1. General description

System

The Genelec 1038AC 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 screen. The Genelec 1038AC is totally compatible for use with standard Genelec 1038A active monitors, but it can also be used in all channels of a Surround Sound or stereo system. The 1038AC 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 film and video post-production, DVD mastering and medium sized control rooms. It also suits project studios, general purpose broadcasting, television studios and digital workstations. The 1038AC 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 stereo system to peak output levels in excess of 124 dB SPL at 2 m with program material. The 1038AC 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 subsonic signals. The crossover network is driven by an active balanced input stage fed by a 5 pin XLR. Variable input sensitivity allows for accurate level matching to the mixing console.

Amplifiers

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

2. Installation

Each 1038AC monitor is supplied with a separate amplifier unit in a 12 U 19" rack mount chassis, a 10 meter connecting cable set, a mains cable and an operating manual. Once unpacked, place the loudspeaker in its required listening position, taking note of the line of the listening axis (see figure 3) and install the amplifier into a standard 19" rack. 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. It is also necessary to leave 5 cm (2") of space above and below the amplifier to ensure adequate cooling.

Before connecting up, ensure that the mains switch is off (see figure 4). 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 connector in and turn it clockwise until the retaining clip clicks.

The audio input to the amplifier is made via a 10 kOhm balanced XLR connector, however, unbalanced leads may be used as long as pin 3 is grounded to pin 1 of the XLR (see figure 2). Once the connections have been made, the speakers are ready to be powered-up.

<table>
<thead>
<tr>
<th>Speaker Mounting Position</th>
<th>Bass Roll-off</th>
<th>Bass Tilt</th>
<th>Bass Level</th>
<th>Midrange Level</th>
<th>Treble Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat anechoic response</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Free standing in a damped room</td>
<td>None</td>
<td>-2 dB</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Free standing in a reverberant room</td>
<td>None</td>
<td>-2 dB</td>
<td>-2 dB</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Soffit mounted in a control room wall</td>
<td>None</td>
<td>None</td>
<td>-4 dB</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>In a corner</td>
<td>-2 dB</td>
<td>-2 dB</td>
<td>-2 dB</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Figure 1. Suggested tone control settings for different acoustic environments

Figure 2. XLR connection if unbalanced input is required.

Figure 3. Speaker cabinet dimensions and acoustic axis in horizontal and vertical mounting positions.
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 4). A small screwdriver is needed for the adjustment. The manufacturer default setting for this control is -6 dBu (fully CW) 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 switches 'bass tilt', 'bass roll-off', 'bass level', 'mid level' and 'treble level' on the rear panel of the amplifier. The manufacturers default settings for these controls are 'All Off' to give a flat anechoic response. See Figure 1 for suggested tone control settings in differing acoustic environments.

Figure 5 overleaf 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 1038AC can be used vertically or horizontally. If the speakers orientation is changed vertically (see figure 2). 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 to the appropriate direction and remount the screws.

Flush mounting

The 1038AC is recommended to be flush mounted into the control room wall thereby offering some acoustical benefits. No cabinet edge reflections will occur, resulting in an improved response, especially in the midrange. Reflection behind the speaker can be avoided, which improves the bass frequency response and allows the bass drivers to work in half space conditions, thus improving low frequency efficiency and response. The speakers acoustical axis (See figure 3.) should also point directly to the listening position.

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 blinking.

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 around the amplifier is not blocked. There should be a clearance of at least five centimeters above and below the amplifier and the amplifier front should be facing into free air.

3. Maintenance

No user serviceable parts are to be found within the amplifier unit. Any maintenance or repair of the 1038AC unit should only be undertaken by qualified service personnel. Ensure that if fuse replacement is required, only fuses of the appropriate voltage and current ratings are used. Always disconnect the mains cable before replacing the fuse.

4. Safety Considerations

Although the 1038AC 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:

- Servicing and adjustment should only be performed by qualified service personnel. Opening the amplifier’s rear panel is strictly prohibited except by qualified service personnel who are aware of the hazards involved.
- It is forbidden to use this product with an unearthed mains cable, which may lead to personal injury.
- Do not expose the loudspeaker, amplifier or cables to water or moisture.

5. Accessories

Order code

Opt 09 Grille 1038-439

6. Guarantee

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

Figure 4. Amplifier panel layout.
Figure 5. The curves above left show the effect of the 'bass tilt', 'bass level' and 'bass roll-off' controls on the free field response. The curves to the right show the effect of the treble and midrange 'level' controls.

Figure 6. The curve group above shows the horizontal directivity characteristics of 1038AC in its vertical configuration measured at 1m.

SYSTEM SPECIFICATIONS

- Lower cut-off frequency, -3 dB: \( \leq 33 \) Hz
- Upper cut-off frequency, -3 dB: \( \geq 20 \) kHz
- Free field frequency response of system: \( 35 \) 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:
  - @1m: \( \geq 120 \) dB SPL
  - @0.5m: \( \geq 126 \) dB SPL
- Maximum long term RMS acoustic output in same conditions with IEC-weighted noise (limited by driver unit protection circuit):
  - @1m: \( \geq 116 \) dB SPL
  - @0.5m: \( \geq 122 \) dB SPL
- Self generated noise level in free field @1m on axis: \( \leq 15 \) dBA
- Harmonic distortion at 95 dB SPL at 1m on axis:
  - freq. 50...100 Hz: \( < 1\% \)
  - freq. >100 Hz: \( < 0.5\% \)
- Drivers:
  - Bass: 2 x 250 mm (10") cone
  - Mid: 130 mm (5") cone
  - Treble: 25 mm (1") metal dome
- Speaker weight: 60 kg (130 lb)
- Speaker dimensions (horizontal mounting):
  - Height: 350 mm (13 5/8")
  - Width: 910 mm (35 7/8")
  - Depth: 453 mm (17 1/8")

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

AMPLIFIER SECTION

Bass amplifier output power with an 4 Ohm load:
- Short term: 2 x 200W
Midrange amplifier output power with an 8 Ohm load:
- Short term: 120W
Treble amplifier output power with an 8 Ohm load:
- Short term: 20W

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

- slew rate: \( 80\text{V/\mu s} \)
- Amplifier system distortion at nominal output:
  - THD: \( \leq 0.05\% \)
  - SMPTE-IM: \( \leq 0.05\% \)
  - CCIF-IM: \( \leq 0.05\% \)
  - DIM 100: \( \leq 0.05\% \)
- Signal to Noise ratio, referred to full output:
  - Bass: \( \geq 100 \) dB
  - Midrange: \( \geq 100 \) dB
  - Treble: \( \geq 100 \) dB

CROSSOVER SECTION

- 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
  - for maximum short term output of 120 dB SPL @1m: variable from +26 to +14 dBu
- Subsonic filter below 33 Hz:
  - 18 dB/octave
- Ultrasonic filter above 25 kHz:
  - 12 dB/octave
- Crossover frequency:
  - Bass/Mid: 410 Hz
  - Mid/Treble: 3 kHz
- Crossover acoustical slopes:
  - 24 - 32 dB/octave
- Crossover level control operating range in 1 dB steps:
  - Bass: from 0 to -6 dB
  - Mid: from 0 to -6 dB
  - Treble: 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.

Genelec Oy, Olvitie 5 FIN - 74100 IISALMI, FINLAND Phone: +358 - 17 - 83881 Telefax: +358 - 17 - 812 267 Email: genelec@genelec.com Web: www.genelec.com

Genelec Inc., 7 Tech Circle NATICK, MA 01760, U.S.A. Phone: +1 508 652 0900 Fax: +1 508 652 0909 Email: genelec.usa@genelec.com

Copyright Genelec Oy 10/2000
All data subject to change without prior notice