7300 Series

Operating Manual 操作手册

Genelec 7382A Smart Active Subwoofer
真力 7382A 智能有源超低音箱

GENELEC®

Genelec 7382A Smart Active Subwoofer

Introduction

Thank you for choosing a Genelec product! Fulfilling our customers' dreams by offering the most truthful sound reproduction possible has been the source of our enthusiasm since 1978. There are over one million Genelec monitors around the world - welcome to our story!

All Genelec monitors are designed, hand assembled and individually tested at our factory in Iisalmi, Finland. Our products are designed to last for decades and we take care that our customers receive excellent support and technical service throughout the lifetime of the products.

Please register your product at http://www.community.genelec.com/. You will receive an extended 5 year warranty for spare parts. More information about our service and technical support: http://www.genelec.com/customer-service.

System Description

The Genelec 7382A SAM subwoofer is designed for professional use and integrates easily into environments based on analog or digital interfacing. The 7382A even introduces outstanding GLM™ features to the lower octaves of monitoring systems based on main speakers from a different vendor.

Multichannel AES/ EBU signals can be monitored by using the 9301A multichannel digital audio interface device connected to the subwoofer.

The 7382A is intended to be calibrated to the monitoring room acoustics using the Genelec Loudspeaker Manager (GLM) computer software. The GLM software runs on Mac OS and Windows computers and enables detailed acoustic calibration permanently inside the subwoofer. It is also possible to use the GLM software as a monitoring management system for more than 30 SAM monitors and subwoofers.

In its power save mode, the 7382A consumes less power. Energy saving Intelligent Signal Sensing (ISS) can automatically put the subwoofer into a power save mode when audio has been absent for a selected time. Upon sensing an input signal, the subwoofer wakes up to full operation. The time before entering the ISS power save mode can be configured using the GLM software.

Package content

Each subwoofer is supplied with an individually calibrated RAM-SW amplifier unit. If several 7382A subwoofers are used in the same system, it is very important not to mix the subwoofer/amplifier pairs. A mains cable, a 10 m (33.3 ft) Speakon signal cable, one 5 m GLM network cable and this operating manual are also included.

Operating Environment

This subwoofer is designed for indoor use only. The permissible ambient temperature is 15-35 degrees Celsius (50-95°F) and relative humidity 20 – 80% (noncondensing). When the product has been stored or transported in a cool environment and is taken into a warm room, wait about one hour before opening packing to prevent condensation of humidity before connecting to mains power.

Genelec Loudspeaker Manager™ (GLM™) Software And GLM User Kit

The GLM software gets the most out of 7382A and tailor-fits it to your room. GLM is available for download free of charge at www.genelec.com/glm. Check in from time to time to take advantage of new features, or consider using the cloud-based version.

A GLM User Kit comprising the necessary hardware, including the GLM Adapter and measuring microphone is needed for building and operating the GLM network. This kit can be purchased at certified Genelec dealers.

Connections

Before connecting signal cables, switch the subwoofer amplifier and monitors off.

Analog Inputs 1 and 2

The 7382A SAM subwoofer accepts balanced XLR inputs. These are the outputs typically provided in a console or a monitor controller. The maximum balanced audio signal level is +24 dBu.

LFE In

A dedicated XLR input is provided for the analog LFE signal. The bandwidth for a signal fed to the LFE input is 120 Hz. The LFE input sensitivity can be set the same as for the main channels or at +10 dB relative to the main channels. This feature is set in the GLM software.

IN Digital

One AES/EBU digital audio XLR input is available on the 7382A subwoofer. This can take a stereo digital audio signal.

Multichannel digital audio monitoring is possible with the 9301A interface device. The 9301A connects to the digital audio input in the 7382A subwoofer and expands the number of digital audio inputs to four XLR digital audio inputs. This supports a 7.1 audio system, including an LFE channel. For more subs not playing the same signal, e.g.

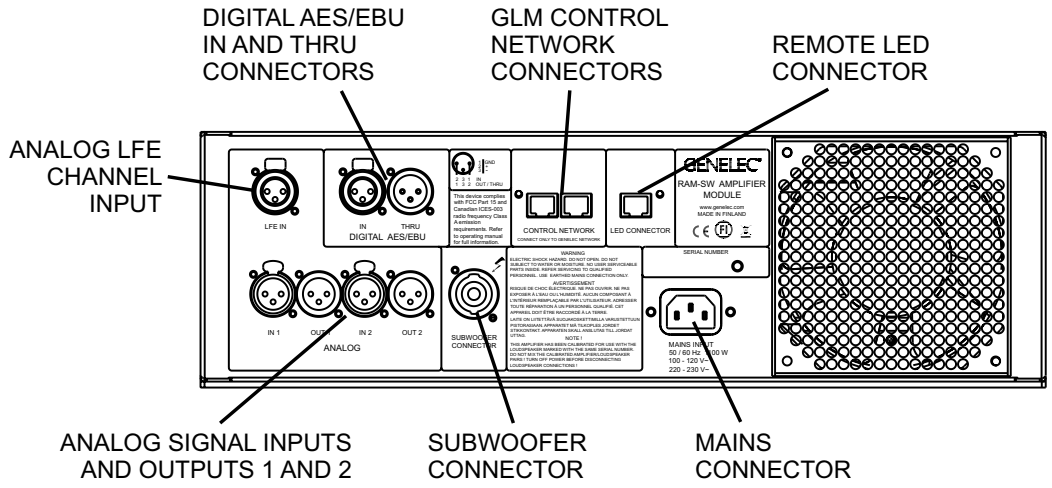

Figure 1. Connector panel of the RAM-SW amplifier unit.

Cable Gauge	Max. Length
4 x 2.0 mm^2 (14 AWG)	30 m / 100 ft
4 x 2.5 mm^2 (13 AWG)	40 m / 130 ft
4 x 3.3 mm^2 (12 AWG)	50 m / 165 ft
4 x 4.0 mm^2 (11 AWG)	60 m / 200 ft

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

in large immersive installations with bass management of surround channels, one 9301A is required per 7382A.

Analog Output 1 and 2

Analog balanced XLR connectors connect the subwoofer to the monitors.

These analog outputs carry an unfiltered copy of the inputs. The subwoofer/main monitor crossover is adjusted in the GLM software from 50 Hz to 100 Hz in 5 Hz increments.

See chapter "Bass Management" for details.

THRU AES/EBU

The THRU AES/EBU is a bit-to-bit copy of the digital audio signal on the IN Digital. This output can be used for digital sharing of the audio between subwoofers in the case where multiple subwoofers are used. This output can also be used for distributing a stereo digital audio signal to monitors, creating a 2.1 digital audio stereo monitoring system.

Subwoofer Connector

This Speakon connector is used for linking the RAM-SW amplifier unit and the 7382A subwoofer enclosure. There is a corresponding connector on the reflex port end of the enclosure.

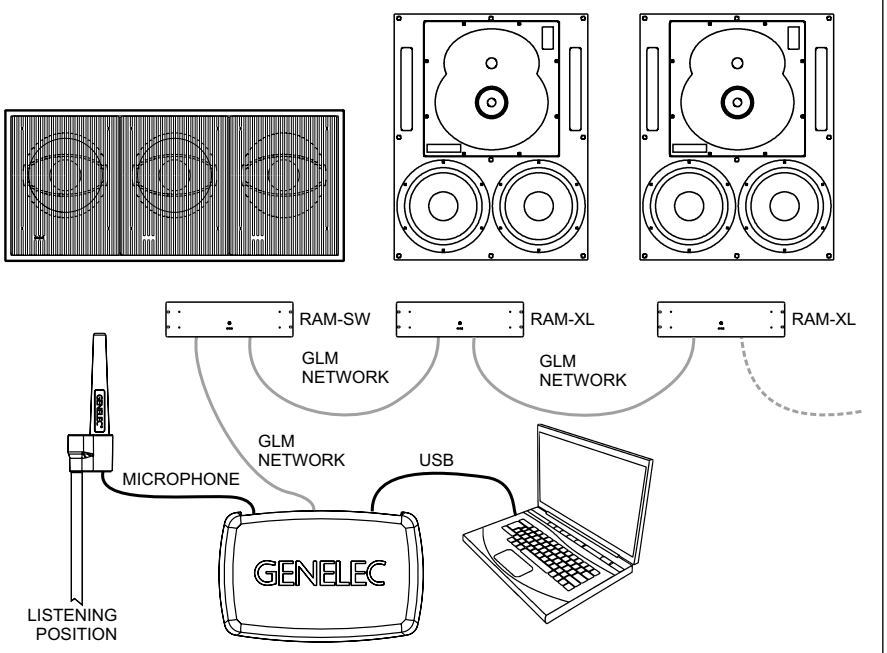

Figure 2. GLM Network cabling. Audio cabling not shown.

A 10 m (33.3 ft) cable is provided with the subwoofer. See Table 1 for recommended minimum gauges for different lengths of cable. Four pole cable is recommended. The cable connectors are connected pin to pin, with 1+ and 2+ in parallel, same as 1- and 2-.

GLM Management Network

All controls and calibration features included in the 7382A subwoofer are set using the Genelec Loudspeaker Manager (GLM) software. Two GLM Network connectors are provided for computer control. These accept CAT5 or higher category cable (RJ45 connector). Standard CAT cables can be used.

The GLM management network runs a proprietary protocol. This is not an Ethernet connection, do not connect to an Ethernet network.

LED Connector

This connector allows linking a remote status indicating light if the amplifier unit is placed so that its front panel light can not be seen.

Mains Power Input

The mains power connection supports a wide mains voltage range (100-240 VAC, 50-60 Hz). This enables the RAM-SW amplifier to be plugged in anywhere globally. When the mains power is provided with a generator, inverter, or certain lower-quality UPS devices, we recommend filtering power to remove harmonics and ensuring the voltage supply is stable.

Bass Management

Bass management divides the input audio signal into low frequency and high frequency content at the subwoofer crossover frequency. The signal content below the crossover frequency is reproduced by the subwoofer. The signal content above the crossover frequency is reproduced by the monitors.

In the distributed bass management method used in the 7382A system, the monitors and the subwoofer receive full banwidth audio signal and the filtering is done separately inside each monitor and subwoofer. The lowpass and highpass filters are set in synchrony by the GLM management network. This method is only available in systems with GLM computer management and with monitors supporting GLM. The crossover frequency can be adjusted from 50 Hz to 100 Hz in 5 Hz increments.

The distributed bass management supports three different signal cabling configurations:

All channels are routed through the subwoofer's IN/OUT connectors to the respective monitors.

- Y-cables split each signal to the subwoofer's IN connector and the monitor's input.
- Signal sources with dual outputs for each channel, one going to the subwoofer, the other going to the monitor.

Use With GLM Control Network

The 7382A SAM subwoofer is fully compatible with Genelec Loudspeaker Manager GLM software, the proprietary Genelec monitor management network, and all Genelec SAM monitors.

Managing the 7382A SAM subwoofer using GLM software control unleashes the full power of room compensation in the 7382A SAM subwoofer, enabling 20 parametric room compensation filters. This powerful room compensation functionality is only available when the GLM is used. Detailed information on the use with the GLM network is presented in the GLM System Operating Manual.

System Setup

The 7382A SAM subwoofer reaches its full potential when set up and calibrated using the GLM software. Genelec Loudspeaker Manager GLM and the proprietary Genelec monitor management network offer

- automated acoustic equalization individually for every monitor and subwoofer
- automated level alignment
- distance (acoustic time-of-flight) calibration
- aligning of the subwoofers for bass management

for any reproduction system from stereo to complex 3D immersive setups, including one or more subwoofers. GLM setup is fast and accurate. It can precisely address the typical narrow-band low frequency modal resonances and radiation loads of a room and offers precise frequency response compensations. The settings can be controlled with a computer or the settings can be permanently stored in the monitors and subwoofers, to make the setup available at all times even when the computer is not in use. Genelec recommends setting up SAM monitoring systems using the GLM. You can find a detailed description of the setup process and the use of GLM in the GLM System Operating Manual.

The setup using GLM is fast and consists of the following steps:

- Connect a CAT5 or higher category (RJ45) cable between each monitor (and subwoofer) and finally to the control network input of the GLM Adapter device (see Figure 1).
- Connect the GLM Adapter device to computer USB connector.
- Using a microphone stand, place the Genelec measurement microphone at the listening location with the microphone pointing upwards and the microphone top at the height of the engineer’s ear. The microphone is a part of the GLM User Kit.
- Connect the GLM Adapter device to the computer USB port using cable included in the GLM User Kit.
- Download the GLM software at the Genelec web site (www.genelec.com).
- Install the GLM software and follow the instructions in the software to measure and set up your system.
- If you plan to not use a computer for controlling the subwoofer, use the GLM software to write the setting into the subwoofer (use menu item “Store | Store the Current Group Settings…”).

With GLM software active and controlling the 7382A SAM subwoofer, the use of analog and digital inputs is controlled by the GLM software entirely. In the software ‘Input Type’ in the ‘Group’ definition sets this. The GLM software allows you to select and switch between the analog and digital audio inputs.

If GLM control is not used, an AES/EBU digital audio signal will override analog signal. This means, if a valid digital audio clock is detected, the digital audio is selected over the analog audio.

When the GLM acoustic settings have been stored in the 7382A SAM subwoofer and are active, the input is selected by the ‘Group’ settings in the GLM software when the settings are stored.

RAM-SW Power Switch Light

When used without a connection to the GLM software, the light on the power switch on the RAM-SW is green, indicating normal operational mode. A red colour indicates amplifier clipping and yellow indicates thermal overload. If the red or

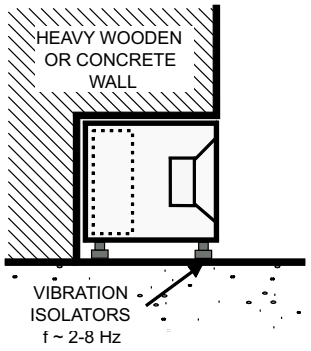

Figure 3. Flush mounting the subwoofer in a non-absorbing wall.

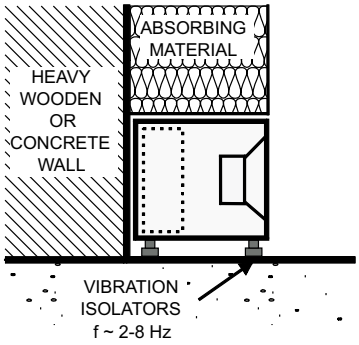

Figure 4. Flush mounting the subwoofer in a semi-absorbing wall.

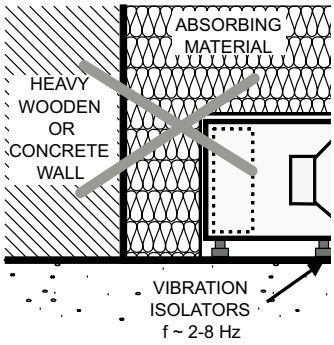

Figure 5. Incorrect flush mounting of the subwoofer in a semi-absorbing wall.

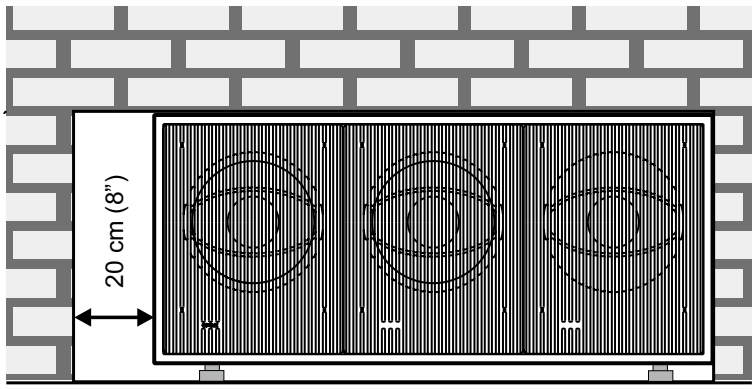

Figure 5. Clearance needed on the reflex port side.

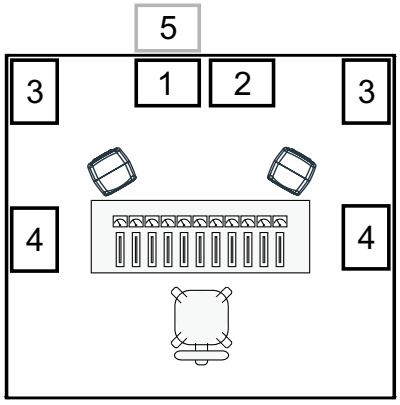

Figure 4. Examples of subwoofer positioning. 1 and 2 are good starting positions for a single subwoofer and also work well with two linked subwoofers. Position 3 causes a significant bass boost and may cause asymmetric spatial imaging if only one subwoofer is used. Position 4 also works best with two subwoofers. Flush mounting (pos. 5) generally works well.

yellow warning light appears, turn down the level.

Additional Information

Positioning the Subwoofer in a Room

The location of the subwoofer affects the frequency response and sound level dramatically particularly when the room acoustic effects are strong. Even small changes in a subwoofer's location can make a marked difference in the frequency response. To begin, place the subwoofer near the front wall slightly offset from the room center line. Often systematic experimentation is needed to find the location giving the flattest frequency response at the listening location. Usually the subwoofer is placed close to a wall as this creates the highest output. Positioning the subwoofer close to a corner will boost the bass level at lower frequencies and may also cause asymmetrical spatial imaging. Measured from the subwoofer's driver the recommended distance to a wall is less than 0.6 m (24 in). This avoids a loss of audio level at low frequencies created by the audio reflecting off the wall and cancelling certain frequencies radiated by the subwoofer.

Minimum Clearances

Do not cover the amplifier or place it in a closed cabinet. The space must be ventilated or sufficiently large to dissipate heat so that the ambient temperature does not rise above 35 degrees Celsius (95°F). The reflex port opening on the enclosure should have a clearance of at least 20 cm (8 in) to ensure functioning of the reflex port.

Flush Mounting

When the subwoofer is flush mounted in a wall or cabinet, ensure unrestricted airflow in the reflex port and amplifier cooling. Make the recess 20 cm (8 in) wider than the subwoofer. Place the subwoofer to the right side of the recess if the driver is facing the room. This leaves sufficient free space at the reflex port side. The height and depth of the recess should not be much bigger than what is needed as this may cause unwanted acoustic effects.

Using Multiple Subwoofers

Multiple Genelec 7382A subwoofers can be coupled together in high SPL applications. The necessary cabling is different for digital and analog signals. When subwoofers are close to each other, the sound level increases typically by 6 dB for each doubling of the number of subwoofers. When subwoofers are far from each other, the total increase in the sound level can be less. It is safe to assume the increase is 3 dB for each doubling of the number of subwoofers. Accurate understanding of the increase in sound level requires acoustic measurements.

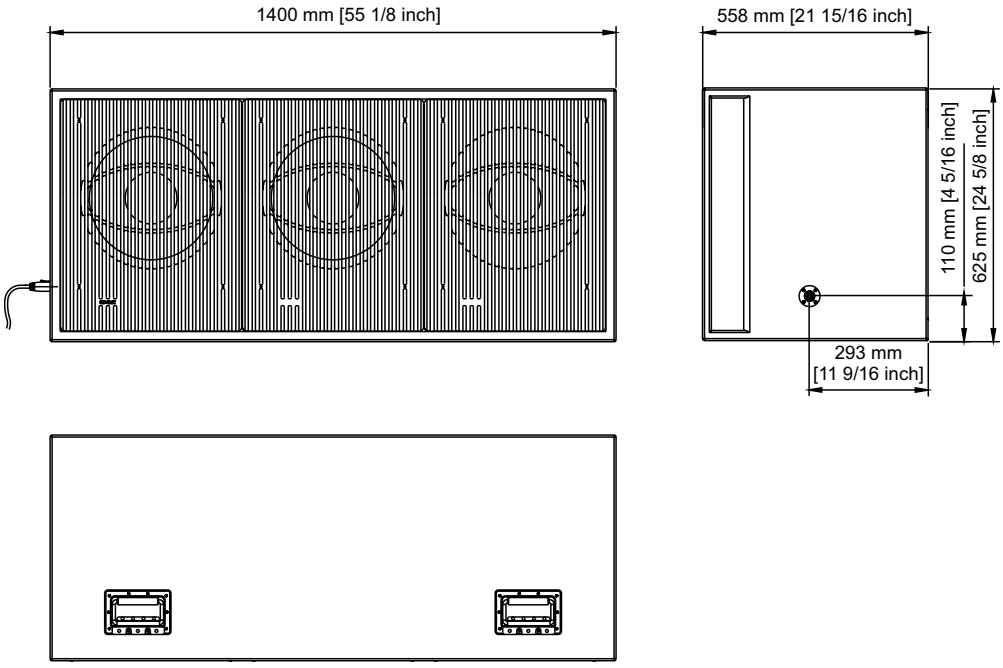

Figure 5. The dimensions of the 7382A enclosure and the location of the reflex port and input connector

Digital Cabling

Run a signal cable from the THRU AES/EBU connector of the first subwoofer in the chain to the IN Digital connector of the next subwoofer.

Analog Cabling

When daisy-chaining multiple subwoofers with analog signals, run cables from the OUT 1 and 2 connectors to the next subwoofer's IN 1 and 2 connectors. The LFE channel has no output connector and can not be daisy-chained.

Maintenance

There are no user serviceable parts inside the subwoofer or the amplifier unit. Maintenance or repair must only be done by Genelec certified service personnel.

Guarantee

Genelec guarantees the subwoofers for two years against manufacturing faults or defects altering performance. You can extend the guarantee to five years by registering the product at www.genelec.com. Refer to the reseller for full sales and guarantee terms.

Safety Considerations

The 7382A has been designed in accordance with international safety standards. To ensure safe operation, the following warnings and precautions must be observed:

- Servicing and adjustment must only be performed by Genelec certified service personnel.
- The subwoofer enclosure must not be opened.
- Do not use this product with a mains cable or mains outlet having no protective earth (potential equalizing) connection as doing so may result in personal injury.
- To prevent fire or electric shock, do not expose the product to water or moisture.
- Do not place objects filled with liquid, such as vases, on the subwoofer or near it.
- The amplifier is not completely disconnected from the mains power unless the mains cable is removed from the amplifier or the mains outlet.
- Free flow of air behind and around the subwoofer is necessary to maintain sufficient cooling. Do not obstruct airflow around the subwoofer.
- This subwoofer is capable of producing sound pressure levels in excess of 85 dB, which may cause a permanent hearing damage.

Compliance to FCC Rules

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

- This device may not cause harmful interference, and
- 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 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:

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

SPECIFICATIONS	
Lower cut-off frequency -6 dB	15 Hz
Upper cut-off frequency -6 dB (main channel/LFE)	100 Hz/120 Hz
Drivers	3 x 381 mm (15 in)
Harmonic distortion at 1 m on axis in half space, 30 to 85 Hz 2nd 3rd	 ≤ 1% @ 105 dB SPL ≤ 1.5% @ 105 dB SPL
Maximum short term sine wave SPL output averaged from 30 to 85 Hz, measured in half space at 1 meter	≥ 129 dB SPL
Maximum peak SPL output with random pink noise, measured in half space at 1 meter (Long term SPL output is limited by driver unit protection circuitry)	≥ 133 dB SPL
Self generated noise at 1 m on axis (A-weighted)	<5 dBA
Dimensions H x W x D Subwoofer enclosure RAM-SW amplifier unit Weight Subwoofer enclosure RAM-SW amplifier unit	625 x 1400 x 558 mm (24 5/8 x 55 1/8 x 21 15/16 in) 3U 132 x 483 (front plate), 425 (casing) x 286 mm 3U 5 3/16 x19 (front plate), 16 1/4 (casing) x 11 1/4 in 145 kg (320 lb) 11.3 kg (25 lb)

AMPLIFIER SECTION	
Short term amplifier output power (Long term output power is limited by driver unit protection circuitry)	2500 W
Amplifier system THD at nominal output	<0.01%
Mains voltage	100-240 VAC 50/60 Hz
Power consumption Standby, ISS active Idle Full output, long term Full output, peak	 <13 W 22 W 1100 W 1500 W

SIGNAL PROCESSING SECTION	
Signal connectors	2 channel analog IN/OUT Analog LFE IN Digital IN/OUT
Analog signal input connectos XLR female, balanced 10 kOhm	pin 1 gnd, pin 2 non-inverting, pin 3 inverting
Maximum analog input signal Analog input sensitivity (100 dB SPL at 1 m)	+24.0 dBu -6 dBu
Digital signal input connector XLR female 110 Ohm Digital signal output / Thru connector XLR male 110 Ohm	AES/EBU Single Wire AES/EBU Single Wire
Digital audio input Word length Sample rate Digital input sensitivity (100 dB SPL at 1 m) Positive input gain selection (GLM control)	 16 - 24 bits 32 - 192 kHz -30 dBFS +6, +12, +18 dB
Control network Type Connection	 Proprietary GLM network 2 RJ45, CAT5 cables
GLM™ software frequency response adjustment parametric notch filters	20
System calibration	Genelec GLM AutoCal™, GLM manual
Crossover setting in subwoofer's input/output channels	GLM control, input low pass selectable 50 - 100 Hz, output no filtering
LFE cutoff	120 Hz
Midband rejection >400 Hz	≥ 50 dB
Phase matching control	15° steps with GLM control

真力 7382A 智能有源超低音箱

介绍

感谢您选择 Genelec 真力。通过为您提供最精准的声音再现，实现您的梦想，是真力自 1978 年成立以来的不懈追求。如今，世界上已经有超过一百万只真力音箱正在使用中——欢迎加入我们！

每一只真力音箱都诞生于芬兰伊萨尔米的总部工厂，并且在出厂前逐一经过严格检测。真力音箱经久耐用，在产品周期内，我们力求为用户提供出色的技术支持和服务。

请扫描音箱包装上的二维码，注册您的音箱。注册之后，您的音箱将获得长达 5 年的质保服务。更多信息请参考 www.genelec.cn 的“服务支持 > 维修与延保服务”页面。

系统概述

真力 7382A 智能超低音箱为专业应用而设计，可以轻松集成到基于模拟或数字信号的系统中。7382A 可以搭配真力 GLM™ 软件使用，甚至可以为其他品牌的全频监听音箱提供低频扩展。

如需对数字多声道系统进行低频管理，可通过真力 9301 多通道数字音频接口将信号接入超低音箱。

真力音箱管理软件（GLM）可以针对房间声学实际情况对 7382A 进行精确校准。GLM 软件可以在 macOS 或 Windows 系统中运行，并能够将声学校准后的数据存储到超低音箱中。GLM 软件还可以作为监听控制器使用，支持同时控制 80 只以上的真力 SAM™ 系列音箱。

在待机模式下，7382A 消耗的功率小于 1 瓦。智能休眠功能（ISS™）启用后，在一段时间内未检测到输入信号时，7382A 将自动进入待机模式。当检测到输入信号时，它将自动回到工作状态。用户可通过 GLM 软件调整 7382A 进入待机模式的等待时间。

包装

每只 7382A 配备一台专属的 RAM-SW 功放。如果系统内使用多只 7382A 时，请注意将音箱与其专属的功放一一对应连接，切勿混用。此外包装箱中还配备了 1 根电源线，1 根长度 10 米（33.3 英尺）的音箱线（Speakon 插头），1 根长度 5 米的 GLM 网线，以及此操作手册。

使用环境

此产品仅限室内使用。允许的环境温度为 15-35°C（50-95°F），相对湿度为 20% 至 80%（未凝结）。为了防止冷凝，当此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，请静候至少 1 小时后再通电开机使用。

真力音箱管理软件（GLM）及用户套件

真力音箱管理软件（GLM）可以让 7382A 发挥出其最佳性能，使其与房间环境精准耦合。您可以在 www.genelec.cn 的“服务支持 > GLM 软件下载”页面免费下载 GLM 软件，请及时更新版本以享用最新功能，或考虑使用基于云服务的版本。

GLM 用户套件包含适配盒和校准话筒，是搭建和控制 GLM 网络必不可少的硬件。您可以从真力经销商处购买 GLM 用户套件。

连接

在连接信号线之前，请关闭超低音箱的功放及其他音箱的电源。

模拟输入通道 1-2（ANALOG IN 1-2）

这两个卡侬（XLR）平衡输入接口通常与调音台或监听控制器的输出相连接，最大输入电平为 +24 dBu。

模拟 LFE 输入（LFE IN）

这个卡侬（XLR）输入接口是 LFE 声道信号的专用接口。此通道的上限截止频率到 120 Hz。LEF 声道的输入灵敏度可以设置为与主声道一致，或相对于主声道大 10 dB。该设置需在 GLM 软件中完成。

AES/EBU **输入**（DIGITAL AES/EBU IN）

7382A 提供 1 个 AES/EBU 数字卡侬（XLR）输入接口，用于接收 立体声数字音频信号。

使用真力 9301 数字接口可以实现对数字多声道系统进行低频管理，9301 通过数字输入连接到7380A，将超低音箱的数字卡侬（XLR）输入接口扩展至 4 个，正好满足包括 LFE 声道在内的 7.1 多声道音频系统。

模拟环出通道 1-2（ANALOG OUT 1-2）

这两个卡侬（XLR）平衡环出接口用于连接全频音箱。

这些环出接口输出的信号为未经任何处理的输入信号。全频音箱与超低音箱之间的分频点可通过 GLM 软件调节，可调范围为 50 Hz 至 100 Hz。

详情请参阅“低频管理”章节。

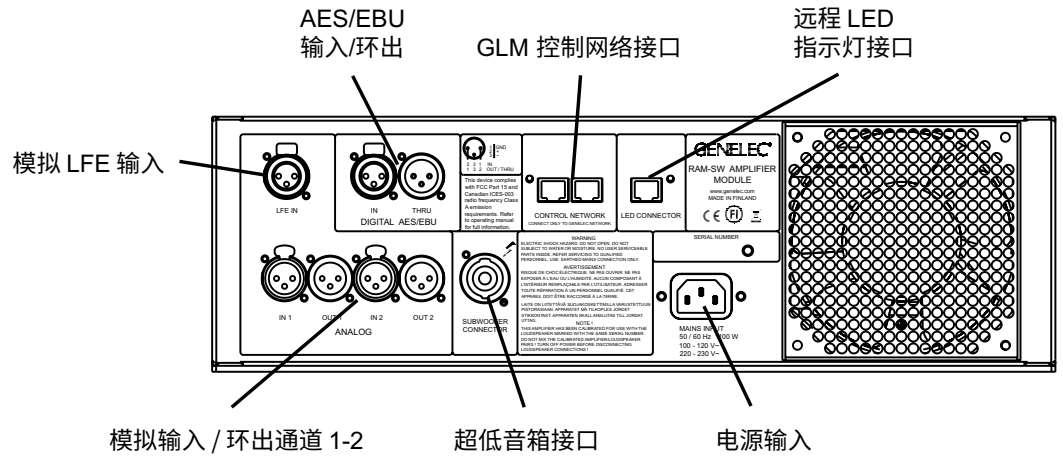

图 1. RAM-SW 功放的接口面板。

音箱线规格	最大长度
4 x 2.0 平方米 (14 AWG)	30 米 / 100 英尺
4 x 2.5 平方米 (13 AWG)	40 米 / 130 英尺
4 x 3.3 平方米 (12 AWG)	50 米 / 165 英尺
4 x 4.0 平方米 (11 AWG)	60 米 / 200 英尺

表 1. 不同长度音箱线对应的建议规格

AES/EBU **环出**(DIGITAL AES/EBU THRU)

这个接口输出的信号，是 AES/EBU 输入信号的完整复制。在使用多只超低音箱时，此环出接口可将数字音频信号传输至其他超低音箱。在 2.1 立体声数字监听系统中，此环出接口还可用于将立体声数字音频信号分配给全频音箱。

超低音箱接口(SUBWOOFER CONNECTOR)

这个 Speakon 接口用于连接 RAM-SW 功放和 7382A 箱体。箱体上对应的接口位于倒相孔一侧的底部。

包装箱中配备一根长度 10 米(33.3 英尺)的音箱线。有关不同长度音箱线推荐的规格，请见表 1。建议使用 4 芯音箱线。音箱线两端插头的针脚需一一对应，在插头上针脚 1+ 的位置与 针脚 2+ 平行，针脚 1- 与 针脚 2- 平行。

GLM **控制网络**(CONTROL NETWORK)

真力音箱管理软件(GLM)可以对 7382A 进行校准和控制。这需要将电脑通过适配盒连接至 7382A 功放上的 GLM 控制网络接口，并在电脑上运行 GLM 软件。请使用 5 类及 5 类以上的网线(RJ45)。

GLM 控制网络基于真力专有的协议，不兼容以太网，请勿连接以太网设备。

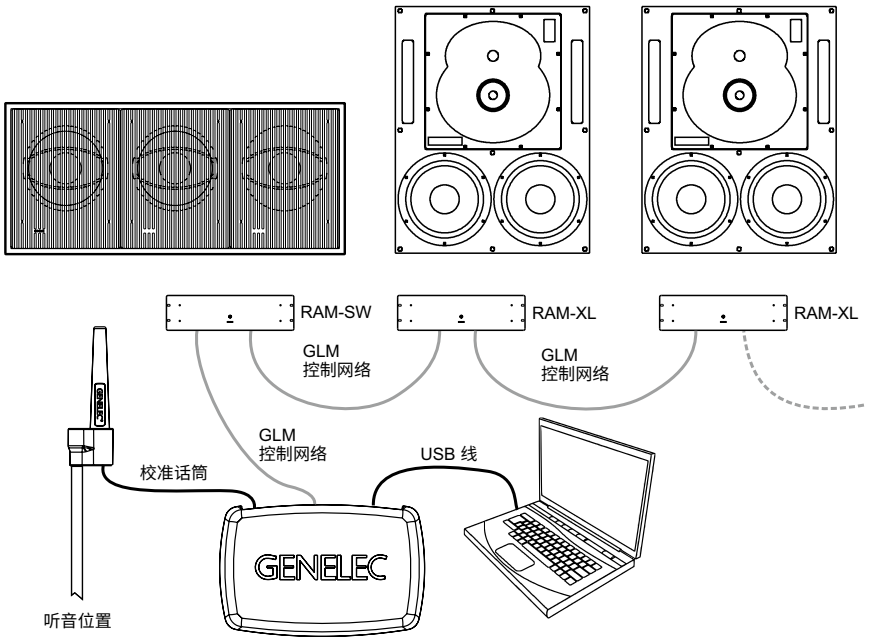

图 2. GLM 控制网络连接示意图。图中未展示音频信号连接。

LED 指示灯接口(LED CONNECTOR)

当功放被安装在看不到其面板指示灯的位置时,可以通过此接口连接远程状态指示灯以查看功放的工作状态。

电源输入(MAINS INPUT)

电源输入支持全球通用电压(100-240 伏交流电, 50-60 Hz),因此 RAM-SW 功放可以在不同电源规格的环境中使用。当使用发电机、逆变器或低质量 UPS 等设备供电时,我们建议使用额外的设备来滤除电源杂波,并确保电压供应稳定。

低频管理

低频管理的主要功能是将输入信号按照所设置的分频点拆分为低频部分和高频部分。低于分频点的信号由超低音箱重放,高于分频点的信号由与超低音箱模拟环出接口相连的全频音箱重放。

7382A 采用分布式低频管理模式,全频音箱和超低音箱各自接收未经任何处理的音频信号,并通过其各自内部的滤波器进行处理。在 GLM 软件中,用户可以协同设置全频音箱和超低音箱的分频滤波器。此模式仅适用于真力 SAM 系列音箱(个别型号不支持),且需要搭配使用真力 GLM 用户套件。低频管理的分频点可在 50 Hz 至 100 Hz 范围内调节。

分布式低频管理模式支持三种不同的信号连接方式:

- 从音源输出的所有通道,需要先连接至超低音箱的输入接口,再由其环出接口连接至对应的各只全频音箱。
- 使用一分二线缆,从音源设备的输出分别连接至超低音箱和各只全频音箱。
- 每个通道占用音源设备的两个输出接口,分别连接至超低音箱和各只全频音箱。

使用 GLM 进行音箱设置

7382A 与真力音箱管理软件(GLM)、专有的真力控制网络,以及其他 SAM 系列音箱完美兼容。

搭配 GLM 软件使用时,7382A 才能启用 20 段参量均衡,发挥其房间声学补偿的全部性能。有关 GLM 控制网络使用的详情,请参阅《GLM 使用手册》。

系统设置

仅有经过 GLM 软件设置和校准后,7382A 才能发挥出其最佳性能。

GLM 软件配合专有的真力控制网络可以提供以下功能:

对每只音箱单独进行自动均衡校准

自动电平校准

自动距离校准(声学延时)

自动相位校准(低频管理模式下)

从简单的立体声系统到复杂的 3D 沉浸式系统,从仅使用一只超低音箱到使用多只超低音箱,GLM 软件能为任何重放系统提供自动声学校准。GLM 软件使用便捷且结果准确,它可以精准地测量分析出房间内常有的低频模态共振和由于声波反射造成的特定频段能量过多现象 ,并精准地进行补偿。相关设置可以通过电脑控制,也可以存储到音箱中,无需随时在电脑上运行 GLM 软件。真力建议使用 GLM 软件来配置 SAM 系列音箱。有关 GLM 软件使用的详请请见《GLM 使用手册》。

GLM 使用便捷,包括以下步骤:

1. 使用 5 类网线(RJ45 接头)将每只音箱(包括超低音箱)串接起来,最终连接至 GLM 适配盒(见图 1);
2. 将 GLM 适配盒(包含在 GLM 用户套件中)通过 USB 线连接至电脑;
3. 使用话筒支架,将真力校准话筒(包含在 GLM 用户套件中)放置于听音位置。校准话筒指向正上方,话筒顶部与听音者耳朵齐平;
4. 将真力校准话筒连接到 GLM 适配盒;
5. 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;
6. 安装 GLM 软件,根据软件提示进行音箱设置和校准;
7. 如果您不需要随时在电脑上运行 GLM 软件来控制音箱,可以将 GLM 设置存储到音箱中(利用菜单选项中的 “编组预设(Group Preset)> 保存到音箱(Store to Loudspeakers)”)。

在使用 GLM 软件控制音箱时,当前的信号输入模式完全由 GLM 软件控制。用户可在“编组预设(Group Preset)> 编辑(Edit)> 输入模式(Input Mode)”中选择模拟或数字输入,还可以通过 GLM 软件实时切换输入模式。

在单机模式(脱离 GLM 软件使用)下,AES/EBU 数字音频信号的优先级高于模拟音频信号,当检测到 AES/EBU 数字信号时钟时,音箱将强制切换为数字输入。

将校准后的声学设置保存到音箱并启用后,保存界面的输入选择将作为音箱当前的输入模式。

RAM-SW 电源指示灯

功放在单机模式(脱离 GLM 软件使用)下,RAM-SW 的电源指示灯通常为绿色,表示功放处于正常工作状态。当功放过载时,指示灯会变为红色;当音箱内部温度过高时,指示灯会变为黄色。如果指示灯变成红色或黄色时,请降低电平。

附加信息

音箱在房间中的摆位

超低音箱在房间中的摆位显著影响频率响应和声压级。房间声学对低频的影响极其强烈,即使音箱位置只发生细微变化,也会引起频率响应上的显著差异。

将超低音箱摆放在靠近房间前墙的地板上,略微偏离房间左右的中轴线。通常需要系统的试验才能找到理想的位置,使超低音箱的频率响应更加平直。为获得最大的输出,通常可以将超低音箱靠近墙面摆放。超低音箱靠近角落摆放,也会让低频能量显著增加,但可能会导致低频声像不对称。超低音箱的单元到前墙的距离应小于 0.6 米(24 英寸),避免因墙面反射声引发 部分低频产生抵消现象,导致低频能量被减弱。

使用环境

此产品仅限室内使用。允许的环境温度为 15-35°C(50-95°F),相对湿度为 20% 至 80%(未凝结)。为了防止冷凝,当此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,请静候至少 1 小时后再通电开机使用。

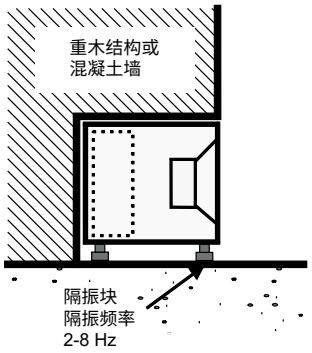

图 3. 超低音箱嵌入安装在无吸声的墙体中。

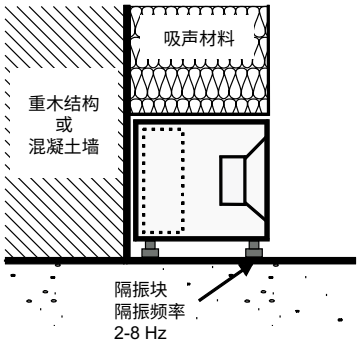

图 4. 超低音箱嵌入安装在半吸声的墙体中。

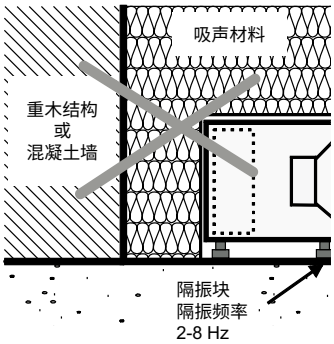

图 5. 超低音箱以错误的方式嵌入安装在半吸声的墙体中。

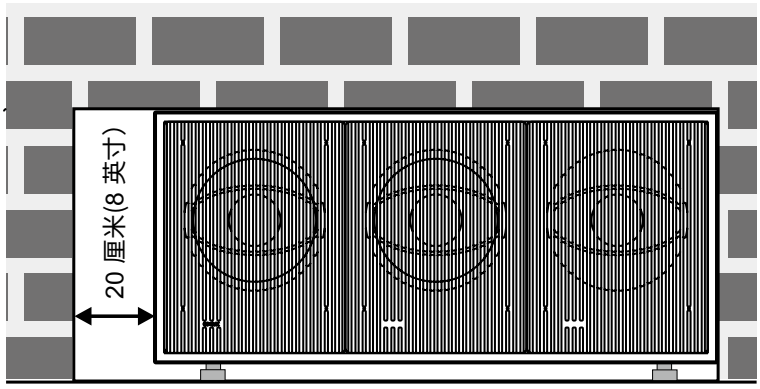

图 6. 倒相孔一侧需预留的空隙。

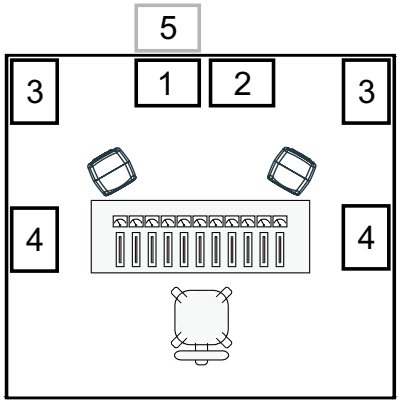

图 7. 超低音箱摆位示例。
使用一只超低音箱或两只串接的超低音箱(重放相同信号)时,位置 1 和位置 2 是较为理想的位置。摆放在位置 3 可以获得较为明显的低频提升,但需要左右对称摆放两只超低音箱,若仅使用一只,可能会导致低频声像不对称。位置 4 也适用于对称摆放两只超低音箱。嵌入式安装(位置 5)通常也是很好的选择。

与墙面或其他物体之间的最小距离

请勿遮盖功放或将其安装在封闭的机柜中。空间须保持通风,或留有足够大的空间以供散热,确保环境温度不超过 35 摄氏度(95 华氏度)。为确保超低音箱的倒相孔正常工作,请在箱体的倒相孔一侧留出不小于 20 厘米(8 英寸)的空隙。

嵌入式安装

当把超低音箱嵌入墙体或柜体安装时,请为功放留出足够的散热空间,并确保倒相孔附近的空气正常流通。嵌入槽的宽度需比音箱宽度多 20 厘米(8 英寸)。请注意正确的安装方向,音箱单元面向房间内部,并在嵌入槽中靠右放置,以便为倒相孔留出足够空间。请确保音箱四周有足够的空间用于通风,但嵌入槽的高度和深度不应远大于音箱的尺寸,这可能会导致有害的声学现象,影响声音效果。

使用多只超低音箱

多只 7382A 可串接使用,以获得更大的声压级。数字系统和模拟系统的连接方式有所不同。将多只超低音箱紧靠摆放时,音箱的数量每增加一倍,总声压级通常会增加 6 dB,而多只超低音箱互相远离摆放时,总声压级的叠加效果会有所减弱。保守估计音箱数量每增加一倍,总声压级会增加 3 dB。如需获得精确的声压级数值,请使用声级计等设备进行测量。

数字信号连接

只需将链路中第一只超低音箱的 AES/EBU 环出(DIGITAL AES/EBU THRU)接口,通过信号线连接至下一只超低音箱的 AES/EBU 输入(DIGITAL AES/EBU IN)接口。

模拟信号连接

以菊花链形式连接多只超低音箱并传输模拟音频信号时,将第一只超低音箱的模拟环出接口 1-2 (ANALOG OUT 1-2)通过信号线连接至下一只超低音箱的模拟输入接口 1-2 (ANALOG IN 1-2)。LFE 声道没有环出接口,因此 LFE 声道信号不能通过菊花链的形式串接。

维护

在音箱和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。

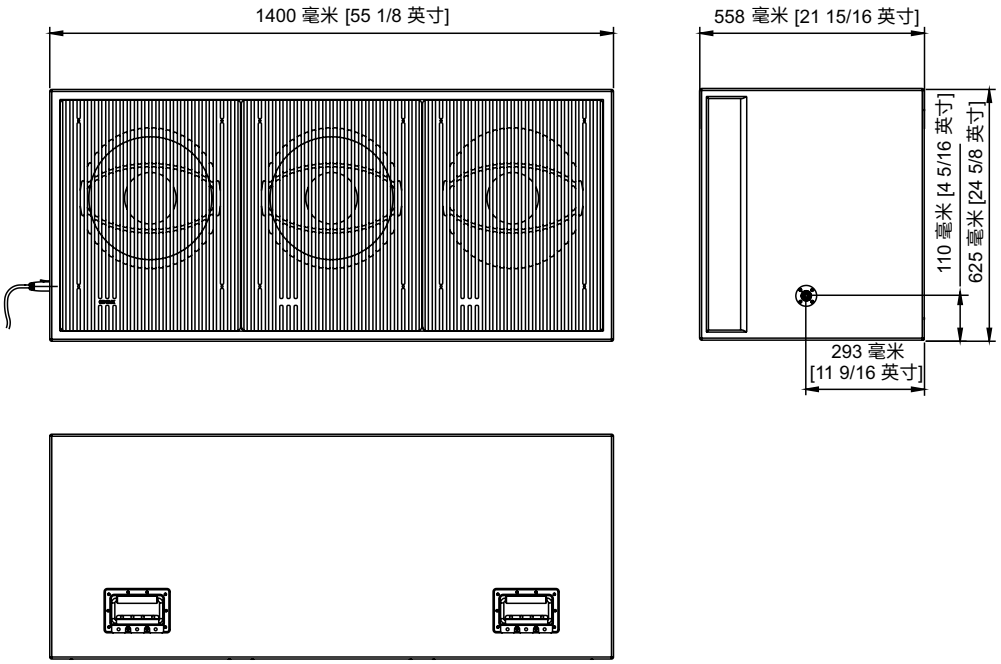

图 8. 7382A 箱体的尺寸，倒相孔及功放输入接口的位置。

质保

产品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。

安全注意事项

7382A 严格按照国际安全标准设计，但您仍需注意以下警告和注意事项，确保安全操作：

- 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。
- 切勿自行拆开音箱。
- 切勿使用未连接保护地的电源，这可能会危及人身安全。
- 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。
- 本设备采用电源插头作为断开装置。除非将电源线从音箱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。
- 切勿阻挡音箱周围的气流。确保音箱后方有足够的空气流动，使音箱能够充分冷却。
- 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。

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) 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：

重新调整天线的方向和位置。

增加该设备与接收器之间的距离。

将该设备和接收器分别连接到不同电路的插座上。

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。

参数	
低频截止频率 -6 dB	15 Hz
高频截止频率 -6 dB (主通道/LFE 声道)	100 Hz/120 Hz
驱动单元	3 x 381 毫米 (15 英寸)
半开放空间内，总谐波失真 @1 米 轴上 30 Hz - 85 Hz 2 次 3 次	 ≤ 1% @ 105 dB SPL ≤ 1.5% @ 105 dB SPL
半开放空间内，轴上最大短时正弦波声学输出， 30 Hz - 85 Hz 均值 @1 米	≥ 129 dB SPL
半开放空间内，使用随机粉噪测得的最大峰值声学输出（ 长期输出声压级受驱动单元保护电路限制）） @1 米	≥ 133 dB SPL
自身噪声电平 @ 1米 轴上 (A 计权)	<5 dBA
尺寸 高度 x 宽度 x 深度 超低音箱箱体 RAM-SW 功放 重量 超低音箱箱体 RAM-SW 功放	625 x 1400 x 558 毫米 ($24\frac{5}{8}$ x $55\frac{1}{8}$ x $21\frac{15}{16}$ 英寸) 3U 132 x 483 (前面板)毫米, 425 (外壳) x 286 毫米 3U $5\frac{3}{16}$ x19 (前面板)英寸, $16\frac{1}{4}$ (外壳) x $11\frac{1}{4}$ 英寸 145 千克 (320 磅) 11.3 千克 (25 磅)

功放部分	
功放短期输出功率 (长期输出功率受限于驱动单元保护电路)	2500 瓦
在标称输出功率下的功放系统失真参数	<0.01%
电源电压	100-240 伏 50/60 Hz 交流电
功耗 待机，ISS 待机 空闲 满输出，峰值	 <1 瓦 22 瓦 1500 瓦

信号处理部分	
信号接口	2 通道模拟输入/环出接口 模拟 LFE 输入 AES / EBU 数字输入/环出接口
模拟信号输入接口：XLR 母座（平衡式 10 k 欧姆） 最大模拟信号输入电平 模拟输入灵敏度（100 dB SPL 在 1 米处）	针脚 1：地；针脚 2：正极；针脚 3：负极 +24.0 dBu -6 dBu
数字信号输入接口：XLR 母座（110 欧姆） 数字信号输出／环出接口：XLR 公座（110 欧姆） 数字信号输入 量化精度 采样范围 数字输入灵敏度（100 dB SPL 在 1 米处） 输入信号电平增益选择（在 GLM 软件中调节）	AES/EBU 单线 AES/EBU 单线 16 - 24 bits 32 - 192 kHz -30 dBFS +6, +12, +18 dB
控制网络 类型 连接方式	 专用的 GLM 控制网络 2 个 RJ45 接口，5 类网线
GLM 软件频率响应调整参量陷波滤波器	20 段
系统校准	使用真力 GLM 软件进行自动或手动校准
超低音箱输入/输出通道分频点	通过 GLM 软件调节 输入：低通 50-100 Hz（可调节） 环出：无滤波器
LFE 通道截止频率	120 Hz
中频抑制 >400 Hz	≥ 50 dB
相位耦合控制	GLM 软件中以 15° 为步长

7382A 操作手册

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