

Q10

Manual (1.4 EN)



Symbols on the equipment

Please refer to the information in the operating manual.

WARNING!
Dangerous voltage!

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General Information

Q10 Manual

Version 1.4 EN, 03/2008, D2043.E.01

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

When reselling this product, hand over this manual to the new customer.

If you supply d&b products, please draw the attention of your customers to this manual. Enclose the relevant manuals with the systems. If you require additional manuals for this purpose, you can order them from d&b.

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Safety precautions



WARNING!

Information regarding use of loudspeakers

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.

CAUTION!

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.

Q10

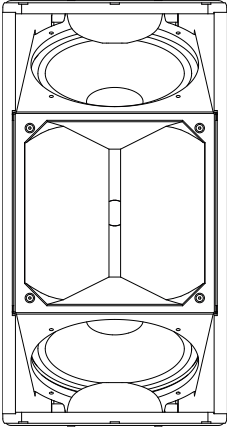


Fig. 1: Q10 loudspeaker

The Q10 is a 110° x 40° passive two-way loudspeaker. It houses 2 x 10" LF drivers and a 1.3" HF compression driver with a rotatable CD horn and a passive crossover network. Its frequency response extends from 60 Hz to above 17 kHz. The two 10" neodymium LF drivers are positioned in a dipolar arrangement providing exceptional vertical dispersion control even at lower frequencies.

The Q10 cabinet is constructed from marine plywood and has an impact resistant paint finish. The front of the loudspeaker cabinet is protected by a rigid metal grill, covered with a replaceable acoustically transparent foam. The cabinet incorporates a pair of handles.

The Q10 cabinet is fitted with four types of rigging devices:

- Eight sockets in the front grill and rear edge bar that accept the Z5153 Locking pins 8 mm to connect the array links.
- A quick lock adapter plate on one side of the cabinet that accepts the Z5150 Q Swivel bracket or the Z5156 Q Flying adapter.
- Five sockets that accept the Z5048 Flying pin 10 mm to support single cabinets and to secure the aiming of an array.
- Four M10 threaded inserts to accept the Z5020 Flying adapter 02, Z5025 Flying adapter 03 or Z5043 MAX Horizontal bracket.

NOTICE: Only operate Q10 loudspeakers with a correctly configured d&b amplifier, otherwise there is a risk of damaging the loudspeaker components.

Connections

The Q10 cabinet is fitted with a pair of EP5 connectors. All five pins of both connectors are wired in parallel. The Q10 uses the pin assignments 1/2. Pins 3/4 and 5 are designated to Q-SUB active subwoofers, where pin 5 is used for SenseDrive (only available when using a D12 amplifier and 5-wire cabling). Using the male connector as the input, the female connector allows for direct connection to additional loudspeakers.

The Q10 can be supplied with NL4 output connectors as an option. Pin equivalents of EP5 and NL4 connectors are listed in the table below.

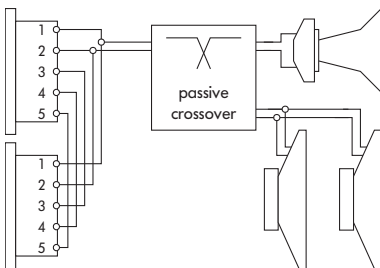


Fig. 2: Connector wiring

| | | | | | |
|------------|----|----|----|----|------|
| EP5 | 1 | 2 | 3 | 4 | 5 |
| NL4 | 1+ | 1- | 2+ | 2- | n.a. |

Operation with D6 or D12

Select the controller setup Q10.

Within the D12 amplifier this is available in "Dual Channel" and "Mix TOP/SUB" mode.

Up to a total of two Q10 loudspeakers can be driven by each D6 or D12 amplifier channel.

In applications with low continuous levels and low ambient temperatures up to three cabinets can be connected to a D12 channel.

Controller settings

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

CUT circuit

Set to CUT, the Q10 low frequency level is reduced. The Q10 is now configured for use with the Q-SUB or d&b C-Series subwoofers.

HFA circuit

In HFA mode (High Frequency Attenuation), the HF response of the Q10 system is rolled off. The HFA circuit provides a natural, balanced frequency response when a unit 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.

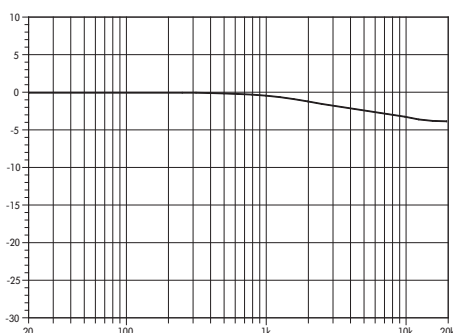


Fig. 3: Frequency response correction of HFA circuit

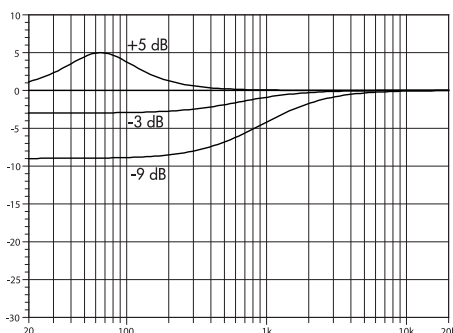


Fig. 4: Frequency response correction of CPL circuit

CPL circuit

The CPL (Coupling) circuit compensates for coupling effects between the cabinets when building closely coupled arrays. CPL begins gradually at 1 kHz, with maximum attenuation below 400 Hz, providing a balanced frequency response when Q10 cabinets are used in arrays of two or more. The function of the CPL circuit is shown in the diagram opposite and can be set in dB attenuation values between -9 and 0, or a positive CPL value which creates an adjustable low frequency boost around 65 Hz (0 to +5 dB).

Operation with E-PAC

Selecting Q10 mode enables the E-PAC to drive one Q10 loudspeaker. LO IMP mode configures the E-PAC to drive a maximum of two Q10 loudspeakers with a 6 dB reduction in input level to the loudspeakers.

For acoustic adjustment the functions CUT and CPL can be selected. The characteristics of the CUT and CPL settings are explained in the previous section "Operation with D6 or D12 - Controller settings".

The E-PAC CPL circuit creates a 3 dB attenuation corresponding with the -3 dB curve shown in Fig. 4.

Dispersion characteristics

The graphs below show dispersion angle over frequency of a single Q10 cabinet plotted using lines of equal sound pressure (isobars) at -6 dB and -12 dB.

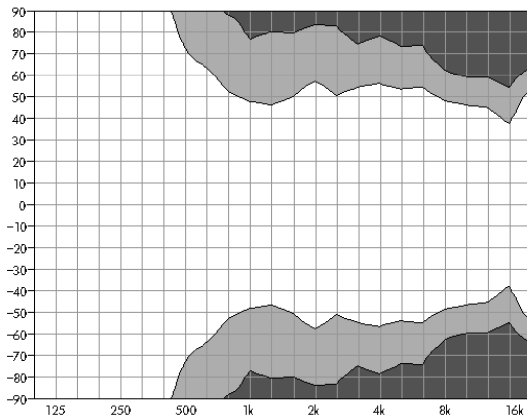


Fig. 5: Isobar diagram Q10 horizontal, standard set up

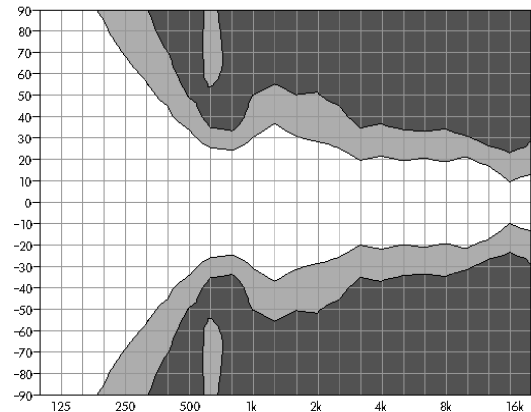
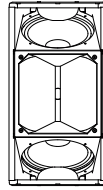


Fig. 6: Isobar diagram Q10 vertical, standard set up

Horizontal setup with the horn rotated

Note:

Please note that in the standard upright configuration the Q10 has a very accurate 110° horizontal constant directivity behavior that is maintained down to approximately 800 Hz, see Fig. 5.

This performance differs considerably when the cabinet is deployed horizontally with the horn rotated. Fig. 7 illustrates this and clearly shows the narrowing of the horizontal dispersion below 1 kHz as a result of the dipole arrangement of the low drivers. Extreme care should therefore be taken when the Q10 is configured in this manner to ensure adequate coverage is obtained.

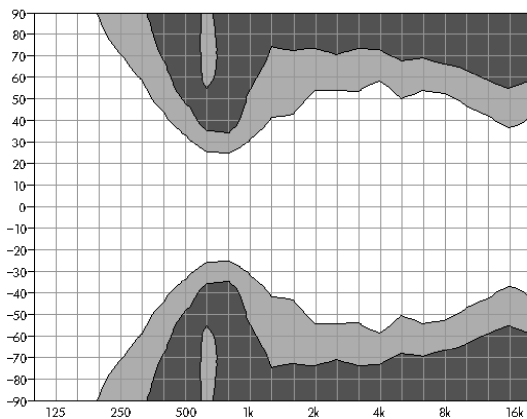


Fig. 7: Isobar diagram Q10 horizontal, horizontal set up with the horn rotated

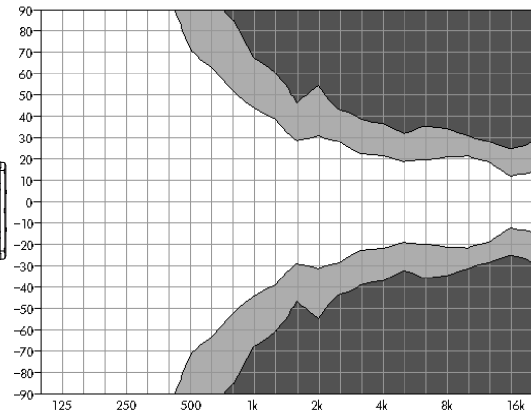
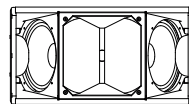


Fig. 8: Isobar diagram Q10 vertical, horizontal set up with the horn rotated

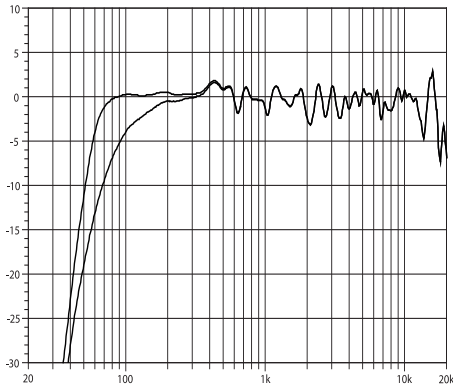


Fig. 9: Q10 frequency response, standard and CUT settings

Technical specifications

Q10 system data

| | |
|--|--|
| Frequency response (-5 dB standard) | 60 Hz ... 17 kHz |
| Frequency response (-5 dB CUT mode) | 100 Hz ... 17 kHz |
| Max. sound pressure (single cabinet, 1 m, free field) with D12 | 137 dB |
| Max. sound pressure (single cabinet, 1 m, free field) with D6 | 133 dB |
| | (SPLmax peak, pink noise test signal with crest factor of 4) |
| Input level (100 dB-SPL/1 m) | -17 dBu |

Q10 loudspeaker

| | |
|--|---------------------------|
| Nominal impedance | 8 ohms |
| Power handling capacity (RMS / peak 10 ms) | 400/1600 W |
| Nominal dispersion angle (hor. x vert.) | 110° x 40° |
| Components | 2 x 10" driver |
| | 1.3" compression driver |
| | Passive crossover network |
| Connections | 2 x EP5 |
| | (optional 2 x NL4) |
| Pin assignments | EP5: 1/2 |
| | NL4: 1+/1- |
| Weight | 22 kg (49 lb) |

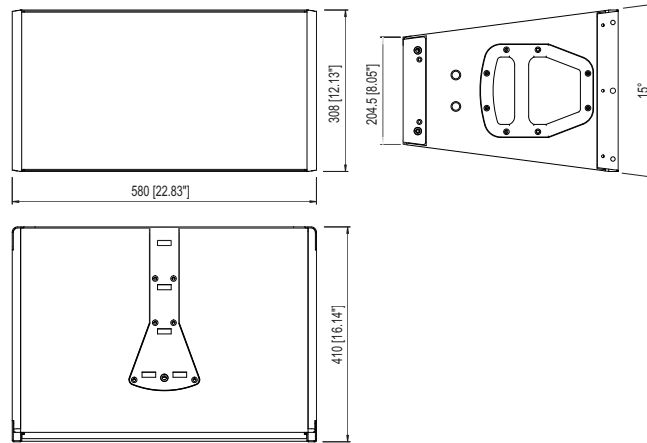


Fig. 10: Q10 cabinet dimensions in mm [inch]

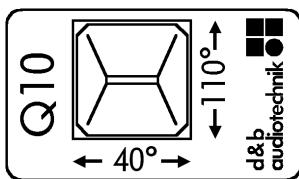


Fig. 11: Q10 horn dispersion label

Altering the HF horn dispersion

The Q10 HF horn has a square flange allowing it to rotate through 90°. It can easily be accessed through an aperture in the front grill.

The horn is secured against falling out internally via a steel wire.

Tools required: 3 mm Allen key (Torque wrench).

1. Undo the four countersunk Allen screws of the horn.
2. Rotate the horn through 90° - Fig. 11.
3. Refit the horn and tighten the four screws of the horn to a torque of 2 Nm.

Arraying Q10 cabinets

Horizontal array of Q10 cabinets

The horizontal angle between adjacent Q10 cabinets can be set to between 60° and 90°. The most even energy distribution is achieved with 75°.

Vertical array of Q10 cabinets

The vertical angle between adjacent Q10 cabinets can be set to between 20° and 40°. The most even energy distribution is achieved with 35°. Smaller angles between the cabinets will give a smaller coverage area but will produce higher sound pressure on the center axis of the array.

Q10 used in line array columns with Q1s and Q-SUBs

The Q10 with the horn rotated can be positioned at the bottom of a Q1 line array column to extend the near field coverage horizontally and vertically, if required. When the standard Q1 array links are used to connect the Q10 cabinet the splay should be set to a maximum of 14°.

Manufacturer's declarations



EU conformity of loudspeakers (CE symbol)

This declaration applies to

- Q10 loudspeaker Z0508

manufactured by d&b audiotechnik GmbH.

All production versions of this type are included, provided they correspond to the original technical version and have not been subject to any later design or electromechanical modifications.

All production versions of this type 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.

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.

