

1039A

Data Sheet
Genelec 1039A
Control Room Monitoring System

GENELEC®





Applications

- Main monitor for large control rooms
- Music recording studios
- Video/Film large post-production facilities
- TV music production studios
- Mastering Suites

1039A Control Room Monitoring System

System

The Genelec 1039A is a very powerful three-way active monitoring system including loudspeaker drivers, speaker enclosure, multiple power amplifiers and low level active crossover. Designed for large control room this system is ideal for music recording studios, large film and video post-production facilities and mastering suites, where broad bandwidth, high SPL's and extended low frequency response are essential. The 1039A is designed to be flush mounted in the control room wall.

The unique Directivity Control Waveguide (DCW™) Technology developed by Genelec provides excellent stereo imaging and frequency balance even in difficult acoustic environments. The fast, low distortion amplifiers are capable of driving a stereo system to peak output levels in excess of 126 dB SPL at 2 m with program signals. Versatile crossover controls allow for precise matching of the speaker system to different acoustic conditions. The system can be used in both vertical and horizontal orientation by simply rotating the DCW unit.

Protection circuitry

The 1039A amplifier unit contains electronic circuitry which serves to protect the drivers from damage by overload and distortion. These circuits monitor each amplifier chan-

nel and automatically reduce the signal level to the driver if an overload condition occurs. In addition the signal levels to all of the drivers in the loudspeaker are reduced by the same amount. This preserves the frequency balance of the loudspeaker. A LED located on the loudspeaker enclosure indicates the status of this protection circuitry.

Amplifiers

The bass, midrange and treble amplifiers each produce 2 x 400 W, 350 W and 120 W respectively of short term power with very low THD and IM distortion. The electronics have been carefully designed to ensure the highest subjective sound quality currently possible. The system incorporates special circuitry for drivers overload protection and amplifiers thermal protection. A standard 10 m cable is supplied for the speaker enclosure connection. Longer lengths are available upon special order.

Drivers

The bass frequencies are reproduced by two long throw 385 mm (15") bass drivers loaded with a 320 liters vented box. The -3 dB point is 29 Hz and the low frequency response extends down to 25 Hz (-6 dB). The midrange frequencies are reproduced by a proprietary 130 mm (5") high sensitivity direct radiating cone driver loaded with the DCW. The high frequency driver is a 25 mm (1") metal dome also

loaded by the DCW with an upper -3 dB point at 22 kHz. The midrange and high frequency drivers have field replaceable diaphragms.

Flush mounting

Flush mounting the loudspeaker into a wall offers important advantages by eliminating unwanted secondary sound radiation from the loudspeaker cabinet's edges and nearly idealizing the radiation space to half space by eliminating reflections from the wall behind the loudspeaker. The result is minimization of diffraction effects, linear low frequency response, increased speaker output, improved transient response and imaging. The use of the DCW Technology removes the diffraction effects to a large extent. Moreover, the 1039A has versatile crossover controls to compensate and adjust response variations due to different loudspeaker positioning and room loading.

Crossover filter

The active crossover network consists of three parallel band pass filters, with crossover frequencies at 400 Hz and 3.2 kHz, and a common balanced input stage. All the filters are aligned for equal phase and group delay characteristics and are acoustically complementary. The filter slopes are 24 dB/octave.

In order to obtain uniform frequency balance under different acoustic conditions, special calibrated controls are featured in the

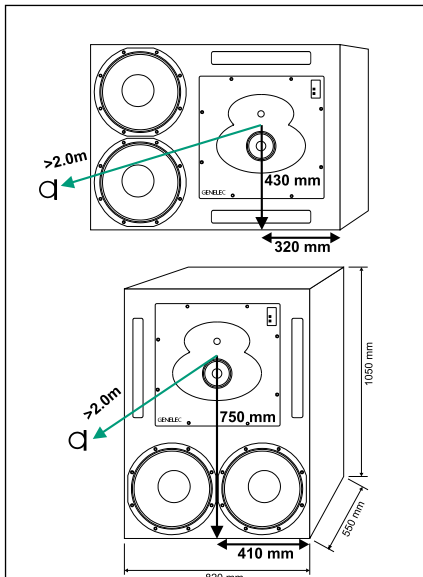


Figure 1: The location of the acoustical axis of the 1039A in horizontal and vertical configuration

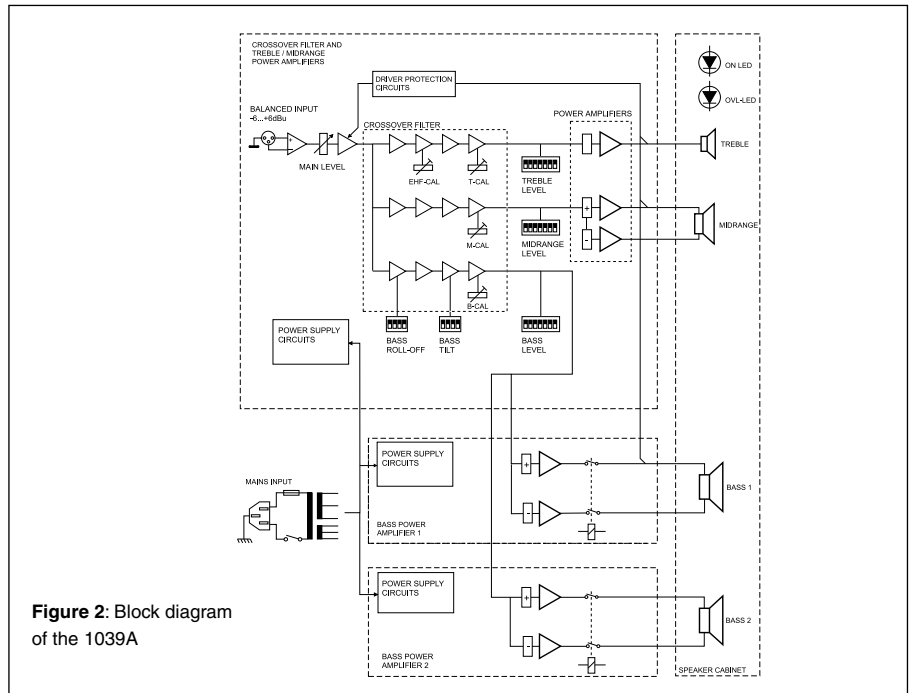


Figure 2: Block diagram of the 1039A

crossover. The Bass, Midrange and Treble level controls operate in 1 dB steps. Furthermore, the Bass Tilt and Roll-off controls both have four 2 dB steps to allow refined low frequency response tailoring. A high-pass filter is included in the low frequency channel to protect the bass drivers from subsonic interference signals. Variable input sensitivity allows for accurate level matching to the mixing console.

DCW Technology

The revolutionary Directivity Control Waveguide Technology is a means of improving the performance of a direct radiating multi-way loudspeaker in normal listening conditions. The basic idea is to match the different drive units precisely, both in terms of frequency response and directivity. This will result in a smoother and a virtually uncoloured off-axis response of the system. Due to improved control of the directivity, especially in the midrange frequencies, more direct sound and less early boundary reflections are received at the listening position. This results in more accurate stereo imaging and makes the system less sensitive to differing control room acoustics than any conventional direct radiator design. The DCW Technology improves drive unit sensitivity from +2 to +6 dB thus increasing the system maximum sound pressure level.

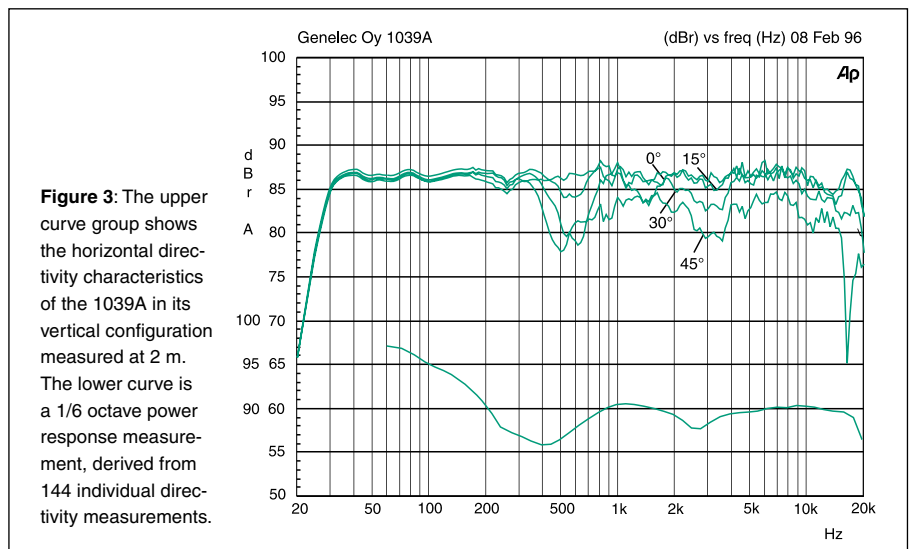


Figure 3: The upper curve group shows the horizontal directivity characteristics of the 1039A in its vertical configuration measured at 2 m. The lower curve is a 1/6 octave power response measurement, derived from 144 individual directivity measurements.

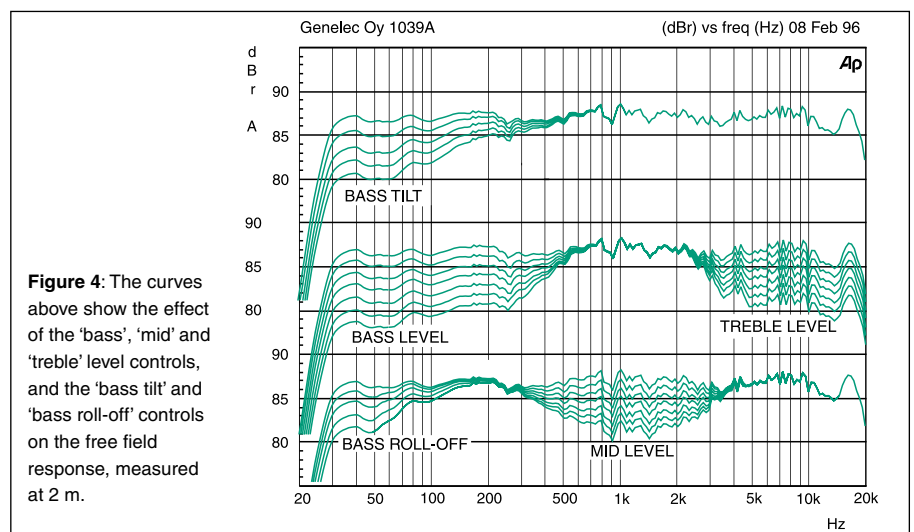


Figure 4: The curves above show the effect of the 'bass', 'mid' and 'treble' level controls, and the 'bass tilt' and 'bass roll-off' controls on the free field response, measured at 2 m.

1039A Data Sheet

SYSTEM SPECIFICATIONS

	1039A
Lower cut-off frequency, -3 dB Upper cut-off frequency, -3 dB Free field frequency response	≤ 29 Hz ≥ 20 kHz 31 Hz - 20 kHz (±2.5 dB)
Maximum short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz:	@ 1 m ≥126 dB SPL
Maximum long term RMS acoustic output in same conditions with IEC-weighted noise (limited by driver unit protection circuit)	@ 1 m ≥120 dB SPL
Maximum peak acoustic output per pair @ 2 m from the engineer with music material	≥ 130 dB
Self generated noise level in free field @ 2 m on axis	≤ 15 dBA
Harmonic distortion at 100 dB SPL	Freq: 50...200 Hz <1% 200...10 kHz <0.5
Drivers	Bass 2 x 385 mm (15") Mid 1 x 130 mm (5") Treble 1 x 25 mm (1") metal dome
Weight	Speaker 115 kg (253 lb) Amplifier 22 kg (49 lb)
Speaker dimensions (Horizontal mounting)	Height 820 mm (32 ¹ / ₄ ") Width 1050 mm (39 ⁹ / ₈ ") Depth 550 mm (21 ⁵ / ₈ ")
Amplifier dimensions	Height 310 mm (12 ³ / ₁₆ ") Width 483 mm (19") Depth 250 mm (9 ¹³ / ₁₆ ") *

* Note that the cable connectors require additional 100 mm (4") of space behind both the amplifier and the speaker cabinet.

AMPLIFIER SECTION

	1039A
Bass amplifier output power with an 8 Ohm load	Short term 2 x 400 W
Mid amplifier output power with an 8 Ohm load	Short term 350 W
Treble amplifier output power with an 8 Ohm load	Short term 120 W
	Long term output power is limited by driver unit protection circuitry.
Slew rate	80 V/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 Mid ≥100 dB Treble ≥100 dB
Mains voltage:	100/200 or 115/230 V
Voltage operating range at 230 V setting 115 V setting	207 - 244 V (-10/+6 %) 104 - 122 V (-10/+6 %)
Power consumption	Idle 70 W Full output 1000 W

CROSSOVER SECTION

	1039A
Input connector: XLR female	pin 1 gnd pin 2 + pin 3 -
Input impedance	10 kOhm balanced
Input level for 100 dB SPL output @ 1 m	variable from +6 to -6 dBu
Input level for maximum short term output of 126 dB SPL @ 1 m	variable from +32 to +20 dBu
Subsonic filter below 27 Hz Ultrasonic filter above 22 kHz	18 dB/octave 12 dB/octave
Crossover frequencies	Bass/Mid 400 Hz Mid/Treble 3.2 kHz
Crossover acoustical slopes	>24 dB/octave
Level control operating range in 1 dB steps	Bass from 0 to -6 dB & MUTE Mid from 0 to -6 dB & MUTE Treble from 0 to -6 dB & MUTE
Bass roll-off control in 2 dB steps Bass tilt control in 2 dB steps	from 0 to -8 dB @ 29 Hz from 0 to -8 dB @ 50 Hz
	The 'CAL' position is with all tone controls set to 'off' and input sensitivity control to maximum and corresponds to a maximally flat free field response.

