

Earscan™

Acoustic Impedance Microprocessor Audiometer with Data Output

OPERATING GUIDE

START UP

1. Impedance Units: Insert probe and airline into 'PROBE' location. Select tip for probe.
2. Audiometer Units: Insert phone jack into 'PHONE' location. Insert Patient Response Button into 'BUTTON' location.
3. Plug unit into grounded outlet.
4. Press rocker switch on back panel to 'on' position. After Earscan does a brief check you are ready to begin testing.

SETTING AUDIOMETER PARAMETERS

Allows frequency and stimulus selection. Test parameters will default to factory pre-set levels when power is shut off.

1. Press <SPEC>, <ENTER>, and <AUD>.
2. Press <DISP> to observe keys operating function.
3. Press <DISP>. Use <Hz↑> and <Hz↓> to select frequency. Press <TONE> to include frequency. Press <CLEAR> to remove any frequency. The starting frequency (-), is set by pressing <SPEC>.
4. Press <DISP> to access stimulus range programming. Press <Hz↓> to select minimum stimulus range. Toggle <dB↑> and <dB↓> to set the desired minimum dB level.
5. Press <Hz↑> to select maximum stimulus range. Toggle <dB↑> and <dB↓> to set the desired maximum dB level.
6. Press <AUD> to save parameters; exit programming mode.

INITIALIZATION

Date Press <DATE>.
Press numbers for (DD)(MM)(YY).
Press <ENTER>.

Operator ID Press <SPEC>, <ID>.
Press up to 12 numbers for ID.
Press <ENTER>.

IMPEDANCE

1. Press <IMP>.
2. Seal probe in ear; hold steady until test ends. Impedance test is done when tympanogram is displayed on the screen.
3. Press <DISP>. Numerical values of Middle Ear Pressure, Physical Volume, COMPLIance, and GRADient are displayed.
4. Press <DISP> to review the graphs or the numerical data.
5. Press <RIGHT/LEFT> to toggle between right and left ear. For impedance test on left ear repeat steps 1 through 4.
6. Impedance Speed:
Press <SPEC>, <IMP>, <1> for fast speed.
Press <SPEC>, <IMP>, <2> for normal speed.
7. Press <SPEC>, <DISP> to toggle display between 1cc full scale and autoranging.

ACOUSTIC REFLEX: 1K & 2K @ 105 dB SPL

1. Follow steps for IMPEDANCE, but hold probe steady in ear until display shows 'REMOVE PROBE.'
2. Press <DISP>. Reflexes are displayed after numerical values of the tympanogram.

PATIENT SET-UP FOR AUDIOMETRY

1. Seat patient so the front panel of the audiometer cannot be seen by the patient.
2. Place headphones securely over ears, making sure red phone covers right ear and blue phone covers left ear.
3. Instruct the patient to listen for either a continuous tone or a series of beeping sounds. He should raise his hand on the same side the sound is coming from. If the patient response button is used, the patient should press and release the button whenever a sound is heard.

MANUAL AUDIOMETRY: 250 Hz thru 8K Hz

1. Press <AUD> once.
2. Press <RIGHT/LEFT> to select ear.
3. Increase and decrease frequency using the <Hz> keys.
4. Increase and decrease dB level using the <dB> keys.
5. Press <TONE> to present stimulus.
6. Toggle <DISP> to display thresholds and review data.
7. Press <SPEC>, <AUD> to toggle the Manual Audiometer output between continuous tone and a 3-pulsed tone.

AUTOMATIC AUDIOMETRY

1. Press <AUD> twice.
2. Earscan will determine and store thresholds for each frequency. Earscan will signal the completion of testing by presenting a series of tones.
3. Toggle <DISP> to display thresholds and review data.

PRINTING RESULTS

1. For data output, connect cable of printer or computer to serial port on rear panel of Earscan.
2. Install Patient ID number. Press <ID> and enter up to 12 digits or dashes to identify who is being tested. Press <ENTER>.
3. Press <GRAPH> to print Graphs and Data, or press <DATA> to print numerical data only.
4. Press <GRAPH>.
5. Press <GRAPH> or <DATA> for each additional printout.

IMPORTANT NOTES

1. Press <SPEC>, <CLEAR> to clear old data and patient ID from unit.
2. Press <CLEAR> and begin the number again if an error is made while entering a number or if the patient errors in automatic audiometry test.
3. Rerun any test if the results are in question.
4. DO NOT swap probes or headsets among units. Each Earscan is calibrated to match a particular probe and headset. The last digits of the Earscan serial number are engraved on probe plug and on each headphone label.

Any questions or comments? Please feel free to call on your dealer or Micro Audiometrics.



Micro Audiometrics

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ACOUSTIC — IMPEDANCE INTERPRETATION

TYPE	EARSCAN™ GRAPH	TEST VALUES	CONDITION
NORMAL TYMPANOGRAM		MEP: 0 to -100 daPa (negative value dependent upon examiner criteria) PV: <2.0 ml in young children <2.5 ml in older children & adults COMP: > 0.2 ml or <1.5 ml	Normal tympanic membrane & middle ear system.
NEGATIVE PRESSURE, normal compliance		MEP: -100 daPa or greater (neg. value may vary) PV: Normal COMP: > 0.2 ml	Eustachian tube dysfunction; middle ear effusion may be present. (Rounded tympanograms indicate a higher probability of effusion.)
FLAT TYMPANOGRAM, low compliance		MEP: ? PV: Normal when tympanic membrane intact > 2.5 ml when tympanic membrane not intact COMP: < 0.2 ml	Middle ear effusion, or thickened tympanic membrane, or perforation, or patent ventilating tube.
PEAKED TYMPANOGRAM, high compliance		MEP: Normal PV: Normal COMP: > 1.5 ml	Flaccid tympanic membrane, or ossicular discontinuity.
POSITIVE PRESSURE, normal compliance		MEP: Negative PV: Normal COMP: > 1.5 ml	Eustachian tube dysfunction and flaccid tympanic membrane, or ossicular discontinuity.
IPSI LATERAL ACOUSTIC REFLEX INTERPRETATION		Reflex: Present Tympanogram: Normal Reflex: Absent Tympanogram: Abnormal	Middle ear function completely normal. Consider adhesions, or ossicular fixation, or conductive hearing loss.

KEY —

MEP: Middle Ear Pressure
PV: Physical Volume
COMP: Compliance

daPa: dekapascals (approximately equivalent to millimeters of water pressure - mmH2O)
ml: milliliter (equivalent to cubic centimeter - cc)