S30C Active Monitoring System

SYSTEM
The Genelec S30C is a three-way Active Monitoring System including loudspeaker drivers, speaker enclosure, multiple power amplifiers and active, low level crossovers. All these are housed entirely within the speaker cabinet. Featuring a proprietary ribbon tweeter the S30C is a no compromise design. The fast, low distortion amplifiers are capable of driving a stereo system to peak output levels in excess of 122 dB SPL at 1 m with program signals. Versatile crossover controls allow for precise matching of the speaker system to different acoustic conditions. Designed for relatively small control rooms and available in vertical and horizontal versions, this system is ideal for general purpose broadcasting and television studios, digital workstations, post production facilities and mobile recording vehicles. The high output and absolute reproduction accuracy make the S30C an ultimate nearfield monitor in recording studios.

INTEGRATED CONSTRUCTION
The system is very easy to use as only mains power and input signal are needed. The performance is consistent because the loudspeakers and amplifiers are built as a single integrated, matched and calibrated package. The rugged amplifier is mounted into the enclosure with vibration isolators which act also as quick release hinges making possible maintenance operations very easy and straightforward. The speaker cabinet is constructed of veneered MDF, which is heavily braced to eliminate structural resonances.

AMPLIFIERS
The bass, midrange and treble amplifiers each produce 120 W of short term power with very low THD and IM distortion. Special attention is paid to electronics design to get also the subjective sound quality as good as currently possible. To improve acoustic transient response the output impedance of the woofer amplifier is made negative. The system incorporates a special circuitry for protecting drivers from overload. Thermal protection is included for the amplifiers.

APPLICATIONS
Broadcast Control Rooms
TV Control Rooms
Mobile Vans
Near Field Monitoring
Post Production
Work Stations
CD Mastering

Three 120 W amplifiers are housed in the speaker cabinet.
CROSSOVER FILTERS

The crossover frequencies of the active crossover network are 420 Hz and 4 kHz. In order to reach uniform frequency balance in different acoustic conditions, special calibrated controls are included in the crossover. The Bass, Midrange and Treble level controls operate in 1 dB steps. Moreover, the low frequency Tilt- and Roll-off controls both have four 2 dB steps to allow refined LF response tailoring. A high-pass filter is included in the LF channel to protect the woofer from subsonic signals. The crossover network is driven by an active balanced input stage. Variable input sensitivity allows for accurate level matching to the mixing console.

DRIVERS

The 210 mm (8") woofer is loaded with a 24 liters (0.85 cu.ft.) vented box. The woofer has a very large magnet and a long linear excursion capability (±9 mm, ±0.35”). Both features are needed to reach low frequencies with reasonable efficiency and high acoustic output (SPL) in a small enclosure. The -3dB point is 42 Hz and the low frequency response extends down to 35 Hz. A carefully designed 80 mm cone driver, sealed in a cast aluminum alloy housing, reproduces the critical midrange where the ear is most sensitive. To minimize coloration the diaphragm is specially impregnated. As a result, the midrange driver’s response actually extends well beyond the range required by the crossovers. The high frequency driver is a proprietary ribbon tweeter with a moving mass of only 32 mg and frequency response extending into ultrasonic range. The dispersion characteristics of both tweeter and midrange driver are matched for uniform tonal balance in different rooms. A magnetic shielding option is available for applications where magnetic stray field must be minimized.
SYSTEM SPECIFICATIONS

Lower cut-off frequency, -3 dB: \( \leq 42 \text{ Hz} \)

Upper cut-off frequency, -3 dB: \( \geq 25 \text{ kHz} \)

Free field frequency response of system: \( 43 \text{ Hz} - 25 \text{ kHz} \) (\( \pm 2.5 \text{ dB} \))

Maximum short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz:
- \( @1 \text{ m} \): \( \geq 111 \text{ dB SPL} \)
- \( @0.5 \text{ m} \): \( \geq 117 \text{ dB SPL} \)

Maximum long term RMS acoustic output in same conditions with IEC-weighted noise (limited by driver unit protection circuitry):
- \( @1 \text{ m} \): \( \geq 102 \text{ dB SPL} \)
- \( @0.5 \text{ m} \): \( \geq 108 \text{ dB SPL} \)

Maximum peak acoustic output per pair on top of console, \( @1 \text{ m} \) from the engineer with music material: \( \geq 122 \text{ dB} \)

Self generated noise level in free field \( @1 \text{ m} \) on axis: \( \leq 10 \text{ dB} \) (A-weighted)

Harmonic distortion at 90 dB SPL at 1 m on axis:
- freq. \( <200 \text{ Hz} \): \( <2\% \)
- freq. \( >200 \text{ Hz} \): \( <1\% \)

Drivers:
- Bass: 210 mm cone
- Midrange: 80 mm cone
- Treble: 9x65 mm ribbon

Weight: 20 kg (44 lb)

Dimensions:
- Height: 495 mm (19 1/2")
- Width: 320 mm (12 3/4")
- Depth: 290 mm (11 7/16")

AMPLIFIER SECTION

Bass amplifier output power with an 8 Ohm load:
- Short term: 120W

Midrange amplifier output power with an 8 Ohm load:
- Short term: 120W

Treble amplifier output power with an 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: \( \leq 0.05\% \)
- SMPTE-IM: \( \leq 0.05\% \)
- CCIF-IM: \( \leq 0.05\% \)
- DIM 100: \( \leq 0.05\% \)

Signal to Noise ratio, referred to full output:
- Bass: \( \geq 100 \text{ dB} \)
- Midrange: \( \geq 100 \text{ dB} \)
- Treble: \( \geq 100 \text{ dB} \)

Mains voltage: 100/200V or 115/230V

Voltage operating range at 230V setting:
- 207 - 253V (\( \pm 10\% \))

Power consumption:
- Idle: 30W
- Full output: 200W

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 38 Hz: 18 dB/octave

Ultrasonic filter above 25 kHz: 12 db/octave

Crossover frequency:
- bass/mid: 420 Hz
- mid/treble: 4 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 -6 dB @42 Hz

Bass tilt control in 2 dB steps:
- from 0 to -6 dB @80 Hz

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