J12

Manual (1.2EN)

d&b audiotechnik®

Symbols on the equipment

Please refer to the information in the operating manual.

WARNING!
Dangerous voltage!

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General Information

J12 Manual

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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

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.

J12

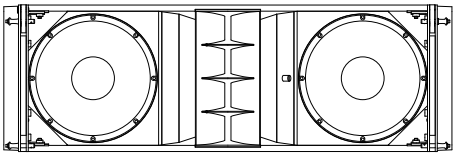

Fig. 1: J12 loudspeaker

The J12 is a line array loudspeaker for large-scale sound reinforcement. When the J Flying Frame is used, J12 cabinets can be flown in vertical columns with up to 24 cabinets producing a 120° constant directivity dispersion pattern in the horizontal plane.

The J12 is acoustically and mechanically compatible to the J8 line array module which provides a 80° horizontal dispersion. J-Series arrays may consist of a combination of J8, J12 loudspeakers and J-SUB cardioid subwoofers.

The J12 cabinet is a 3-way design housing 2 x 12" neodymium LF drivers, one horn-loaded 10" MF driver and two 1.4" exit HF compression drivers with 3" coils mounted to a dedicated wave shaping device. The cylindrical wave segments of each cabinet couple without gaps and sum up coherently. Splay angles between adjacent cabinets can be set in the range from 0° to 7°.

J12 cabinets are driven by the two channels of the d&b D12 amplifier providing the active crossover between the LF and mid/high sections. MF and HF drivers are crossed over passively within the cabinet.

All components are arranged symmetrically around the center axis of the cabinet to produce a perfect symmetrical dispersion pattern. This setup allows a very smooth crossover design with a well defined overlap of adjacent frequency bands resulting in a very consistent and accurate horizontal dispersion. Due to the dipolar arrangement of the low drivers the nominal dispersion of 120° is maintained down to 200 Hz.

The J12 frequency response extends from 48 Hz to above 17 kHz.

The J12 cabinet is constructed from marine plywood and has an impact and weather protected PCP (Polyurea Cabinet Protection) finish. The front of the loudspeaker cabinet is protected by a rigid metal grill. The side and rear panels incorporate four handles.

J-Series rigging components
J-Series arrays

Cabinets are mechanically connected using the rigging strands at both sides of the cabinet front and a central strand at the rear of the cabinet which also serves as a heat sink for the MF driver. All necessary rigging components are mounted to the cabinet and folded or slid out when needed.

A detailed description of the J-Series rigging components is given in the J-Series Rigging manual which is provided with the J Flying frame.

A detailed description of planning and designing J arrays is given in the technical information "TI 385 J-Series and Q-Series system design, d&b ArrayCalc" which is also provided with the J Flying frame.

The d&b ArrayCalc array calculator can be downloaded from the d&b website at www.dbaudio.com.

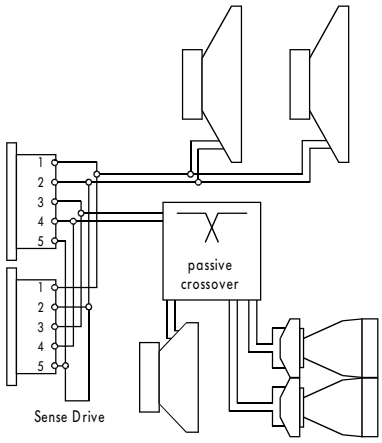

Fig. 2: Connector wiring

Connections

The J12 cabinet is fitted with a pair of EP5 connectors. All five pins of both connectors are wired in parallel. The J12 uses the pin assignments 1/2 for the low drivers. Pins 3/4 drive the mid/high section. Pin 5 is used for SenseDrive. Using the male connector as the input, the female connector allows for direct connection to a second cabinet.

The J12 can be supplied with NL8 connectors as an option. Pin equivalents of EP5 and NL8 connectors are listed in the table below.

	LF +	LF •	MF/HF +	MF/HF •	SenseDrive
EP5	1	2	3	4	5
NL8	1+	1•	4+	4•	3•

CAUTION!

IMPORTANT!

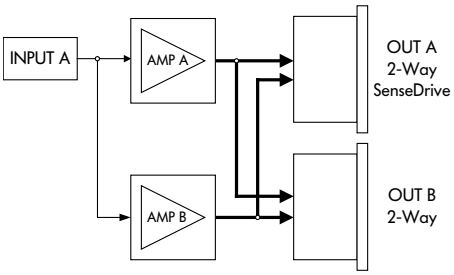

Fig. 3: D12 Input/Output routing 2-Way Active mode

Operation with D12

Only operate J12 loudspeakers with a d&b amplifier configured for the J12, otherwise there is a risk of damaging the loudspeaker components.

Selecting "2-Way Active" and J12 mode enables up to two J12 cabinets to be driven actively by the D12 amplifier.

The input signal is fed to INPUT A, while the input signal is routed (linked) to INPUT B internally.

To enable SenseDrive at least one of the cabinets has to be connected to output A of the D12 amplifier.

"J12 Arc" and "J12Line" setups

The D12 amplifier provides two setups for J12 cabinets. The selection depends on the curvature of the array. Within a typical J12 array both amplifier setups may be used.

The "Arc" setup is used for J12 loudspeakers in curved array sections.

The "Line" setup is used for long throw array sections with three or more consecutive splay settings of 0° or 1°. Compared to the "Arc" setup, the mid/-high range is reduced to compensate for the extended nearfield.

The transition from "Line" to "Arc" configuration within the array is made according to the splay progression but may allow for certain deviations due to the paired wiring of the cabinets.

Controller settings

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

CUT circuit
Set to CUT, the J12 low frequency level is reduced. The J12/J8 array is now configured for use with the d&b J-SUB, Q-SUB or B2-SUB subwoofers.

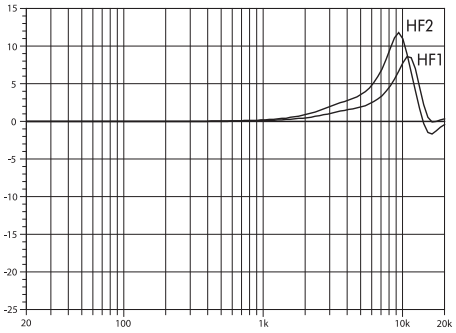

Fig. 4: Frequency response correction of HFC circuit, HF1 and HF2 settings

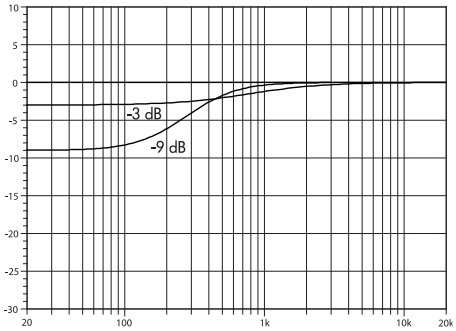

Fig. 5: Frequency response correction of CPL circuit

HFC circuit

Selecting the HFC (High Frequency Compensation) circuit compensates for loss of high frequency energy due to absorption in air when loudspeakers are used to cover far field listening positions.

The HFC circuit has two settings (HF1, HF2) for different distance ranges the cabinets have to cover. The settings should be used selectively, only for those cabinets covering the respective distances, HF1 for distances larger than 40 m (130 ft) and HF2 for distances larger than 80 m (260 ft).

The compensation is adjusted for a typical relative humidity of 40%. With lower humidity the absorption by air increases therefore the distances where the respective HFC setting provides a correct equalization are shorter than indicated above.

Using the HFC function provides the correct sound balance between close and remote audience areas, whilst all amplifiers driving the array can be fed with the same signal.

CPL circuit

The CPL (Coupling) circuit compensates for coupling effects between the cabinets by reducing the low and mid frequency level. The CPL function should be used when J8/J12 cabinets are used in arrays of five or more. As coupling effects increase with the length of the line array the CPL circuit can be set to dB attenuation values between 0 and –9. CPL begins gradually at 2 kHz with the maximum attenuation below 100 Hz. With higher attenuation values the corner frequency of the filter shifts towards lower values.

The function of the J12 CPL circuit in the D12 amplifier is shown in the diagram opposite. Please note that all cabinets within the line array should be operated with the same CPL setting.

Dispersion characteristics

The graph below shows dispersion angle over frequency plotted using lines of equal sound pressure (isobars) at –6 dB and –12 dB. The nominal horizontal dispersion of 120° is maintained above 200 Hz.

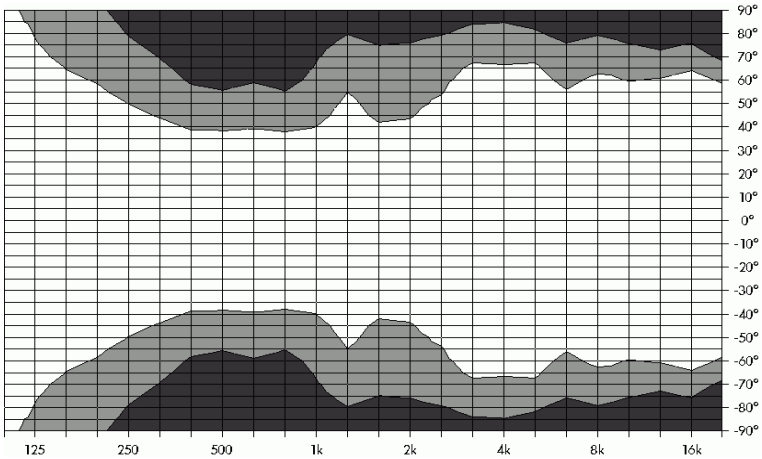

Fig. 6: Isobar diagram J12 horizontal

Technical specifications

J12 system data

Frequency response (–5 dB standard).....48 Hz ... 17 kHz
Frequency response (–5 dB CUT mode).....85 Hz ... 17 kHz
Max. sound pressure (single cabinet, 1 m, free field) with D12 .....143 dB
(SPLmax peak, pink noise test signal with crest factor of 4)

J12 loudspeaker

Nominal impedance LF/MHF.....6/12 ohms
Power handling capacity LF (RMS / peak 10 ms).....500/2000 W
Power handling capacity MHF (RMS / peak 10 ms).....200/800 W
Nominal dispersion angle (horizontal).....120°
Splay angle settings.....0...7° (1° increment)
Components.....2 x 12" driver
.....1 x 10" driver
.....2 x1.4" exit compression driver
.....Passive crossover network
Connections.....2 x EP5
.....(optional 2 x NL8)
Pin assignments
EP5.....1: LF+ / 2: LF– / 3: MHF+ / 4: MHF–/5: SenseDrive
NL8.....1+: LF+ / 1–: LF– / 4+: MHF+ / 4–: MHF–/3–: SenseDrive
Weight.....60 kg (132 lb)

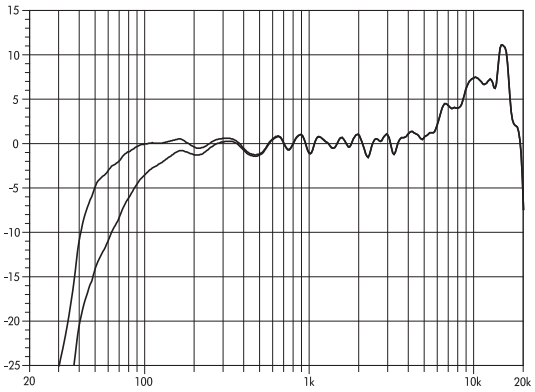

Fig. 7: J12 frequency response, single cabinet, standard and CUT settings

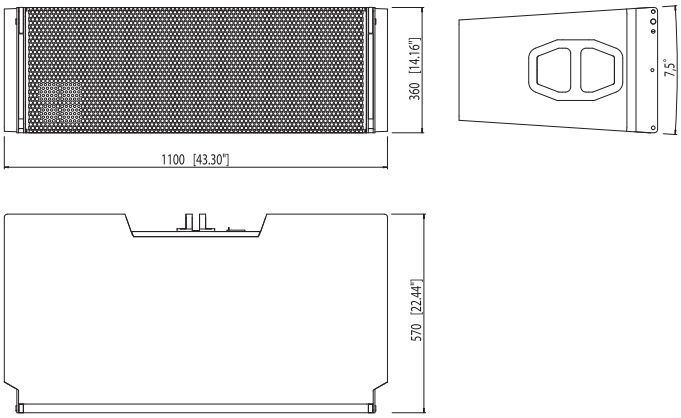

Fig. 8: J12/J8 cabinet dimensions in mm [inch]

Manufacturer's Declarations

EU conformity of loudspeakers (CE symbol)

This declaration applies to

- **J12 loudspeaker Z0651**

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.

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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