# MADSEN AccuScreen

# Technical specifications

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|---|---|
| **Measurement techniques** | |
| **TEOAE** | |
| Evaluation method: | Noise-weighted averaging, counting of significant signal peaks |
| Stimulus: | Non-linear click sequence |
| Stimulus level: | 75 dB(A) ± 5 dB in 2 cc coupler, self calibration depending on ear canal volume |
| Click rate: | 67-76 clicks per second (randomized) |
| Input filter: | 1 to 4 kHz |
| Display: | Statistical waveform, measurement progress, TEOAE detection level, noise level |
| **DPOAE** | |
| Evaluation method: | Noise-weighted phase statistics |
| Stimulus: | Primary tone pair, F2/F1 = 1.24 |
| Available test frequencies: | F2 = 1, 1.5, 2, 3, 3.5, 4, 5 and 6 kHz |
| Default test frequencies: | F2 = 2, 3, 4 and 5 kHz (***Pass/Clear Response*** at 3 out of 4) |
| Test level: | L1/L2 = 60/50 dB SPL or 65/55 dB SPL |
| Test display: | DP-Gram, DPOAE level, noise level, test progress |
| Result display: | Overall ***Pass/Clear Response*** or ***Refer/No Clear Response***, DP-Gram with DPOAE and noise level. |
| **ABR** | |
| Evaluation method: | Noise-weighted averaging and template matching |
| Stimulus: | 30, 35, 40 or 45 dB nHL chirp |
| Chirp rate: | 78-82 chirps per second (randomized) |
| Impedance test range: | 1 to 99 kΩ |
| Impedance accepted for test: | < 12 kΩ |
| Impedance control: | Before test, periodically during test, stimulus continues during impedance control |
| Test display: | Statistical graph, impedances, ABR detection probability, EEG-level and test progress |
| Result display: | Statistical graph, impedances, EEG-level and overall ***Pass/Clear Response*** or ***Refer/No Clear Response***. |
| Electrodes: | Disposable hydrogel electrodes |
| **Dimensions** | |
| Approx. | 200 x 73 x 34 mm (7.9 x 2.9 x 1.3 inches) |
| **Weight** | |
| Approx. | 240 g (8.5 oz) excluding battery<br>280 g (9.9 oz) including battery |
| **Display** | |
| Type: | Color, TFT, touch screen with adjustable LED backlight |
| Dimensions: | 71.5 x 53.6 mm (2.8 x 2.1 inches) |
| Resolution: | 240 x 320 pixels |
| Keystroke durability | min. 1 million repetitive strokes per screen point |
| **Keypad** | |
| Resistive touch screen (can be used with gloves) | |
| **Memory** | |
| Patient memory capacity: | Max. 250 patients / Min. 500 tests |
| **Connectors** | |
| OAE probe connector: | 14 pin ODU Medisnap - For OAE Probe or ABR ear coupler cable |
| ABR (ABR version only): | 4 pin ODU Medisnap - For ABR electrode cable |
| **Real time clock** | |
| Integrated real time clock for time-stamping of measurements. The clock is automatically synchronized with PC clock when docked. | |
| Backup: | Min. 7 days, when battery is removed from unit |
| **Data interfaces** | |
| PC: | IR data transmission to docking station - USB interface from docking station to PC |
| **Transport and storage environment** | |
| Temperature range: | -20 - +60°C (-4 - 140°F) |
| Humidity range: | 10 - 90 % rel., non-condensing |
| Air pressure | 500 hPa to 1040 hPa |
| **Operating environment** | |
| Temperature range: | 10 - 40°C (50 - 104°F) |
| Humidity range: | 30 - 90 % rel., non-condensing |
| Air pressure | 500 hPa to 1060 hPa |
| **Standards** | |
| **Safety:** | |
| | EN 60601-1:2006+A1:2013<br>ANSI/AAMI ES60601-1:2005 + A1:2012<br>Internally Powered, Type BF, IPX0<br>IEC 60601-2-40:2016 and EN 60601-2-40:1998 |
| EMC: | IEC 60601-1-2:2007 and EN 60601-1-2:2007<br>IEC 60601-1-2:2014 and EN 60601-1-2:2015 |
| Otoacoustic emissions: | IEC 60645-6:2009, Type 2 and EN 60645-6:2010, Type 2 |
| Auditory evoked potentials: | IEC 60645-7:2009, Type 2 and EN 60645-7:2010, Type 2 |
| **Power supply and battery** | |
| Battery type: | Rechargeable Li-ion 3.7 V/1800 mAh (6.7 Wh), fully charged |
| Estimated battery life: | 8 hours of continuous use (based on a typical use scenario. Actual use can influence the battery life time.) |
| Battery level indicator: | 5-step battery level indicator |
| Charge time in AccuScreen docking station: | 80% charged: 4½ hours |

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| **PC interface** | |
| Interface type: | USB 2.0, Full-speed |
| USB Power: | Uses <100 mA of current from the USB interface |
| **Printer interface** | |
| Interface type: | RS232 |
| Connector type: | 6-pol Mini Din |
| **DC power input** | |
| Input voltage: | 5 V DC ±5% |
| Max. power consumption when AccuScreen is docked: | 5 VA (5 V, 1.0 A) |
| Max. power consumption when AccuScreen is not docked: | 0.25 VA (5 V, 50 mA) |
| **Power adapter** | |
| Input voltage/range: | 100-240 V AC, 50-60 Hz |
| Output voltage: | 5.0 V DC / min. 1.0A |
| Mains plug types: | US, UK, Europe and Australia |
| **Probe** | |
| Flexible, shielded cable. Approx. length: 150 cm/59 inches | |
| **Dimensions** | |
| Probe body: | 20 mm Ø x 23 x 11 mm (0.8 inch Ø x 0.9 inch x 0.43 inch) |
| Probe tip: | 3.3 mm Ø x 10 mm (0.13 inch Ø x 0.4 inch) |
| **Weight** | |
| Probe incl. probe tip: | Approx. 4.5 g |
| **Eartips** | |
| Standard (cylindrical): | 4 sizes (3.7 - 5 mm) |
| Silicone tree tip: | 1 size (4 - 7 mm) |
| Foam tip: | 1 size (7 - 13 mm) |
| **ABR electrode cable** | |
| Flexible, shielded cable. Approx. length: 140 cm/55 inches | |
| **ABR ear coupler cable (optional)** | |
| Flexible, shielded cable. Approx. length: 145 cm/57 inches | |
| **Device class** | |
| II a (according to Council Directive 93/42/EEC Appendix IX) | |

**Standard accessories**

Carrying case
Docking station, including power adapter and USB cable
Starter kit (includes ear tips, probe tips, and probe tip cleaning tool)
Probe (except ABR w/ear coupler cable) (Cable Approx. length: 150 cm/59 inches)
ABR electrode cable (ABR version only) (Approx. length: 140 cm/55 inches)
ABR ear coupler cable (ABR w/ear coupler cable version only) (Approx. length: 145 cm/57 inches)
ABR tester (ABR version only)
User Manual
Battery
Cleaning cloth

**Optional accessories**

Ear tips
Probe tips
Probe tip cleaning tool
Label printer with printer cable
Probe (Approx. length: 150 cm/59 inches)
ABR ear coupler cable (Approx. length: 145 cm/57 inches)
External battery charger
EarHugs
Ear coupler cable for EarHugs (Approx. length: 145 cm/57 inches)
Standard accessories and optional accessories may vary from country to country - please consult your local distributor.

**Available configurations**

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| AccuScreen TE |
| AccuScreen DP |
| AccuScreen TE/DP |
| AccuScreen ABR |
| AccuScreen ABR/TE |
| AccuScreen ABR/DP |
| AccuScreen ABR/TE/DP |

TE = TEOAE, Transiently Evoked Otoacoustic Emissions
DP = DPOAE, Distortion Product Otoacoustic Emissions
ABR = Auditory Brainstem Response

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