

Ci45/Ci60/Ci90

Manual (9.2 EN)

Symbols on the equipment



Please refer to the information in the operating manual.



WARNING!
Dangerous voltage!

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General Information

Ci45/Ci60/Ci90 Manual

Version 9.2 EN, 03/2008, D2086.E.09

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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.

Ci45/Ci60/Ci90

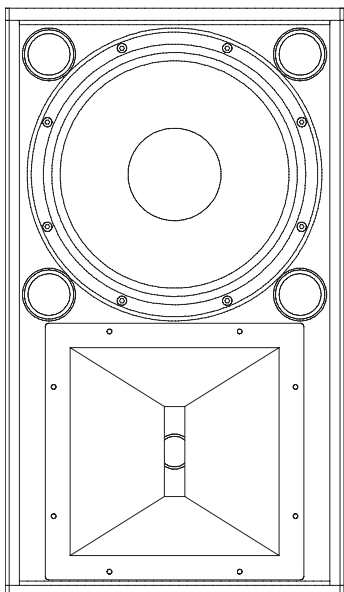


Fig. 1: Ci45/Ci60/Ci90 loudspeaker

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 .

NOTICE: Only operate Ci45/Ci60/Ci90 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.

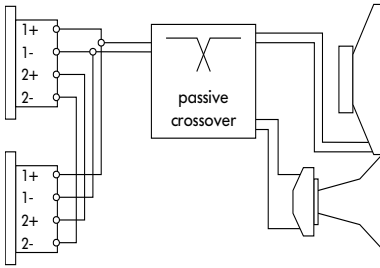


Fig. 2: Connector wiring

Connections

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.

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 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 Ci45, Ci60 or Ci90.

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

Up to a total of two Ci45/Ci60/Ci90 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 Ci45/Ci60/Ci90 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

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

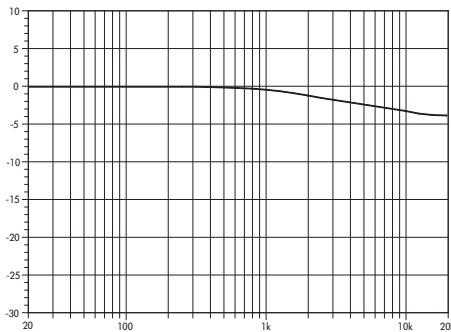


Fig. 3: Frequency response correction with HFA setting

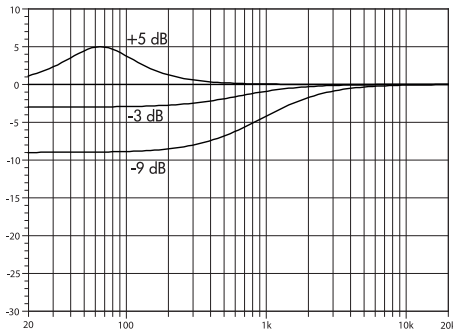


Fig. 4: Frequency response correction of CPL circuit

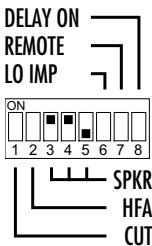


Fig. 5: E-PAC Configuration for Ci60/Ci90 (E-PAC version 2)

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 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

To drive Ci60/Ci90 or Ci45 loudspeakers, select the controller setup Ci60/Ci90 (Ci6/Ci9 - possible with E-PAC version 2 from serial number Z2500.000.02-01313 and E-PAC version 3) or the Ci45 setup (possible with E-PAC version 3).

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

For an E-PAC version 3, the respective setup can be selected via the encoder in conjunction with the LCD.

Selecting Ci45/Ci60/Ci90 mode enables the E-PAC to drive one Ci45/Ci60/Ci90 loudspeaker. LO IMP mode configures the E-PAC to drive a maximum of two loudspeakers with a 6 dB reduction in input level to the loudspeakers.

The CUT and HFA settings are available on versions 2 and 3 and are explained in the previous section "Operation with D6 or D12 - Controller settings".

Dispersion characteristics

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

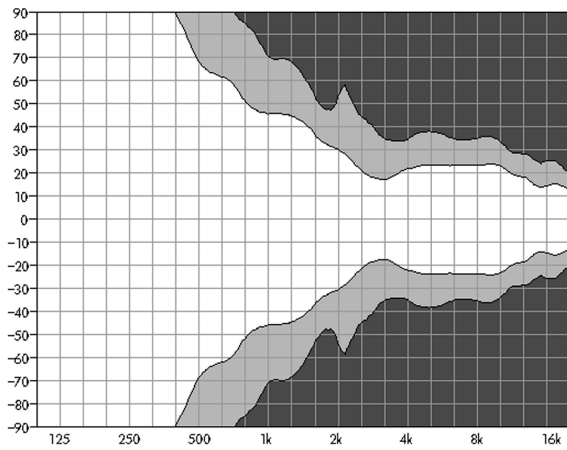


Fig. 6: Isobar diagram Ci45 horizontal

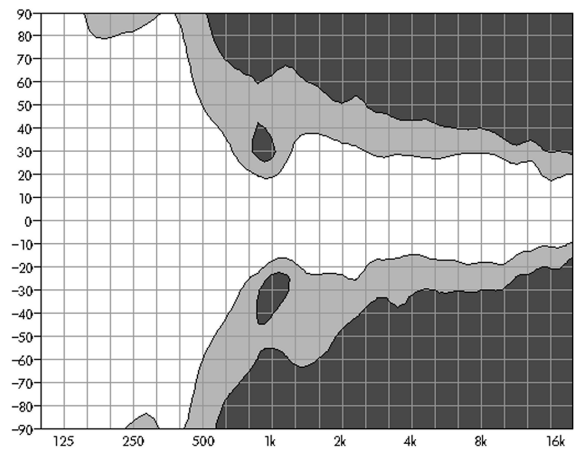


Fig. 7: Isobar diagram Ci45 vertical

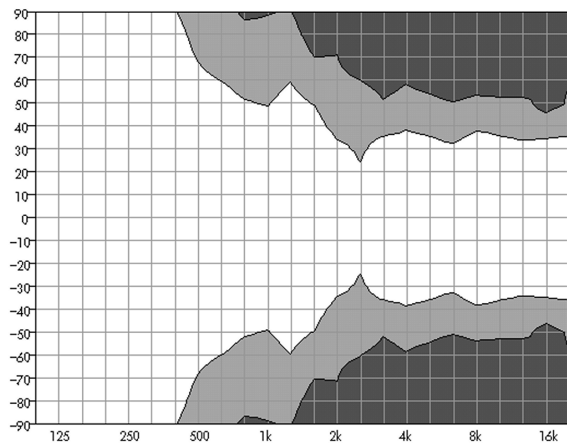


Fig. 8: Isobar diagram Ci60 horizontal

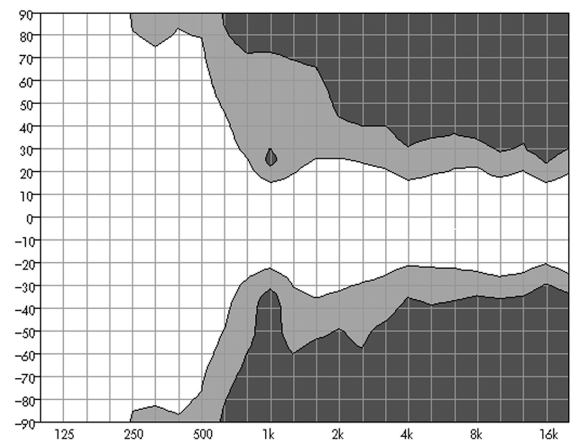


Fig. 9: Isobar diagram Ci60 vertical

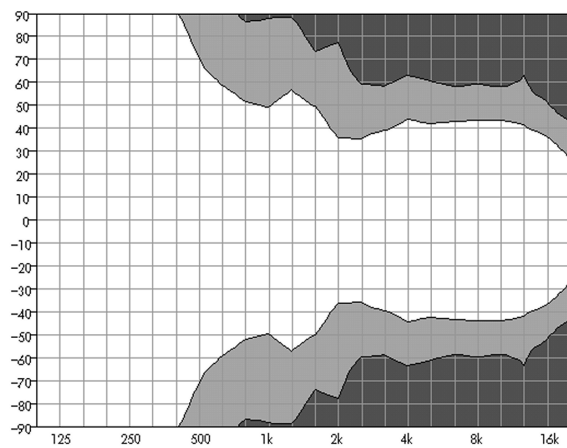


Fig. 10: Isobar diagram Ci90 horizontal

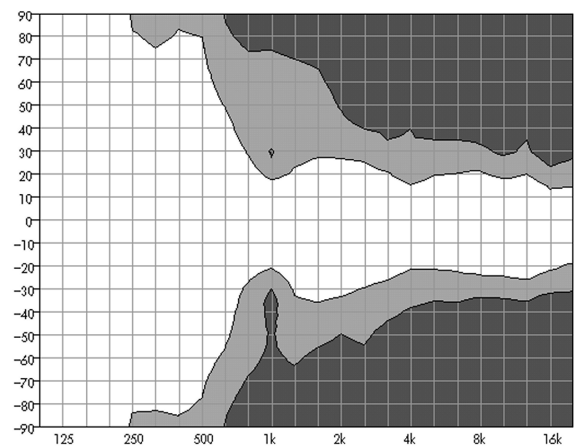


Fig. 11: Isobar diagram Ci90 vertical

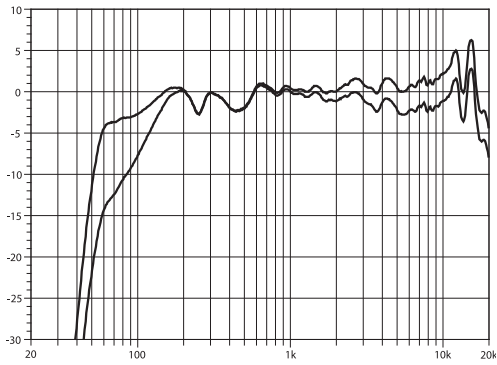


Fig. 12: Frequency response Ci45 standard, CUT and HFA settings

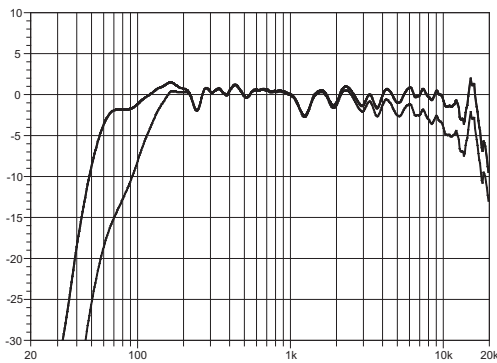


Fig. 13: Frequency response Ci60, standard, CUT and HFA settings

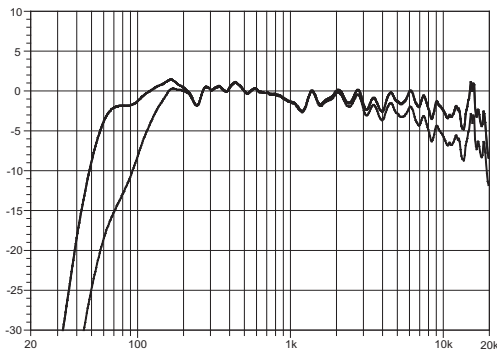


Fig. 14: Frequency response Ci90 standard, CUT and HFA settings

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 D6.....	133/133/132 dB
	(SPLmax peak, pink noise test signal with crest factor of 4)
Input level (100 dB SPL / 1 m).....	-16 dBu

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.....	1 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)

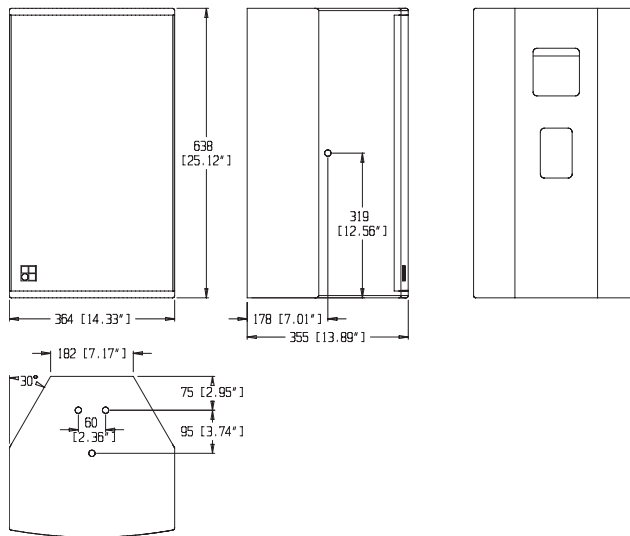


Fig. 15: Cabinet dimensions Ci45/Ci60/Ci90 in mm [inch]

Manufacturer's declarations



EU conformity of loudspeakers (CE symbol)

This declaration applies to

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

manufactured by d&b audiotechnik GmbH.

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 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.

