

4040A

Operating Manual

Genelec 4040A
Active Loudspeaker



General

The bi-amplified Genelec 4040A is a powerful but compact two way active loudspeaker designed for fixed installations. As an active loudspeaker, it contains drivers, power amplifiers, active crossover filters and protection circuitry. The 4040A is designed for indoor use only, in temperatures between 15 to 35 degrees Celsius and relative humidity between 20 % and 90 %.

The MDE™ (Minimum Diffraction Enclosure™) loudspeaker enclosure is made of die-cast aluminium and shaped to reduce edge diffraction. Combined with the advanced Directivity Control Waveguide™ (DCW™), this design provides excellent frequency balance in difficult acoustic environments.

Positioning The Loudspeaker

Each 4040A is supplied with an integrated amplifier unit, mains cable, a 5-pin connector for audio signal and 12 V trigger voltage, a keyhole type wallmount and an operating manual. After unpacking, place the loudspeaker in its required listening position, taking note of the line of the acoustic axis. The axis should be pointed towards the center of the listening area.

Connections

Before connecting up, ensure that the loudspeakers and the signal source have been switched off. The power switch of the 4040A is located on the back panel (see Figure 3). Connect the loudspeaker to an earthed mains connection with the supplied mains cable. Never connect the loudspeaker to an unearthed mains supply or using an unearthed mains cable. Audio input is via a 10 kOhm balanced Phoenix connector. The connector also has two pins for 12 V trigger voltage for power switching. The pin sequence of the connector is shown in Figure 2.

Connect the signal cable and 12 V trigger voltage to the 5-pole plug provided with the loudspeaker and secure the connections by tightening the screws on each pole. Push the plug into the connector on the loudspeaker.

Never connect the 4040A to the loudspeaker outputs of a power amplifier or an integrated amplifier or receiver.

Once the connections have been made, the loudspeaker is ready to be switched on.

Controls

Level Control

The input sensitivity of the loudspeaker can be matched to the output of the signal source by adjusting the rotary level control on the rear panel.

Autostart Sensitivity

This control sets the triggering sensitivity of the signal sensing Autostart function. In case of a high background noise level in the audio network, the automatic shutoff may not function as the circuit detects the noise and misinterprets it as a valid signal. Switching the “Autostart Sensitivity” switch to “ON” reduces the triggering sensitivity and gives better immunity to noise in the signal network. On the other hand, if a very low playback level is desirable, the Autostart function works better in the more sensitive “OFF” setting. The required triggering voltages are approximately 0.4 mV (OFF) and 1.4 mV (ON).

Autostart Off Time

This control sets the shutoff delay of the Autostart function. When the switch is set to “OFF”, the loudspeaker shuts off one hour after ending the playback. In the “ON” setting, the delay is 15 minutes.

Led Off

This switch turns off the green power indicator LED. However, the overload indication by red coloured LED remains active.

Tone Controls

The frequency response of the Genelec 4040A can be adjusted to match the acoustic environment by setting the tone control switches on the rear panel. The controls are “Bass Roll-Off”, “Bass Tilt” and “Treble Tilt”. An acoustic measuring system is recommended for analyzing the effects of the adjustments, however, careful listening with suitable test recordings can also lead to good results if a test system is not available. Table 1 shows some examples of typical settings in various situations. Figure 4 shows the effect of the controls on the anechoic frequency response.

Bass Roll-Off

The Bass Roll-Off control (switches 1 to 3 in switch group 1) affects the low frequency roll-off of the loudspeaker and attenuates its

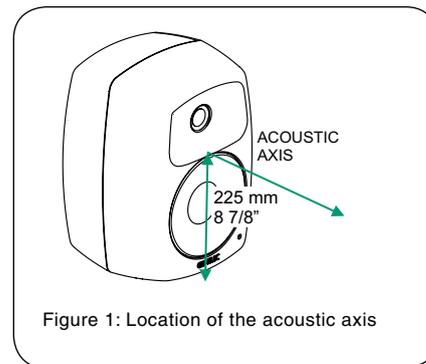


Figure 1: Location of the acoustic axis

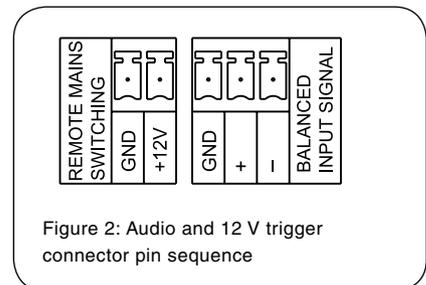


Figure 2: Audio and 12 V trigger connector pin sequence

energy output near the cut-off frequency (55 Hz). Attenuation levels of -2, -4 or -6 dB can be selected.

Bass Tilt

The Bass Tilt control (switches 2 to 4 in switch group 2) offers three attenuation levels for the bass response of the loudspeaker below 800 Hz, usually necessary when the loudspeaker is placed near a wall or other room boundaries. The attenuation levels are -2 dB (switch 3 “ON”), -4 dB (switch 4 “ON”) and -6 dB (both switches “ON”).

Treble Tilt

The Treble Tilt control (switches 2 to 4 in switch group 3) adjusts the treble response of the loudspeaker at frequencies above 4 kHz. Two attenuation levels, -2 dB (switch 3 “ON”) or -4 dB (switch 2 “ON”) are available for smoothening down an excessively bright sounding system, while the +2 dB setting (switch 4 “ON”) provides slightly increased treble level suitable for heavily damped surroundings.

The factory setting for all tone controls is “OFF” to give a flat anechoic frequency response. Always start adjustment by setting all switches to “OFF” position. Measure or listen systematically through the different combinations of settings to find the best frequency balance.

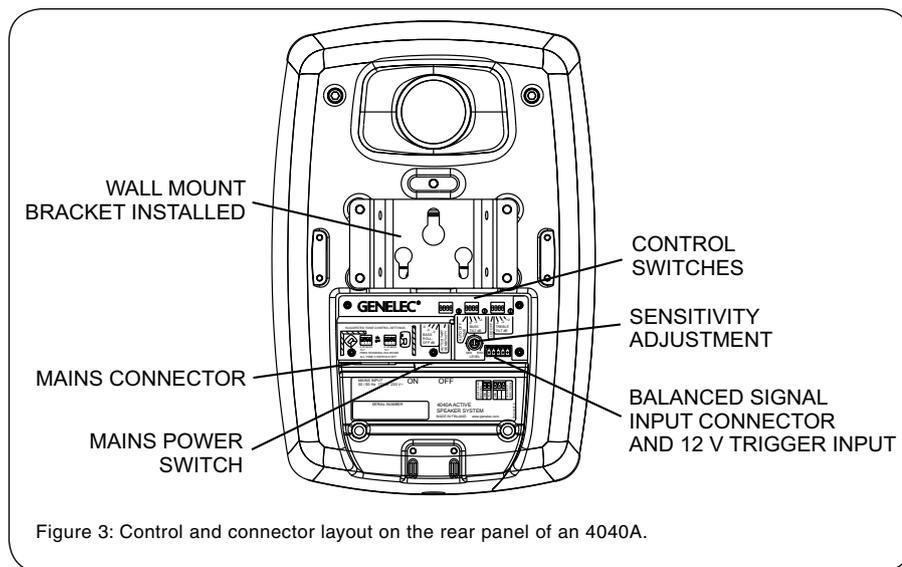


Figure 3: Control and connector layout on the rear panel of an 4040A.

The triggering sensitivity can be selected with the Autostart Sensitivity switch (see chapter Autostart Sensitivity above).

The amplifier mode can also be switched by a 12 V DC trigger type remote control. The remote control wires can be connected to the first two (starting from left) poles of the Phoenix connector (See Figure 2 for the connector pin sequence). Remote control overrides the Autostart function.

Maintenance

No user serviceable parts are to be found within the loudspeaker. Any maintenance or repair of the 4040A unit should only be undertaken by qualified service personnel.

Safety Considerations

Although the 4040A has been designed in accordance with international safety standards, the following warnings and cautions should be observed to ensure safe operation and to maintain the loudspeaker under safe operating conditions:

- Servicing and adjustment must only be performed by qualified service personnel.
- The loudspeaker must not be opened.
- Do not use this product with an unearthed mains cable or an unearthed mains connection as this may compromise electrical safety.
- Do not expose the loudspeaker to water or moisture. Do not place any objects filled with liquid, such as vases on the loudspeaker or near it.
- This loudspeaker is capable of producing sound pressure levels in excess of 85dB, which may cause permanent hearing damage.
- Free flow of air behind the loudspeaker is necessary to maintain sufficient cooling. Do not obstruct airflow around the loudspeaker.
- Note that the amplifier is not completely disconnected from the AC mains service unless the mains power cord is removed from the amplifier or the mains outlet.

Guarantee

This product is guaranteed for a period of two years against faults in materials or workmanship. Refer to supplier for full sales and guarantee terms.

Speaker Mounting Position	Treble Tilt	Bass Tilt	Bass Roll-Off
Flat anechoic response	None	None	None
Free standing in a damped room	None	-2 dB	None
Free standing in a reverberant room	None	-4 dB	None
In a corner	None	-4 dB	-4 dB

Table 1: Suggested tone control settings for differing acoustical environments

Mounting Considerations

Align The Loudspeakers Correctly

Always place the loudspeakers so that their acoustic axes (see Figure 1) are aimed towards the center of the listening area. Only vertical placement is preferred, as it minimises acoustical cancellation problems around the crossover frequency.

Minimise Reflections

Acoustic reflections from objects close to the loudspeakers like walls, cabinets etc. can cause unwanted colouration or blurring of the sound image. These can be minimised by placing the loudspeaker clear of reflective surfaces.

Minimum Clearances

Sufficient clearance for cooling of the amplifier and functioning of the reflex port must be ensured if the loudspeaker is installed in a restricted space such as a cabinet or integrated into a wall structure. The surroundings of the loudspeaker must always be open to the listening room with a minimum clearance of 5 centimeters (2") behind, above and on both sides of the loudspeaker. The space

adjacent to the amplifier (back panel of the enclosure) must either be ventilated or sufficiently large to dissipate heat so that the ambient temperature does not rise above 35 degrees Celsius (95°F).

Mounting Options

The Genelec 4040A offers several mounting options: It can be fitted to Omnimount® Series 30 and König & Meyer loudspeaker mounts or the keyhole wall mount adapter provided with the loudspeaker on two sets of M6x10 mm threaded holes on the back of the enclosure. On the base of the enclosure is an M10x10 mm threaded hole which can be used for securing the loudspeaker to its base. See Genelec Accessories Catalogue on www.genelec.com for a complete list of mounting hardware options.

Autostart And Remote Control

The 4040A is equipped with an Autostart function, which automatically turns the amplifier to Standby mode if an input signal has not been detected for approximately 3 hours (Auto Off Time switch set to "OFF") or 15 minutes (Auto Off Time switch set to "ON"), and back to "ON" mode when the signal returns.

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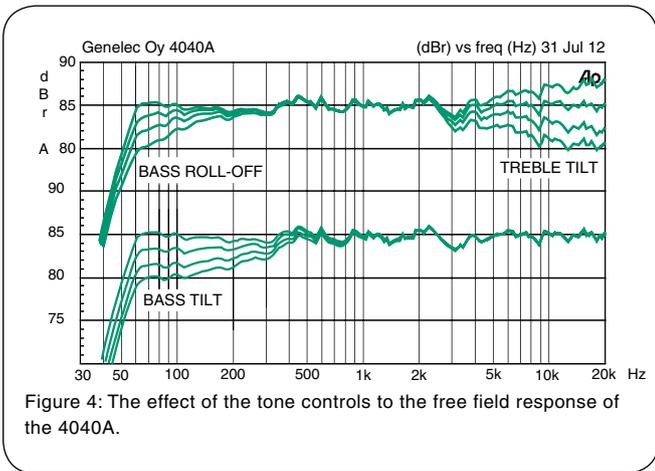


Figure 4: The effect of the tone controls to the free field response of the 4040A.

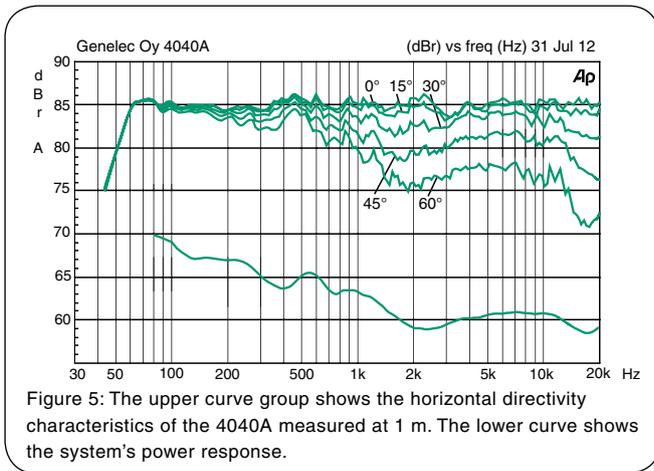


Figure 5: The upper curve group shows the horizontal directivity characteristics of the 4040A measured at 1 m. The lower curve shows the system's power response.

SYSTEM SPECIFICATIONS	
	4040A
Lower cut-off frequency, -3 dB	≤ 55 Hz
Upper cut-off frequency, -3 dB	≥ 20 kHz
Free field frequency response of system (± 3.0 dB)	55 Hz - 20 kHz
Maximum short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz @ 1 m	≥ 109 dB SPL
Maximum long term RMS acoustic output in same conditions with IEC weighted noise (limited by driver unit protection circuit) @ 1 m	≥ 101 dB SPL
Self generated noise level in free field @ 1m on axis (A-weighted)	≤ 10 dB
Harmonic distortion at 90 dB SPL @ 1m on axis	
Freq. 50 to 100 Hz	< 3 %
> 100 Hz	< 0.5 %
Drivers:	
Bass	165 mm (6 1/2")
Treble	19 mm (3/4") metal dome
Weight:	9.9 kg (22 lbs)
Dimensions:	
Height	350 mm (13 13/16")
Width	237 mm (9 3/8")
Depth	223 mm (8 13/16")

CROSSOVER SECTION	
	4040A
Input connector	Balanced Phoenix connector
Input impedance	Pin 1 gnd, pin 2 +, pin 3 -
Input level for maximum short term output of 100 dB SPL @ 1m:	10 kOhm balanced
Crossover frequency, Bass/Treble	Adjustable from +6 to -6 dBu
Treble tilt control operating range in 2 dB steps	2.5 kHz
Bass roll-off control operating range in 2 dB steps	From +2 to -4 dB & MUTE @ 15 kHz
Bass tilt control operating range in 2 dB steps	From 0 to -6 dB @ 55 Hz

The 'CAL' position is with all tone controls set to 'off' and the input sensitivity control to maximum (fully clockwise)

AMPLIFIER SECTION	
	4040A
Bass amplifier short term output power	120 W
Treble amplifier short term output power	120 W
Long term output power is limited by driver unit protection circuitry	
Amplifier system distortion at nominal output THD	≤ 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 W
Standby	<0.5 W
Full output	170 W



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