point (Fsp), automatic rejection option
  - Frequency range f1/2: 1.22. Sample rate: 48 kHz (stimulus, response)
  - Minimum DPOAE level criterion: 1, 70 dB
  - Measurement interval: 4096 samples
  - Stimulus modes with Frequency-modulated DPOAE license:
    - Frequency range: 1 to 6 kHz, modulation depth: 50 Hz, 100 Hz, 200 Hz
    - Multichannel DPOAE: simultaneous measurement of DPOAE at up to 10 frequencies at a time
    - Frequency range: 1, 1.5, 2, 3, 4, 5, 6, 8 kHz
      - Linear: 0.8 to 10 kHz (step size: 0.5 Hz from 1 to 10 kHz), steps: 10 to 1000 Hz (step size: 10 Hz)
      - Logarithmic: 0.8 to 10 kHz (step size: 0.5 Hz from 1 to 10 kHz), steps: 1 to 30 points per octave (step size: 1 point per octave)
    - Stimulus levels L1, 30 to 65 dB SPL, step size: 5 dB (single and multiple selections possible)
    - Minimum DPOAE level criterion (optional): 20 to 0 dB, step size: 5 dB
    - Measurement time: adaptive timeout, manual min/max timeout

DPOAE threshold - cochlear audiogram (order #100111):
- Frequency range f1/2: 1, 1.5, 2, 3, 4, 5, 6, 8 kHz
- Stimulus level L1, 20 to 65 dB SPL (automated threshold detection)
- Minimum stimulus level L1, 20, 25, 30 dB SPL
- L1/L2 relation: automatic (excursion paradigm)

TEOAE (order #100109):
- Noise detection: test mean square (RMS) of non-stimulus intervals
- Residual noise calculation & artifact rejection: weighted averaging
- Response detection TEQUICK: 8 values with changing sign fulfilling a 3 sigma criterion (representing 99.7% statistical significance)

TEOAE Diagnostic: user-defined stop criterion (SNR: 6 or 9 dB) in 3, 4, or 5 out of 5 frequency bands [1, 1.5, 2, 3, 4 kHz]
  - Sample rate: 48 kHz (stimulus), 16 kHz (response)
  - Window of analysis: 5 to 13 ms poststimulus
  - Stimulus level: 85 dB pa/SL
  - Stimulus type: short-term stimulus without direct component (0.7-6 kHz)
  - Measurement protocol: norm

Technical Specifications:
- Device dimensions: 150 x 210 x 45 mm, ca. 4.5 kg
- Display: 240 x 320 pixels
- Graphical LCD 5", resistive touch screen, real-time clock, piezoelectric sound generator, USB, Output voltage and nominal impedance (headphone socket) 5 Vpp, 32 Q Power consumption: max. 2 W
- Memory capacity: up to 1000 patients, ca. 1000 tests (dependent on test type)

Additional technical specifications can be found in the detailed technical manual (rev 11 per 08/2017) available online: https://path-med.de/support/#manuals

Hardware order instructions for MODEL SOH100497 - TYMP SCREENING with diagnostic options:
- #100497-US11 for Tymp screening combined with diagnostic DPOAE & TEOAE and audiometry class 3
- #100497-US13 for Tymp screening combined with diagnostic DPOAE, TEOAE and audiometry class 3

All sets can be upgraded to diagnostic tymp later on as described on the back side of this page.

Audiometry (order #100113):
- Full 2 channel diagnostic audiometer (DIN EN 60645-1 class 3)
- air - bone - making
- Child audiometry options: MAGIC #100112, MATCH #100356, BASO, swinkeys and many more
- Speech
- Multiple transducer options including circumaural headphones, insert phones and bone conduction. Multiple upgrades available.

Diagnostics made portable!

The world’s first integrated OAE, tympanometry and audiometry device.

PATH MEDICAL GmbH
Landsberger Straße 65
82110 Germering
Germany
Tel +49 89 800 76 502 / Fax +49 89 800 76 503
info@path-medical.de / www.path-medical.de
Database Software and Data Management

Easily view, archive and export test results:

- With the MIRA database you can transfer the SENTIERO test data in seconds via USB cable from device to MIRA through communication software
- Export full-color, 8.5” x 11” reports in multiple formats, with graphic and tabular data, allows for preset comments to be selected or add text and test information—perfect for consulting with parents, colleagues and for record keeping
- Easily attach test results to patient records within most EMR systems
- Remote display of results on your PC / monitor using the MIRA remote control
- Allows inputting patient demographics onto the device
- NOAA compatible
- Stores up to 1000 patients on the device
- Results can be sorted by: birthdate, name, patient ID, examiner, date and time.
- Direct print from your device to pdf

Technology Leader in Otoacoustic Emissions

OPTIMAL DPOAE STIMULATION...

...is required in order to detect the DPOAE amplitude easily in noisy environments. Optimal combinations of level and frequency ratio are needed in order to record DPOAE amplitudes with good signal to noise ratio (SNR) higher than 6dB and amplitude higher than -5dB. PATH MEDICAL co-founder Dr. T. Janssen detected the advantages of using the optimal stimulus paradigm (Scissor Paradigm) in 1998. The Scissor Paradigm produces easy and robust detection of DPOAE responses. The technology is applied to a patented method in SENTIERO to produce a full cochlear audiogram.

FREQUENCY MODULATION IS USED TO REDUCE FINE STRUCTURE!

Applying FMDPOAE® eliminates all notches in the fine structure diagram displayed above. It is important to note that even a simple screening DPOAE would not have passed at the “notch frequencies” without the patented FMDPOAE® method. A priori, frequencies of notches are unknown, but often in the region of standard screening frequencies. Consequently FMDPOAE® enhances robustness and speed of DPOAE screening and diagnostic recordings.

BINAURAL AND MULTIFREQUENCY OAE:

- FMDPOAE® with frequency modulated stimulus: two pairs of frequencies can be tested at the same time per ear (multiple channel testing)
- Binaural DP-testing: both ears at the same time
- Up to four times faster than competition!
- Binaural TEOAE in screening mode or diagnostic mode

Probes are colour-coded to provide the user with easy probe selection, left (blue) and right (red) when testing binaurally. The device detects the probes automatically when inserted - keeping calibration information always updated.

MULTIPLE CONFIGURATIONS AVAILABLE - SAVE MONEY AND ORDER A BUNDLE.

FUTURE UPGRADES ARE AVAILABLE TOO!

MULTIPLE CONFIGURATIONS AVAILABLE - SAVE MONEY AND ORDER A BUNDLE.

FUTURE UPGRADES ARE AVAILABLE TOO!

- order # 100497-US6: Multi-frequency tympanometry class 1 incl. ETT and reflex.
- order # 100497-US7: Full features (as per US6) and binaural DPOAE & TEOAE
- order # 100497-US8: Full features (as per US8) and FMDPOAE® 
- order # 100497-US9: Full features (as per US9) and binaural DPOAE & TEOAE
- order # 100497-US10: Full features (as per US10) and binaural DPOAE & TEOAE
- order # 100497-US11: Full features (as per US11) and binaural DPOAE & TEOAE
- order # 100497-US12: Full features (as per US12) and binaural DPOAE & TEOAE