Data Sheet
Amplaid A321 - A321 HF
Clinical twin channel portable Audiometers

A321 complete battery of tests
The A321 Clinical and the A321 HF Clinical audiometers provide complete battery of tests from industrial audiometry to differential auditory investigation and research tests. The pre-set parameters of test menus can be customized to create the protocols most frequently used in the Hearing Clinic. The new parameters will be automatically presented thus saving precious operator’s time. Built-in test memories and efficient data handling allow rapid transfer to PC hosting Amplaid A.S.A. and NOAH module by means of built-in USB and RS232 serial ports.

Pure tone and speech tests
• Pure tone audiometry by AC, BC and FF. NBN and WN masking by AC, BC, insert and FF.
• Multifrequency audiometry in 10, 20, 50 and 100 Hz steps, by AC, BC and Free Field. NBN and WN masking by AC, BC, insert and FF.
• Speech audiometry by AC, BC and Free Field. SN and WN masking by AC, BC, insert phone and FF

Cochlear and retro-cochlear functional tests
• Recruitment measuring methods: ABLB (Fowler), MLB (Reger), DLI (Lüscher) and SISI (Jerger)
• Cochlear / retro-cochlear loss: Tone Decay and high level SISI.

Hearing conservation and industrial audiometry
• Automatic industrial audiometry by AC and BC, with or without NBN and WN masking: Autothreshold test.
• Non organic hearing loss: tone - speech STENGER with masking.

Master Hearing Aid for hearing aid adaptation, by AC and FF.

Advanced investigation and research (A321 HF only)
• HF Audiometry by AC and FF. NBN and WN masking by AC and FF.
• BEKESY automatic recording audiometry by AC and BC. Continuous Sweep and fixed frequencies: steady and pulsed tones and LOT. NBN and WN masking by AC, BC and insert phone.
• MLD (Masking Level Difference) for assessment of CNS disorders.

A321 user-programmable features
Programmable configuration for maximum operator comfort
• Interface language: English, French, German, Italian and Spanish.
• AC phones: easy change over from supra-aural TDH phones to EARTone inserts.
• Primary channel: control keys aligned below test ear audiogram make testing easier.

• On-line printing: built-in printer prints test graphics. External printer prints a formatted page with test graphics and heading for patient data.
• Cursors: during testing cursors will automatically center on running frequency and intensity levels.
• Operating: testing mode and access to calibration (password required).
**A321 user-friendly features**

- **Data storage and transfer**
  - **Internal memories**: up to four for each test menu.
  - **Data transfer**: built-in bi-directional USB (Universal Serial Bus) and RS232.

- **External data storage**: Amplaid software A.S.A. Database for Patient Data Management and NOAH module.

- **Printer**: built-in high resolution, alphanumeric and graphic.

- **External printer**: built-in COM port for optional on-line external printer, PCL5 language compatible.

**Special testing facilities**

- **Synchronous masking** to maintain constant the gap between signal and masking intensity levels.
- **Channel interlocking**.
- **Communication**: Talk-back, Talk-over and Operator Monitor with independent gain controls.
- **Two separate external inputs** for each channel with independent vu-meters.
- **Automatic score** for Speech and SISI.
- **Timers** for Tone Decay, Bekesy and MLD.

**Technical Characteristics**

**A321 clinical audiometer**: type 1 A-E (EN 60645-1, EN 60645-2); type 1 A-E (ANSI S3.6).

**A321 HF clinical audiometer**: type 1 HF A-E (EN 60645-1, EN 60645-2, EN 60645-4); type 1 HF A-E (ANSI S3.6).

**Number of channels**: 2, identical and independent.

**Outputs**: AC R, L and R+L, BC R and L, speaker R, L and R+L.

**Pure Tone Frequencies**

- **AC**: from 125 Hz to 8000 Hz.
- **AC HF**: from 8000 Hz to 20000 Hz.
- **BC**: from 250 to 8000 Hz.
- **FF**: from 250 Hz to 8000 Hz.
- **FF HF**: from 8000 Hz to 16000 Hz.
- **Multifrequency mode**: steps of 10, 20, 50 and 100 Hz.
- **Bekesy mode**: fixed and swept frequencies.

**Intensity ranges**: from -10 dB up to 8000 Hz; HF: from -20 dB from 8000 Hz to 20000 Hz.

**Intensity intervals**: 1, 2 and 5 dB

**Maximum output levels**

<table>
<thead>
<tr>
<th>Transducers</th>
<th>TDH49</th>
<th>ER 3A</th>
<th>VO</th>
<th>INSERT</th>
<th>SPKR</th>
</tr>
</thead>
<tbody>
<tr>
<td>dB HL</td>
<td>120</td>
<td>110</td>
<td>80</td>
<td>n/a</td>
<td>95</td>
</tr>
<tr>
<td>NBN</td>
<td>95</td>
<td>95</td>
<td>100</td>
<td>105</td>
<td>95</td>
</tr>
</tbody>
</table>

**SPEECH AUDIOMETRY**

| dB HL       | 105   | 100   | 60 | n/a    | 90   |
| NBN         | 90    | 90    | 90 | 110    | 95   |

**Speech Signals**: CH1 and CH2 independent inputs: Mic, Ext1 and Ext2, two separate vu-meters. Masking noises: SN and WN.

**HF pure tone max output levels** (HDA200 phones and FF).

<table>
<thead>
<tr>
<th>k Hz</th>
<th>8-11.2</th>
<th>12.5</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>19 - 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC dB HL</td>
<td>90</td>
<td>80</td>
<td>70</td>
<td>50</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>FF dB HL</td>
<td>90</td>
<td>90</td>
<td>85</td>
<td>85</td>
<td>70</td>
<td>65</td>
</tr>
</tbody>
</table>

**HF NBN maximum output levels**: 15 dB below pure tone.

**Signal Mode**

- **Presentation**: N.O.N (manual) and N.OFF (reverse)
- **1 sec: pure tone ON for 1 second only, from 20 dB below max outputs**
- **Warble**: frequency modulated +/- 5%, rate 5 Hz
- **Steady**: continuous
- **Pulsed**: rates of 0.5, 1 and 2 Hz, 50% duty cycle
- **Alternated (ABLB and MLB)**: 0.5, 1 and 2 Hz, 50% duty cycle
- **SISI**: 300 ms ON, every 2 and 5 seconds or Random
- **BEKESY**: Sweep and fixed frequencies.

  **Mode**: steady and pulsed tones and LOT.

  **dB increments**: 0 - 0.25 - 0.5 - 0.75 - 1 - 1.25 - 1.5 - 1.75 - 2 - 2.5 - 3 - 4 - 5 dB

Specifications are subject to change without notice.