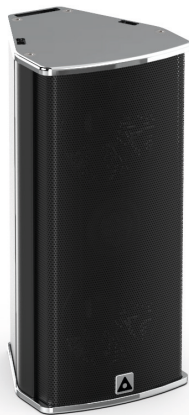




DOCUMENTATION

MANUAL PAN SPEAKER P 02-RJ + VARIANTS

V 1.1



Shapely.
Versatile.
Functional.

Read the manual carefully before putting the device into operation.
The manual must be retained.



All products are designed, developed and manufactured by Pan Acoustics in Germany.
Pan Acoustics reserves the right to modify products without prior notice.

www.pan-acoustics.de

General information

Manual Pan Speaker P 02 + variants
P 02-RJ
P 02-RJ (mB)

Version: 1.1
Language: English
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This document must be kept with the product or in a safe place so that it is available when needed.

If the product is resold, the document must be handed over to the new owner in printed or electronic form.

Pan Acoustics reserves the right to change / update the document without prior notice. The latest version of this document can be downloaded from the Pan Acoustics website.

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1. Product description

Thank you for choosing a product from Pan Acoustics. The passive loudspeakers from the Pan Speaker series combine architecturally appealing design with flexible connections. Depending on the model, low impedance, 100 V and RJ variants are available.


The Pan Speaker series offers a comprehensive range of loudspeakers for different applications such as traditional AV installations, theatre, immersive sound and outdoor applications.


All loudspeakers from the Pan Speaker series feature:


- appealing design
- natural and unaltered audio reproduction
- flexibility and modularity


Please read this operating manual carefully prior to startup in order to guarantee fault-free operation.

2. Symbols and explanation

 **DANGER** This symbol indicates a hazard with a high level of risk. If this hazard is not avoided, serious injury or death may result.

 **WARNING** This symbol indicates a hazard with a medium level of risk. If this hazard is not avoided, moderate to serious injury or death may result.

 **CAUTION** This symbol indicates a hazard with a low level of risk. Failure to observe this instruction may result in minor injuries or damage to property.

 **NOTICE** This symbol provides important instructions for the proper handling of the product. Failure to observe this instruction may result in damage to the product or malfunctions.

3. General information and target group

All information in this operating manual is based on the product properties available at the time of preparation and the safety regulations applicable at that time.

This operating manual describes the setup, function and connection of the Pan Speaker loudspeaker systems P 02-RJ and P 02-RJ (mB). It is aimed at system technicians and persons assigned the task of installing and operating a relevant system.

Pan Acoustics reserves the right to make changes and modifications within the scope of legal regulations and product improvements without prior notice.

This operating manual and all additional information required for operation must be read prior to use by all persons involved in commissioning. The operating manual and all additional information required must be kept within reach near the device.

All necessary information and documents can be obtained from the Pan Acoustics website, <https://www.pan-acoustics.de/en/service/download>, or by sending an e-mail to contact@pan-acoustics.de.

4. General safety regulations

The following safety regulations must be read completely and diligently before putting the device into operation and must then be kept in a safe place near the device. Reading the operating manual does not replace the knowledge and observance of all valid local safety rules and regulations. The information and technical specifications published in this document are based on data available at the time of publication. We reserve the right to make changes to the product aimed towards product improvement and adjustment to new applicable standards.

DANGER

To prevent injuries, electric shock and fire, ensure that all persons involved in the set up, operation, dismounting or installation of the device/system have read this operating manual.

WARNING

In order to prevent falling object injuries,

- this device is to be fastened to building fixtures with friction-locking connections using suitable connector elements according to the installation instructions. The base surface is to be checked for suitability of installation and, where required, prepared by qualified personnel.
- the connections and components delivered by Pan Acoustics or expressly mentioned in this manual are to be used.
- the load-bearing elements and connections are to be checked regularly for wear and loosening.

To minimise the risk of fire or electric shock,

- the product must not be opened. It does not contain any parts that can be serviced by the user.
- the product must not be exposed to moisture or humidity, except for loudspeakers with an appropriate IP protection class.
- no objects filled with liquid (e.g. bottles) must be placed on top of the device.
- the device must not be exposed to excessive heat, direct sunlight, fire or the like.
- no open sources of fire (e.g. candles) must be placed on top of or under the device.

To prevent injury, this product must be taken out of operation, clearly marked and secured against accidental operation if the product

- shows signs of visible damage.
- contains loose parts.
- no longer works flawlessly.
- has been stored for a long time under unfavourable conditions (e.g. in humid rooms).
- was exposed to severe transport stress (e.g. with unsuitable packaging).

To avoid injuries such as hearing damage due to excessive volume levels, persons should

- never stand directly in front of a connected loudspeaker.
- not be exposed to high volume levels over a long period of time.

CAUTION

To prevent damage to the product, avoid

- generating acoustic feedback.
- playing back distorted signals of high power over a long period of time.
- generating impulse-like sounds (e.g. popping noises) which occur when a media player is switched on, connected or disconnected.

NOTICE

Device protection and operating safety

- The device is completely disconnected from the signal network by disconnecting the signal connection.
- The device may only be cleaned from the outside using a dry cloth.
- The original packaging or an appropriate transport box (flight case) should be used when transporting the device. The device must be protected against vibrations.

5. Safety instructions

All products from Pan Acoustics are developed and manufactured in Germany according to the latest safety regulations. Each product is thoroughly inspected prior to shipping according to in-house quality guidelines.

The device conforms to the current CE regulations for operation in residential, business, commercial and industrial areas.

The device must be carefully inspected upon receipt for transport damage and completeness. In case of damage, the transport company and the shipper must be notified without delay.

Safety may be compromised if the product:

- shows signs of visible damage.
- no longer works correctly.
- has been stored for a long time under unfavourable conditions.
- has been transported incorrectly (e.g. unsuitable packaging).

If the product shows signs of impairments that no longer guarantee safe operation, the device must be secured and labelled accordingly. It must also be ensured that no intentional or accidental operation by third parties is possible.

6. Scope of delivery

Inspect the product for completeness upon delivery. The scope of delivery includes:

- 1 x Pan Speaker P 02-RJ** (version as ordered)
- 1 x manual download information**

7. Setup location

The loudspeaker is suitable for indoor operation. In outdoor areas, the loudspeaker must only be operated with a suitable IP protection class (IP54 or IP65). Sufficient air circulation must be ensured when operating the device indoors.

The device may be damaged by condensation. It should therefore be appropriately acclimatised before operation.

The loudspeaker may only be operated in the specified ambient temperature --> see chapter 17 "Technical data loudspeaker".

WARNING

When unpacking, it is important to pay attention to the temperature difference between the ambient temperature and the device. If the temperature difference is high, it is necessary to wait a sufficiently long time before operating the device to avoid damage due to condensation.

8. Assembly and connection

8.1. Assembly of mounts (accessories)

Various mounts are available from the "Pan Accessories" range for installing the loudspeaker on walls and ceilings

--> see chapter 16 "Mounts".

The installation and commissioning of loudspeakers must only be carried out by qualified personnel. Ensure that the mount chosen corresponds to the requirements on the wall or ceiling structure, along with operating requirements.

National safety regulations for operation and assembly must be followed.

CONNECTION WITH THE BUILDING STRUCTURE

- It must be ensured that the ceiling/wall area where the device is to be installed is structurally suitable.
- The mount must lie flat on the surface of the building structure. The surface must not show any settlement effects even in the long term.
- For a safe and durable connection, plug and screw connections must be dimensioned according to the acting forces that may occur through lever effects.
- In case of doubt as to the type and composition of the building structure, consult a structural engineer.

CONNECTION OF THE LOUDSPEAKER AND MOUNT

- All mounts sourced via Pan Acoustics for the Pan Speaker series are delivered with suitable installation material for connection with the loudspeaker.
- The connection between the loudspeaker and the mount is made by a fixing point (e.g. a slot nut, which is inserted into the rear slot of the loudspeaker and tightened with two M6 set screws). The mB variant of the loudspeaker features a U-bracket, which is mounted via a fixing point in the lids of the loudspeaker.
- To avoid damage to the mounts and the loudspeakers, no screws longer than the original ones must be used. Longer screws may destroy the stability of the loudspeaker or cause short circuits inside the loudspeaker.
- A tightening torque of 10 Nm must be observed for the screw connection between the mount and the loudspeaker.



⚠ NOTICE

You can find the installation instructions for the selected mount on our website in the download area.

8.1.1. Assembly/disassembly of the bracket (mB variant)

The mB variant of the loudspeaker P 02-RJ is delivered with a pre-assembled U-bracket. The bracket features three fixing points for mounting e.g. on a building surface. To mount the U-bracket on a surface, it must first be removed from the loudspeaker. After mounting the bracket on the wall, the loudspeaker must be inserted into the bracket and fixed (see step 3).

Tools required for assembly/ disassembly of the U-bracket:

Hexagon screwdriver



Step 1:

Unscrew 2 x hexagon screw.



Step 2:

Pull off the bracket to the back.



Step 3:

Secure plastic washer.

Mount the bracket on the desired building surface. When assembling, position the plastic washers appropriately.

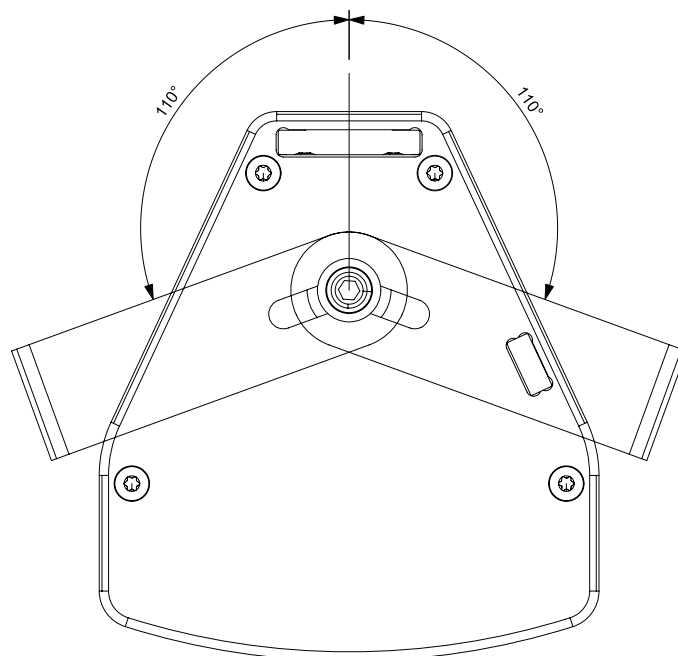


NOTICE

Assembly is done in reverse order.

8.1.2. Angle of the U-bracket

The U-bracket can be swivelled from the centre to the left and right by 110° each. To adjust the set angle, hand-tighten the screws connecting the U-bracket to the lids.



8.2. Electrical connection

8.2.1. P 02-RJ (low impedance)

The low impedance variant of the loudspeaker P 02-RJ is equipped with an RJ45 socket with high electrical and mechanical load capacity at the back. The contacts of the RJ45 socket are wired in such a way that 4 wires of a network cable are combined for low-impedance signal transmission. This connection variant permits to connect the loudspeaker to power amplifiers with corresponding socket and assignment using 23 AWG or 24 AWG network cables. Alternatively, an adapter cable is available to operate the loudspeaker with DSP power amplifiers that do not have an RJ45-compatible port.

⚠ WARNING

Connection cables must not be used for fixing or suspending loudspeakers.

⚠ CAUTION

To avoid damage to the product or to other IT equipment, e.g. switches (PoE), the loudspeaker must not be connected to such devices.

Step 1:

Make the connection panel accessible.



Step 2:

Run the network cable with the RJ45 plug to the loudspeaker.

⚠ NOTICE

Check the locking mechanism of the connection cable for function to prevent the cable from slipping out.



Step 3:

Connect the network cable to the socket of the loudspeaker and snap it into place.



8.3. Important notice regarding the network cable and amplifier power

The following information is to ensure the safe operation of the loudspeaker with power amplifiers. The maximum cable lengths and cable cross sections that may be used are indicated below.

Pan Acoustics loudspeakers have a high efficiency. Due to the high sensitivity of the systems, a considerable sound pressure can already be generated from little applied power. The RJ variants of the loudspeakers therefore do not have to be driven to the maximum in order to produce a sound level that is sufficient for the room, e.g. in conference applications.

⚠ WARNING

Network cables are not suitable for transmitting high currents. Cables have an electrical resistance and can heat up considerably depending on the cable cross section. To prevent too much cable heating, the cross section of the cable must be sufficiently dimensioned. It is therefore important to adjust the power of the DSP power amplifier to the conditions, max. 50 watts (programme) / 100 watts (peak) @ 23 AWG twisted pair cable. The CAT sockets and, if applicable, patch cables used must also be designed for currents of up to 1.5 A per wire pair.

8.3.1. Permissible cable cross sections and lengths

| CAT cable cross section | = cross section 2 wire cable | Cable length (1 dB attenuation) | Cable length (1 dB attenuation) |
|---------------------------------|------------------------------|---------------------------------|---------------------------------|
| 22 AWG (0.326 mm ²) | 1.31 mm ² | 36 m @ 8 ohms | 18 m @ 4 ohms |
| 23 AWG (0.258 mm ²) | 1.038 mm ² | 28 m @ 8 ohms | 14 m @ 4 ohms |
| 24 AWG (0.205 mm ²) | 0.823 mm ² | 22 m @ 8 ohms | 11 m @ 4 ohms |

The maximum cable length (24 AWG cable) between the power amplifier and the loudspeaker with RJ socket should not exceed the length of 100 m @ 8 ohms and 60 m @ 4 ohms.

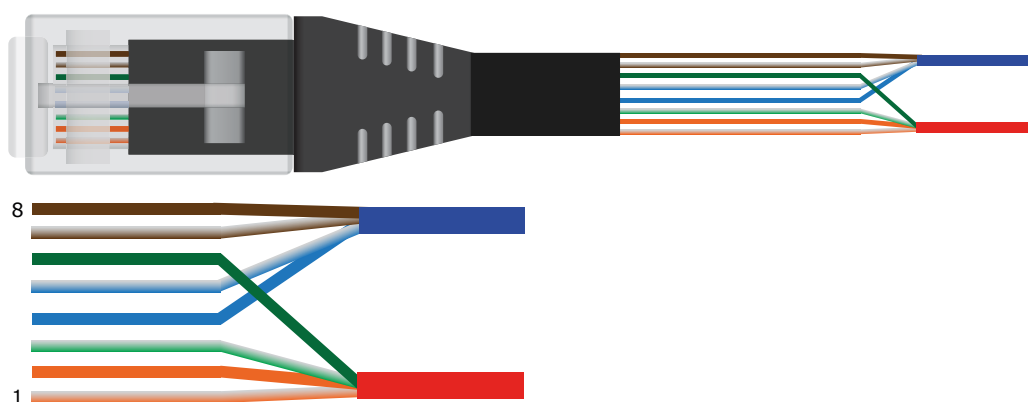
⚠ NOTICE

CAT5e or CAT6 cables are suitable for adapted power transmission if their cross sections correspond to 23 AWG or 24 AWG cables, shielded cables are NOT required.

For optimum power transmission, only use cables with copper cores.

8.3.2. RJ pin assignment

The contacts of the loudspeaker's RJ socket are wired in such a way that 4 wires (blue/brown) and 4 wires (green/orange) are combined to one wire (+) and one wire (-). This assignment results in no polarity reversal when using a crossed network cable.



8.3.3. RJ adapter

For connection to a DSP power amplifier that is not equipped with a correspondingly assigned RJ socket, but e.g. with a 2-pin connection terminal, an adapter with Keystone socket is available.



8.4. Operation on the power amplifier

The loudspeaker P 02-RJ must be operated on a correctly configured DSP amplifier or amplifier with upstream audio DSP. The power of the amplifier to be used must be limited to 20 watts (programme) and 60 watts (peak). Further technical descriptions of the loudspeaker can be found in the technical data --> see chapter 17 "Technical data loudspeaker".

DSP settings for various DSP amplifiers and DSP audio platforms for sound equalisation can be downloaded from the Pan Acoustics website www.pan-acoustics.de. If you have any technical questions, you can also contact our support team at support@pan-acoustics.de.

WARNING

The RJ plug connections on the power amplifier or on the loudspeaker must not be plugged or unplugged under load. Plugging or unplugging the RJ plugs under load will cause electrical damage to the contacts in the socket or on the plug.

9. Operating conditions

The product is suitable for operation in an ambient temperature from -10 °C to +50 °C. If the product is operated below 0 °C, the device must be operated by means of a continuous signal in order to prevent the loudspeaker chassis from freezing.

Before operating the device for the first time, it must be acclimatised. Avoid exposing the device to aggressive chemical liquids and vapours. The device must not be covered up by textiles. Take precautions to prevent the enclosure from heating up due to direct exposure to sunlight or powerful spotlights. The device must also not be exposed to strong vibrations.

10. Service and repair

Service and repair work may only be carried out by persons and partners authorised by Pan Acoustics.

No service or repair measures are to be performed on the device that exceed the statements made in chapter 11 "Maintenance".

Contact data:

--> see chapter 15 "Contact address".

11. Maintenance measures

The following measures must be carried out at regular intervals:

Cleaning

The enclosure should be regularly dusted off with a damp cloth and checked for damage.

Visual and functional check

The installed device should be regularly subjected to a visual check.

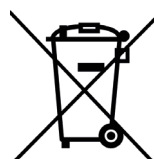
The following checks must be carried out:

- Check the wall and ceiling mount for a firm fit.
- Check the enclosure for damage.
- Check the connection cable for damage.

12. Declaration of conformity

The declaration of conformity for the relevant product from the Pan Speaker series can be requested from Pan Acoustics.

13. WEEE declaration (disposal)



The waste bin symbol indicates that electrical and electronic devices must not be disposed of with household waste after their useful life. This symbol can be found on the type plate of our products. Dispose of the device in accordance with the applicable regulations and any contractual agreements. If you have any questions about disposal, please contact your dealer, distributor or us.

14. Warranty

Pan Acoustics stands by its products and gives up to **10 years warranty** on its loudspeakers for any material or manufacturing defects. New products manufactured in accordance with protection classes IP54 and IP65 as well as digital audio interfaces (Dante®) from Audinate Pty Ltd and rechargeable batteries are excluded from the 10-year warranty. A warranty period of 3 years is granted for loudspeakers in accordance with protection classes IP54 and IP65. For further information on the warranty, please refer to the Pan Acoustics warranty conditions.

<https://www.pan-acoustics.de/en/service/warranty>

15. Contact address

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38302 Wolfenbüttel
Germany

E-mail: support@pan-acoustics.de

16. Mounts

Recommended mounts for mounting products from the Pan Speaker series on walls and ceilings or for mobile use include:



Tripod mount



Wall mount, TWM II



Wall mount, TWM III



Ceiling mount (W)



Ceiling mount (BK)

⚠ NOTICE

Depending on the length and weight of the loudspeaker, a corresponding number of mounts must be used and, if necessary, additional measures for stability or fall protection must be taken.

Information on additional measures or the number of mounts to be used can be found in the manual of the corresponding accessory. If you have any technical questions, you can also contact our support team at support@pan-acoustics.de.

17. Technical data loudspeaker

17.1. P 02-RJ

ACOUSTIC PROPERTIES

| | |
|--------------------------------------|---|
| Configuration: | 2-way system (D'Appolito) |
| Frequency range: | 130 Hz – 20 kHz |
| Equipment: | 2 x 3.5" / 0.5" voice coil |
| Rated power: | 150 W (peak _{20 ms}) / 100 W (programme) / 60 W (nominal) |
| Recommended amplifier: | DSP power amplifier |
| Sensitivity: | 89 dB 1 W/1 m |
| Maximum SPL: | 115 dB* (peak) @ 1 m |
| Impedance: | 8 ohms |
| Horizontal radiation pattern: | 100° (< 10 kHz) |
| Vertical radiation pattern: | 60° |
| Connections: | 1 RJ45 socket |
| Temperature range: | -10 °C to +50 °C (ambient temperature) |

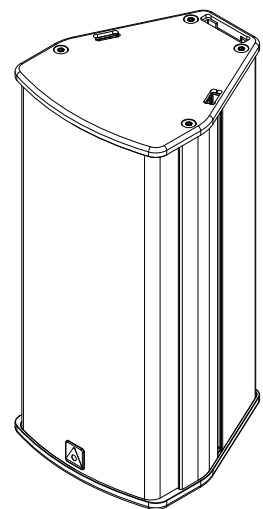
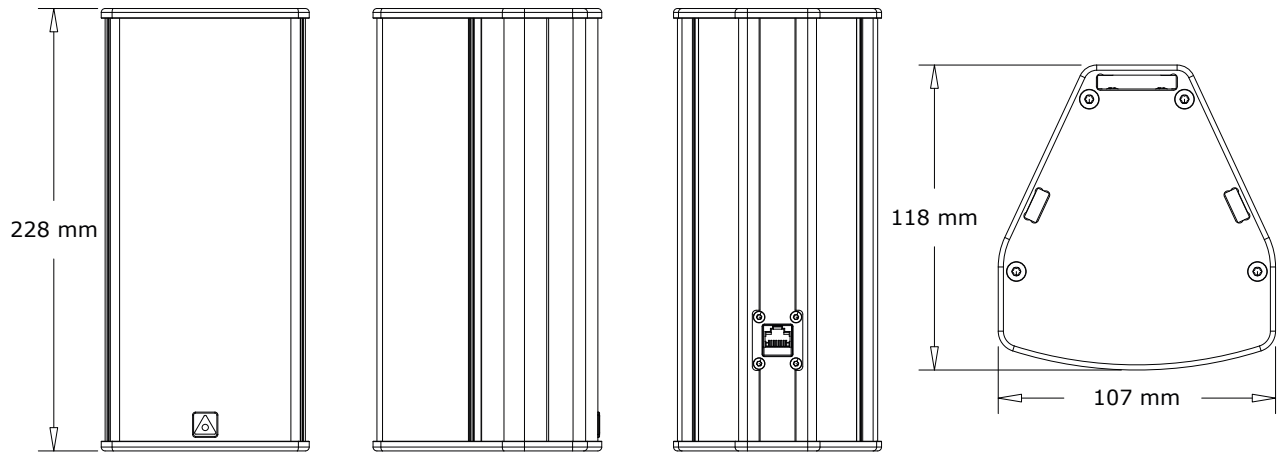
MECHANICAL PROPERTIES

| | |
|--|--|
| Enclosure: | Aluminium profile |
| Grille: | Powder-coated perforated metal sheet |
| Standard colours (with silver lids): (optional: lids in enclosure colour) | RAL 9006 (aluminium), anodised RAL 9010 (white), silk matt RAL 9005 (black), silk matt |
| Dimensions without bracket (HxWxD): Dimensions with bracket (HxWxD): | 228 x 107 x 118 [mm] 244 x 107 x 152 [mm] |
| Weight: | 1.5 kg |
| Mounting option: | Available with or without U-bracket. Other mounting accessories available. |

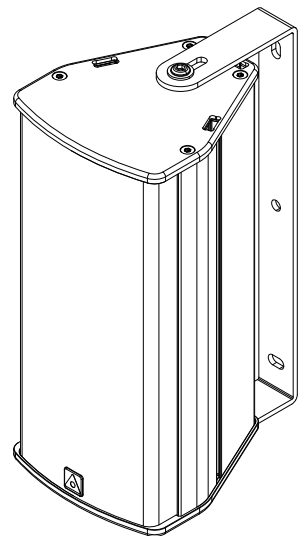
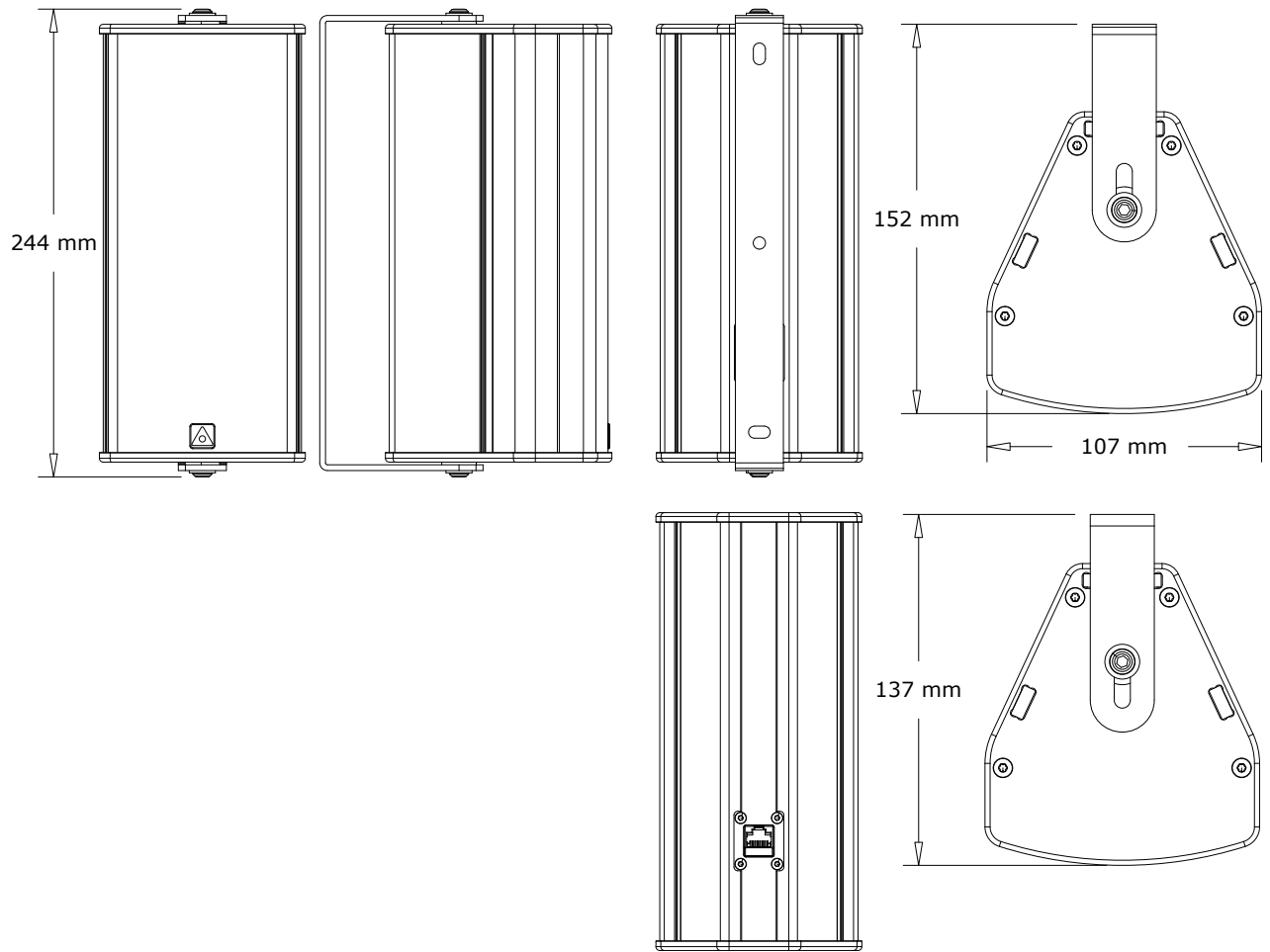
*Under anechoic half-space conditions with DSP settings.
Frequency range: -10 dB under anechoic half-space conditions.

18. Technical drawing loudspeaker

18.1. P 02-RJ



18.2. P 02-RJ (mB)



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