Diagnostic Audiometer **AD229e**

- Efficient Hearing Examinations

Audiometry *precision*

The high quality of the AD229e makes it well suited for any stationary or portable application where diagnostic testing of air, bone and speech is performed. The time saving automatic test functions combined with the computer interface makes the AD229e ideal for modern healthcare environments. The talk forward and talk back functions make it easy to work with the AD229e, especially with sound booth installations. Full NOAH compatibility completes the picture.

leading diagnostic solutions

Interacoustics®

Diagnostic Audiometer AD229e

- Efficient diagnostic examinations

Auto Threshold and Békésy

The AD229e incorporates a function for performing threshold determination automatically. The test procedure is based on the Hughson-Westlake method (up 5dB, down 10dB) and conforms to ISO 8253. Desired test frequencies may be selected freely by the user.

The Békésy Test, featuring pure tone, pulsed tone or narrow band noise as stimuli as well as masking with narrow band noise, is incorporated. After testing the test results can be recalled from the memory of the AD229e or transferred to a PC for database storage or printing. A buzzer is built in, allowing the operator to be informed about test status when doing automatic tests.

ABLB / SISI / Stenger / Tone in Noise

As well as the pre-programmed ABLB and SISI tests the AD229e can perform the Stenger Test with pure tones for evaluating malingering, or as a binaural speech test with a monophonic speech signal. The Langenbeck "Tone in Noise" Test is also included.

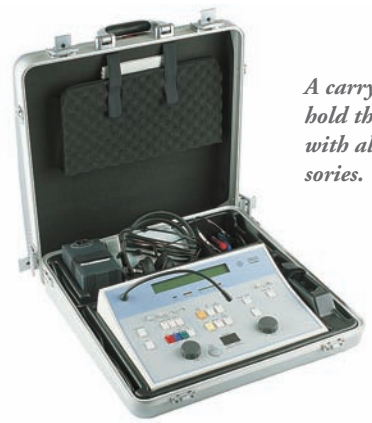
Master Hearing Aid

The AD229e has incorporated a 2 channel Master Hearing Aid for hearing aid simulation. The speech signal from the live voice microphone is transformed directly into digital signals, and all sound shaping filters thus work in the digital domain ensuring high sound quality.

Filters and Acoustic Gain can be selected individually for each channel.

Printing

PC connectivity provides options for data storage and full page reports via NOAH or the Interacoustics database software OtoAccess™.



A carrying case will hold the AD229e with all its accessories.

Data Storage with Windows® Based Software

Transferring data to a PC is possible by two different applications. OtoAccess™ is the Interacoustics database platform that enables data collection from multiple instrument sources into one patient file. Hearing aid information may also be included. NOAH hearing aid fitting software will also integrate the test data when used with the Interacoustics NOAH audiometry module software.

Sound Field Installation

Speech and pure tone may be presented under free field conditions. Available system ranges from 90dB SPL to 115dB SPL and is medically approved. A set of connection panels, AFC8, is available for connection to a sound booth.

Speech Testing and Communication

• Live Voice speech testing is easy to perform using the built-in goose neck microphone.

• CD or tape players may be connected.

• Talk back is provided for sound field installations.

• Talk forward is available using the built-in microphone. The intensity is easily adjusted on the front panel.

• Monitoring is possible either through the operator's headset or through the built-in monitor loudspeaker.

Earphones and Noise Excluders

• Amplivox features independent suspension of the TDH39 earphones.

• Peltor - traditional noise excluding headset.

• Insert phones - EAR-Tone 5A insert phones feature very low cross hearing and reduce need for masking. Ambient noise is also attenuated.

TDH39 headset

EAR-Tone 5A Insert Phones

Interconnections

UPS400 Main Supply100-240V

AD229e

IFC69 - serial / UCA40 USB

Software for PC:
PrintView
OtoAccess™ Database
NOAH Modules

General Technical Specifications

Standards:
Audiometer: EN 60645 -1, ANSI S3.6, Type 2
Speech: EN60645-2/ANSI S3.6 type B or B-E.
Safety: EN 60601-1, Class 1, Type B.
Medical CE-mark:
Interacoustics A/S meets the requirements of the Annex II of the Medical Device Directive 93/42/EEC. Approval of the quality system is made by TÜV – identification no. 0123.
Calibration: AC: ISO 389-1 (TDH39), ISO 389-2 (EARTone5A), BC: ISO 389-3.

Frequencies and Maximum Hearing Levels:

	AC dBHL	AC dBHL	BC dBHL	NB/SN dBHL	FF dBSPL
Hz	TDH39	EAR-Tone5A	B71		
125	90	95		80	90dB to 115dB SPL depending on FF system
250	110	100	45	100	
500	120	110	65	110	
750	120	120	70	110	
1000	120	120	70	110	
1500	120	120	70	110	
2000	120	120	75	110	
3000	120	120	80	110	
4000	120	120	80	110	
6000	120	105	55	110	
8000	110	100	50	90	

Extended Range Function: If not selected, the AC output will be limited to 20dB below maximum output.
Input: Tone, Warble Tone ±5%, 5Hz (true sine wave frequency modulation), tape/CD 1+2, mic.

Masking Stimulus: Automatic selection of narrow band noise (or white noise) for tone presentation and speech noise for speech presentation.
Outputs: Left, Right, Bone L+R, Insert Phones, Insert Masking, FF1, FF2.

Transducers:
TDH39 Audiometric Headset.
EAR-Tone 5A Insert Phones (optional).
HDA200 Audiometric Headset (optional).
B71 Bone Conductor.

Talk Forward: Built in talk forward microphone. 0-110dB SPL continuously adjustable on operation panel.
Monitor: Output of tape or CD through built-in speaker or through external earphone or speaker.
Tone Presentation: Manual or Reverse.
Single pulse.
Multiple pulses 250-5000 msec. on/off.
Auto Threshold: Patient controlled Hughson Westlake procedure according to ISO 8253-1 or OSHA procedure with automatic re-check (US edition only).
Frequency Selection: 125Hz, 250Hz, 750Hz, 1500Hz or 8kHz may freely be deselected if a quicker test routine is desired.
Synchronous Masking: Locks channel 2 attenuator to channel 1 attenuator.
Store Function: Internal memory for AC L/R and BC L/R and full speech curve.

Tests:
SISI with auto score calculation. (5dB included for familiarization).

ABLB
Stenger (Binaural pure tone stimulation).
Stenger Speech (Binaural speech test with monophonic signal).
Langenbeck (Tone in Noise).
Békésy Test: Pure tone or narrow band stimulation. Fixed frequency. Continous or pulsed tone.
2 channel speech: Input for 2 channel prerecorded material.
2 channel Master Hearing Aid: Both channels operate independently with gain and filter settings.
Display: Alpha-Numeric Display.
Patient Signal: Reed switch push button.

Examples of Compatible Windows Software:
Interacoustics OtoAccess™ database and diagnostic modules
PrintView for on-line PC monitoring and printing.
NOAH hearing aid fitting software.

Construction: Plastic cabinet.
Attenuator controls:
Rotary switches (Push buttons optional).
Power Supply: External UPS400 (included). 100-240 V.
Consumption: 40 VA

Dimensions (LxWxH): 36x26x10 cm / 14x10x4 inches.
Weight: 1.8kg/4.0 lbs. (external power supply UPS400 + 0.8kg/1.8 lbs.)
Air freight packing:
1 case: 48x31x37 cm /19x12.2x14.6 inches.
Gross weight: 5.6 kg/12.4 lbs.

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Included Parts:

TDH39 Audiometric headset
B71 Bone conductor
APS3 Patient response button
UPS400 External power Supply
200 AF12 Audiogram charts, 3 Pens
Power cable
Dust cover
Operation manual CD
Multilingual CE instructions for use

Optional Parts:

21925 Amplivox audiocups, noise reducing headset
50250 Peltor noise reducing headset (may be supplied at no extra cost)
ACC25 Carrying case
EARTone5A Audiometric insert phones
HDA200 Audiometric headset
CIR22 Insert earphone set for masking or monitoring
UCA40 USB computer cable
IFC69 (9 pins) serial computer cable
EM400 Talk back microphone
MTH400 Monitor headset
MTH400M Monitor headset with boom mic.
Push buttons instead of rotary switches
Interacoustics database OtoAccess™ and diagnostic modules software
PrintView software
IA-NOAH-Aud Software

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