

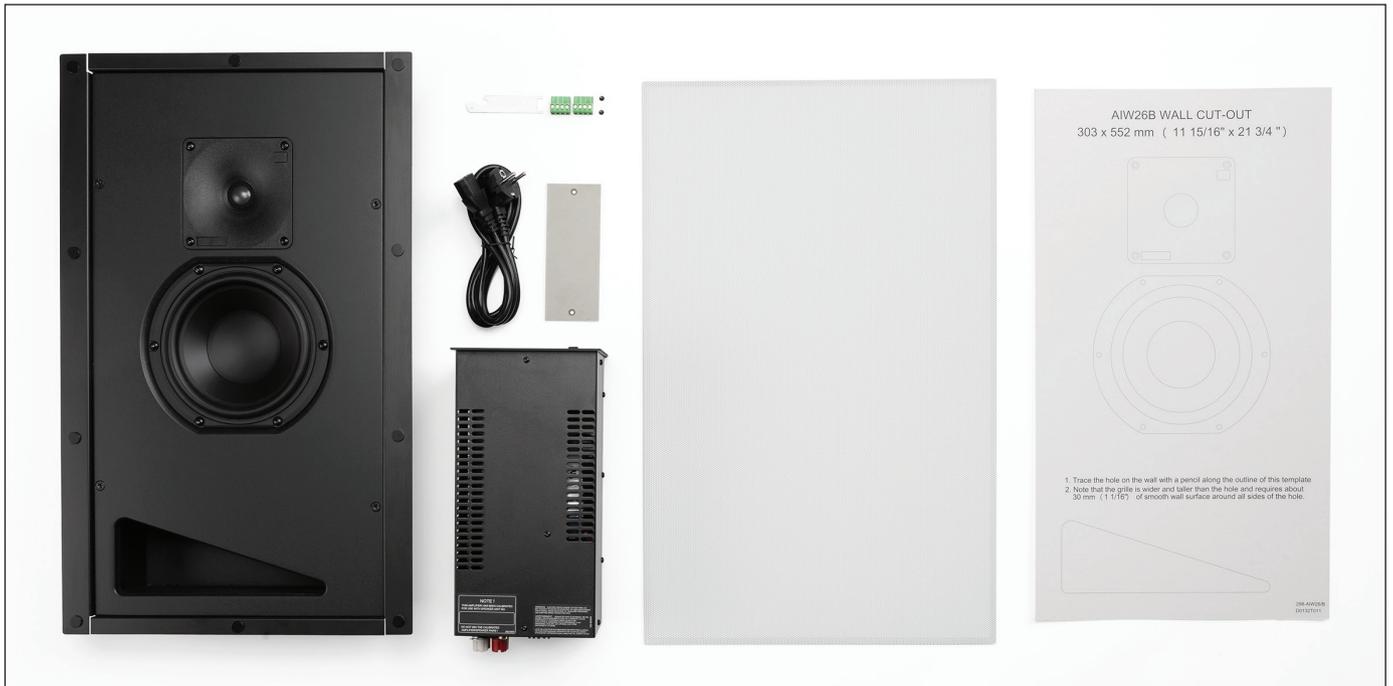
# AIW26B

# Operating Manual

# GENELEC®



# Genelec AIW26B Operating Manual



## Introduction

The Genelec AIW26B Active In-wall loudspeaker system consists of a bass reflex type two-way loudspeaker and a matched remote amplifier module, RAM1. It The AIW26B can be used in the most demanding applications, like the main L-C-R array of a Home Theater system, critical Stereo listening or rear/side channels of a large, state-of-the-art Home Theater.

## Unpacking

A Genelec AIW26B set includes the items listed below. Check that nothing is missing or damaged during transport and delivery. If there is a problem with the product, contact your local Genelec dealer.

- AIW26B loudspeaker unit.
- Grille
- AIW26B cardboard cut-out template
- RAM1 amplifier unit
- Mains power cable
- Plexiglass cover for the control switches
- This Operating Manual

## Installation

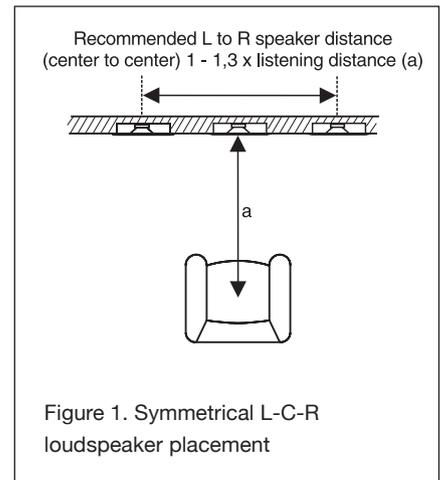
Genelec recommends that you use the services of an authorized installation specialist or other competent and experienced installation company for the installation of the AIW26B system. Ask your local Genelec dealer for recommended installation companies in your region.

### Matching loudspeakers and amplifiers

Each AIW26B loudspeaker unit has been factory calibrated for optimum performance with the RAM1 amplifier it is shipped with. Never mix these matched amplifier-loudspeaker systems in the installation process. The matching units are marked with the same ID number on the reflex port of the AIW26B enclosure and the top panel of the RAM1.

### Loudspeaker placement

Genelec AIW26B loudspeakers are equipped with Genelec's proprietary Directivity Control Waveguide (DCW). One of the main characteristics of the DCW technology is that the loudspeakers give a very even and consistent frequency response over a larger listening area than



conventional loudspeakers. A secondary function of the DCW is to reduce the off-axis radiated sound energy, thereby minimizing the reflections from the side walls, floor and ceiling. This results in a precise and stable sound image

If the AIW26B loudspeakers are used in an application where their capability for precise sound imaging is needed, such as the front channels of a Surround Sound system or a Stereo system, we recommend that the loudspeakers are placed as far as possible from wall corners and other reflective



Figure 2. Lift the AIW26B enclosure into the hole.

surfaces. The loudspeakers should be placed symmetrically in relation to the listening position and there should be no obstructions between the loudspeaker and the listener. This guarantees clear dialogue in films and a good stereo image with music. Figure 1 shows a Left-Center-Right arrangement that works well both as Surround Sound front channels and a Stereo pair.

Whole house audio installations might require less stringent placement options. In these cases be sure to consult this manual for dip switch settings near boundary conditions in Table 3.

Side and rear channel speaker placement in home theaters should follow the practical guidelines given in 5.1, 7.1 and 3D audio configurations.

### Painting the loudspeakers

The metal mesh grille can be spray painted to match the wall colour. Do not paint the loudspeaker enclosure itself, or try to paint the grille while it is attached to the loudspeaker. Remove the thin cloth attached to the grille to avoid clogging the grille with paint. Paint the grille with a thin spray. Do not use brushes or rollers. Be very careful not to clog the holes on the mesh with paint.

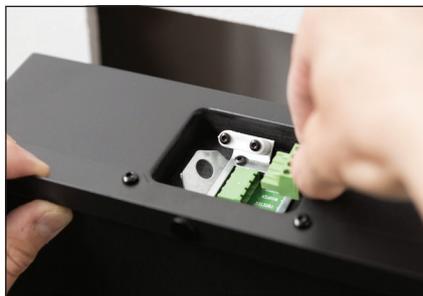


Figure 3. Connect the loudspeaker cable.



Figure 4. Loudspeaker cable in place.

### Installing the AIW26B loudspeaker enclosure

AIW26B specific pre-construction brackets are available at your Genelec dealer. In the following we describe the installation procedure into an existing wall.

Use the cardboard wall cut-out template to find the location for the AIW26B. The template also shows the position of the loudspeaker drivers, so you can easily find the placement that brings them to the optimum position as outlined in chapter "Loudspeaker placement".

Examine the wall structure carefully to find a clearly unobstructed location for the loudspeaker. The loudspeaker enclosure requires a minimum of 102 millimeters (4 in) of free depth measured from the surface of the drywall. Note that the grille is slightly wider and taller than the hole and requires about 30 millimeters (1 1/16 in) of smooth wall surface around all sides of the hole.

When you have found a good location, check that the template is level and trace the hole onto the wall with a pencil along the outline of the template. If you are not sure that the chosen part of wall is free from obstructions, you can start by making a smaller hole at the center of the marked area



Figure 5. Tighten the four Torx T25 screws to 1.5 Nm (1.1 lb ft).

through which you can probe the inside of the wall. Use a drywall saw and make the first cut at a 45° angle toward the center of the hole so you can put the cut piece back in if the location is unsuitable. If you find no obstructions, you can make the final cut along the marked lines.

If you have already connected the RAM1 amplifier units to the system, select the loudspeaker that has the same ID number as the amplifier it will be driven by.

Lift the loudspeaker into the hole lower end first and connect the loudspeaker cable connectors!

Push the AIW26B loudspeaker into the hole and turn the four Torx T25 screws clockwise so that the mounting tabs rotate outwards. Continue tightening the screws to 1.5 Nm (1.1 lb) and the drywall is firmly clamped between the mounting tabs and the enclosure flange. If necessary, a secondary support line can be attached to the tab on the top side of the enclosure.

Next place the grille on the enclosure. The grille is held in place by magnets.



Figure 6. The metal mesh grille is held in place by magnets.

## Choosing and installing the loudspeaker cables

The RAM1 amplifier unit has separate power amplifiers for the tweeter and woofer. Accordingly, there are two pairs of binding posts, white (-) and red (+) for the tweeter and black (-) and grey (+) for the woofer. At the loudspeaker end, the cables are connected to a screw block terminal, which plugs into the input connector on the loudspeaker enclosure. Be sure to maintain correct polarity when connecting the loudspeaker cables and be extra careful not to mix the tweeter and woofer cables (See Figure 7).

Use a good quality 4-conductor cable and make the cable runs as short as possible. See Table 1 for recommended cable gauges. The terminals accept a cable up to 6 mm<sup>2</sup> (9 gauge).

If you are installing the AIW26B system to an existing wall, examine the walls thoroughly for the shortest and least obstructed cable route. Be careful to avoid cutting or drilling into electrical wires, ventilation or water pipes. These are often visible in the attic, basement or crawl space below the floor. It is a good idea to route the loudspeaker cables away from electric or video cables, which might induce hum into the loudspeaker system.

## Connecting the RAM1 amplifier

The RAM1 amplifier is designed to be connected to a line level output of a preamplifier, Surround Sound processor or other low level source. **NOTE!** Never

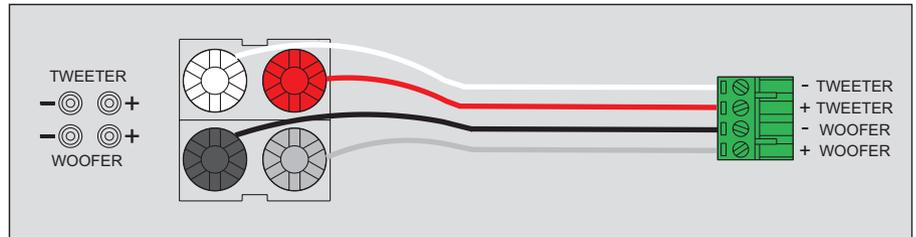


Figure 7. Correct loudspeaker cable polarity.

| Cable gauge                  | Max. length   |
|------------------------------|---------------|
| 2,0 mm <sup>2</sup> (14 AWG) | 30 m (100 ft) |
| 3,3 mm <sup>2</sup> (12 AWG) | 40 m (130 ft) |
| 5,3 mm <sup>2</sup> (10 AWG) | 60 m (200 ft) |

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

*connect the RAM1 to a loudspeaker level output of a power amplifier!* Before making the connections, check that the voltage selector on the amplifier's back panel is set to the correct voltage and the power on all components is turned off.

Start by connecting the loudspeaker cables to the amplifier's binding posts (see Fig. 7 and 9). Check that the amplifier's serial number matches that of the AIW26B loudspeaker enclosure which it will power. The number can be found on a sticker on the loudspeaker's reflex port and on the amplifier's top cover. If the loudspeakers are not yet installed, make a note of which amplifier is connected to each channel. Check the cable polarity and use the provided cable binding post tool to tighten the binding posts. Be careful not to overtighten the binding posts as they may be damaged.

The RAM1 has two parallel 10 kOhm input connectors: a balanced XLR and an unbalanced RCA. For longer cable connection lengths (>10m or >30ft) a balanced line connection is recommended as it offers better immunity to external interference. The RCA connection method usually works as well for shorter connection lengths in less electrically noisy environments. Do not use both inputs at the same time. Consult your Genelec dealer for the choice of signal cables.

The RAM1 has a provision for remote controlled switching between "ON" and "STANDBY" modes (not available in units sold in the EU). The "REMOTE CONTROL"

connector block has two connector pairs: 1-2 for a 12 V DC trigger remote control and 3-4 for an external switch or relay type (contact closure) remote control (see Table 2). Do not connect two remote controls to the amplifier at the same time.

## Space requirement for the RAM1 amplifier

The dual 120 W power amplifiers of a RAM1 unit generate a large amount of heat when used at full power. To avoid overheating, ensure that there is good airflow around the amplifier and no external heat sources close to it. We recommend installing the RAM1 into a well ventilated equipment rack using its dedicated RM1 4U rack mount kit.

If the RAM1 amplifier is placed in a cabinet, on a shelf or into an equipment rack without its dedicated RM1 rack mount kit, there must be at least 100 mm (4 in) of free space behind, 150 mm (6 in) above and 50 mm (2 in) on both sides of the amplifier to ensure adequate cooling (see figure 10).

## Mounting the RAM1 amplifier to an equipment rack

We recommend that you use the Genelec RM1 4U rack mount kit when installing the RAM1 amplifier in an equipment rack. Make sure that the space above and below the RAM1 is uncluttered and there is a space of 100 mm (4 in) or more behind the amplifier. The space behind the amplifier must be well ventilated. If the temperature inside the rack is likely to rise close to the RAM1's maximum ambient temperature of 35° C (95° F), we recommend installing ventilation fans to ensure that the thermal protection is not activated prematurely. See figure 11.

## Setting the input sensitivity

The input sensitivity of each amplifier can be made to match that of the decoder or other source by use of the input sensitivity control on the amplifier's front panel (see

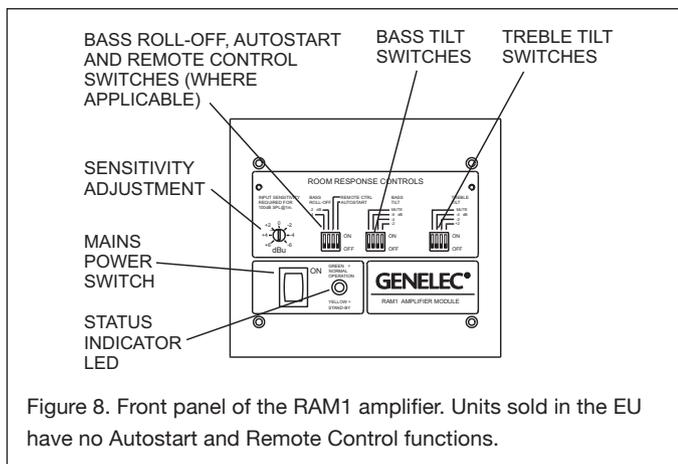


Figure 8. Front panel of the RAM1 amplifier. Units sold in the EU have no Autostart and Remote Control functions.

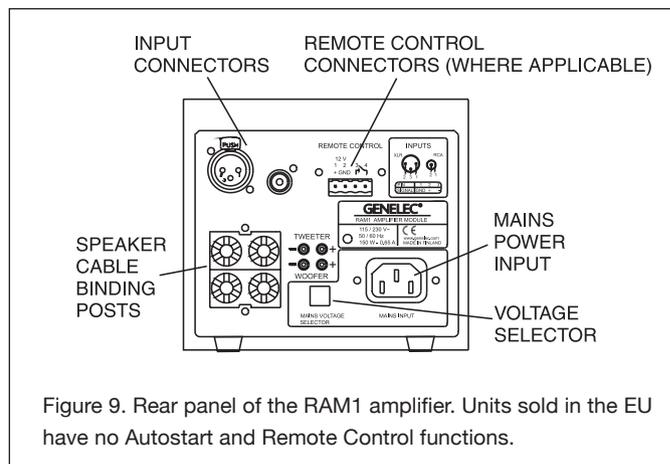


Figure 9. Rear panel of the RAM1 amplifier. Units sold in the EU have no Autostart and Remote Control functions.

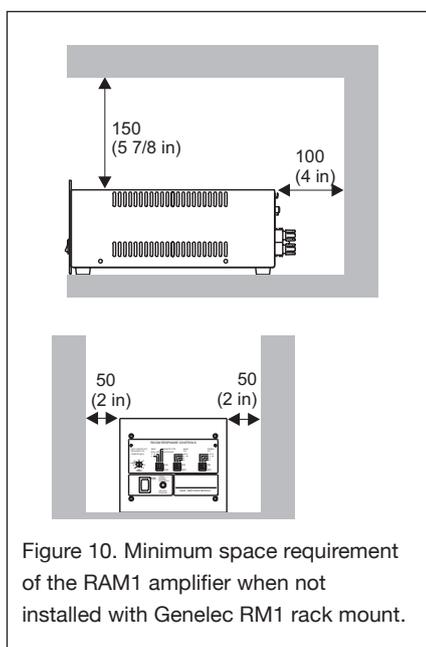


Figure 10. Minimum space requirement of the RAM1 amplifier when not installed with Genelec RM1 rack mount.

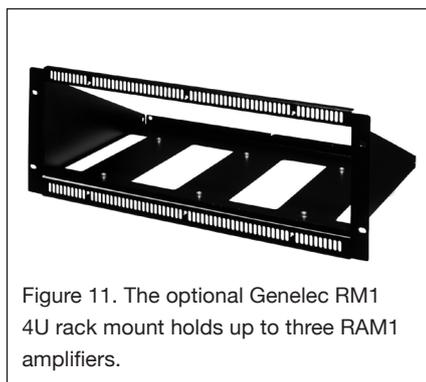


Figure 11. The optional Genelec RM1 4U rack mount holds up to three RAM1 amplifiers.

to get the full output level of 110 dB SPL, an input level of +4 dBu (1.22V) is needed in this setting. Most pre-amplifiers are capable of this output level.

### Setting the room response controls

The acoustic response of the system may have to be adjusted to match the acoustic environment and personal taste. See Table 3 for suggested room response control settings. If the sound is found subjectively too bright, set ‘treble tilt’ to -2 dB, if too bass heavy, set ‘bass tilt’ to -2 dB. The adjustment is done by setting the three groups of room response control switches ‘treble tilt’, ‘bass tilt’ and ‘bass roll-off’ on the front panel of the amplifier. The manufacturer default settings for all controls are ‘All Off’ to give a flat response in half space, i.e. when the loudspeaker has been installed in a wall. Always start adjustment by setting all switches to the ‘OFF’ position. Then set *only one* switch within each group to the ‘ON’ position to select the desired response curve. The switches are not cumulative. If more than one switch is set to ‘ON’ (within one switch group) the attenuation value is not accurate. See Table 3 for some recommended settings.

### Using Autostart and Remote Control functions

Autostart and Remote Control functions are not available in units sold in the EU.

The RAM1 amplifier can be switched to “STANDBY” mode by activating the signal sensing Autostart function or by a remote control unit (not included in the AIW26B system). If the system is left unused for

| Remote control type                            | Pole or contact | Connect to remote control input pin no. |
|--|-----------------|---|
| 12 V DC trigger voltage                        | +               | 1                                       |
|  | -               | 2                                       |
| External switch or relay                       | Contact 1       | 3                                       |
|  | Contact 2       | 4                                       |
| Connect only one remote control unit at a time |                 |   |

Table 2. Remote control connectors on the RAM1.

several days, power it down using the RAM1’s main power switch or a central power switch if one has been installed.

The Autostart function is activated by turning switch 4 (AUTOSTART) on the first switch group to “ON”. Autostart turns the amplifier to “STANDBY” mode if there is no signal present for about 30 minutes. When the signal returns the amplifier switches on immediately and the loudspeaker functions normally.

If you are using a remote control to switch the RAM1 between “STANDBY” or “ON” modes (see chapter “Connecting the RAM1 amplifier”), turn switch 3 (REMOTE CONTROL), on the first switch group to “ON”. This activates the remote control function. In this setting the remote control will override the Autostart function. If you want to use Autostart, turn the “REMOTE CONTROL” switch to “OFF”.

### Protecting the settings

The control group of the RAM1 can be covered with a piece of plexiglass to protect

figure 8). A small screwdriver is needed for the adjustment. The manufacturer default setting for this control is -6 dBu (0.389V, fully clockwise) which gives SPL of 100 dB @1m with -6 dBu input level. Note that

|   | Bass Roll-Off | Bass Tilt | Treble Tilt |
|---|---------------|-----------|-------------|
| Half space factory default setting  | ALL OFF       | ALL OFF   | ALL OFF     |
| Well damped (dead sounding) room  | 0 dB          | 0 dB      | 0 dB        |
| Normal room   | 0 dB          | 0 dB      | -2 dB       |
| Highly reflective (live sounding) room  | 0 dB          | -2 dB     | -4 dB       |
| Additional settings to compensate the loudspeaker positioning within the room                                   |               |           |             |
| In a double corner (wall/wall or wall/ceiling)  | -2 dB         | -2 dB     | 0 dB        |
| In a triple corner (wall/wall/ceiling)  | -4 dB         | -4 dB     | 0 dB        |
| If the loudspeaker is positioned behind a perforated screen, add +2 dB to the Treble Tilt setting to compensate |               |           |             |

Table 3. Suggested room response control settings for differing acoustical environments

the settings. Attach the plexiglass over the switch groups with two Phillips screws when you have completed the adjustments. Do not overtighten the screws.

### Status indicator LED

The status indicator LED on the RAM1 changes colour to indicate amplifier status. If the LED is yellow, it indicates that the amplifier is in “STANDBY” mode. When the amplifier is switched to “ON” mode, the LED changes to green colour.

### Automatic protection circuits

The AIW26B system has protection circuits against loudspeaker driver thermal overload and amplifier overheating. The protection system resets automatically so the user only has to turn the input level down to ensure that it does not reactivate.

Driver thermal overload protection protects the drivers from damage caused by prolonged overdriving with excessively high or distorted signal. The circuit automatically reduces the volume of the channel that is being overloaded. To avoid this, lower the listening volume if the sound becomes harsh and distorted at high sound pressure levels.

Amplifier thermal protection turns the amplifier to “STANDBY” mode if the amplifier overheats. Let the amplifier cool down and check that there is sufficient clearance around the amplifier for cooling (see chapters “Space requirement for the RAM1 amplifier” and “Mounting the RAM1 amplifier to an equipment rack” above). If the problem persists, consult your Genelec dealer or Home Theater Installation company for an improved cooling solution for your equipment cabinet or rack.

### Maintenance

There are no user serviceable parts within the loudspeaker or the amplifier. Any maintenance or repair should only be undertaken by qualified Genelec service personnel.

### Safety considerations

- Servicing and adjustment must only be performed by qualified Genelec service personnel. Do not undo any screws on the amplifier unit.
- It is forbidden to use this product with an unearthed power cable, which may lead to personal injury.
- To prevent fire or electric shock, do not expose any part of the system to water or moisture. Do not place any objects filled with liquid, such as vases, on the RAM1 amplifier or near it.
- Switch off the mains power from the amplifier if the system is not used for long periods of time.
- Note that the RAM1 amplifier is not completely disconnected from the AC mains service unless the mains power cable is removed from the amplifier or the mains outlet.

### WARNING!

This equipment is capable of delivering Sound Pressure Levels in excess of 85 dB, which may cause permanent hearing damage.

### Guarantee

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

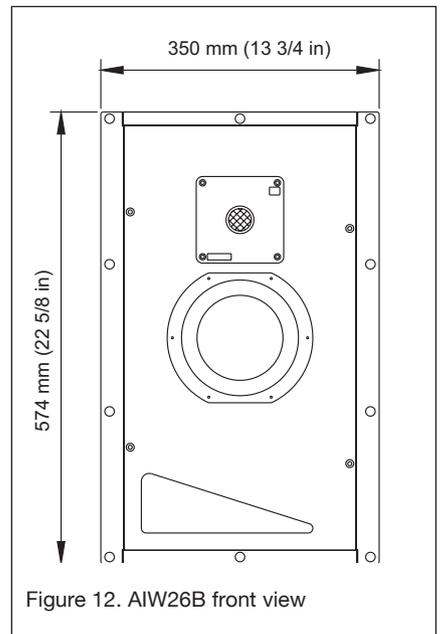


Figure 12. AIW26B front view

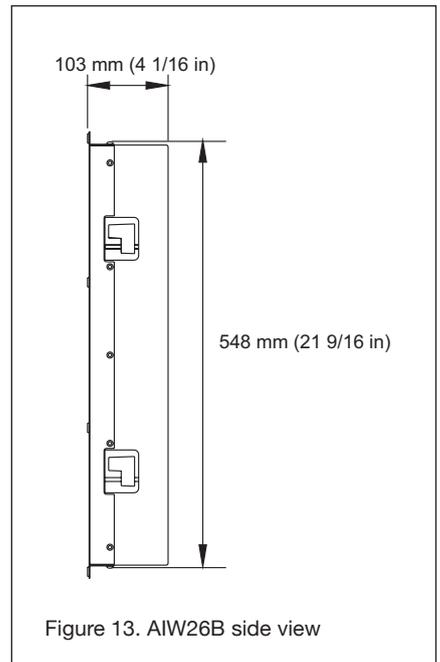


Figure 13. AIW26B side view

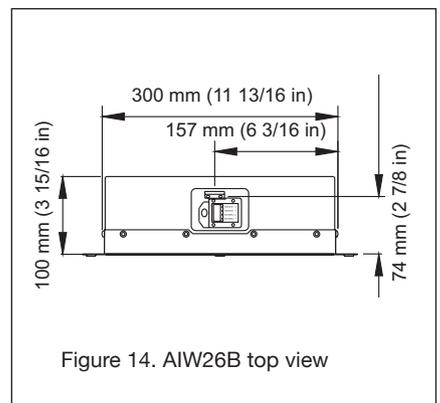


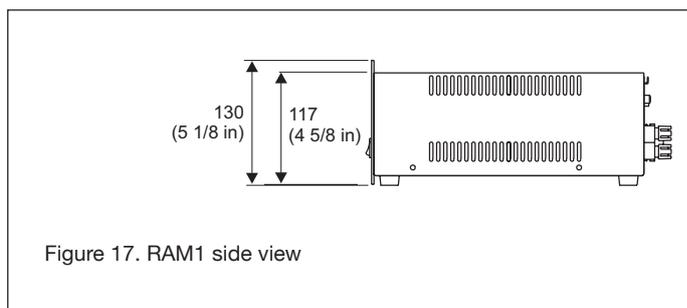
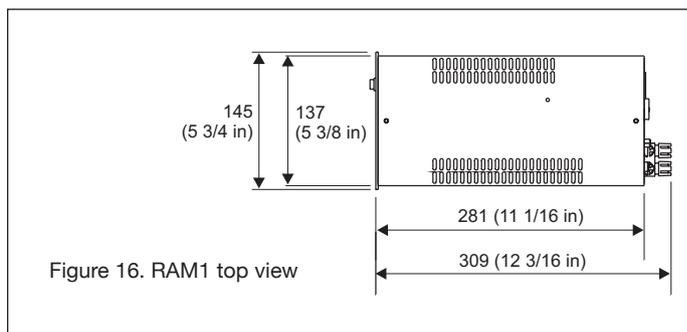
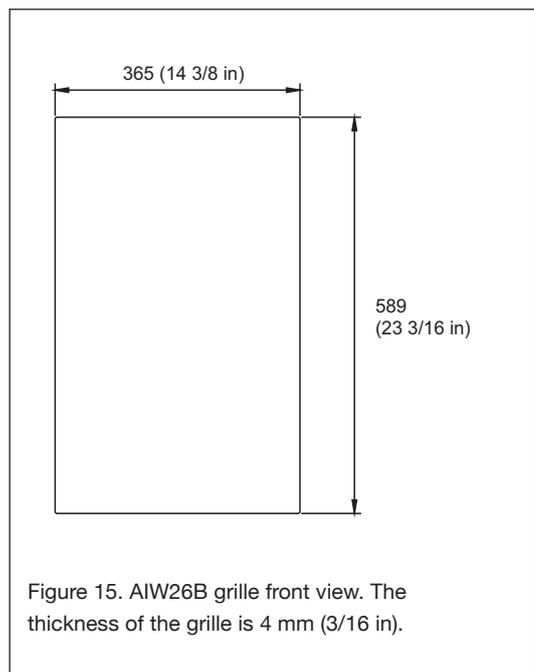
Figure 14. AIW26B top view

| AIW26B LOUDSPEAKER UNIT   |   |
|---|---|
| Lower cut-off frequency, -6 dB:   | < 39 Hz   |
| Upper cut-off frequency, -6 dB:   | > 25 kHz  |
| Accuracy of frequency response, (±2.5 dB):  | 45 Hz...21 kHz  |
| Maximum short time sine wave acoustic output at 1 m on axis in half space, averaged from 100 Hz to 3 kHz: | >110 dB SPL   |
| Maximum peak acoustic output for a pair with music material:  | >120 dB SPL   |
| Drivers   |   |
| Bass:   | 165 mm (6.5 in)                                       |
| Treble:   | 19 mm (3/4 in) metal dome                             |
| Harmonic distortion at 90 dB SPL @ 1 m on axis:   | < 3% (50...200 Hz)<br>< 0.5% (>200 Hz)                |
| Weight including grille assembly:   | 8.7 kg (19.2 lbs)                                     |
| Required cut-out dimensions   |   |
| Height:   | 552 mm (21 <sup>3</sup> / <sub>4</sub> in)*           |
| Width:  | 303 mm (11 <sup>15</sup> / <sub>16</sub> in)          |
| Depth:  | 102 mm (4 in)**                                       |
| Permissible drywall panel thickness:  | 7 - 28 mm (1/4 in - 1 <sup>1</sup> / <sub>8</sub> in) |

\*\* The grille is taller and wider than the cut-out and requires 30 mm (1 1/16 in) of smooth wall surface around all sides of the cut-out.

\*\* Depth = Free space requirement inside the wall cavity measured from the surface of the drywall.

| RAM1 AMPLIFIER UNIT  |   |
|--|---|
| Bass amplifier output power:                               | Short term 120 W                            |
| Treble amplifier output power:                             | Short term 120 W                            |
| Input impedance:   | 10 kOhm                                     |
| Crossover frequency:                                       | 3.5 kHz                                     |
| Treble tilt control in 2 dB steps from +2 to -4 dB & MUTE: | @15 kHz                                     |
| Bass roll-off control in 2 dB steps from 0 to -6 dB:       | @50 Hz                                      |
| Bass tilt control in 2 dB steps from 0 to -6 dB & MUTE:    | @100 Hz                                     |
| Mains voltage:   | 100/200 V or 115/230 V                      |
| Power consumption (Standby / Idle / Full output):          | 23/23/200 W                                 |
| Maximum ambient temperature                                | 35°C (95°F)                                 |
| Weight:  | 4.6 kg (10.1 lbs)                           |
| Dimensions   |   |
| Height:  | 130 mm (5 <sup>1</sup> / <sub>8</sub> in)   |
| Width:   | 145 mm (5 <sup>3</sup> / <sub>4</sub> in)   |
| Depth:   | 309 mm (12 <sup>3</sup> / <sub>16</sub> in) |



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