# 1238AC

Operating Manual 操作手册

Genelec 1238AC
Smart Active Monitor

GENELEC®

# Genelec 1238AC Operating Manual

## Introduction

Congratulations 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 more.

Our design philosophy is based on sustainability and environmental values, where industrial design serves our products' 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 1238AC is a three-way monitoring system for medium sized control rooms. It performs well as free-standing monitor as well as flush-mounted in control room walls. It is suited for recording, film and video post-production, broadcast monitoring as well as for mastering.

The unique Directivity Control Waveguide™ (DCW™) technology by Genelec provides excellent stereo imaging and neutral frequency response even in difficult acoustics.

With program material at a 2 meter listening distance, the fast low distortion amplifiers drive a stereo system to peak sound levels in excess of 124 dB SPL.

The 1238AC is fully compatible with Genelec Loudspeaker Manager GLM™ and the proprietary Genelec control network. It can be used with 8200-series SAM monitors and 7200-series SAM subwoofers in the same network.

## Drivers and Cabinet Construction

The 1238AC reproduces low frequencies with dual 250 mm (10 in) woofers in a 110 litre bass reflex enclosure. The proprietary 130 mm (5 in) direct radiating midrange driver, and a 25 mm (1 in) metal dome tweeter are acoustically loaded by the proprietary Directivity Control Waveguide. All drivers are magnetically shielded.

## Amplifiers and Signal Processing

The 1238AC uses the RAM-L amplifier unit. The RAM-L is designed to be mounted in a 19 inch rack. Digital signal processing in the RAM-L amplifier unit is done with high precision algorithms, and includes driver and amplifier overload protection. The room response compensations include highly flexible parametric filters, level alignment, and acoustic delay compensation. These allow accurate matching to all console output sections and room acoustics.

## Cables

Each 1238AC is delivered with the following cable kit:

- One mains cable
- Two 10 m (32 ft 9 in) 4-pole Speakon cables
- One 10 m (32 ft 9 in) RJ45 cable
- One 5 m (16 ft 4 in) RJ 45 cable

The 10 m cables are designed to go between the amplifier and the monitor enclosure. If you need to make custom length cables for this, please connect the Speakon cables pin to pin and see Table 1 for recommended wire gauges.

## Operating Environment

These monitors and their RAM-L amplifiers are designed for indoor use only. The permissible ambient

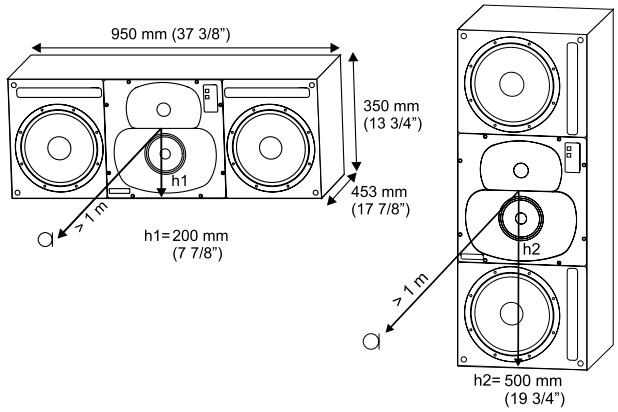


Figure 1. The location of the acoustic axis.

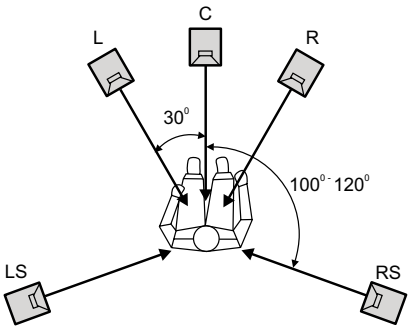


Figure 2. Recommended placement and alignment of monitors in a 5-channel system (ITU-R BS.775-1)

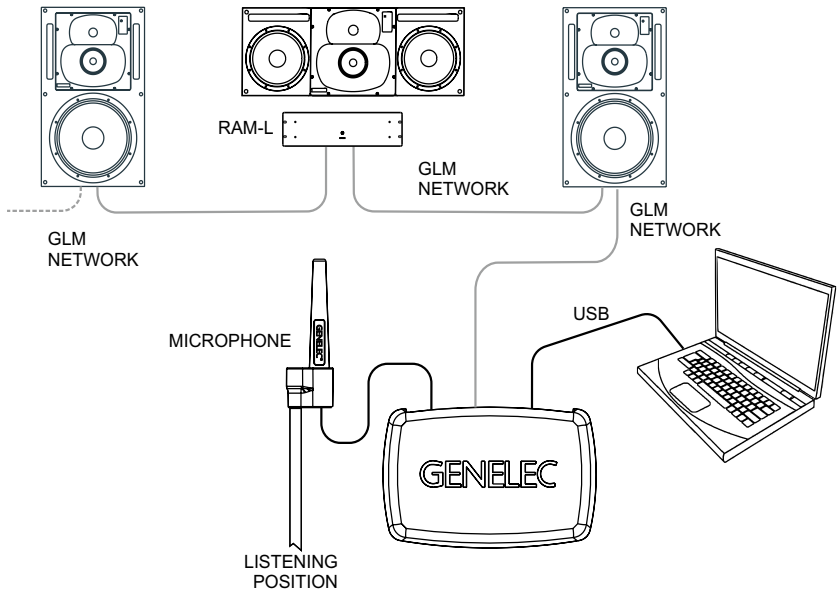


Figure 3. GLM network cabling

| Cable gauge | Max. length |
|---|---|
| 2.0 mm² (14 AWG) | 30 m (100 ft) |
| 3.3 mm² (12 AWG) | 40 m (130 ft) |
| 5.3 mm² (10 AWG) | 60 m (200 ft) |

Table 1. Recommended cable thicknesses for different lengths of signal cable

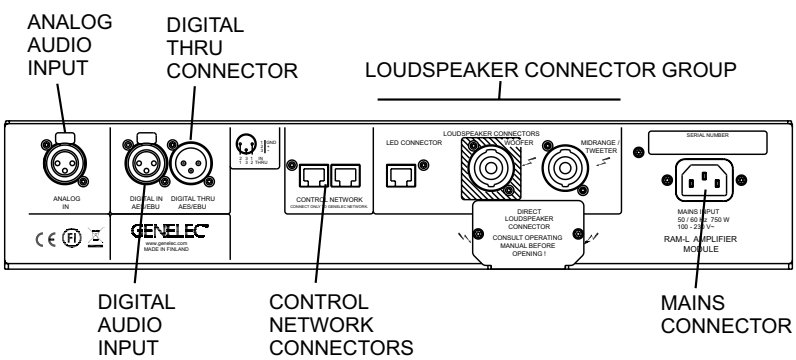


Figure 4. Connector panel of the RAM-L amplifier.

temperature is 15-35 degrees Celsius (50-95°F) and permissible relative humidity between 20% and 80%. Humidity condensation on the product is not allowed during use. For instance, if the product has been stored or transported in a cool environment and then taken into a warm room, it must be allowed to warm up to the ambient temperature before connecting to mains power.

## Mounting Considerations

Place the monitor so that its acoustic axes are aimed towards the listening position (see Figures 1 and 2). Place monitors with left-right symmetry and at an equal distance from the listening position. Acoustic reflections from objects close to monitors and the listening position can cause colouration and blurring of the sound image. Symmetrical positioning of reflective objects maintains good stereo imaging. When soffit (flush) mounting, the wall surface should extend to the monitor, forming a continuous surface.

### Minimum Clearances

The ambient temperature around the

amplifier must not exceed 35 degrees Celsius (95°F).

When the RAM-L amplifier is mounted in a 19 in rack, the minimum free space is 1/2 U both above and below the amplifier and both sides of the amplifier fully open to enable free movement of air. Use the included rack mount front plate to ensure sufficient space above and below the amplifier.

When the RAM-L is mounted on a table, shelf or similar solid surface, there must be a free space of at least 250 mm (10 in) above and 10 cm (4 in) on both sides of the amplifier. Free air flow must be possible in the front side of the amplifier.

## Description Of Connectors

### "MAINS INPUT" Connector

Connect to the mains supply. The RAM-L amplifier accepts any AC 50/60 Hz mains voltage between 100 and 230 Volts.

### "DIGITAL IN AES/EBU" Connector

The monitor defaults to reproducing an analog input signal. The digital audio AES/EBU input is selected automatically when a valid digital audio signal is presented. Use GLM software to define the AES/EBU subframe to monitor.

### "DIGITAL THRU AES/EBU" Connector

This output carries an unaltered copy of the digital audio signal and can be used for daisy-chaining the signal up to three additional SAM monitors or subwoofers.

### "ANALOG IN" Connector

The maximum input level of the analog input is +25.0 dBu. The analog input must not be overloaded, otherwise distortion will result. When the maximum input is exceeded, the enclosure front panel light turns red, indicating the overload.

The sensitivity of the monitor system is set using the GLM software. Coming from the factory, the analog input is set to the highest sensitivity, resulting in a sound output of 100 dB SPL for a -6 dBu analog input signal.

### "CONTROL NETWORK" Connectors

The RJ45 sockets connect the monitor to the proprietary Genelec Loudspeaker Manager™ (GLM™) network. Do not connect to Ethernet LAN.

### "Loudspeaker Connectors" Group

These connectors are used for connecting the rack mounted RAM-L amplifier to the monitor enclosure.

1. "LED" Connector
   This RJ45 socket is a connection for the front panel warning LED.
2. "Woofer" Connector
   A standard four-pole Speakon cable connects to the woofer.
3. Midrange/Tweeter" Connector
   A standard four-pole Speakon cable connects to the the midrange and tweeter.

## Connecting Cables

Insert the connectors into the appropriate sockets "WOOFER", "MIDRANGE/TWEETER" and "LED CONNECTOR" found on the rear panel of the amplifier unit and the rear of the monitor. Note that each RAM-L amplifier is individually calibrated for use with the monitor enclosure that it is delivered with and marked with the same serial number. Do not mix these amplifier/monitor pairs.

Insert the connectors into the sockets and turn the connectors clockwise. The connectors lock automatically. The electrical connections are only made when the connectors are fully inserted.

To remove the signal connectors pull the release lever on the connector and turn the connector counterclockwise simultaneously. The connector can now be removed from the socket.

## Set-up and Use

### Monitor calibration and setup

The 1238AC is set up using the GLM software. The setup is fast and consists of the following steps:

1. Run a CAT5 (RJ45) cable from the monitor control network to the next monitor.
2. Run the final cable to control network input of the GLM Adapter device.
3. Connect the GLM Adapter device to your computer USB connector. The cable is a part of the GLM User Kit.
4. Place the Genelec measurement microphone at the listening location of the engineer, on a stand, with the microphone pointing upwards and the microphone top at the height of the engineers ear in normal working position. The microphone is a part of the GLM User Kit.
5. Run the microphone cable to the microphone input in the GLM Adapter device.
6. Download GLM software at the Genelec web site (www.genelec.com). Install the GLM software.
7. Follow the GLM software instructions to measure and set up your monitors.
8. If you plan not to use a computer for controlling the monitors, use the GLM software to write the settings into the monitors ("Store the Settings").

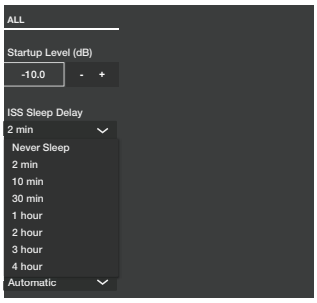

Figure 5. Selecting ISS setting.

## Recommendations for AES/EBU Audio

For a digital input signal of –30 dB FS, the 1238AC monitor will produce a 100 dB sound level (SPL) at 1 meter distance, in free space. The sensitivity of the monitor system is set using the GLM software.

It is advantageous to keep the maximum incoming digital audio signal level high, near to 0 dBFS. It may be useful to lower the internal GLM level control. This enables maintaining high digital resolution in the digital source.

Single-wire mode of AES/EBU is the default and the older dual-wire mode is automatically detected if used at the source.

The standard AES/EBU cable carries two channels of audio, called A and B. As a default, both A and B subchannels are reproduced by the monitor. GLM software is used to set up the monitor to specific channel assignments.

## RAM-L Amplifier Power Button

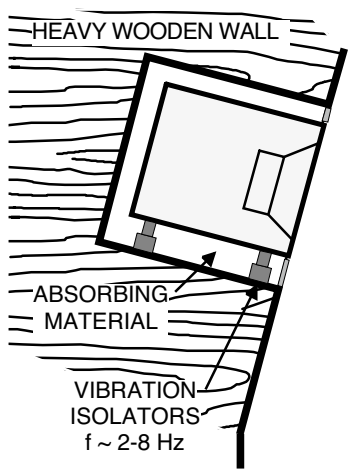


Figure 6. Flush mounting the speaker in a wall constructed of wood

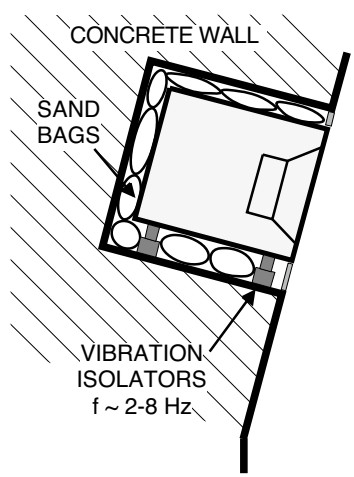


Figure 7. Flush mounting the speaker in a wall constructed of concrete

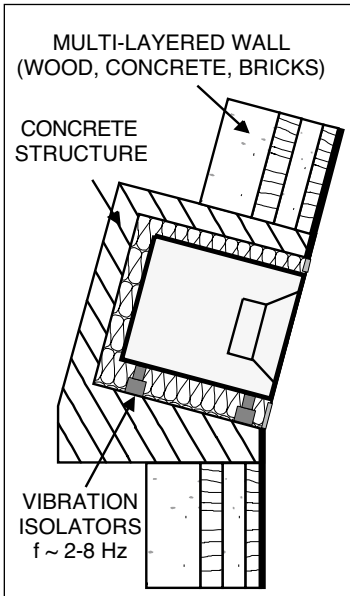


Figure 8. Flush mounting the speaker in a wall constructed of a combination of materials.

The power button in the middle of the RAM-L amplifier front panel controls several functions.

A short press of the power button turns RAM-L on or off. Turning on, the power button light flashes rapidly, and lights on steadily when the turn-on has been completed.

Testing modes are explained later in this manual.

## Setting ISS™

The Intelligent Signal Sensing™ (ISS™) puts the monitor to a power-saving stand-by mode automatically. The factory setting for ISS is "OFF." The ISS can be activated using the GLM software (see Figure 5). When ISS is active, if no audio signal is sensed during the selected time, the monitor powers down. The monitor will power up again once a signal is detected. The ISS setting is applied to all ISS-enabled monitors in the currently selected Setup.

## Front Panel Light Functions

The green light on the DCW panel of a 1238AC enclosure indicates normal operation. A yellow light indicates certain activities when the GLM control software is used. The light turns red in an overload condition. The overload light (red) is activated by several events:

1. Exceeding the maximum input of the analog input
2. Reaching close to the digital input maximum (high likelihood of digital clipping)
3. Overload of drivers or amplifier, or clipping in the power amplifier
4. An error detected in the AES/EBU audio data

If a red warning light appears on the monitor enclosure, turn the source level down. Ensure that there are no bit errors in the AES/EBU digital audio data transmission.

## Flush Mounting the Monitor Enclosure

Flush mounting offers acoustical benefits. No cabinet edge diffraction will occur. Low frequency reflections from the wall behind the monitor can be avoided. The monitor's acoustical axis (Figure 1) should point to the seated listening position. The wall in which the monitors are mounted should be stiff and heavy. The monitors should not be mounted too high (maximum tilt angle < 15 degrees).

A space 50 to 100 mm (2 to 4 in) wide can be left around the monitor but this space should be covered with a panel in the front. Leave a gap of 5 to 10 mm (¼ to ½ in) between the monitor and the panel. Fill this gap with a soft rubber gasket (see figure 14). The monitor should be mounted on vibration isolators. The resonant frequency of movement for the mounted monitor should be between 2 to 8 Hz.

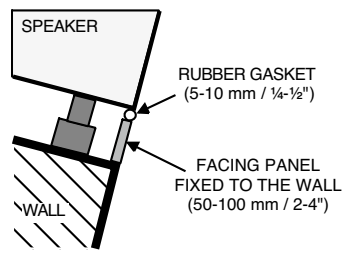


Figure 9. Covering the gap between the wall and the monitor enclosure.

An empty cavity in the wall should be filled with absorbent mineral wool or foam plastic. A wooden wall structure must be heavily braced (see figure 11). In a solid (e.g. concrete) wall structure, the space around the cabinet should be filled with absorbent mineral wool or sand bags (see Figure 12).

Ensure that the cabinet is flush with the surface of the wall. If a decorative cloth frame is used the edges adjacent to the monitors must be less than 20 mm (3/4 in) deep. The cloth must be acoustically transparent. Genelec-approved cloth grilles are available.

| Button press | Function | Notes |
|---|---|---|
| Short press | Power on, power off | |
| Long press | Enter special mode, exit special mode | Press longer than 5 seconds |
| Special mode: one short press | Mode 1: AES/EBU channel A selected, room-related calibration in use | Power button light blinks once every few seconds |
| Short press advances | Mode 2: AES/EBU channel B selected, room-related calibration in use | Power button light blinks twice every few seconds |
| Short press advances | Mode 3: AES/EBU channel A selected, factory calibration in use | Power button light blinks three times every few seconds |
| Short press advances | Mode 4: AES/EBU channel B selected, factory calibration in use | Power button blinks four times every few seconds |
| Special selection: long press | Once a special mode 1-4 has been selected, a long press selects the special mode | Press longer than 5 seconds; the RAM-L selects the special mode and starts playing. To exit the special mode turn off the amplifier. |
| Special mode: no press for 60 seconds | RAM-L exits the special mode and turns off | Automatically happens if user does not press the power button |

Table 2. Power button actions to activate testing modes

## Testing Mode

Once on, when the power button is pressed for a long time, the RAM-L enters a mode for system testing. This special mode is intended for system debugging and testing. When the RAM-L is turned off, the special mode is reset. Upon restarting the RAM-L the current standard settings stored by GLM software are restored.

Test mode selection blinks the power button light (see Table 2). A special mode is activated by a long press on the power button. In a special mode the power button light remains on but blinks off 1-4 times indicating the mode currently selected.

The testing modes are not intended for continued operation. Use GLM software to set up permanent settings for 1238AC.

## Safety Considerations

The 1238AC has been designed in accordance with international safety standards. To ensure continued safe operation and to maintain the monitor under safe operating conditions, the following warnings and precautions must be observed:

1. Servicing and adjustment must only be performed by qualified service personnel. The monitor enclosure or the amplifier enclosure must not be opened.
2. Do not use this product with a mains cable with no protective earth conductor, or a mains connection without the protective earth contact, as this may lead to personal injury.
3. To prevent fire or electric shock, do not expose the unit to water or moisture.
4. Do not place any objects filled with liquid, such as vases or water pipes on the amplifier or near it.
5. 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.
6. Free flow of air around the amplifier is necessary to maintain sufficient cooling. Do not obstruct airflow around the amplifier.

**WARNING!**

The Genelec 1238AC monitor is capable of producing sound pressure levels in excess of 85 dB, which may cause permanent hearing damage.

## Maintenance

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

## Guarantee

The Genelec 1238AC is supplied with a two year guarantee against manufacturing faults or defects that might alter the performance of the monitors. Refer to supplier for full sales and guarantee terms.

## Accessories

A wide selection of accessories is available for Genelec monitors. Consult the Accessories Catalogue on www.genelec.com or your local distributor/dealer for up-to-date information.

## Compliance to FCC Rules

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

1. This device may not cause harmful interference
2. 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

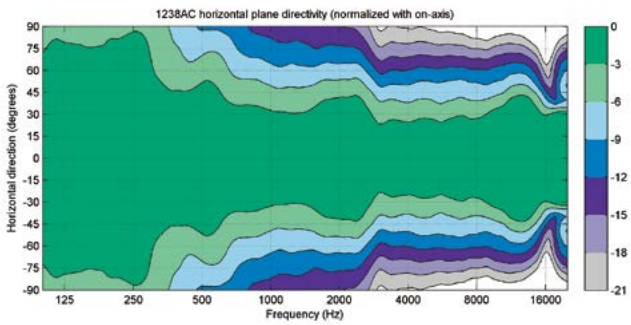


Figure 10. Horizontal directivity characteristics of the 1238AC.

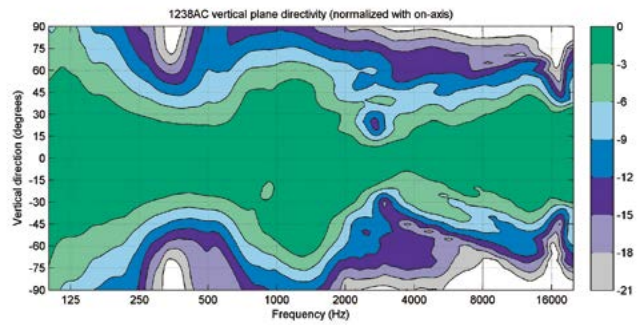


Figure 11. Vertical directivity characteristics of the 1238AC.

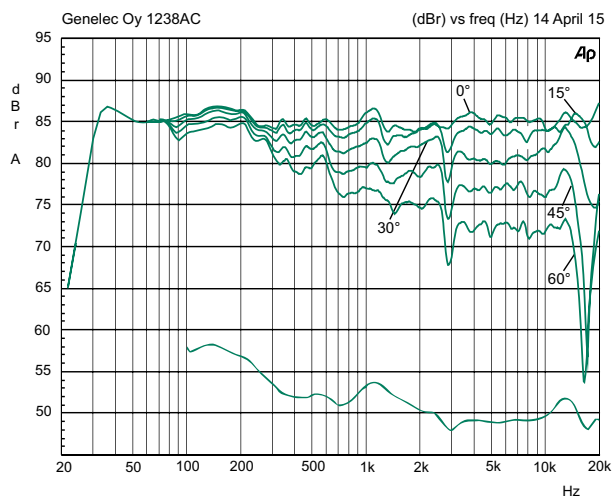


Figure 12. Horizontal directivity characteristics of the 1238AC. The lower curve is the power response graph.

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:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. 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.

# 1238AC Operating Manual

## SYSTEM SPECIFICATIONS

| | 1238AC |
|---|---|
| Lower cut-off frequency, –3 dB | < 33 Hz |
| Upper cut-off frequency, –3 dB | > 21 kHz |
| Free field frequency response, ± 2.0 dB | 35 Hz – 20 kHz |
| Maximum short term sine wave acoustic output on axis in half space, averaged from 100 Hz to 3 kHz @ 1 m | > 121 dB SPL |
| Maximum long term RMS acoustic output in the same conditions with IEC weighted noise (limited by driver protection circuit) @ 1 m | > 116 dB SPL |
| Maximum peak acoustic output per pair in a listening room with music material @ 2 m | > 124 dB |
| Self generated noise level in free space at 1 m on axis (A-weighted) | < 10 dB |
| Harmonic distortion at 95 dB SPL at 1 m on axis | |
| Freq: 50…200 Hz | < 1 % |
| > 200 Hz | < 0.5 % |
| Drivers | |
| Bass | 2 x 250 mm (10 in) cone |
| Midrange | 125 mm (5 in) cone |
| Treble | 25 mm (1 in) metal dome |
| All drivers are magnetically shielded | |
| Weight | |
| Monitor enclosure | 60 kg (130 lb) |
| Amplifier | 6 kg (13 lb) |
| Dimensions (monitor enclosure) | |
| Height | 350 mm (13 3/4 in) |
| Width | 950 mm (37 3/8 in) |
| Depth | 453 mm (17 7/8 in) |
| Amplifier dimensions | |
| Height (front panel) | 3U 132 mm (5 3/6 in) |
| Height (amplifier casing) | 80 mm (3 1/8 in) |
| Width (front panel) | 483 mm (19 in) |
| Width (amplifier casing) | 425 mm (16 3/4 in) |
| Depth | 252 mm (9 15/16 in) |

## AMPLIFIER SECTION

| | 1238AC |
|---|---|
| Bass amplifier short term output power | 500 W |
| Midrange amplifier short term output power | 250 W |
| Treble amplifier short term output power | 200 W |
| Long term output power is limited by driver protection circuitry | |
| Amplifier system THD at nominal output | <0.01 % |
| Signal to Noise ratio, referred to full output | |
| Bass | >115 dB |
| Midrange | >115 dB |
| Treble | >115 dB |
| Mains voltage | 100-240 VAC, 50/60 Hz |
| Power consumption | |
| Standby | <0.5 W |
| Idle | 25 W |
| Full output | 750 W |

## SIGNAL PROCESSING SECTION

| | 1238AC |
|---|---|
| Analog signal input connector XLR female, balanced 10 kOhm | pin 1 gnd<br>pin 2 non-inverting<br>pin 3 inverting |
| Maximum analog input signal | +25.0 dBu |
| Analog input sensitivity (100 dB SPL at 1 m) | -6 dBu |
| Analog input gain selection | 0, +6, +12, +18 dB |
| Digital signal input connector XLR female 110 Ohm | AES/EBU Single Wire or Dual Wire |
| Digital signal output / Thru connector XLR male 110 Ohm | AES/EBU Single Wire or Dual Wire |
| Digital audio input | |
| Word length | 16 - 24 bits |
| Sample rate | 32 - 192 kHz |
| Digital input sensitivity (100 dB SPL at 1 m ) | -30 dBFS |
| Digital input gain selection | 0, +6, +12, +18 dB |
| Control network | Proprietary GLM™ network |
| Type | |
| Connection | 2 RJ45, CAT5 cables |
| Crossover frequency | |
| Bass/Mid | 420 Hz |
| Mid/Treble | 3.0 kHz |
| GLM™ software frequency response adjustment | |
| Notch filters | 4 LF and 2 HF |
| Shelving filters | 2 LF and 2 HF |
| System calibration | Genelec GLM AutoCal™ |

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# Genelec 1238AC 操作手册

## 介绍

感谢您选择 Genelec 真力!

自 1978 年成立以来，我们一直遵循着一个理念——设计和制造最好的有源音箱，在各类声学环境中，提供真实、自然、精准的声音重放。在不懈追求这一终极目标的过程中，真力重视研发投入，不断开发创新音箱单元技术、电子电路、箱体设计等。

我们一直秉承可持续发展和绿色环保的理念，产品的工业设计服务于声学性能。每一只监听音箱，都于芬兰工厂中精心设计和制造，为您提供可长期稳定运行的真力监听音箱。

请认真阅读此操作手册，祝您拥有一段美好的听觉体验!

## 系统描述

真力 1238AC 为三分频监听音箱，适用于中型控制室。无论是独立摆放或者嵌入到墙体内(音箱面与墙面齐平）都能获得良好的性能。它们适用于录音、影视后期、转播以及母带制作等专业应用场景。

借助真力特有的指向性控制波导技术(DCW™），即使在复杂的声学环境中，音箱也能为您提供出色的声像定位和中性的频率响应。

在距离音箱 2 米处监听音乐素材时，失真极低的功放可驱动以 1238AC 组成的立体声监听系统，重放出超过 124 dB SPL 的声音。

1238AC 可与真力音箱管理软件（GLM™）以及真力音箱控制网络完美兼容，并可以与 8200 系列和 7200 系列音箱在同一网络中使用。

## 驱动单元与箱体结构

1238AC 的 110 升倒相式箱体内包含两个 250 毫米（10 英寸）的低音单元、一个真力专有的 130 毫米（5 英寸）直接辐射式中音单元和一个 25 毫米（1 英寸）金属球顶型高音单元，并搭配真力专有的指向性控制波导。音箱内所有单元均经过磁屏蔽。

## 功放与信号处理

1238AC 搭载 RAM-L 功率放大器。RAM-L 功放可安装在标准 19 英寸宽的机柜中。RAM-L 功放的数字信号处理部分采用高精度算法，功放内部包含驱动单元和功放过载保护电路。房间声学响应补偿包括极为灵活的参量滤波器、电平校准和声学延时补偿。通过这些可精准匹配所有调音台的输出部分及各类房间声学环境。

## 线缆

每只 1238AC 的包装箱中配备以下线缆：

- 1 根电源线
- 2 根长度 10 米（32 英尺 9 英寸）的四芯音箱线（Speakon）
- 1 根长度 10 米（32 英尺 9 英寸）的网线（RJ45）
- 1 根长度 5 米（16 英尺 4 英寸）的网线（RJ45）

长度为 10 米的线缆用于连接箱体和功放。如需为此制作定制长度的线缆，请确保线缆两端音箱插头（Speakon）的针脚一一对应，并参阅表 1 了解不同长度音箱线的建议规格。

## 使用环境

音箱及其 RAM-L 功放仅限室内使用。允许的环境温度为 15-35°C（50-95°F），相对湿度为 20% 至 80%。当产品出现冷凝现象时，请勿使用。例如，当产品从温度较低的储存或运输环境转移至温暖的环境中时，待产品的温度升至室温后再通电开机使用。

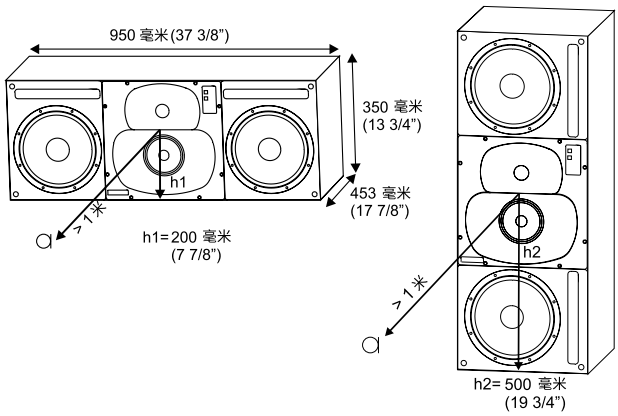


图 1. 声轴的位置。

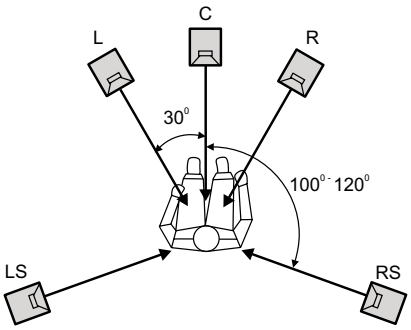


图 2. 多声道音箱系统推荐的摆位方式 (ITU-R BS.775-1)。

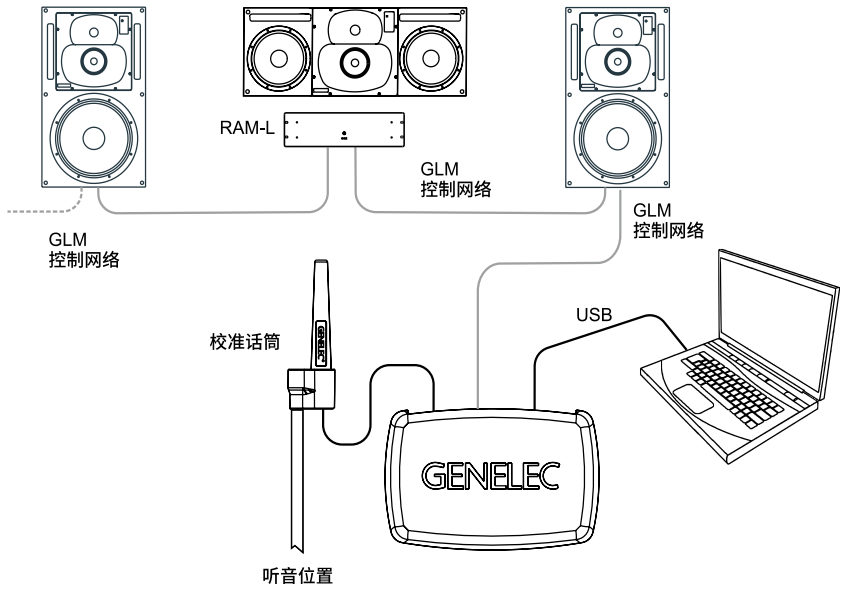


图 3. GLM 控制网络连接示意图。

| 线缆规格 | 最大长度 |
|---|---|
| 2,0 平方毫米 (14 AWG) | 30 米(100 英尺) |
| 3,3 平方毫米 (12 AWG) | 40 米(130 英尺) |
| 5,3 平方毫米 (10 AWG) | 60 米(200 英尺) |

表 1. 不同长度线缆对应的建议线规

## 安装注意事项

请将音箱的声轴 (见图 1 、2) 指向听音位置，将音箱左右对称摆放，并确保每只音箱到听音位置的距离相等。靠近音箱和听音位置的物体产生的声反射，会造成声染色和声像定位模糊。将反射体对称摆放，有助于保持良好的立体声像。嵌入安装时，音箱表面应与墙面保持齐平，使其形成一个连续的平面。

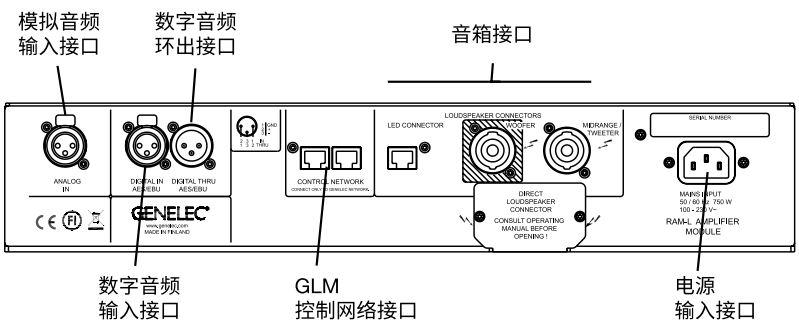


图 4. RAM-L 功放的接口面板。

## 与墙面或其他物体之间的最小距离

功放周围的环境温度不得超过 35 摄氏度 (95 华氏度)。

当 RAM-L 功放安装在 19 英寸机柜中时，功放上下方需留出至少 1/2 U 的空间，两侧须完全开放以确保空气流动。安装时，请使用包装箱中附带的机架安装面板，以确保功放上下方留有足够的空间。

当 RAM-L 功放安装在桌子、架子或类似的硬表面上时，功放上方须留有至少 25 厘米 (10 英寸) 的空间，并为两侧留出 10 厘米 (4 英寸) 的空间。功放的前方应确保空气流动。

## 接口说明

### 电源输入 (MAINS INPUT)

连接至电源。RAM-L 功放可接受 100 至 230 伏之间，50/60Hz 的交流电电源。

### 数字输入 (DIGITAL IN AES/EBU)

音箱默认重放模拟输入信号，当检测到有效的数字音频信号时，音箱会自动切换至 AES/EBU 数字输入。您可以在 GLM 软件中设置重放的 AES/EBU 通道 (通道 A 或通道 B) 。

### 数字环出 (DIGITAL THRU AES/EBU)

当以菊花链方式连接多只音箱时，此接口用于将数字输入信号直通输出至下一只音箱，最多可额外连接三只 SAM 系列音箱。

### 模拟输入 (ANALOG IN)

音箱的最大模拟信号输入电平为 +25 dBu，超过此范围会导致失真。当音箱的输入信号超过最大输入电平时，音箱前面板的电源指示灯会变成红色，表示此时信号过载。

您可通过 GLM 软件设置音箱的灵敏度。出厂时，模拟输入的灵敏度默认设置为最大：当模拟信号的输入电平为 -6 dBu 时，可在自由场中距离音箱 1 米处得到 100 dB SPL 的声压级。

### GLM 网络接口 (CONTROL NETWORK)

RJ45 网络接口，用于连接 GLM 控制网络。请勿将其连接至路由器、交换机等局域网设备。

## 音箱接口

当 RAM-L 功放单独安装在设备机柜中时，将会使用这些接口。

**1. LED 接口**
这个 RJ45 接口用于连接音箱前面板电源指示灯。

**2. 低音单元接口 (Woofer)**
标准四芯 Speakon 接口，用于连接低音单元。

**3. 中音/高音单元接口 (Midrange/Tweeter)**
标准四芯 Speakon 接口，用于连接中音单元和高音单元。

## 线缆连接

将功放后面板与音箱背板上的“低音单元”、“中音/ 高音单元”、“LED 接口”插座通过音箱线和网线对应连接。请注意，每只音箱与其专属的 RAM-L 功放在出厂时经过匹配校准，并标有相同序列号，切勿混用。

将 Speakon 插头插入插座并顺时针旋转，插头将自动锁定。只有当插头完全插入并旋转锁定后，功放和音箱之间才会连通。

如需拔除 Speakon 插头，请拨动插头上的释放杆并逆时针旋转插头，即可将插头从插座上移除。

## 设置和使用

### 音箱的自动校准和设置

真力 1238AC 需通过 GLM 软件进行设置，设置过程十分便捷，包括以下步骤：

1. 使用 5 类网线 (RJ45) 将每只音箱的控制网络接口串接起来；
2. 将最后一只音箱连接到 GLM 适配盒的控制网络输入接口；
3. 将 GLM 适配盒通过 USB 线 (包含在 GLM 套件中) 连接到电脑 USB 接口；
4. 使用话筒支架，将真力校准话筒 (包含在 GLM 套件中) 置于听音位置。校准话筒朝上，话筒顶部与听音者耳朵齐平。
5. 将话筒连接到 GLM 适配盒的话筒输入接口；
6. 从真力官方网站 (www.genelec.cn 的“服务支持 > GLM 软件下载”页面) 下载最新的 GLM 软件并安装；
7. 根据软件提示进行音箱设置和校准；
8. 如果您不需要随时在电脑上运行 GLM 软件来控制音箱，可以利用软件菜单选项中的 “编组预设 (Group Preset) | 保存到音箱 (Store to Loudspeakers) ” ) 将相关配置存储到音箱中。

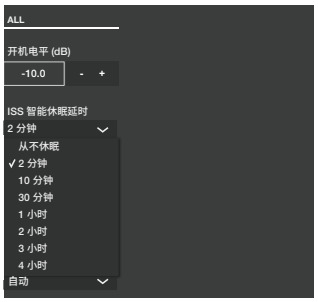


图 5. 智能休眠功能 (ISS) 的设置选项。

## 建议使用 AES/EBU 数字音频信号

当为 1238AC 输入 -30 dBFS 的数字信号时，可在自由场中距离音箱 1 米处得到 100 dB 的声压级。可在 GLM 软件中对音箱的灵敏度进行设置。

在使用数字输入时，建议输入信号保持在接近 0 dBFS，此时通过在 GLM 软件中降低音箱的输出音量。这使得数字音源能够保持更高的数字精度。

数字输入接口默认为单线 (single-wire) 模式，当前级设备输出较旧的双线 (dual-mode) 模式信号时，音箱也可自动识别。

一根标准 AES/EBU 线缆传输两通道音频信号，分别为通道 A 和通道 B。默认情况下，音箱同时重放通道 A 和通道 B 的信号，可在 GLM 软件中为每只音箱分配特定的通道。

## RAM-L 功放电源键

RAM-L 功放前面板中间的电源键可控制若干功能。短按电源键可开关 RAM-L 功放。开机过程中，电源键上的指示灯会快速闪烁；开机完成后，指示灯会常亮。

另可通过电源键进入测试模式，在本手册后续部分将进行说明。

## 设置智能休眠功能 (ISS™)

启用智能休眠功能 (ISS™) 后，音箱将自动进入待机模式。智能休眠功能出厂默认为关闭，可在 GLM 软件中启用该功能 (见图5) 。智能休眠功能启用后，音箱在一段时间内未检测到输入信号时，将自动进入待机模式。当检测到

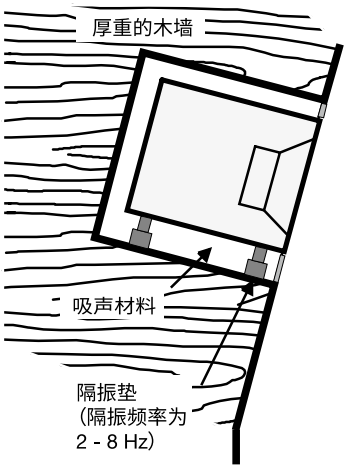


**图 6. 将音箱嵌入木墙中安装。**

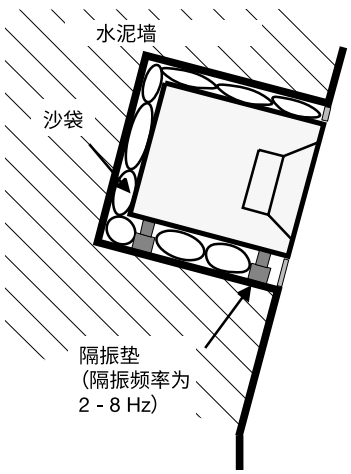


**图 7. 将音箱嵌入水泥墙中安装。**

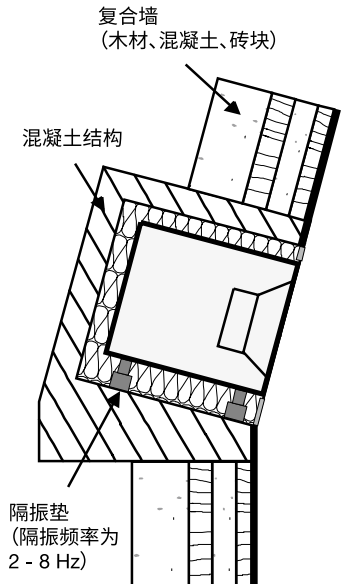


**图 8. 将音箱嵌入复合材料墙中安装。**

输入信号时，音箱将自动回到工作状态。软件中的 ISS 设置将应用在所有已启用该功能的音箱。

## 音箱前面板指示灯功能

1238AC 音箱前面板的指示灯通常为绿色，表示音箱处于正常工作状态。当使用 GLM 软件控制音箱进行某些操作时，指示灯会变为黄色。当音箱过载时，指示灯会变为红色。以下几种原因会导致音箱过载：

1. 当前输入的模拟信号超过音箱最大模拟信号输入电平。
2. 当前输入的数字信号接近音箱最大数字信号输入电平（可能引起数字削波失真）。
3. 音箱单元或功放过载，或功放产生削波。
4. 检测到 AES/EBU 数字音频信号存在错误。

如果音箱前面板上的指示灯亮红灯，请降低音源设备的输出电平，并确保 AES/EBU 数字音频信号传输没有误码。

## 箱体嵌入安装

将音箱嵌入墙内安装，在声学上具有一定优势：可消除箱体边缘的衍射，并避免音箱背后墙体对低频部分的反射。音箱的声轴（见图 1）应指向听音位置。安装音箱的墙体需足够坚硬且厚重。请勿将音箱安装过高（最大倾斜角应小于 15 度）。

音箱四周可留有 50-100 毫米（2-4 英寸）的空间，但需要在前面用面板覆盖。音箱和盖板之间留出 5-10 毫米（¼ -½ 英寸）的间隙，并填充软橡胶垫圈（见图 14）。所安装音箱的移动谐振频率在 2-8 Hz 之间，应将音箱安装在对应的隔振垫上。

箱体和墙体之间的空隙应填充吸声岩棉或泡沫塑料。木墙必须有牢固的支撑（见图 6）。在实心墙（如混凝土）结构中，箱体周围的空隙应填充吸声岩棉或沙袋（见图 7）。

请确保音箱与墙面齐平。如使用装饰布框，布框与音箱相邻的边缘厚度必须小于 20 毫米（3/4 英寸）。布料必须透声，并选用真力认可的布格栅。

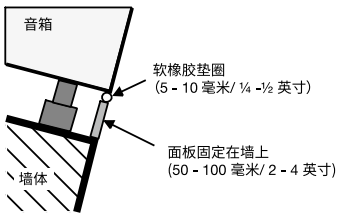


**图 9. 覆盖墙体和音箱之间的缝隙。**

## 测试模式

RAM-L 功放开机后，长按电源键会进入测试模式。该测试模式用于系统调试及测试。当 RAM-L关机后，测试模式会被重置。重新启动 RAM-L 功放后，通过 GLM 软件存储在功放内的配置将恢复。

选择测试模式时，电源键指示灯会发生闪烁（见表 2）。长按电源键可启用当前所选择的测试模式。在测试模式下，电源键指示灯会保持亮起，并闪烁 1-4 次以表示当前选择的模式。

测试模式只能做为临时设置用于系统调试及测试。请使用 GLM 软件对 1238AC 进行永久设置。

## 安全注意事项

尽管 1238AC 严格按照国际安全标准设计，仍应注意以下警告和注意事项，确保安全操作以及安全的音箱工作条件：

- 切勿自行拆开音箱箱体和电路单元。任何关于音箱的维护或维修都应由真力授权的维修服务人员来完成。
- 切勿使用未连接保护地的电源，这可能会危及电气安全。

| Button press | Function | Notes |
|---|---|---|
| 按键操作 | 功能 | |
| 短按 | 开机、关机 | |
| 长按 | 进入测试模式、退出测试模式 | 长按 5 秒以上 |
| 进入测试模式后：短按一次 | 模式 1：选择 AES/EBU 信号的通道 A，使用房间相关的校准设置 | 电源键指示灯每隔几秒闪烁 1 次 |
| 再次短按 | 模式 2：选择 AES/EBU 信号的通道 B，使用房间相关的校准设置 | 电源键指示灯每隔几秒闪烁 2 次 |
| 再次短按 | 模式 3：选择 AES/EBU 信号的通道 A，恢复出厂设置 | 电源键指示灯每隔几秒闪烁 3 次 |
| 再次短按 | 模式 4：选择 AES/EBU 信号的通道 B，恢复出厂设置 | 电源键指示灯每隔几秒闪烁 4 次 |
| 启动测试模式：长按 | 选择其中一种测试模式后，长按电源键启用该模式 | 长按 5 秒以上，RAM-L 功放启用该测试模式并开始工作。如需要退出测试模式，请关闭功放。 |
| 进入测试模式后：60 秒内不进行任何操作 | RAM-L 功放退出测试模式并关机 | 如果不按动电源键，此过程则自动完成。 |

**表 2. 通过电源键启用测试模式**

- 切勿将音箱暴露在水中或潮湿环境，这可能会导致火灾或触电。
- 切勿在音箱上或其附近摆放装有液体的物品，例如花瓶和水管。
- 请注意，除非将电源线从功率放大器上或电源插座上拔掉，否则设备并未完全与交流电源断开连接。
- 切勿阻挡功放周围的气流。确保功放后方有足够的空气流动，使功放能够充分冷却。

## 警告！

1238AC 音箱可以产生超过 85dB 的声压级，这可能会引起永久性听力损伤。

## 维护

在音箱箱体和RAM-L功放内部没有任何用户可自行维护的部分。任何关于音箱的维护或维修都应由真力授权的维修服务人员来完成。

## 质保

真力 1238AC 针对材料和工艺上的质量问题提供 2 年的质保服务。通过扫描包装箱上的二维码注册您的音箱，可将质保期延长至 5 年。详细质保条款可在 www.genelec.cn 的“服务支持 > 维修与延保服务”页面查看。

## 配件

真力音箱有多种类型配件可供选择。可通过查阅真力网站 www.genelec.cn 上的《真力配件目录 (Genelec Accessories Catalogue)》或者咨询经销商获取更多信息。

## FCC 符合性声明

该设备符合 FCC 标准第 15 部分的要求，操作必须符合以下两个条件：

1. 此设备不造成有害干扰。
2. 此设备必须接收所收到的干扰，包括可能导致意外操作的干扰。

注意：该设备已经过测试，符合 B 类数字设备的限制，且符合 FCC 标准第 15 部分的要求。这些限制旨在提供合理的保护，防止在住宅区安装时产生有害干扰。该设备会产生、使用并辐射射频能量，如果未按照说明安装和使用，则可能对无线通信造成有害干扰。但是，我们无法保证在特定安装中不产生干扰。如果设备对无线电和电视的接收产生有害的干扰，用户可通过开关该设备进行验证，我们建议用户采用下述一种或多种手段消除干扰：

1. 重新调整天线的方向和位置。
2. 增加该设备与接收器之间的距离。
3. 将该设备和接收器分别连接到不同电路的插座上。
4. 向经销商或有经验的无线电/电视技术人员寻求帮助。

任何未经制造商许可的改动都将让用户丧失在 FCC 规定下操作设备的权力。

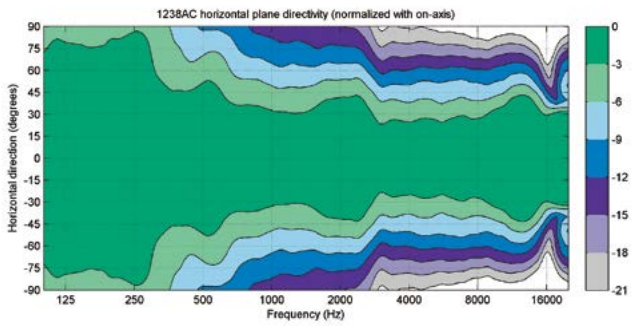


图 10. 1238AC 水平面指向特性。

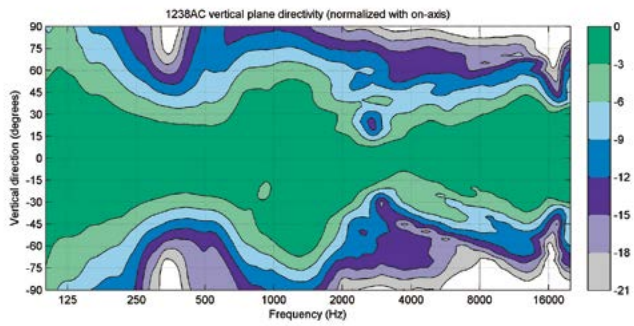


图 11. 1238AC 垂直面指向特性。

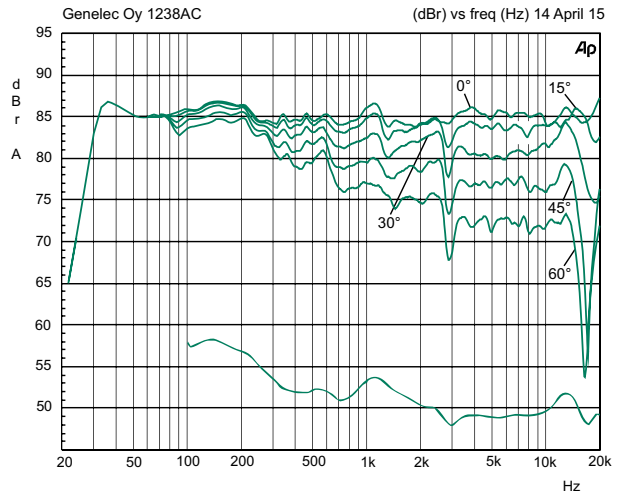


图 12. 上方曲线表示 1238AC 的水平面指向特性；下方曲线表示音箱的功率响应。

## 系统参数

| | 1238AC |
|---|---|
| 低频截止频率, –3 dB | < 33 Hz |
| 高频截止频率, –3 dB | > 21 kHz |
| 自由场频率响应, ± 2.0 dB | 35 Hz – 20 kHz |
| 半开放空间内,轴上最大短时正弦波声学输出,100 Hz - 3k Hz 均值 @ 1 米 | > 121 dB SPL |
| 在相同条件下,使用 IEC 计权噪声测试最大长期 RMS 声学输出(受驱动单元保护电路限制) @ 1 米 | > 116 dB SPL |
| 在听音室内,使用音乐素材进行测试,在距音箱 2 米处每对音箱最大峰值声学输出 | > 124 dB |
| 自由场内自身噪声电平 @ 1 米,轴向 (A 计权) | < 10 dB |
| 总谐波失真 @ 95 dB SPL @ 1 米,轴向(A 计权) | |
| 频率:50…200 Hz | < 1 % |
| > 200 Hz | < 0.5 % |
| 驱动单元 | |
| 低音 | 2 x 250 毫米(10 英寸)锥体 |
| 中音 | 125 毫米(5 英寸)锥体 |
| 高音 | 25 毫米(1 英寸)金属球顶 |
| 所有驱动单元均经过磁屏蔽 | |
| 重量 | |
| 音箱 | 60 千克(130 磅) |
| 功放 | 6 千克 (13 磅) |
| 尺寸(音箱箱体) | |
| 高度 | 350 毫米(13¾ 英寸) |
| 宽度 | 950 毫米(37⅜ 英寸) |
| 深度 | 453 毫米(17⅞ 英寸) |
| 功放尺寸 | |
| 高度(前面板) | 3U 132 毫米(5⅝ 英寸) |
| 高度(功放外壳) | 80 毫米(3⅛ 英寸) |
| 宽度(前面板) | 483 毫米(19 英寸) |
| 宽度(功放外壳) | 425 毫米(16¾ 英寸) |
| 深度 | 252 毫米(9 15/16 英寸) |

## 功放部分

| | 1238AC |
|---|---|
| 低音功放短期输出功率 | 500 瓦 |
| 中音功放短期输出功率 | 250 瓦 |
| 高音功放短期输出功率 | 200 瓦 |
| 长期输出功率受驱动单元保护电路限制 | |
| 在标称输出功率下功放系统失真参数 | <0.01 % |
| 满输出状态下信噪比 | |
| 低频 | >115 dB |
| 中频 | >115 dB |
| 高频 | >115 dB |
| 电源电压 | 100-240 伏交流电 50/60 Hz |
| 功耗 | |
| 待机 | < 0.5 瓦 |
| 空闲 | 25 瓦 |
| 满输出 | 750 瓦 |

## 信号处理部分

| | 1238AC |
|---|---|
| 模拟信号输入接口: XLR 母座(平衡式 10k 欧姆) | 针脚 1 :地<br>针脚 2 :正极<br>针脚 3 :负极 |
| 最大模拟信号输入电平 | +25.0 dBu |
| 模拟输入灵敏度(100 dB SPL 在 1 米处) | -6 dBu |
| 模拟输入灵敏度选择 | 0, +6, +12, +18 dB |
| 数字信号输入接口: XLR 母座(110 欧) | AES/EBU 单线或双线 |
| 数字信号输出/环出接口: XLR 公座(110 欧) | AES/EBU 单线或双线 |
| 数字信号输入 | |
| 量化精度 | 16 - 24 bits |
| 采样范围 | 32 - 192 kHz |
| 数字输入灵敏度(100 dB SPL 在 1 米处) | -30 dBFS |
| 数字输入灵敏度选择 | 0, +6, +12, +18 dB |
| 控制网络 | |
| 类型 | 专用的真力 GLM™ 控制网络 |
| 连接方式 | 2 条 5 类网线(RJ45) |
| 分频点 | |
| 低频/中频 | 420 Hz |
| 中频/高频 | 3.0 kHz |
| GLM™ 软件频率响应调整 | |
| 参量陷波器 | 4 个低频,2 个高频 |
| 搁架滤波器 | 2 个低频,2 个高频 |
| 系统房间响应校准 | 使用真力 GLM 软件进行自动或手动校准 |

# 1238AC 操作手册

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