Ci45/Ci60/Ci90

Manual (9.0E)

d&b audiotechnik

References in the manual



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 informations and/or references**

Symbols on the equipment



Please refer to the information in the operating manual.



WARNING!
Dangerous voltage!

General Information

Ci45/Ci60/Ci90 Manual

Version 9.0E, 12/2004, D2086.E.09

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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 manufacterers 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.

Information regarding use of loudspeakers



WARNING!

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.

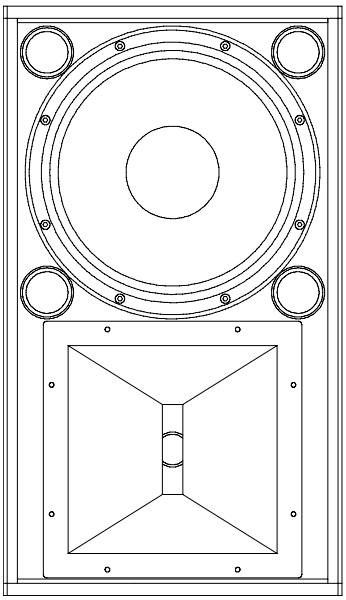


Fig. 1: Ci45/Ci60/Ci90 loudspeaker

C45i0, Ci60 and Ci90 cabinets are full range, two-way bass-reflex enclosures each fitted with a 12" LF driver passively crossed over to a 1.4" HF compression driver coupled to a CD horn with 45° x 45° (Ci45), 65° x 40° (Ci60) or 90° x 40° (Ci90) coverage pattern. The cabinets are designed to allow the horn flares to be rotated through 90° allowing greater flexibility in placement for a given dispersion.

The cabinets are constructed from marine plywood and have an impact resistant paint finish. The front is protected by a rigid metal grill fitted with an acoustically transparent foam. M10 threaded inserts are provided on the top and bottom, and on the sides of each cabinet, for mounting rigging accessories. A recess at the top of the rear panel, which also serves as a handle, is fitted with two Speakon NL4 input connectors.

Ci45/Ci60/Ci90 systems are designed specifically for permanent installation. In the standard, upright operating position the CD horn is positioned below the LF driver so the HF dispersion is less likely to be influenced by reflections from walls, ceilings or other equipment mounted nearby. This arrangement improves the headroom before feedback when systems are flown above the stage.

The frequency response of the systems extends from 18 kHz down to 55 Hz enabling use in most applications without a subwoofer. Where higher SPLs with an extended bass response are required the Ci systems can be combined with d&b active subwoofer systems .

CAUTION!

Only operate Ci45/Ci60/Ci90 loudspeakers with a d&b amplifier configured correspondingly otherwise there is a risk of damage to the loudspeaker components.

Connections

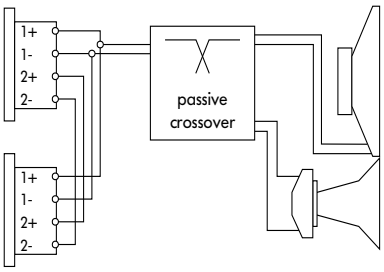


Fig. 2: Connector wiring

Since November 2004 the Ci45/Ci60/Ci90 cabinets are fitted with two NL4 connectors. All pins of both connectors are wired in parallel using the pin assignments 1+/1–. Using one connector as the input, the second connector allows for direct connection to additional loudspeakers.

The systems can be supplied with a fixed cable as an option (cable H-07-RN-F 2 x 2.5 qmm/AWG 13 with a length of 5.5 m as standard or length as required). Pin equivalents of NL4 connectors and fixed cable option (PG) are listed in the table below.

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

Tab. 1: NL4 and fixed cable (PG) pin assignments

Operation with D12

IMPORTANT!

Selecting Ci60, Ci90 or Ci45 mode in the D12 enables up to two cabinets to be driven by the respective channel. In applications with low continuous levels or low ambient temperatures up to three cabinets can be connected.

Controller settings

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

CUT circuit

Set to CUT, the Ci60/Ci90/Ci45 low frequency level is reduced. The loudspeaker is now configured for use with the Ci-SUB, Q-SUB or d&b C-Series subwoofers.

HFA circuit

Im HFA-Modus (High Frequency Attenuation) wird gegenüber der Standardeinstellung der Hochtonpegel zurückgenommen. Mit dieser Einstellung erhält man einen neutralen, unaufdringlichen Klangcharakter bei einer geringen Abhörentfernung.

Die Absenkung der HFA-Funktion setzt bereits bei 1 kHz sehr sanft ein und erreicht etwa 3 dB bei 10 kHz. Diese Charakteristik entspricht dem typischen Klangbild eines Lautsprechers in größerer Abhörentfernung, welches durch diffuse Raumreflexionen geprägt ist.

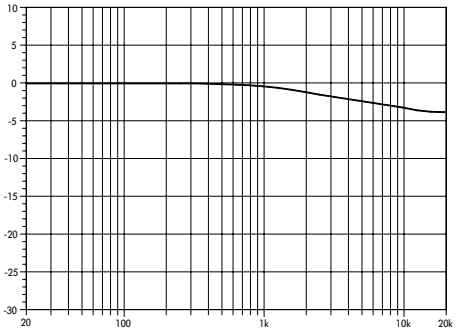


Fig. 3: Frequency response correction with HFA setting

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
250 Hz, providing a balanced frequency response when cabinets are used in arrays of two or more. The function of the CPL circuit in the D12 amplifier 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).

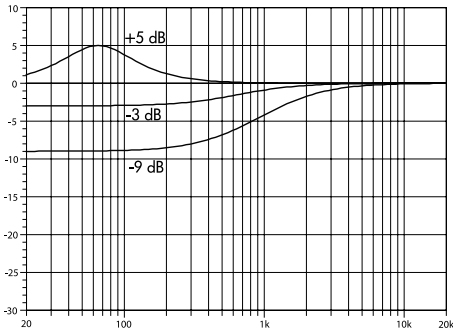


Fig. 4: Frequency response correction of CPL circuit

Operation with E-PAC

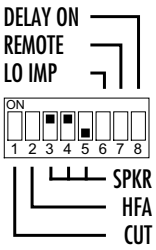


Fig. 5: E-PAC Configuration for Ci60/Ci90 (E-PAC version 2)

To drive Ci60/Ci90 or Ci45 loudspeakers the E-PAC has to be configured to Ci60/Ci90 (CI6/CI9) mode (possible with E-PAC version 2 from serial number Z2500.000.02-01313 and E-PAC version 3) or Ci45 mode (possible with E-PAC vesrion 3).

For an E-PAC version 2, the configuration is selected by setting the appropriate DIP switches on the rear panel.

For an E-PAC version 3, the configuration is set via the encoder in conjunction with the LCD.

Selecting Ci60/Ci90/Ci45 mode enables one Ci60/Ci90/Ci45 cabinet to be driven at an output power of 300 Watts. LO IMP mode allows the E-PAC to drive two cabinets with a 6 dB reduction of input level to the speakers.

The CUT and HFA settings are available on versions 2 and 3 and are explained under the previous section "Operation with D12 - Controller settings".

Dispersion charcteristics

The graphs below show the dispersion angle v frequency, plotted using lines of equal sound pressure (isobars) at −6 dB and −12 dB.

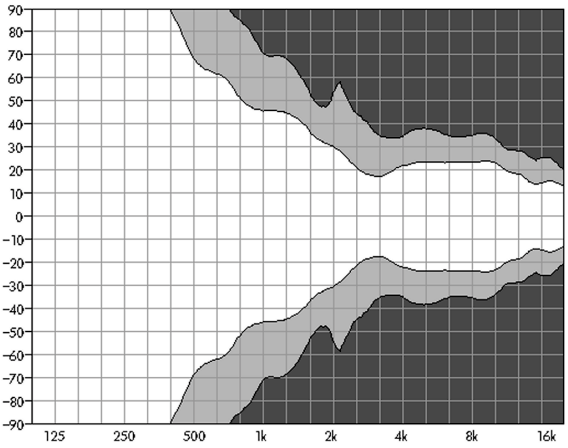


Fig. 6: Isobar diagram Ci45 horizontal

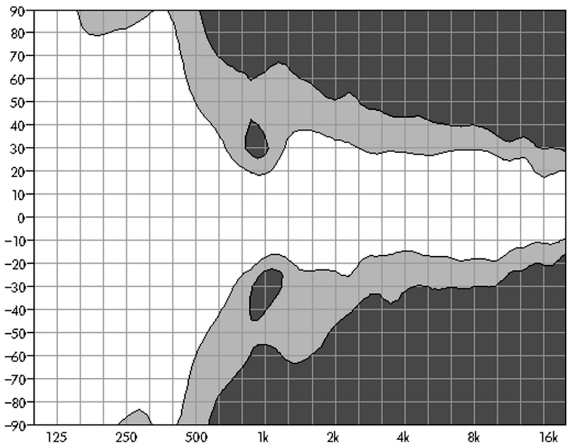


Fig. 7: Isobar diagram Ci45 vertical

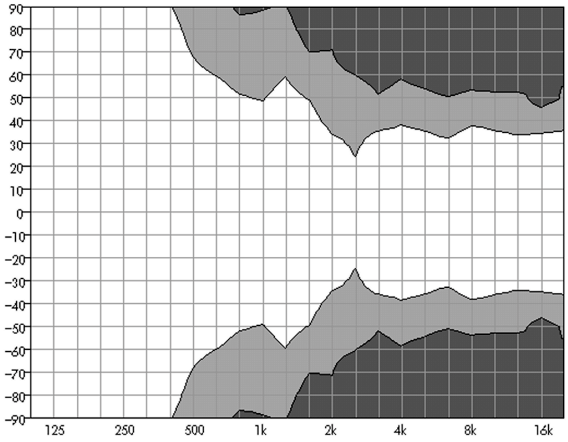


Fig. 8: Isobar diagram Ci60 horizontal

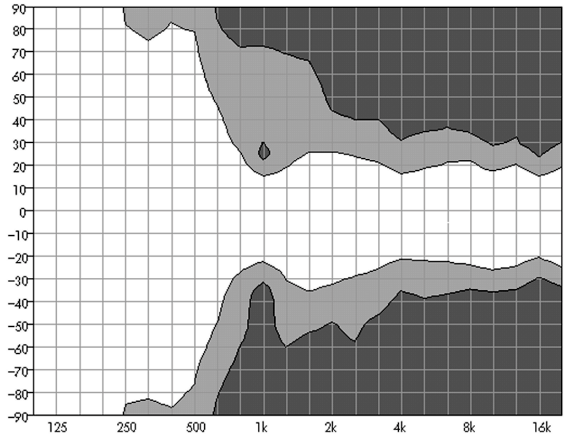


Fig. 9: Isobar diagram Ci60 vertical

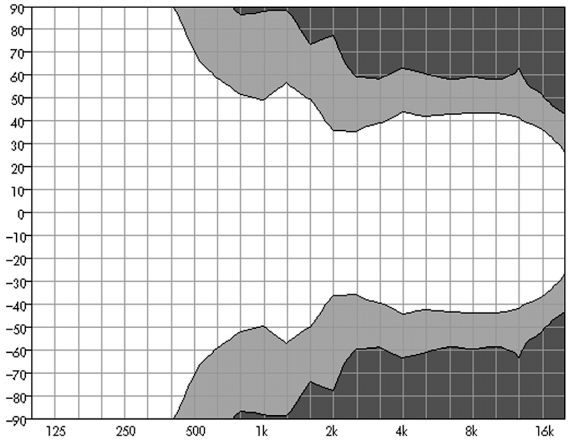


Fig. 10: Isobar diagram Ci90 horizontal

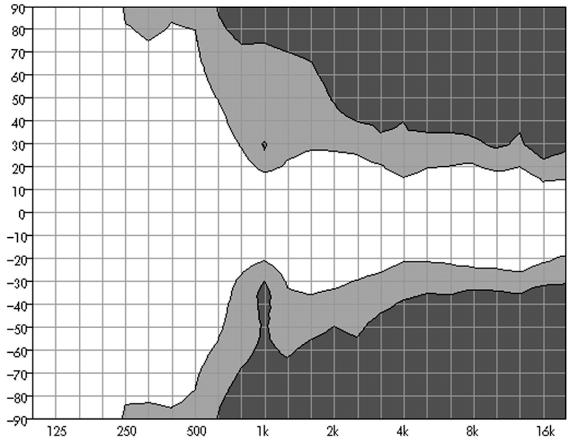


Fig. 11: Isobar diagram Ci90 vertical

Technical specifications

Ci45 / Ci60 / Ci90 system data

Frequency response (–5 dB).....55 Hz – 18 kHz
Max. sound pressure (1 m, free field) with D12.....136/136/135 dB
Max. sound pressure (1 m, free field) with E-PAC.....133/133/132 dB
(SPLmax peak, pink noise test signal with crest factor of 4)
Input level (100 dB SPL / 1 m).....–16 dBu
Polarity to controller INPUT (XLR pin 2: + / 3: –).....LF: – / HF: +

Ci45 / Ci60 / Ci90 loudspeaker

Nominal impedance.....8 ohms
Power handling capacity (RMS / peak 10 ms).....200 / 800 W
Nominal dispersion angle (hor. x vert.).....45° x 45° / 65° x 40° / 90° x 40°
.....Ci60/Ci90 alternatively 40° x 65° /40° x 90°
Components.....2 x 12" driver
.....1.4" 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.....27 kg (59.4 lb)

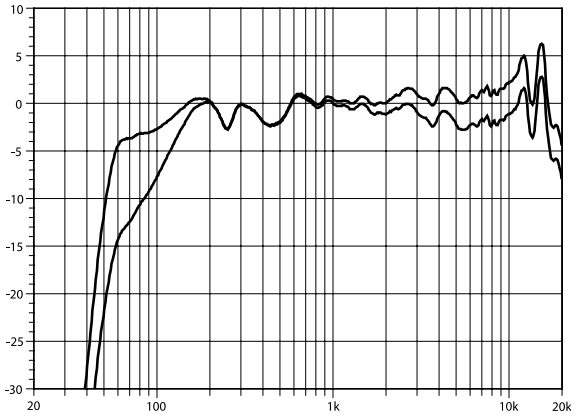


Fig. 12: Frequency response Ci45 standard, CUT and HFA settings

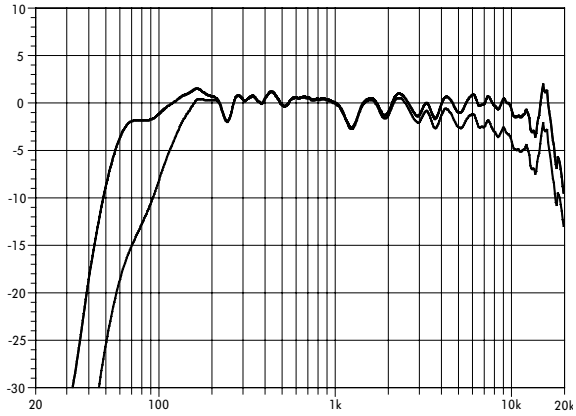


Fig. 13: Frequency response Ci60, standard, CUT and HFA settings

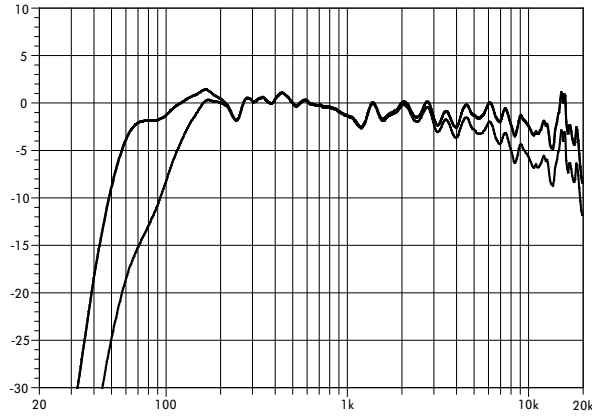


Fig. 14: Frequency response Ci90 standard, CUT and HFA settings

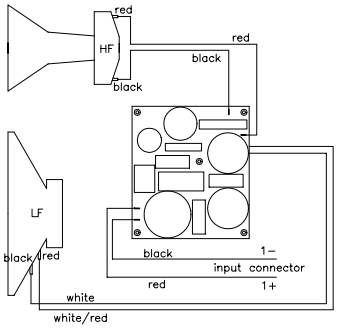


Fig. 15: Wiring diagram Ci45/Ci60/Ci90

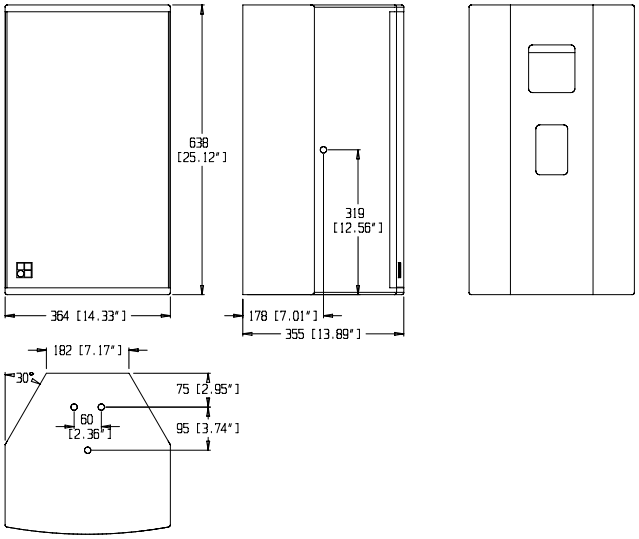


Fig. 16: Cabinet dimensions Ci45/Ci60/Ci90 in mm [inch]

Rigging accessories

The table below lists the rigging accessories that are available for the Ci45, Ci60 and Ci90 loudspeaker:

Code	Description
Z5051.000	Ci60 / Ci90 Horizontal bracket
Z5052.000	Ci60 / Ci90 Flying bracket
Z5053.000	Ci60 / Ci90 Bracket connector
Z5054.000	Ci60 / Ci90 Flying adapter
Z5020.000	Flying adapter 02
Z5044.000	MAX Bracket connector
Z5147.000	Rota clamp
Z5010.000	TV spigot with fixing plate
Z5015.000	TV spigot for Z5020
Z5012.000	Pipe clamp for TV spigot
Z5024.000	Loudspeaker stand adapter
Q9031.000	M8 Safety eye bolt
Q9032.000	M10 Safety eye bolt

For further information please refer to the specific mounting instructions for each accessory.

EU declaration of conformity (CE symbol)

CE

EU conformity of loudspeakers

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

- **Ci45 Loudspeaker Z1405**
- **Ci60 Loudspeaker Z1400**
- **Ci90 Loudspeaker Z1401**

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**

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