Genelec 1022A Operating Manual

Monitoring Speaker

New amplifier and Filter design

valid for

Serial number 1089 and above
1. General description

System

The Genelec 1022A is a three-way active monitoring system including drivers, amplifiers and active crossovers. Designed for relatively small control rooms this system is ideal for broadcasting control rooms and television studios, digital workstations, post production facilities and video and film editing suites. The 1022A is designed as a free standing monitor but may be flush mounted into the control room wall.

Featuring a proprietary ribbon tweeter 1022A is a no compromise design. The fast low distortion amplifiers are capable of driving the stereo system to peak output levels in excess of 121dB SPL at 1.7 m with program signals. Versatile crossover controls allow for precise matching of the speaker system to different acoustic conditions. Separate models exist for vertical and horizontal use.

Drivers

The bass frequencies are reproduced by an 300 mm (10") bass driver loaded with a 70 litres vented box. The bass driver has a very large magnet and long excursion capability. The -3dB point is 38 Hz and the low frequency response extends down to 28 Hz.

The midrange frequencies are reproduced with a very carefully designed 80 mm (3 1/2") cone driver specially impregnated to minimize coloration.

The high frequency driver is a proprietary ribbon tweeter with a moving mass of only 32 mg and frequency response extending into the ultrasonic range.

Crossover filters

The active crossover network consists of three parallel bandpass filters. The crossover frequencies are 400 Hz and 3.8 kHz. Bass, midrange and treble level controls, with 1 dB steps, are included in the crossover to change the balance between the drivers under different acoustic conditions. The low frequency tilt and roll-off controls both have four 2 dB steps to allow refined low frequency equalization. The crossover network is driven by an active balanced input stage. Variable input sensitivity allows for accurate level matching to the mixing console.

Amplifiers

The bass, midrange and treble amplifiers produce 160W, 120W, 120W respectively of short term power with very low THD and IM distortion values. The system incorporates special circuitry for driver overload protection and amplifier thermal protection.

2. Installation

Each 1022A monitor is supplied with an integrated amplifier unit, a mains cable and an operating manual. Once unpacked, place the loudspeaker in its required listening position, taking note of the line of the listening axis (see figure 2). Before connecting up, ensure that the mains switch is off (see figure 4). Check that the mains voltage selector is correctly set and that the appropriate fuse is fitted. Audio input is made via a 10k Ohm balanced (XLR), but unbalanced leads may be used as long as pin 3 is grounded to pin 1 of the XLR (see figure 3). Once connection has been made, the speakers are ready to be powered-up.

Setting the input sensitivity

Adjustment of the input sensitivity of each speaker can be made to match that of the mixing desk or other source, by use of the input sensitivity control on the rear panel (see figure 4). A small screw driver is needed for the adjustment. The manufacturer default setting for this control is -6 dBu (fully CW) which gives an SPL of 100 dB@1m with -6 dBu input level. Note that to get the full output level of 111 dB SPL, an input level of +5 dBu is needed at this setting.

Setting tone controls

The acoustic response of the system may also have to be adjusted to match the acoustic environment. The adjustment is done by setting the five tone control switches 'bass tilt', 'bass roll-off', 'bass level', 'mid level' and 'treble level' on the rear panel of the amplifier. The manufacturers default settings for these controls are 'All Off' to give a flat anechoic response. See Figure 1 for suggested tone control settings in differing acoustic environments. Figure 5 shows the effect of the controls on the anechoic
4. Safety Considerations

Although the 1022A has been designed in accordance with international safety standards, to ensure safe operation and to maintain the instrument under safe operating conditions, the following warnings and cautions should be observed.

Servicing and adjustment should only be performed by qualified service personnel. Opening the amplifier's rear panel is strictly prohibited except by qualified service personnel who are aware of the hazards involved. It is forbidden to use this product with an unearthed mains cable, which may lead to personal injury.

**WARNING!** This equipment is capable of delivering Sound Pressure Levels in excess of 85 dB, which may cause permanent hearing damage.

6. Guarantee

This product is supplied with a ONE YEAR guarantee against manufacturing faults or defects that might alter the performance of the 1022A unit. Refer to supplier for full sales and guarantee terms.

3. Maintenance

No user serviceable parts are to be found within the amplifier unit. Any maintenance or repair of the 1022A unit should only be undertaken by qualified service personnel. Ensure that if fuse replacement is required, only fuses of the appropriate voltage and current ratings are used. REMEMBER to disconnect the power supply by removal of the mains cable, before fuse replacement.
### SYSTEM SPECIFICATIONS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower cut-off frequency, -3 dB</td>
<td>≤38 Hz</td>
</tr>
<tr>
<td>Upper cut-off frequency, -3 dB</td>
<td>≥25 kHz</td>
</tr>
<tr>
<td>Maximum short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz</td>
<td>@1m ≥111 dB SPL</td>
</tr>
<tr>
<td>Maximum long term RMS acoustic output in same conditions with IEC-weighted noise (limited by driver unit protection circuit)</td>
<td>@1m ≥110 dB SPL</td>
</tr>
<tr>
<td>Maximum peak acoustic output per pair on top of console, @1m from the engineer with music material</td>
<td>≥121 dB</td>
</tr>
<tr>
<td>Self generated noise level in free field @1m on axis</td>
<td>≤15 dB (A weighted)</td>
</tr>
<tr>
<td>Harmonic distortion at 90 dB SPL at 1m on axis</td>
<td>freq. ≤200 Hz &lt; 3% freq. &gt; 200 Hz &lt; 1%</td>
</tr>
<tr>
<td>Drivers: Bass</td>
<td>300mm (10&quot;) cone</td>
</tr>
<tr>
<td>Midrange 80 mm (3 1/2&quot;) cone</td>
<td>8x65 mm (3/8&quot;x2 1/2&quot;)ribbon</td>
</tr>
<tr>
<td>Treble</td>
<td>20 Kg (44 lb)</td>
</tr>
<tr>
<td>Weight</td>
<td>20 Kg (44 lb)</td>
</tr>
<tr>
<td>Dimensions: Height</td>
<td>775mm (30 1/2&quot;)</td>
</tr>
<tr>
<td>Width</td>
<td>443mm (17 7/16&quot;)</td>
</tr>
<tr>
<td>Depth</td>
<td>410mm (16 1/8&quot;)</td>
</tr>
</tbody>
</table>

### AMPLIFIER SECTION

- **Bass amplifier output power with a 6 Ohm load**: Short term 160W
- **Midrange amplifier output power with a 8 Ohm load**: Short term 120W
- **Treble amplifier output power with a 8 Ohm load**: Short term 120W

Long term output power is limited by driver unit protection circuitry.

- **Slew rate**: 80V/µs

Amplifier system distortion at nominal output:

- THD ≤0.05%
- SMPTE-IM ≤0.05%
- CCIF-IM ≤0.05%
- DIM 100 ≤0.05%

Signal to Noise ratio, referred to full output:

- **Bass**: ≥100 dB
- **Midrange**: ≥100 dB
- **Treble**: ≥100 dB

- **Main voltage**: 100/200V or 115/230V
- **Voltage operating range at 230V setting**: 207 - 253V (±10%)
- **Power consumption**: Idle 30W Full output 400W

### Crossover Section

- **Input connector**: XLR female
  - pin 1 gnd
  - pin 2 +
  - pin 3 -
- **Input impedance**: 10 kOhm
- **Input level for 100 dB SPL output @1m**: variable from +6 to -6 dBu
- **Input level for maximum short term output of 111 dB SPL @1m**: variable from +17 to +5 dBu
- **Subsonic filter below 35 Hz**: 18 dB/octave
- **Ultrasone filter above 25 kHz**: 12 dB/octave
- **Crossover frequency**: Bass/Mid 400 Hz Mid/Treble 3.8 kHz
- **Crossover acoustical slopes**: 18 - 24 dB/octave
- **Crossover level control operating range in 1 dB steps**: Bass from 0 to -6 dB Mid from 0 to -6 dB Treble from 0 to -6 dB
- **Bass roll-off control in 2 dB steps**: from 0 to -8 dB @ 38 Hz
- **Bass tilt control in 2 dB steps**: from 0 to -8 dB @ 80 Hz

The 'CAL' position is with all tone controls set to 'off' and input sensitivity control to maximum.

Note! All frequency response curves were measured in a calibrated, 12 m cube, anechoic chamber at 1 m using grade 1 measuring equipment. Input signal levels were set at -20 dBu. The anechoic chamber error in the free field response is less than 0.5 dB down to 60 Hz.

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