

Technical Specifications

AD629 Diagnostic Audiometer



License Overview

International configuration AD629		
	Basic license	Extended license
Licenses Audiometry		
Basic Audiometry	x	x
Békésy		x
SISI	x	x
Langenbeck (tone-in-noise)		x
Stenger	x	x
Modified Hughson-Westlake	x	x
Weber	x	x
ABLB	x	x
Speech testing with CD/Mic	x	x
Build-in wave files	x	x
Binaural Speech		x
Hearing Loss Simulator (HLS)		x
MHA		x
QuickSIN	optional	optional
TEN test	optional	optional
High Frequency (HF)	optional	optional
Freefield Lineout	x	x
Hybrid mode - PC controlled mode	optional	optional
Sync mode - Audiogram transfer	optional	optional
Functions available only in Diagnostics suite		
MaskingHelper	x	x

Languages supported in IMP and AUD

	Chinese	Czech	English	Finnish	French	German	Greek	Italian	Japanese	Korean	Norwegian	Polish	Portuguese	Russian	Spanish	Turkish
IMP																
MT10			X		X	X										
Existing AT235			X			X										
New AT235	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Existing AA222			X			X										
New AA222	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Titan	X	X	X		X	X		X	X	X			X	X	X	
AUD																
AS608			X		X	X									X	
AD226	X		X		X	X		X				X	X	X	X	X
AD629 / AD229	X *	X *	X	X *	X	X	X *	X	X *	X *	X *	X	X *	X *	X	X
AC40	X *	X *	X	X *	X	X	X *	X	X *	X *	X *	X	X *	X *	X	X
Suites																
Titan suite	X	X	X		X	X		X	X			X	X	X	X	X
DS	X	X	X		X	X	X	X	X	X		X	X	X	X	X

Included and Optional Parts

Included parts	DD45 Audiometric headset B71 Bone conductor APS3 Patient response button Goose neck microphone Power cable Operation manual CD Multilingual instructions for use
Optional parts	Diagnostic Suite software OtoAccess database 21925 Amplivox audiocups, noise reducing headset Carrying case (Standard or Trolley Style) EARTone3A/5A Audiometric insert phones IP30 Audiometric insert phones HDA300 Audiometric headset with double mono 6.3mm jack TDH39 Audiometric headset CIR33 Insert earphone set for masking or monitoring DD450 Audiometric headset Talk back microphone Sound field speakers SP90 (with external power amp) AP12 Power Amplifier 2x12 Watt AP70 Power Amplifier 2x70 Watt

General Technical Specifications

AD629 Technical Specification

Safety Standards	IEC 60601-1, ES60601-1, CAN/CSA-C22.2 No.60601-1 Class I, Applied parts type B, Continuous operation	
EMC Standard	IEC 60601-1-2:2001 + A1:2004	
Audiometer Standards	Tone Audiometer: IEC 60645 -1, ANSI S3.6 -2010, Type 2, HF IEC 60645-4. Speech Audiometer: IEC 60645-2/ANSI S3.6 type B or B-E. Auto threshold tests: ISO 8253-1	
Calibration	Calibration information and instructions is located in the AD629 Service manual	
Air Conduction	DD45: TDH39: HDA300: HDA280 E.A.R Tone 3A/5A: IP 30: CIR 33	PTB/DTU report 2009 ISO 389-1 1998, ANSI S3.6-2010 PTB report PTB 1.61 – 4064893/13 PTB report 2004 ISO 389-2 1994, ANSI S3.6-2010 ISO 389-2 1994, ANSI S3.6-2010 DES-2361 ISO 389-2
Bone Conduction	B71: Placement: Mastoid	ISO 389-3 1994, ANSI S3.6-2010
Free Field	ISO 389-7 2005, ANSI S3.6-2010	
High Frequency	ISO 389-5 2004, ANSI S3.6-2010	
Effective masking	ISO 389-4 1994, ANSI S3.6-2010	
Transducers	DD45 TDH39 HDA300 HDA280 DD450 B71 Bone E.A.R Tone 3A/5A: IP30 CIR 33	Headband Static Force 4.5N $\pm$ 0.5N Headband Static Force 4.5N $\pm$ 0.5N Headband Static Force 4.5N $\pm$ 0.5N Headband Static Force 5N $\pm$ 0.5N Headband Static Force 10N $\pm$ 0.5N Headband Static Force 5.4N $\pm$ 0.5N
Patient Response switch	One hand held push button.	
Patient communication	Talk Forward (TF) and Talk Back (TB).	
Monitor	Output through built-in speaker or through external earphone or speaker.	
Special tests/test battery	SISI. ABLB. Stenger. Stenger Speech. Langenbeck (tone in noise). Békésy Test. Weber. 2 channel speech, 2 channels Master Hearing Aid, Auto threshold. Auto threshold tests: Available time for patient to respond: Same as tone presentation Increment of hearing level: 5dB. Auto threshold test (Békésy): Mode of operation: Békésy Rate of level change: 2.5 dB/s $\pm$ 20% Smallest increment of level: 0.5 dB	
Stimuli		
Tone	125-20000Hz separated in two ranges 125-8000Hz and 8000-20000Hz. Resolution 1/2-1/24 octave.	
Warble Tone	1-10 Hz sine +/- 5% modulation	

Wave file	44100Hz sampling, 16 bits, 2 channels																																																																																				
Masking	Automatic selection of narrow band noise (or white noise) for tone presentation and speech noise for speech presentation. Narrow band noise: IEC 60645-1:2001, 5/12 Octave filter with the same centre frequency resolution as pure Tone. White noise: 80-20000Hz measured with constant bandwidth Speech Noise. IEC 60645-2:1993 125-6000Hz falling 12dB/octave above 1KHz +/-5dB																																																																																				
Presentation	Manual or Reverse. Single or multiple pulses.																																																																																				
Intensity	Check the accompanying Appendix Available Intensity Steps is 1, 2 or 5dB Extended range function: If not activated, the Air Conduction output will be limited to 20 dB below maximum output.																																																																																				
Frequency range	125Hz to 8kHz (Optional High Frequency: 8 kHz to 20 kHz) 125Hz, 250Hz, 750Hz, 1500Hz and 8kHz may freely be deselected																																																																																				
Speech	<u>Frequency Response:</u> <table><tr><th>(Typical)</th><th>Frequency (Hz)</th><th colspan="2">Linear (dB)</th><th colspan="2">FFeq_{uv} (dB)</th></tr><tr><th></th><th></th><th>Ext sign¹</th><th>Int. Sign²</th><th>Ext sign¹</th><th>Int. Sign²</th></tr><tr><td>TDH39</td><td>125-250</td><td>+0/-2</td><td>+0/-2</td><td>+0/-8</td><td>+0/-8</td></tr><tr><td>(IEC 60318-3 Coupler)</td><td>250-4000</td><td>+2/-2</td><td>+2/-1</td><td>+2/-2</td><td>+2/-2</td></tr><tr><td></td><td>4000-6300</td><td>+1/-0</td><td>+1/-0</td><td>+1/-0</td><td>+1/-0</td></tr><tr><td>DD45</td><td>125-250</td><td>+0/-2</td><td>+1/-0</td><td>+0/-</td><td>+0/-7</td></tr><tr><td>(IEC 60318-3 Coupler)</td><td>250-4000</td><td>+1/-1</td><td>+1/-1</td><td>+2/-2</td><td>+2/-3</td></tr><tr><td></td><td>4000-6300</td><td>+0/-2</td><td>+0/-2</td><td>+1/-1</td><td>+1/-1</td></tr><tr><td>E.A.R Tone 3A</td><td>250-4000</td><td>+2/-3</td><td>+4/-1</td><td>(Non linear)</td><td></td></tr><tr><td>(IEC 60318-5 Coupler)</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>IP 30</td><td>250-4000</td><td>+2/-3</td><td>+4/-1</td><td>(Non linear)</td><td></td></tr><tr><td>(IEC 60318-5 Coupler)</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>B71 Bone Conductor</td><td>250-4000</td><td>+12/-12</td><td>+12/-12</td><td>(Non linear)</td><td></td></tr><tr><td>(IEC 60318-6 Coupler)</td><td></td><td></td><td></td><td></td><td></td></tr></table> 2% THD at 1000 Hz max output +9 dB (increasing at lower frequency) Level range: -10 to 50 dB HL 1. Ext. sign: CD input2. Int. sign: Wave files	(Typical)	Frequency (Hz)	Linear (dB)		FFeq _{uv} (dB)				Ext sign ¹	Int. Sign ²	Ext sign ¹	Int. Sign ²	TDH39	125-250	+0/-2	+0/-2	+0/-8	+0/-8	(IEC 60318-3 Coupler)	250-4000	+2/-2	+2/-1	+2/-2	+2/-2		4000-6300	+1/-0	+1/-0	+1/-0	+1/-0	DD45	125-250	+0/-2	+1/-0	+0/-	+0/-7	(IEC 60318-3 Coupler)	250-4000	+1/-1	+1/-1	+2/-2	+2/-3		4000-6300	+0/-2	+0/-2	+1/-1	+1/-1	E.A.R Tone 3A	250-4000	+2/-3	+4/-1	(Non linear)		(IEC 60318-5 Coupler)						IP 30	250-4000	+2/-3	+4/-1	(Non linear)		(IEC 60318-5 Coupler)						B71 Bone Conductor	250-4000	+12/-12	+12/-12	(Non linear)		(IEC 60318-6 Coupler)					
(Typical)	Frequency (Hz)	Linear (dB)		FFeq _{uv} (dB)																																																																																	
		Ext sign ¹	Int. Sign ²	Ext sign ¹	Int. Sign ²																																																																																
TDH39	125-250	+0/-2	+0/-2	+0/-8	+0/-8																																																																																
(IEC 60318-3 Coupler)	250-4000	+2/-2	+2/-1	+2/-2	+2/-2																																																																																
	4000-6300	+1/-0	+1/-0	+1/-0	+1/-0																																																																																
DD45	125-250	+0/-2	+1/-0	+0/-	+0/-7																																																																																
(IEC 60318-3 Coupler)	250-4000	+1/-1	+1/-1	+2/-2	+2/-3																																																																																
	4000-6300	+0/-2	+0/-2	+1/-1	+1/-1																																																																																
E.A.R Tone 3A	250-4000	+2/-3	+4/-1	(Non linear)																																																																																	
(IEC 60318-5 Coupler)																																																																																					
IP 30	250-4000	+2/-3	+4/-1	(Non linear)																																																																																	
(IEC 60318-5 Coupler)																																																																																					
B71 Bone Conductor	250-4000	+12/-12	+12/-12	(Non linear)																																																																																	
(IEC 60318-6 Coupler)																																																																																					
External signal	Speech replaying equipment connected to the CD input must have a signal-to-noise ratio of 45 dB or higher. The speech material used must include a calibration signal suitable for adjusting the input to 0 dBVU.																																																																																				
Free Field	<u>Power amplifier and loudspeakers</u> With an input of 7 Vrms - Amplifier and loudspeakers must be able to create a Sound Pressure Level of 100 dB in a distance of 1 meter - and meet the following requirements: <table><tr><td colspan="2">Frequency Response</td><td colspan="2">Total Harmonic Distortion</td></tr><tr><td>125-250 Hz</td><td>+0/-10 dB</td><td>80 dB SPL</td><td>< 3%</td></tr><tr><td>250-4000 Hz</td><td>±3 dB</td><td>100 dB SPL</td><td>< 10%</td></tr><tr><td>4000-6300 Hz</td><td>±5 dB</td><td></td><td></td></tr></table>	Frequency Response		Total Harmonic Distortion		125-250 Hz	+0/-10 dB	80 dB SPL	< 3%	250-4000 Hz	±3 dB	100 dB SPL	< 10%	4000-6300 Hz	±5 dB																																																																						
Frequency Response		Total Harmonic Distortion																																																																																			
125-250 Hz	+0/-10 dB	80 dB SPL	< 3%																																																																																		
250-4000 Hz	±3 dB	100 dB SPL	< 10%																																																																																		
4000-6300 Hz	±5 dB																																																																																				
Internal storage	1000 clients / 50.000 sessions																																																																																				

Signal Indicator(VU)	Time weighting: 300mS Dynamic range: 23dB Rectifier characteristics: RMS Selectable inputs are provide with an attenuator by which the level can be adjusted to the indicator reference position(0dB)	
Data Connections (sockets)	4 x USB A (compatible with USB 1.1 and later) 1 x USB B (compatible with USB 1.1 and later) 1 x LAN Ethernet	
External devices (USB)	Standard PC mouse and keyboard (for data entry) Supported printers: Standard PCL3 printers (HP, Epson, Canon)	
Input Specifications	TB	100uVrms at max. gain for 0dB reading Input impedance : 3.2KOhm
	Mic.2	100uVrms at max. gain for 0dB reading Input impedance : 3.2KOhm
	CD	7mVrms at max. gain for 0dB reading Input impedance : 47KOhm
	TF (side panel)	100uVrms at max. gain for 0dB reading Input impedance : 3.2KOhm
	TF (front panel)	100uVrms at max. gain for 0dB reading Input impedance : 3.2KOhm
	Wave files	Plays wave file from hard disk drive
Output Specifications	FF1 & 2	7Vrms at min. 2KOhm load 60-20000Hz -3dB
	Left & Right	7Vrms at 10 Ohms load 60-20000Hz -3dB
	Ins. Left & Right	7Vrms at 10 Ohms load 60-20000Hz -3dB
	Bone	7Vrms at 10 Ohms load 60-10000Hz -3dB
	Ins. Mask	7Vrms at 10 Ohms load 60-20000Hz -3dB
	Monitor(side panel)	2x 3Vrms at 32 Ohms / 1.5Vrms at 8 Ohms load 60-20000Hz -3dB
Display	5,7 inch high resolution color display 640x480 pixels	
Compatible software	Diagnostic Suite - Noah, OtoAccess and XML compatible	
Dimensions (LxWxH)	36.5 x 29.5 x 6.5 cm / 14.4 x 11.6 x 2.6 inches	
Weight	3.3kg/6.3lb	
Power supply	100-240 V~, 50-60Hz max 0.5A	
Operation environment	Temperature:	15-35°C
	Re. Humidity:	30-90% Non condensing
Transport and storage	Transport temperature:	-20-50°C
	Storage temperature:	0-50°C
	Re. Humidity:	10-95% Non condensing