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

IEC 60645-1: Type 1 Class A/AE
ANSI S3.6: Type 1A/1AE
IEC 60645-1 / ANSI S3.6: EHF (Extended High Frequency) 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 or DD45 headphones, ER-3 or IP30 insert earphones, HDA-300 / DD450 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 Hughsone-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 (18 and 20 kHz not displayed in the audiogram)
- 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 DD45	AC HDA-200(*) HDA-300(*) DD450	AC ER-3 IP30	AC ER-5(*)	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	-	-	-	-

(*) Transducer supported but no more available for purchasing
(**) 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 DD45	AC HDA-200 HDA-300 DD450	AC ER-3 IP30	AC ER-5	BC	FF
100	90	100	100	60	Normal: 75
					Extended: 85

(*) Reduce by 20dB in case of free field equivalent filter activation.

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)

ASSISTANT MONITOR
Available only on Piano VRA version:
The Assistant monitor headphone is used for the operator to assistant communication.

PRINTER
Optional integrated thermal printer. Paper size: 112 mm

INTERNAL FLASH MEMORY
Used to store the speech material (.wav format)
Capacity: 4 GB (more than 6 hours of speech)
Speech material upload: through ATIT software (incl.)

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

COMPUTER INTERFACE
Connection: USB (driverless)
Compatible software: Inventis Maestro

HYBRID TECHNOLOGY
Description: Piano can be controlled either as a stand-alone or as a PC-controlled audiometer
It requires Inventis Maestro software.

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

POWER SUPPLY
External medical grade power supply.
AC consumption: 100-240Vac 47-63Hz 0.9-0.34A
DC output: 6V, 4,16A cont.

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: IEC 60645-1, ANSI S3.6
Speech audiometry: IEC 60645-1, ANSI S3.6
High Frequency audiometry: IEC 60645-1, ANSI S3.6
Calibration: ISO 389-1 (TDH 39 and DD45), ISO 389-2 (ER-3 /IP30 / ER-5), ISO 389-3 (B71), ISO 389-5 (HF), ISO 389-7 (FF), data from the manufacturer (HDA-300 / DD450 headphones)
Electrical safety: IEC 60601-1, Class I type BF
EMC: IEC 60601-1-2

CE CERTIFICATE
MDR 2017/745/EU Classification: Class IIa
Classification rule (Annex VIII, 2017/745): 10
Notified body: TÜV SÜD Product Service GmbH (0123)

PRODUCT CODES
10147: Piano model Basic – Clinical audiometer
10164: Piano model Basic – Clinical audiometer – with integrated thermal printer
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 or DD45 supra-aural headphones
- DD450 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
- Desktop response switch for children (Piano Plus VRA only)
- Integrated thermal printer (Printer versions only)

OPTIONAL PARTS (with order code)
- 10833: ER-3C insert earphones
- 11748: IP30 insert earphones
- 10177: IME-100 insert masking earphone
- 10181: Desktop, battery operated microphone for live speech tests
- 10266: One active speaker FBT J-5A

OTHER OPTIONAL PARTS (with order code)
- 10179: Amplivox Audiocups noise excluding enclosures for TDH-39 / DD45 headphones
- 10180: Cable set for sound booth
- 10182: Soft carrying case
- 10257: Additional patient response switch
- 10293: Thermal paper for Harp and Piano audiometers (box of 5)
- 10533: QuickSIN® test license

Only for Piano Plus VRA:
- 10302: Visual Reinforcement for pediatric audiometry - Toy Type 1
- 10303: Visual Reinforcement for pediatric audiometry – Toy Type 2
- 10053: Dedicated table for Pediatric Audiometry systems
- 10307: Stand for toy and speaker
- 10308: Pre-configured mini-tower computer with 4 video outputs - includes the webcam

Piano is developed by INVENTIS S.r.l.
info@inventis.it
www.inventis.it

The Inventis Quality System complies with ISO 13485 standard.