

# 5050A

Operating Manual

Genelec 5050A  
Home Theater Subwoofer

# GENELEC®



## General description

The Genelec 5050A is a compact low frequency loudspeaker designed to complement Genelec 6020A active loudspeakers in Home Theater systems and stereo applications. The 5050A has one active, magnetically shielded loudspeaker driver mounted on the front side of a rectangular cabinet and two passive radiators, one on each side of the cabinet. The amplifier unit is integrated into the rear of the cabinet.

XLR and RCA line level input connectors for the LFE channel, three-channel Bass Management section with RCA inputs and outputs and adjustable input sensitivity provide easy connection to all types of decoders and music sources. Bass roll-off rate and crossover phase can be adjusted to suit different acoustic environments and subwoofer positioning. A "LINK OUT" connector allows coupling of two or more subwoofers together when high sound pressure levels are required. The amplifier is equipped with an "AUTOSTART" function for automatic switching between "STANDBY" and "ON" modes.

## Installation

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

The subwoofer is equipped with three pairs of IN/OUT RCA connectors marked "LEFT", "CENTER" and "RIGHT" for the main channels, parallel XLR and RCA connectors for the LFE channel and a "LINK OUT" RCA connector for daisy-chaining multiple 5050A's together.

Connect the main channel audio signal RCA cables from your preamplifier or processor to the "LEFT", "CENTER" and "RIGHT" "IN" connectors. Next, connect the 6020A main loudspeakers to the subwoofer with RCA cables from the subwoofer's "LEFT", "CENTER" and "RIGHT" "OUT" connectors to the signal inputs of the corresponding main loudspeakers. The 5050A has an integrated crossover network for these three 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 front channels routed through the subwoofer and "Small" for the rear loudspeakers connected directly to the processor.

The LFE channel of the preamplifier or processor can be connected to one of the two "LFE IN" connectors. Do not use both LFE inputs at

the same time. The LFE channel on the 5050A can reproduce signals up to 120 Hz.

The "LINK OUT" connector can be used for daisy-chaining several subwoofers together when high SPL is required. See section "Using multiple subwoofers".

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 subwoofer's location 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, however leaving at least 10 cm (4") of free space in front of the amplifier panel. 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. If you are using two subwoofers, try placing them asymmetrically relative to the side walls. Sometimes moving the subwoofers apart into the front corners helps with problematic rear wall reflections and the loss of mutual coupling is compensated by the bass boost caused by corner positioning.

Although the 5050A is magnetically

shielded, it may cause colour distortion if placed near to very sensitive video monitors or computer displays. Move the subwoofer further away or try turning the amplifier side of the subwoofer towards the screen.

## Flush / Cabinet mounting

If the subwoofer is installed in a cabinet or flush mounted in a cavity inside a wall, sufficient space must be left around it to ensure amplifier cooling and correct functioning of the driver/passive radiator system.

The cavity must be at least 10 cm (4") wider and 10 cm (4") deeper and higher than the outer dimensions of the subwoofer. This allows leaving 5 cm (2") of space beside both passive radiators and sufficient space behind and above the cabinet to allow cooling for the electronics. The subwoofer's amplifier side must face the back of the cavity. If the cavity is covered with a drape or cloth, ensure that it does not hinder the air circulation around the subwoofer.

## Setting the input sensitivity

The input sensitivity control is located on the amplifier panel of the subwoofer. An input voltage of -6 dBu with a -6 dBu input sensitivity setting will produce 100 dB SPL @ 1 m in free field. To obtain a 110 dB SPL output an input voltage of +10 dBu is required when the input sensitivity is set to 0 dBu.

## 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 amplifier 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 main loudspeakers and 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 center of the front loudspeaker array.

Two phase matching switches in the

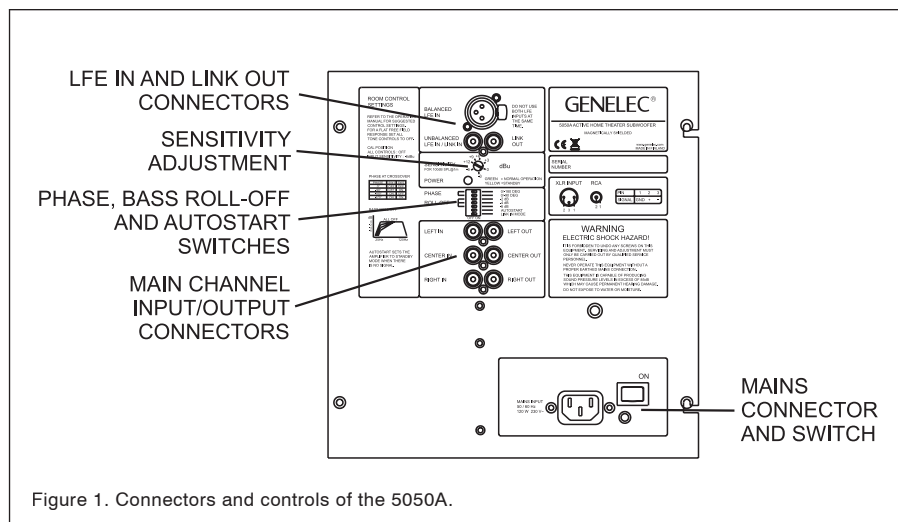


Figure 1. Connectors and controls of the 5050A.

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 the "CENTER IN" input of the subwoofer and 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. Make sure you connect (even temporarily) a main loudspeaker to the "CENTER OUT" output, so that the test signal is properly reproduced by both subwoofer and main loudspeaker.

- 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.



### Using multiple subwoofers

The 5050A is equipped with a "LINK OUT" connector to provide an easy way of coupling two or more subwoofers together in high SPL applications. Connect an RCA cable from the "LINK OUT" connector of the "master" subwoofer to which the decoder is connected,

to the RCA "LFE IN/LINK IN" input connector of the other, "slave" subwoofer. Set the "LINK IN MODE" switch on the "slave" subwoofer to "ON". Do not connect the link signal cable to the main channel inputs.

When two subwoofers connected in this way are positioned close to one another, bass level increases by 6 dB. Three subwoofers give a bass SPL increase of 9,5 dB and four subwoofers 12 dB compared to a single subwoofer. Adjust the sensitivity control of all subwoofers in the group to match the SPL level of the main monitor system. Note that the sensitivity setting must be the same on all subwoofers.

### Autostart function

The 5050A is equipped with an "AUTOSTART" function, which automatically turns the amplifier to "STANDBY" mode if an input signal has not been detected for approximately 30 minutes, and back to "ON" mode when the signal returns. The function can be deactivated by turning the "AUTOSTART" dip switch to "OFF". A two-colour LED on the amplifier panel indicates the amplifier status: green for "ON" and yellow for "STANDBY".

### Automatic protection circuits

The 5050A 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

Genelec 5050A 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.
- Always use a mains power cable and connection with protective earth. Failing to do this may lead to personal injury.
- 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.

# 5050A Operating Manual

SYSTEM SPECIFICATIONS	
	5050A
Free field frequency response ( $\pm 3$ dB)	Main 26 Hz...85 Hz LFE 26 Hz...120 Hz
Maximum short term sine wave SPL output averaged from 30 to 85 Hz, measured in half space at 1 meter	99 dB
Maximum peak SPL output with random pink noise, measured in half space at 1 meter	104 dB
Self generated noise level in half space at 1 m on axis (A-weighted)	$\leq 15$ dB
Driver, magnetically shielded	205 mm (8")
Passive radiators	2 x 205 mm (8")
Weight	15 kg (33 lb)
Dimensions	
Height	332 mm (13 <sup>1/16</sup> ")
Width	325 mm (12 <sup>9/16</sup> ")
Depth	330 mm (13")

If the subwoofer is flush mounted into a wall or a cabinet, the recess must be 10 cm (4") wider, higher and deeper than the subwoofer itself to allow sufficient clearance for the passive radiators and air circulation for cooling.

AMPLIFIER SECTION	
	5050A
Amplifier short term output power (Long term output power is limited by driver unit protection circuitry)	70 W
Amplifier system THD at nominal output	$\leq 0.08$ %
Mains voltage	100, 120 or 230 V
Power consumption (average)	
Idle	11 VA
Full output	120 VA

Selectable Autostart function for signal sensing Standby/On switching

CONNECTORS	
	5050A
Main channels IN/OUT, LFE channel IN and LINK OUT unbalanced female RCA connectors	
pin	+
ring	gnd
LFE IN Balanced female XLR Input connector	
pin 1	gnd
pin 2	+
pin 3	-
Input impedance	10 kOhm
Input level for 100 dB SPL output @ 1 m	Variable from +12 to -6 dBu
LINK OUT gain	0 dB
Main channel OUT gain	0 dB

CROSSOVER SECTION	
	5050A
Subsonic filter (18 dB/octave) below	26 Hz
Crossover frequency, (sub/main channels)	85 Hz
LFE channel cutoff frequency	120 Hz
Midband rejection > 400 Hz	$\geq 50$ dB
Bass Roll-Off control operating range in 2 dB steps	From 0 to -6 dB @ 27 Hz
Phase matching control in 90° steps	From 0 to -270° @ 85 Hz