

1038CF

Operating Manual
Genelec 1038CF
Tri-amplified Monitoring System

GENELEC®





Genelec 1038CF Tri-amplified Monitoring System

System

The Genelec 1038CF is a three-way active monitoring system including drivers, multiple power amplifiers and active crossovers. The system is designed for medium sized control rooms and suited for music recording studios, film and video post-production and general broadcasting monitoring as well as for mastering suites.

The unique Directivity Control Waveguide™ (DCW™) Technology developed by Genelec provides excellent stereo imaging and frequency balance even in difficult acoustic environments. Versatile crossover controls allow for precise matching of the loudspeaker system to different acoustic conditions.

Drivers and enclosure construction

The low frequencies are reproduced by two 210 mm (8") bass drivers. The low frequency (-3 dB) cutoff point is 55 Hz and the high frequency response extends up to 20 kHz (-3 dB).

The midrange and high frequency driver layout features a proprietary 130 mm (5") direct radiating cone for the MF and a 25 mm (1") metal dome for the HF loaded by proprietary Directivity Control Waveguide.

Crossover filters

The active crossover network consists of three parallel bandpass filters. The crossover frequencies are 420 Hz and 3.2 kHz. Bass, midrange and treble level controls with 1 dB steps are included in the crossover to obtain uniform frequency balance in different acoustic conditions. The low frequency Tilt and Roll-off controls both have four 2 dB steps to allow refined low frequency response tailoring. The crossover network is driven by an active balanced input stage, fed by a 3 pin XLR connector. Variable input sensitivity allows for accurate level matching to console output section.

Amplifiers

The bass, midrange and treble amplifiers on the 1038CF produce 180 W, 120 W and 120 W of short term power. The amplifiers are designed to operate at very low THD and IM distortion values and incorporate special circuitry for driver overload protection and amplifier thermal protection.

Installation

Each 1038CF monitor is supplied with an integrated amplifier unit located at the back of the enclosure, a mains cable and an oper-

ating manual. Once unpacked place the loudspeaker in its required listening position, taking note of the line of the listening axis (see Figure 1).

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). If the loudspeaker is flush mounted into the wall structure, the amplifier must be placed separately into an equipment rack using an optional rack mount kit (see sections 'Flush mounting' and 'Accessories').

Before connecting up, ensure that the mains switch is off (see Figure 2). Check that the mains voltage selector is correctly set to your local voltage. Audio input is made via a 10 kOhm balanced XLR connector, but unbalanced leads may be used as long as pin 3 is grounded to pin 1 of the XLR. Once connection has been made, the loudspeakers are ready to be powered-up.

Setting the input sensitivity

Adjustment of the input sensitivity of each loudspeaker can be made to match the output

| Loudspeaker mounting position | Bass roll-off | Bass tilt | Bass level | Midrange level | Treble level |
|---------------------------------------|---------------|-----------|------------|----------------|--------------|
| Free anechoic response | None | None | None | None | None |
| Free standing in a damped room | None | -2 dB | None | None | None |
| Free standing in a reverberant room | None | -2 dB | -2 dB | 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 for different acoustic environments

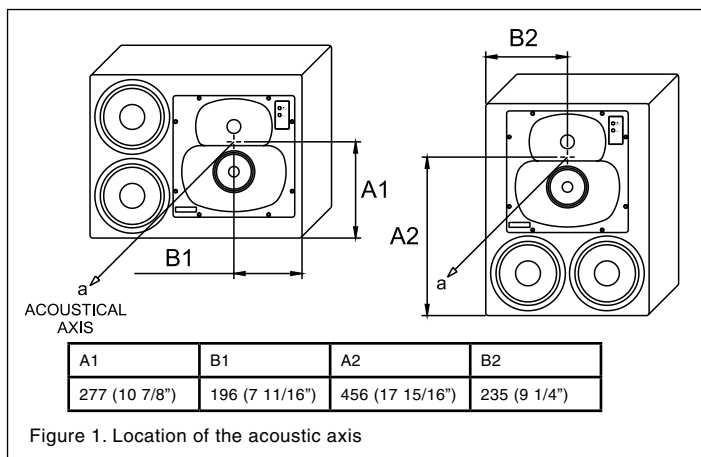


Figure 1. Location of the acoustical axis

of the mixing console or other source, by use of the input sensitivity control on the rear 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. To get the full dB level of 118 dB SPL from the 1038CF an input level of +10 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 panel of the amplifier. The manufacturer's 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. Figures 7 and 8 show 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 per group 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.

Mounting options

The 1038CF has two M10x30 threads on both sides of the enclosure and one M10x30 thread above the amplifier on the back of the enclosure. These can be used for securing the loudspeaker in its place. There is also an adapter for a 35 mm tube type loudspeaker stand at the bottom of the enclosure.

The loudspeakers are delivered either for vertical or horizontal mounting. In the horizontal mounting position the bass drivers should point inwards to obtain better low frequency coupling. If the loudspeaker positioning needs to be changed, the DCW plate can be rotated so that the midrange driver remains always located at the bottom of the DCW. Remove the four corner screws of the DCW 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 1038CF can be used flush mounted into the control room wall, which offers some acoustical benefits. No enclosure edge diffraction will occur, resulting in an improved response, especially at midrange frequen-

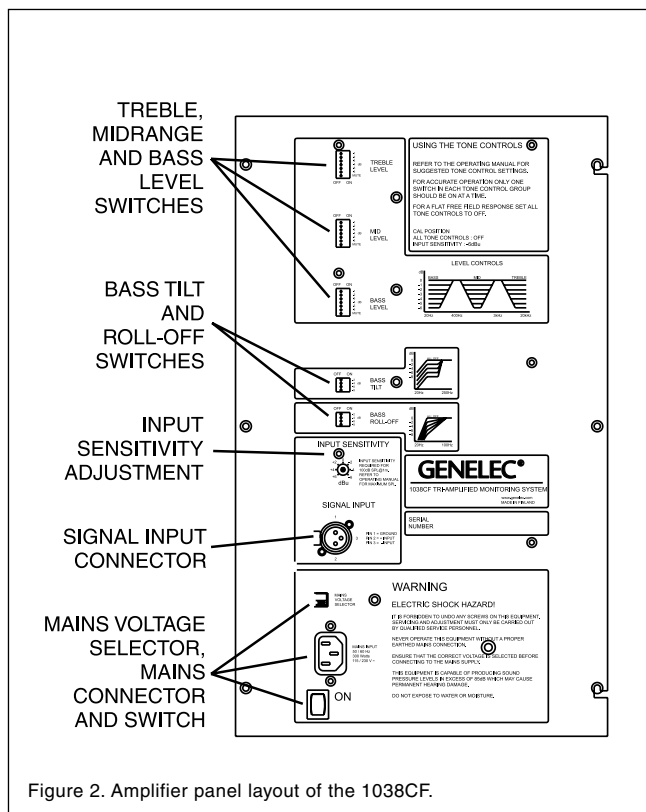


Figure 2. Amplifier panel layout of the 1038CF.

cies. Low frequency reflections from the wall behind the loudspeaker can be avoided, which improves the low frequency response and efficiency and allows the loudspeaker to work in half space conditions. In terms of installation and orientation, the loudspeaker's acoustical axis (See Figure 1.) should also point directly to the listening position. The loudspeaker should be vertically aimed so that the acoustical axis of the loudspeakers meet midway between the standing and seated listening position (1.4 m - 4'7" from the floor). In the horizontal plane the loudspeaker should be positioned according to the standard stereophonic (60 degrees between left-right channels) or multichannel (ITU-R BS.775-1) placement recommendation.

As the amplifier unit is located at the back of the loudspeaker enclosure, it must be removed before flush mounting the loudspeaker. The amplifier can be attached to a rack mount chassis (order code 1037-412) and placed in an equipment rack so that amplifier cooling and access to the controls is provided.

The ceiling, side walls and especially the rear wall should be acoustically absorbent at low frequencies. The wall in which the loudspeakers are mounted should have a high

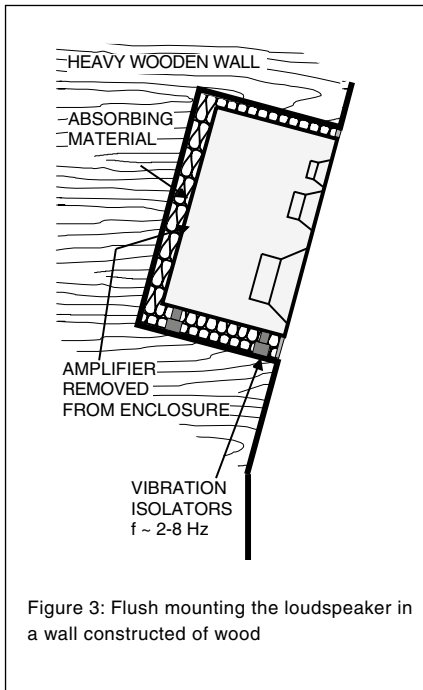


Figure 3: Flush mounting the loudspeaker in a wall constructed of wood

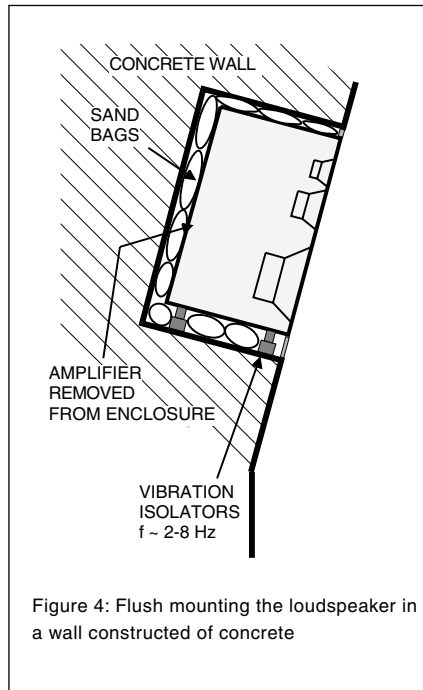


Figure 4: Flush mounting the loudspeaker in a wall constructed of concrete

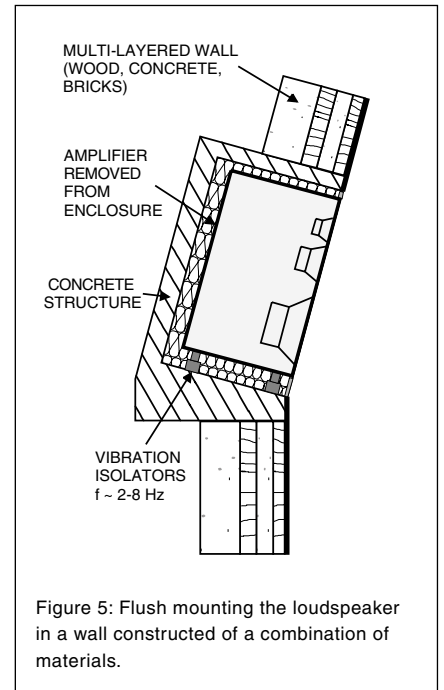


Figure 5: Flush mounting the loudspeaker in a wall constructed of a combination of materials.

acoustical mass to properly implement a low frequency radiation condition into half space and be angled so that the loudspeakers are correctly aimed. However, the loudspeakers should not be mounted too high as this increases the required vertical tilt of the loudspeaker (maximum tilt angle < 20 degrees) and reduces the optimum listening area. Great care should be taken over how the loudspeaker is mounted into the wall. Note the following:

A space 50 to 100 mm (2 to 4") wide can be left around the loudspeaker. Cover the space around the loudspeaker with a facing panel that should be fixed to the wall. Leave a gap of about 5 to 10 mm (1/4 to 1/2") between the loudspeaker and the panel. Fill this gap with a soft rubber gasket to allow for possible enclosure movement (see Figure 6).

Ensure that the loudspeaker cables can reach the rear of the loudspeaker enclosures.

Regardless of the type of front wall construction the loudspeaker enclosure should be mounted on vibration isolators, with a resonant frequency between 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 enclosure 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 3).

In a solid wall (e.g. concrete) structure, the space around the enclosure should be filled with either absorbent mineral wool or sand bags (see Figure 4).

The wall can also be constructed of a combination of materials to achieve high acoustical structural mass that will prevent low frequency sound propagation and provide high LF sound isolation (see Figure 5). Acoustic consultants will be able to provide details and design these structures.

Ensure that the enclosure is flush with the surface of the wall. Discontinuities in the loudspeaker 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 loudspeaker are less than 20 mm (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.

Overload indicators

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

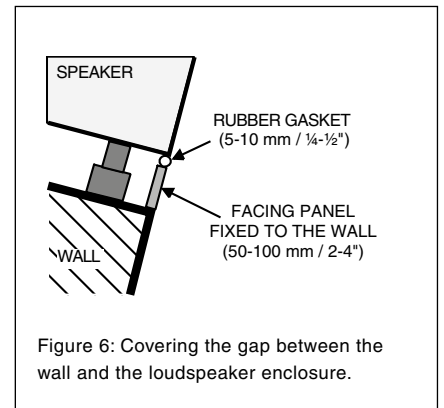


Figure 6: Covering the gap between the wall and the loudspeaker enclosure.

the LED stops blinking. If the red LED stays on constantly it indicates that the amplifier thermal protection is activated. Let the amplifier cool down and check that the ventilation around the amplifier is not blocked. There should be a clearance of more than 100 mm (4") between the amplifier face panel and any solid surface at the back.

Maintenance

No user serviceable parts are to be found within the amplifier unit. Any maintenance or repair should only be undertaken by qualified service personnel. Ensure that if fuse replacement is required, only fuses of the same voltage and current rating are used. Remember to disconnect the power supply by removal of the mains cable, before fuse replacement.

Safety considerations

Although the 1038CF monitors have 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 or an unearthed mains connection as this may compromise electrical safety.
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 loudspeaker or near it.
4. 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!

These loudspeakers are capable of producing sound pressure levels in excess of 85 dB, which may cause permanent hearing damage.

Guarantee

This product is supplied with two year guarantee against manufacturing faults or defects that might alter its performance. Refer to supplier for full sales and guarantee terms.

EC Declaration of Conformity

This is to certify that the Genelec Monitoring System 1038CF conforms to the following standards:

Safety:

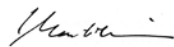
EN 60065: 2002 + A1:2006 / IEC 60065:2001 7th Edition + A1: 2005

EMC:

EN 55020 A2: 2008
 EN 55013: (2001)+ A1 : 2003 + A2: 2009
 EN 61000-3-2: 2006
 EN 61000-3-3 A2: 2005

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: 30-March-2009

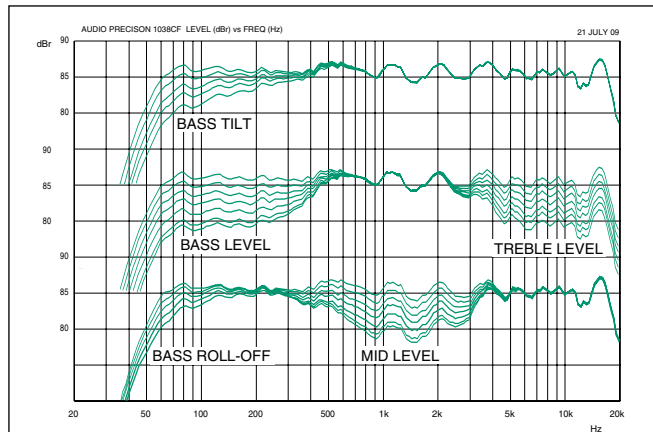


Figure 7: The curves above show the effect of the 'bass', 'mid' and 'treble' level controls, and the 'bass tilt' and 'bass roll-off' controls on the free field response of the 1038CF, measured at 2 m.

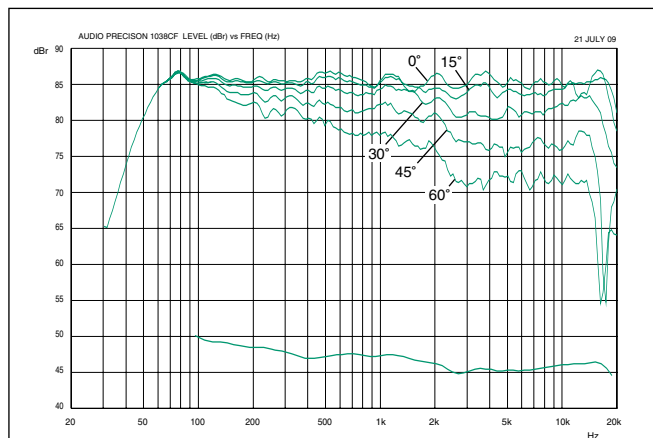


Figure 8: The upper curve group shows the horizontal directivity characteristics of the 1038CF in its vertical configuration measured at 2 m. The lower curve is a 1/6 octave power response measurement, derived from 144 individual directivity measurements.

1038CF Operating Manual

| SYSTEM SPECIFICATIONS | |
|--|--|
| | 1038CF |
| Lower cut-off frequency, -3 dB | ≤ 55 Hz |
| Upper cut-off frequency, -3 dB | ≥ 20 kHz |
| Free field frequency response | 57 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 ≥ 117 dB SPL |
| Maximum long term RMS acoustic output in same conditions with IEC weighted noise (limited by driver unit protection circuit) | @ 1 m ≥ 107 dB SPL |
| Maximum peak acoustic output per pair with music material | @ 2 m ≥ 124 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 Freq: 60...100 Hz > 100 Hz | < 1 % < 0.5 % |
| Drivers Bass Midrange Treble | 2 x 210 mm (8") cone 125 mm (5") cone 25 mm (1") metal dome All drivers are magnetically shielded |
| Weight | 39 kg (87 lb) |
| Dimensions Height Width Depth | 610 mm (24") 470 mm (18 1/2") 235 mm (9 1/4") |

| CROSSOVER SECTION | |
|--|--|
| | 1038CF |
| 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 | Adjustable from +6 to -6 dBu |
| Crossover frequency Bass/Mid Mid/Treble | 420 Hz 3.0 kHz |
| Crossover acoustical slopes | 18 - 24 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 @55 Hz |
| Bass Tilt control in 2 dB steps | from 0 to -8 dB & MUTE @80 Hz The 'CAL' position is with all tone controls set to 'off' and input sensitivity control to maximum. |

| AMPLIFIER SECTION | |
|--|---|
| | 1038CF |
| Bass amplifier short term output power Midrange amplifier short term output power Treble amplifier short term output power | 180 W at 4 Ohm load 120 W at 8 Ohm load 120 W at 8 Ohm load |
| Long term output power is limited by driver unit protection circuitry | |
| Slew rate | 80 V/us |
| Amplifier system THD at nominal output | < 0.08 % |
| Signal to Noise ratio, referred to full output Bass Midrange Treble | ≥100 dB ≥100 dB ≥100 dB |
| Mains voltage Mains voltage operating range | 100/200 or 115/230 V -10 to +6% |
| Power consumption (average) Idle Full output | 50 VA 300 VA |

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