

8130A

Data Sheet
Genelec 8130A
Digital Monitoring System

GENELEC®





8130A Digital Monitoring System

System

The Genelec 8130A Digital Monitoring System has a 192 kHz/24 bit digital audio interface. Due to its compact size, integrated construction, excellent dispersion and precise stereo imaging, the 8130A is ideal for near field monitoring, mobile vans, digital audio workstations, broadcast and TV control rooms, surround sound systems, home studios, multimedia applications and also for use with computer soundcards. The Directivity Control Waveguide (DCW™) technology provides excellent frequency balance even in difficult acoustic environments.

The integrated design allows the amplifiers and the drivers to be calibrated as a single unit, eliminating the effects of component tolerances and ensuring consistent quality.

The all-aluminium Minimum Diffraction Enclosure™ (MDE™) and advanced Directivity Control Waveguide™ (DCW™) technologies are carefully matched with advanced amplifier and electronics circuitry. The low frequency response extends down to 55 Hz (-3 dB) while distortion is extremely low due to a uniquely new rear reflex port design.

The 8130A has been specially designed to have a sufficient LF extension for most situations. However if greater SPL's and a lower cutoff frequency are required, it can be com-

plemented with Genelec 7050B subwoofer, which has a lower cutoff point of 25 Hz.

Digital audio

The quality of a digital audio signal is defined by two parameters: word length and sampling rate. The word length defines how precisely the audio signal is represented. Longer word length leads to smaller noise and distortion level. The typical word length in CD records is 16 bits. Studio recording systems use word lengths of 20 bits and above.

The sampling rate determines what frequencies can be represented in the digital audio signal. A higher sampling rate allows higher frequencies to be recorded.

Converting the digital presentation to an analog signal using a D/A converter involves potential sources of error. Your digital-to-analog converter may have inferior performance, or it may be misaligned with your amplifiers. The interface between the converter and the amplifier may distort the signal or change the frequency balance. The monitoring volume level may need to be adjusted in the digital domain instead of analog. Genelec 8130A allows you to solve all of these problems. The alignment of the whole system from the digital input connector is carefully balanced, to make sure that you hear the whole digital truth, and nothing but the truth. All you have to do is to supply

Main features

- AES/EBU digital audio and analog audio inputs in a single loudspeaker system
- 192 kHz / 24 bit digital audio interface
- Automatic detection of word length and sampling frequency
- Supports single-wire and dual-wire digital input mode
- Perfect level match throughout the system from D/A converter to power amplifier outputs
- Compatible with LSE™ stereo subwoofer
- High system integration and ease of use
- Daisy-chaining of up to 8 loudspeakers in digital or analog mode

the digital signal, and adjust for the volume you desire.

Setting up

The 8130A is very easy to set up and use, the only connections required are the mains supply and the input signal. The female XLR input connector can be fed with either AES/EBU formatted digital signal or analog line level audio signal. The Genelec 8130A automatically detects analog or digital signals and directs them to the correct signal paths. In cases where the 8130A is presented with a dual-wire/single channel signal, detection is again automatic and the digital input mode is selected.

Up to eight 8130A's can be daisy-chained together in digital or analog mode through the two male XLR output connectors on the connector panel. The analog output can also be used for connecting a Genelec 7050A subwoofer.

The volume control knob located on the front panel and the -10, -20 or -30 dB attenuation switches on the back panel allow easy and accurate level matching with other audio equipment.

Crossover filters

The amplifier unit contains an active crossover, a feature more commonly used in large and expensive control room monitors. This

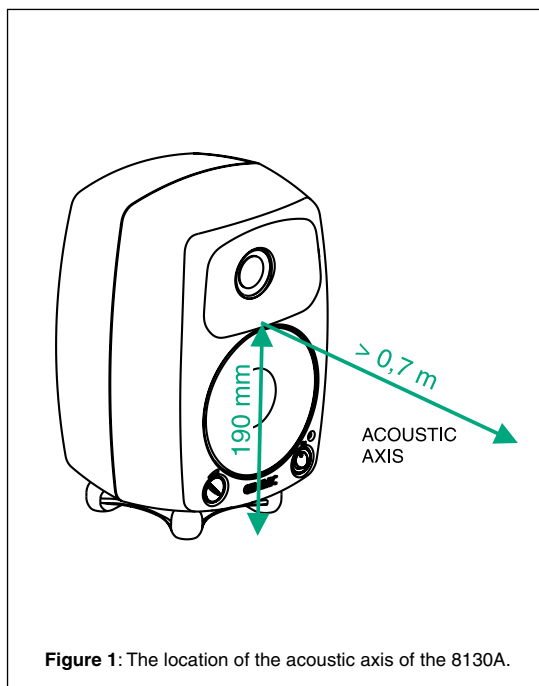


Figure 1: The location of the acoustic axis of the 8130A.

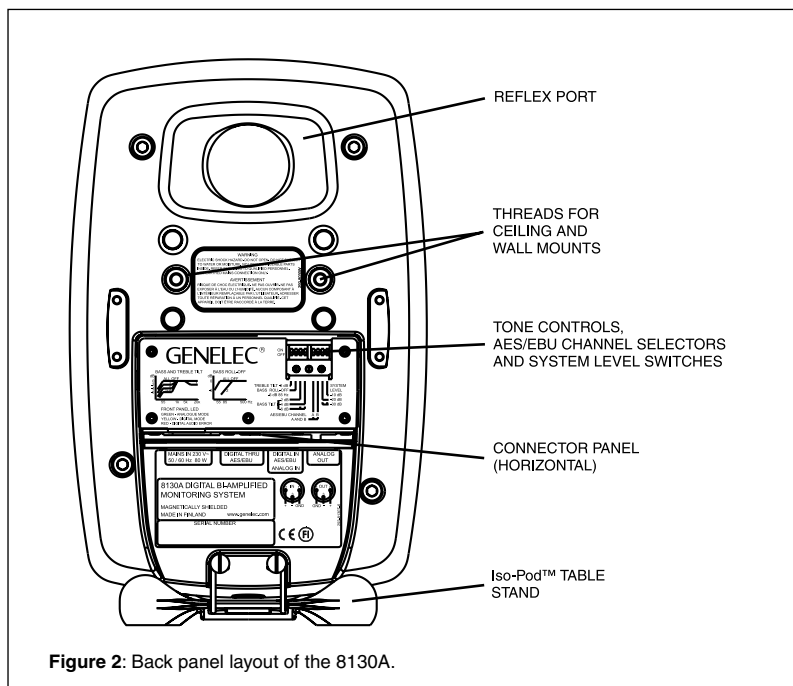


Figure 2: Back panel layout of the 8130A.

is the ideal method for dividing the input signal between the driver units. The active crossover allows the overall response of the system to be optimized to an extent impossible with a passive system. To maintain uniform frequency balance in differing acoustic environments, special calibrated controls are included in the active crossover network. These controls include “Treble Tilt”, “Bass Tilt” and “Bass Roll-Off” switches.

Amplifiers

The bass and treble amplifiers produce 40 W of output power each, with very low THD and IM distortion values. The amplifiers are designed to ensure the highest subjective sound quality currently possible. The amplifier unit also contains a protection circuit that monitors the output levels and prevents any damage to the drivers. This makes the system immune to overloads and spurious signals.

Drivers

A 19 mm (3/4”) metal dome tweeter is loaded by an advanced DCW™ waveguide. The DCW™ is integrated into the one piece front baffle.

The 130 mm (5”) bass cone driver is mounted in a newly designed bass reflex enclosure. The long, flow optimized reflex tube has a large cross sectional area and terminates with a wide flare at the back of the enclosure.

Protective grilles are positioned in front of both drivers. Magnetic shielding is standard on the 8130A. Shielding is vital for applications such as video post production, where stray magnetic fields must be minimized.

MDE™ and DCW™ Technologies

The Minimum Diffraction Enclosure™ (MDE™) Technology increases the performance of the Genelec 8130A by minimizing edge diffraction and improving frequency and power response. The edges of the enclosure are rounded and blend seamlessly into the enlarged Directivity Control Waveguide™. Surface discontinuities that cause diffraction are minimized. The curved walls of the die-cast aluminium enclosure are thin but rigid, allowing maximum internal volume while also providing improved EMC shielding and heat dissipation for the amplifiers. Locating the reflex port to the back of the enclosure allows a generously dimensioned reflex port for minimal port noise and excellent bass articulation while freeing the front baffle for an enlarged and optimized DCW™.

The advanced DCW™ is designed to match the performance of the drivers in terms of both frequency response and directivity. This results in a smoother overall frequency response on and off axis. In addition, the improved directivity control causes more

direct sound and less reflected sound to be received at the listening position, providing improved imaging and reducing the effects of differing control room acoustics. The DCW™ improves the drive unit sensitivity by +2 to +6 dB (depending on the particular application), thus also increasing the available system maximum sound pressure level.

Mounting

The 8130A offers several mounting options: The vibration insulating Isolation Positioner/Decoupler™ (Iso-Pod™) table stand allows tilting the loudspeaker for correct alignment of the acoustic axis. The stand can be attached to three mounting locations allowing vertical and symmetrical horizontal positioning. On the base of the loudspeaker is a 3/8” UNC threaded hole which can accommodate a standard microphone stand. On the rear there are two M6x10 mm threaded holes for a wide variety of wall and ceiling mounts available at your Genelec dealer. See the Genelec accessories catalogue at www.genelec.com or consult your dealer for the right solution for your needs.

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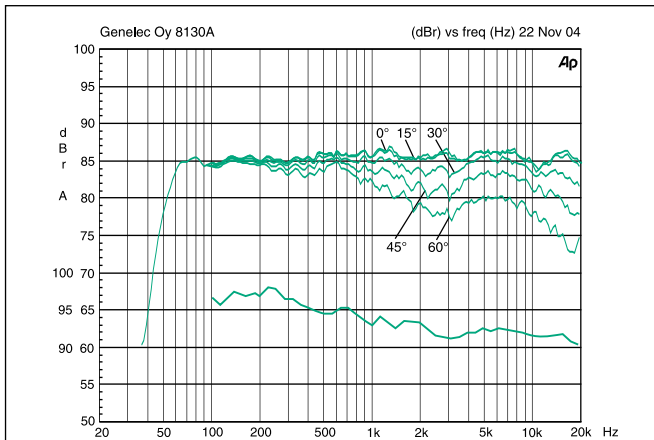


Figure 3: The upper curve group shows the horizontal directivity characteristics of the 8130A measured at 1 m. The lower curve shows the systems power response.

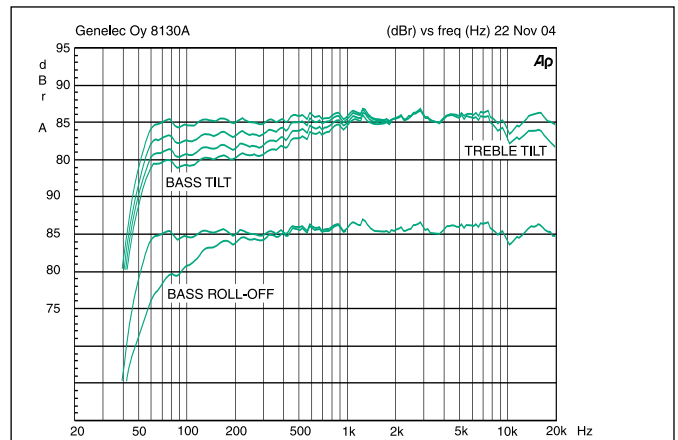


Figure 4: The curves above show the effect of the "Bass Tilt", "Treble Tilt" and "Bass Roll-Off" controls on the free field response.

SYSTEM SPECIFICATIONS

Lower cut-off frequency, -3 dB:	≤ 55 Hz
Upper cut-off frequency, -3 dB:	≥ 21 kHz
Free field frequency response of system:	58 Hz – 20 kHz (± 2.0 dB)
Maximum short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz:	
@ 1 m	≥ 100 dB SPL
@ 0.5 m	≥ 106 dB SPL
Maximum long term RMS acoustic output in same conditions with IEC weighted noise (limited by driver unit protection circuit):	@ 1 m ≥ 97 dB SPL
Maximum peak acoustic output per pair on top of console, @ 1 m from the engineer with music material:	≥ 108 dB
Self generated noise level in free field @ 1 m on axis:	≤ 10 dB (A-weighted)
Harmonic distortion at 85 dB SPL @ 1 m on axis:	
Freq: 50...100 Hz	< 2 %
> 100 Hz	< 0.5 %
Drivers:	
Bass	130 mm (5") cone
Treble	19 mm (3/4") metal dome
	Both drivers are magnetically shielded
Weight:	5.6 kg (12.3 lb)
Dimensions:	
Height	299 mm (11 ¹³ / ₁₆ " (including Iso-Pod™ table stand)
Height	285 mm (11 ¹ / ₄ " (without Iso-Pod™ table stand)
Width	189 mm (7 ⁷ / ₁₆ "
Depth	178 mm (7")

CROSSOVER SECTION

Analog connectors:	
Input connector:	XLR female, (DIGITAL IN AES/EBU, ANALOG IN) balanced 10 kOhm, pin 1 gnd, pin 2 +, pin 3 -
Analog output:	XLR male, (ANALOG OUT) balanced 100 Ohm pin 1 gnd, pin 2 +, pin 3 -
Input level for 100 dB SPL output at 1 m:	-6 dBu at volume control max
Volume control range:	-80 dB relative to max output
Output signal level is 0 dB relative to input signal level but adjustable by volume control	
Crossover frequency, Bass/Treble:	3.0 kHz
Treble Tilt control operating range:	0 to -2 dB @ 15 kHz
Bass Roll-Off control operating in a -6 dB step @ 85 Hz (to be used in conjunction with a 7050A subwoofer)	
Bass Tilt control operating range in -2 dB steps:	0 to -6 dB @ 100 Hz
The 'CAL' position is with all tone controls set to 'off' and the input sensitivity control to maximum (fully clockwise).	

DIGITAL SECTION

Input connector (DIGITAL IN AES/EBU, ANALOG IN)	XLR female
DIGITAL THRU connector	XLR male
Word length:	16...24 bits
Input format:	AES/EBU
Input termination impedance:	110 Ohm
Input sampling rate:	29-200 kHz (no de-emphasis)
Dynamic range:	>113 dB (A weighted, triangular PDF dither, 24 bit data)

AMPLIFIER SECTION

Bass amplifier output power with an 8 Ohm load:	40 W
Treble amplifier output power with an 8 Ohm load:	40 W
Long term output power is limited by driver unit protection circuitry.	
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
Treble	≥ 100 dB
Mains voltage:	100, 120, 220 or 230 V according to region
Voltage operating range:	±10 %
Power consumption:	Idle 15 VA Full output 80 VA