

# **Q-SUB**

## **Manual (2.1E)**

**WARNING!**

This refers to a potentially dangerous situation which may lead to personal injury.

**CAUTION!**

This refers to a potentially dangerous situation which may lead to personal injury.

**IMPORTANT!**

This refers to a situation which may cause the equipment to malfunction.

**Note:**

Additional information and/or references.

**Symbols on the equipment**

Please refer to the information in the operating manual.



**WARNING!**  
**Dangerous voltage!**

**General Information**

Q-SUB Manual

Version 2.1E, 11/2004, D2042.E.02

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The information contained in this manual has been carefully checked for accuracy, at the time of going to press, however no guarantee is given with respect to the correctness.

d&b audiotechnik AG accepts no responsibility for any errors or inaccuracies that may appear in this manual or the products and software described in it.

Technical specifications, dimensions, weights and properties do not represent guaranteed qualities.

As manufacturers we reserve the right to make alterations and modifications within the framework of legal provisions, as well as changes aimed at improving quality.

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## Safety precautions

**Before you use our products, read the manual carefully and observe all the safety precautions. They will protect you and help to avoid equipment failures.**

**Keep this manual in a safe place so that it is available for future reference.**

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



### 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.

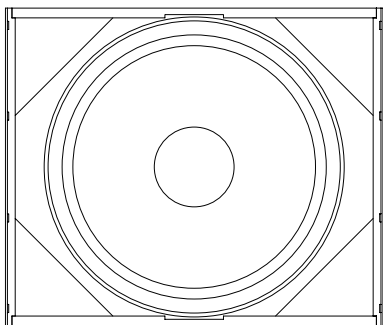
Regularly check the loudspeaker housings and accessories for visible signs of wear and tear, and replace them when necessary.

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.

## Q-SUB



**Fig. 1: Q-SUB**

The Q-SUB is the subwoofer for the Q-Series. It can be used to supplement Q1 and Q7 cabinets in various combinations, either flown or ground stacked. The Q-SUB cabinet is an actively driven bass-reflex design housing a long excursion 18" driver, its frequency response extending from 40 Hz to 130 Hz.

The Q-SUB 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, and mounted on the rear panel are two EP5 or NL4 connectors wired in parallel and four heavy duty wheels. An M20 threaded flange in the top panel accepts the d&b Z5013 Loudspeaker stand for the deployment of full range cabinets.

The Q-SUB has a total of 10 sockets in the front grill and side panels to accept the Z5153 Locking pins 8 mm that connect to the array links of the Q1 system. Two runners extend from the rear to the front panel of the cabinet protecting the bottom panel against scratching. Two correspondingly shaped recesses are incorporated in the top panel of each cabinet that accept these runners to prevent cabinet movement when stacking Q-SUBs.

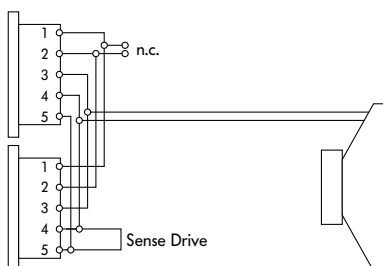
### CAUTION!

Only operate Q-SUB loudspeakers with a d&b amplifier configured for the Q-SUB otherwise there is a risk of damage to the loudspeaker components.

### Connections

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

The Q-SUB can be supplied with NL4 output connectors as an option. The D12 SenseDrive function is not available when using NL4 connectors. Pin equivalents of EP5 and NL4 connectors are listed in the table below.



**Fig. 2: Connector wiring**

EP5	1	2	3	4	5 (SenseDrive)
NL4	1+	1-	2+	2-	n.a.

**Tab. 1: EP5 and NL4 pin assignments**

### IMPORTANT!

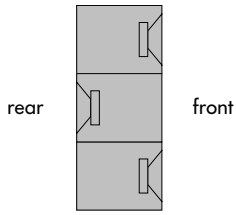
### Operation with D12

Selecting Q-SUB mode in the D12 enables up to two Q-SUB subwoofers to be driven by the respective channel. In applications with low continuous levels or low ambient temperatures up to three subwoofers per channel can be connected.

### Controller settings

#### 100 Hz circuit

If the 100 Hz circuit is selected, the upper operating frequency of the system is reduced from 130 Hz to 100 Hz.



**Fig. 3: CSA Stack (Example)**

### CSA

CSA (Cardioid Subwoofer Array) is a method to combine three or a multiple of three subwoofer cabinets to an array with exceptional directivity at low frequencies. Please refer to d&b TI-330 (d&b code D5330.E) which describes the set up in detail. Do not use this mode with any other configuration of Q-SUB systems.

Driven in CSA mode a reversed cabinet will eliminate the energy radiated to the rear of two front radiating Q-SUB cabinets (CSA not selected). Please note that all other settings of the amplifiers driving a CSA have to be identical (input signal, level, 100 Hz, EQ, delay).

### Operation with E-PAC

Selecting Q-SUB mode (firmware V4.00 or later) enables the E-PAC to drive a single Q-SUB cabinet. We do not recommend that two Q-SUB cabinets are driven in LO IMP mode as the 6 dB reduction in input level to the loudspeakers results in no gain in acoustical output.

The 100 Hz setting is available. The characteristics of the 100 Hz setting is explained under the previous section "Operation with D12 - Controller settings".

### Technical specifications

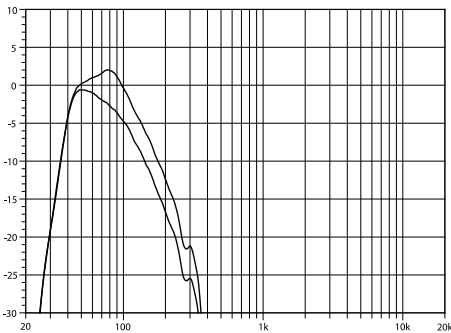
#### Q-SUB system data

Frequency response (-5 dB standard).....40 Hz ... 130 Hz  
 Frequency response (-5 dB 100 Hz mode).....40 Hz ... 100 Hz  
 Max. sound pressure (single cabinet, 1 m, free field) with D12 .....133 dB  
 Max. sound pressure (single cabinet, 1 m, free field) with E-PAC .....129 dB  
 (SPLmax peak, pink noise test signal with crest factor of 4)

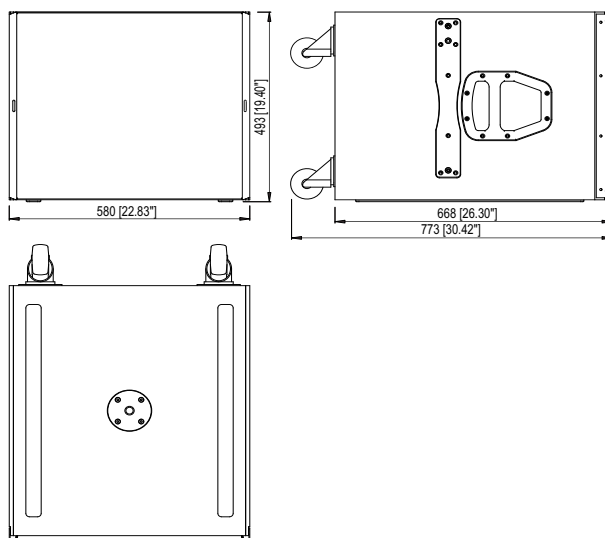
Input level (100 dB-SPL/1 m).....-13 dBu  
 Polarity to controller INPUT (XLR pin 2: + / 3: -).....LF: +

#### Q-SUB subwoofer

Nominal impedance.....8 ohms  
 Power handling capacity (RMS / peak 10 ms).....400/1600 W  
 Components.....18" driver  
 Connections.....2 x EP5 (optional 2 x NL4)  
 Pin assignments.....EP5: 3/4, SenseDrive pin 5 (NL4: 2+/2-)  
 Weight.....42 kg (92.6 lb)



**Fig. 4: Q-SUB frequency response, standard and 100 Hz settings**



**Fig. 5: Q-SUB cabinet dimensions in mm [inch]**



## WARNING!

### Connecting Q-SUB and Q1 cabinets

Using Q-SUBs together with Q1 cabinets in a flow array the Q-SUB cabinets **MUST** be positioned at the top of the column.

Q1 and Q-SUB cabinets use the same sockets in the front grill and side panels to accept the Z5153 Locking pin 8 mm.

Located on the top of the side panels of the Q-SUB cabinet is an additional socket that enables the Q1 cabinet to be tilted downwards up to 6° for ground stacked use. In this case the Z5152 Q Front links have to be rotated through 180° before attaching to allow the Q1 cabinet to be tilted to the front (see picture below).

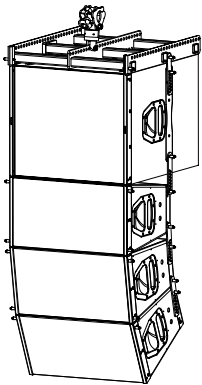


Fig. 6: Q1/Q-SUB Line Array

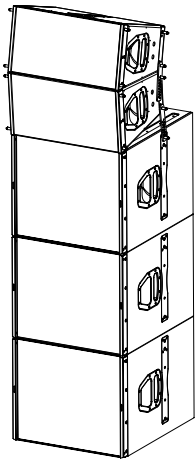


Fig. 7: Q1/Q-SUB Stack

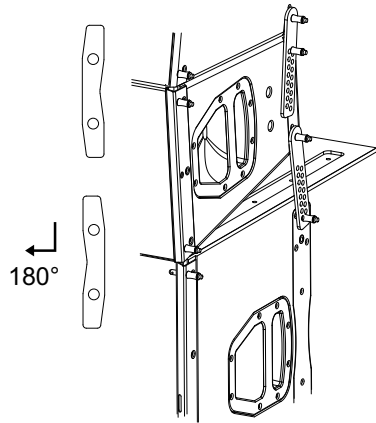


Fig. 9: Orientation of Z5152 Q Front links

### Q-SUB and Q7 cabinets

An M20 threaded flange in the top panel accepts the Z5013 Loudspeaker stand M20 with winder for the deployment of full range cabinets such as Q7 together with the Z5150 Q Swivel bracket and the Z5024 High stand adapter.

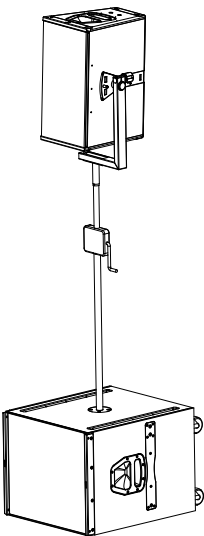


Fig. 8: Q-SUB with Z5013 Loudspeakerstand M20 with winder and Q7

## EU declaration of conformity (CE symbol)



### EU conformity of loudspeakers

This declaration applies to loudspeakers manufactured by d&b audiotechnik AG and includes the types listed in the table below:

- **Q-SUB      Z0510**

All production versions of these types 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 following EC directives including all applicable amendments:**

- **89/336      Electromagnetic Compatibility**

**The following standards have been applied:**

- **DIN EN 55013:08-1991**
- **DIN EN 55020:05-1995**
- **DIN EN 50082-1:03-1993**

