


GENELEC®

8010A

 МУЗЦЕНТР
МУЗЫКАЛЬНОЕ ОБОРУДОВАНИЕ
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Operating Manual

Operating Manual

8010A

Active Monitoring System

General description

The bi-amplified Genelec 8010A is an extremely compact two-way active monitoring loudspeaker designed for professional applications. It contains drivers, power amplifiers, active crossover filters and protection circuitry. The MDE™ (Minimum Diffraction Enclosure™) 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. If necessary, the bass response of 8010A can be extended with a Genelec subwoofer.

Packing contents

Each 8010A is supplied with a mains cable and this operating manual.

Mounting considerations

Align the monitors correctly

Always place monitors so that their acoustic axes converge at ear height at the listening position (see Figures 1 and 2). Vertical orientation of monitors is preferred, as it minimises acoustical cancellation problems around the crossover frequency.

Maintain symmetry

Check that the monitors are placed symmetrically and at equal distance from the listening position. If possible, place the monitors so that the listening position is on the centerline of the room and the monitors are at an equal distance from the room centerline.

Minimise reflections

Acoustic reflections from objects close to the monitors, like desks, cabinets, computer monitors etc. can cause unwanted colouration and blurring of the sound image. These reflections can be minimised by placing the monitor away from such surfaces.

Minimum clearances

If the monitor is installed in a restricted space such as a cabinet or integrated into a wall structure, sufficient cooling for the amplifier and functioning of the reflex port must be ensured.

A minimum clearance of 2.5 centimeters (1 in) behind, above and on sides of the monitor must be found. The space adjacent to the amplifier must either be ventilated or sufficiently large to dissipate heat so that the ambient temperature does not rise above 35 degrees Celsius (95°F)

Connections

Connect the mains cables only after you have completed connecting audio signal cabling.

The 8010A has a balanced XLR 7 kOhm audio input connector. It can also be connected to an unbalanced RCA line level audio source with a suitable adapter cable your Genelec dealer can provide. As the 8010A contains amplifiers, no power amplifier is needed. Never connect 8010A to the loudspeaker outputs of a power amplifier, integrated amplifier, or receiver.

When all audio connections are completed, connect the monitors to mains with the supplied mains cables. They will switch on automatically.

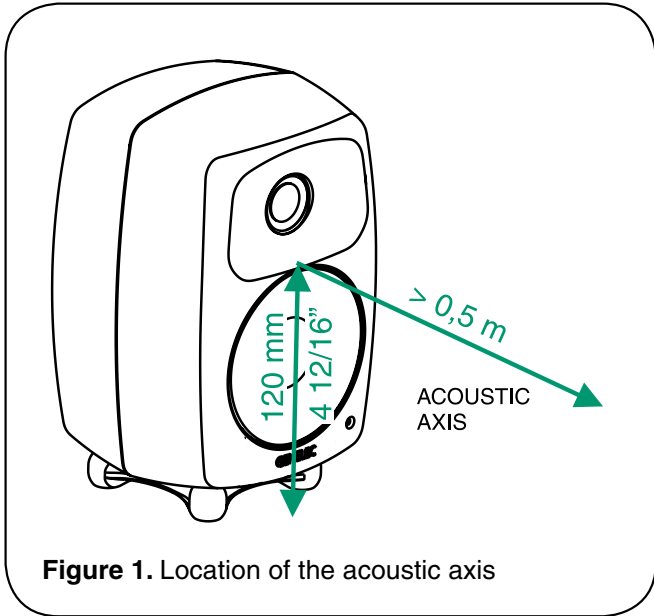


Figure 1. Location of the acoustic axis

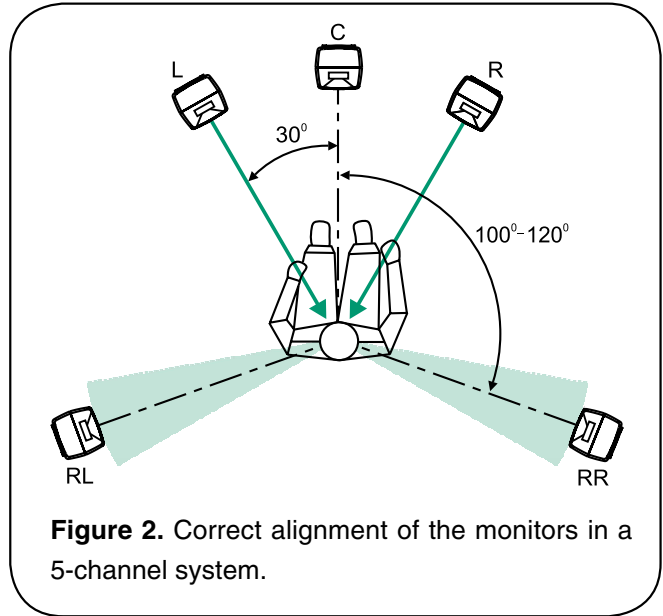


Figure 2. Correct alignment of the monitors in a 5-channel system.

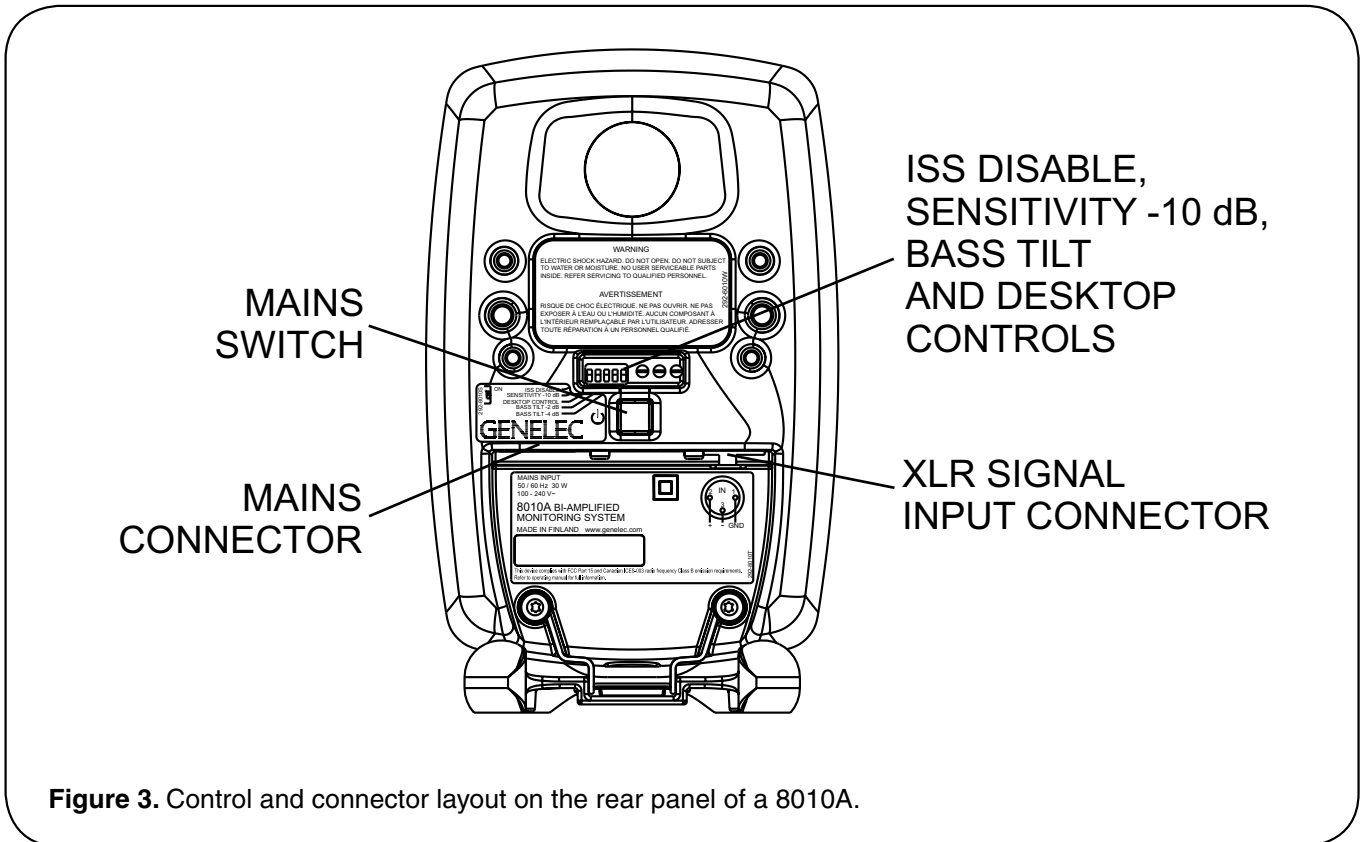


Figure 3. Control and connector layout on the rear panel of a 8010A.

Monitor Mounting Environment	Desktop	Bass Tilt
Flat anechoic response	OFF	OFF
Free standing in a damped room	OFF	OFF
Free standing in a reverberant room	OFF	-2 dB
Near to a wall	OFF	-4 dB
Near field on a reflective surface	ON (-4 dB @ 200 Hz)	-2 dB
In a corner or a cabinet	OFF	-6 dB

Table 1: Suggested tone control settings for various acoustical environments

ISS™ Autostart function

The signal sensing Autostart function of the 8010A powers it up when playback begins. Automatic powering down to standby mode happens after the playback has ended. The power consumption in standby mode is less than 0.5 watts. The monitor will automatically and rapidly start up once an input signal is detected.

There is a slight delay in the automatic powering up. If this is undesirable, the ISS™ function can be disabled by setting the “ISS DISABLE” switch on the back panel to “ON” position. In this mode, the monitor is powered on and off using the power switch on the back panel.

Sensitivity adjustment

The input sensitivity (playback level) of the 8010A has two alternative settings, normal and -10 dB. The normal setting is factory default and the lower, -10 dB setting can be selected by turning the “SENSITIVITY -10 dB” switch on the back panel to “ON”. The output levels are 100 dB @ -6dBu and 90 dB @ -6 dBu respectively. Choose the setting that gives the desired playback level and good resolution of the volume control.

Tone controls

The frequency response of the Genelec 8010A can be adjusted to match the acoustic environment by setting the tone control switches on the rear panel. The controls are “Bass Tilt” and “Desktop”. Table 1 shows some examples of typical settings in various situations. Figure 4 shows the effect of the controls on the anechoic response.

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.

Bass Tilt

The Bass Tilt control offers three attenuation levels for the bass response of the monitor, usually necessary when the monitors are placed near a wall or other room boundaries. The attenuation levels are -2 dB (switch 1 “ON”), -4 dB (switch 2 “ON”) and -6 dB (both switches “ON”).

Desktop Control

The “Desktop” low frequency control (switch 3) attenuates the bass frequencies by 4 dB at 200 Hz. This feature is designed to compensate for the boost often occurring when the monitor is placed on a table or similar horizontal surface.

Mounting options

The 8010A offers several mounting options: Iso-Pod™ (Isolation Positioner/Decoupler™) vibration insulating table stand allows tilting the monitor towards the listener. On the rear, there are three pairs of threaded holes compatible with Omnimount®, VESA, and Sanus brackets. For a full list of available options, please consult Genelec's accessories catalogue at www.genelec.com or contact your Genelec dealer.

Maintenance

No user serviceable parts are to be found inside the unit. Any maintenance or repair of the 8010A should only be done by qualified service personnel.

Safety considerations

Although the 8010A has been designed in accordance with international safety standards, the following warnings should be observed to ensure safe operation and to maintain the monitor in safe operating conditions:

- Servicing and adjustment must only be performed by qualified service personnel. The monitor must not be opened.
- Do not expose the monitor to water or moisture. Do not place any objects filled with liquid, such as vases, on the monitor or near it.
- This monitor is capable of producing sound pressure levels in excess of 85 dB, which may cause permanent hearing damage.
- Free flow of air behind the monitor is necessary to maintain sufficient cooling. Do not obstruct airflow around the monitor.
- 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.

Compliance to FCC rules

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

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

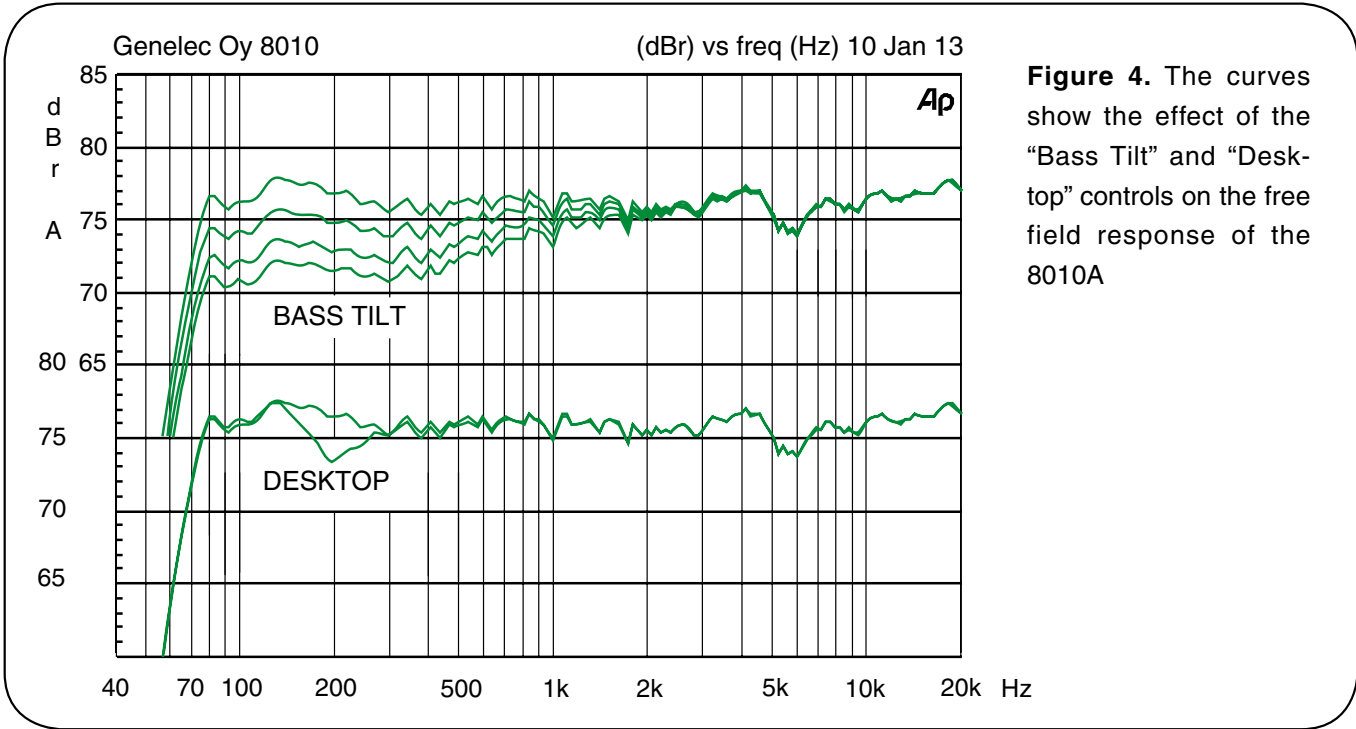


Figure 4. The curves show the effect of the “Bass Tilt” and “Desktop” controls on the free field response of the 8010A

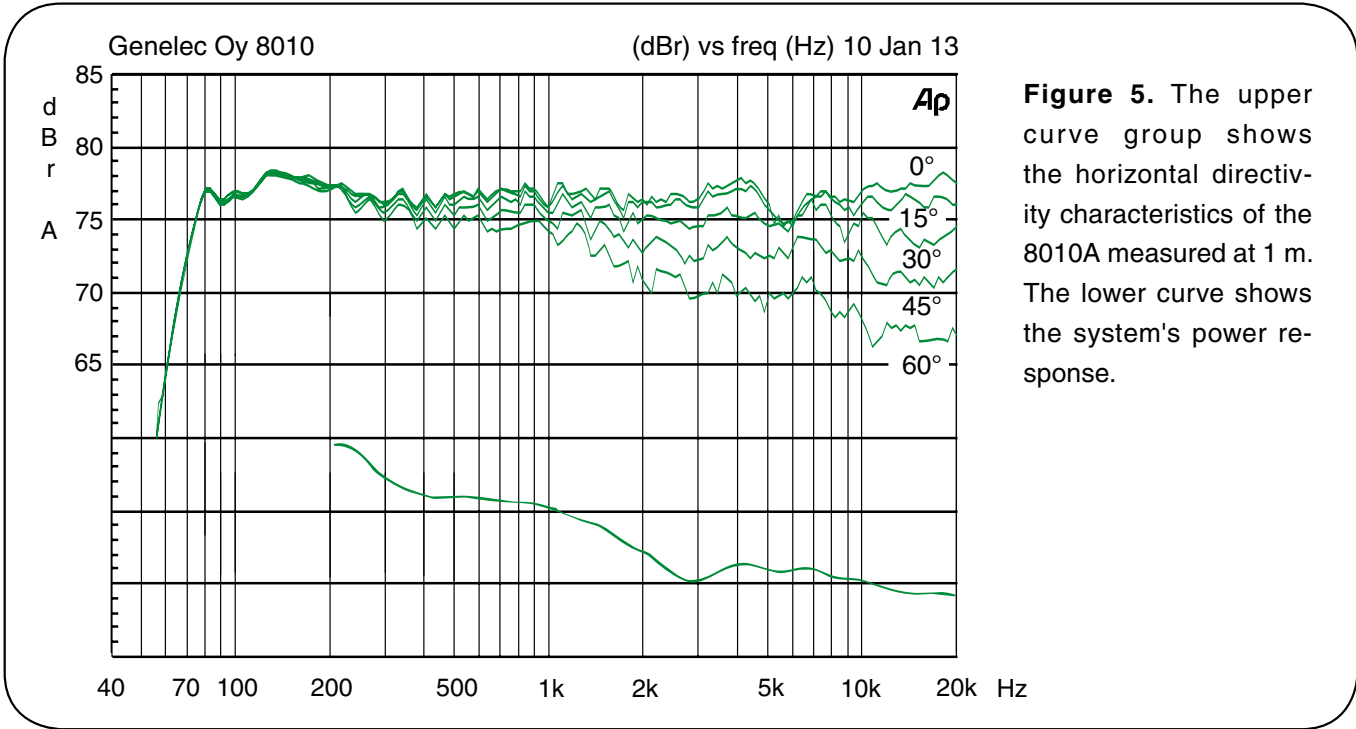


Figure 5. The upper curve group shows the horizontal directivity characteristics of the 8010A measured at 1 m. The lower curve shows the system's power response.

SYSTEM SPECIFICATIONS

Lower cut-off frequency, -6 dB:	≤ 67 Hz
Upper cut-off frequency, -6 dB:	≥ 25 kHz
Free field frequency response (± 2.5 dB):	74 Hz–20 kHz
Max. short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz	
at 1 m distance	≥ 96 dB SPL
at 0.5 distance	≥ 102 dB SPL
Maximum long term RMS acoustic output in same conditions with IEC weighted noise (limited by driver unit protection circuit) @ 1 m:	≥ 91 dB SPL
Maximum peak acoustic output per pair on top of console, @ 1 m distance with music material:	≥ 105 dB
Self generated noise level in free field @ 1 m on axis (A-weighted):	≤ 5 dB
Harmonic distortion at 80 dB SPL @ 1 m on axis	
Freq: 70...400 Hz	< 3 %
>400 Hz	< 0.5 %
Drivers:	
Bass	76 mm (3 in) cone
Treble	19 mm (3/4 in) metal dome
Weight:	1.5 kg (3.3 lb)
Dimensions:	
Height including Iso-Pod™ table stand	195 mm (7 ¹¹ / ₁₆ in)
Height without Iso-Pod™ table stand	181 mm (7 ¹ / ₈ in)
Width	121 mm (4 ³ / ₄ in)
Depth	116 mm (4 ⁹ / ₁₆ in)

CROSSOVER SECTION

Input connector: XLR female 7 kOhm:	pin 1 gnd, pin 2 + pin 3 -
Input level for 100 dB SPL output at 1 m:	-6 dBu (Sensitivity -10 dB off)
Level control range relative to max output:	-10 dB (Sensitivity -10 dB on)
Desktop control operating range:	0 to -4 dB @ 200 Hz
Crossover frequency, Bass/Treble:	3.0 kHz
Bass Tilt control operating range in -2 dB steps:	0 to -6 dB @ 100 Hz
The 'CAL' position is with all tone controls and Sensitivity -10 dB function set to 'off'	

AMPLIFIER SECTION

Bass amplifier power with an 8 Ohm load:	25 W
Treble amplifier power with an 8 Ohm load:	25 W
Long term output power is limited by overload protection circuitry	
Amplifier system distortion at nominal output THD+N:	≤ 0.08 %
Mains voltage:	100 - 240 V AC
Voltage operating range:	±10 %
Power consumption	
Standby	<0.5 W
Idle	5 W
Full output	30 W

GENELEC®

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GENELEC®

Data Sheet **8020C**





8020C

Active Monitoring System

System

The Genelec 8020C is a very compact bi-amplified active monitor system with performance comparable to much larger systems. The 8020C excels in applications where space is at a premium, taking full advantage of the unconventional design and advanced technologies of Genelec's 8000 Series loudspeaker range. The all-aluminium Minimum Diffraction Enclosure™ (MDE™) and advanced Directivity Control Waveguide™ (DCW™) technologies are carefully matched with complementing advanced amplifier and electronics circuitry and the latest drivers. Bass response reaches down to 65 Hz (-3 dB) with low distortion due to a uniquely new rear reflex port design. The system's excellent directivity characteristics and accurate imaging together with its compact size and flexible mounting options make the 8020C the perfect monitoring tool for a wide range of applications.

The 8020C has been specially designed to have a sufficient LF extension for a variety of situations. However if greater SPL's and a lower cutoff frequency are required, it can be complemented with Genelec 7050B subwoofer, which has a lower cutoff point of 25 Hz.

Integrated construction

The 8020C is very easy to set up and use, the only connections required are the mains supply and the line level input. The input is

made via a balanced female XLR connector.

The volume control is located on the front panel. This allows easy level matching with other audio equipment.

The integrated design allows the amplifiers and the drivers to be calibrated as a single unit, eliminating the effects of component tolerances and ensuring consistent quality.

Crossover filters

The amplifier unit contains an active crossover, a feature more commonly used in large and expensive control room monitors. This is the ideal method for dividing the input signal between the driver units. The active crossover allows the overall response of the system to be optimized to an extent impossible with a passive system.

To maintain uniform frequency balance in differing acoustic environments, special calibrated controls are included in the active crossover network. These controls include "treble tilt", "bass tilt" and "bass roll-off" switches.

Amplifiers

The bass and treble amplifiers produce 20 W of output power each, with very low THD and IM distortion values. The amplifiers are designed to ensure the highest subjective sound quality currently possible. The amplifier unit also contains a protection cir-

cuit that monitors the output levels and prevents any damage to the drivers. This makes the system immune to overloads and spurious signals.

Drivers

A 19 mm ($\frac{3}{4}$ ") metal dome tweeter is loaded by an advanced DCW™ waveguide. The DCW™ is integrated into the one piece front baffle.

The 105 mm (4") bass cone driver is mounted in a newly designed bass reflex enclosure. The long, flow optimized reflex tube has a large cross sectional area and terminates with a wide flare at the back of the enclosure.

Protective grilles are positioned in front of both drivers. Magnetic shielding is standard on the 8020C. Shielding is vital for applications such as video post production, where stray magnetic fields must be minimized.

ISS™ autostart function

When the power switch on the back panel of the loudspeaker is set to "ON", the Intelligent Signal Sensing™ (ISS™) autostart function of the 8020C is active. 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. The playback will automatically resume once an input signal is

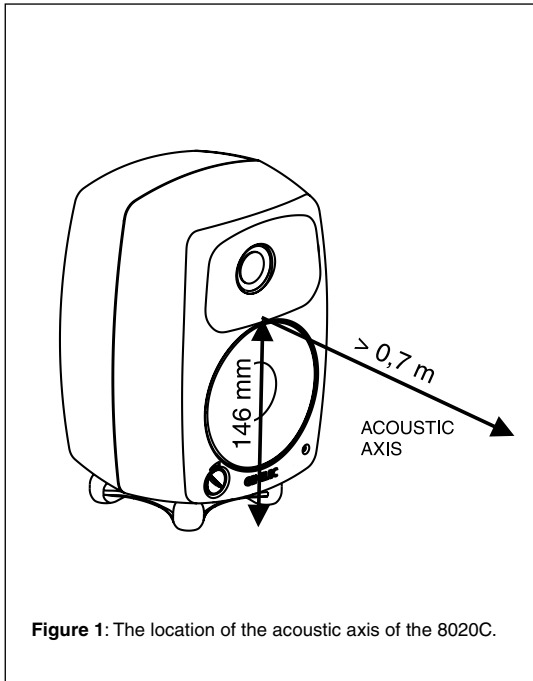


Figure 1: The location of the acoustic axis of the 8020C.

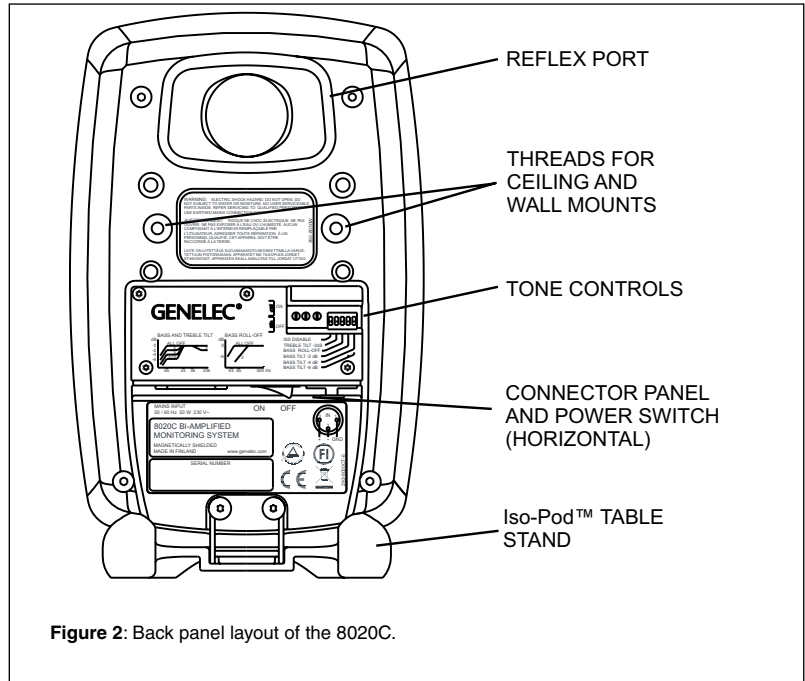


Figure 2: Back panel layout of the 8020C.

detected from the source.

There is a slight delay in the automatic powering up. If this is undesirable, the ISS™ function can be disabled by setting the “ISS DISABLE” switch on the back panel to “ON” position. In this mode, the monitor is powered on and off using the power switch on the back panel.

MDE™ and DCW™ Technologies

The Minimum Diffraction Enclosure™ (MDE™) Technology increases the performance of the Genelec 8000 Series loudspeakers by minimizing edge diffraction and improving frequency and power response. The edges of the enclosure are rounded and blend seamlessly into the enlarged Directivity Control Waveguide™. Surface discontinuities that cause diffraction are minimized. The curved walls of the die-cast aluminium enclosure are thin but rigid, allowing maximum internal volume while also providing improved EMC shielding and heat dissipation for the amplifiers. Locating the reflex port to the back of the enclosure allows a generously dimensioned reflex port for minimal port noise and excellent bass articulation while freeing the front baffle for an enlarged and optimized DCW™.

The advanced DCW™ is designed to match the performance of the drivers in

terms of both frequency response and directivity. This results in a smoother overall frequency response on and off axis. In addition, the improved directivity control causes more direct sound and less reflected sound to be received at the listening position, providing improved imaging and reducing the effects of differing room acoustics. The DCW™ improves the drive unit sensitivity by +2 to +6 dB (depending on the particular application), thus also increasing the available system maximum sound pressure level.

Mounting

The 8020C offers several mounting options: The vibration insulating Isolation Positioner/Decoupler™ (Iso-Pod™) table stand allows tilting the speaker for correct alignment of the acoustic axis. The stand can be attached to three mounting points allowing vertical and symmetrical horizontal positioning. On the base of the monitor is a 3/8" UNC threaded hole which can accommodate a standard microphone stand. On the rear there are two M6x10 mm threaded holes for an Omni-mount® size 20.5 bracket.

Guarantee

The 8020C is guaranteed for a period of two years against faults in materials or workmanship.

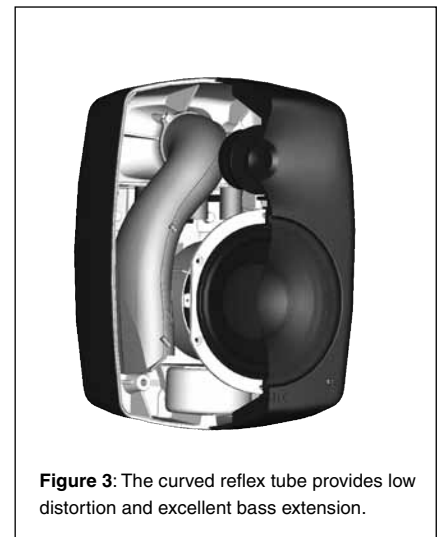


Figure 3: The curved reflex tube provides low distortion and excellent bass extension.

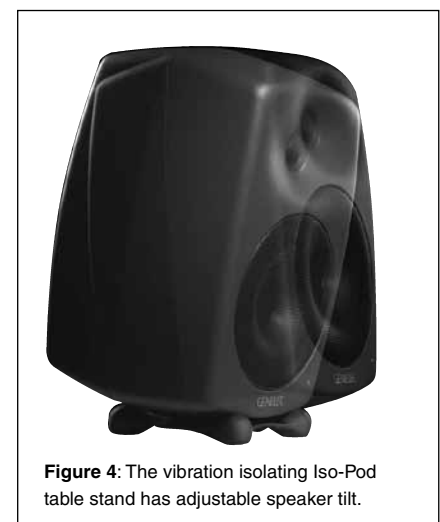


Figure 4: The vibration isolating Iso-Pod table stand has adjustable speaker tilt.

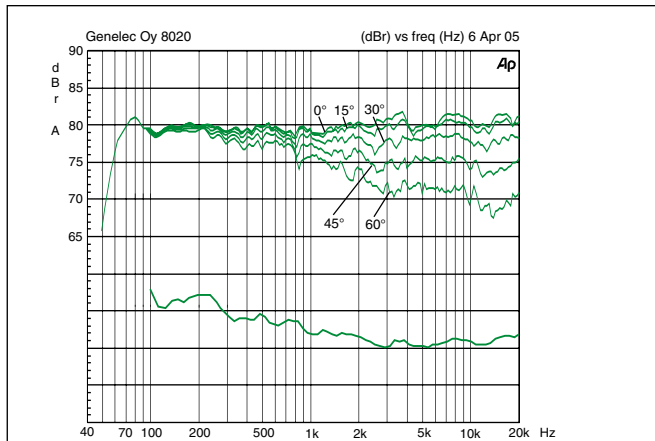


Figure 5: The upper curve group shows the horizontal directivity characteristics of the 8020C measured at 1 m. The lower curve shows the systems power response.

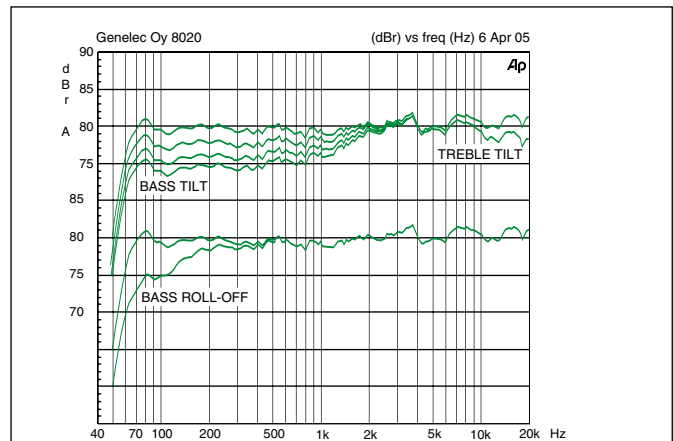


Figure 6: The curves above show the effect of the "bass tilt", "treble tilt" and "bass roll-off" controls on the free field response.

SYSTEM SPECIFICATIONS

	8020C
Lower cut-off frequency, -3 dB	≤ 65 Hz
Upper cut-off frequency, -3 dB	≥ 21 kHz
Free field frequency response	66 Hz – 20 kHz (± 2.5 dB)
Maximum short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz	@ 1 m ≥ 96 dB SPL
Maximum long term RMS acoustic output in same conditions with IEC weighted noise (limited by driver unit protection circuit)	@ 1 m ≥ 95 dB SPL
Maximum peak acoustic output per pair with music material	@ 1 m ≥ 105 dB
Self generated noise level in half space at 1 m on axis (A-weighted)	≤ 10 dB
Harmonic distortion at 85 dB SPL at 1 m on axis Freq: 50...100 Hz > 100 Hz	< 3 % < 0.5 %
Drivers Bass Treble	105 mm (4 in) cone 19 mm (3/4 in) metal dome Both drivers are magnetically shielded
Weight	3.7 kg (8.1 lb)
Dimensions Height including Iso-Pod™ table stand Height without Iso-Pod™ table stand Width Depth	242 mm (9 1/2 in) 230 mm (9 1/8 in) 151 mm (6 in) 142 mm (5 5/8 in)

AMPLIFIER SECTION

	8020C
Bass amplifier short term output power Treble amplifier short term output power	20 W at 8 Ohm load 20 W at 8 Ohm load
Long term output power is limited by driver unit protection circuitry	
Amplifier system THD at nominal output	< 0.08 %
Mains voltage	100, 120, 220 or 230 V according to region
Voltage operating range:	±10 %
Power consumption (average) Standby Idle Full output	<0.5 W 5 W 50 W

CROSSOVER SECTION

	8020C
Signal input connector XLR female, balanced 10 kOhm	pin 1 gnd, pin 2 +, pin 3 -
Input level for 100 dB SPL output at 1 m	-6 dBu at volume control max
Sensitivity control range	-80 dB relative to max output
Crossover frequency, Bass/Treble	3.0 kHz
Treble Tilt control operating range	0 to -2 dB @ 15 kHz
Bass Tilt control operating range in 2 dB steps	From 0 to -6 dB @ 100 Hz
Bass Roll-Off control	-6 dB step @ 85 Hz (to be used in conjunction with a 7050B subwoofer)

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

8030B

Data Sheet
Genelec 8030B
Active Monitoring System

GENELEC®





8030B Active Monitoring System

System

The Genelec 8030B is a very compact bi-amplified active monitor system with performance comparable to much larger systems. The 8030B excels in applications where space is at a premium, taking full advantage of the unconventional design and advanced technologies of Genelec's 8000 Series loudspeaker range. The all-aluminium Minimum Diffraction Enclosure™ (MDE™) and advanced Directivity Control Waveguide™ (DCW™) technologies are carefully matched with advanced amplifier and electronics circuitry and the latest drivers. Bass response has been widened down to 55 Hz (-3 dB) while distortion is substantially lower due to a uniquely new rear reflex port design. The system's excellent directivity characteristics and accurate imaging together with its compact size and flexible mounting options make the 8030B the perfect monitoring tool for a wide range of applications.

The 8030B has been specially designed to have a sufficient LF extension for most situations. However if greater SPL's and a lower cutoff frequency are required, it can be complemented with Genelec subwoofers.

Integrated construction

The 8030B is very easy to set up and use, the only connections required are the mains supply and the line level input. The input is

made via a balanced female XLR. A balanced male XLR output connector can be used for connecting a 7050A subwoofer or daisy chaining up to six 8030B's together.

The volume control is located on the front panel. This allows easy level matching with other audio equipment.

The integrated design allows the amplifiers and the drivers to be calibrated as a single unit, eliminating the effects of component tolerances and ensuring consistent quality.

Crossover filters

The amplifier unit contains an active crossover, a feature more commonly used in large and expensive control room monitors. This is the ideal method for dividing the input signal between the driver units. The active crossover allows the overall response of the system to be optimized to an extent impossible with a passive system. To maintain uniform frequency balance in differing acoustic environments, special calibrated controls are included in the active crossover network. These controls include "treble tilt", "bass tilt" and "bass roll-off" switches.

Amplifiers

The bass and treble amplifiers produce 40 W of output power each, with very low THD and IM distortion values. The amplifiers are designed to ensure the highest subjective

Applications

- Near Field Monitoring
- Audio Video Post Production
- Mobile Vans
- Home Theaters
- Project / Home Studios
- Digital Workstations
- Multimedia Production and Playback

sound quality currently possible. The amplifier unit also contains a protection circuit that monitors the output levels and prevents any damage to the drivers. This makes the system immune to overloads and spurious signals.

Drivers

A 19 mm ($\frac{3}{4}$ ") metal dome tweeter is loaded by an advanced DCW™ waveguide. The DCW™ is integrated into the one piece front baffle.

The 130 mm (5") bass cone driver is mounted in a newly designed bass reflex enclosure. The long, flow optimized reflex tube has a large cross sectional area and terminates with a wide flare at the back of the enclosure.

Protective grilles are positioned in front of both drivers. Magnetic shielding is standard on the 8030B. Shielding is vital for applications such as video post production, where stray magnetic fields must be minimized.

ISS™ autostart function

When the power switch on the back panel of the loudspeaker is set to "ON", the Intelligent Signal Sensing™ (ISS™) autostart function of the 8030B is active. 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. The playback will

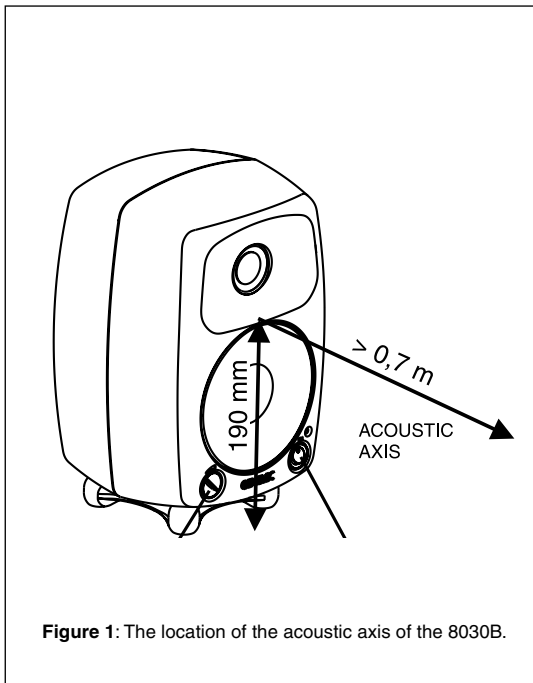


Figure 1: The location of the acoustic axis of the 8030B.

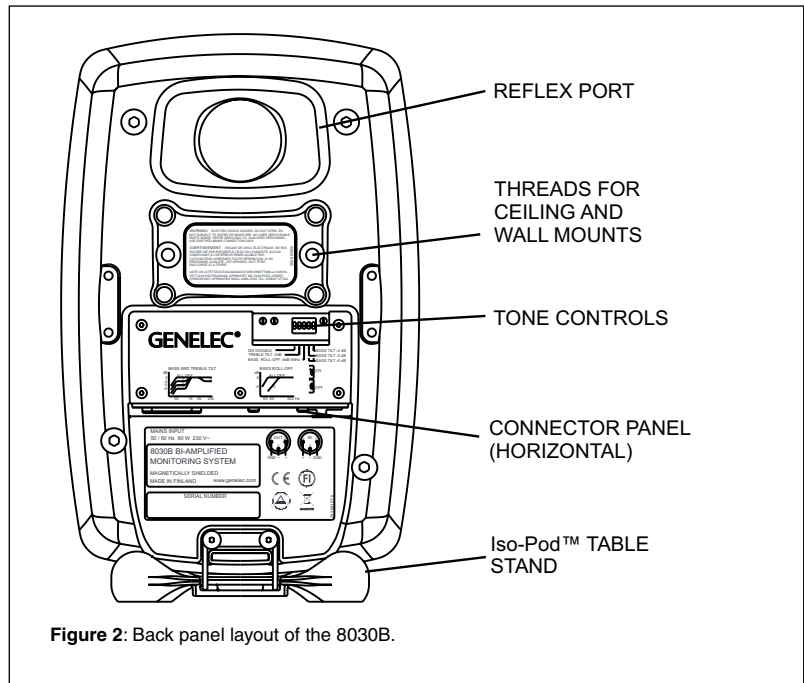


Figure 2: Back panel layout of the 8030B.

automatically resume once an input signal is detected from the source.

There is a slight delay in the automatic powering up. If this is undesirable, the ISS™ function can be disabled by setting the “ISS DISABLE” switch on the back panel to “ON” position. In this mode, the monitor is powered on and off using the power switch on the front panel.

MDE™ and DCW™ Technologies

The Minimum Diffraction Enclosure™ (MDE™) Technology increases the performance of the Genelec 8000 Series loudspeakers by minimizing edge diffraction and improving frequency and power response. The edges of the enclosure are rounded and blend seamlessly into the enlarged Directivity Control Waveguide™. Surface discontinuities that cause diffraction are minimized. The curved walls of the die-cast aluminium enclosure are thin but rigid, allowing maximum internal volume while also providing improved EMC shielding and heat dissipation for the amplifiers. Locating the reflex port to the back of the enclosure allows a generously dimensioned reflex port for minimal port noise and excellent bass articulation while freeing the front baffle for an enlarged and optimized DCW™.

The advanced DCW™ is designed to match the performance of the drivers in

terms of both frequency response and directivity. This results in a smoother overall frequency response on and off axis. In addition, the improved directivity control causes more direct sound and less reflected sound to be received at the listening position, providing improved imaging and reducing the effects of differing control room acoustics. The DCW™ improves the drive unit sensitivity by +2 to +6 dB (depending on the particular application), thus also increasing the available system maximum sound pressure level.

Mounting

The 8030B offers several mounting options: The vibration insulating Isolation Positioner/Decoupler™ (Iso-Pod™) table stand allows tilting the speaker for correct alignment of the acoustic axis. The stand can be attached to three mounting points allowing vertical and symmetrical horizontal positioning. On the base of the monitor is a 3/8" UNC threaded hole which can accommodate a standard microphone stand. On the rear there are two M6x10 mm threaded holes for an Omnimount® size 20.5 bracket.

Guarantee

The 8030B is guaranteed for a period of two years against faults in materials or workmanship.

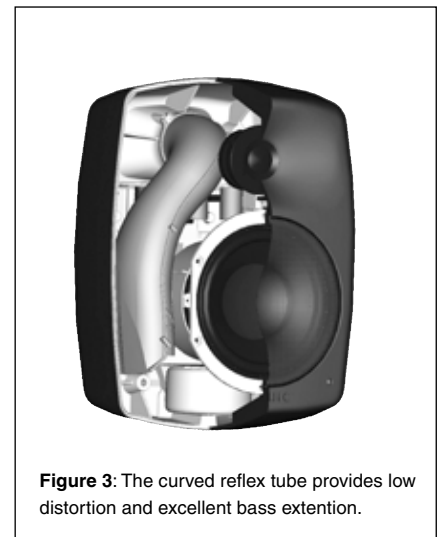


Figure 3: The curved reflex tube provides low distortion and excellent bass extension.

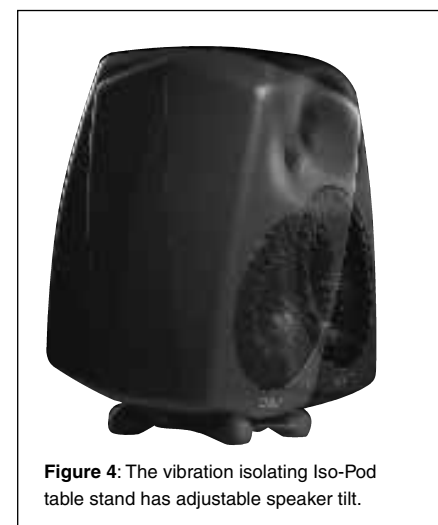


Figure 4: The vibration isolating Iso-Pod table stand has adjustable speaker tilt.

8030B Data Sheet

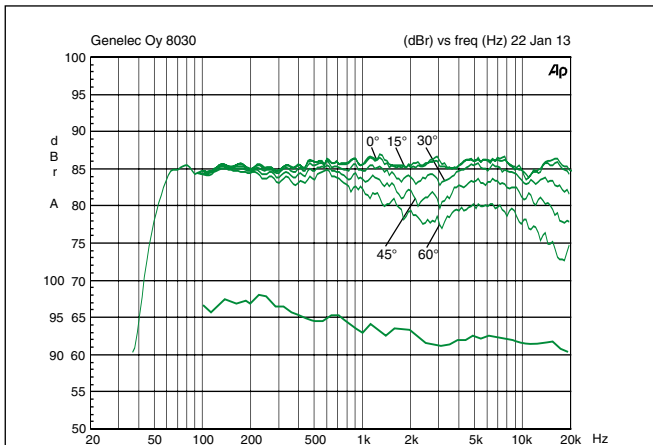


Figure 3: The upper curve group shows the horizontal directivity characteristics of the 8030B measured at 1 m. The lower curve shows the systems power response.

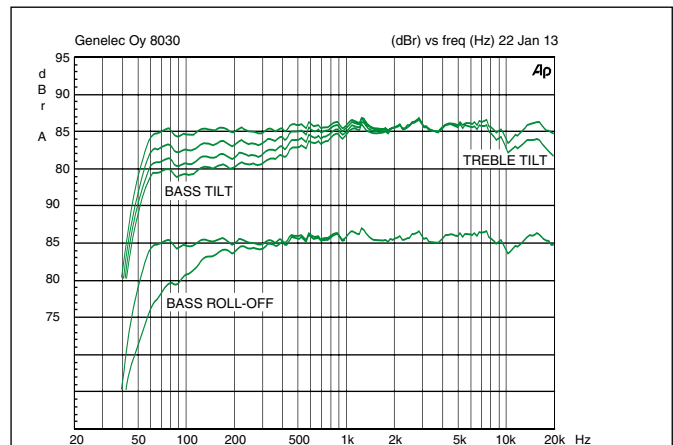


Figure 4: The curves above show the effect of the "bass tilt", "treble tilt" and "bass roll-off" controls on the free field response.

SYSTEM SPECIFICATIONS

	8030B
Lower cut-off frequency, -3 dB	≤ 55 Hz
Upper cut-off frequency, -3 dB	≥ 21 kHz
Free field frequency response	58 Hz – 20 kHz (± 2.0 dB)
Maximum short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz	@ 1 m ≥ 100 dB SPL @ 0.5 m ≥ 106 dB SPL
Maximum long term RMS acoustic output in same conditions with IEC-weighted noise (limited by driver unit protection circuit)	@ 1 m ≥ 97 dB SPL
Maximum peak acoustic output per pair @ 1 m from the engineer with music material	≥ 108 dB
Self generated noise level in free field @ 1 m on axis	≤ 10 dB (A-weighted)
Harmonic distortion at 85 dB SPL @ 1 m on axis	Freq: 50...100 Hz < 2 % > 100 Hz < 0.5 %
Drivers	Bass 130 mm (5 in) cone Treble 19 mm (3/4 in) metal dome Both drivers are magnetically shielded
Weight	5.6 kg (12.3 lb)
Speaker dimensions	Height 299 mm (11 ^{13/16} in) (including Iso-Pod table stand) Height 285 mm (11 ^{1/4} in) (without Iso-Pod table stand) Width 189 mm (7 ^{7/16} in) Depth 178 mm (7 in)

AMPLIFIER SECTION

	8030B
Bass amplifier output power	Short term 40 W (8 Ohm load)
Treble amplifier output power	Short term 40 W (8 Ohm load) Long term output power is limited by driver unit protection circuitry.
Amplifier system distortion at nominal output	THD ≤ 0.05 % SMPTE-IM ≤ 0.05 % CCIF-IM ≤ 0.05 % DIM 100 ≤ 0.05 %
Signal to Noise ratio, referred to full output	Bass ≥ 100 dB Treble ≥ 100 dB
Mains voltage: Voltage operating range:	100, 120, 220 or 230 V according to region. ±10 %
Power consumption	Standby < 0.5 W Idle 10 W Full output 80 W

CROSSOVER SECTION

	8030B
Input connector: XLR female, balanced 10 kOhm	pin 1 gnd, pin 2 +, pin 3 -
Output connector: XLR male, balanced 100 kOhm	pin 1 gnd pin 2 +, pin 3 -
Input level for 100 dB SPL output @ 1m	-6 dBu at volume control max
Volume control range	-80 dB relative to max output Output signal level is 0 dB relative to input signal level but adjustable by volume control
Crossover frequency	3.0 kHz
Treble tilt control operating range	0 to -2 dB @ 15 kHz
Bass roll-off control	-6 dB step @ 85 Hz (to be used in conjunction with a 7050 subwoofer)
Bass tilt control	0 to -6 dB @ 100 Hz in 2 dB steps
	The 'CAL' position is with all tone controls set to 'off' and input sensitivity control to maximum and corresponds to a maximally flat free field response.

GENELEC®

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8040B

Data Sheet
Genelec 8040B
Active Monitoring System

GENELEC®





8040B Active Monitoring System

System

The Genelec 8040B is a compact bi-amplified active monitor system with performance comparable to much larger systems. The 8040B takes full advantage of the unconventional design and advanced technologies of Genelec's 8000 Series loudspeaker range. The all-aluminium Minimum Diffraction Enclosure™ (MDE™) and advanced Directivity Control Waveguide™ (DCW™) technologies are carefully matched with advanced amplifier and electronic circuitry and the latest drivers. Bass response has been widened down to 45 Hz (-3 dB) while distortion is substantially lower due to a uniquely new rear reflex port design. The system's excellent directivity characteristics and accurate imaging together with its compact size and flexible mounting options make the 8040B the perfect monitoring tool for a wide range of applications.

The 8040B has been specially designed to have a sufficient LF extension for most situations. However if greater SPL's and a lower cutoff frequency are required, it can be complemented with a Genelec subwoofer.

Integrated construction

The 8040B is very easy to set up and use, the only connections required are the mains supply and the line level input. The input is made via a balanced female XLR connector. The input sensitivity of the 8040B can be

adjusted for easy level matching with other audio equipment.

The integrated design allows the amplifiers and the drivers to be calibrated as a single unit, eliminating the effects of component tolerances and ensuring consistent production quality.

Crossover filters

The amplifier unit contains an active crossover, a feature more commonly used in large and expensive control room monitors. This is the ideal method for dividing the input signal between the driver units. The active crossover allows the overall response of the system to be optimized to an extent impossible with a passive system. To maintain uniform frequency balance in differing acoustic environments, special calibrated controls are included in the active crossover network. These controls include "treble tilt", "bass tilt" and "bass roll-off" functions.

A new function, "desktop low frequency" control attenuates the bass frequencies around 160 Hz by 4 dB. This feature is designed to compensate for the boost often occurring at this frequency range when the loudspeaker is placed upon a meter bridge, table or a similar reflective horizontal surface.

Amplifiers

The bass and treble amplifiers produce 90 W of output power each, with very low THD and IM distortion values. Each amplifier

Applications

- Near Field Monitoring
- Broadcast & TV Control Rooms
- Audio Video Post Production
- Mobile Vans
- Project / Home Studios
- Digital Workstations
- Multimedia Production and Playback

is designed to precisely match the driver it is connected to, thus ensuring the highest subjective sound quality currently possible. The amplifier unit also contains a protection circuit that monitors the output levels and prevents any damage to the drivers. This makes the system immune to overloads and spurious signals.

Drivers

A 19 mm ($\frac{3}{4}$ ") metal dome tweeter is loaded by an advanced DCW™ waveguide, which is integrated into the one piece front baffle. The improved DCW™ provides superior directivity characteristics and perfect matching between the drivers.

The 165 mm (6.5") bass cone driver is mounted in a newly designed bass reflex enclosure. The long, flow optimized reflex tube has a large cross sectional area and terminates with a wide flare at the back of the enclosure.

Protective grilles are positioned in front of both drivers. Magnetic shielding is standard on the 8040B. Shielding is vital for applications such as video post production, where stray magnetic fields must be minimized.

ISS™ autostart function

When the power switch on the back panel of the loudspeaker is set to "ON", the Intelligent Signal Sensing™ (ISS™) autostart function of the 8040B is active. Automatic power-

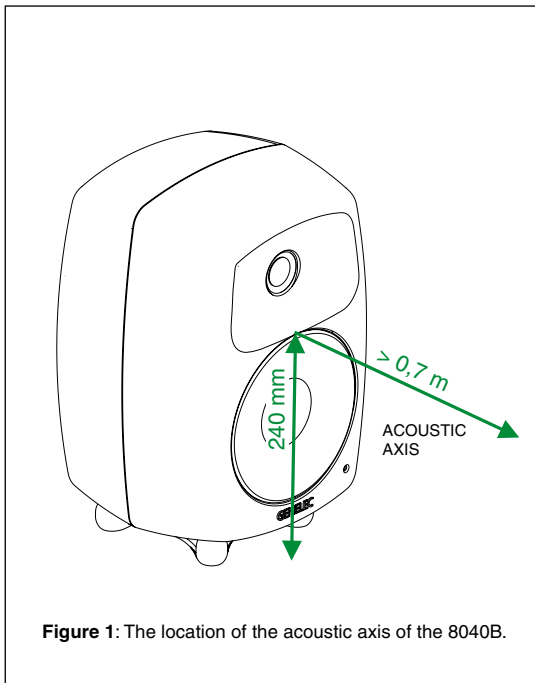


Figure 1: The location of the acoustic axis of the 8040B.

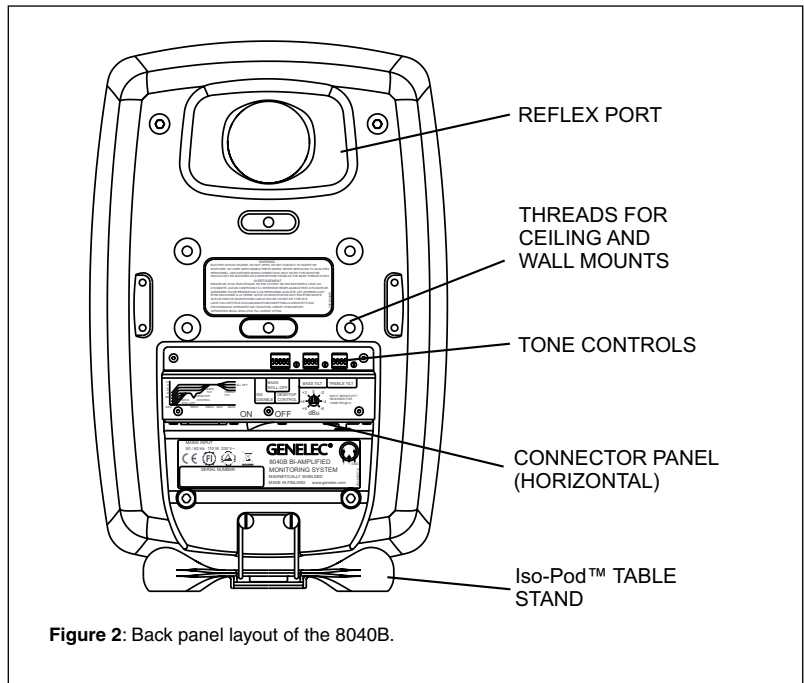


Figure 2: Back panel layout of the 8040B.

ing 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. The playback will automatically resume once an input signal is detected from the source.

There is a slight delay in the automatic powering up. If this is undesirable, the ISS™ function can be disabled by setting the “ISS DISABLE” switch on the back panel to “ON” position. In this mode, the monitor is powered on and off using the power switch on the back panel.

MDE™ and DCW™ Technology

The Minimum Diffraction Enclosure™ (MDE™) Technology increases the performance of the Genelec 8000 Series loudspeakers by minimizing edge diffraction and improving frequency and power response. The edges of the enclosure are rounded and blend seamlessly into the enlarged Directivity Control Waveguide™. Surface discontinuities that cause diffraction are minimized. The curved walls of the die-cast aluminium enclosure are thin but rigid, allowing maximum internal volume while also providing improved EMC shielding and heat dissipation for the amplifiers. Locating the reflex port to the back of the enclosure allows a generously dimensioned reflex port for minimal port noise and excellent bass articulation while freeing the front baffle for an enlarged and optimized DCW™.

The advanced DCW™ is designed to match the performance of the drivers in terms of both frequency response and directivity. This results in a smoother overall frequency response on and off axis. In addition, the improved directivity control causes more direct sound and less reflected sound to be received at the listening position, providing improved imaging and reducing the effects of room acoustics. The DCW™ improves the drive unit sensitivity by +2 to +6 dB, thus also increasing the available system maximum sound pressure level.

Mounting

The 8040B offers several mounting options: The vibration insulating Isolation Positioner/Decoupler™ (Iso-Pod™) table stand allows tilting the speaker for correct alignment of the acoustic axis. The stand can be attached to three mounting points allowing vertical and symmetrical horizontal positioning. On the rear of the enclosure there are two sets of M6x10 mm threaded holes to accommodate an Omnimount® size 30.0 bracket or a K&M 24180 wall mount. On the base of the enclosure is a M10x10 mm threaded hole which can be used for securing the loudspeaker to its base.

Guarantee

The 8040B is guaranteed for a period of two years against faults in materials or workmanship.

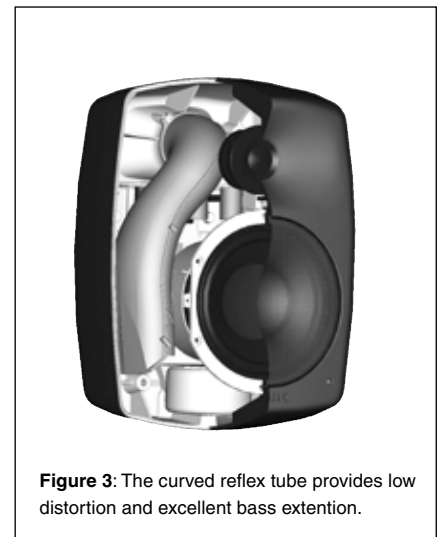


Figure 3: The curved reflex tube provides low distortion and excellent bass extension.

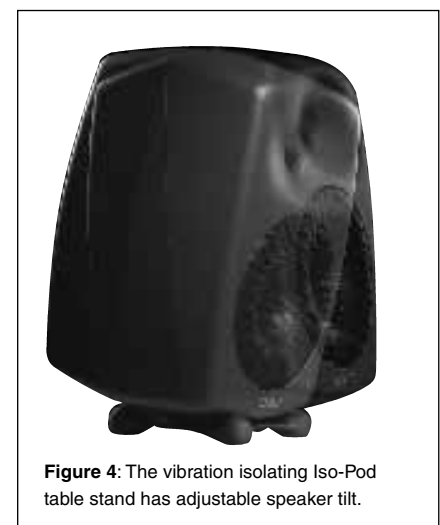
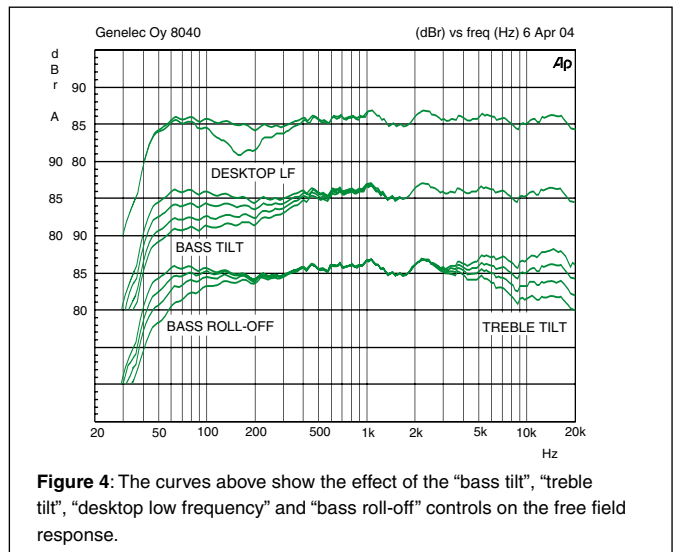
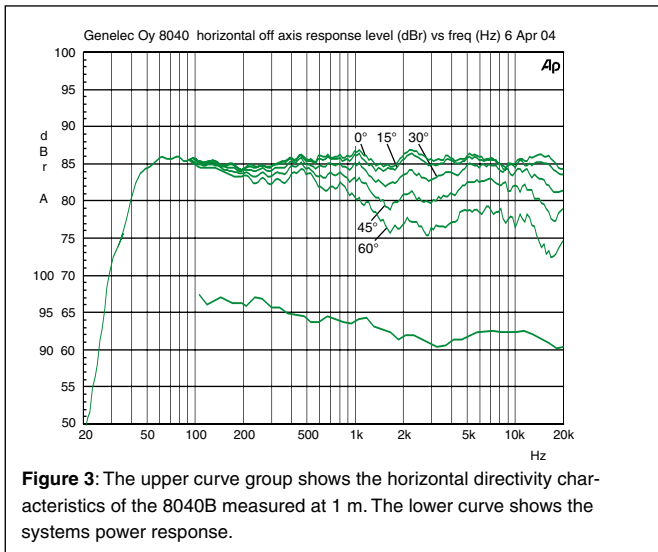


Figure 4: The vibration isolating Iso-Pod table stand has adjustable speaker tilt.

8040B Data Sheet



SYSTEM SPECIFICATIONS

	8040B
Lower cut-off frequency, -3 dB Upper cut-off frequency, -3 dB	≤ 45 Hz ≥ 20 kHz
Free field frequency response of system (± 2.0 dB)	48 Hz - 20 kHz
Maximum short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz @ 1 m @ 0.5 m	≥ 105 dB SPL ≥ 111 dB SPL
Maximum long term RMS acoustic output in same conditions with IEC weighted noise (limited by driver unit protection circuit) @ 1 m	≥ 99 dB SPL
Maximum peak acoustic output per pair above console top, @ 1 m from the listening position with music material	≥ 115 dB SPL
Self generated noise level in free field @ 1 m on axis (A-weighted)	≤ 10 dB
Harmonic distortion at 90 dB SPL @ 1 m on axis Freq. 50 to 100 Hz > 100 Hz	< 2 % < 0.5 %
Drivers: Bass Treble Both drivers are magnetically shielded	165 mm (6 ¹ / ₂ in) cone 19 mm (3/4 in) metal dome
Weight:	8.6 kg (18.9 lbs)
Dimensions: Height (without Iso-Pod table support) Height (including Iso-Pod table support) Width Depth	350 mm (13 ³ / ₈ in) 365 mm (14 ³ / ₈ in) 237 mm (9 ³ / ₈ in) 223 mm (8 ³ / ₈ in)

AMPLIFIER SECTION

	8040B
Bass amplifier short term output power Treble amplifier short term output power Long term output power is limited by driver unit protection circuitry	90 W (8 Ohm load) 90 W (8 Ohm load)
Amplifier system distortion at nominal output THD SMPTE-IM CCIF-IM DIM 100	≤ 0.05 % ≤ 0.05 % ≤ 0.05 % ≤ 0.05 %
Signal to Noise ratio, referred to full output Bass Treble	≥ 100 dB ≥ 100 dB
Mains voltage	100, 120, 220 or 230 V according to region
Voltage operating range	±10 %
Power consumption Standby Idle Full output	<0.5 W 10 W 110 W

CROSSOVER SECTION

	8040B
Input connector XLR female	Pin 1 gnd, pin 2 +, pin 3 -
Input impedance	10 kOhm balanced
Input level for maximum short term output of 100 dB SPL @ 1m	Variable from +6 to -6 dBu
Crossover frequency, Bass/Treble	3.0 kHz
Treble tilt control operating range in 2 dB steps	From +2 to -4 dB & MUTE @ 15 kHz
Desktop low frequency control operating range	-4 dB @ 160 Hz
Bass roll-off control operating range in 2 dB steps	From 0 to -6 dB @ 45 Hz
Bass tilt control operating range in 2 dB steps	From 0 to -6 dB & MUTE @ 100 Hz
The 'CAL' position is with all tone controls set to 'off' and the input sensitivity control to maximum (fully clockwise)	

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

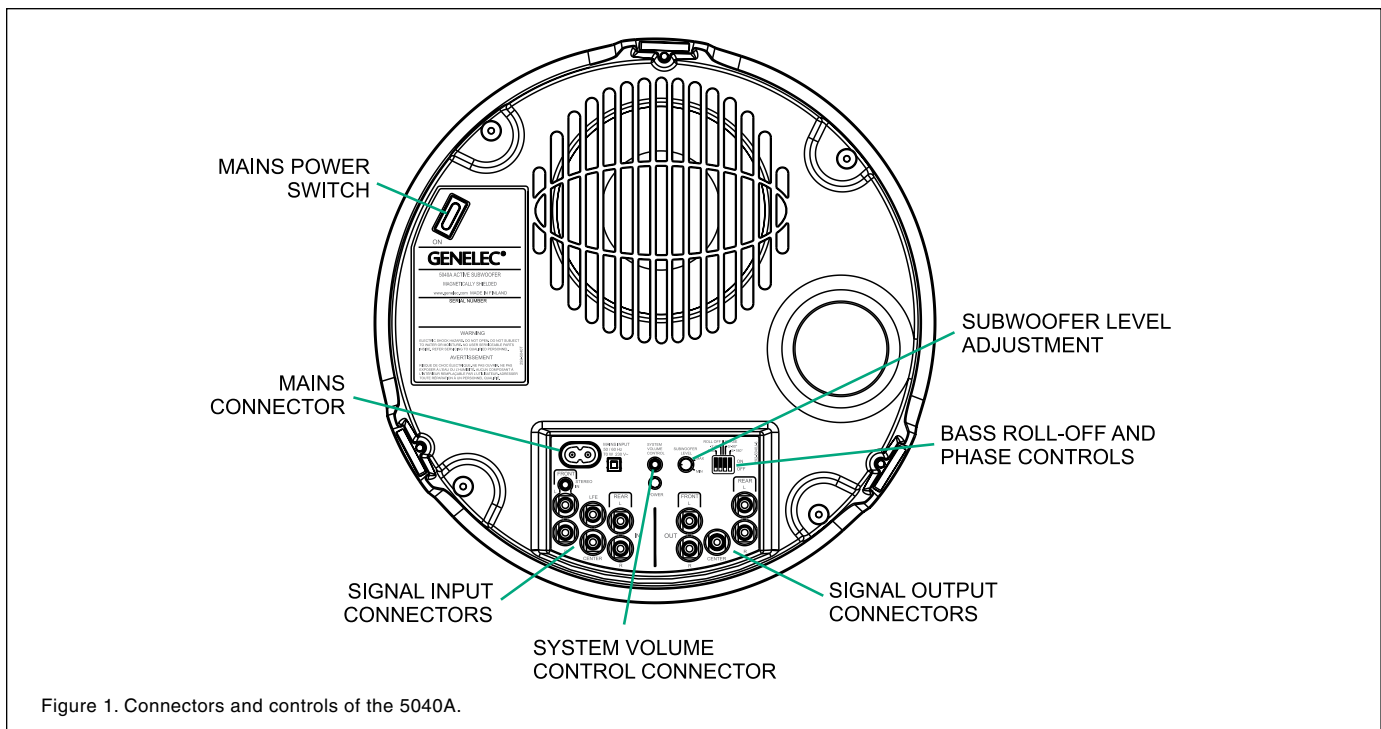


Figure 1. Connectors and controls of the 5040A.

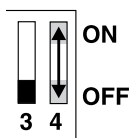
center of the front loudspeaker array.

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

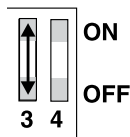
Coarse phase correction method

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.

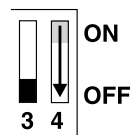
- Toggle the -180° phase switch 'ON' and 'OFF' and set it to the position which gives the lowest sound level at the listening position.



- 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: 
Position: Chairman of the Board
Date: 26-May-2008

5040A Operating Manual

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 $\frac{1}{2}$ ")
Weight	6.3 kg (13.9 lb)
Dimensions	
Height	251 mm (9 $\frac{7}{8}$ ")
Diameter	305 mm (12")

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	7 VA
Full output	70 VA

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	gnd
Tip	Left channel
Ring	Right channel
Input impedance	10 kOhm balanced
Main channel OUT gain referred to IN	0 dB

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

7040A

Operating Manual
Genelec 7040A
Active Subwoofer

GENELEC®





Genelec 7040A Active Subwoofer

Introduction

Congratulation and thank you for choosing Genelec!

Since 1978, Genelec has been guided by a single idea – to make perfect active monitors that deliver neutral and accurate sound in every kind of acoustical environment. In Genelec's quest for this ultimate goal, our unrivalled commitment to research and development has led us to continuously develop innovative driver technology, electronic circuitry, enclosure designs and many more. Our design philosophy is based on sustainability and environmental values, where industrial design serves our product acoustical performance.

Your Genelec product has been designed and manufactured with care in our factory, in Finland, using environmentally efficient solutions to give you reliable operation over many years.

Please take the time to read this manual. Happy monitoring!

General Description

The Genelec 7040A is a very compact active subwoofer for reproducing low frequencies. The 7040A extends the bass reproduction of Genelec 8010, 8020 and M030 active monitors for stereo applica-

tions. Using the 7040A extends their frequency responses down to 30 Hz (-6 dB).

Driver

The 7040A contains one 165 mm (6.5 in) magnetically shielded driver, housed in Genelec Laminar Spiral Enclosure™ (LSE™).

Bass Management

Balanced XLR connectors are used for the audio inputs and outputs. There are two input connectors and two outputs.

The bass management unit in the 7040A subwoofer splits the input into low and high frequency components at 85 Hz. Frequencies below 85 Hz are reproduced by the subwoofer. Frequencies above 85 Hz are directed via the subwoofer's output connectors to the main monitors. The subwoofer's outputs have the same level as the inputs.

The subwoofer sensitivity can be adjusted from +12 to -6 dBu to match the subwoofer sound level easily with different monitors.

Two "BASS ROLL-OFF" switches provide bass response adjustment to compensate for the acoustical environment in three 2 dB steps. Two switches allow alignment of subwoofer phase with the monitors. The

phase can be adjusted in 90 degree increments between 0° and -270°.

Amplifier

A Class D power amplifier produces 50 W output power with very low THD and IM distortions. Driver overload protection is included in the amplifier circuitry. The amplifier also incorporates thermal overload and short circuit protections. The power supply accepts mains voltages from 100 to 240 VAC.

ISS™ Autostart

The 7040A is equipped with Intelligent Signal Sensing™ (ISS™) automatic start function. ISS turns the amplifier to standby mode if no input signal has been detected for one hour. The power consumption in standby mode is less than 0.5 watts. Playback automatically resumes once an input signal is detected.

There is a slight delay in the automatic powering up. In those environments where the 7040A is required to be on all of the time, the ISS function can be disabled by setting the "ISS DISABLE" switch to the "ON" position. Then the subwoofer is continuously powered and can be turned off using the power switch on the connector

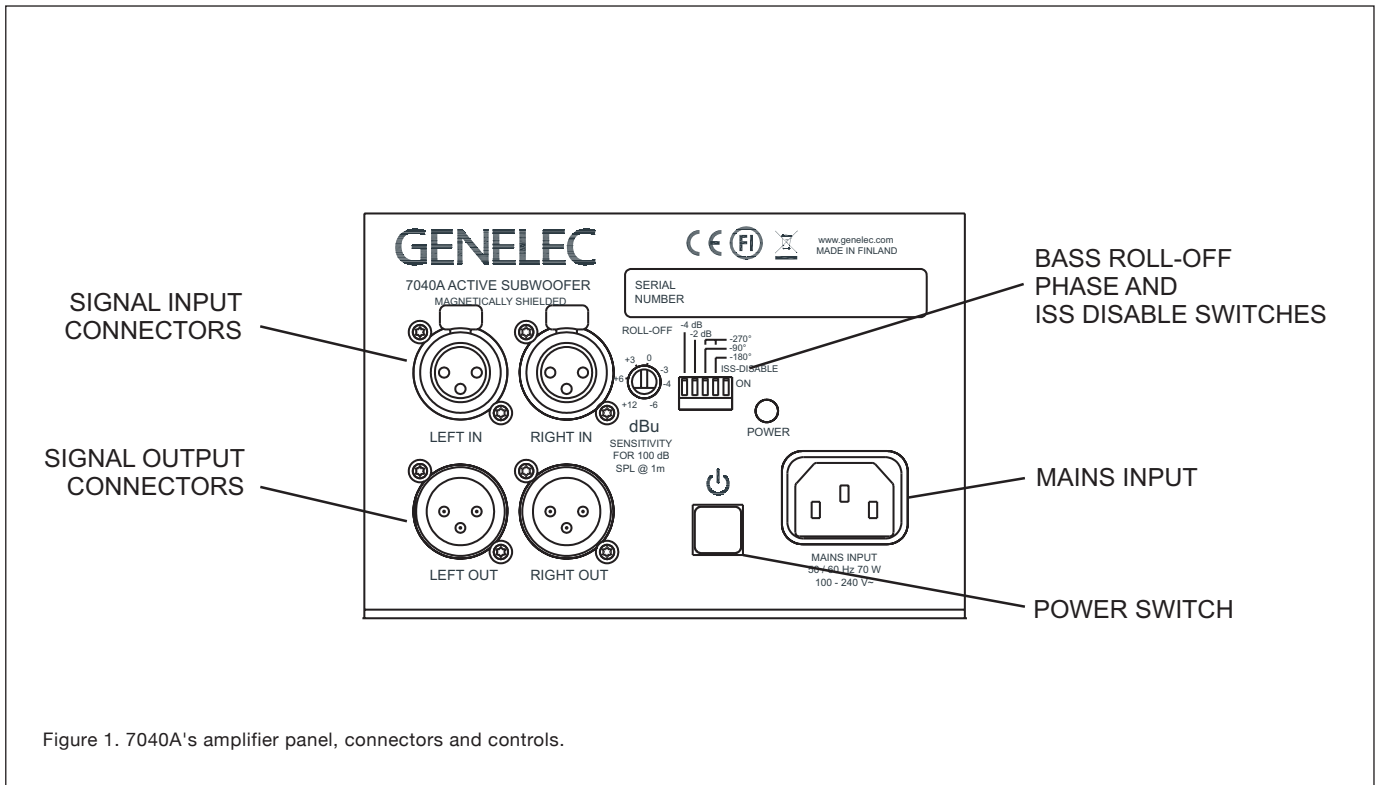


Figure 1. 7040A's amplifier panel, connectors and controls.

panel. The default position from the factory is with "ISS DISABLE" in the OFF position.

Installation

The subwoofer is supplied with a mains cable and this operating manual. After unpacking inspect the subwoofer for possible damage in transport. Ensure that the subwoofer and the monitors are powered off before connecting cables.

Audio connections to the subwoofer and monitors use balanced XLR cables (not included in the subwoofer delivery content). As the 7040A has an integrated amplifier, it may only be connected to a line level signal source, such as a mixing console or preamplifier, never to the loudspeaker outputs of a power amplifier or an integrated amplifier.

The source is connected to the "LEFT IN" and "RIGHT IN" connectors of the subwoofer. The subwoofer's output connectors "LEFT OUT" and "RIGHT OUT" are connected to the monitors.

If the signal source has unbalanced RCA outputs, you can use signal cables as shown in Figure 2.

Once all connections have been made, the subwoofer and monitors can be powered up.

Positioning In The Room

Placement of the subwoofer in the room affects the subwoofer frequency response and sound level dramatically, as the room influences the low frequencies strongly. Even a slight change in the subwoofer's location can make a marked difference in the frequency balance. Often patient and methodical experimentation is needed to find the optimum placement. The placement will also affect the phase alignment between the monitors and the subwoofer, as well as the need for bass roll-off adjustment.

First, place the subwoofer slightly offset from the center of the front wall. The distance to the nearest wall should be less than 0.6 m (24 in) measured from the subwoofer's driver. This position increases acoustic loading and sound output due to the proximity of the wall and floor. Too large a distance from the wall can cause cancellations and reduce subwoofer output. The monitor should be placed at least 1.1 m (43 in) away from walls to avoid reduction of low frequency output (see Figure 3).

If the subwoofer frequency response does not seem balanced, move the subwoofer slightly to the left or right. This changes how the room modes are excited and can

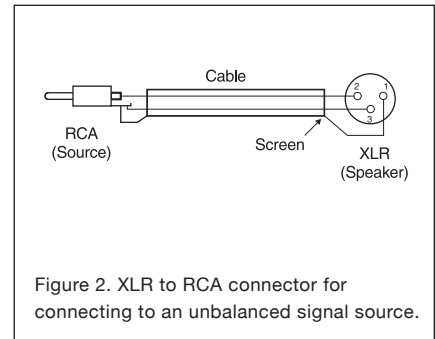


Figure 2. XLR to RCA connector for connecting to an unbalanced signal source.

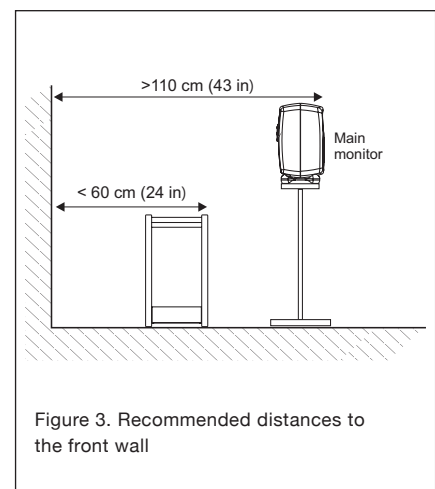


Figure 3. Recommended distances to the front wall

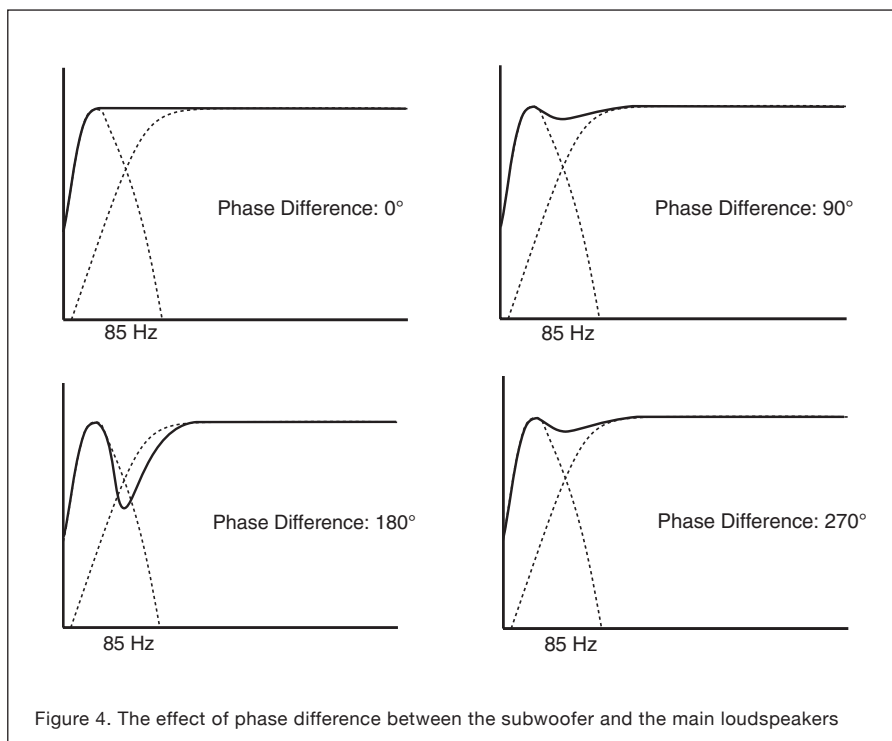


Figure 4. The effect of phase difference between the subwoofer and the main loudspeakers

Subwoofer placement	Bass Roll-Off setting
Near to a wall	-2 dB
In a corner	-6 dB
Flush mounted	-2 dB

Table 1. Suggested Bass Roll-Off settings

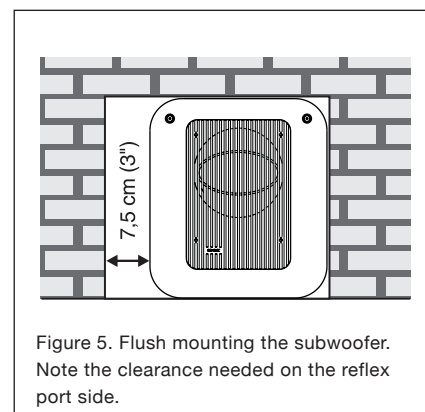


Figure 5. Flush mounting the subwoofer. Note the clearance needed on the reflex port side.

result in improved flatness. Positioning the subwoofer close to a corner boosts the subwoofer output but may cause asymmetrical spatial imaging at low frequencies.

Operating Environment

The 7040A 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.

Sufficient amplifier cooling and reflex port functioning is required when the subwoofer is installed in a restricted space, such as a cabinet or integrated into a wall structure. See section "Flush Mounting the Subwoofer." A restricted space must be sufficiently ventilated to prevent ambient temperature rise above 35 °C (95 °F).

Do not cover the driver of the subwoofer. Do not place the subwoofer so that there is less than 10 cm (4 in) of free space in front of the grille.

Thick carpets under the subwoofer can block the ventilation clearance needed for cooling the amplifier unit. To ensure proper

functioning of the reflex port the reflex port side (opposite of the connector panel) should have a minimum clearance of 7.5 cm (3 in).

Flush Mounting the Subwoofer

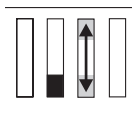
If the subwoofer is flush mounted into a wall or a cabinet, ensure amplifier cooling and unrestricted airflow from the reflex port. Make the recess 7.5 cm (3 in) wider than the subwoofer. Place the subwoofer into the right end of the recess with the driver side facing the room. This leaves sufficient 7.5 cm (3 in) of free space for the reflex port. The height and depth of the recess should not be much larger than the subwoofer.

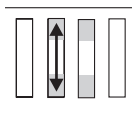
Setting the Input Sensitivity

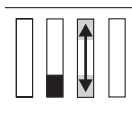
The 7040A has the same sensitivity as 8010, 8020 and M030 monitors in free field. However, when placed near reflecting surfaces the sensitivity of 7040A typically must be attenuated due to increased wall loading. A typical initial setting for the rotary sensitivity control is -4 dBu. The +12 dBu setting provides maximum attenuation. The use of proper measuring equipment with careful listening is highly recommended.

Phase Alignment by Listening

Connect an audio frequency signal generator to LEFT IN or RIGHT IN input of the 7040A and feed in an 85 Hz tone. Connect a monitor to the corresponding output, so that the test signal is reproduced by both subwoofer and monitor.

 ON OFF Toggle the -180° phase switch (DIP 4 from left) "ON" and "OFF". Set it to the position giving the lowest sound level at the listening position.

 ON OFF Next, toggle the -90° phase switch (DIP 3) "ON" and "OFF", and again set it to the position which gives the lowest sound level.

 ON OFF Finally, invert the -180° phase switch (DIP 4) position to the opposite setting. Now you can remove the test signal.

Phase Alignment Using Test Equipment

Feed in the test signal to LEFT IN or RIGHT IN of the subwoofer. Place the microphone at the listening position. Using a real-time analyser or other frequency response measurement system, adjust the sensitivity of the subwoofer until the frequencies below and above 85 Hz are reproduced at equal level. Then, adjust the phase switches for the maximum dip of at least -6 dB at the crossover frequency (85 Hz). Invert the -180° switch to the opposite setting. The phase is now aligned and the measurement should show a smooth response around 85 Hz.

Setting the Bass Roll-Off

The acoustic response of the subwoofer can compensate the room characteristics. To adjust the subwoofer use the "Bass Roll-Off" switches located on the connector panel. These offer attenuation levels of -2, -4, and -6 dB at the lowest subwoofer output frequencies. Table 1 provides suggestions for Bass Roll-Off switch settings. Flat anechoic response is obtained when both roll-off switches are set to "OFF".

Safety Considerations

Genelec 7040A subwoofer has been designed in accordance with international safety standards. However, to ensure safe operation and maintain the unit in safe operating condition, the following warnings and cautions must be observed:

- 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.
- Servicing and adjustment must only be performed by authorized Genelec service personnel.
- Opening the amplifier unit is strictly prohibited except by authorized service personnel.
- Always use a mains power connection with protective earth terminal. In case of fault, failing to do this may lead to personal injury.

Warning!

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

Maintenance

No user serviceable parts are inside the amplifier unit. Any maintenance of the unit must only be performed by Genelec authorized service personnel.

Guarantee

This product is supplied with a two year guarantee against manufacturing faults or defects that might alter the performance. The guarantee can be extended to five years by registering the product on www.genelec.com. Refer to the supplier for full sales and guarantee terms.

Compliance to FCC rules

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

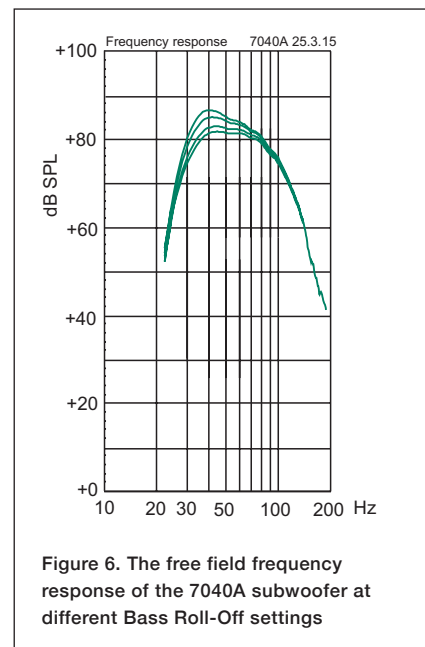


Figure 6. The free field frequency response of the 7040A subwoofer at different Bass Roll-Off settings

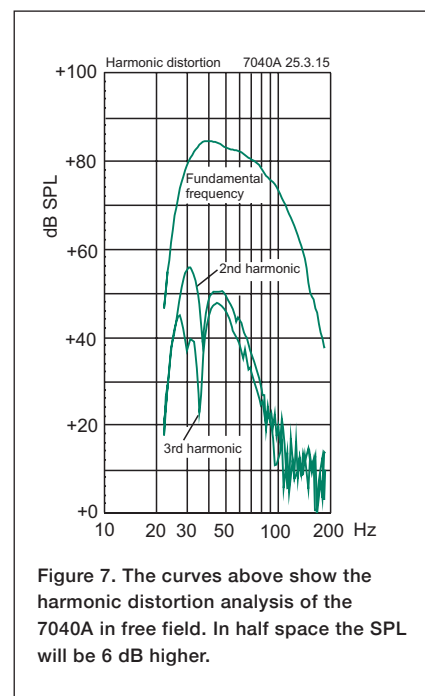


Figure 7. The curves above show the harmonic distortion analysis of the 7040A in free field. In half space the SPL will be 6 dB higher.

- 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.

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

7040A Operating Manual

SYSTEM SPECIFICATIONS	
	7040A
Free field frequency response (-6 dB)	30...90 Hz
Accuracy of frequency response	± 3 dB (33...85 Hz)
Maximum short term sine wave SPL output averaged from 40 to 85 Hz, measured in half space at 1 meter	100 dB
Self generated noise level in half space at 1 m (A-weighted)	≤ 5 dB
Harmonic distortion at 90 dB SPL at 1 m on axis in half space 40...85 Hz	
2nd	≤ 2.5%
3rd	≤ 1.5 %
Driver, magnetically shielded	165 mm (6 ¹ / ₂ in)
Weight	11.3 kg (24.9 lb)
Dimensions	
Height	410 mm (16 ¹ / ₈ in)
Width	350 mm (13 ³ / ₄ in)
Depth	205 mm (8 ¹ / ₁₆ in)

CROSSOVER SECTION	
	7040A
Subsonic filter (18 dB/octave) below	35 Hz
Input channels	2
Low pass frequency for main channels	85 Hz
Midband rejection >400 Hz	≥ 50 dB
Bass Roll-Off control in 2 dB steps	0 to -6 dB @ 35 Hz
Phase matching control in 90° steps	0 to -270°
Input sensitivity control	+12 to -6 dBu

AMPLIFIER SECTION	
	7040A
Amplifier short term output power (Long term output power is limited by driver unit protection circuitry)	50 W
Amplifier system THD at nominal output	≤ 0.08 %
Mains voltage	100 - 240 VAC universal
Power consumption (average)	
Standby (ISS active)	≤ 0.5 W
Idle	5 W
Full output	70 W

INPUT SECTION	
	7040A
Input connectors XLR female	
pin 1	gnd
pin 2	+
pin 3	-
Input impedance	10 kohm balanced
Input level for 100 dB SPL output @ 1 m	Variable from +12 to -6 dBu

OUTPUT SECTION	
	7040A
Input connectors XLR male	
pin 1	gnd
pin 2	+
pin 3	-
Main monitor Out gain	0 dB

7050B

Data Sheet

Genelec 7050B
Active Subwoofer

GENELEC®





Main Features:

- LSE™ Power efficient port/ enclosure design
- Unparalleled low frequency performance
- Precise integration to Genelec 8020A or 8030A systems

7050B Active Subwoofer

System

The Genelec 7050B active subwoofer is a very compact low frequency loudspeaker, designed to extend the bass reproduction of Genelec 8020A active loudspeakers in stereo or surround applications and models 8030A or 8130A in stereo applications. Adding the 7050B to these loudspeakers creates a compact near-field monitoring system capable of a flat frequency response from 25 Hz to 20 kHz (± 3 dB). The 7050B should not be used in surround applications with the 8030A or 8130A due to their greater SPL capacity.

Driver

The 7050B contains a single 205 mm (8") magnetically shielded low frequency driver, housed in a Genelec Laminar Spiral Enclosure™ (LSE™) bass reflex cabinet.

Crossover

The built-in crossover unit has five signal input and output channels (L/C/R Front and L/R Rear) and a LFE input, providing great flexibility and easy connection. The discrete LFE signal input is equipped with a selectable 85/120 Hz low-pass filter and a 0/+10 dB LFE sensitivity switch.

The amplifier has adjustable sensitivity, bass roll-off and phase matching controls

to tailor the response of the subwoofer to its environment.

The crossover has a fixed 85 Hz low pass filter for five main channels. However, the signal passing through the "OUT" connectors is full bandwidth, i.e. not filtered. Because of this, the "BASS ROLL-OFF" switch (switch 2) on the main loudspeakers must be switched on to avoid unwanted overlapping of the frequency bands between the subwoofer and main loudspeakers. Due to this and the input sensitivity of the 7050B subwoofer, it can only be used with Genelec 8020A, 8030A, 8130A, 1029A, 2029A and 2029B active loudspeakers.

The overall input sensitivity of the subwoofer can be reduced from 0 dB to -18 dB for easy level matching with the main loudspeakers.

Amplifier

The amplifier produces 70 W of output power, with very low THD and IM distortion. Driver overload protection and power-on signal muting is included in the amplifier circuitry. The amplifier also incorporates thermal overload and short circuit protection.

LSE™ cabinet construction

Like the larger Genelec 7000 series subwoofers, the 7050B features the new Genelec Laminar Spiral Enclosure™ (LSE™) bass reflex cabinet. The cabinet is made of sheet

metal rolled into a spiral shape and clamped between thick MDF side panels. The spiral forms a seamless, gently curving reflex tube with excellent laminar flow characteristics and minimal turbulence noise. The curved shape also offers excellent structural stiffness and optimal packing of a very long reflex tube into a small space.

The overall construction of the 7050B is rugged and reliable: The amplifier unit is mounted on vibration absorbers to ensure rattle-free operation and the handsome cast-aluminium grille protects the magnetically shielded 8 inch driver.

Why a subwoofer?

For applications, such as computer multimedia work and most types of near field monitoring, the Genelec 8020A and 8030A are appropriate monitor systems. However if lower LF cutoff and more LF SPL are required, the 7050B subwoofer has been specifically designed to complement these compact loudspeakers. When combined they give a frequency response comparable to some larger Genelec models - one of the differences is the greater SPL's offered by larger systems.

The 8020A/8030A and 7050B combination offers great flexibility in loudspeaker placement. Due to the small physical size of the main loudspeakers, they can be located on

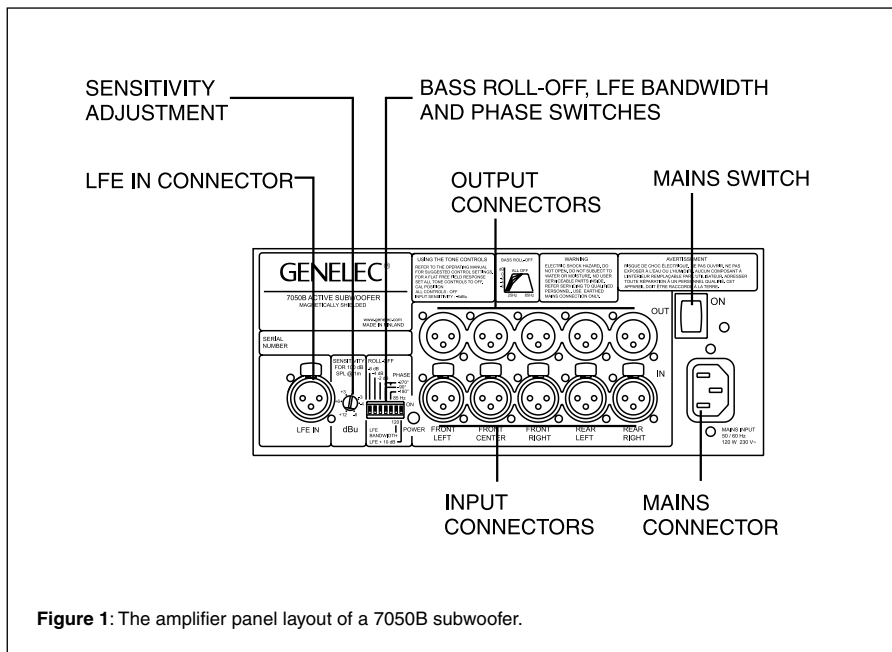


Figure 1: The amplifier panel layout of a 7050B subwoofer.

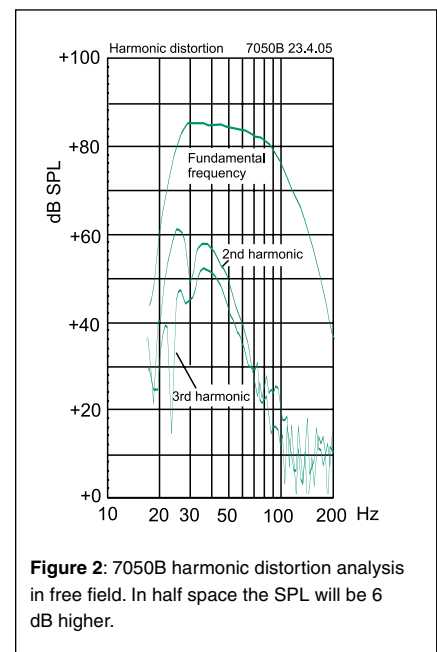


Figure 2: 7050B harmonic distortion analysis in free field. In half space the SPL will be 6 dB higher.

desks and, if carefully placed appear fairly innocuous in a room. Further advice on how to place the loudspeaker is described in the operating manual.

If the subwoofer and main loudspeakers are placed properly some of the low frequency problems associated with free standing speakers can be avoided.

Why active loudspeakers?

There are various reasons why active loudspeakers are preferable to passive alternatives, the most dominant being the integrated construction allowing better optimization of the system performance. The loudspeakers are always delivered as a complete factory calibrated system, consisting of all amplifiers, crossover electronics and speaker cabinets.

In an active loudspeaker system the amplifiers are connected directly to the drive units. Distortion anomalies and losses caused by passive crossovers are completely avoided resulting in better sound quality and maximum acoustic efficiency.

For every model of monitor the associated amplifiers have a unique design including driver overload protection. The overload protection detects signals that are above the drivers safe limits preventing damage. This makes the system immune to overloads and spurious signals which synthesizers,

sequencers and multimedia sources, such as sound cards, can occasionally produce.

The crossover and phase responses are optimized for each particular model to achieve highly accurate system performance. Consequently every model has the same neutral sound.



7050B Data Sheet

SYSTEM SPECIFICATIONS	
	7050B
Free field frequency response (± 3 dB)	25 Hz...85 Hz LFE 85/120 Hz
Maximum short term sine wave SPL output averaged from 30 to 85 Hz, measured in half space at 1 meter	≥ 100 dB
Self generated noise level in half space at 1 m on axis (A-weighted)	≤ 15 dB
Harmonic distortion at 90 dB SPL at 1 m on axis in half space 30... 85 Hz	
2nd	$\leq 4\%$
3rd	$\leq 1\%$
Driver, magnetically shielded	205 mm (8")
Weight	18 kg (39.6 lb)
Dimensions	
Height	410 mm (16 $\frac{1}{8}$ ")
Width	350 mm (13 $\frac{3}{4}$ ")
Depth	319 mm (12 $\frac{9}{16}$ ")

CROSSOVER SECTION	
	7050B
Subsonic filter (18 dB/octave) below	25 Hz
Input channels	5 main + LFE
Low pass frequency for 5 main channels	85 Hz
LFE cutoff frequency	85 or 120 Hz selectable
Midband rejection >400 Hz	≥ 50 dB
Bass Roll-Off control in 2 dB steps	0 to -6 dB @ 26 Hz
Phase matching control in 90° steps	0 to -270°
Input sensitivity control	+12 to -6 dBu
LFE input sensitivity control	0 or +10 dB selectable

AMPLIFIER SECTION	
	7050B
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

INPUT SECTION	
	7050B
Input connectors XLR female	
pin 1	gnd
pin 2	+
pin 3	-
Input impedance	10 kohm balanced
Input level for 100 dB SPL output @ 1 m	Variable from +12 to -6 dBu

OUTPUT SECTION	
	7050B
Input connectors XLR male	
pin 1	gnd
pin 2	+
pin 3	-
Main loudspeaker Out gain	0 dB

Main loudspeaker Out connectors carry an unfiltered copy of the signal arriving into their respective Input connectors.



LSE Series

Data Sheet

Genelec 7060B, 7070A and
7071A Active Subwoofers

GENELEC®





Active Subwoofers 7060B, 7070A and 7071A

System

Genelec LSE series active subwoofers are powerful and precise bass monitoring tools for modern 6.1 or 5.1 channel Surround Sound as well as traditional Stereo systems. With their 19 Hz lower cut-off frequency, high sound pressure output capability and versatile bass management systems, they can be adapted to all low frequency monitoring situations.

The amplifier unit integrated into the cabinet contains active crossover filters, driver overload protection circuits and power amplifiers. The built-in bass management unit has six signal input and output channels (L/C/R Front and L/C/R Rear), LFE input and summed signal output connectors, providing great flexibility and easy connection. The discrete LFE signal input is equipped with a selectable 85/120 Hz low-pass filter and a 0/+10 dB LFE sensitivity switch.

The amplifier has adjustable sensitivity, bass roll-off and phase matching controls to tailor the response of the subwoofer to its environment. An integrated 85 Hz test tone generator is provided for accurate crossover phase alignment.

LSE™ cabinet construction

These LSE series subwoofers feature Genelec's new Laminar Spiral Enclosure™ (LSE™) bass reflex cabinet. The cabinet is made of sheet metal rolled into a spiral

shape and clamped between thick MDF side panels. The spiral forms a seamless, gently curving reflex tube with excellent laminar flow characteristics and minimal turbulence noise. The curved shape also offers excellent structural stiffness and optimal packing of a very long reflex tube into a small space.

The bass management unit is mounted on vibration absorbers, to ensure rattle-free operation. This results in a robust and reliable system. The handsome cast-aluminium grille also functions as a heatsink for the power amplifier.

Speaker configuration and positioning

With their built-in bass management unit the LSE series subwoofers may be used with other Genelec monitors to extend their low frequency response and SPL performance. Two or more subwoofers can be coupled together via the "SUM OUT" connector if a higher maximum SPL is required.

The phase correction switch in the bass management unit allows for the subwoofer to be freely placed away from the main monitors without phase cancellation.

Drivers

The 7060B has one 250 mm (10") cone driver, the 7070A one 305 mm (12") cone and the 7071A two 305 mm cone drivers. The drivers are magnetically shielded long throw types capable of producing high SPLs.

Main Features:

- LSE™ Power efficient port/ enclosure design
- Highly configurable 6.1 channel Bass Management System
- Unparalleled low frequency performance
- Phase calibration test tone
- RJ11 remote control connection
- SUM out and in for "daisy chaining" units

Amplifier

The amplifiers produce 120, 250 and 500 W of short term RMS power for the 7060B, 7070A and 7071A respectively, with very low THD and IM distortion. Driver overload protection and power-on signal muting is included in the amplifier circuitry.

Bass management unit

The built-in bass management unit splits the six main channel input signals into low and high frequency components, accurately dividing the input signal between the subwoofer and the main speakers. The crossover frequency is fixed at 85 Hz. The low pass section has an adjustable sensitivity, to allow easy level matching with the main speakers. The six high pass sections have 0 dB passband gain. The high pass filters can be bypassed using an optional bypass switch so that the effect of the subwoofer to the whole monitoring system can be determined. Balanced XLR connectors are used for the system inputs and outputs.

A dedicated "LFE IN" input connector allows easy set-up and accurate monitoring of the LFE channel in 5.1 and 6.1 channel surround sound systems. The LFE channel on the 7000 series subwoofers can be set to two bandwidths: 19 to 85 Hz or 19 to 120 Hz. If the LFE signal includes higher frequencies than 120 Hz, they can be monitored by

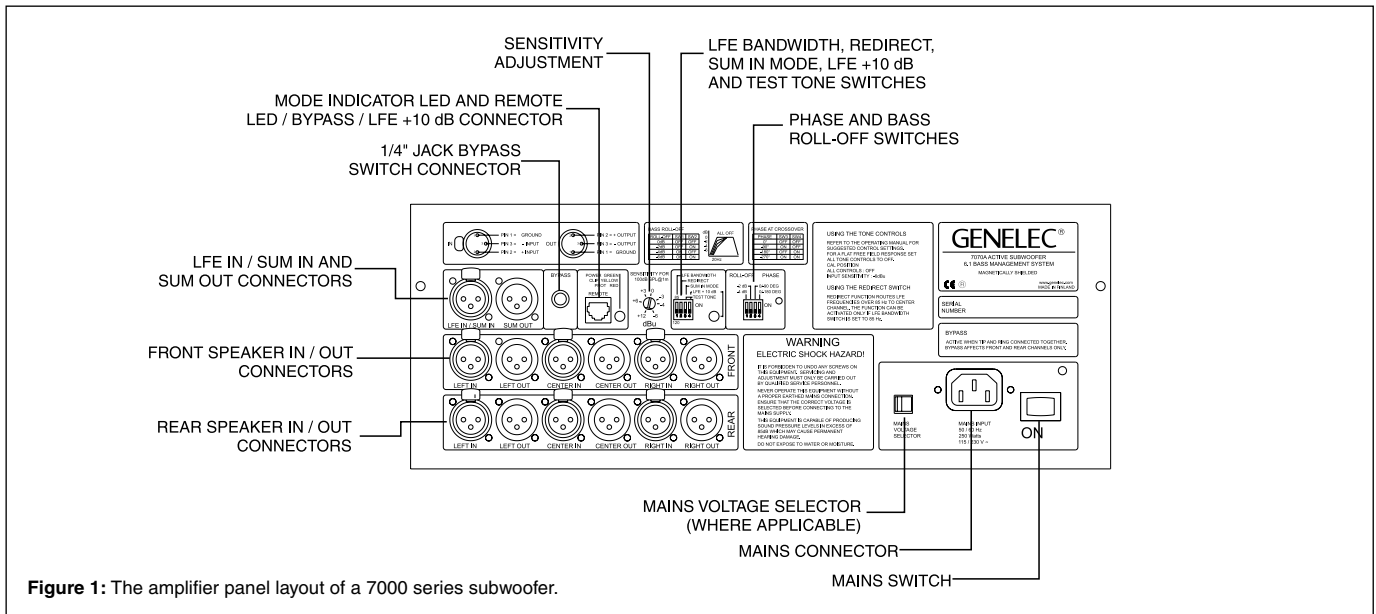


Figure 1: The amplifier panel layout of a 7000 series subwoofer.

using the "redirect" function. In this case, frequencies above 85 Hz in the LFE signal are redirected to the center channel output to be reproduced by the center channel monitor. The sensitivity of the LFE channel can easily be set to 0 or +10 dB according to the monitoring needs.

To provide a flat bass response in many different acoustic environments, a 'bass roll-off' switch is included, which makes adjustments to the subwoofer response in three 2 dB steps possible. Two phase alignment switches in the crossover allow compensation for the phase delay which occurs if the subwoofer is placed away from the main speakers or for other phase changes in the loudspeaker system. Four settings are provided between 0° and -270°.

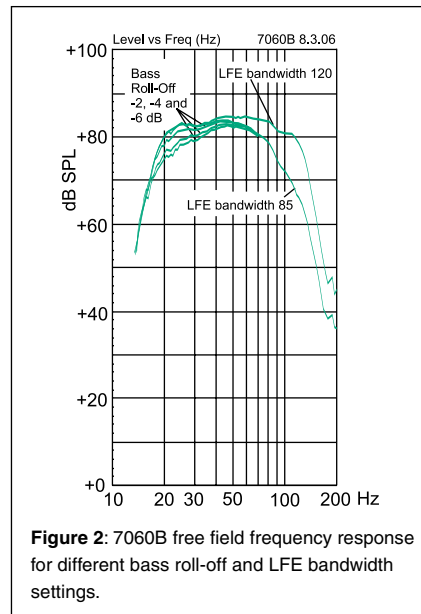


Figure 2: 7060B free field frequency response for different bass roll-off and LFE bandwidth settings.

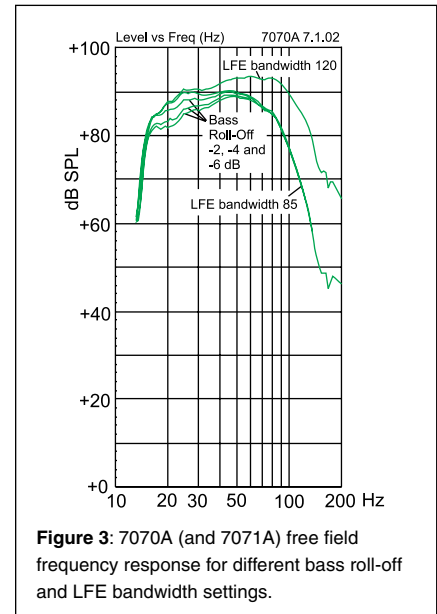


Figure 3: 7070A (and 7071A) free field frequency response for different bass roll-off and LFE bandwidth settings.

Options

Order code	Description
1092-400	1/4" jack bypass switch
7000-415 RJ 11	Remote Power/ Overload LED
7000-416 RJ 11	Remote control for bypass and +10 dB LFE functions

7060B / 7070A / 7071A Data Sheet

SYSTEM SPECIFICATIONS

	7060B	7070A	7071A
Free field frequency response (+/- 3 dB)	19 Hz...85 Hz LFE 85/120 Hz	19 Hz...85 Hz LFE 85/120 Hz	19 Hz...85 Hz LFE 85/120 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	≥ 118 dB SPL
Maximum peak SPL output with random pink noise, measured in half space at 1 meter	≥ 113 dB SPL	≥ 117 dB SPL	≥ 123 dB SPL
Self generated noise level in free field @ 1 m on axis (A-weighted)	≤ 15 dB		
Harmonic distortion at @ 1 m on axis in half space	@ 90 dB SPL 30 ... 85 Hz 2nd ≤ 3 % 3rd ≤ 2 %	@ 95 dB SPL 30 ... 85 Hz ≤ 3 % ≤ 3 %	@ 100 dB SPL 30 ... 85 Hz ≤ 3 % ≤ 3 %
Driver, magnetically shielded	250 mm (10")	305 mm (12")	2 x 305 mm (12")
Weight	26 kg (57 lbs)	50 kg (110 lbs)	81 kg (178 lbs)
Dimensions			
Height	527 mm (20 3/4")	625 mm (24 5/8")	755 mm (29 3/4")
Width	462 mm (18 3/16")	555 mm (21 7/8")	803 mm (31 5/8")
Depth	363 mm (14 5/16")	490 mm (19 5/16")	490 mm (19 5/16")

CROSSOVER SECTION

	7060B	7070A	7071A
Subsonic filter (18 dB/octave) below	19 Hz		
Crossover frequency, (sub/main channels)	85 Hz		
LFE cutoff Hz	85 Hz/120 Hz selectable		
Crossover slopes	36 dB/octave		
Lowpass	12 dB/octave		
Highpass			
Midband rejection >400 Hz	≥ 50 dB		
Bass roll-off control operating range in 2 dB steps	From 0 to -6 dB @ 20 Hz		
Phase matching control in 90° steps	From 0 to -270° @ 85 Hz		

AMPLIFIER SECTION

	7060B	7070A	7071A
Short term amplifier output power (Long term output power is limited by driver unit protection circuitry)	120 W	250 W	500 W
Amplifier system distortion at nominal output THD	≤ 0.05%		
Mains voltage	100/200 V or 115/230 V		
Power consumption (average)			
Idle	15 VA	15 VA	30 VA
Full output	150 VA	250 VA	500 VA

INPUT SECTION

	7060B	7070A	7071A
Input connector XLR female	gnd + -		
Input impedance	10 kOhm balanced		
Input level for 100 dB SPL output @ 1 m	Variable from +12 to -6 dBu		

OUTPUT SECTION

	7060B	7070A	7071A
Output connector XLR male	gnd + -		
Remote LED connector (RJ11)	Remote LED for Power/Overload+Bypass		
Main monitor Out gain	0 dB		
Sum Out gain	0 dB		

CONTROLS

	7060B	7070A	7071A
Input sensitivity	+12 to -6 dBu		
Bypass	Bypasses the bass management for the main channels		
LFE bandwidth	85 / 120 Hz		
LFE sensitivity	0 / +10 dB		
Redirect	Redirects LFE channel signal above 85 Hz to center channel		
Sum in	Changes subwoofer to Sum in mode		
Test tone for phase adjustment	85 Hz		
Bass roll-off	0/-2 dB/ -4 dB/ -6 dB @ 20 Hz		
Phase	0/90/180/270°		

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