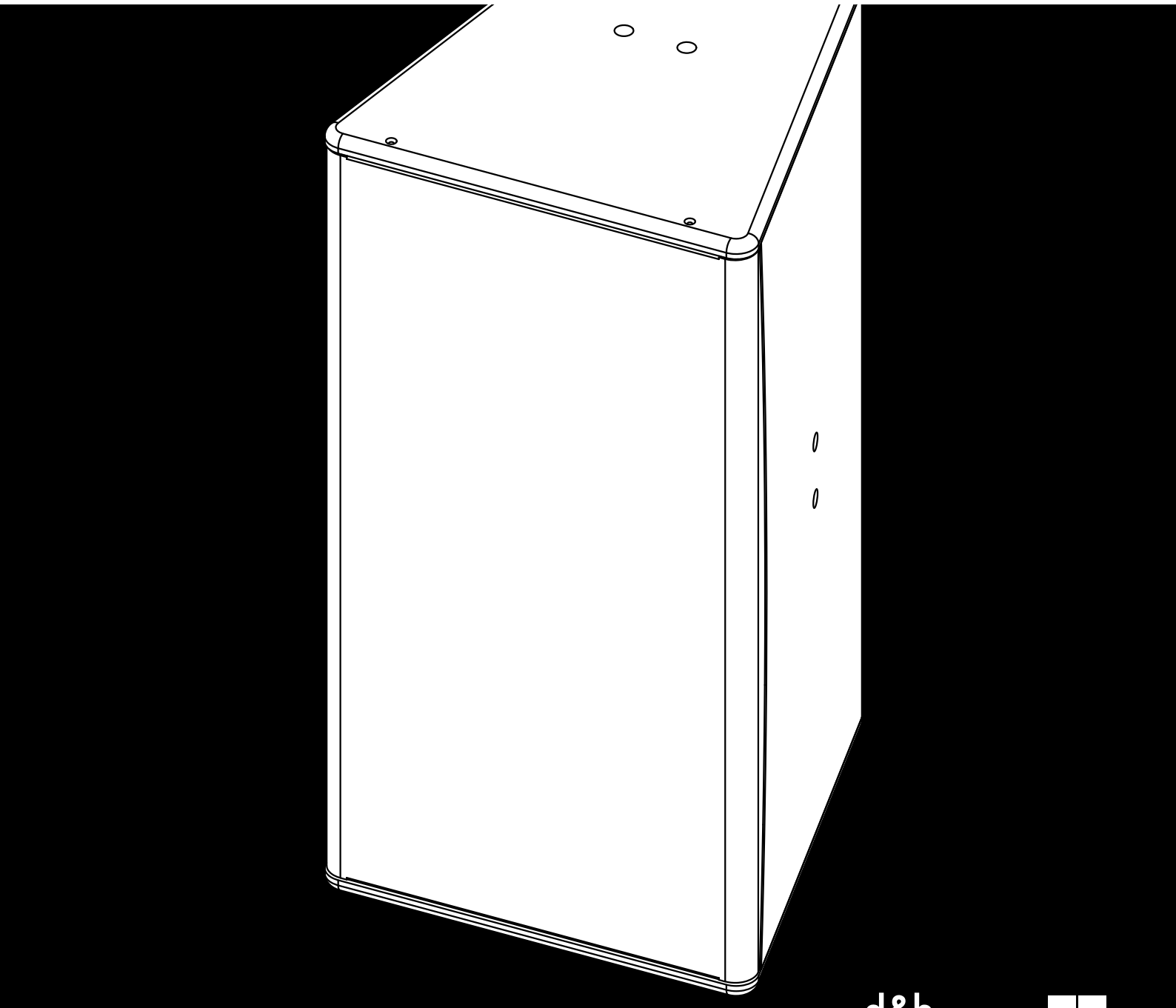
xS

24S/24S-D
Manual 1.2 en



d&b audiotechnik

General information

24S/24S-D Manual

Version: 1.2 en, 10/2018, D2624.EN .01

Keep this document with the product or in a safe place so that it is available for future reference.

When reselling this product, hand over this document to the new owner.

d&b audiotechnik GmbH & Co. KG
Eugen-Adolff-Str. 134, D-71522 Backnang, Germany
T +49-7191-9669-0, F +49-7191-95 00 00
docadmin@dbaudio.com, www.dbaudio.com

Contents

Potential risk of personal injury

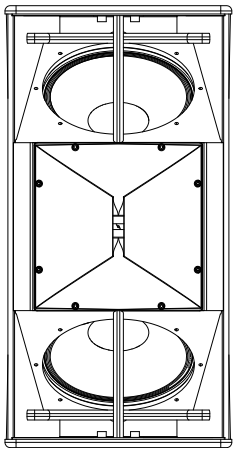
Never stand in the immediate vicinity of loudspeakers driven at a high level. Professional loudspeaker systems are capable of causing a sound pressure level detrimental to human health. Seemingly non-critical sound levels (from approx. 95 dB SPL) can cause hearing damage if people are exposed to it over a long period.

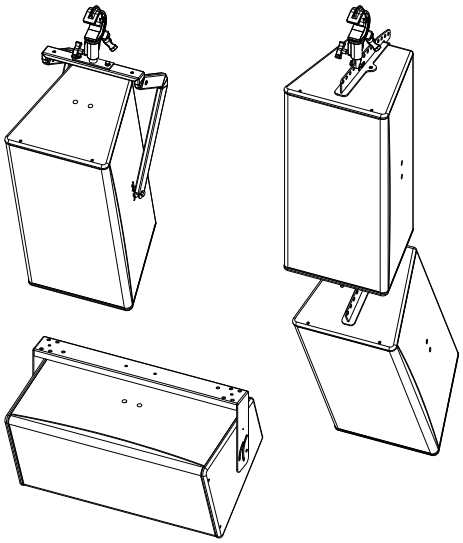
In order to prevent accidents when deploying loudspeakers on the ground or when flown, please take note of the following:

- When setting up the loudspeakers or loudspeaker stands, make sure they are standing on a firm surface. If you place several systems on top of one another, use straps to secure them against movement.
- Only use accessories which have been tested and approved by d&b for assembly and mobile deployment. Pay attention to the correct application and maximum load capacity of the accessories as detailed in our specific "Mounting instructions" or in our "Flying system and Rigging manuals".
- Ensure that all additional hardware, fixings and fasteners used for installation or mobile deployment are of an appropriate size and load safety factor. Pay attention to the manufacturers' instructions and to the relevant safety guidelines.
- Regularly check the loudspeaker housings and accessories for visible signs of wear and tear, and replace them when necessary.
- Regularly check all load bearing bolts in the mounting devices.

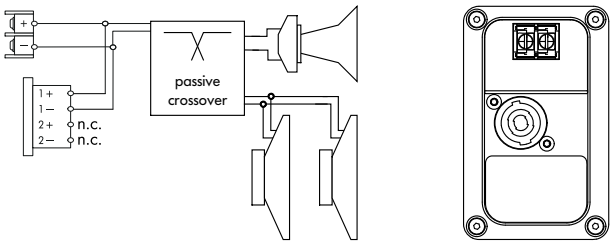
Potential risk of material damage

Loudspeakers produce a static magnetic field even if they are not connected or are not in use. Therefore make sure when erecting and transporting loudspeakers that they are nowhere near equipment and objects which may be impaired or damaged by an external magnetic field. Generally speaking, a distance of 0.5 m (1.5 ft) from magnetic data carriers (floppy disks, audio and video tapes, bank cards, etc.) is sufficient; a distance of more than 1 m (3 ft) may be necessary with computer and video monitors.





24S/24S-D loudspeaker
Rigging examples:
24S/24S-D flown with Z5553 Flying bracket 24S .
24S/24S-D ceiling mounted with Z5554 Horizontal bracket 24S.
24S/24S-D array with Z5384 VP Flying adapter /Z5551 VP Flying adapter link.



2.1 Product description

The 24S and 24S-D are high performance 2-way loudspeakers employing two 12" neodymium LF driver in a bass-reflex enclosure and different HF sections for a wide range of installed sound applications. Both models are lightweight passive designs using a 1.4" exit neodymium driver and large horns for accurate pattern control. They provide rotatable dispersion characteristics of (h x v) 75° x 45° (24S) or 110° x 45° (24S-D).

The two 12" LF drivers are positioned in a dipolar arrangement providing exceptional vertical dispersion control even at lower frequencies.

Specially designed ports with optimized flow characteristics provide a considerably improved, efficient low frequency reproduction.

With a frequency response extending from 55 Hz to above 18 kHz, the cabinets can be used as full range systems or supplemented by different subwoofers of the xS- or xA-Series.

The enclosures are constructed from marine plywood with an impact resistant paint finish. The fronts of the cabinets are protected by a rigid metal grill backed by an acoustically transparent foam.

The cabinets are Ball Impact Resistant according to DIN 18032-3.

Rigging components

The top, bottom, side and rear panels of the cabinets are each equipped with a pair of M10 threaded inserts to connect to different rigging accessories such as:

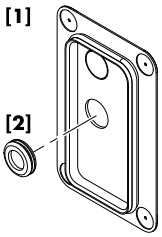
- Z5553 Flying bracket 24S
- Z5554 Horizontal bracket 24S
- Z5384 VP Flying adapter
- Z5551 VP Flying adapter link

2.2 Connections

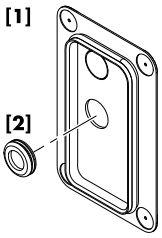
The cabinets are fitted with an NL4 M connector using the pin assignment 1+/1– and a two pole screw terminal block (ST).

Pin equivalents of the applicable connector options are listed in the table below.

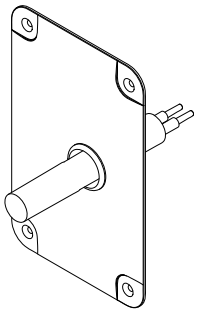
NL4 M	1+	1–	2+ (n.c.)	2– (n.c.)
ST	+	–	n.a.	n.a.



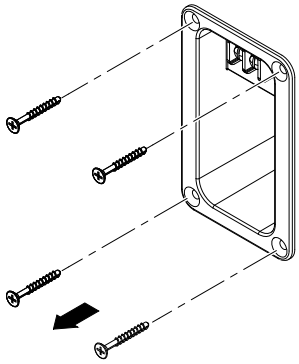
Cover plate and rubber grommet



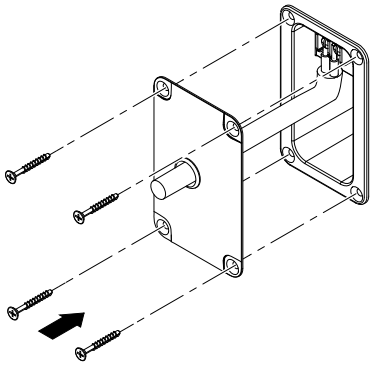
Step 1



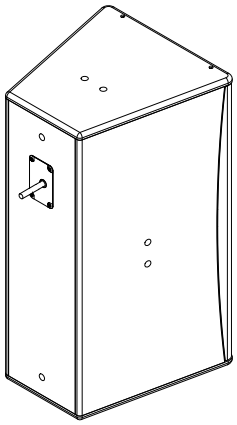
Step 2



Step 3

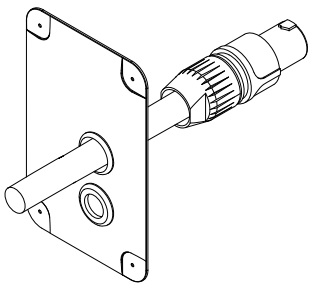


Step 4/5



Step 6

Installing the fixed cable connection



NL4 cable connection with cover plate [1]

Fixed cable connection

The 24S and 24S-D loudspeakers are each supplied with a cover plate **[1]** and a rubber grommet feed through **[2]**. For indoor operation, these items can be used to hide the connector panel, if required. For unprotected outdoor operation, the connector panel must be covered, i.e. both items must be used to achieve an IP degree of protection of IP34.

To install the fixed cable connection, proceed as follows:

Tools required: Philips screw driver (#PH2).

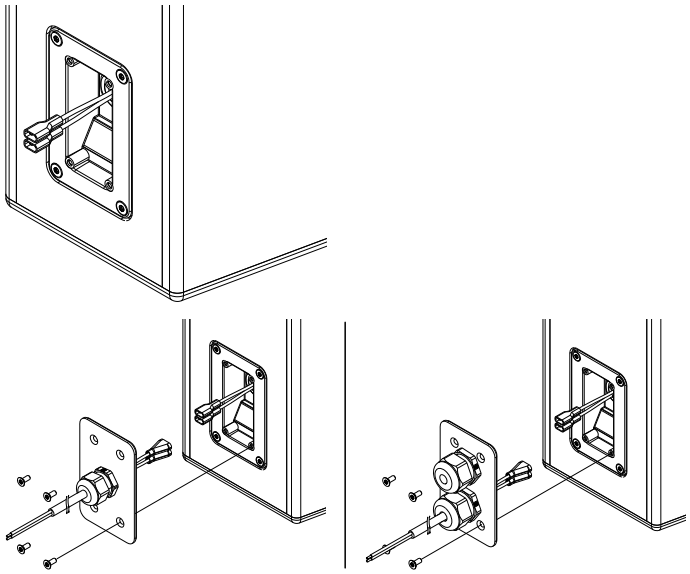
1. Remove the knockout opening in the cover plate **[1]** and attach the rubber grommet **[2]** correspondingly.
2. Insert the connection cable through the rubber grommet.
3. Undo the four screws of the connector panel.
4. Connect the cable wires to the screw terminal.
   ⇒ Observe the correct polarity!
5. Push the cover plate towards the connector panel until it fits into place.
6. Finally fix the cover plate together with the connector panel using all screws.

NL4 connection with cover plate

The NL4 connector socket of the cabinet's connector panel is located in a recess to allow the use of the cover plate **[1]** together with an NL4 cable connector, as shown in the graphic opposite.

> **Note:** Neutrik NL4FC type connectors must be used for this option.

To use the NL4 connection, proceed in the same manner as described in the previous section.



Faston type connector, male single PG (standard), dual PG (optional)

WR option (Weather Resistance)

NOTICE!

The WR option enables operation of loudspeakers in changing ambient conditions, however it is not intended to enable permanent, unprotected operation of loudspeakers outdoors.

- Provide an additional cover over the loudspeakers.
- Aim the cabinets either horizontally or with a downward tilt.

A number of d&b loudspeakers are available in special options suitable for different types of installed applications and environmental conditions. The following options are available for the 24S/24S-D loudspeaker:

- Weather resistant (WR): This option is suitable for outdoor use. The cabinets have an impact and weather protected black PCP (Polyurea Cabinet Protection) finish.

WR cabinets are equipped with a recessed connector panel including a Faston type connector (2 x 6.3 mm, female). A cover plate which accepts single or dual PG cable glands (Type PG13.5 for cable diameters from 6 - 12 mm) is enclosed, as shown in the graphic opposite.

To install the fixed connection cable, please proceed as follows:

Tools required: Screw driver (#T20).

Note: Observe the correct polarity of the cable Brown (+) / Blue (–).

1. Insert the connection cable through the PG screwing and connect the male connector to the female connector.
2. Push the cover plate towards the connector panel until it fits into place.
3. Fix the cover plate to the connector panel using the four countersunk screws.

2.3 Operation

NOTICE!

Only operate d&b loudspeakers with a correctly configured d&b amplifier, otherwise there is a risk of damaging the loudspeaker components.

Applicable d&b amplifiers:
30D/D20/D80.

Application	Setup	Cabinets per channel
24S	24S	1
24S-D	24S-D	1

For applicable d&b amplifiers, the controller setups are available in Dual Channel and/or Mix TOP/SUB mode.

2.3.1 Controller settings

For acoustic adjustment the functions CUT, HFA and CPL can be selected.

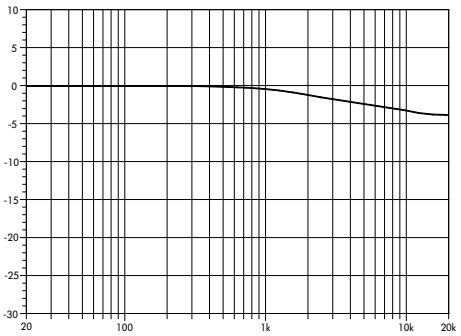
CUT mode

Set to CUT, the low frequency level is reduced. The cabinets are now configured for use with actively driven d&b subwoofers.

HFA mode

In HFA mode (High Frequency Attenuation), the HF response of the system is rolled off. HFA provides a natural, balanced frequency response when a cabinet is placed close to listeners in near field or delay use.

High Frequency Attenuation begins gradually at 1 kHz, dropping by approximately 3 dB at 10 kHz. This roll off mimics the decline in frequency response experienced when listening to a system from a distance in a typically reverberant room or auditorium.

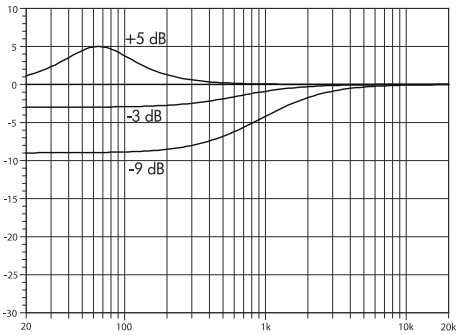


Frequency response correction in HFA mode

CPL function

The CPL (Coupling) function compensates for coupling effects between the cabinet and close boundary surfaces. CPL begins gradually around 1 kHz, with the maximum attenuation below 400 Hz. To achieve a balanced frequency response, the CPL function can be set to dB attenuation values between 0 and –9.

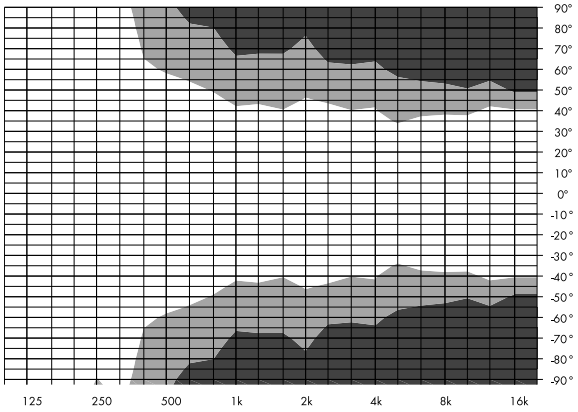
Positive CPL values create an adjustable low frequency boost (0 to +5 dB) at around 65 Hz and can be set when the system is used in full range mode without subwoofers.



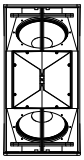
Frequency response correction of the CPL function

2.4 Dispersion characteristics

The following graphs show dispersion angle over frequency of a single cabinet plotted using lines of equal sound pressure (isobars) at –6 dB and –12 dB.

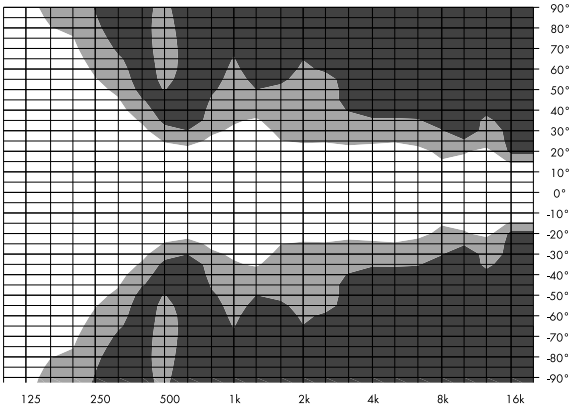


Isobar diagram horizontal

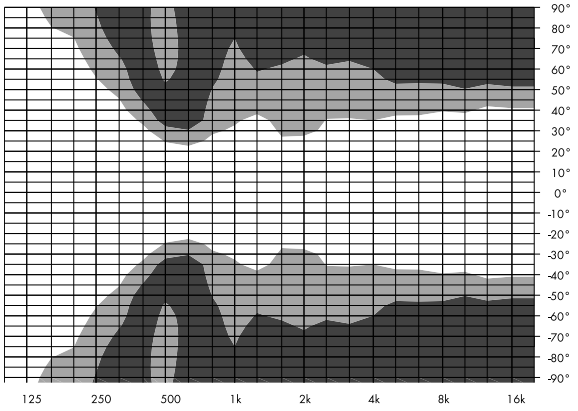


24S

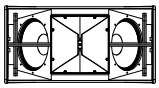
vertical setup



Isobar diagram vertical

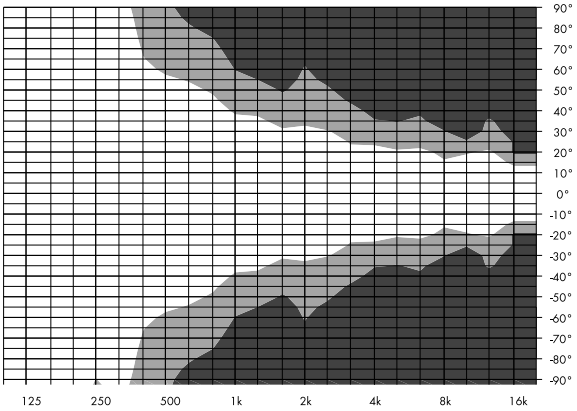


Isobar diagram horizontal

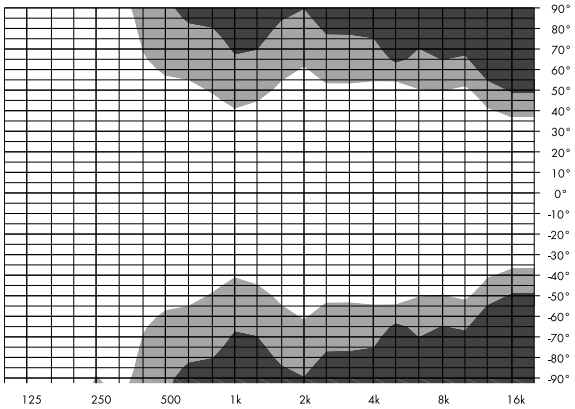


24S

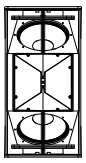
horizontal setup, horn rotated



Isobar diagram vertical

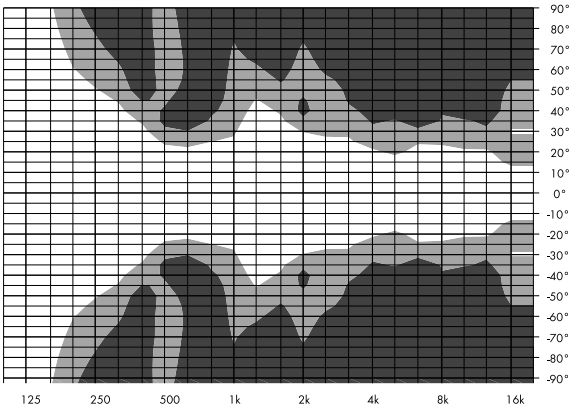


Isobar diagram horizontal

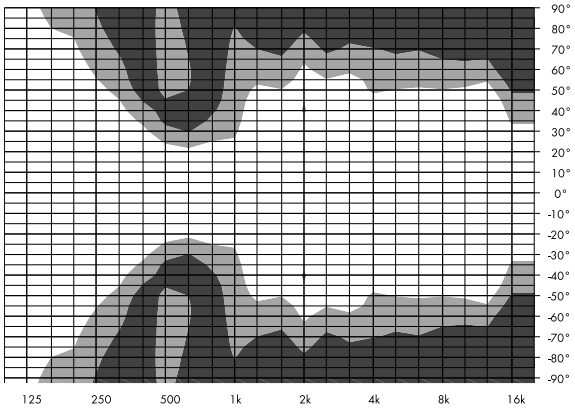


24S-D

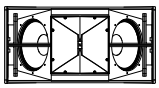
vertical setup



Isobar diagram vertical

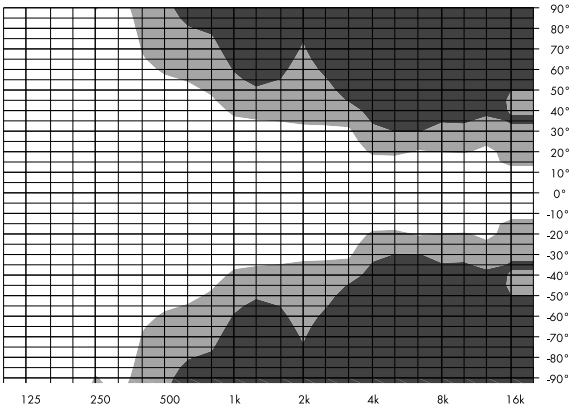


Isobar diagram horizontal

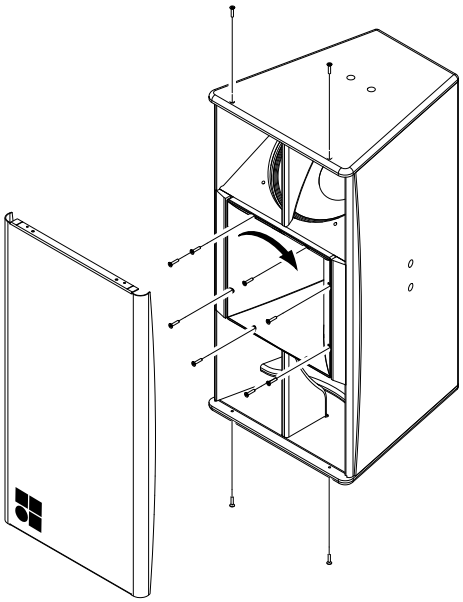


24S-D

horizontal setup,
horn rotated



Isobar diagram vertical



Altering the HF dispersion

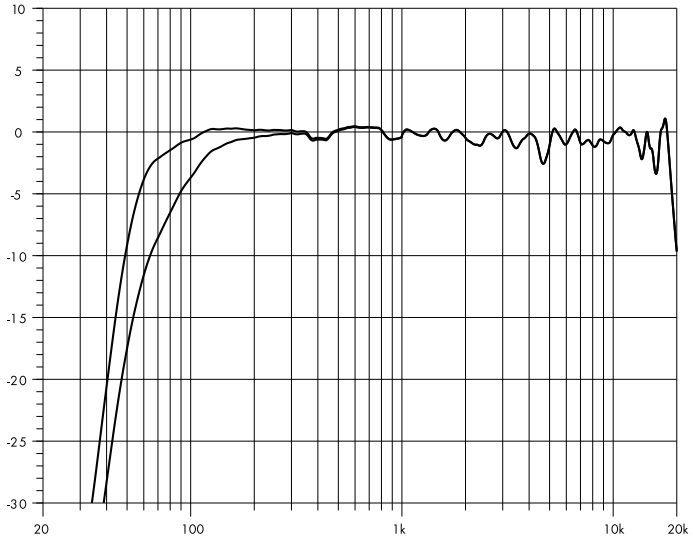
Altering the HF horn dispersion

By factory default, the HF horn is fitted to the cabinet providing the nominal horizontal dispersion when the cabinet is used in upright position. This is indicated by a white label on the horn flange. The label is visible through the front grill on each side of the cabinet as shown in the graphic opposite.

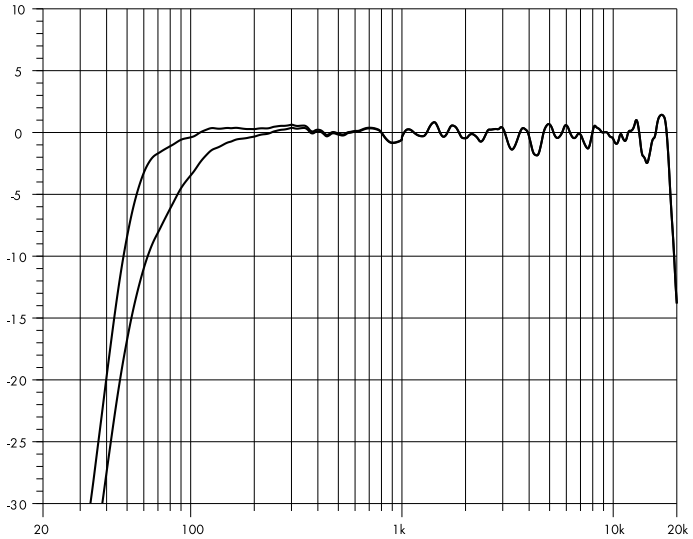
The HF horn can be rotated through 90°.

Tools required: Torx wrench (#TX20).

1. Undo the torx screws on the top and bottom panels of the cabinet and remove the front grill.
2. Undo the screws holding the horn flange and rotate the horn.
3. Refit the horn as follows:
   - Make sure the gasket of the horn is in place.
   - Refit the horn.
   - Insert all screws and carefully tighten them clockwise until they fit precisely into the countersunk holes.
4. Refit the front grill.



24S frequency response, standard and CUT modes



24S-D frequency response, standard and CUT modes

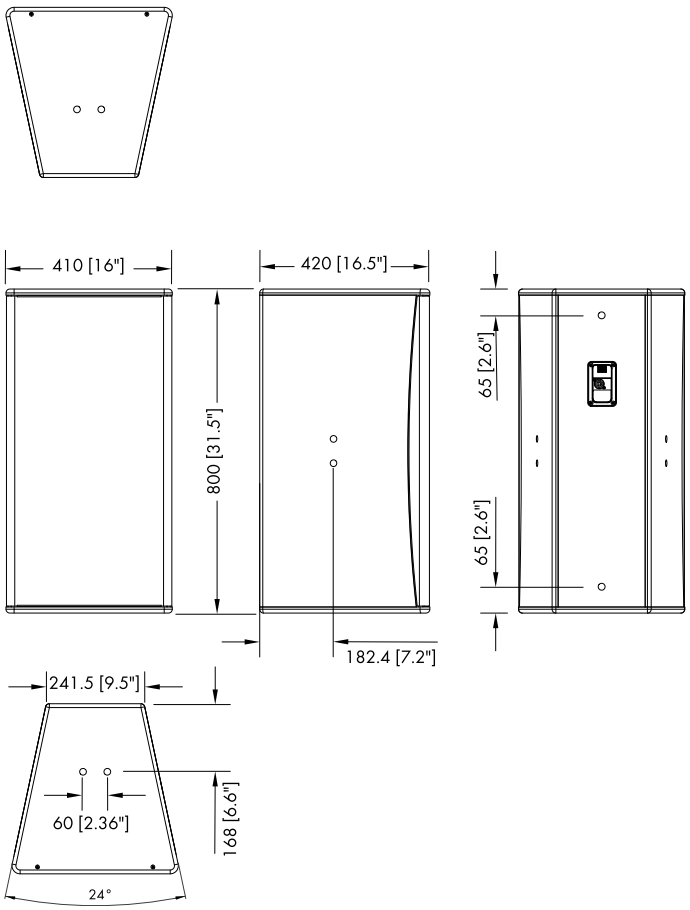
2.5 Technical specifications

System data

Frequency response (–5 dB standard) .....55 Hz - 18 kHz
Frequency response (–5 dB CUT mode) .....90 Hz - 18 kHz
Max. sound pressure (1 m, free field).....
24S with 30D/D20 .....138 dB
24S with D80.....138 dB
24S-D with 30D/D20.....137 dB
24S-D with D80.....137 dB
.....(SPLmax peak, pink noise test signal with crest factor of 4)

Loudspeaker data

Nominal impedance.....4 ohms
Power handling capacity (RMS/peak 10 ms) .....500/2000 W
Nominal dispersion angle (horizontal) 24S.....75°
Nominal dispersion angle (horizontal) 24S-D .....110°
Nominal dispersion angle (vertical) .....45°
Components .....2 x 12" driver with neodymium magnet
.....1.4 " exit compression driver on rotatable CD horn
.....Passive crossover network
Connections.....1 x NL4 M
.....1 x screw terminal (ST - up to 4 mm^2/AWG 11)
.....WR option: Faston type connector (2 x 6.3 mm)
Pin assignment.....NL4 M: 1+/1–
.....WR option: Brown: (+) / Blue: (–)
Weight .....33 kg (73 lb)



24S/24S-D cabinet dimensions in mm [inch]

3.1 EU conformity of loudspeakers (CE symbol)

This declaration applies to:

d&b Z1610 24S loudspeaker

d&b Z1611 24S-D loudspeaker

manufactured by d&b audiotechnik GmbH & Co. KG.

All product variants are included, provided they correspond to the original technical version and have not been subject to any later design or electromechanical modifications.

We herewith declare that said products are in conformity with the provisions of the respective EC directives including all applicable amendments.

A detailed declaration is available on request and can be ordered from d&b or downloaded from the d&b website at www.dbaudio.com.

3.2 WEEE Declaration (Disposal)

Electrical and electronic equipment must be disposed of separately from normal waste at the end of its operational lifetime.

Please dispose of this product according to the respective national regulations or contractual agreements. If there are any further questions concerning the disposal of this product, please contact d&b audiotechnik.

WEEE-Reg.-Nr. DE: 13421928

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