

Qi10

Manual (1.2 EN)

Symbols on the equipment



Please refer to the information in the operating manual.



WARNING!
Dangerous voltage!

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General Information

Qi10 Manual

Version 1.2 EN, 03/2008, D2046.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.

Qi10

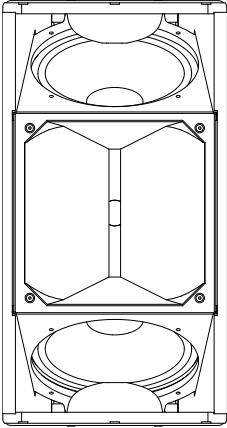


Fig. 1: Qi10 loudspeaker

The Qi10 is the installation version of the Q10 loudspeaker. It is acoustically compatible with the standard road version differing only in cabinet construction and mounting hardware.

The Qi10 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 Qi10 cabinet is constructed from marine plywood and has an impact resistant paint finish. The front of the loudspeaker cabinet is covered with a replaceable acoustically transparent foam that is then protected by a rigid metal grill.

Four M10 threaded inserts on each side panel of the cabinet enclosure are provided for attaching installation hardware.

NOTICE: Only operate Qi10 loudspeakers with a correctly configured d&b amplifier, otherwise there is a risk of damaging the loudspeaker components.

Weather resistant (WR) option

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.

Cabinet design

Component	Description
Cabinet	Plywood to DIN 68705 Part III. Equivalent to flame spread class 3. Temperature range from -200° C to +100° C.
Wood joints	Bonded waterproof to stress class D4.
Cabinet paint	Two component PU paint (seaworthy, chemical resistant and temperature resistant to 110° C).
Screws	Stainless steel (VA).
Driver cones	Impregnated with silicone spray or coated.
Driver components/ Crossover network	The coil and pole plate are also treated with silicone. The crossovers are sprayed with silicone on both the solder and component sides.

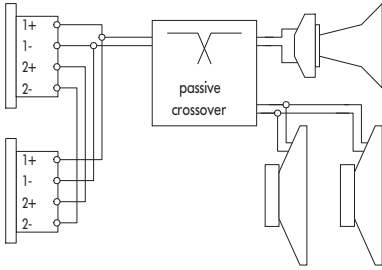


Fig. 2: Connector wiring

Connections

The Qi10 cabinet is fitted with a pair of NL4 connectors. All pins of both connectors are wired in parallel. The Qi10 uses the pin assignments 1+ / 1-. Using one connector as the input, the second connector allows for direct connection to additional loudspeakers.

Installation loudspeakers with the weather resistant option are supplied with a fixed cable (PG).

Cable type: H-07-RN-F 2 x 2.5 mm²/AWG 13

Standard length: 5.5 m (18 ft)

Pin equivalents of NL4 connectors and the fixed cable option (PG) are listed in the table below.

NL4	1+	1-	2+	2-
PG	Brown (+)	Blue (-)		

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 Qi10 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 Qi10 low frequency level is reduced. The Qi10 is now configured for use with d&b active subwoofers.

HFA circuit

In HFA mode (High Frequency Attenuation), the HF response of the Qi10 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.

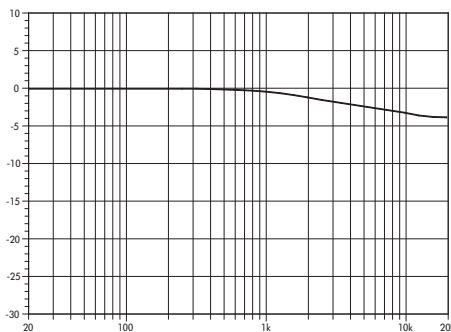


Fig. 3: Frequency response correction of HFA circuit

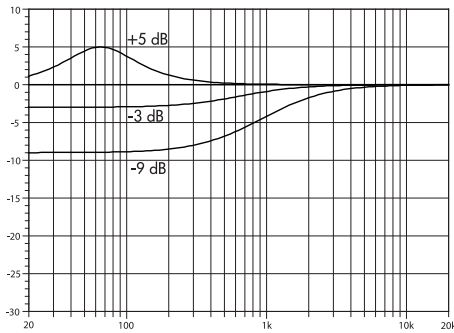


Fig. 4: Frequency response correction of CPL circuit

CPL circuit

The CPL (Coupling) circuit compensates for 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 Qi10 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 Qi10 loudspeaker. LO IMP mode configures the E-PAC to drive a maximum of two Qi10 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 to the -3 dB curve shown in Fig. 4.

Dispersion characteristics

The graphs below show dispersion angle over frequency of a single Qi10 cabinet plotted using lines of equal sound pressure (isobars) at -6 dB and -12 dB.

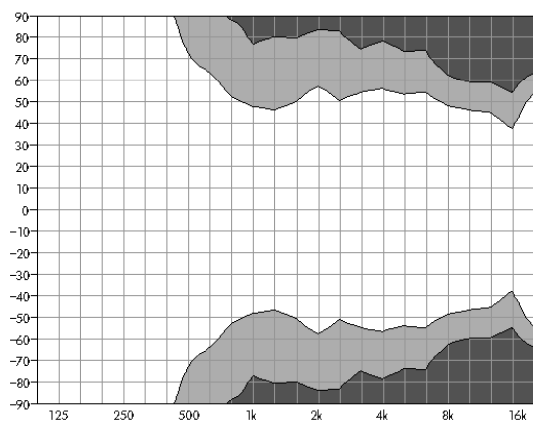


Fig. 5: Isobar diagram Qi10 horizontal, standard setup

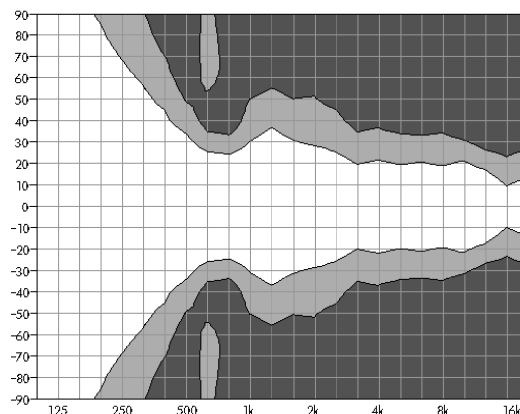
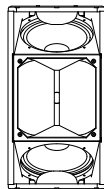


Fig. 6: Isobar diagram Qi10 vertical, standard setup

Horizontal setup with the horn rotated

Note: Please note that in the standard upright configuration the Qi10 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 dipolar arrangement of the low drivers. As a result of this effect, extreme care should be taken to ensure adequate coverage is obtained, when the Qi10 is configured in this manner.

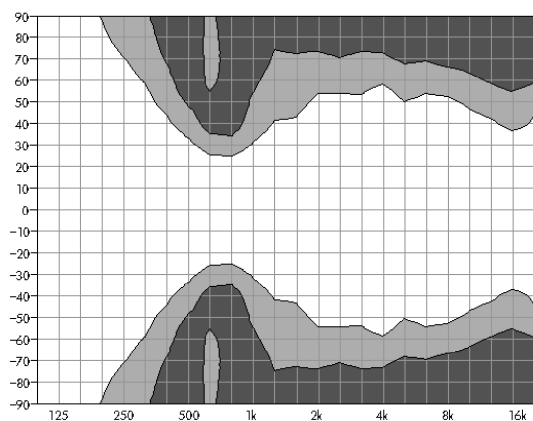


Fig. 7: Isobar diagram Qi10 horizontal, horizontal setup with the horn rotated

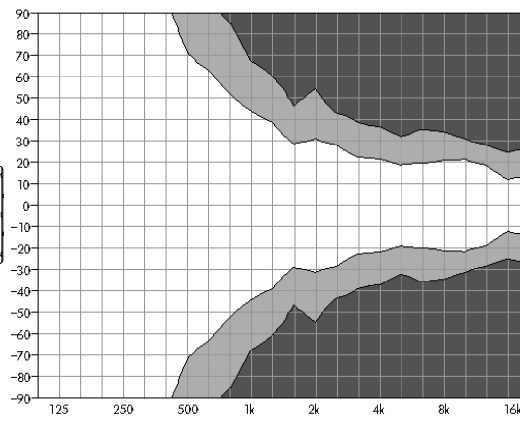
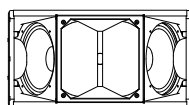


Fig. 8: Isobar diagram Qi10 vertical, horizontal setup with the horn rotated

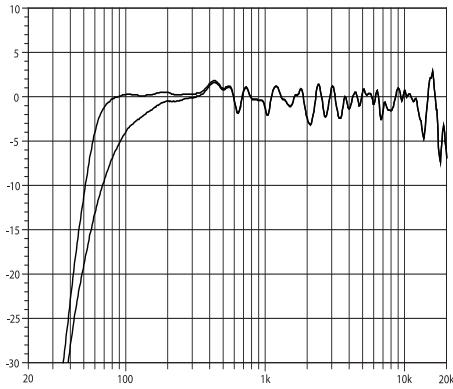


Fig. 9: Qi10 frequency response, standard and CUT settings

Technical specifications

Qi10 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 D12137 dB
 Max. sound pressure (single cabinet, 1 m, free field) with D6133 dB
 (SPLmax peak, pink noise test signal with crest factor of 4)
 Input level (100 dB-SPL/1 m).....-17 dBu

Qi10 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 NL4
optional fixed cable (H-07-RN-F 2 x 2.5 qmm/AWG 13)
 Pin assignments.....NL4: 1+/1-
Fixed cable: Brown + / Blue -
 Weight.....21 kg (46 lb)

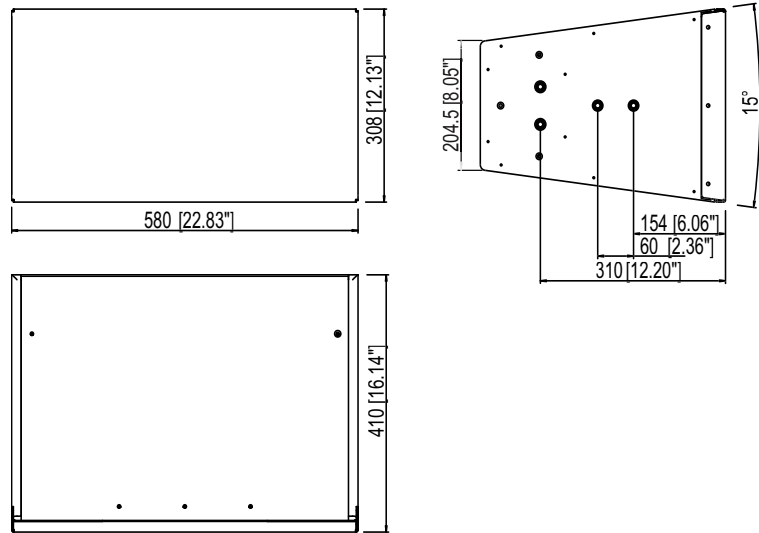


Fig. 10: Qi10 cabinet dimensions in mm [inch]

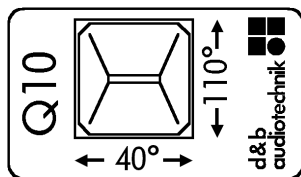


Fig. 11: Horn dispersion label

Altering the HF horn dispersion

The Qi10 HF horn has a square flange allowing it to rotate through 90°.

To rotate the horn the front grill needs to be removed.

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

1. Undo the six countersunk Allen screws that hold the front grill in place and remove the front grill.
2. Undo the four countersunk Allen screws of the horn.
3. Rotate the horn through 90° - Fig. 11.
4. Refit the horn and tighten the four screws of the horn to a torque of 2 Nm.
5. Refit the front grill and tighten the six screws to a torque of 2 Nm.

Arraying Qi10 cabinets

Horizontal array of Qi10 cabinets

The horizontal angle between adjacent Qi10 cabinets can be set to between 60° and 90°. The most even energy distribution is achieved with 75°.

Vertical array of Qi10 cabinets

The vertical angle between adjacent Qi10 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.

Qi10 used in line array columns with Qi1s and Qi-SUBs

The Qi10 with the horn rotated can be positioned at the bottom of a Qi1 line array column to extend the near field coverage horizontally and vertically, if required.

Manufacturer's declarations



EU conformity of loudspeakers (CE symbol)

This declaration applies to

- Qi10 loudspeaker Z0528

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.

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