MADSEN Astera

Clinical audiometer

The MADSEN Astera is a state-of-the-art clinical audiometer that enables you to work with precision and flexibility, whether you practice in a major health care facility or a one-person office. It combines the best features of traditional, stand-alone audiometers and newer PC-based systems so you can store, share and report all data in our OTOsuite software universe or integrate directly with NOAH and Electronic Medical Records.

Multiple users can each enjoy their own customized interface
To cover the needs of multiple users and various testing scenarios, the Astera can be customized by individual users. This feature quickly lets each user define his or her own favorite test settings and sequences without the need to reset the unit each time it is used. And because the unit combines traditional stand-alone audiometers with the newer PC-based software, it can operate through the familiar user interface of the Audiometer Control Panel or the PC keyboard or mouse.

Future-proof design
The MADSEN Astera is durable, comfortable and future-proof. Not only will users receive soft ware upgrades for the life of the equipment, the Astera is ready to meet future requirements of EMR (Electronomic Medical Records) by incorporating standard data-transfer protocols.

Full range of tests

- TEN Test
- QuickSIN
- Tinnitus Evaluation
- ABLB
- SISI
- Stenger
- Tone Decay
- Multiple Frequency Weber
- Masking level difference (MLD)
- High frequency 20K
- Lüscher/DLI (Difference Limen Intensity)

OTOsuite™

Easy integration with other processes for seamless workflow
The Astera is part of the OTOsuite universe which means the audiometric workflow easily integrates with the immittance and fitting testing processes. This allows you to perform audiometry, fitting, counseling and verification in a seamless workflow. One-click data logging, combined immittance and audiometry reporting contribute to a more efficient testing process and helps eliminate paperwork.

otometrics

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Technical specifications:

Channels	
Two separate and identical channels	
Frequency range	
TDH39:	Standard frequencies: 125 - 12500 Hz
HDA 200:	Standard frequencies: 125 - 20000 Hz
Insert phones:	Standard frequencies: 125 - 8000 Hz
BC:	Standard frequencies: 250 - 8000 Hz
SF:	Standard frequencies: 125 - 20000 Hz
FRESH noise stimulus*:	125 - 12500 Hz
NBN masking:	Available for each stimulus frequency
** Range may be limited by choice of transducer*	
Frequency resolution	
1/6, 1/12, 1/24 and 1/48 octave as well as 1 Hz (You can store up to 24 points for each audiometry curve)	
Level range	
Maximum output will be limited by the transducer	
AC:	-10 to 120 dB HL (500 to 4000 Hz; supra-aural earphone)
BC:	-10 to 80 dB HL (1500 to 3000 Hz; mastoid placement)
SF:	102 dB SPL in a 6' by 6' or 2 x 2 m sound room
Level accuracy	
Entire level range (AC):	125 to 5000 Hz: ±3 dB
	5000 to 20000 Hz: ±5 dB
Entire level range (BC):	250 to 5000 Hz: ±4 dB
	5000 to 8000 Hz: ±5 dB
Level resolution	
1, 2, or 5 dB step resolution over the entire range	
Stimulus types	
Tone	
Warble	
Pulsed tone	
Pulsed warble	
FRESH noise (FREquency-Specific Hearing assessment noise)	
Pulsed FRESH noise	
Stimulus presentation	
Normal:	The signal is presented when the Stimulate button is pressed
Continuous ON:	The signal is interrupted when the Stimulate button is pressed
Pulse:	The signal is pulsed
Pulse duration:	200 ms on and 200 ms off
Masking types	
Narrow Band Noise	
• AC and BC	Correlated
• SF	Non-correlated[a]
Speech Weighted Noise	
• AC and BC	Correlated
• SF	Non-correlated[a]
White Noise (Wide band noise)	
• AC and BC	Correlated
• SF	Non-correlated[a]
(a) A maximum of 3 non-correlated simultaneous masking signals	
Stimulus modulation	
FM (Warble):	Adjustable modulation rate and depth:
	Modulation rate: 1-20 Hz (default: 5 Hz)
	Modulation depth: 1-25% of center frequency (default: 5%)
SISI:	5, 2, 1 dB increments
Special tests	
TEN Test, QuickSIN (optional), SAL Test, MLD, ABLB, SISI, Weber, Rinne, Stenger, Tone Decay, Tinnitus tests	
Total harmonic distortion	
Air < 2.5 %	
Bone < 5 %	

Selectable transducers	
AC:	TDH39, HDA 200, and Insert phones
BC:	B71 (Mastoid / Forehead)
SF:	Passive sound field speaker, using the built-in amplifier in MADSEN Astera, or Sound field speaker with built-in amplifier or external amplifier, with both types using the line output from MADSEN Astera
(Transducer options depend on how MADSEN Astera is ordered and calibrated)	
Outputs	
AC:	3 x 2 mono jacks, 1/4 "
BC:	2 x mono jacks, 1/4 "
SF power output:	4 x terminals, 4 x 40 W peak, 8Ω load
SF line output:	4 x RCA phone, 4 x 1.6 Vrms,
External inputs	
CD/Tape:	0.2 to 2.0 Vrms, 10 kΩ 2 x RCA phone
Talk Back microphone:	Electret microphone
Input voltage:	0.002 to 0.02 Vrms
Input resistance:	2.21 kΩ.
	3.5 mm jack
USB port connector	
Type:	USB device port
Compliant:	USB 2.0
Speed:	Full-speed (12 Mb/s)
Dimensions	
Approx. 325 x 255 x 60 mm (12.8 x 10 x 2.4 inches)	
Weight	
Approx. 1.3 kg (2.85 lb)	
Power supply	
External power supplies, type:	
Output:	24 V, 3.75 A
Input:	100-240 V, 50-60 Hz, 1.0 A
Standards	
Audiometer:	EN60645-1, Type 1, EN60645-2 Type A-E, EN60645-4, and ANSI S3.6
Patient Safety:	Complies with EN 60601-1, Class 1, Type B; U2601-1; CAN/CSA-C22.2 NO 601.1-90.
EMC:	EN 60601-1-2
Audiometer Control Panel	
USB port connector	
Type:	USB device port
Compliant:	USB 2.0
Speed:	Full-speed (12 Mb/s)
Dimensions	
Approx. 410 x 290 x 36 mm (16.1 x 11.4 x 1.4 inches)	
Weight	
Approx. 2.1 kg (4.6 lb)	
Power supply	
No external power supply. Supplied by the USB (5 V)	
*(If you are using a USB hub, use a **powered** USB hub)*	
PC System Requirements	
• Pentium 4, 1.5 GHz	
• 1 GB RAM	
• 32 MB graphics adapter, 32 bit color	
• 3 GB free disk space for installation of this software	
• Windows XP Professional SP1, Windows 2000 SP3 or Windows Vista, Windows 7	
• Internet Explorer 6 Service Pack 1	
• A USB port for connection of the accessories	
• NOAH 3.1™ or higher for NOAH mode operation (please refer to HIMSA at www.himsa.com)	

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