

User Manual

Ray-On PoE

For column models
B70 PoE, R70 PoE, R110 PoE



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Warning

For your safety, please read this manual before any intervention on Ray-On PoE speakers. If in doubt, contact your reseller or Active Audio (info@activeaudio.fr).

For your safety, please follow the instructions listed below to avoid the risk of electric shock, fire, or damage to the product and its environment.

The list of precautions below is not exhaustive and does not exempt from compliance with standards, customs and regulations relating to the fields of electricity and construction.

Electrical safety

Ray-On PoE is an active product, powered by the network. All precautions must therefore be taken when connecting it.

- Use CAT5 or higher network cables
- Use RJ45 connectors mounted and tested in accordance with industry standards
- Use certified cables and connectors
- Take every precaution to keep the cable in good condition
 - Do not overload the cable (placing heavy or sharp objects on the cable)
 - Do not bend the cable beyond the radius of curvature indicated by its manufacturer
 - Do not staple the cable
 - Keep the cable away from a heat source

If the following events occur, immediately disconnect the power source

- Finding of a damaged cable
- Unusual odor or release of smoke
- Introduction of objects inside the enclosure
- Introduction of water inside the enclosure

NEVER OPEN THE SPEAKER

Mechanical safety

Do not use the supports supplied with the enclosure to support elements other than the enclosure.

Do not hang anything on the speaker.

Use fixing systems suitable for the support against which the speaker is placed and have the fixing carried out by qualified personnel.

Environmental security

Do not expose the enclosure to :

- Splashes of water or liquid chemicals
- The heat
- The flame
- Too large variations in temperature

This product contains recyclable elements. Its disposal must comply with the local regulations in force.

1. Introduction

The PoE range includes 2 types of speakers:

- Ray-On 70 PoE and Ray-On 110 PoE ensure perfect speech intelligibility and optimal acoustical comfort, even in noisy and reverberant venues. They are based on the DGRC (Digital & Geometric Radiation Control) principle patented by Active Audio.

Compared with a classic sound system in which each loudspeaker is controlled independently, the DGRC method makes it possible to decrease the number of channels to be controlled, thereby enhancing economic efficiency.

- The Ray-On B70 PoE sound bar is designed for the sound reinforcement of narrow spaces such as corridors, escalators, shopping alleys, shopping malls, railway platforms... B70 will also ensure the sound reinforcement of spaces with limited coverage areas, such as video-conferencing equipment, huddle rooms, small spaces in museums...

The arc position of the drivers allows a perfect directivity control in the spatially and in the frequency domain. This directivity control allows to limit the sound disturbance in the sound reinforced spaces neighbourhood.

Ray-On PoE characterized by the use of PoE (Power over Ethernet) technology which allows the speakers to be supplied with power and audio signal using a single network cable.

Ray-On PoE range includes 3 models of loudspeakers from 70cm to 1.10m high (2 models) and 70cm wide (1 model).

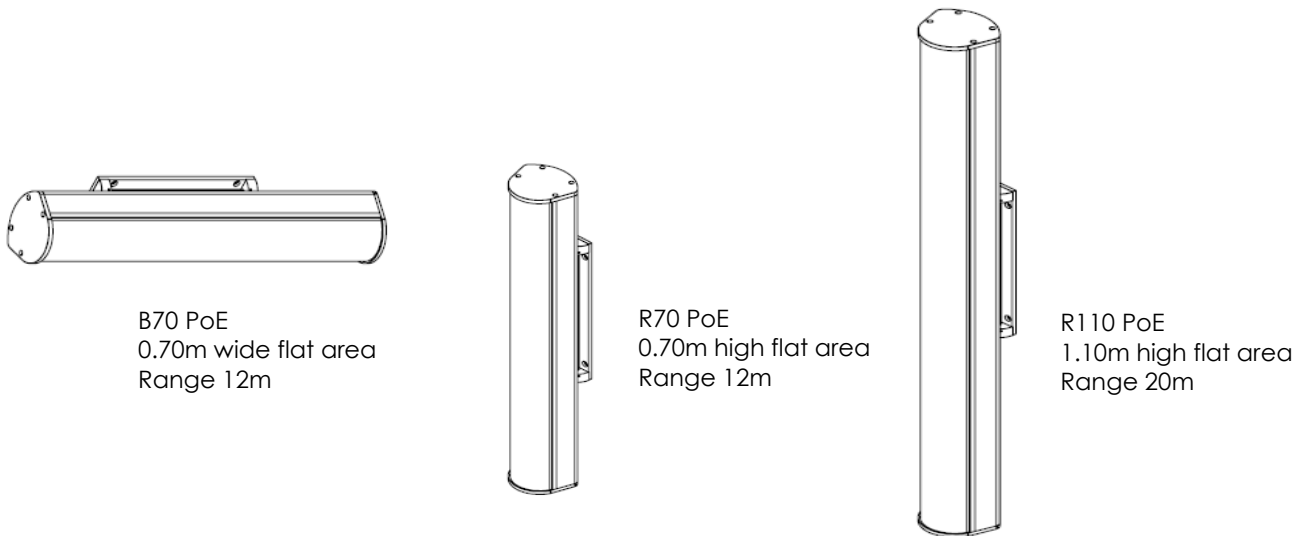


Figure 1 : Ray-On PoE

2.1. R70 PoE and R110 PoE

The most important parameter for the installation of Ray-On+ loudspeaker is its mounting height because the range of the column directly depends on it. Installing the column higher will increase the range but will affect SPL. On the contrary, installing the column lower will increase SPL, but decreases its range.

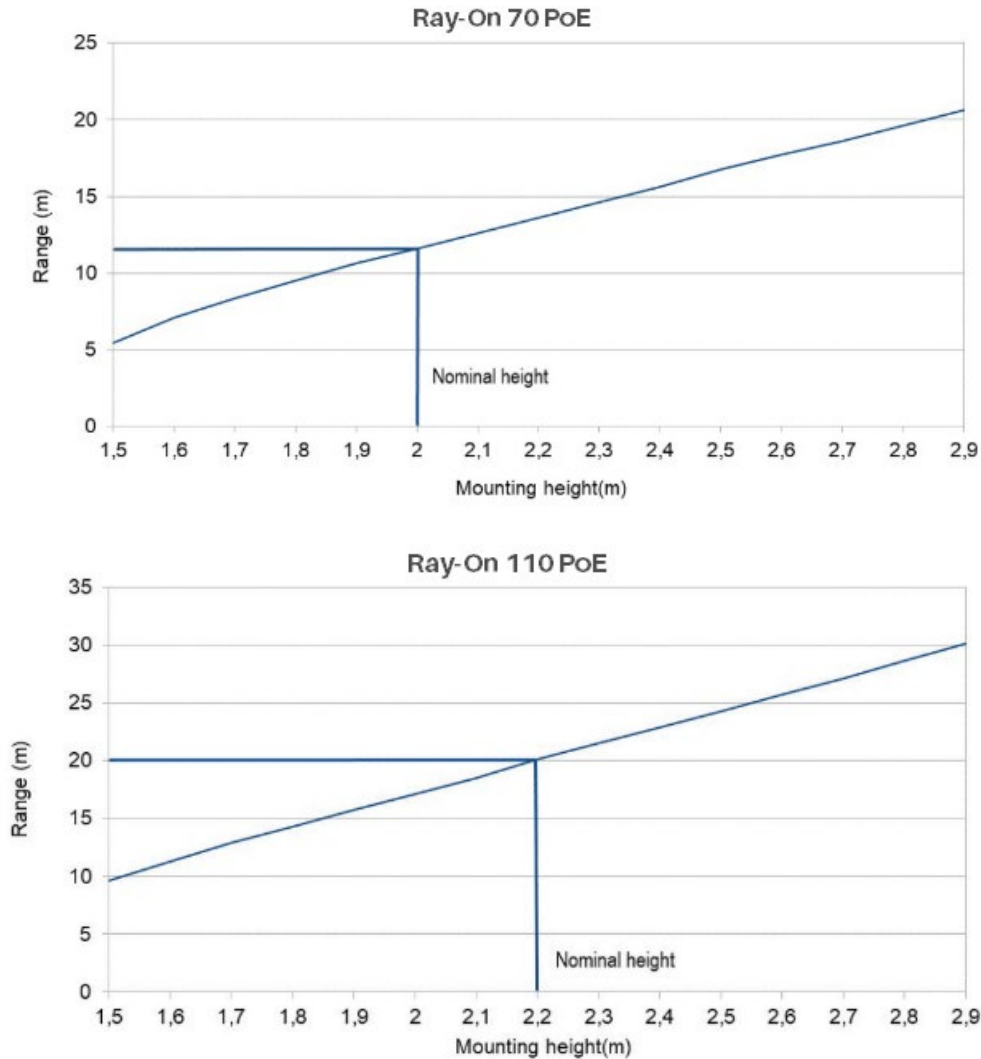


Figure 2 : ± 5 dB range (m) according to mounting height (from floor to bottom of column, in m), for the direct field at mid- frequencies (300Hz-3kHz).

		Mounting height		
		Minimal	Nominal	Maximal
Ray-On R70 PoE	Standing audience	1.55m	2m	2.50m
	Seated audience	1.15m	1.60m	2.10m
Ray-On R110 PoE	Standing audience	1.55m	2.20m	2.70m
	Seated audience	1.15m	1.80m	2.30m

Figure 3 : Ray-On PoE mounting height, **from floor to bottom of column**

The B70 sound bar is horizontally mounted, above the area to be sounded in transverse direction as shown in figure 3. The width of the zone to be sounded and the recommended space between the loudspeakers is given by the mounting height. Figure 5 gives these values in function of the mounting height.

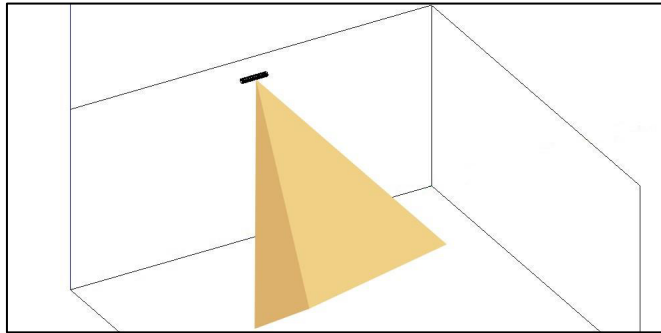


Figure 4 : B70 positioning (on a wall or above the audience area in transverse direction)

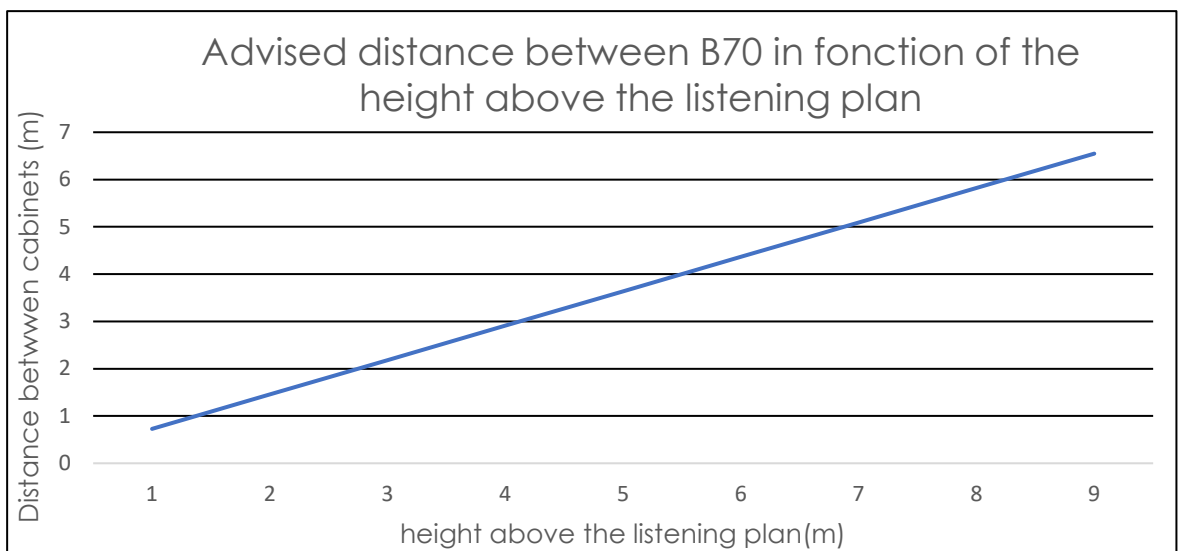
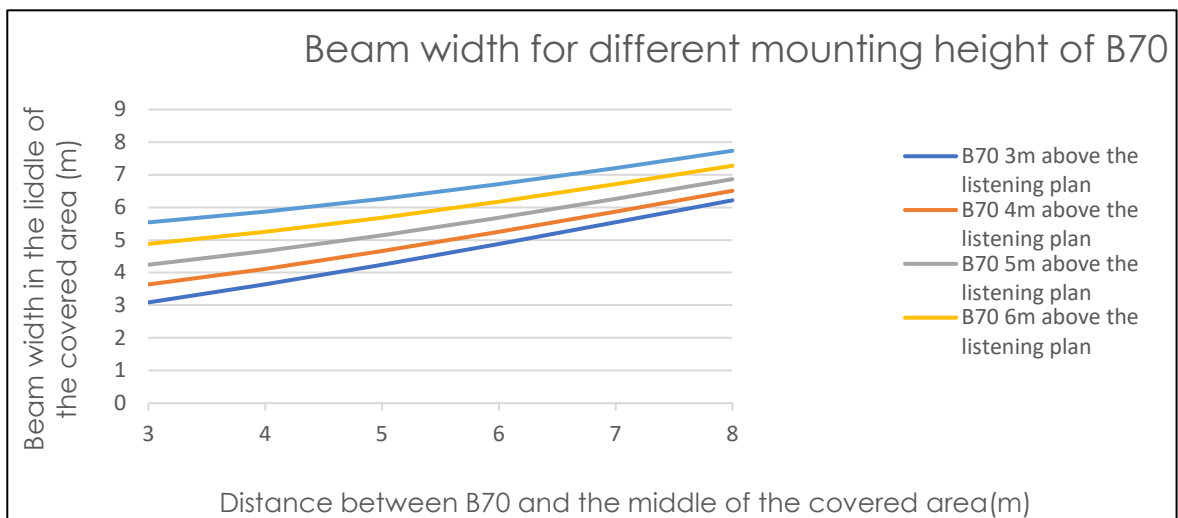


Figure 5 : Width of the covered area and advised distance between loudspeakers according the mounting height

3 Integration of the column in the network

Before connecting Ray-On PoE, on the network, it is necessary to check that it is compatible with PoE+ technology and that it has the characteristics allowing to obtain the perfect functioning of Ray-On PoE.

3.1 PoE technology

The PoE technology described by the IEEE802.3 standard enables a device connected to an Ethernet network to be supplied from the network cable. With this technology, the active elements of the network inject electrical power directly into the cable connecting the PoE terminal device to the switch or router.

There are several types of PoE technology depending on the power available and the mode of energy transport over the network cable.

The speakers of the Ray-On PoE range use PoE+ technology (IEE 802.3at). This technology is characterized by :

- Power available 30W
- Power transport on 2 pairs

3.2 PoE+ network verification

Before connecting Ray-On PoE to the network, the following points should be checked :

- In order to be compatible with PoE+ technology, the network to which the speakers are connected must be made with cables and connectors of type CAT5 or higher (CAT6, CAT7).
- The loss of power being linked to the length of the cables, the network to which the speakers are connected must have the shortest cable lengths possible and compatible with the Ethernet standard (80m maximum).
- There must be a link between the zone concentrator (switch) and each enclosure. In no case will it be positioned hub or other distributors to connect 2 speakers on the same switch port.

3.3 Choice and connection of the PSE

In PoE+ network, the PSE (Power Sourcing Equipment) and the device that injects energy into the network. These devices not supplied with Ray-On PoE speakers can be of 2 types :

- PoE+ switches

If the speakers are connected to a switch, it must be of the PoE+ type, compatible with the IEEE802.3af/at standard. In order to obtain the best sound and dynamic quality, the switch must have a power supply of 30W per port with all the ports in service.

For example, if 8 PoE outputs are required to power 8 speakers, the switch must have a minimum power capacity of $8 \times 30 = 240W$.

- PoE+ injectors

In the case where switches that do not have the PoE+ function are already present on the installation, it is possible to position a PoE injector between the switch and the cable connected to the enclosure. This device allows power to be sent over the network link without changing the topology or routing properties of the existing network. Ray-On PoE speakers must be connected to PoE+ type injectors (30W- IEEE802.3 af/at).

4. Wiring

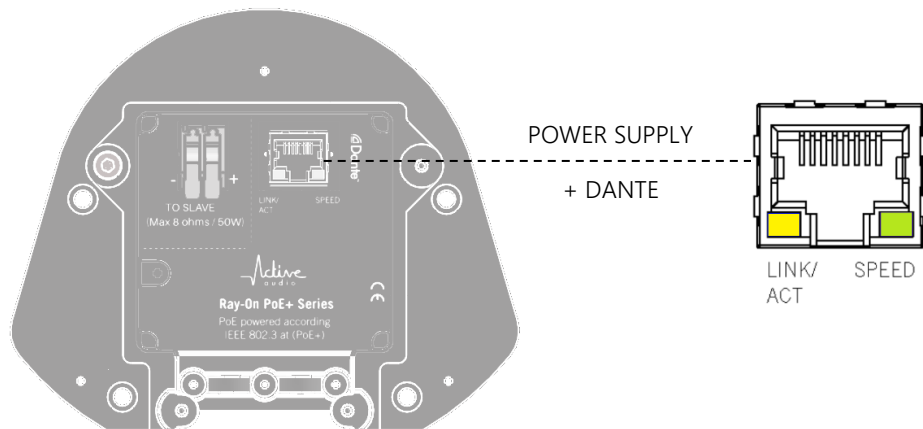


Figure 6 : Wiring Ray-On R70 PoE columns

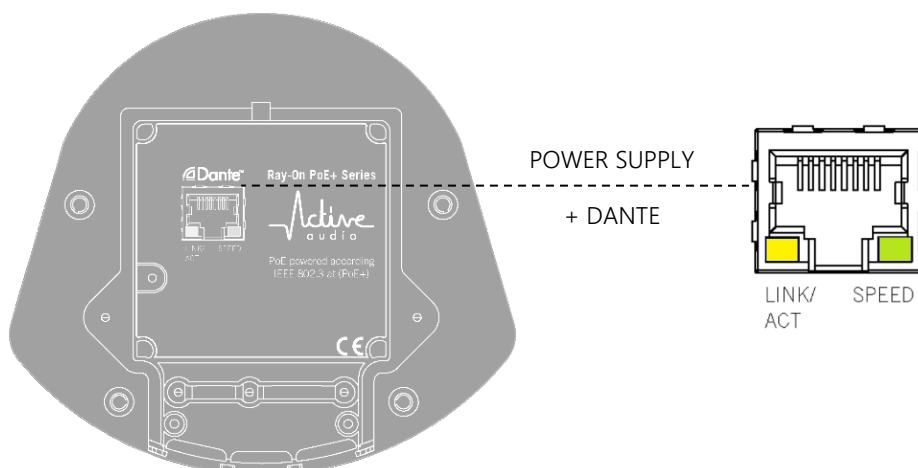


Figure 7 : Wiring Ray-On B70PoE and R110PoE columns

4.1 Setting

Ray-On PoE has a DANTE standard digital audio input. Ray-On PoE must therefore be connected to a network comprising all the elements enabling DANTE to operate.

The commissioning and configuration of Ray-On PoE requires connecting a computer equipped with DANTE CONTROLLER software to the network. This software can be downloaded for free from the Audinate web site (www.audinate.com).

Before putting Ray-On PoE into service, make sure that the network configuration is similar to that shown in the diagram below.

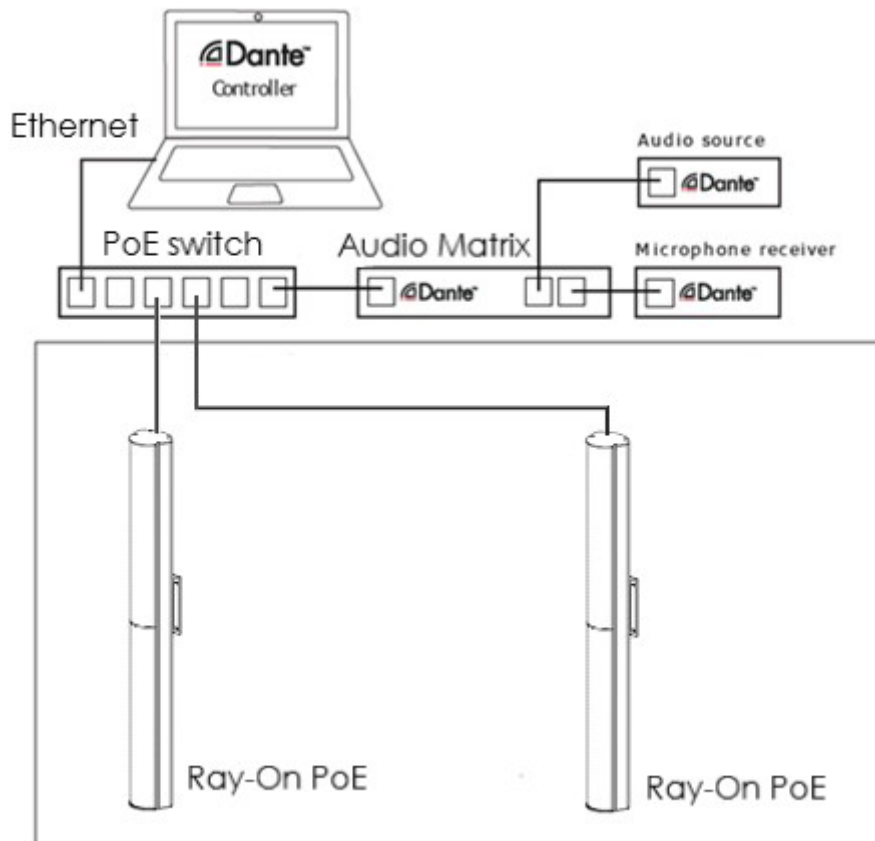


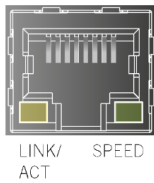
Figure 7 : Configure Ray-On PoE columns using the Dante network

Locating the speakers

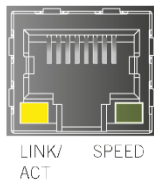
Connect the speakers one by one on the network.

After each connection :

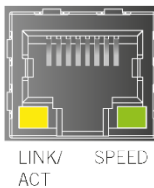
- Check that the speaker is correctly connected to the network. If the speaker is correctly connected to the network, the configuration of the LEDs located at the RJ45 connector on the speaker is as follows :



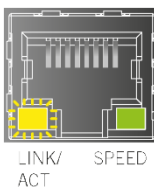
Both off
No network link



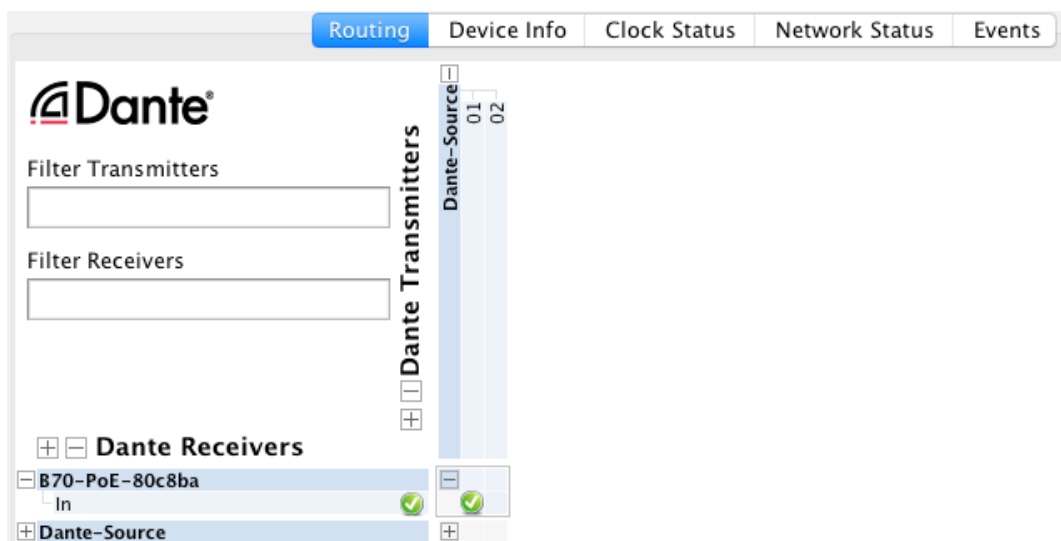
Amber (left) on, Green (right) off
10 Mbps link detected (not supported)



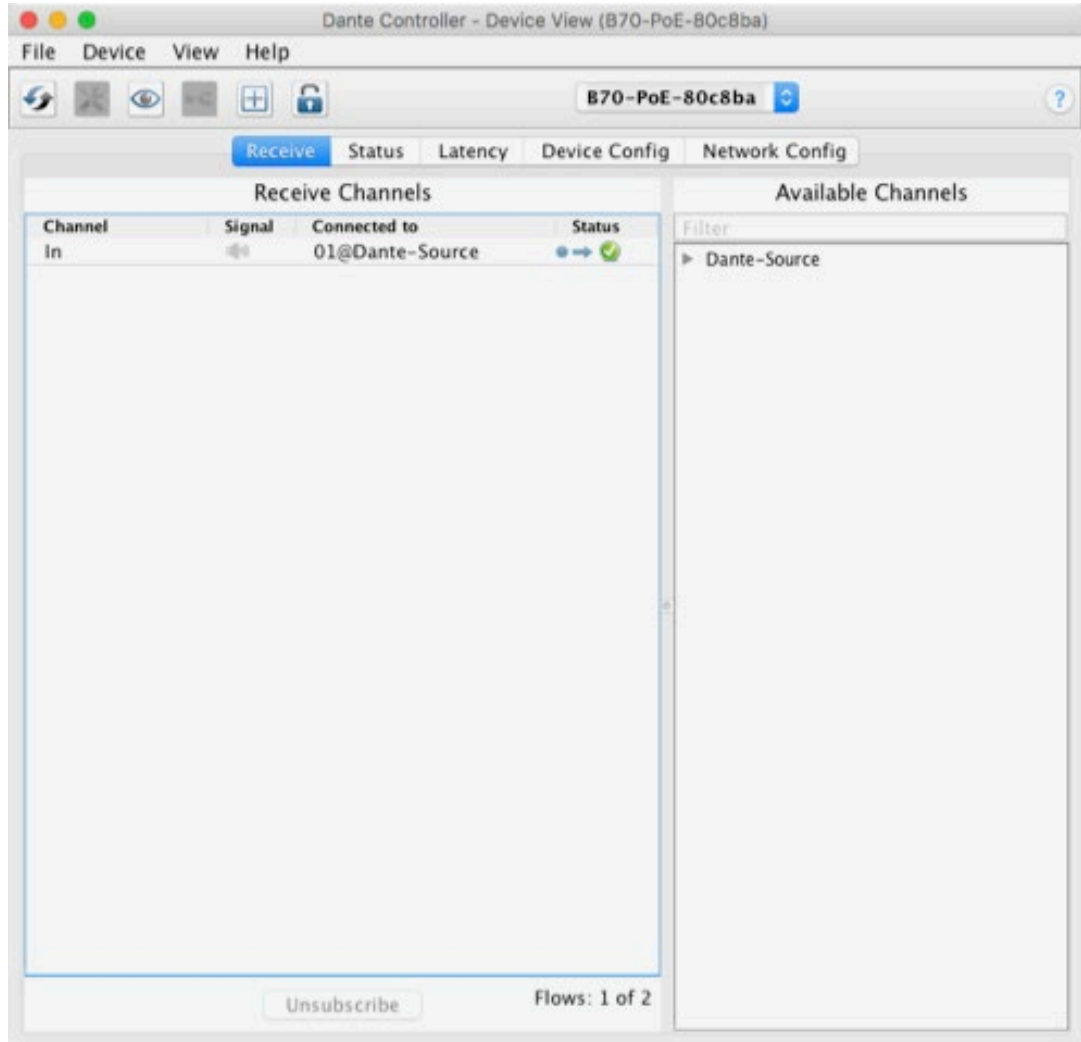
Amber (left) on, Green (right) on
100 Mbps link detected



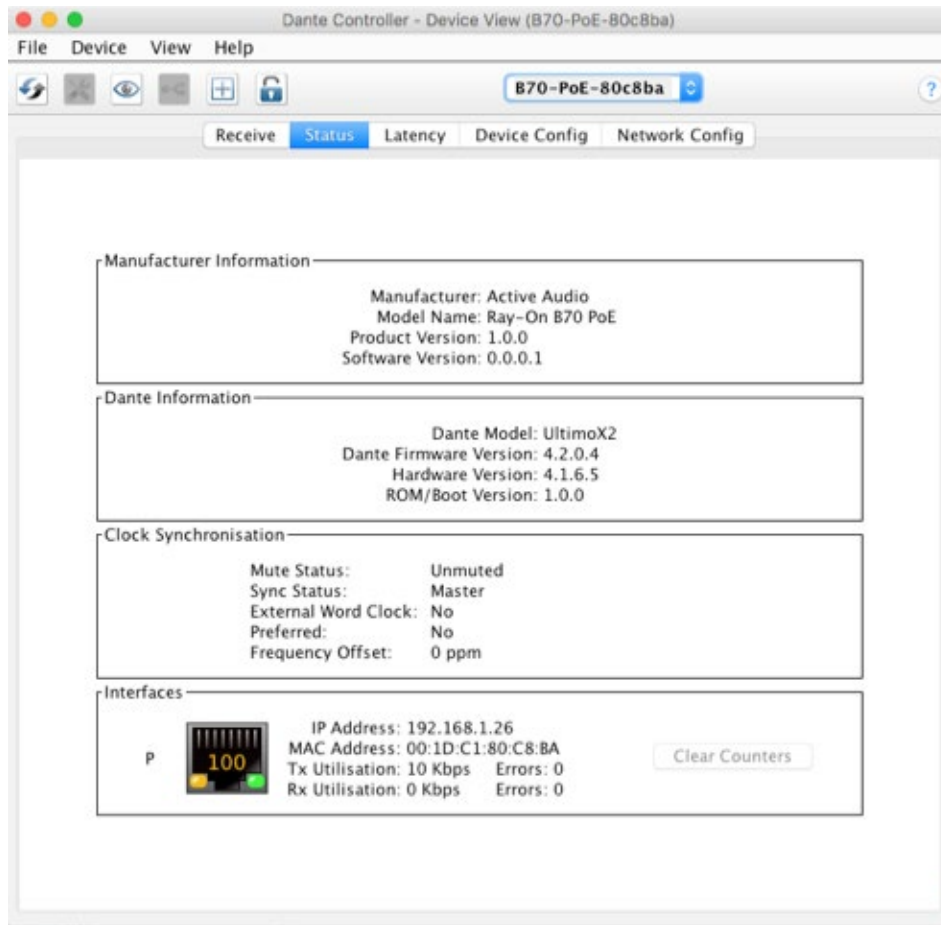
Amber (left) blinking
Network activity



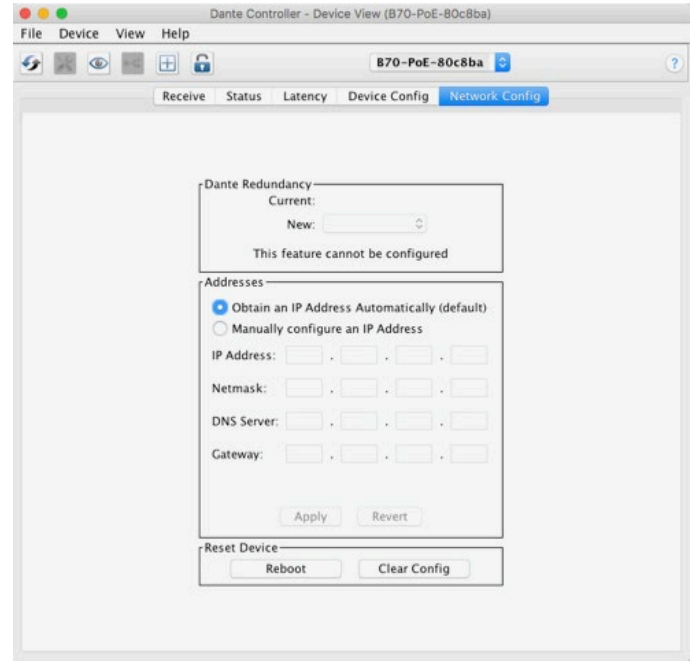
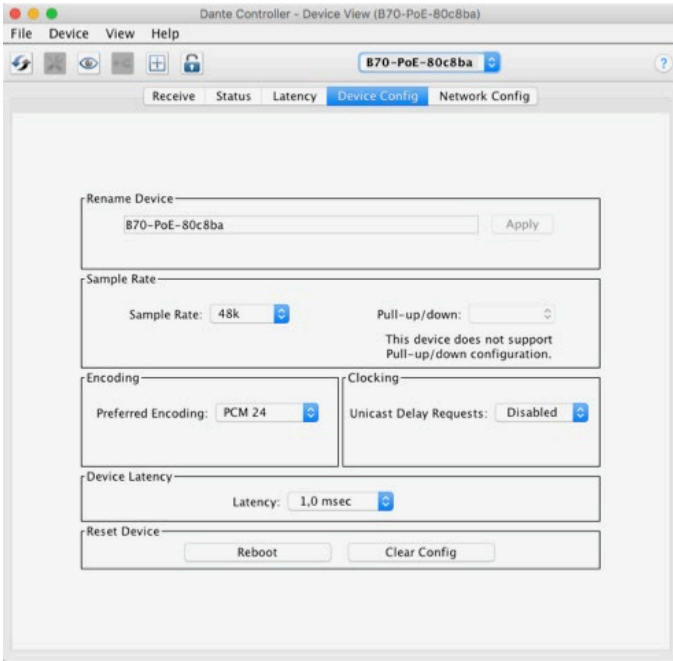
- Then access the Device View in DANTE CONTROLLER.
 Menu -> Device -> Device View
 The Receive tab allows you to view the device connected to the speaker, the connection status as well as the presence of a signal.



- After having refreshed the equipment connected in DANTE CONTROLLER (F5 key), the speaker must appear by its address, at the Status tab.



- In the Device tab, you can rename the enclosure if necessary in DANTE CONTROLLER. You can change the sample rate to subscribe to another device. Two connected devices must have the same sample rate.



- In the Network Config tab, it is recommended to remain in auto IP except installation requiring fixed IP.

Speaker setting

The DSP processor built into the Ray-On PoE enclosure incorporates EQ settings for optimal sound quality.

Once the routing is done in DANTE CONTROLLER no other action is necessary to operate Ray-On PoE.

If room equalization is required, this will be done on the DANTE matrix or on the mixing console connected to the DANTE network.

5. Technical drawings

5.1. R70 PoE and R110 PoE

Ray-On 70 PoE and 110 PoE loudspeakers are vertically mounted, usually on a wall, using the supplied wall-mounting system. See also figure 9 for the technical drawings of the wall-mounting system.

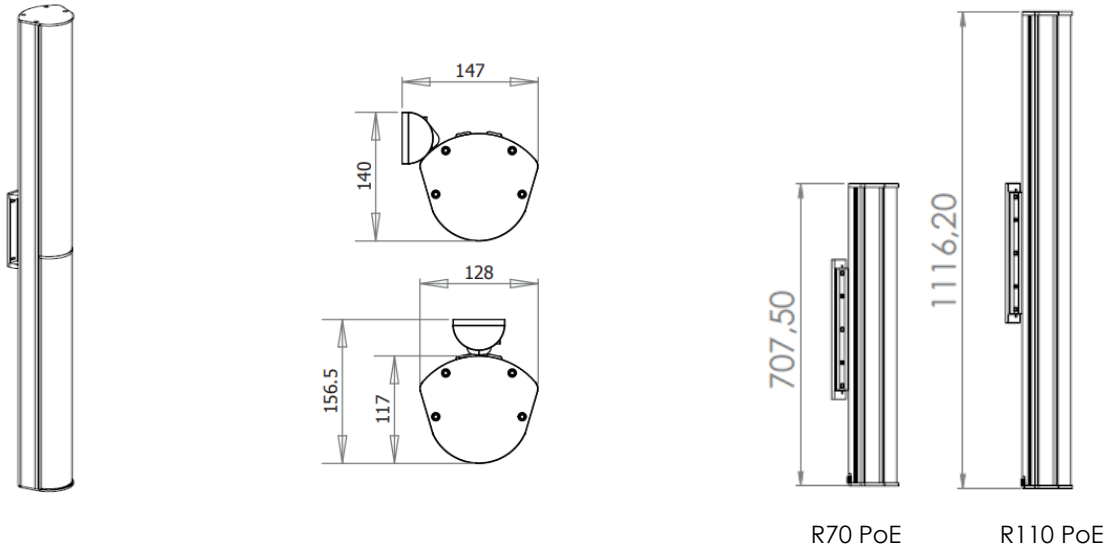


Figure 8 : Mechanical drawings

It is important to ensure verticality when mounting Ray-On PoE columns

Fixation dimensions

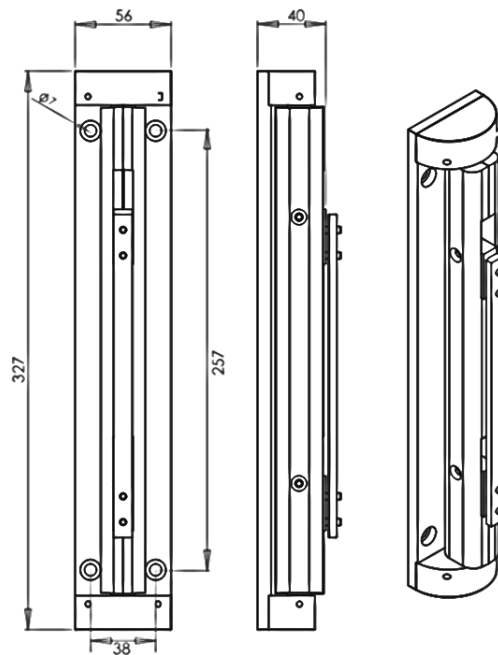


Figure 9 : General and back view of fixation

5.2. B70 PoE

B70 PoE is horizontally mounted, usually on a wall or hanged from the ceiling, using the supplied mounting systems. See also figure 11 for the technical drawings of the mountings system.

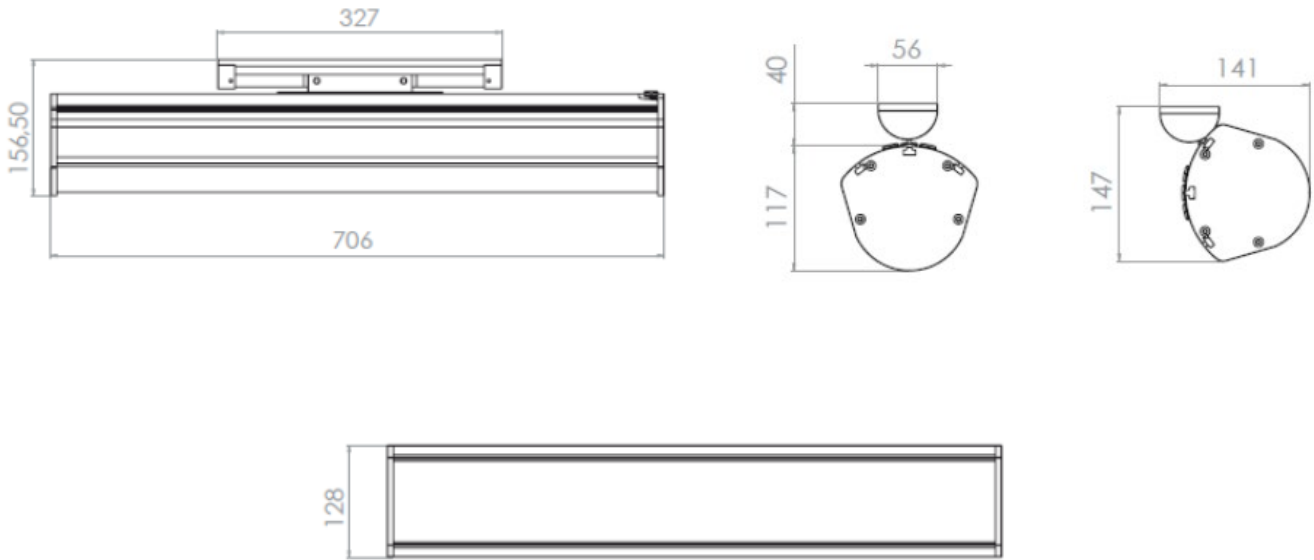


Figure 10 : Mechanical drawings

Fixation dimensions

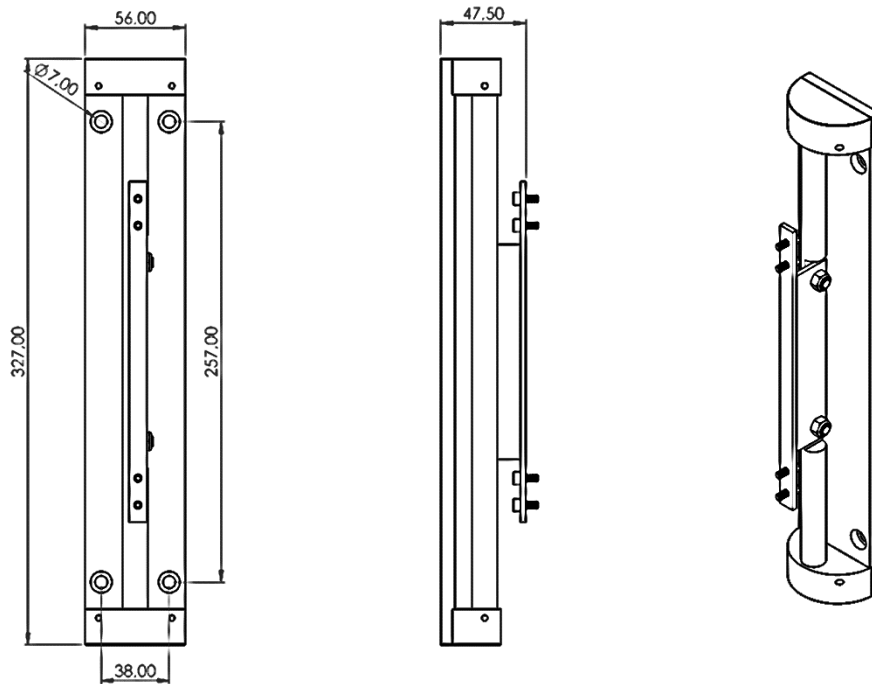


Figure 11 : General and back view of fixation

B70 PoE

Acoustical data

Range ±3dB	6,5m
Range ±5dB	12m
Max SPL	94dB at 5m (108dB at 1m)
Tilting angle of audience area	0°-5°
Frequency bandwidth (-10dB)	120Hz – 18kHz
Opening angle at -6dB	100° / 70°

Mechanical data

Net weight	5.4kg
Shipping weight	5.9kg
Height	706mm
Width	128mm
Depth	117mm
Standard colors	white RAL 9016 black RAL 9005

Electrical data

Amplifier type	Class-D amplifier
Max output power	60W
Power supply	PoE+ (30W) - 802.3af/at

Network

1xRJ45 connector, Dante™	
Max. operating ambient temperature	55°C

R70 PoE

Acoustical data

Range ±3dB	6,5m
Range ±5dB	12m
Max SPL	88dB at 5m (102dB at 1m)
Tilting angle of audience area	0°-5°
Frequency bandwidth (-10dB)	120Hz – 18kHz
Opening angle at -6dB	100° / 70°

Mechanical data

Net weight	7.0kg
Shipping weight	7.5kg
Height	706mm
Width	128mm
Depth	117mm
Standard colors	white RAL 9016 black RAL 9005

Electrical data

Amplifier type	Class-D amplifier
Max output power	60W
Power supply	PoE+ (30W) - 802.3af/at

Network

1xRJ45 connector, Dante™	
Max. operating ambient temperature	55°C

R110 PoE

Acoustical data

Range ±3dB	15m
Range ±5dB	20m
Max SPL	89dB at 8m (107dB at 1m)
Tilting angle of audience area	0°-5°
Frequency bandwidth (-10dB)	120Hz – 18kHz
Opening angle at -6dB	100° / 70°

Mechanical data

Net weight	8.5kg
Shipping weight	9.3kg
Height	1115mm
Width	128mm
Depth	117mm
Standard colors	white RAL 9016 black RAL 9005

Electrical data

Amplifier type	Class-D amplifier
Max output power	60W
Power supply	PoE+ (30W) - 802.3af/at

Network

1xRJ45 connector, Dante™	
Max. operating ambient temperature	55°C

7. Acoustical data

All data presented below are obtained with columns in their nominal position and using nominal filtering parameters.

a. R70 PoE acoustical data

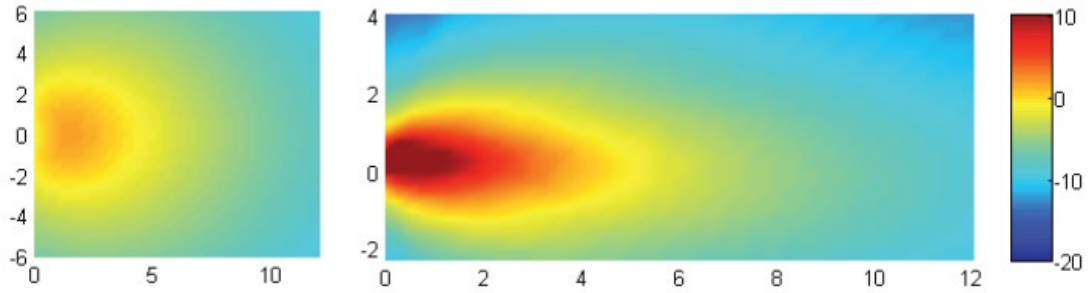


Figure 12 : R70 PoE directivity : sound level for the voice octaves (500Hz - 2kHz)
Left : horizontal, Right : vertical

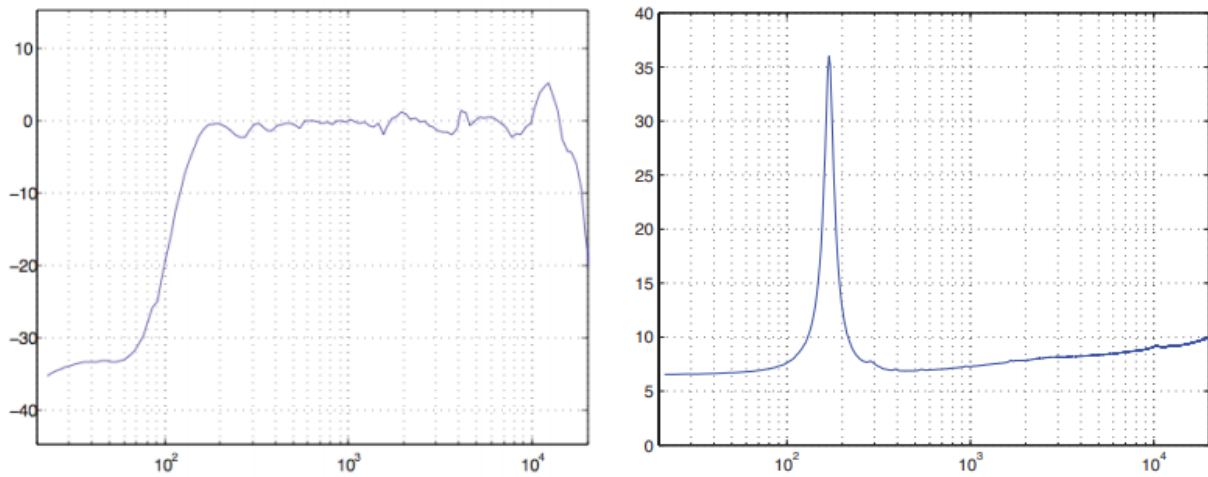


Figure 13 : R70 PoE : Frequency response @1W at reference point* (left), Impedance (right)

*0dB corresponds to the efficiency (dB / 1W the reference point)

b. R110 PoE acoustical data

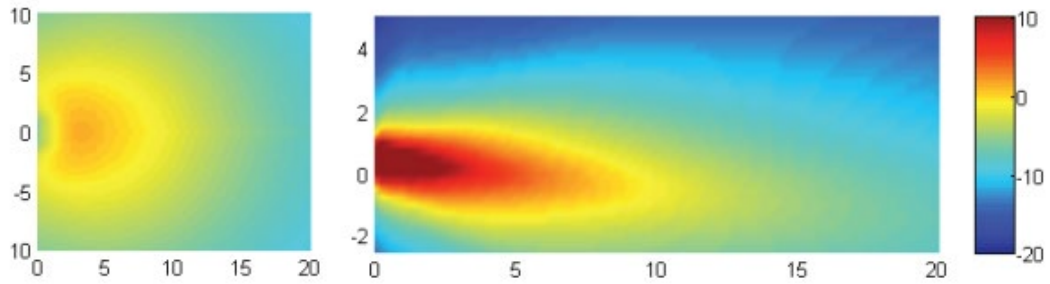


Figure 14 : R110 PoE directivity : sound level for the voice octaves (500Hz - 2kHz)
Left : horizontal, Right : vertical

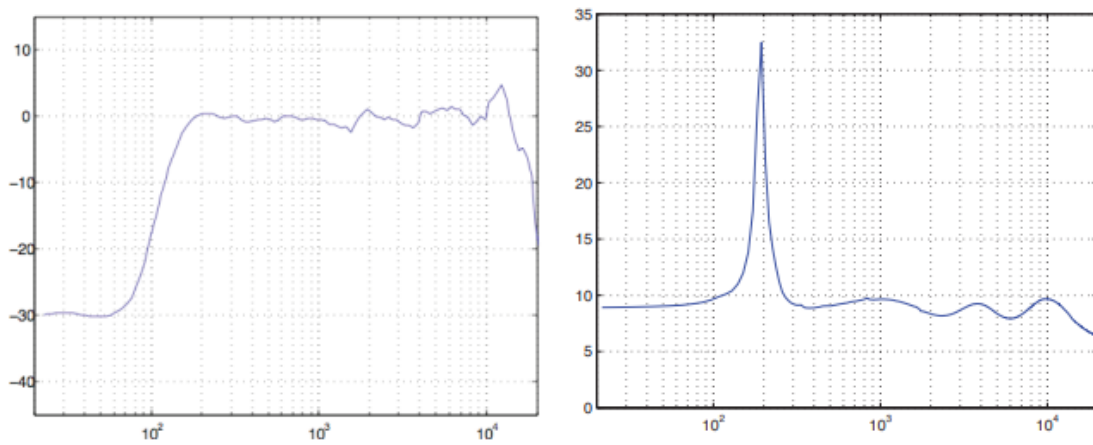


Figure 15 : R110 PoE : Frequency response @1W at reference point* (left),
Impedance (right)

*0dB corresponds to the efficiency (dB / 1W the reference point)

c. B70 PoE acoustical data

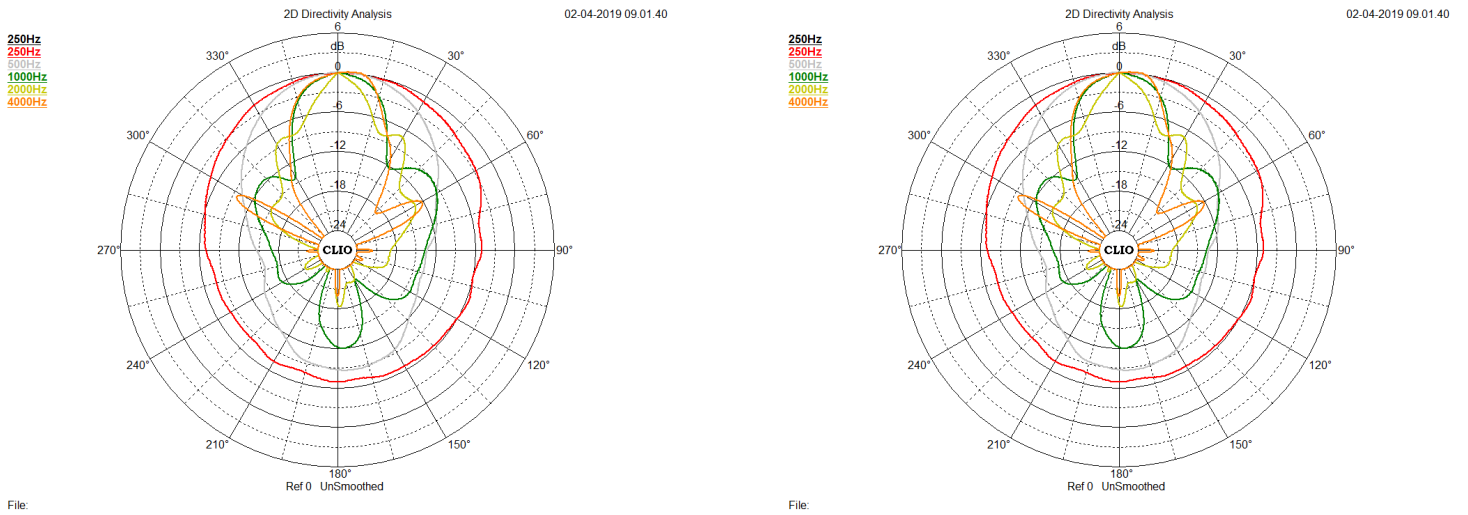


Figure 16 : Horizontal and vertical polar curves of B70 PoE

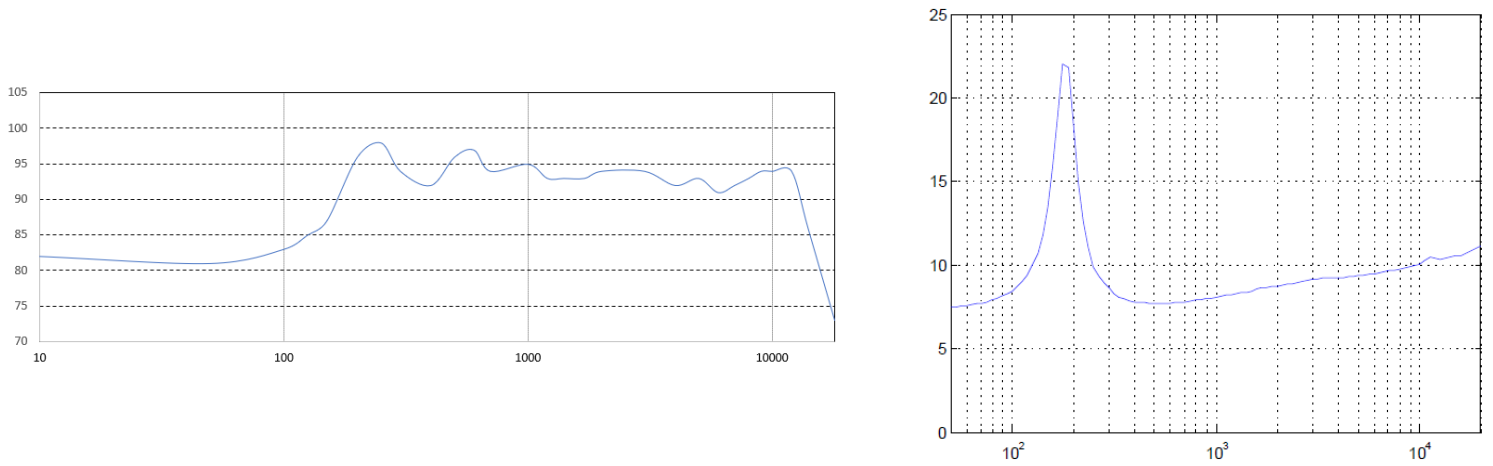


Figure 17 : Frequency response (left), Impedance (right)

8. Declaration of conformity



We,

ACTIVE AUDIO SAS,

8 Rue Johannes Gutenberg 44340 Bouguenais, France,

Declares under our sole responsibility that the following products

B70 PoE, R70 PoE, R110 PoE

Comply with the council directive 2004/108/CE

Assessment of compliance is based on the following standards: EN50081-1, EN61000, EN60065

Established on the 2nd of January 2020

by Régis CAZIN, CEO.

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