



# Piano Basic – Plus – Plus VRA

CLINICAL AUDIOMETER

### DESCRIPTION

Piano is an advanced clinical audiometer with two separate and independent channels. Piano features a complete battery of tests, all easily managed via a wide touch screen color display.

The “Plus VRA” version of the Piano audiometer forms the heart of a professional VRA system and can use as reinforces either traditional cabinet toys or videos and images on one or more displays.

### CLASSIFICATION

- EN 60645-1 / ANSI S3.6: Type 1
- EN 60645-2 / ANSI S3.6: Type A or A-E
- EN 60645-4 / ANSI S3.6: Compliant (Piano Plus / Plus VRA only)

### AVAILABLE SIGNALS

- Stimulus: pure tone, warble tone
- 2 external inputs for speech audiometry
- MIC input for live speech audiometry
- Internal input (flash memory) for speech audiometry
- Masking: NBN, WN, SN

### SIGNALS SPECIFICATION

- Attenuator step: 1 and 5 dB
- Presentation: Continuous, Pulsed (0.5, 1 and 2 Hz or custom freq.), Single Pulse (with selectable duration)
- Warble: 5 Hz sin wave modulating signal

### AVAILABLE OUTPUTS AND TRANSDUCERS

- AC: TDH-39, ER-3A / ER-5A insert earphones, HAD-200 headphones (Piano Plus / Plus VRA only)
- BC: B-71 bone vibrator
- Free field
- Insert masking earphone: IME-100

### AVAILABLE TESTS

- Pure Tone audiometry
- Auto threshold (modified Hughson-Westlake)
- Speech audiometry (2 channels)
- ABLB
- MLB
- SISI: automatic score; 1 dB increment (5 dB for familiarization)
- DLI, with increments between 0 and 5 dB
- Tone decay, with 60 or 120 sec. duration
- Stenger, with pure tone or speech stimulation
- 2 independent channels Master Hearing Aid
- TEN test
- QuickSIN® test (optional)

Only on Piano Plus:

- HF audiometry: from 8 to 20 kHz
- Multi Frequency: frequency steps selectable between 1/3, 1/6, 1/12 and 1/24 octave
- Bekesy Test: 125 Hz to 8 kHz fixed or sweep frequency, continuous or pulsed tone
- Masking Level Difference (MLD): noise and / or signal out of phase

Only on Piano Plus VRA:

- Visual Reinforcement Audiometry (VRA) test
- Conditioned Play Audiometry (CPA) test

### PURE TONE: FREQUENCIES AND MAXIMUM LEVELS (dB HL)

Freq. (Hz)	AC TDH-39	AC HDA-200	AC ER-3A	AC ER-5A	BC	FF (*)
125	80	85	90	90	-	75
250	100	100	105	100	45	85
500	120	110	110	110	65	95
750	120	110	115	120	70	95
1.000	120	110	120	120	75	95
1.500	120	110	120	120	80	95
2.000	120	110	120	115	80	95
3.000	120	110	120	115	75	95
4.000	120	105	110	110	75	95
6.000	110	100	100	100	55	90
8.000	100	90	90	90	50	85
9.000	-	90	-	-	-	80
10.000	-	90	-	-	-	80
11.200	-	90	-	-	-	80
12.500	-	80	-	-	-	80
14.000	-	70	-	-	-	80
16.000	-	50	-	-	-	50
18.000	-	110 dB SPL	-	-	-	-
20.000	-	110 dB SPL	-	-	-	-

(\*) The values refer to “normal” range; add 10 dB to each value in case of “extended range” option selected

### SPEECH AUDIOMETRY: MAXIMUM LEVELS (dB HL)

AC TDH-39	AC ER-3A	AC ER-5A	BC	FF
100	100	100	55	Normal: 75
				Extended: 85

### PATIENT – OPERATOR COMMUNICATION

Talk over: built-in or external microphone  
 Talk back: through built-in speaker or monitor headset (included); clip-on patient microphone included  
 Up to 2 patient response buttons (left and right)

### MONITOR SIGNAL

Both channels and patient voice monitored through the built-in speaker or monitor headset (included)

### INTERNAL FLASH MEMORY

Used to store the speech material (.wav format)  
 Capacity: 2 GB (more than 3 hours of speech)  
 Speech material upload: through ATIT software (incl.)

**PRINTER**

Optional integrated thermal printer  
Paper size: 112 mm

**CALIBRATION**

Validity: 12 months  
All the parameters set through the device software

**COMPUTER INTERFACE**

Connection: USB (driverless)  
Compatible software: - Inventis Daisy with Maestro module  
- Noah with "Maestro for Noah" module

**HYBRID TECHNOLOGY**

Description: Piano can be controlled either as a stand-alone or as a PC-controlled audiometer  
It requires Daisy or Noah Maestro module

**DISPLAY**

Type: Graphical colour TFT LCD  
Size: diagonal 7", 150 mm x 90 mm  
Resolution: 800 x 480  
Resistive touch screen

**POWER SUPPLY**

*Without integrated printer:*  
Maximum consumption: 9 Watts  
Power supply: 6V, 2A cont., through an external medical grade 100-240 Vac 50/60 Hz power supply  
*With integrated printer:*  
Maximum consumption: 25 Watts  
Power supply: 6V, 6A cont., through an external medical grade 100-240 Vac 50/60 Hz power supply

**MECHANICS**

*Without integrated printer:*  
Size (WxDxH): 32 x 32 x 15 cm / 12.6 x 12.6 x 5.9 in  
Weight: 2 Kg / 4.4 lbs  
*With integrated printer:*  
Size (WxDxH): 32 x 39 x 15 cm / 12.6 x 15.4 x 5.9 in  
Weight: 2.5 Kg / 5.5 lbs

**FREIGHT PACKING**

Size (WxDxH): 47 x 40 x 35 cm / 18.5 x 15.8 x 13.8 in  
Gross weight (without printer): 4.4 Kg / 9.7 lbs  
Gross weight (with printer): 4.9 Kg / 10.8 lbs

**APPLICABLE STANDARDS**

Pure tone audiometry: EN 60645-1, Type 1  
Speech audiometry: EN 60645-2, Type A or A-E (depending on the equalization filter status)  
High Frequency audiometry: EN 60645-4  
Calibration: EN ISO 389-1 (TDH 39), EN ISO 389-2 (ER-3A and ER-5A), EN ISO 389-3 (B71), EN ISO 389-5 (HF), EN ISO 389-7 (FF)  
Electrical safety: EN 60601-1, Class II type BF (model Basic and Plus without printer), Class I type BF (model VRA and devices with integrated printer)  
EMC: EN 60601-1-2

Piano is developed by Inventis s.r.l.  
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**CE CERTIFICATE**

93/42/EEC classification : Class IIa  
Classification rule (Annex IX, 93/42/EEC): 10  
Notified body: TÜV SÜD Product Service GmbH (0123)  
Number of CE certificate: G1 12 09 65346 006

**PRODUCT CODES**

10147: Piano model Basic – Clinical audiometer  
10164: Piano model Basic – Clinical audiometer – with integrated thermal printer  
10299: Piano model Basic VRA – Clinical audiometer with VRA exam  
10148: Piano model Plus – Clinical audiometer  
10165: Piano model Plus – Clinical audiometer – with integrated thermal printer  
10300: Piano model Plus VRA – Clinical audiometer with VRA exam  
10306: Piano model Plus VRA – Clinical audiometer with VRA exam – with integrated thermal printer

**INCLUDED PARTS**

- TDH-39 supra-aural headphones
- HDA-200 headphones (Piano Plus / Plus VRA only)
- B71 bone vibrator
- Patient response switch
- Monitor headset with boom microphone
- Clip-on microphone for patient-to-operator communication
- Plastic cover sheet
- Medical grade power supply
- USB connection cable
- User manual
- Inventis Software Suite CD
- Noah Maestro module
- Desktop response switch for children (Piano Plus VRA only)

**OPTIONAL ACCESSORIES (with order code)**

- 10166: ER-3A insert earphones
- 10172: ER-5A insert earphones
- 10177: IME-100 insert masking earphone
- 10181: Desktop, battery operated microphone for live speech tests
- 10179: Amplivox Audiocups noise excluding enclosures for TDH-39 headphones
- 10257: Additional patient response switch
- 10180: Cable set for sound booth
- 10182: Soft carrying case
- 10541: Trolley for audiometers / tympanometers
- 10149: Daisy Maestro module
- 10293: Thermal paper for Harp and Piano audiometers (box of 5)
- 10266: One active speaker FBT Jolly 5RA
- 10259: One active speaker FBT Jolly 8BA
- 10533: QuickSIN® test license

Only for Piano Plus VRA:

- 10301: Visual Reinforcement for Piano VRA – Kit The Bunny
- 10302: Visual Reinforcement for Piano VRA – Peanuts the Dog
- 10303: Visual Reinforcement for Piano VRA – Jack the Donkey
- 10053: Dedicated table for Pediatric Audiometry systems
- 10307: Stand for toy and speaker
- 10304: Daisy VRA module
- 10308: Pre-configured mini-tower computer with 4 video outputs - includes the webcam

