F Two

Operating Manual

GENELEC®

F Two Active Subwoofer

General description

The Genelec F Two is a very compact active subwoofer designed to complement up to five Genelec G One or G Two active loudspeakers as a .1 / LFE channel subwoofer in a 5.1 system or a pair of the slightly bigger G Threes. Linked together two F Two's can also be used with G Fours. The F Two extends the system's bass response down to 27 Hz and integrates perfectly with the main loudspeakers in any environment. The playback level for the whole system is conveniently controlled by the wireless volume control provided with the subwoofer. A wired volume control is available as an option.

The F Two has integrated bass management for the two output channels which directs frequencies below 85 Hz to the subwoofer and higher frequencies through the output connectors to the main loudspeakers. When using the subwoofer for the .1/LFE channel of a multichannel system, we recommend that bass management is done in the processor or receiver and only the LFE channel is connected to the subwoofer.

Installation

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

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

Please follow the steps listed below for a succesful setting up of the subwoofer:

1. Check the contents of the shipment. in addition to the subwoofer, there is a wireless remote control, a mains cable, an IR extension cable and a Quick Setup Guide.
2. Pull out the battery insulating strip from the underside of the remote control as shown in figure 1. This strip insulates the battery from the contacts on the remote control during shipping and the remote control does not function before it is removed.
3. Place the subwoofer in its position.
4. Connect audio cables from your signal source(s). You can connect up to two digital audio sources and two analog audio sources.
5. Connect the main loudspeakers to the output connectors of the subwoofer. You can use either balanced XLR or unbalanced RCA connectors.
6. Set the "LEVEL +10" and "-10 dB" switches on the subwoofer and main loudspeakers according to Table 2 on this manual.
7. Adjust the phase of the subwoofer as instructed in this manual and the Quick Setup Guide.
8. Use test recordings and familiar music pieces to judge the sound balance. Use the "SUBWOOFER LEVEL" rotary control and the "BASS ROLL-OFF" dip switches to fine-tune the balance. If this fails, consider relocating the subwoofer.

Operating Environment

The F Two subwoofer is designed for indoor use only. The ambient temperature should be 15-35 °C (50-95 °F) and the relative humidity 20-80 %. Condensation is not allowed. If it has been stored or transported in a cool environment, the product must be allowed to warm up in its packing to the ambient temperature before connecting mains power.

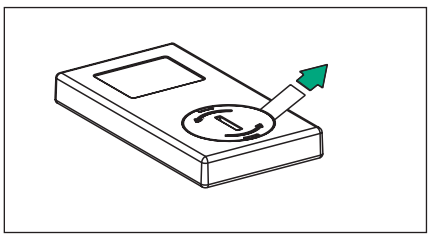


Figure 1. Removing the battery insulating strip from the remote control

Connectors

The F Two is equipped with both analog and digital signal input connectors, that can be used simultaneously to connect up to four audio sources (two analog, two digital). Switching between sources is done with the Select button on the connector panel or with the "<" and ">" buttons on the remote control. The colour of the LED light on the subwoofer enclosure indicates which source is selected.

Analog Input Connectors

The F Two has two stereo inputs (3.5 mm jack and L/R RCA connectors) and an LFE/LINK RCA connector. The stereo inputs are parallel, so you can connect two audio sources at the same time, just play only one of them at a time. The Select function does not work between these two inputs. The LFE/LINK input is used for the LFE

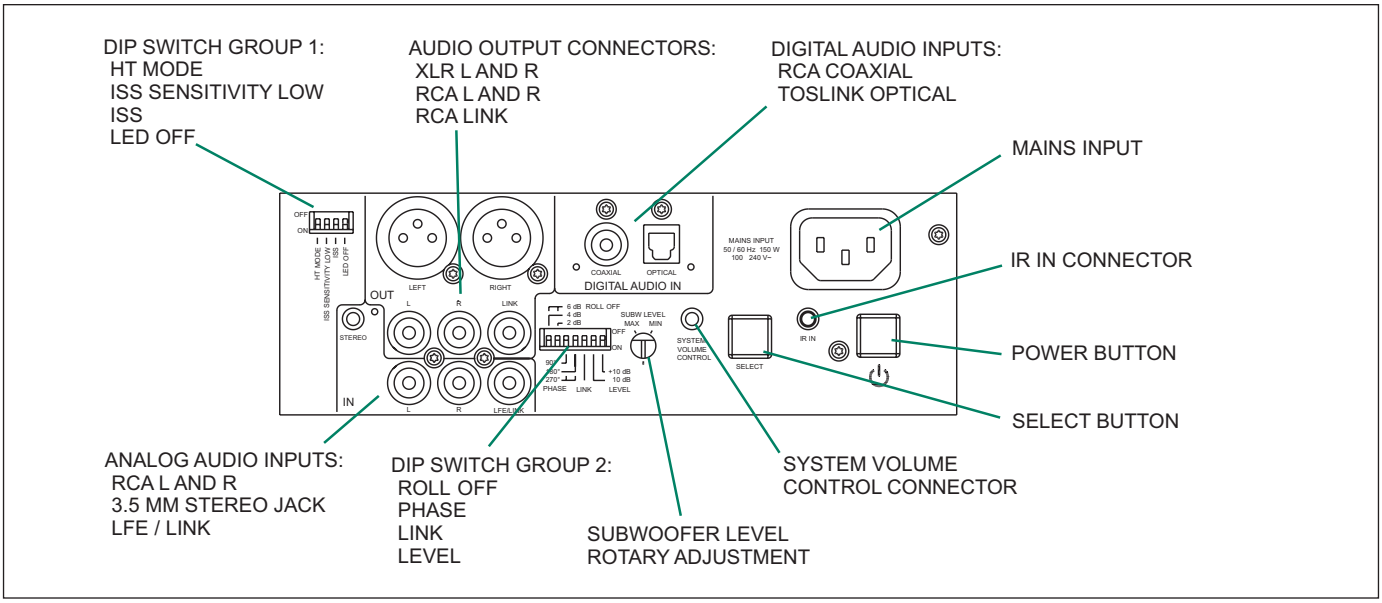


Figure 2. Connectors and controls of the F Two.

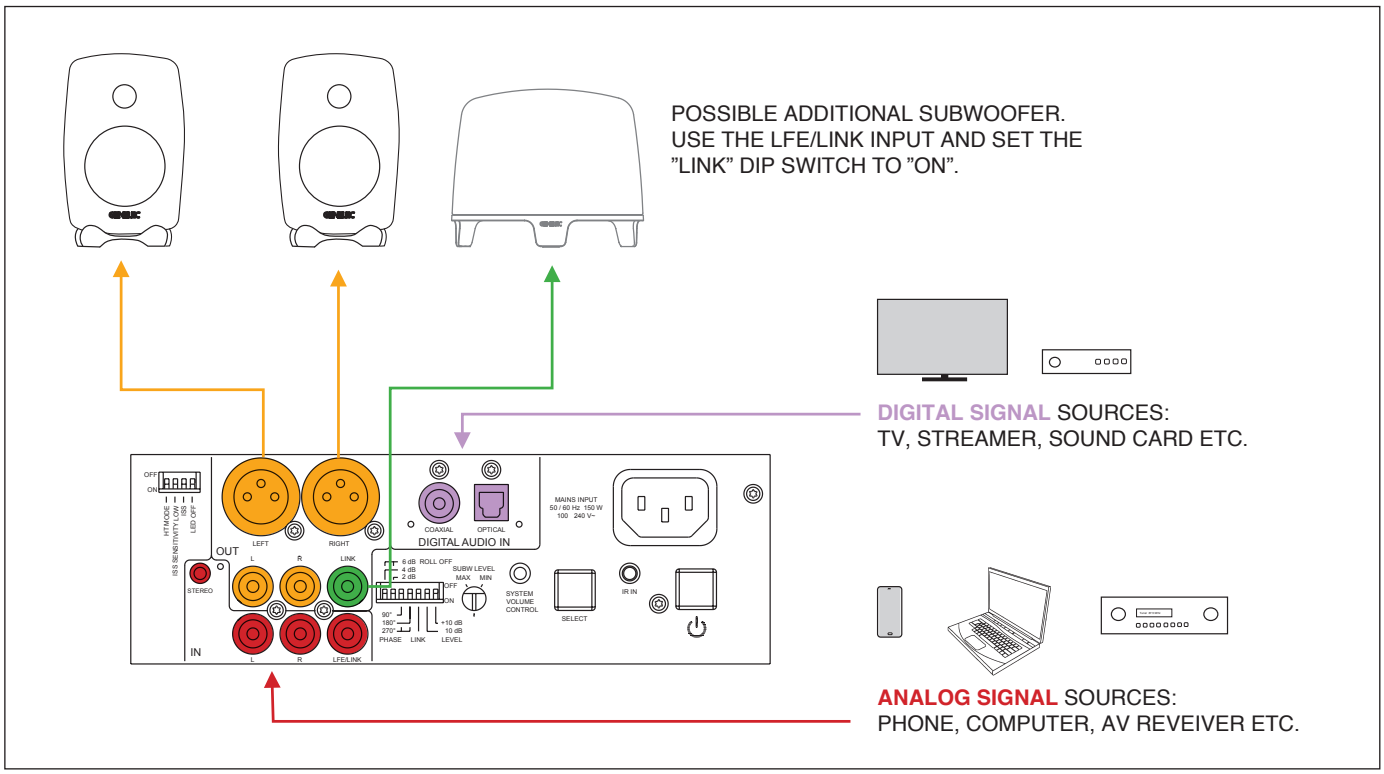


Figure 3. Audio cabling

(.1) signal in a 2.1 or 5.1 channel sound system or as the signal input in a multiple subwoofer system (see chapter Using Multiple Subwoofers). The LFE/LINK input has a 120 Hz low pass filter, so it is not suitable for full frequency range signals.

Digital Input Connectors

The F Two has two digital signal input connectors, one coaxial and one optical, that accept stereo PCM format digital signal. You can connect two digital sources and switch between them using the Select function.

Analog Output Connectors

The F Two has two pairs of analog stereo L/R output connectors, one with RCA connectors and the other with balanced XLR male connectors. Connect signal cables from these connectors to the main speakers. Both connector pairs carry the same

Subwoofer placement	Bass Roll-Off
Near a wall	-2 dB
In a corner	-4 dB

Table 1. Suggested Bass Roll-Off settings in typical situations

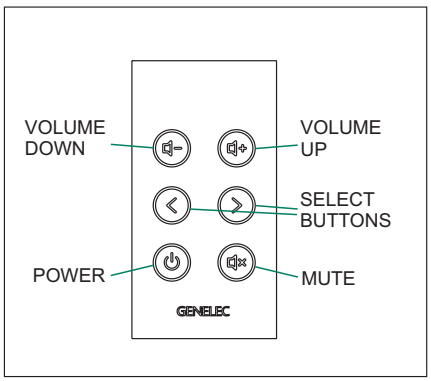


Figure 4. F Two remote control

signal so you can use main speakers with either RCA or XLR input connectors. These outputs are high pass filtered at 85 Hz (See chapter Bass Management). Additionally, the LINK RCA output provides a summed signal of both channels. Use this connector as a signal output to the next subwoofer when you want to connect several subwoofers together. See chapter “Using Multiple Subwoofers” for more information.

System Volume Control Connector

This connector allows connecting the Genelec 9310A Wired Volume Control which is available as an accessory. When connected, the 9310A controls the volume of the whole system, including the main speakers.

IR IN Connector

If the F Two is used with an infrared type remote control (see chapter Use with IR Remote Controls) and the desired location of the subwoofer does not allow an unobstructed line of sight to the receiver located next to the LED in one of subwoofer’s feet, the IR extension cable provided with the subwoofer can be connected here. The receiver end of the cable is then brought to a location where the IR remote control reception works conveniently, for instance close to the IR receiver of a television set when using the subwoofer and speakers with a TV.

Main loudspeaker model	F Two Level Dip switch setting	
	-10 dB switch	+10 dB switch
G One A	OFF	OFF
G One B	OFF	OFF
G One B -10 dB Dip ON	ON	OFF
G Two A	OFF	OFF
G Two B	OFF	OFF
G Two B -10 dB Dip ON	ON	OFF
G Three A	OFF	OFF
G Three A +10 Dip ON	OFF	ON
G Three B	OFF	OFF
G Three B -10 Dip ON	ON	OFF
G Four A	OFF	OFF
G Four A +10 dB Dip ON	OFF	ON
8010A	OFF	ON
8010A -10 dB Dip ON	OFF	OFF
8020A	OFF	ON
8020B	OFF	ON
8020C	OFF	ON
8020D	OFF	ON
8030A	OFF	ON
8030B	OFF	ON
8030C	OFF	ON
8040A	OFF	ON
8040B	OFF	ON
M030	OFF	ON

Table 2. Suggested Level switch settings with different main loudspeakers

Functions And Controls

HT Mode

Turn this switch to “ON” when you connect a sound source with its own volume control to the analog inputs of the F Two. In this mode the volume control of the F Two does not have effect on the analog signals. However, it works with the digital inputs, so you can use them to connect other signal sources.

ISS Sensitivity Low

If the Intelligent Signal Sensing (ISS) function switches the subwoofer on when there is no audio signal present, turning this switch to “ON” reduces the triggering sensitivity of the function.

ISS

The Intelligent Signal Sensing (ISS) function monitors the audio signal fed to the subwoofer. If there is no signal for approximately 45 minutes, the function switches the subwoofer to Standby mode, reducing the power consumption to less than 0.5 Watts. When the signal resumes, the subwoofer powers up again. There is a slight delay in the automatic powering up. In those environments where the subwoofer is required to be on all of the time, the ISS

function can be disabled by setting the "ISS" switch to the "OFF" position. Then the subwoofer is continuously powered and can be turned off using the power button on the remote control or connector panel.

LED Off

This switch deactivates the status indicator LED on the "foot" of the subwoofer.

Roll-Off

These two switches attenuate the subwoofer's bass response. At 27 Hz the attenuation levels are -2, -4 and -6 dB (both switches "ON").

Phase

These two switches provide phase adjustment for the subwoofer in -90 degree increments. See chapter "Phase Alignment".

Link

This switch selects the analog inputs and disables input channel selection. In addition, it disables the remote control and sets the subwoofer's level to maximum. Set this switch to "ON", when using the subwoofer as a "slave" in a multiple subwoofer system. See chapter "Using Multiple Subwoofers".

Level

These two switches allow adjusting the subwoofer's level by -10 dB or +10 dB, providing level matching with different main speaker models. See Table 2 for some examples.

Subwoofer Level

This rotary adjustment adjusts the playback level of the subwoofer. The level is increased by turning the adjustment clockwise and reduced by turning it counterclockwise.

Select

This button allows signal input selection between the two digital inputs and the analog input and initiation of the matching procedure for IR remote controls (see Matching IR Remote Controls).

Power

This button switches the subwoofer between Standby and Power mode. Note that this button does not completely disconnect the subwoofer from the mains power. If this is necessary, the subwoofer's mains cable must be disconnected. This button can also be used for restoring the factory settings by keeping it depressed for 10 - 15 seconds. This returns the volume setting on the remote control to factory level and deletes possible remote control pairing and IR remote control matching. Also the source selection returns to automatic, which is the factory setting.

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 sound pressure level due to the proximity of the front wall and floor. 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.

ISS™ Autostart

The automatic power saving function ISS (Intelligent Signal Sensing) can be activated by setting the "ISS" switch on the connector panel to "ON." Automatic powering down to standby mode happens after a certain time when playback has ended. The power consumption in standby mode is typically less than 0.5 watts. Playback will automatically resume once an input signal is detected from any source.

Alternatively, the subwoofer can be activated by pushing any button on the remote control.

There is a slight delay in the automatic powering up. If this is undesirable, the ISS™ function can be disabled by setting the "ISS" switch on the connector panel to "OFF." In this mode, the subwoofer is powered on and off using the remote control or the power button on the connector panel.

The "ISS SENSITIVITY LOW" switch lowers the triggering sensitivity of the ISS function. This can be necessary if the subwoofer "wakes up" even if there is no audio signal.

Setting The Playback Level

The "LEVEL +10 dB and LEVEL -10 dB" switches and the rotary "SUBWOOFER LEVEL" level adjustment can be used for matching the subwoofer's playback level with the main loudspeakers (See Table 2). Fine tuning can be done with the rotary adjustment knob.

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 (see Table 1). 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

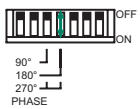
The effect of incorrect phase alignment between the main loudspeakers and the subwoofer is a drop in the frequency response of the whole system at the main loudspeaker / subwoofer crossover frequency. The phase difference between the main loudspeakers and subwoofer at the listening position is dependent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

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

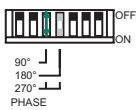
Coarse Phase Correction Method

Connect an audio frequency signal generator to a signal input on the subwoofer which has a main loudspeaker connected to the corresponding “OUT” connector. If the loudspeakers are placed at different distances from the listening position, choose the loudspeaker that is nearer.

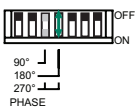
Set the generator to 85 Hz. If a signal generator is not available, it is possible to use an audio test recording which has a test frequency in the range 70 Hz to 100 Hz. Suitable test signals can be downloaded at www.genelec.com and found in some smart phones.



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.

Matching IR Remote Controls

The F Two subwoofer can be used with most IR remote controls, providing convenient use with, for instance, the remote control of a TV set when connected to it via a fixed level digital signal input. Turn the subwoofer upside down so you can easily reach the “Select” button on the subwoofer’s connector and the status indicator LED on the subwoofer’s foot is visible. The IR receiver is located in the LED. Note that the “Select” buttons on the RF remote control provided with the subwoofer do not actuate the matching.

The matching procedure is as follows:

- Keep the “Select” button on the subwoofer depressed until the status indicator LED starts blinking red.
- Choose the button on the remote control that you want to actuate “volume up” function. Keep it depressed until the LED stops blinking. With some remote controls pressing the button multiple times works better.
- Now the LED blinks green, indicating that the button for “volume down” can be selected. Follow the procedure described above.
- Next the LED blinks blue for selection of the button for “Select” button.
- Yellow LED indicates the selection of “Mute” button.
- Magenta LED indicates the selection of “Power” button.

A short press on the “Select” button allows you to skip a step in the procedure, if you do not want to “teach” all the commands listed above. If you want to interrupt the procedure, press “Select” for approximately two seconds. This saves the settings made so far. If you don’t want to save the settings, press the Power button for two seconds. This will also delete the matching settings done by that point. If you want to change the matched buttons, just redo the matching process.

Matching The RF Remote Control To The Subwoofer

The remote controls delivered with F Two subwoofers will function with any other F Two subwoofer as well. If this is not desirable, for instance when there are several F Two subwoofers in the same premises, and the user wishes to avoid the situation that more than one subwoofer reacts to the commands given by each remote control, the remote controls can be matched to operate only one subwoofer.

1. Press and hold down the “Power” and “Select “ buttons on the subwoofer until the LED starts blinking white.
2. While the LED is blinking, first press and hold down the volume “+“ button on the remote control and then the volume “-“ button. Keep both buttons pressed for a few seconds until the status indicator LED on the subwoofer stops blinking. This indicates that matching is completed and the matching operation ends automatically.

Now the subwoofer should only respond to commands given by the matched remote control, and respectively, the matched remote control should not work with other F Two units. For cancelling the matching operation while the LED is blinking, press and hold down the ”Power” button on the subwoofer for two seconds. If you wish to undo a matching completely, press and hold down the ”Power” button on the subwoofer for ten seconds.

NOTE: In some cases the local WiFi network can cause problems with the RF remote control, if they operate on the same wavelength. We recommend the use of an IR remote control in these cases.

Using Multiple Subwoofers

The Genelec F Two subwoofer is equipped with an LFE/LINK output connector to provide an easy way of coupling two or more subwoofers together in high SPL applications, for instance when using the subwoofers with Genelec G Four active loudspeakers. Connected as described below, the “master” subwoofer controls the volume of all subwoofers linked to it through this connector.

Connect an RCA cable from the LINK connector of the “master” subwoofer to which the main loudspeakers are connected, to the LFE / LINK connector of the other, “slave” subwoofer and turn the LINK dip switch on the “slave” subwoofer to “ON”.

In the LINK mode, the subwoofer volume is automatically set to maximum and the “slave” subwoofer only reacts to the power on/off commands given with a remote control. It follows the volume adjustment and source channel selection done in the “master” subwoofer.

When two subwoofers connected in this way are positioned close to one another, bass level increases by 6 dB. Three subwoofers give an SPL increase of 9.5 dB and four subwoofers 12 dB compared to a single subwoofer.

The rotary “SUBWOOFER LEVEL” adjustment knob should be set in the same position as that of the “master” subwoofer unless the subwoofers are placed in very different positions acoustically, for example one in a corner and one far from corners. In such case, it is advisable to measure the loudness of each subwoofer separately and adjust them individually for correct balance.

Phase and Bass Roll-Off adjustments should be done individually for each subwoofer in the chain, especially if they are not placed close together. To check the phase alignment for the “master” subwoofer switch off the “slave” subwoofer and follow the instructions given in the previous sections.

To adjust the phase alignment of the

"slave" subwoofer, you need to switch off the "master" subwoofer, connect a signal cable from one of the "slave" subwoofer's output connectors to the corresponding loudspeaker and switch the LINK switch to "OFF". This effectively changes the "slave" to "master" mode and the phase adjustment can be carried out. Return the connections and LINK setting on the "slave" subwoofer back to the "ON" setting after completing the adjustment.

Safety Considerations

The Genelec F Two 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.

- Do not use this product with an unearthed mains cable or a mains connection without the protective earth contact as this may lead to personal injury.
- Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.
- The battery shall not be exposed to excessive heat such as sunshine, fire or the like.
- Servicing and adjustment must only be performed by qualified service personnel.
- Opening the subwoofer 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.

Compliance To FCC Rules

Remote control

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This product emits radio frequency energy, but the radiated output power of this device is below FCC radio frequency exposure limits. This equipment complies with FCC RF radiation exposure limits forth for an uncontrolled environment. Nevertheless, the device should be used in such a manner that the potential for human contact with the antenna during normal operation is minimized.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Subwoofer

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

This device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

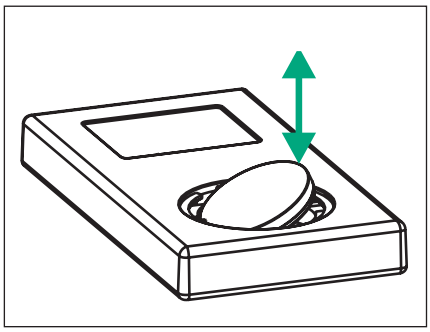


Figure 5. Changing the remote control battery

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

Changing The Remote Control Battery

The remote control battery can be changed by turning the battery cover on the back of the remote control anticlockwise. Use a small screwdriver under the right side of the battery (see figure 5) to wedge the battery out. Replace the battery with a similar CR2032 type battery. Insert the battery with the left side first as shown in figure 4 and close the battery cover.

Take the used battery to your local battery recycling point. Under no circumstances should the battery be disposed with general dry waste.

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. By registering your product at:

www.community.genelec.com

You can get an additional three year guarantee that covers the spare parts.

F Two

Operating Manual

SYSTEM SPECIFICATIONS

	F Two
Free field frequency response (-6 dB)	Main 27 Hz...85 Hz LFE 27 Hz...120 Hz
Maximum short term sine wave SPL output averaged from 30 to 85 Hz, measured in half space at 1 meter	103 dB
Self generated noise level in half space at 1 m on axis (A-weighted)	≤ 5 dB SPL
Driver, magnetically shielded	205 mm (8")
Weight	8.5 kg (18.7 lb)
Dimensions Height Diameter	 **300 mm (11 13/16")** **362 mm (14 1/4")**

AMPLIFIER SECTION

	F Two
Amplifier short term output power (Long term output power is limited by driver unit protection circuitry)	150 W
Amplifier system THD at nominal output	≤ 0.05 %
Mains voltage	100 - 240VAC 50/60 Hz
Power consumption (average) Stand by Idle Full output	 0.5 W 11 W 150 W

CONNECTORS

	F Two
Analog audio inputs 10 kOhm RCA 3.5 mm stereo jack	 L, R, LFE 1
Digital audio inputs Optical Toslink Coaxial RCA 75 Ohm	 1 1
Audio outputs XLR balanced RCA	 L, R L, R, LINK

CROSSOVER SECTION

	F Two
Subsonic filter (18 dB/octave) below	27 Hz
Crossover frequency (subwoofer/main channels)	85 Hz
LFE channel cutoff frequency	120 Hz
Midband rejection >400 Hz	≥50 dB
Analog input level for 90 dB SPL output at 1 m	-10 dBu at level control max
Digital input level for 90 dB SPL output at 1 m	-21 dBFS at level control max
Digital input word length	16...24 bits
Digital input sample rate	32...96 kHz
Sensitivity adjustment range	18 dB
Level dip switches	+10 dB and -10 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

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