

# 1038BC

Operating Manual

Genelec 1038BC

Tri-amplified Monitoring System

# GENELEC®





## Genelec 1038BC Tri-amplified Monitoring System

### System

The Genelec 1038BC is a dedicated center channel speaker for three channel (LCR) and Surround systems. Its compact cabinet has been designed for optimum placement in the limited space above or below a video monitor or screen. The 1038BC is a three-way active monitoring system including drivers, multiple power amplifiers and active crossovers. The amplifiers and crossovers are built into a separate rack mount chassis.

The system is designed for medium sized control rooms and is ideal for project studios, general purpose broadcasting and television studios, digital workstations, post production facilities as well as DVD mastering. The 1038BC is recommended to be flush mounted into the control room wall, but it can also be used as a free-standing monitor.

The unique Directivity Control Waveguide™ (DCW™) Technology used provides excellent stereo imaging and frequency balance even in difficult acoustics environments. The fast, low distortion amplifiers are capable of driving the system to

peak output levels in excess of 124 dB SPL at 2 m with program signals. Versatile crossover controls allow for precise matching of the speaker system to different acoustic conditions.

### Drivers

The bass frequencies are reproduced by two 250 mm (10") bass drivers loaded with a 110 liter vented box. The -3dB point is 33 Hz and the low frequency response extends down to 29 Hz (-6 dB). The mid-range frequencies are reproduced by a proprietary 130 mm (5") direct radiating cone driver loaded with a DCW. The high frequency driver is a 25 mm (1") metal dome also loaded by a DCW. The 1038BC is magnetically shielded in order to minimise interference with video monitors

### Crossover filters

The crossover frequencies of the active crossover network are 410 Hz and 3.0 kHz. In order to obtain a uniform frequency balance under different acoustic conditions. Special calibrated controls are included in the crossover; the Bass, Midrange and Treble level controls operate in 1 dB steps.

Furthermore, the low frequency Tilt and Roll-off controls both have four 2 dB steps to allow refined LF response tailoring.

A high-pass filter is included in the LF channel to protect the woofer from sub-sonic signals. The crossover network is driven by an active balanced input stage fed by a 3 pin XLR. Variable input sensitivity allows for accurate level matching to console output section.

### Amplifiers

The bass, midrange and treble amplifiers produce 400 W, 120 W and 120 W, respectively of short term power with very low THD and IM distortion values. The negative output impedance of the woofer amplifiers improves acoustic transients. The system incorporates special circuitry for driver overload protection and amplifier thermal protection.

### Installation

Each 1038BC monitor is supplied with a separate amplifier unit in a 19" 12 U rack mount chassis, a 10 meter connecting cable set, a mains cable and an operating manual. Once unpacked, place the loud-

Speaker mounting position	Bass roll-off	Bass tilt	Bass level	Midrange level	Treble level
Free field anechoic response	None	None	None	None	None
In a corner	-2 dB	-2 dB	-2 dB	None	None
Soffit mounted in a control room wall	None	None	-4 dB	None	None

Table 1. Suggested tone control settings in some typical situations

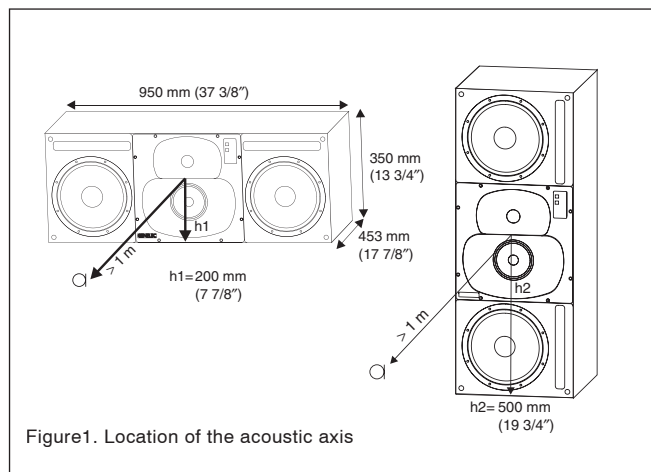


Figure1. Location of the acoustic axis

speaker in its required listening position, taking note of the line of the listening axis (see figure 1) and install the amplifier into a standard 19" rack. Sufficient cooling for the amplifier must be ensured. The minimum clearance for the amplifier is 10 centimeters (4") to any object. 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).

When flush-mounting the units it should be noted that the cable connectors require 10 cm (4") of free space behind both the speaker and the amplifier.

Before connecting up, ensure that the mains switch is off (see figure 2). Check that the mains voltage selector is correctly set and that the appropriate fuse is fitted. The connecting cables between the amplifier and the speaker cabinet have Speakon 8- and 4-pole connectors. Push the 4-pole connector in and turn it clockwise until the retaining clip clicks. The 8-pole (thicker) type is connected by pushing the connector in, turning it clockwise and tightening the blue locking collar at the end of the connector.

Audio input to the amplifier is made via a 10k Ohm balanced (XLR) lead, but unbalanced leads may be used as long as pin 3 is grounded to pin 1 of the XLR (see figure 3). Once connection has been made, the speakers are ready to be powered-up.

## Setting the input sensitivity

Adjustment of the input sensitivity of each speaker can be made to match that of the mixing desk or other sources, by use of the input sensitivity control on the amplifier panel (see figure 2). A small screwdriver is needed for the adjustment. The manufacturer default setting for this control is -6 dBu (fully clockwise) which gives an SPL of 100 dB @1m with -6 dBu input level. Note that to get the full output level of 120 dB SPL, an input level of +14 dBu is needed at this setting.

## Setting tone controls

The acoustic response of the system may also have to be adjusted to match the acoustic environment. The adjustment is done by setting the five tone control switch groups 'bass tilt', 'bass roll-off', 'bass level', 'mid level' and 'treble level' on the rear

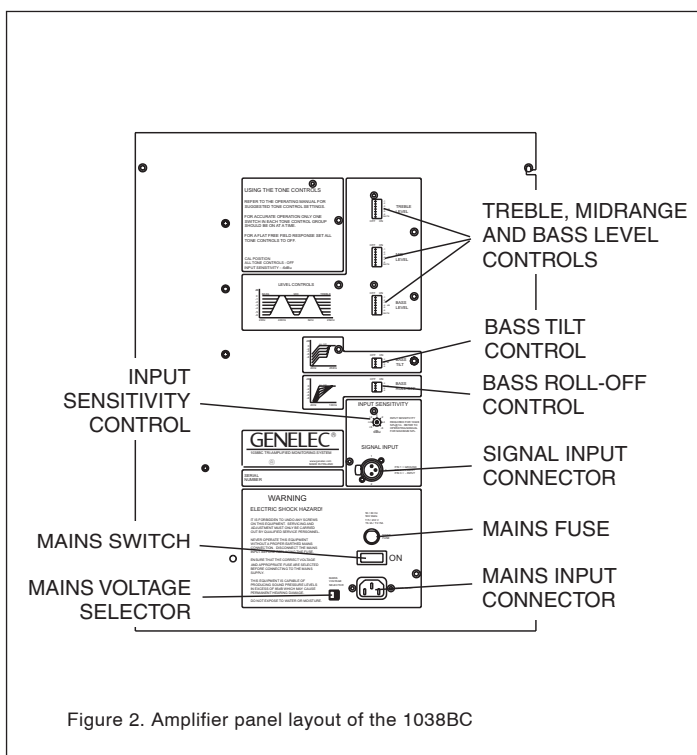


Figure 2. Amplifier panel layout of the 1038BC

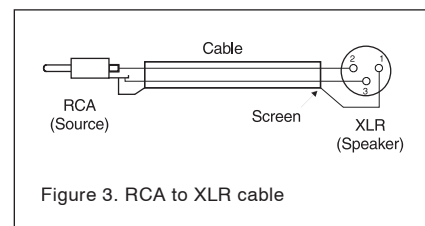
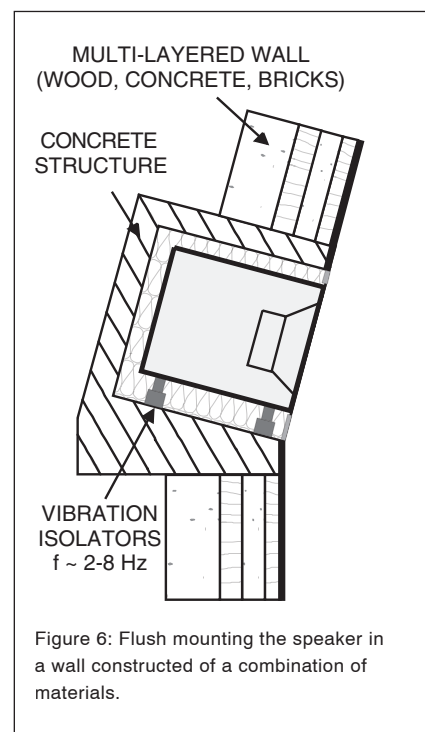
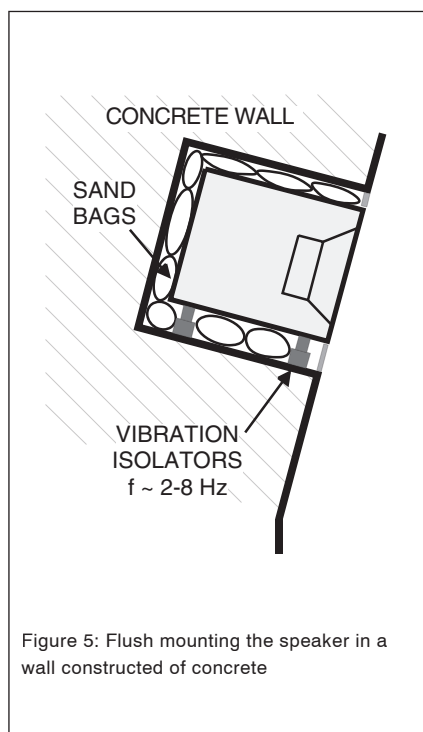
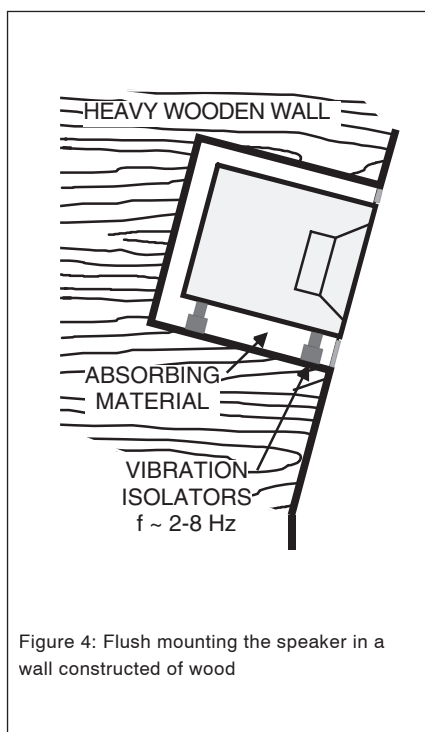


Figure 3. RCA to XLR cable

panel of the amplifier. The manufacturers default settings for these controls are 'All Off' to give a flat anechoic response. See Table 1 for suggested tone control settings in differing acoustic environments. Figure 8 shows the effect of the controls on the anechoic response. Always start adjustment by setting all switches to the 'OFF' position. Then set only one switch to the 'ON' position to select the response curve required. If more than one switch is set to 'ON' (within one switch group) the attenuation value is no longer accurate.

## Vertical / horizontal mounting

Genelec 1038BC can be mounted vertically or horizontally. If the speakers orientation is changed the DCW plate must be rotated so that the mid-range driver always remains located at the bottom of the DCW.



Remove the four corner screws of the DCW (use a 4 mm Allen key) and pull the plate carefully out without stressing the wires and the gasket. Rotate the plate 90 degrees in the appropriate direction and remount the screws.

## Flush mounting

The 1038BC can be used flush mounted into the control room wall, which offers some acoustical benefits. No cabinet edge diffraction will occur, resulting in an improved response, especially at mid-range frequencies. Low frequency reflections from the wall behind the speaker can be avoided, which improves the low frequency response and efficiency and allows the speaker to work in half space conditions. In terms of installation and orientation, the speaker's acoustical axis (See figure 1) should point directly to the listening position. The speaker should be vertically aimed so that the acoustical axis of the two speakers meet midway between the standing and seated listening position (1.4 m - 4'7" from the floor). In the horizontal plane the speaker should be positioned according to the standard stereophonic (60 degrees between left-right channels)

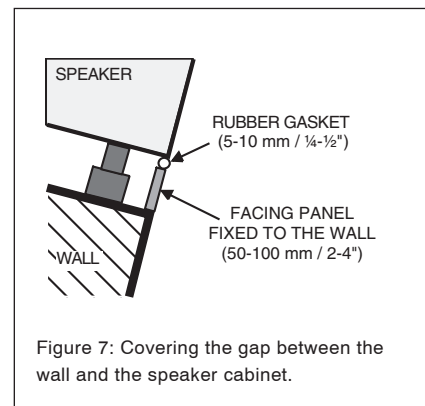
or multichannel (ITU-R BS.775-1) placement recommendation.

The ceiling, side walls and especially the rear wall should be acoustically absorbent at low frequencies. The wall in which the speakers are mounted should have a high acoustical mass to properly implement half space radiation at low frequencies and be angled so that the speakers are correctly aimed. However, the speakers should not be mounted too high as this increases the required vertical tilt of the speaker (maximum tilt angle < 20 degrees) and reduces the optimum listening area. Great care should be taken over how the speaker is mounted into the wall. Note the following:

A space 50 to 100 mm (2 to 4") wide can be left around the speaker. Cover the space around the speaker with a facing panel that should be fixed to the wall. Leave a gap of about 5 to 10 mm ( $\frac{1}{4}$  to  $\frac{1}{2}$ ") between the speaker and the panel. Fill this gap with a soft rubber gasket to allow for possible cabinet movement (see figure 6).

Ensure that the speaker cables can reach the rear of the speaker cabinets.

Regardless of the type of front wall construction the speaker cabinet should be mounted on vibration isolators, with a

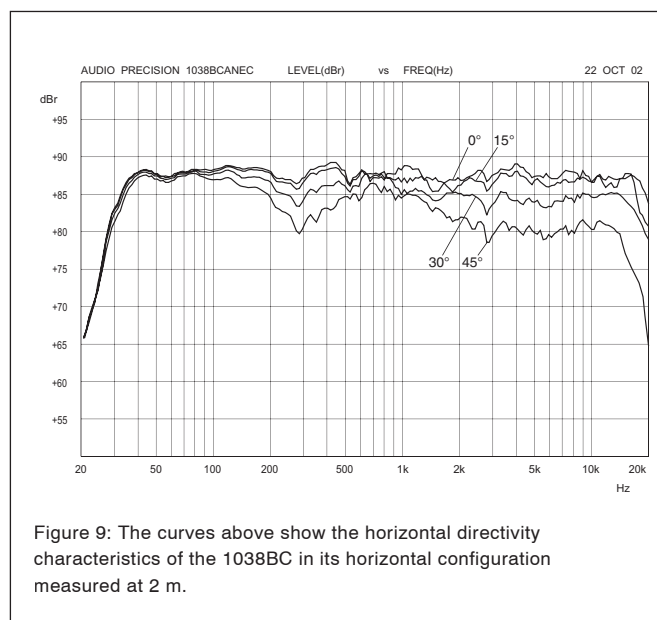
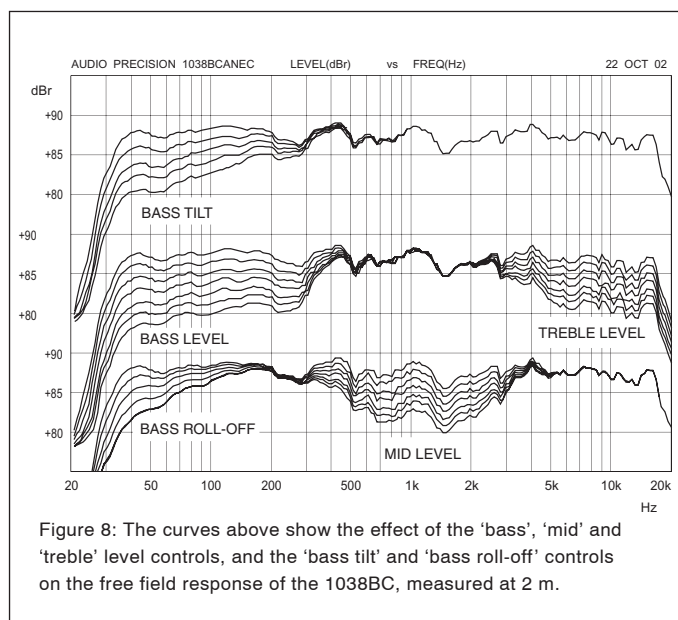


resonant frequency of 2 to 8 Hz, to prevent vibrations from being transmitted to the wall and impairing the low frequency performance.

If a heavy wooden front wall construction is used, the space around the cabinet should be filled with absorbent mineral wool or foam plastic. The wooden wall structure must be heavily braced to achieve sufficiently high mass and rigidity (see figure 4).

In a solid wall (e.g. concrete) structure, the space around the cabinet should be filled with either absorbent mineral wool or sand bags (see figure 5).

The wall can also be constructed of a combination of materials to achieve high



acoustical structural mass that will disable low frequency sound propagation and provide high LF sound isolation (see figure 6). Acoustic consultants will be able to provide details and design these structures.

Ensure that the cabinet is flush with the surface of the wall. Discontinuities in the speaker mounting wall will cause diffraction, which leads to inferior frequency response and stereo imaging. So, if a decorative cloth frame is used to cover the wall, make sure that the edges adjacent to the speaker are less than 20 mm ( $\frac{3}{4}$ " ) deep. The cloth must be very thin Tricot or an acoustically transparent material otherwise the high frequency response of the system will be adversely affected. Genelec approved cloth grilles are available.

## Overload indicators

The speaker is provided with two warning LED's marked 'CLIP PROTECT (FAULT)' and 'READY'. The green READY-LED when lit indicates that the speaker is ready for use. The red CLIP PROTECT (FAULT)-LED indicates that the amplifier is overloaded or the driver protection circuit is activated. In both cases reduce the signal level so that the LED stops blink-

ing. If the CLIP PROTECT (FAULT)-LED stays on constantly it indicates that the amplifier thermal protection is activated. Let the amplifier cool down and check that the ventilation space around it is sufficient. There should be a clearance of more than 10 centimeters between the amplifier panel and any solid surface.

## Maintenance

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

## Safety considerations

Although the 1038BC 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 must be observed:

1. Servicing and adjustment must only be performed by qualified service personnel. The amplifier's rear panel must not be opened.
2. Do not use this product with an unearthed mains cable as this may lead to personal injury.

3. To prevent fire or electric shock, do not expose the unit to water or moisture. Do not place any objects filled with liquid, such as vases on the speaker or near it.
4. Note that 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.

## WARNING!

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

## Accessories

	Order code
Protective grille	1038BC-409

## Guarantee

This product is supplied with one year guarantee against manufacturing faults or defects that might alter the performance of the 1038BC unit. Refer to supplier for full sales and guarantee terms.

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## SYSTEM SPECIFICATIONS

	1038BC
Lower cut-off frequency, -3 dB Upper cut-off frequency, -3 dB Free field frequency response of system	<33 Hz >20 kHz 35 Hz - 20 kHz ( $\pm 2.5$ dB)
Maximum short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz	@1m >120 dB SPL
Maximum long term RMS acoustic output in same conditions with IEC-weighted noise (limited by driver unit protection circuit)	@1m >116 dB SPL
Maximum peak acoustic output per pair above console with music materia	@ 2m >124 dB
Self generated noise level in free field @1m on axis	<15 dB (A weighted)
Harmonic distortion at 95 dB SPL at 1m on axis:	freq. 50...100 Hz <1% freq. >100 Hz <0.5%
Drivers Bass Midrange Treble All drivers are magnetically shielded	2 x 250 mm (10") cone 130 mm (5") cone 25 mm (1") metal dome
Weight Speaker cabinet Amplifier	60 kg (130 lb) 14 kg (31 lb)
Speaker cabinet dimensions Height Width Depth	350 mm (13 <sup>3</sup> / <sub>4</sub> " ) 950 mm (37 <sup>3</sup> / <sub>8</sub> " ) 453 mm (17 <sup>7</sup> / <sub>8</sub> " )*
Amplifier dimensions Height Width Depth	530 mm (20 <sup>7</sup> / <sub>8</sub> " ) (12 U) 480 mm (8 <sup>7</sup> / <sub>8</sub> " ) 113 mm (4 <sup>7</sup> / <sub>16</sub> " )*

\*Without connecting cables. Cable connectors require additional 100 mm (4") of space behind the speaker and the amplifier

## AMPLIFIER SECTION

	1038BC
Bass amplifier short term output power	2 x 200 W (4 Ohm load)
Midrange amplifier short term output power	120 W (8 Ohm load)
Treble amplifier short term output power	120 W (8 Ohm load)
Long term output power is limited by driver unit protection circuitry.	
Slew rate	80V/ $\mu$ s
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 Midrange Treble	>100 dB >100 dB >100 dB
Mains voltage	100/200V or 115/230V
Voltage operating range	nominal $\pm 10\%$
Power consumption Idle Full output	60 W 500 W

## CROSSOVER SECTION

	1038BC
Input connector XLR female	pin 1 gnd pin 2 + pin 3 -
Input impedance	10 kOhm
Input level for 100 dB SPL output @1m	variable from +6 to -6 dBu
Input level for maximum short term output	variable from +26 to +14 dBu for 120 dB SPL @1m
Subsonic filter	18 dB/octave below 33 Hz
Ultrasonic filter	12 dB/octave above 25 kHz
Crossover frequency Bass/Mid Mid/Treble	410 Hz 3 kHz
Crossover acoustical slopes	24 - 32 dB/octave
Crossover level control operating range in 1 dB steps Bass Mid Treble	from 0 to -6 dB from 0 to -6 dB from 0 to -6 dB
Bass roll-off control in 2 dB steps	from 0 to -8 dB @33 Hz
Bass tilt control in 2 dB steps	from 0 to -8 dB @80 Hz

The 'CAL' position is with all tone controls set to 'off' and input sensitivity control to maximum.

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