HTS3B and HTS4B

Operating Manual

Genelec HTS3B and HTS4B
Home Theater Subwoofers

GENELEC®

General description

Genelec HTS3B and HTS4B are powerful low frequency loudspeakers designed specially for high quality digital 5.1 channel Home Theater systems. Both models share the same design layout with one active, magnetically shielded speaker driver mounted on the front side of a compact cabinet and two passive radiators, one on each side of the cabinet. The amplifier unit is integrated into the subwoofer cabinet.

XLR and RCA line level input connectors and adjustable input sensitivity provide easy connection to all types of decoders. 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 amplifiers are equipped with an “AUTOSTART” function for automatic switching between “STANDBY” and “ON” modes. Connectors for remote power “ON/STANDBY” switches are also provided.

Installation

Before connecting the audio signals, ensure that all equipment is switched off. Check that the subwoofer voltage selector switch is set to the correct voltage. Audio input to the subwoofer can be made via balanced XLR or unbalanced RCA connector. We recommend the use of balanced cables and connectors due to their better noise immunity. Do not use both inputs at the same time.

The “LINK OUT” connector can be used for daisy-chaining several subwoofers together when high SPL is required. Simply connect a balanced XLR cable from the “LINK OUT” connector to the XLR input connector of the next subwoofer. See section “Using multiple subwoofers”.

Once all connections have been made, the subwoofer and main speakers 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 speakers and the subwoofer. These effects can be compensated using the controls in the amplifier unit 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 monitors.

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 90 cm / 36” 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 speakers 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 HTS3B and HTS4B are magnetically shielded, they 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.

Soffit / 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. These switches provide an adjustment range of -10 dB in 2 dB steps. 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 speakers and subwoofer is a drop in the frequency response of the whole system at the main speaker / subwoofer-crossover frequency. The phase difference between the main speakers 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 speaker 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

- Configure the processor so that the main speakers (L, C, R) are set to “small” and check the main speaker/subwoofer crossover frequency setting on your processor. This frequency may be

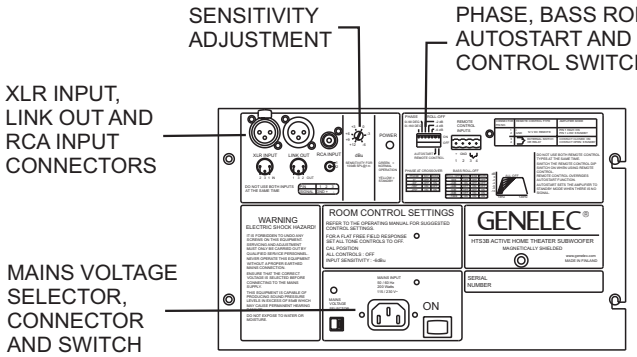


Figure 1. Connectors and controls of the HTS3B.

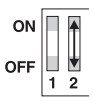
Remote control type	Pole or contact	Connect to remote control input pin no.
12 V DC remote control	+	1
	-	2
External switch or relay	Contact 1	3
	Contact 2	4
Connect only one remote control unit at a time		

Table 1. Remote control connectors of the HTS3B and HTS4B

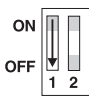
variable or fixed, consult the operating manual of your processor.

- Connect an audio frequency signal generator to one of the input channels used in the system.
- Set the frequency generator to the same frequency as the subwoofer crossover frequency on your decoder. If a signal generator is not available, you can use an audio test recording with a suitable range of test frequencies.
- 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.



After the phase setting has been completed, return the speaker configuration on the processor to its' original settings.

Using multiple subwoofers

The HTS3B and HTS4B are equipped with a "LINK OUT" connector to provide an easy way of coupling two or more subwoofers together in high SPL applications. Connect an XLR cable from the "LINK OUT" connector of the "master" subwoofer to which the decoder is connected, to the XLR input connector of the other, "slave" subwoofer.

When two subwoofers connected in this way are positioned close to one another, bass level increases by 6 dB. Three subwoofers give an 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 and remote control

HTS3B and HTS4B are 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".

The amplifier mode can also be switched by a remote control unit connected to the respective inputs on the amplifier. Two pairs of connectors are provided, 1 and 2 for a 12 V DC trigger type remote control, and 3 and 4 for an external switch or relay type control. Switch the "REMOTE CONTROL" dip switch to "ON" to activate this function. Do not connect two remote controls to the subwoofer at the same time. Remote control overrides the "AUTOSTART" function.

Automatic protection circuits

Both HTS3B and HTS4B subwoofers have protection circuits against speaker 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 HTS3B and HTS4B comply 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 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.

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SYSTEM SPECIFICATIONS

	HTS3B	HTS4B
Free field frequency response (+/- 3 dB)	18 Hz…120 Hz	18 Hz…120 Hz
Maximum short term sine wave SPL output averaged from 30 to 85 Hz, measured in half space at 1 meter	≥ 108 dB SPL	≥ 112 dB SPL
Maximum peak SPL output with random pink noise, measured in half space at 1 meter	≥ 113 dB SPL	≥ 117 dB SPL
Self generated noise level in free field @ 1 m on axis (A-weighted)	≤ 15 dB	≤ 15 dB
Harmonic distortion at @ 1 m on axis in half space 2nd 3rd	@ 95 dB SPL 30 … 120 Hz ≤ 2 % ≤ 2 %	@ 95 dB SPL 30 … 120 Hz ≤ 2 % ≤ 2 %
Driver, magnetically shielded Passive radiators	250 mm (10") 2 x 250 mm (10")	305 mm (12") 2 x 305 mm (12")
Maximum permissble ambient temparature	35° C (95°F)	35° C (95°F)
Weight	28 kg (62 lbs)	37 kg (81 lbs)
Dimensions Height Width (including grilles) Depth	 433 mm (17 1/16") 398 mm (15 5/8") 400 mm (15 3/4")	 518 mm (20 3/8") 483 mm (19") 465 mm (18 5/16")

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

AMPLIFIER SECTION

	HTS3B	HTS4B
Short term amplifier output power (Long term output power is limited by driver unit protection circuitry)	200 W	400 W
Amplifier system distortion at nominal output THD	 ≤ 0.05%	 ≤ 0.05%
Mains voltage	100/200 V or 115/230 V	100/200 V or 115/230 V

INPUT SECTION

	HTS3B	HTS4B
Input connector XLR female pin 1 pin 2 pin 3	1, balanced gnd + -	1, balanced gnd + -
Input connector RCA female sleeve pin	1, unbalanced gnd +	1, unbalanced gnd +
Input impedance	10 kOhm balanced (XLR), unbalanced (RCA)	
Input level for 100 dB SPL output @ 1 m	Variable from +12 to –6 dBu	
Remote control inputs	External 12 V DC / Relay or switch	

OUTPUT SECTION

	HTS3B	HTS4B
Link Out connector XLR male pin 1 pin 2 pin 3	 gnd + –	 gnd + -
Link Out gain	0 dB	0 dB

CONTROLS

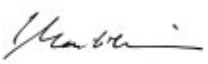
	HTS3B	HTS4B
Input sensitivity	+12 to –6 dBu	
Bass roll-off	0 / -2 dB / -4 dB / -6 dB / -8 dB / -10 dB @ 20 Hz	
Phase adjustment	0° / -90° / -180° / -270°	
Autostart	Signal sensing Standby/On switching	
Remote control	Activates remote controlled Standby/On switching by 12 V trigger or external switch	

EC DECLARATION OF CONFORMITY

This is to certify that the Genelec HTS3B and HTS4B Home Theater Subwoofers conform to the following product specifications:

Safety: EN 60065
EMC: EN 55013, EN 55020,
EN 61000-3-2 and EN 61000 3-3

The products herewith comply with the requirements of The Low Voltage Directive73/23/EEC and EMC Directive 89/336/EEC as amended by Directive 93/68/EEC

Signed: 
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