The FONIX® FP40

Portable and Desk Model Hearing Aid Analyzers

The FONIX FP40 Portable and the FP40-D Desk Model hearing aid analyzers are important members of the FONIX family. They are reliable, mid-range units with a wealth of programming. Real Ear Measurements are a standard feature on the FP40-D and a popular option on the for FP40 portable.

Test Sequences

Since we sell this unit all over the world, we have made sure to provide standards in force wherever the user lives: ANSI, IEC, JIS, ISI*. Your choice of one test sequence comes with a new unit. You may add others if needed. ANSI '96 and ANSI '87 are currently available. The IEC test sequence is based on the latest IEC quality control standard for hearing aids.

Quick Tests

Sometimes you don't want to do a whole test sequence. The FP40 and FP40-D make it easy for you to look at a simple pure tone or composite response. You can even look at one frequency. Push a button if you want to see data in numbers rather than curves.

Composite Option

The composite signal provides a real time measurement that tells you what is happening with the hearing aid immediately. The composite signal avoids the errors inherent in pure tone testing of AGC and signal processing aids that are called "artificial blooming of the lows."

In addition, the composite signal will show you when the aid has intermodulation distortion. The curve will begin to break up when this form of distortion appears. For some time now, we have been including an interrupted signal that in most cases will allow you to test digital hearing aids with the noise reduction circuit on. We call it our digital speech signal. Three different spectrums are included: ICRA, ANSI '92, and LTASS.

Don't forget that the response that you see on a computer screen on a programmable aid is always a simulation. It may or may not be correct. You have to test to be sure.

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* ANSI—American National Standards Institute
IEC—International Electrotechnical Commission
JIS—Japanese Industrial Standard
ISI—Indian Standards Institute

Spectrum Analysis

You can use live speech as a great counseling tool. Just turn the composite signal off while the individual is being tested in the real ear. Now have the accompanying person speak and everyone there will see what a difference an individual voice can make. Sometimes, the hearing aid will quiet a shout. At another time, the quiet voice will be amplified to the range where it can be understood.

Great Flexibility in Real Ear Measurements

You can choose to do real ear measurements in many different ways. The traditional insertion gain measurement is available. However, many people will be interested in looking at their measurements in SPL. It is useful to know how the hearing aid works with soft, medium and loud sounds. The target can be converted from insertion gain to SPL when desired. All of this information can be seen on one screen. The RECD process is also available and is made easier by the fact that you can save the response of the insert earphone so it is only necessary to do that part of the measurement once.

The DSL (Desired Sensation Level) Program, developed at the University of Western Ontario, is standard on all FP40-Ds and all FP40s with the Probe (real ear option).

The Audibility Index based on the work of Killion and Mueller is available. In this case the measurements and target are all changed into HTLs (Hearing Threshold Measurements). Percentages of audibility are shown for all curves.

Telecoil and Battery Drain Measurements

There are two different methods of telecoil available. Purchase the telewand and you can get the complete measurements called for in the ANSI '96 specification. Or, if you have need of the older methods, a telecoil board is an optional accessory. Four battery pills are standard with the FP40 and are optional with the FP40-D. We offer battery pills in every size that is used by the hearing industry.

Printers

The built-in printer is quiet and fast. It is also possible to use an external color laser or inkjet printer.

CIC Option

2-cc coupler measurements of CIC hearing aids are useful for quality control purposes, but they do not give the user a realistic measure of what amplification the user of the CIC aid really is receiving. Our CIC option includes a special coupler and correction factors that provide a much closer match to the real ear amplification to the average user.

Profiler Option

Available for units with Composite Option

This Option provides nine different tests in under 45 seconds to identify the "mystery" hearing aids that appears in your office. Or it can be used as a very quick way to record the way a programmable aid has been set up. It maybe just what you need for future reference or for third party payment.

A separate FP40 Specifications Sheet is available.

FP40

STANDARD ACCESSORIES

Operator's Manual
HA-1, HA-2 couplers
Battery pills #675/65, 312, 10A, 230
FM40 microphone
Fun-Tak
Ear level adapter
Roll of printing tape
Lid with accessories compartments
14mm to 1" adapter
VGA monitor capability

STANDARD WITH PROBE OPTION

Monitor headset
Wedge ear hook
Calibration clip
Probe calibration adapter
M250 probe microphone assembly
Set of 25 probe tubes
Felt pen—dry erase
Mounting sleeve

OPTIONAL ACCESSORIES

External printer kit
Swing arm, speaker and cable
Telewand for ANSI '96
Telecoil induction board
Quest CQ-10 sound level calibrator
Maintenance Manual (on request at time of purchase)
Children's wedge ear hook
6010 sound chamber
Battery pills #41, 5/5A, AA
Insert Earphone Kit
FM kit
VGA monitor

OPTIONS

Composite Option
Probe Option (Real Ear)
Battery Pack Option
ID Option
RS232 Option
OES (Occluded Ear Simulator) Option
CIC Option with coupler
WinCHAP software
IEC, ANSI '87, ANSI '96, JIS, ISI test sequences (one standard, others at extra cost.)
Profiler
DSL/Link programming
Safety Approval UL 544 available on request at no additional charge

FP40-D

STANDARD ACCESSORIES

Same as FP40, with these exceptions:
Add:
All accessories standard with FP40 Probe Option except monitor headset.
Exclude:
Battery pills
Lid with accessories compartments
Carrying handle

OPTIONAL ACCESSORIES

Same as FP40, with these exceptions:
Add:
Battery pills #13, 675/76, 312, 10/230
Soft carrying case

OPTIONS

Same as FP40, with these exceptions:
Exclude:
Probe Option (standard on FP40-D)
Battery Pack

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FONIX FP40/FP40-D Specifications

SINE SIGNAL

Frequencies	
Normal Sweep	1/12 octave frequencies from 200 to 8000 Hz, closest 100 Hz, within 1%.
Fast Sweep	1/3 octave frequencies closest 100 Hz.
Warbled Sinewave	Has 5%, 33-1/3 Hz warble.
Short Sweep	1/2 octave frequencies closest 100 Hz.
Amplitude (RMS)	Coupler mode: 40 dB SPL through 100 dB SPL in 5 dB steps. Probe mode: 40 dB SPL through 90 dB. Accuracy at reference point, after leveling, 2.5 dB for 500 Hz through 3500 Hz; 3.5 dB for all other frequencies.
Harmonic Distortion	(at 70 dB SPL) Less than 0.5% for 500, 800, & 1600 Hz.

COMPOSITE SIGNAL (optional)

Frequencies	From 200 Hz to 8000 Hz in 100 Hz intervals. Accuracy within 1%.
Amplitude	**Coupler mode:** (RMS) 40 dB SPL through 100 dB SPL in 5-dB steps. **Probe mode:** 40 dB SPL through 90 dB. Accuracy at reference point, after leveling, 2.5 dB for 0.5 kHz through 3.5 kHz; 3.5 dB for all other frequencies.
Crest Factor	Less than 9 dB.

BATTERY CURRENT MEASUREMENT

Measurement Range	0 mA to 25.5 mA.
Current Limit	55 mA.
Accuracy	3% of full scale ±1 digit.
Resolution	0.1 mA.
Simulated Battery Types	10 A/230, 13, 312, 5, and 675 zinc air; 13, 312, 675, and 41 mercury; 13, 312, 76 silver; AA
Battery Voltages Supplied	1.5 V for silver oxide and AA, 1.3 V for mercury and zinc air.
Tolerance	±0.01V, no load.

DIGITAL READOUT OF SPL

Frequency Range	200 Hz through 8000 Hz.
Amplitude Range	0 dB SPL through 149.9 dB SPL, -70 dB through +100 dB gain.
Max Input Signal	150 dB SPL.
Resolution	0.1 dB
Type	True RMS.
Accuracy	From 250 Hz to 2500 Hz, 2 dB ±one digit. All other frequencies, 3 dB ±one digit.

HARMONIC DISTORTION ANALYSIS

Type	2nd, 3rd, and 2nd + 3rd = total.
Resolution	.1%
Reading	Percent with respect to total signal. Readings made at frequencies from 400 through 2500 Hz.

SYSTEM NOISE

Equivalent Input Noise	50 dB SPL RMS.
Noise Reduction	Signal averaging synchronized with the signal generator. Averaging factors: off, 2, 4, 8, or 16. Random noise will be reduced by an amount equal to the inverse square root of the factor chosen.

POWER REQUIREMENTS

Voltage	90 VAC to 264 VAC.
Frequency	50 Hz to 60 Hz.
Power Dissipation	40 VA at 120 VAC, 60 Hz input, normal operation, 55 VA while printing.

BATTERY OPERATION (optional)

Operating Time	3 hours continuous on battery power (with new battery at 25 degrees C).
Auto Shutdown	General shutdown after no operation of controls for 15 minutes (battery operation only).
Battery Charger	Built-in automatic battery charger. Full charge in 10 hours.

SOUND CHAMBER

Test Area	3 1/2" x 5 1/2" (8.9 x 13.9 cm)

DISPLAY SCREEN

Backlit Liquid	Graphical display, 640 x 200 pixels
Crystal Display	Display angle adjustable.

HIGH SPEED THERMAL PRINTER

Print Speed	Screen copy in 14-19 seconds.
Paper Width	60 mm.

EXTERNAL CONNECTORS

Jacks	RS232 (9-pin), probe monitor earphone (1/4" stereo), external speaker jack (3.5 mm stereo phone), VGA CRT (15-pin).

PHYSICAL DESCRIPTION

Dimensions	20.125" x 14.750" x 6.5" (50.5 x 36.9 x 16.25 cm) (with lid on case).
Color	Grey, black trim, white control panel.
Weight	25 pounds (11,40 kg) with lid and battery; 22 pounds (10 kg) without battery.

GUARANTEE

The FONIX FP40 and its accessories are guaranteed to be free from manufacturing defects which would prevent the products from meeting these specifications for a period of one year from date of purchase.

SAFETY APPROVAL

UL544 and IEC 601 available on request (no charge).

CE APPROVAL

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