

International enquiries:
Genelec, Olvitie 5
FIN-74100, Iisalmi, Finland
Phone +358 17 83 881
Fax +358 17 812 267
Email genelec@genelec.com

In the U.S. please contact
Genelec, Inc., 7 Tech Circle
Natick, MA 01760
Phone +1 508 652 0900
Fax +1 508 652 0909
Email genelec.usa@genelec.com

Genelec document D0043R001.
Copyright Genelec Oy 6.2002.
All data subject to change without prior notice.

GENELEC® 6040A Active Speaker Operating Manual



GENERAL DESCRIPTION

The bi-amplified GENELEC 6040A is a two way floor-standing active speaker with high output, low coloration, and broad bandwidth.

As an active speaker, the 6040A contains drivers, power amplifiers, active crossover filters and protection circuitry. The Directivity Control Waveguide™ (DCW™) technology used provides excellent frequency balance in difficult acoustic environments.

INTEGRATED CONSTRUCTION

As the amplifiers are built into the speaker base, the only connections required are the mains supply and the line level input signal, making the 6040A very easy to set up and use. The integrated design allows the amplifiers and the drivers to be calibrated as a single unit at the factory. This eliminates the effects of component tolerances and ensures consistent quality.

DRIVERS

The bass frequencies are reproduced by a 182 mm (7") bass driver. The -6 dB point lies at 43 Hz.

The high frequency driver is a 19 mm (3/4")

metal dome. Uniform dispersion control is achieved with the revolutionary DCW™ Technology pioneered by Genelec, which also results in perfect phase and delay uniformity at the crossover frequency.

Magnetic shielding is standard on the 6040A to ensure minimal interference with TV screens and computer displays.

CROSSOVER

The active crossover network consists of two parallel bandpass filters. Acoustically, the filters are complementary and the slopes are 24–32 dB/octave. The crossover frequency is 3.5 kHz. The active crossover controls ("treble tilt", "bass tilt" and "bass roll-off") allow the 6040A to be exactly matched with the listening room acoustics. Variable input sensitivity allows for accurate level matching.

AMPLIFIERS

The integrated bass and treble amplifiers of the 6040A both produce 120 W of output power. The amplifier unit incorporates special circuitry for driver overload protection.

SPEAKER PLACEMENT

It is vital that the speakers are correctly positioned in the room as this greatly affects their performance. To produce a true and accurate stereo image the speakers must have identical frequency responses. This is easy to achieve in an anechoic measuring chamber, but in a normal room the response of a speaker is always affected by the way the sound reflects within the room, bouncing back from walls, ceiling, floor, furniture and other objects.

A good starting point is to place the speakers symmetrically at the same distance from the front and side walls. This minimises colouration effects caused by cancellation dips in the frequency response and maintains accurate stereo imaging.

The distance from the front wall should be either less than 1 meter, or alternatively more than 3 meters to avoid an uneven frequency response due to reflections from the front wall.

If the speaker is placed close to the wall (<1 m) this will boost the lower frequencies and the tone controls should then be adjusted appropriately.

The speakers should be aimed toward the listening position. This is due to the effect of the

DCW which increases the directivity. If the ratio of direct sound to reflected sound is greater the listener is then able to listen to more of the material and less of the room effects. Subjectively this is perceived as superior stereo imaging.

INSTALLATION

Each 6040A speaker is supplied with a mains cable, a set of pads (attached) and spikes for the speaker base and an operating manual. After unpacking place the speaker in its required listening position. Before connecting up, ensure that the mains switch is off and the mains voltage selector set to your local voltage. Audio input is via a 10 kOhm balanced XLR connector or an unbalanced RCA connector at the speaker base. Do not use both input connectors at the same time. Once the audio and mains connections have been made, the speakers are ready to be switched on.

REMOTE CONTROL AND AUTOSTART

The 6040A has a provision for remote ON/STANDBY switching by remote control or automatic signal sensing. Two pairs of connectors are provided at

the base of the speaker next to the signal input connectors, pins 1 and 2 for a 12 V DC trigger type remote control and pins 3 and 4 for an external switch or relay type control. Do not connect two remote controls at the same time. The remote control function must be activated by turning the "REMOTE CONTROL" dip switch on the base panel to "ON".

If a remote control is not used, the "autostart" function provides automatic ON/STANDBY switching by signal sensing. Switch the "AUTO-START" dip switch to "ON" and "REMOTE CONTROL" dip switch to "OFF" to activate the function. The "Remote control" function overrides "autostart" so it must be deactivated when using "autostart". "Autostart" switches the speaker to "STANDBY" mode if an input signal has not been detected for approximately twenty minutes, and back to "ON" mode when the signal returns.

SETTING THE VOLUME CONTROL

The input sensitivity of the speakers can be matched to the output of the preamplifier by adjusting the sensitivity control on the speaker base panel.

USING THE TONE CONTROLS

The response of the 6040A can be adjusted to overcome acoustical problems in the listening room. Excessive bass level often results if the speakers are placed near a wall or into a corner. Treble can be dull or too bright depending on the acoustical damping characteristics of the room etc. These effects can be corrected by adjusting the tone controls on the speaker base panel. The tone controls include three groups of switches: "TREBLE TILT", "BASS TILT" and "BASS ROLL-OFF." The factory settings for all these are "OFF" to give a flat anechoic response. Use this as the starting point when making adjustments and note that only one switch within each group should be switched to "ON" at a time. Figure 3 illustrates their effect on the speaker's response and Table 1 shows suggested settings for some typical cases.

Adjusting the treble response

Switch on one of the "TREBLE TILT" switches: "+2 dB" switch increases the treble level and makes the sound "brighter". If the treble level feels too high, you can attenuate it by -2 dB or -4 dB

using the corresponding switches. "MUTE" mode is mainly used for testing purposes.

Adjusting the bass response

"BASS TILT" and "BASS ROLL-OFF" controls can be used to attenuate the speaker's bass response if the sound feels too bass heavy. See table 1.

MAINTENANCE

No user serviceable parts are to be found within the speaker. Any maintenance or repair of the 6040A should only be undertaken by qualified service personnel.

SAFETY CONSIDERATIONS

Although the 6040A has been designed in accordance with international safety standards, to ensure safe operation and to maintain the instrument under safe operating conditions, the following warnings and cautions should be observed:

- Do not use this product with an unearthed mains cable as this may compromise electrical safety.

- Do not expose the speaker to water or moisture. Do not place any objects filled with liquid, such as vases on the speaker or near it.
- This equipment is capable of producing sound pressure levels in excess of 85 dB, which may cause permanent hearing damage.

GUARANTEE

This product is guaranteed for a period of ONE year against faults in materials or workmanship. Refer to supplier for full sales and guarantee terms.

Table 1.
Suggested tone control settings for some typical situations.

Speaker positioning	Treble tilt	Bass tilt	Bass roll-off
Anechoic space	OFF	OFF	OFF
Free standing in a damped room	OFF	-2 dB	OFF
Near a wall	OFF	-4 dB	-2 dB
In a corner	OFF	-4 dB	-4 dB

SYSTEM SPECIFICATIONS

Free field frequency response of system: 47 Hz – 20 kHz (± 2.5 dB)
-6 dB point at 43 Hz

Maximum short term acoustic output >100 Hz: >105 dB

Drivers:
Bass 182 mm (7") cone

Treble 19 mm (3/4") metal dome
Both drivers are magnetically shielded

Weight: 15 kg (33 lb)

Dimensions:
Height 996 mm (39 1/4")
(without speaker base spikes or pads)

Width Base: 250 mm (10")
Speaker: 237 mm (9 5/16")

Depth Base: 266 mm (10 1/2")
Speaker: 220 mm (8 3/4")

CROSSOVER SECTION

Inputs:
Input 1 XLR female, balanced 10 kOhm

Input 2 RCA unbalanced 10 kOhm

Input level for 100 dB SPL output at 1 m: -6 to +6 dBu

Crossover frequency, Bass/Treble: 3.5 kHz

Treble tilt control range: +2 to -4 dB and MUTE in 2 dB steps

Bass roll-off control range: 0 to -4 dB in 2 dB steps

Bass tilt control range: 0 to -6 dB and MUTE in 2 dB steps

DESIGN

Harri Koskinen

AMPLIFIER SECTION

Short term bass amplifier output power with an 8 Ohm load: 120 W

Short term treble amplifier output power with an 8 Ohm load: 120 W

Long term output power is limited by driver unit protection circuitry.

Amplifier system distortion at nominal output:

THD:	< 0.08 %
SMPTE-IM:	< 0.08 %
CCIF-IM:	< 0.08 %
DIM 100	< 0.08 %

Input impedance: 10 kOhm

Mains voltage: 115/230 V

Voltage operating range: ± 10 %

Power consumption:

Standby	5 W
Idle	10 W
Full output	200 W

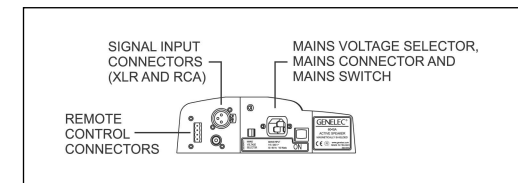


Figure 1. Connectors and controls on the speaker base side panel.

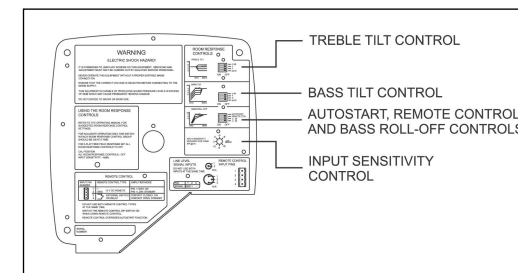


Figure 2. Control switch groups on the speaker base panel.

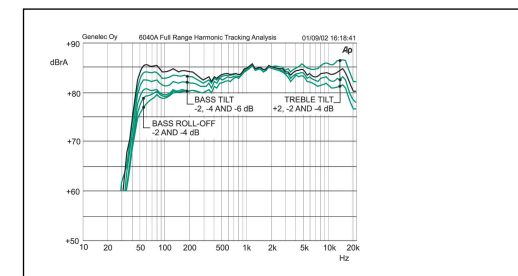


Figure 3. The effect of the tone controls on the free field response of the 6040A. The black curve shows the response with all controls switched off.