GENELEC®

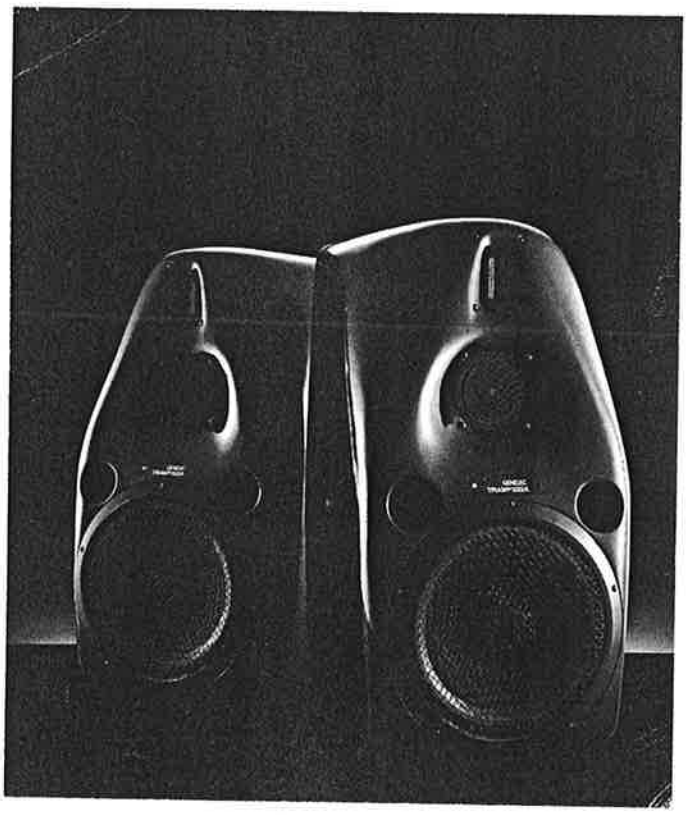
Genelec 1022A Monitoring Speaker

Operating Manual

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 maybe 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.

Speaker Mounting Position	Bass roll-off	Bass tilt	Bass level	Midrange level	Treble level
Free anechoic response	None	None	None	None	None
Free standing in a damped room	None	-2 dB	None	None	None
Free standing in a revebrant room	None	-4 dB	None	None	None
Near field or on console bridge	None	None	-4 dB	None	None
In a corner	-2 dB	-2 dB	-2 dB	None	None

Figure 1. Suggested tone control settings for different acoustic environments

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.

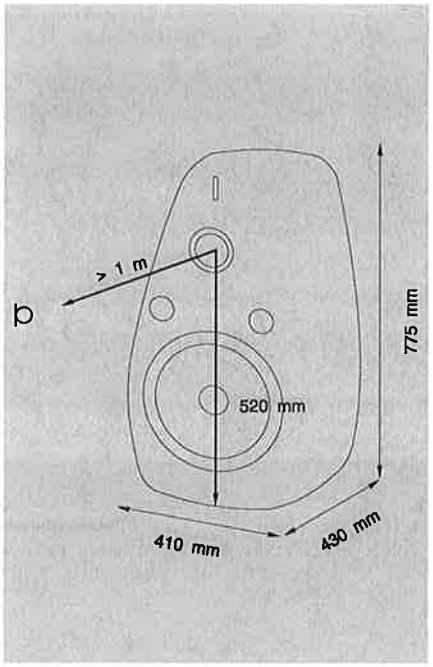


Figure 2. Speaker acoustic axis and dimensions in horizontal and vertical mounting positions.

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

response. Always start adjustment by setting all switches to the 'OFF' position. Then set only one switch to the 'ON' position to select the response curve required. If more than one switch is set to 'ON' (within one switch group) the attenuation value is no longer accurate.

Vertical / horizontal mounting

The speakers are delivered either for vertical or horizontal mounting. In the horizontal mounting position the bass drivers should point inwards to obtain a proper stereo image.

Console top mounting

If the 1022A's are used for console top monitoring it is recommended not to mount the speakers directly on the console. Instead position the speakers slightly behind the console by using floor stand to the console rear side. This prevents the reflections from the console surface from colouring the sound.

Overload indicators

The speaker is provided with two warning LED's marked 'OVL' and 'ON'. The green ON-LED when lit indicates that the speaker is ready for use. The red OVL-LED indicates that the amplifier is overloaded or the driver protection circuit is activated. In both cases reduce the signal level so that the LED stops blinking. If the OVL-LED stays on constantly it indicates that the amplifier thermal protection is activated. Let the amplifier cool down and check that the ventilation at the rear side of the speaker is not blocked. There should be a clearance of more than 100 mm between the speaker rear and any solid surface at the back.

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.

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.

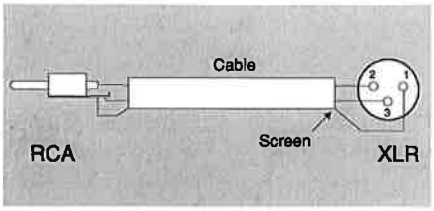


Figure 3 . XLR connection if unbalanced input is required.

5. Accessories

Opt 01 -Flightcase
Opt 04 -Wall mount
Opt 05 -Floor stand

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.

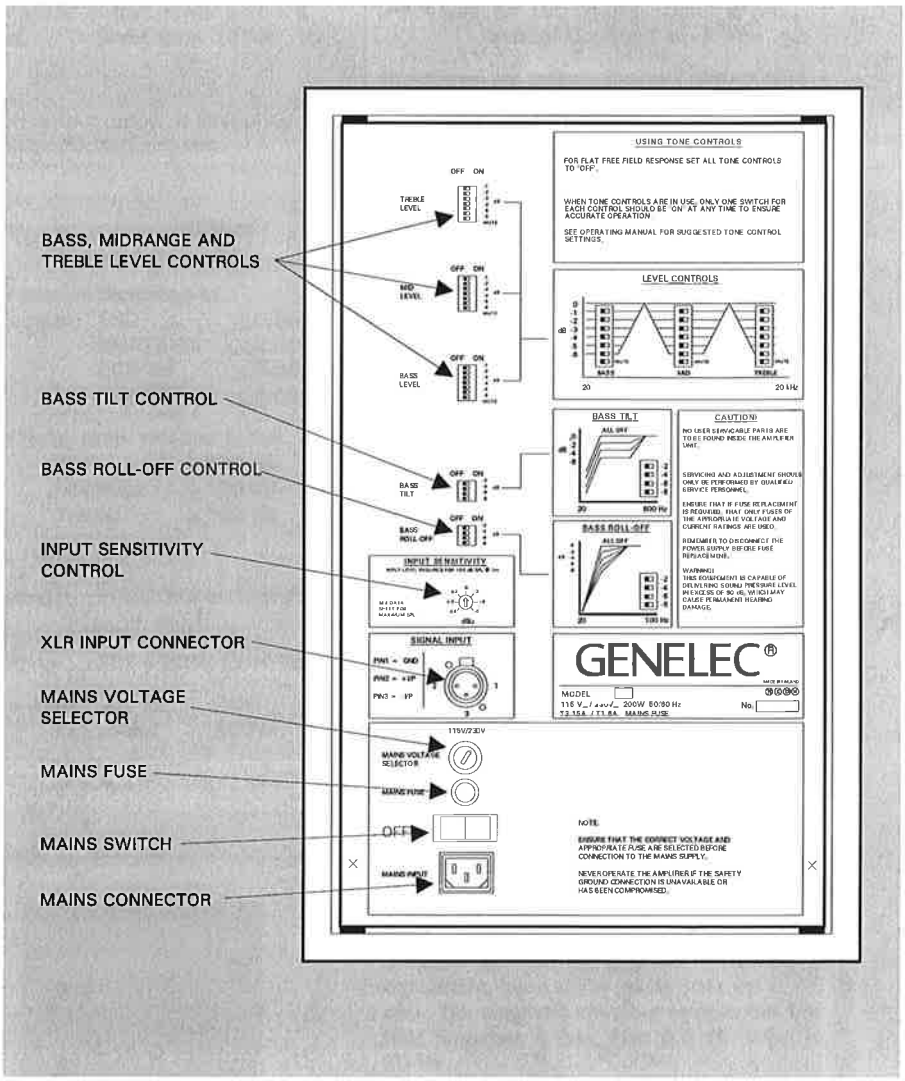


Figure 4. Rear panel layout.

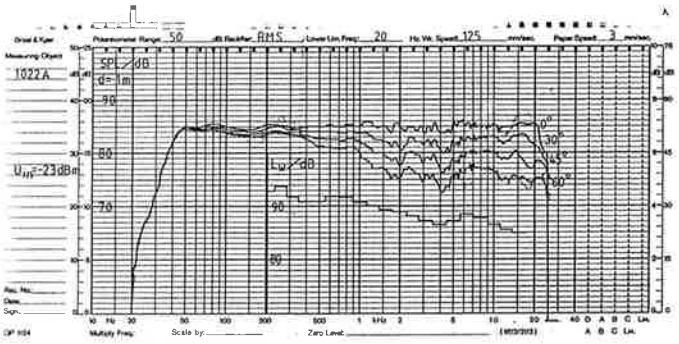


Figure 5. The curves above left show the effect of the 'bass tilt', 'bass level' and 'bass roll-off' controls on the free field response. The curves to the right show the effect of the treble and midrange 'level' controls.

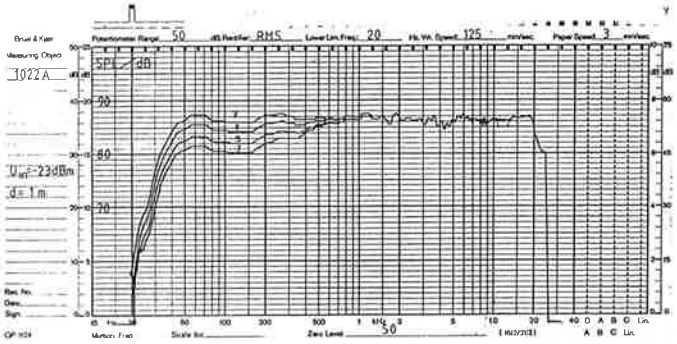


Figure 6. The upper curve group shows the horizontal directivity characteristics of 1022A in its vertical configuration measured at 1 m. The lower curve is a 1/3 octave band power response, measured in an IEC approved reverberation chamber.

SYSTEM SPECIFICATIONS

Lower cut-off frequency, -3 dB: ≤38 Hz

Upper cut-off frequency, -3 dB: ≥25 kHz

Maximum short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz: @1m ≥111 dB SPL

Maximum long term RMS acoustic output in same conditions with IEC-weighted noise (limited by driver unit protection circuit): @1m ≥110 dB SPL

Maximum peak acoustic output per pair on top of console, @ 1m from the engineer with music material: ≥121 dB

Self generated noise level in free field @ 1m on axis: ≤15 dB (A weighted)

Harmonic distortion at 90 dB SPL at 1m on axis: freq. ≤200 Hz <3%
freq. >200 Hz <1%

Drivers: Bass 300mm (10") cone
Midrange 80 mm (3 1/2") cone
Treble 9x65 mm (3/8"x2 1/2")ribbon

Weight: 20 Kg (44 lb)

Dimensions: Height 775mm (30 1/2")
Width 443mm (17 7/16")
Depth 410mm (16 1/8")

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

Mains 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

Ultrasonic 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.

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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.

Data Sheet No. 1022-0106-0