5040A

Operating Manual

Genelec 5040A
Active Subwoofer

GENELEC®

5040A Active Subwoofer

General description

The Genelec 5040A is a very compact active subwoofer designed to complement up to five Genelec 6010A active loudspeakers or a pair of the slightly bigger 6020A's or 8020A's. The 5040A extends the system's bass response down to 35 Hz and integrates perfectly with the 6010A's in any environment. The playback level for the whole system is conveniently controlled by the remote volume control provided with the subwoofer.

Installation

Before connecting the audio signals, ensure that all equipment is switched off.

The subwoofer is equipped with six RCA signal inputs (FRONT L, FRONT R, CENTER, REAR L, REAR R and LFE) and a 3.5 mm stereo jack input. These allow connecting the 5040A to a variety of line level audio sources with either 3.5 mm Jack or RCA type audio connectors. Suitable sources are preamplifiers, computer sound cards, portable audio players, "PRE OUT" connectors on a Home Theater receiver, etc. Two separate sources can be connected to the 3.5 mm Jack and the FRONT L and R inputs at the same time, but this may cause a slight increase of the noise level.

As the 5040A contains its own amplifier, no separate power amplifier is needed. Never connect the 5040A to the loudspeaker outputs of a power amplifier, integrated amplifier or receiver.

Connect the audio signal cables from your source to the corresponding RCA connectors. Next, connect the main loudspeakers to the subwoofer with RCA cables from the subwoofer's FRONT L, FRONT R, CENTER, REAR L and REAR R "OUT" connectors to the signal inputs of the corresponding main loudspeakers.

If you are using the 5040A with Genelec 8020A active loudspeakers, the connecting cables must have a male XLR connector at the loudspeaker end. See the 8020A operating manual for the correct type of cable. When using the 8020A's with the 5040A, the Bass Roll-Off switch on the 8020A's should be in position "OFF"

The 5040A has an integrated crossover network for the five main channels which directs the frequencies below 85 Hz to the subwoofer and higher frequencies through the output connectors to the main loudspeakers. When using a surround sound processor, select a loudspeaker setting "Large" for the channels routed through the subwoofer.

The LFE channel of the preamplifier or processor can be connected to the "LFE IN" connector. The LFE channel on the 5040A can reproduce signals up to 120 Hz.

Connect the volume control to the "SYSTEM VOLUME CONTROL" connector. The volume control adjusts the playback level of the subwoofer and all loudspeakers connected to it.

Once all connections have been made, the subwoofer and main loudspeakers are ready to be powered up.

Positioning in the room

The placement of the subwoofer in the room affects the overall frequency response and sound level of the system dramatically, as at low frequencies the effects of the room are strong. Even a slight change in the location of the subwoofer can cause a marked difference in the frequency balance and often patient and methodical experimentation and testing is needed to find the optimum placement.

The placement will also affect the bass roll-off rate and the phase difference between the main loudspeakers and the subwoofer. These effects can be compensated using the controls in the subwoofer but we recommend that at first you leave the switches untouched and concentrate on finding the position where the subwoofer gives the smoothest response, and only then use the controls to fine-tune the balance and phase alignment between the subwoofer and the main loudspeakers.

Start by placing the subwoofer close to the center of the front wall. We recommend a distance of less than 60 cm / 24" to the wall. This position gives increased acoustic loading and SPL due to the proximity of the front wall and floor. Cancellations from the front wall and floor are also avoided. Ideally the subwoofer and main loudspeakers should be positioned symmetrically and at an equal distance from the listening position.

If the frequency balance is not quite right, try moving the subwoofer to the left or right along the wall so that different room modes are excited at different levels. Positioning the subwoofer close to a corner will boost the bass level at lower frequencies and may cause asymmetrical spatial imaging.

Although the 5040A is magnetically shielded, it may cause colour distortion if placed near to very sensitive CRT monitors or computer displays.

Setting the subwoofer level

The subwoofer level control is located on the connector panel of the subwoofer. The factory default setting is -6 dB (9 o'clock) from maximum position, which gives a good starting point for level matching with 6010A loudspeakers. When using the 5040A with Genelec 6020A's or 8020A's the level of the main loudspeakers typically needs to be lowered by turning the volume control on the front panel back from its maximum setting to the 12 o'clock position.

Setting the Bass Roll-Off switches

The acoustic response of the subwoofer may have to be matched to the characteristics of the room and the positioning in which it will be used. To adjust the subwoofer to match these characteristics use the ''BASS ROLL-OFF' control switches located on the connector panel. When all Roll-Off switches are 'OFF', a flat anechoic response is obtained.

Setting the phase control

The effect of incorrect phase alignment between the main loudspeakers and the subwoofer is a drop in the frequency response of the whole system at the main loudspeaker / subwoofer crossover frequency. The phase difference between the main loudspeakers and subwoofer at the listening position is dependent upon the position of the subwoofer. To avoid phase differences between the left and right channels and the subwoofer, the subwoofer should be placed close to the

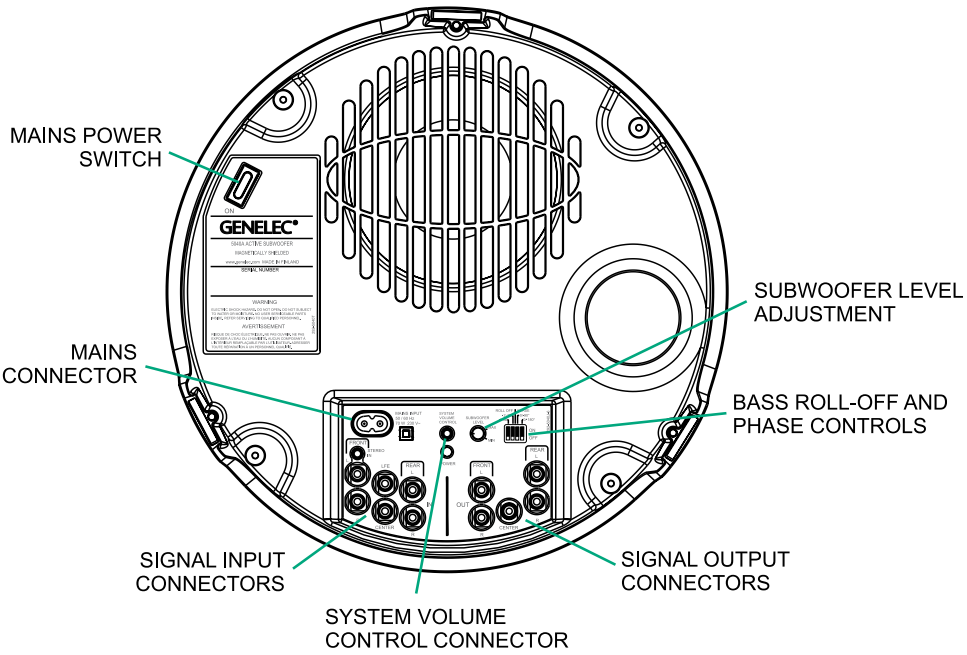


Figure 1. Connectors and controls of the 5040A.

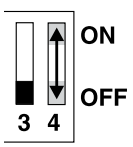
center of the front loudspeaker array.

Two phase matching switches in the crossover allow compensation for incorrect phase alignment. Four settings are provided between 0° and -270°.

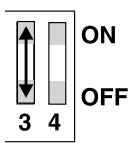
Coarse phase correction method

Connect an audio frequency signal generator to a signal input on the subwoofer which has a main loudspeaker connected to the corresponding “OUT” connector. Set the generator to 85 Hz. If a signal generator is not available, then it is possible to use an audio test recording which has a test frequency in the range 70 Hz to 100 Hz. Suitable test signals can be downloaded at www.genelec.com.

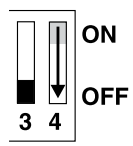
- Toggle the -180° phase switch ‘ON’ and ‘OFF’ and set it to the position which gives the lowest sound level at the listening position.



- Next toggle the -90°phase switch ‘ON’ and ‘OFF’, and again set it to the position which gives the lowest sound level.



- Finally, set the -180°phase switch to the opposite setting.



Automatic protection circuits

The 5040A is equipped with protection circuits against loudspeaker driver thermal overload and amplifier overheating. The protection system resets automatically so that the user only has to turn the input level down to ensure that it does not reactivate.

Safety considerations

The Genelec 5040A complies with international safety standards. However, to ensure safe operation and maintain the equipment in safe operating condition the following warnings and cautions must be observed.

- Servicing and adjustment must only be performed by qualified service personnel.
- Opening the amplifier panel is strictly prohibited except by qualified service personnel.
- Do not expose the subwoofer to water or moisture. Do not place any objects filled with liquid, such as vases on the subwoofer or near it.
- Note that the amplifier is not completely disconnected from the AC mains service unless the mains cable is removed from the amplifier or the mains outlet.

Warning!

This equipment is capable of delivering sound pressure levels in excess of 85 dB, which may cause permanent hearing damage.

Maintenance

There are no user serviceable parts inside the subwoofer. Any maintenance of the unit must only be performed by qualified service personnel.

Guarantee

This product is supplied with two year guarantee against manufacturing faults or defects that might alter the performance of the unit. Refer to supplier for full sales and guarantee terms.

EC Declaration of Conformity

This is to certify that the Genelec Active Subwoofer 5040A conforms to the following standards:

Safety:
EN 60065: 2002 + A1:2006 /
IEC 60065:2001 7th Edition + A1: 2005

EMC:
EN 55020: (2002) + A1 : 2003
EN 55013: (2001)+ A1 : 2003
EN 61000-3-2 (2000)
EN 61000-3-3 (1995)

The product herewith complies with the requirements of The Low Voltage Directive 2006/95/EC and EMC Directive 2004/108/EC

Signed:
Ilpo Martikainen
Position: Chairman of the Board
Date: 26-May-2008

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SYSTEM SPECIFICATIONS

	5040A
Free field frequency response (± 3 dB)	Main 35 Hz...85 Hz LFE 35 Hz...120 Hz
Maximum short term sine wave SPL output averaged from 40 to 85 Hz, measured in half space at 1 meter	98 dB
Self generated noise level in half space at 1 m on axis (A-weighted)	≤ 15 dB SPL
Driver, magnetically shielded	165 mm ($6^1/_2$")
Weight	6.3 kg (13.9 lb)
Dimensions Height Diameter	 251 mm ($9^7/_8$") 305 mm (12")

CONNECTORS

	5040A
Main channels IN/OUT, LFE channel IN unbalanced female RCA connectors Pin Ring	 + gnd
Stereo IN 3.5 mm Jack female connector Sleeve Tip Ring	 gnd Left channel Right channel
Input impedance	10 kOhm balanced
Main channel OUT gain referred to IN	0 dB

AMPLIFIER SECTION

	5040A
Amplifier short term output power (Long term output power is limited by driver unit protection circuitry)	40 W
Amplifier system THD at nominal output	≤ 0.05 %
Mains voltage	100, 120 or 230 V
Power consumption (average) Idle Full output	 7 VA 70 VA

CROSSOVER SECTION

	5040A
Subsonic filter (18 dB/octave) below	35 Hz
Crossover frequency (subwoofer/main channels)	85 Hz
LFE channel cutoff frequency	120 Hz
Midband rejection >400 Hz	≥50 dB
Input level for 90 dB SPL output at 1 m	-9 dBu at level control max
Sensitivity adjustment range	18 dB
Bass Roll-Off control operating range in 2 dB steps	From 0 to -6 dB @ 35 Hz
Phase matching control in 90° steps	From 0 to -270° @ 85 Hz

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