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.

* 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.
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.

BARTERьер CURRENT MEASUREMENT
Measurement Range 0 mA to 25.5 mA.
Current Limit 55 mA.
Accuracy 3% of full scale ±1 digit.
Resolution ±0.01 V, 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

FONIX FP40/FP40-D Specifications

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