

# **C4-TOP**

## **Data Sheet**

## **Safety precautions**

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 loading capacity of the accessories as specified in our "Rigging accessories" manual.

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.

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.

**WARNING!**

**CAUTION!**

## **General Information**

C4-TOP Data Sheet

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The information presented in this document is, to the best of our knowledge, correct. We will however not be held responsible for the consequences of any errors or omissions.

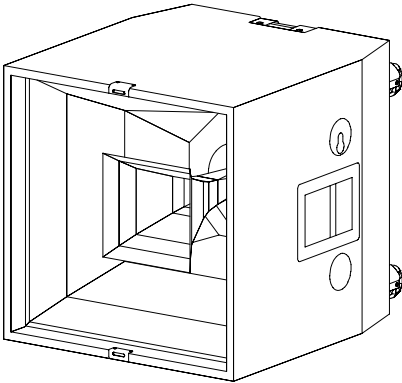
Technical specifications, weights and dimensions should always be confirmed with d&b audiotechnik AG prior to inclusion in any additional documentation.

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## C4-TOP



The C4-TOP is a two way horn loaded loudspeaker which provides high SPL coverage from mid to high frequencies. The constant directivity design of the C4-TOP's coaxial horns ensures that its 35° x 35° dispersion is maintained down to 700 Hz. The driver complement consists of two passively coupled devices - a 12" low/mid frequency driver and a 2" HF compression driver.

The C4-TOP cabinet is constructed from marine plywood, fitted with steel handles, MAN CF4 stud plate rigging points 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 and fitted with catches to the top and bottom for securing an optional transport lid E7908. Mounted on the rear panel are ratchet strap guide plates (kelping bars), four M10 threaded inserts for attaching installation hardware, two Speakon NL4 or EP-5 connectors wired in parallel and four heavy duty wheels.

As the C4-TOP operates from 18 kHz down to 150 Hz, it requires low frequency support from a subwoofer system like the C4-SUB (50 Hz to 150 Hz).

C4 systems comprising TOP and SUB cabinets can be used ground-stacked or flown. The distinctive angled rear side panels of the C4 cabinet set a 30° horizontal angle between side by side array columns. The recommended two stack minimum C4 configuration - two TOP's and two SUB's per side - gives 70° of horizontal coverage.

The narrow dispersion angle and very high output capability of the C4 system make it suitable for audience coverage up to and beyond 50 m (165 ft) - ideal for large concert halls, arenas and open air festival sites.

Only operate C4-TOP loudspeakers with a d&b P1200A mainframe fitted with C4-TOP controller modules otherwise there is a risk of damaging the loudspeaker components.

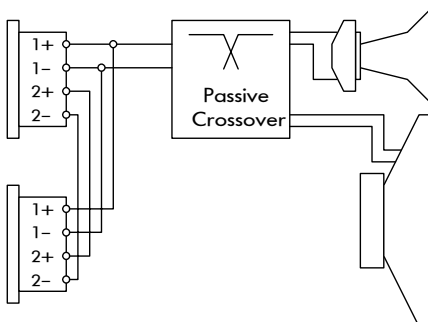
### CAUTION!

### Connections

The C4-TOP cabinet is fitted with a pair of Speakon-NL4 connectors. All four pins of both connectors are wired in parallel. The C4-TOP uses the pin assignments 1+/1-. Pins 2+/2- are designated to C and E-Series active subwoofers. Using one connector as the input, the second connector allows for direct connection to additional loudspeakers.

The C4-TOP can be supplied with EP-5 output connectors as an option. Pin equivalents of Speakon-NL4 and EP-5 connectors are listed in the table on the left.

Up to two C4-TOP loudspeakers can be driven by each P1200A power amplifier channel. Fitting one C4-TOP-CO and one subwoofer controller module allows a single mainframe to drive two C4-TOP and two active subwoofer cabinets (C4-SUB or C7-SUB). All cabinets can be linked together locally and fed by a single four-wire cable from either mainframe output connector.



Connector wiring

EP-5	1	2	3	4	5
NL4	1+	1-	2+	2-	n.c.

Speakon- NL4 and EP-5 pin assignments

## C4-TOP controller module switches

### HFC switch & indicator

In HFC mode (High Frequency Compensation, yellow HFC LED illuminated), the response of the system is tailored for remote listening positions. The characteristics of HFC mode are detailed in the graph below right.

Selecting the HFC switch compensates for loss of high frequency energy due to absorption in air when loudspeakers are used to cover far field listening positions. The HFC correction equates to the HF loss which occurs at a distance of 30 m (100 ft) at 20° C (68° F) in 50 % relative humidity.

In applications which use vertically arrayed C4-TOP cabinets, ground stacked or flown, the HFC switch should be used selectively, only for those cabinets covering the far field. This guarantees the correct sound balance between close and remote audience areas, whilst all mainframes driving the array can be fed with the same signal.

### Operation with E-PAC (only possible with E-PAC version 3 with display)

To drive C4-TOP cabinets the E-PAC has to be configured to C4-TOP mode.

For an E-PAC version 3, the configuration is set via a front panel digital rotary encoder in conjunction with an LCD.

The HFC setting is available. The characteristics of the HFC setting are explained under the section "C4-TOP controller module switches".

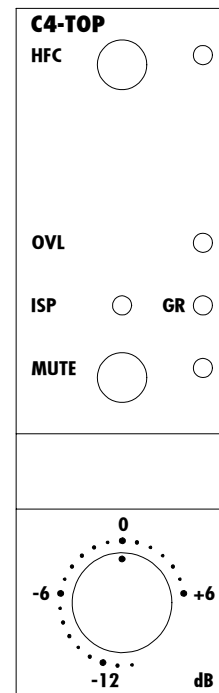
The E-PAC can drive a single C4-TOP cabinet at an output power of 300 watts. LO IMP mode allows the E-PAC to drive two C4-TOP cabinets with a 6 dB reduction of input level to the speakers.

## C4 arrays

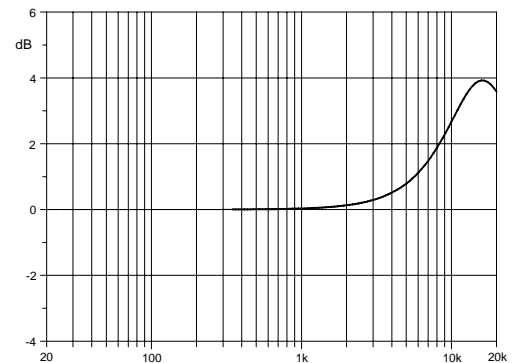
The horizontal angle between adjacent C4-TOP's in an array can be set to between 20° and 30°. Using the 30° maximum horizontal array angle produces arrays with  $(n \times 30^\circ) + 10^\circ$  horizontal coverage - where  $n$  = the number of speaker columns in the array - in the case of a four column array this results in 130° of horizontal coverage. Smaller angles between the cabinets will give a smaller horizontal coverage area but will produce higher sound pressure on the array middle axis.

Especially in venues with difficult room acoustics the configuration of the array should be thoroughly adapted to the actual requirements. In order to keep diffuse sound low, the total coverage angle should only be as wide as necessary to cover the audience area.

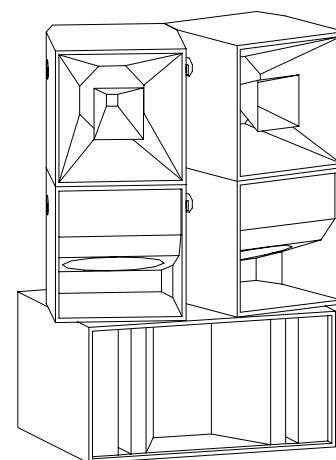
In a typical left-right set up it is sufficient if the coverage zones of the two PA wings or rigs overlap only in the middle of the room. Because of the differences in arrival time, large set ups allow stereo imaging only on the middle axis between both arrays.



Controls on C4-TOP controller module



Frequency response correction of HFC circuit



C4-TOP/SUB stacks with B2-SUB

Ground stacks are normally constructed by placing cabinets directly on top of each other. Having no vertical angle between TOP cabinets produces a strong coupling effect and increases vertical directivity which helps to provide coverage to the far field. However it is not recommended to stack TOP cabinets more than three high as this produces very different dispersion patterns in the mid and high frequency range.

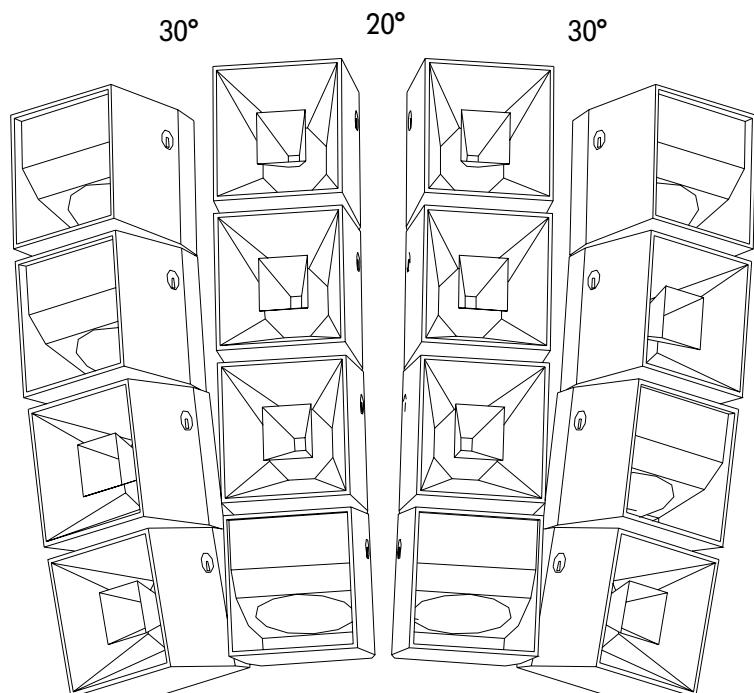
### Flown systems

d&b offers a wide range of accessories for the assembly of flown C4 arrays (d&b Flying Bar, d&b Flying System). Detailed descriptions can be found in the manuals for Rigging Accessories and the Flying System.

Compared to a ground stacked system a flown array will normally give a smoother level distribution in the audience area and provide coverage over a longer range.

For the horizontal set up of the array generally the same rules apply as already described in the section C4 arrays. The vertical set up of TOP's and SUB's is determined by the required level and reach of the system. A standard 5° vertical angle is normally used between adjacent rows of C4 cabinets in an array.

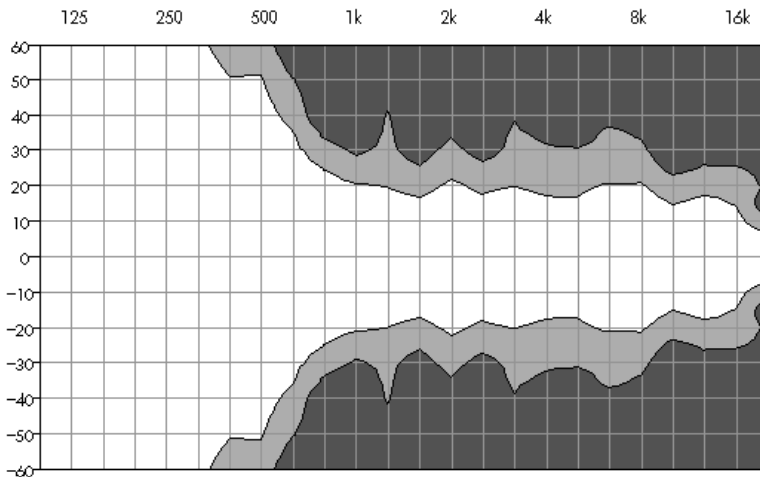
Placing all the C4-SUB's used on the ground in preference to flying them may give a higher sound pressure level but at the expense of an inferior sound balance from the whole system. So at least some of the SUB's should be integrated into the flown array. This can be achieved by placing them in the lower rows, where, due to the smaller distance to the audience less TOP's are needed or by inserting whole columns or rows of C4-SUB's. If a vertical column of SUB's is deployed ensure that the total horizontal angle between TOP cabinets in adjacent columns does not exceed 30°.



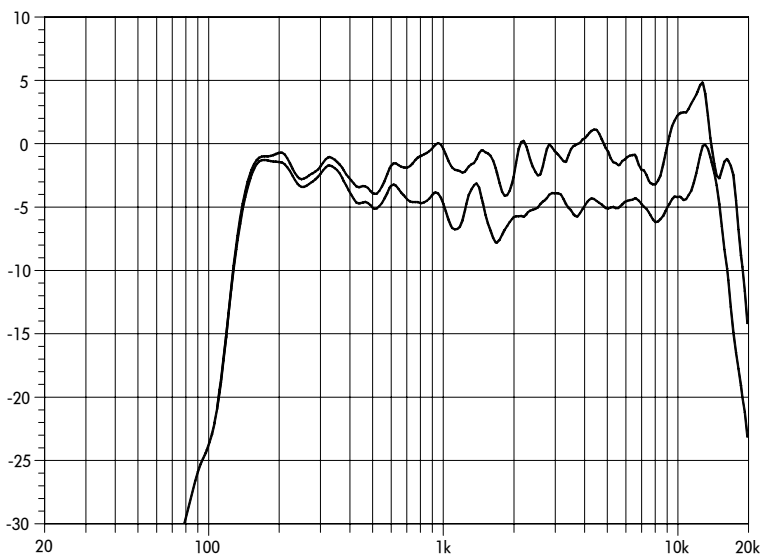
Example for a flown C4 array

## Dispersion characteristics

The diagrams below show dispersion angle vs frequency plotted using lines of equal sound pressure (isobars) at -6 dB and -12 dB. The nominal 35° dispersion is maintained from 16 kHz down to 700 Hz. Horizontal and vertical characteristics are identical.



**C4-TOP isobar diagram**



**C4-TOP frequency response on axis and 18° hor./vert. angles**

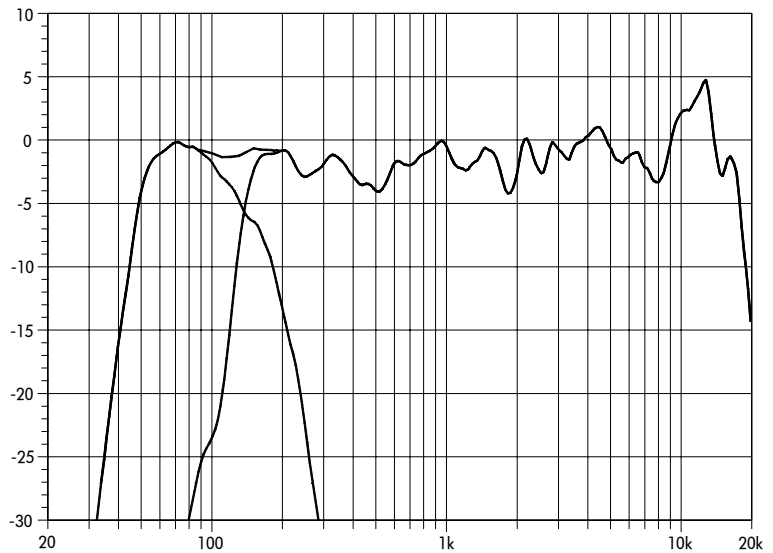
## Technical specifications

### C4-TOP system data

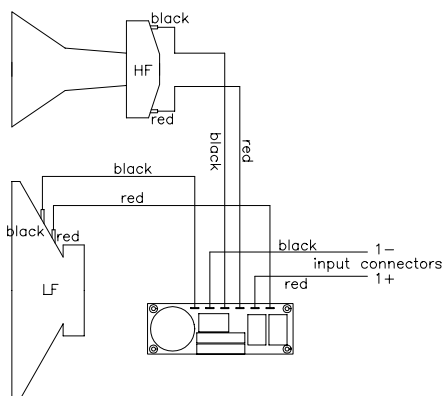
Frequency response (-5 dB).....	150 Hz ... 18 kHz
Max. sound pressure (1 m, free field) with P1200A .....	138 dB
Max. sound pressure (1 m, free field) with E-PAC .....	136 dB
(SPLmax peak, pink noise test signal with crest factor of 4)	
Input level (SPLmax).....	+14 dBu
Input level (100 dB-SPL / 1 m).....	-21 dBu
Polarity to controller INPUT (XLR pin 2: + / 3: -).....	LF: + / HF: +

### C4-TOP loudspeaker

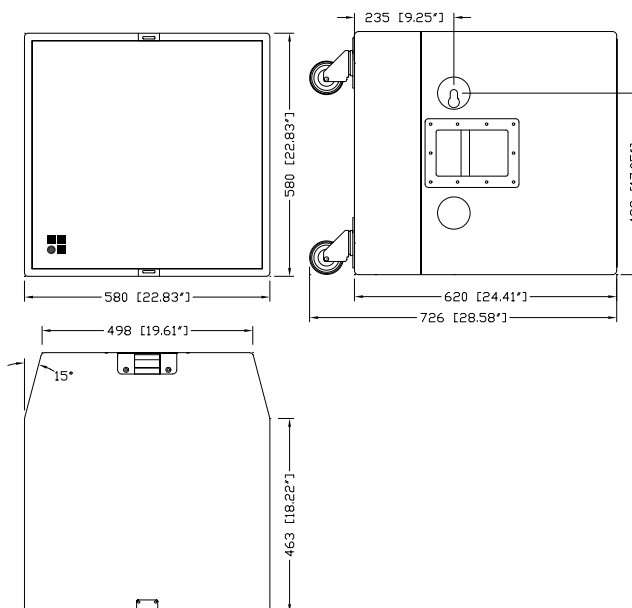
Nominal impedance.....	8 ohms
Power handling capacity (RMS / peak 10 ms).....	200 / 800 W
Nominal dispersion angle (hor. x vert.).....	35° x 35°
Connections .....	2 x Speakon-NL4
.....	(optional 2 x EP-5)
Pin assignments .....	1+ / 1-
.....	(EP-5: 1 / 2)
Weight .....	58 kg (128 lb)



C4-TOP frequency response used with C4-SUB



C4-TOP wiring diagram



C4-TOP cabinet dimensions in mm [inch]

