

The J-Series



The J-Series

The **d&b J-Series** continues the established d&b audiotechnik approach to the design and manufacture of loudspeaker systems. It is intended for use in large-scale sound reinforcement applications, providing incredibly quick and easily configurable array solutions even in the most arduous situations. Control of dispersion behaviour is a particular fixation at d&b, as is keeping the size and weight of systems to an absolute minimum; these are both areas in which the J-Series excels. It also embodies the d&b holistic approach to sound reinforcement solutions: integrating loudspeakers, electronics, mechanical deployment assemblies, remote control functions, transport solutions and set up design tools for precise calculation of array performance. The J-Series carries on the "d&b specific" combination of a neutral, intelligible sound character that is clear and transparent even at the highest sound pressure levels providing the engineer with an efficient, effortless tool and a neutral platform. The crystal clear and detailed audio performance with an extraordinarily smooth and even frequency response over distance, high dynamic bandwidth, extreme power and headroom capabilities makes the J-Series the ultimate choice for the far reaching reinforcement of any sound genre. All the components needed to suspend the loudspeakers within the bespoke three point BGV C1 compliant J-Series flying system are integrated into the cabinets ensuring speedy deployment in all the intended applications, whether ground supported or flown. The use of neodymium magnets in the driver assemblies increases the ratio of weight against output power to significantly higher levels. The ArrayCalc calculator predicts the physical and acoustical performance of arrays; enabling simple and accurate system planning and negates trial and error in highly pressured onsite situations.

The 3-way **J8** and **J12** loudspeakers are acoustically matched and constructed to be mechanically compatible sharing the same vertical directivity, size, footprint, weight, rigging and driver complement. The coherent vertical wave front that is produced enables the construction of vertical arrays starting from a minimum of four up to a maximum of twenty-four cabinets with a fully user and venue definable vertical profile. Both loudspeakers use an active crossover between the low and mid and a passive crossover between the mid and high frequencies. J8 and J12 are completely symmetrical horizontally with two 12" neodymium low frequency drivers placed to the outsides in a dipolar arrangement. Their hornloaded coaxial mid and high frequency section is mounted in the centre of the loudspeakers. The mid frequency horn uses a 10" driver, while the high frequency section consists of two 1.4" exit HF compression drivers with 3" voicecoils mounted to a dedicated wave-shaping device.

The J8's 80° horizontal constant directivity dispersion pattern, maintained down to 250 Hz, and its high output capability can cover a distance range of over 100 m (330 ft) depending on the climatic conditions.

The J12 has a wider horizontal dispersion pattern of 120° maintained down to 250 Hz, which is particularly useful for short and medium throw applications up to approximately 40 m (130 ft). Using a combination of J8 and J12 cabinets enables the user to create a venue specific dispersion and energy pattern.

The **J-SUB** completes the Series sharing the same width as the other two loudspeakers and is equipped with compatible flying fittings. The bass-reflex design uses three 18" high excursion drivers, one of which radiates to the rear to produce cardioid or hypercardioid subwoofer performance both in flown and ground stacked configurations. It may be flown as a separate column or integrated at the top of a J-Series array. While it can be deployed in a conventional left and right ground stacked set up, it is particularly suited for use in distributed bass-arrays to achieve an even venue specific coverage pattern.

All J-Series loudspeakers are finished with a PCP (Polyurea Cabinet Protection) coating that provides resistance for mobile systems to the adverse effects on cabinets in changing ambient outdoor conditions.

The d&b **D12** amplifier contains the loudspeaker specific controller configurations for all the J-Series loudspeakers and provides the necessary amplification. This amplifier is specially designed and manufactured by d&b utilizing digital signal processing and incorporates configuration set ups for the d&b loudspeaker range including switchable functions for precisely tailoring the system response for a wide variety of applications. A user definable 4-band parametric equalizer and a delay capability is provided in every amplification channel to reduce the need for external processing units and increase the control permutations for the loudspeaker system elements. The D12 amplifier uses a switch mode power supply that automatically selects the mains supply voltage. It also has network remote control and monitoring of the system functions as well as Load monitoring and System check that can monitor loudspeaker driver status. The D12 amplifier has both analog and digital signal inputs as well as link outputs and also incorporates d&b SenseDrive.

To complete the picture, the high fidelity of the **J-Series** pushes all the boundaries of the d&b maxim; to maintain the compatibility and sound character between systems enabling them to be easily combined. Together these components create complete, integrated reinforcement solutions in situations from the simplest to the most complex.

The J-Series



J8, J12 loudspeaker



J subwoofer



D12 amplifier

The D12 amplifier

D12 amplifier

The D12 amplifier is a two channel power amplifier developed and manufactured by d&b utilizing Digital Signal Processing (DSP) to incorporate loudspeaker specific configuration information and functions. It is designed for use with d&b loudspeakers, has both digital and analog signal inputs as well as link outputs, remote control and monitoring capabilities and a switch mode power supply. The level control incorporates a digital rotary encoder enabling selection of all operating modes in conjunction with a Liquid Crystal Display (LCD).

Loudspeaker specific configuration set ups for all current d&b loudspeakers are contained within the D12 and a linear mode is provided for loudspeakers such as the d&b MAX and MAX12. The digital elements of the D12 are specified and constructed to achieve audio performance meeting or exceeding that of analog devices. The Digital Signal Processing is used to provide the loudspeaker specific configurations, sophisticated protection circuits modelling thermal and mechanical driver behaviour, and the switch functions such as CUT/HFA/HFC/CPL as detailed in each loudspeaker section.

User definable equalization and delay functions are incorporated in each channel of the D12 and can be used for applications, such as front fills, or under balcony delays, without the need for external processors. The 4-band parametric equalizer provides optional Boost/Cut or Notch filtering and the signal delay capability allows delay settings of up to 340 msec. (= 100 m/328 ft) to be applied independently to either channel. A signal generator offering pink noise or sine wave program is also incorporated for test and alignment purposes. Each unit can be given a unique Device Name to simplify identification and a password protected LOCK function is also incorporated to inhibit unauthorized set up changes.

The D12 amplifier can detect incoming Pilot signals at its input (Input monitoring) and uses the Load monitoring and System check function to ascertain the status of the loudspeaker impedance. d&b System check is designed to verify that the system performs within a predefined condition and can be initiated at the end of a show for example. d&b Load monitoring on the other hand enables an automatic and continuous impedance monitoring and

along with Input monitoring is designed for incorporation within applications specified to the requirements stated in the International Standard IEC 60849 'Sound Systems for Emergency Purposes'. Both can determine the status of an LF or HF driver in systems with multiple elements, even if these are crossed over passively. Errors are reported on the front panel display and/or with audible tones. System check errors can be monitored using the remote control and monitoring functions provided via the REMOTE interface.

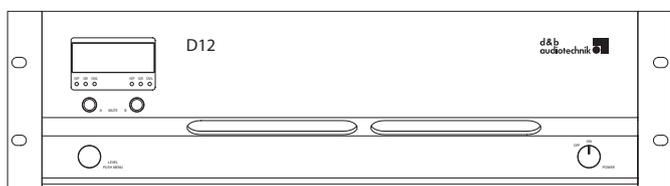
The D12 utilizes an autosensing switch mode power for mains supply voltages 115/230 V, 50 - 60 Hz (optional 100/200 V) with overvoltage protection. A temperature and signal controlled fan is used to cool the internal assemblies.

The D12 is specifically designed to produce high power into low impedance loads, typically those between 4 and 16 ohms. Due to differences in impedance response against frequency, the maximum number of cabinets driven by each channel varies depending on the loudspeaker type.

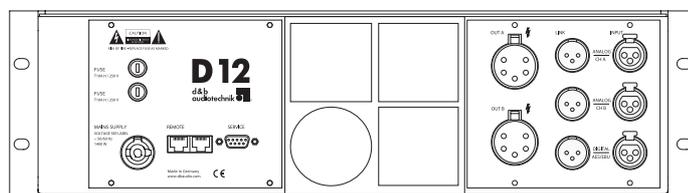
The D12 provides d&b SenseDrive for use with the LF drivers in d&b active loudspeakers and subwoofers. In the LF region the impedance of a loudspeaker can change significantly with frequency, cone excursion and cable length, leading to considerable linear and non-linear distortion. SenseDrive uses an extra conductor in the loudspeaker cable as feedback that modifies the amplifier output behaviour to compensate for these effects. The result is more accurate control of the diaphragm improving the transient response.

The rear panel houses: an I/O panel containing analog signal inputs with link outputs for each channel, and an AES/EBU digital input with a link output; a mains panel that houses loudspeaker outputs that are optionally either EP5, NL4 or NL8.

The two RJ 45 REMOTE sockets at the rear integrate the D12 into the d&b Remote network via CAN-Bus allowing it to be remotely controlled and/or monitored. A SUB-D9 SERVICE interface (RS 232) is also provided to enable operating software and loudspeaker updates to be loaded into the unit. When multiple units are integrated into a d&b Remote network, up to 63 amplifiers can be simultaneously updated from a central location using the d&b R10 service software.



D12 front view



D12 rear view

The D12 amplifier

Displays

ISP A / B.....Input Signal Present indicator (green)
GR A / B.....Gain Reduction indicator (yellow)
OVL A / B.....Overload / Error indicator (red)
MUTE A / B.....Mute / Standby indicator (green)
Liquid Crystal Display (LCD).....Graphic display / 120 x 32 Pixel

Controls

POWER.....Main power switch
MUTE A / B.....Mute / Standby switch
LEVEL / PUSH MENU.....Digital rotary encoder
.....access to all functions (Channel A / B) including:
Level control.....-57.5 dB to +6 dB with 0.5 dB detents
Configurations.....Loudspeaker specific configurations and functions
.....(e.g. CUT / HFA / HFC / CPL)
4-band equalizer.....Optional PEQ / Notch
Delay setting.....0.3 - 340 msec. with 0.1 msec. detents
System set ups.....All current d&b loudspeakers /
.....linear (MAX / MAX12)
Protection.....Operator input inhibit / password protection
Remote control.....RIB / CAN-Bus
Device name.....15 alphanumeric digits
Display illumination.....Off / On / Timeout 10 sec.
Frequency generator.....Pink noise or Sine wave, 10 Hz - 20 kHz
.....with 1 Hz detent, Level: -57.5 dB to +6 dB with 0.5 dB detents
Buzzer.....Audible signal for error messages

Monitoring according to IEC 60849

'Sound Systems for Emergency Purposes'

Input monitoring.....Detecting external Pilot signal
Load monitoring.....Continuous impedance monitoring
.....using Pilot signal at 10 Hz and 20 kHz
System check.....Manual impedance measurement
.....to calibrate before, and verify after use

Connectors

INPUT ANALOG CH A / CH B.....3 pin XLR female*
Input impedance.....44 kohm, electronically balanced
Maximum input level.....+25 dBu
LINK ANALOG CH A / CH B.....3 pin XLR male*
.....parallel to INPUT
INPUT DIGITAL AES / EBU.....3 pin XLR female*
Input impedance.....110 ohms, electronically balanced
Sampling.....48 kHz / 96 kHz / 2 Ch/n
Synchronisation.....Word-Sync: PLL-locked to source (slave mode)

LINK DIGITAL output.....3 pin XLR male
.....electronically balanced, analog signal buffering
.....power fail relay (Bypass)
OUT CHANNEL A / B.....Optional EP5 / NL4 / NL8
REMOTE.....2 x RJ 45 parallel
SERVICE.....SUB-D9 female

Protection circuits

Mains inrush current limiter.....5 A RMS at 230 V
.....10 A RMS at 115 / 100 V
Speaker switch on delay.....Approx. 2 sec.
Overvoltage protection.....Up to 400 VAC
Self-resetting overtemperature protection.....75° C / 167° F
Output short and open circuit protection.....±60 A peak

Data (linear setting with subsonic filter)

Rated output power (THD+N < 0.1%).....
.....2 x 750 W into 8 ohms, both channels are driven
.....2 x 1200 W into 4 ohms, both channels are driven
Frequency response (-1 dB).....28 Hz - 40 kHz
THD+N (20 Hz - 20 kHz).....< 0.1 %
IM (SMPTE).....< 0.1 %
S / N ratio (unweighted, RMS).....> 110 dB
Damping factor (20 Hz - 1 kHz into 4 ohms).....> 200
Crosstalk (20 Hz - 20 kHz).....< -65 dB

Digital Signal Processing

Sampling rate.....96 kHz / 27 Bit ADC / 24 Bit DAC
Basic delay analog input.....0.3 msec.
ADC / Input / DAC dynamic.....> 110 / 127 / 110 dB

Power supply

Autosensing switch mode power supply for.....
.....115 / 230 V, 50 - 60 Hz
.....optional 100 / 200 V, 50 - 60 Hz
Mains connector.....PowerCon®
PowerCon® is a registered trademark of the Neutrik AG, Liechtenstein

Dimensions, weight

Height x width x depth.....3 RU x 19" x 353 mm
.....3 RU x 19" x 13.9"
Weight.....13 kg / 28.7 lb

* XLR pin assignment: 1 = GND, 2 = pos. signal, 3 = neg. signal

The d&b Remote network

d&b Remote network

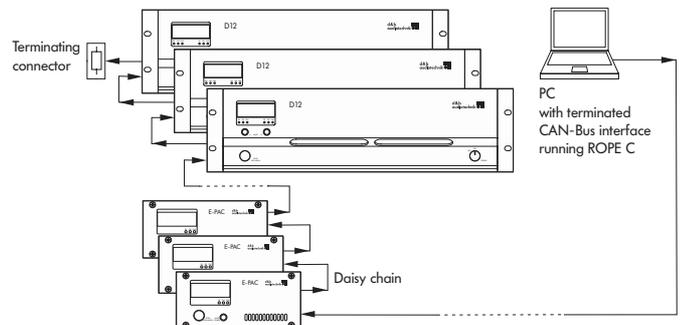
Remote interfaces are fitted into d&b's amplifiers for control and monitoring of functions and features provided within these units. The architecture of the d&b Remote system allows control of each channel of the amplifier as a single entity and enables the creation of groups of loudspeakers in as little, or as much detail as required by the application.

The features and functions of the E-PAC and D12 amplifiers that can be remotely controlled and/or monitored using the d&b Remote network are:

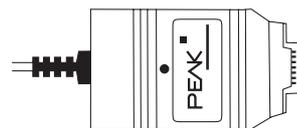
- Power on/off and MUTE
- Loudspeaker configuration
- Input selection
- Level control, range 63.5 dB in 0.5 dB steps
- Function switches; CUT/HFA/HFC/CPL/etc.
- User definable delay
- User definable four band parametric equalizer
- System check
- All front panel indicators
- Gain reduction
- Device diagnostic

The remote interface fitted to d&b's amplifiers is a Controller Area Network (CAN) bus. Each D12 and E-PAC has two REMOTE connectors (RJ 45) to enable the CAN-Bus to be daisy chained through them. CAN-Bus segments are terminated at both ends using RJ 45 M Terminators.

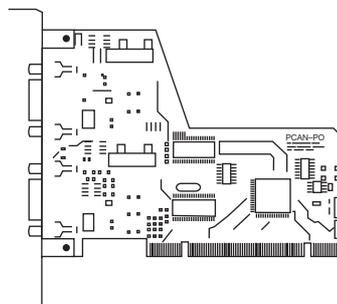
A simple d&b Remote network application consists of a computer, a Peak USB to CAN interface (ISO) or Peak PCI to CAN interface (ISO), a D-SUB 9 F to 2 x RJ 45 F CAN adapter, CAT 5 shielded twisted pair cable with shielded RJ 45 connectors and d&b D12 or E-PAC amplifiers. Up to 504 devices can be incorporated into one application. TI 312 d&b Remote network gives a detailed description of the CAN-Bus, cabling requirements and the interfaces available and can be downloaded from the Documentation section at www.dbaudio.com.



d&b Remote network with ROPE C



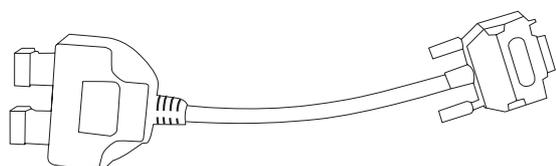
Z6110
Peak USB to CAN interface (ISO)



Z6111
Peak PCI to CAN interface (ISO)



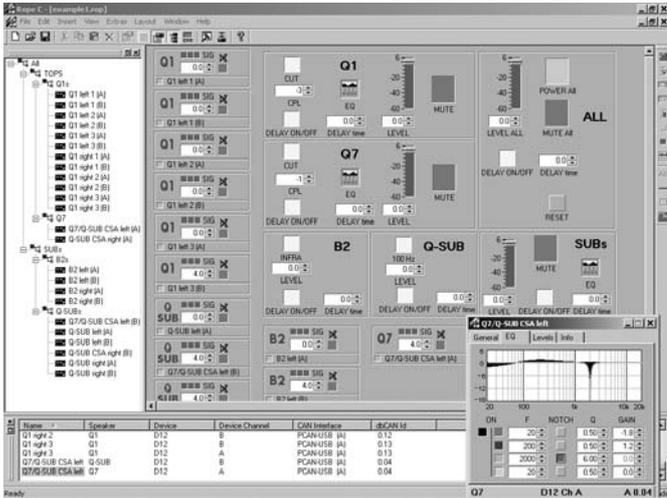
Z6116
RJ 45 M Terminator



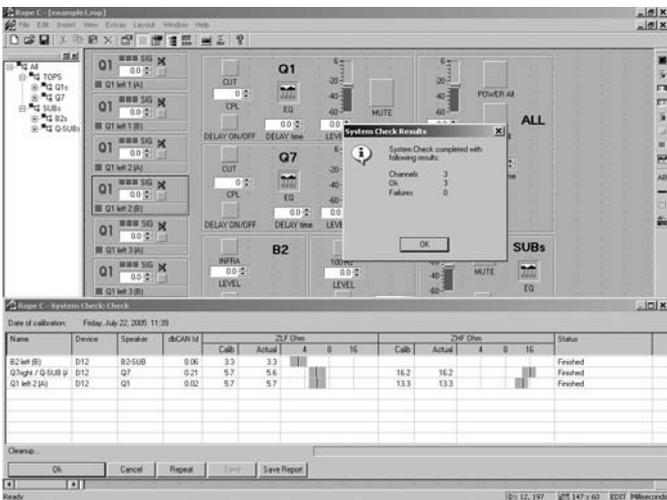
Z6117
D-SUB 9 F to 2 x RJ 45 F CAN adapter

The ROPE C remote control software

The R10 service software



ROPE C



ROPE C with System check

ROPE C remote control software

ROPE C (Remote OPERating Environment CAN-Bus) is a graphical drag and drop user interface enabling the construction of a screen based virtual control surface for complete d&b systems, using the d&b Remote network. Operating elements for all d&b D12 and E-PAC loudspeaker specific controller configurations can easily be incorporated into an application from ROPE C's internal library. ROPE C runs on PCs operating Microsoft Windows 2000/XP*.

The loudspeaker specific operating elements of ROPE C incorporate gain controls, level displays, indicators for ISP/OVL/GR and switch functions such as CUT/HFA/HFC/CPL. The operating elements use a two level format, the level one view contains the most important information and controls allowing a fast overview of a large system. The second level contains more detailed information and controls. Group functions such as system on/off, master level and mute may be added to the control surface, and setting for Load monitoring and Input monitoring can be defined.

ROPE C has extensive facilities for storing and recalling system settings allowing these to be repeated, as and when required. It also enables the remote access of the System check function to verify that the system performs within a predefined condition. The unique device IDs used to identify each amplifier can be edited using the rotary encoder and the LCD display on the front panel of the d&b amplifiers. This makes it easy to transport a ROPE C application to an identical, but completely different set of equipment at another location.

For fixed, or installed systems, ROPE C can be configured to offer access to different levels of system control. This can be tailored to the operational requirements with simplified control possibilities for daily use and more complex control for system configuration purposes. Password protection is available to restrict access.

R10 service software

When multiple amplifiers are integrated into a d&b Remote network the R10 service software enables the firmware update of up to 63 amplifiers simultaneously from a central location. Predefined standard warehouse or installation D12 settings can also be loaded and saved in the R10 to then be re-loaded into other D12s.

* Microsoft and Windows 2000/XP are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries

The J8 loudspeaker

J8 loudspeaker

The J8 loudspeaker is designed specifically for use in large-scale sound reinforcement applications. It is a 3-way design housing 2 x 12" LF drivers, one hornloaded 10" MF driver and two 1.4" exit HF compression drivers with 3" voicecoils mounted to a dedicated waveshaping device. The mechanical and acoustical design enables flown vertical columns of up to twenty-four loudspeakers to be suspended using vertical splay angles between them of 0° to 7° with a 1° resolution. The cylindrical wave segments produced couple coherently in the vertical plane. The symmetrical dipolar arrangement of the neodymium LF drivers around the centrally mounted coaxial MF and HF components allows a smooth overlap of the adjacent frequency bands in the crossover design. This results in an exceptional 80° horizontal constant directivity dispersion control nominally being maintained down to 250 Hz.

The J8 is acoustically and mechanically compatible with the J12 loudspeaker. It can be used in columns of purely J8 loudspeakers or combined with J12s and /or with J-SUBs.

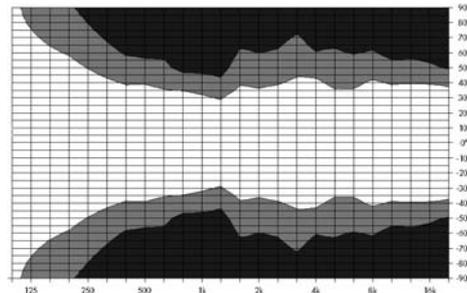
Cabinets are mechanically connected using the rigging links on both sides of the cabinet front, and with a central rigging link on the rear of the loudspeaker. The J8 cabinet is constructed from marine plywood and has an impact and weather protected PCP (Polyurea Cabinet Protection) finish. The front of the loudspeaker cabinet is protected by a rigid metal grill, the side and rear panels incorporate four handles, and two EP5 or NL8 connectors wired in parallel are also mounted at the rear.

System data

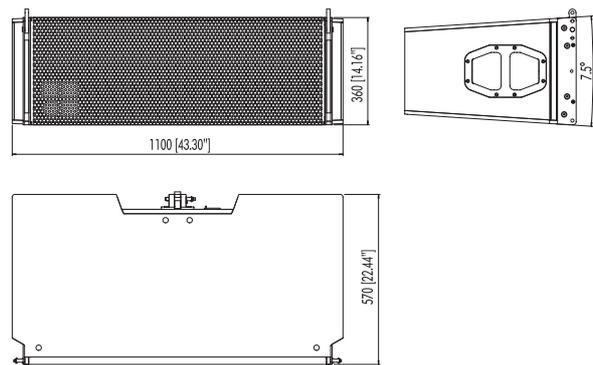
Frequency response (-5 dB standard).....48 Hz - 17 kHz
 Frequency response (-5 dB CUT mode).....85 Hz - 17 kHz
 Max. sound pressure (1 m, free field)*.....145 dB
 Polarity to controller INPUT (XLR pin 2: +/3: -).....LF: +/MHF: +

Loudspeaker data

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).....80°
 Splay angle settings.....0 - 7° (1° increment)
 Components.....2 x 12" driver/1 x 10" driver
2 x 1.4" 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
 Weight60 kg (132 lb)



J8 horizontal dispersion characteristics**

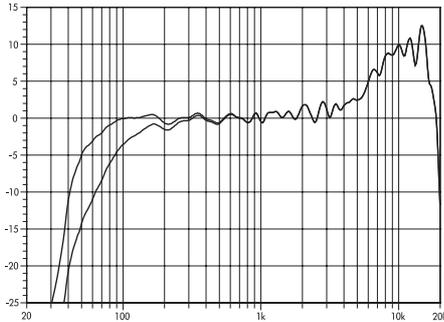


J8 cabinet dimensions in mm (inches)

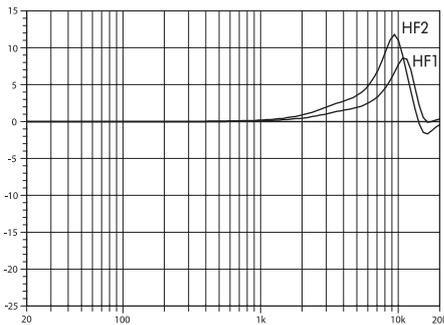
* Broadband measurement, pink noise, crest factor 4, peak measurement, linear weighting

** Dispersion angle vs frequency plotted using lines of equal sound pressure (isobars) at -6 dB and -12 dB

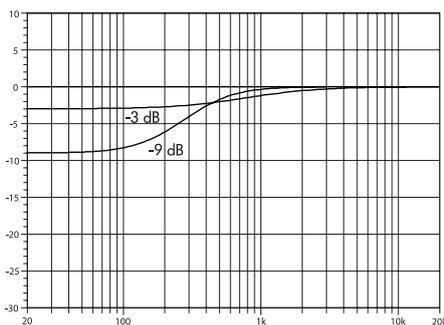
The D12 configuration



J8 frequency response standard and CUT settings (single cabinet)



Frequency response correction of HFC circuit



Frequency response correction of CPL circuit

J8 with D12

Selecting 2-way active mode with the J8 configuration enables up to two J8 loudspeakers to be driven actively by the D12 amplifier. J8 loudspeakers are amplified by the two channels of the D12 providing the active crossover between the low and mid/high sections, whilst the mid and high frequency drivers are crossed over passively within the cabinet.

The D12 amplifier has two set ups for J8 cabinets, the Line and the Arc configuration, depending on the curvature of the array. The J8 Line configuration is selected when groups of four or more J8 cabinets are coupled to a straight long throw array section, where the splay angles to adjacent cabinets are 0° or 1°. Compared with the loudspeakers used in the curved array sections, those used in the straight array sections extend the acoustical near field, and therefore require a different tonal balance. By using the Line configuration, the mid/high range is reduced to compensate for this. The J8 Arc configuration is selected when J8 cabinets are used in curved array sections, where the splay angles to adjacent cabinets are 2° or more. Within a typical J-shaped array both amplifier configurations are used.

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

Set to CUT, the J8 low frequency level is reduced. The J8 is now configured for use with the d&b J subwoofer.

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 which should be used selectively, HF1 for cabinets covering distances larger than 40 m (130 ft) and HF2 for those covering distances larger than 80 m (260 ft). This can be used to achieve the correct sound balance between close and remote audience areas, whilst all amplifiers driving the array can be fed with the same signal and the whole array performs with comparable headroom.

The CPL (Coupling) circuit compensates for coupling effects between the cabinets; these effects increase as the length of the array is extended. CPL begins gradually at 2 kHz, with the maximum attenuation below 100 Hz, providing a balanced frequency response when J8 cabinets are used in arrays of five 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.

The D12 incorporates d&b SenseDrive* for accurate control of LF driver membranes in J8 loudspeakers, resulting in an extremely precise bass performance, even at high levels. SenseDrive is only available using a D12 fitted with EP5 or NL8 connectors and appropriate 5-wire cabling.

* For further information please refer to the d&b T1340 SenseDrive which is available for download at www.dbaudio.com.

The J12 loudspeaker

J12 loudspeaker

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The J12 is acoustically and mechanically compatible with the J8 loudspeaker. It can be used in columns of purely J12 loudspeakers or combined with J8s and/or with J-SUBs.

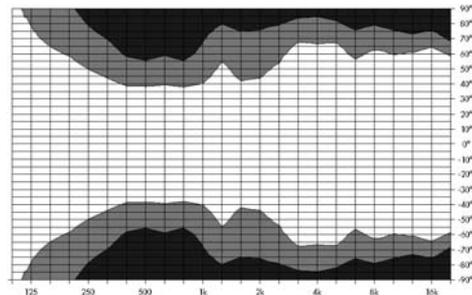
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System data

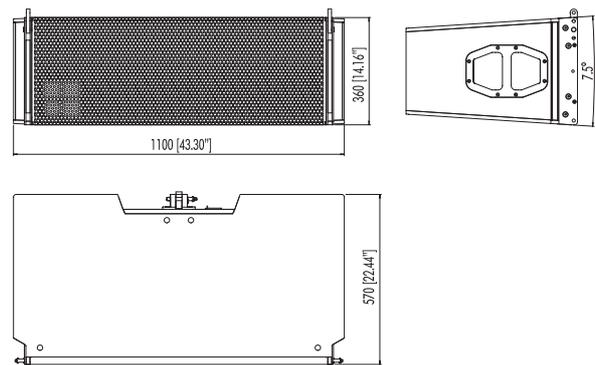
Frequency response (-5 dB standard).....48 Hz - 17 kHz
 Frequency response (-5 dB CUT mode).....85 Hz - 17 kHz
 Max. sound pressure (1 m, free field)*.....143 dB
 Polarity to controller INPUT (XLR pin 2: +/3: -).....LF: +/MHF: +

Loudspeaker data

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 x 1.4" 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)



J12 horizontal dispersion characteristics**

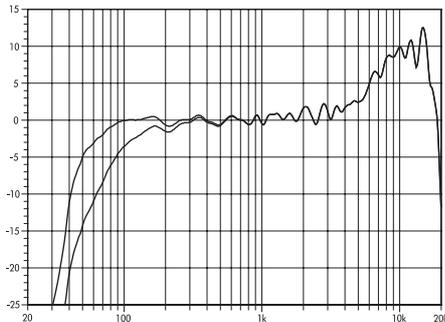


J12 cabinet dimensions in mm (inches)

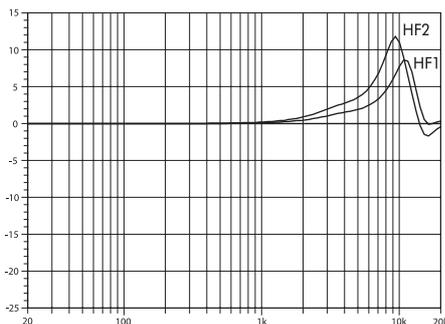
* Broadband measurement, pink noise, crest factor 4, peak measurement, linear weighting

** Dispersion angle vs frequency plotted using lines of equal sound pressure (isobars) at -6 dB and -12 dB

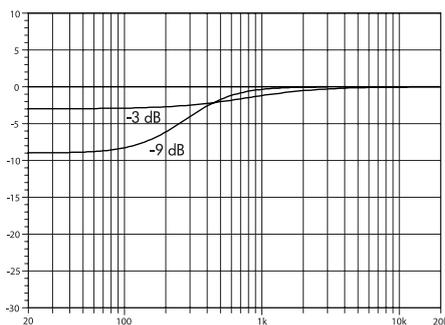
The D12 configuration



J12 frequency response standard and CUT settings (single cabinet)



Frequency response correction of HFC circuit



Frequency response correction of CPL circuit

J12 with D12

Selecting 2-way active mode with the J12 configuration enables up to two J12 loudspeakers to be driven actively by the D12 amplifier. J12 loudspeakers are amplified by the two channels of the D12 providing the active crossover between the low and mid/high sections, whilst the mid and high frequency drivers are crossed over passively within the cabinet.

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

Set to CUT, the J12 low frequency level is reduced. The J12 is now configured for use with the d&b J subwoofer.

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 which should be used selectively, HF1 for cabinets covering distances larger than 40 m (130 ft) and HF2 for those covering distances larger than 80 m (260 ft). This enables the correct sound balance between close and remote audience areas, whilst all amplifiers driving the array can be fed with the same signal and the whole array performs with similar headroom.

The CPL (Coupling) circuit compensates for coupling effects between the cabinets; these effects increase as the length of the array is extended. CPL begins gradually at 2 kHz, with the maximum attenuation below 100 Hz, providing a balanced frequency response when J12 cabinets are used in arrays of five 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.

The D12 incorporates d&b SenseDrive* for accurate control of LF driver membranes in J12 loudspeakers, resulting in an extremely precise bass performance, even at high levels. SenseDrive is only available using a D12 fitted with EP5 or NL8 connectors and appropriate 5-wire cabling.

* For further information please refer to the d&b T1340 SenseDrive which is available for download at www.dbaudio.com.

The J subwoofer

J subwoofer

The J-SUB is the subwoofer for the J-Series. It is an actively driven 2-way bass-reflex design housing three long excursion neodymium 18" drivers, two drivers face to the front and one driver to the rear. The cardioid dispersion pattern resulting from this approach avoids unwanted energy behind the system that greatly reduces the reverberant field at low frequencies and provides the greatest accuracy of low frequency reproduction.

The J subwoofer can be used to supplement J8 and J12 loudspeakers in various combinations, ground stacked or flown, either integrated on top of a J8/J12 array or as a separate column. Cabinets are mechanically connected using the rigging links on both sides of the cabinet front, and with a central rigging link at the rear of the cabinet.

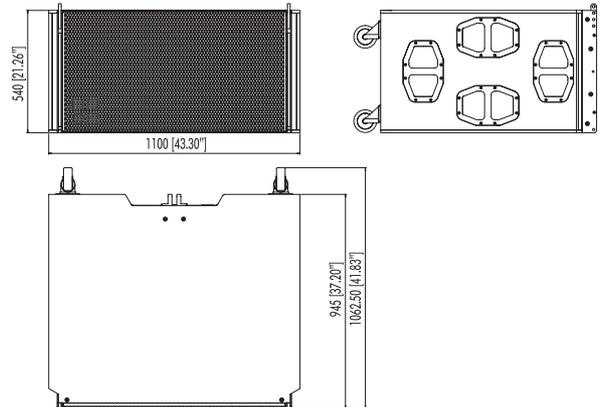
The J-SUB cabinet is constructed from marine plywood and has an impact and weather protected PCP (Polyurea Cabinet Protection) finish. The front and rear of the loudspeaker cabinet are protected by a rigid metal grill and the side panels incorporate eight handles. Four 100 mm wheels and one EP5 or NL8 connector are mounted at the rear.

System data

Frequency response (-5 dB standard)32 Hz -100 Hz
 Frequency response (-5 dB INFRA mode).....32 Hz - 70 Hz
 Max. sound pressure (1 m, free field)*.....138 dB
 Input level (100 dB SPL / 1 m).....-16 dBu
 Polarity to amplifier INPUT (XLR pin 2: + / 3: -).....LF: +

Loudspeaker data

Nominal impedance front / rear.....4 / 8 ohms
 Power handling capacity (RMS / peak 10 ms).....
 Front.....800 / 3200 W
 Rear.....400 / 1600 W
 Components.....3 x 18" driver
 Connections.....1 x EP5 (optional 1 x NL8)
 Pin assignments.....
 EP5.....1: F+ / 2: F- / 3: R+ / 4: R- / 5: F SenseDrive**
 NL8.....1+: F+ / 1-: F- / 4+: R+ / 4-: R- / 3-: F SenseDrive**
 Weight.....106 kg (234 lb)

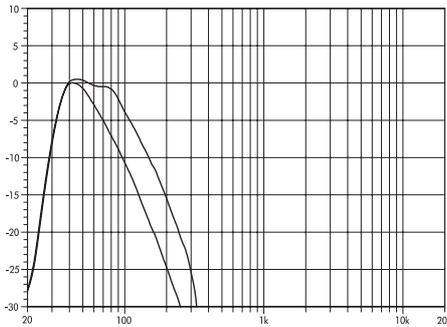


J-SUB cabinet dimensions in mm (inches)

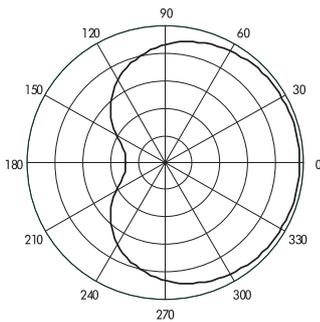
* SPL_{max}peak with music program

** F=Front, R=Rear

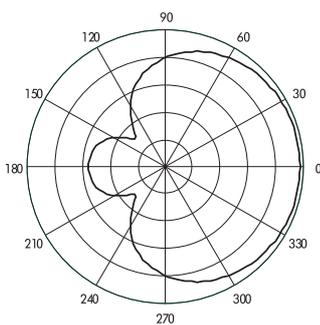
The D12 configuration



J-SUB frequency response, standard and INFRA



J-SUB standard cardioid polar pattern



J-SUB hypercardioid polar pattern

J-SUB with D12

Selecting 2-way active mode with the J-SUB configuration enables a single J subwoofer to be driven by the D12 amplifier.

For acoustic adjustment the functions INFRA and HCD can be selected.

Selecting the INFRA mode restricts the J-SUB frequency response to a narrow 32 Hz - 70 Hz range (-5 dB). The J-SUB can now be used to supplement d&b J-Series systems operated in full range mode.

Depending on the application requirements, the dispersion pattern of the J-SUB cabinet can be modified electronically to achieve the best sound rejection where it is most effective. In standard cardioid mode the D12 J-SUB set up provides the maximum rejection directly behind the cabinet, whilst selecting HCD (hypercardioid) optimizes the tuning for a maximum rejection to the rear left and right sides, as shown in the polar plots opposite. The HCD mode is particularly useful for applications with subwoofers stacked on the left and right sides of the stage to provide the minimum low frequency energy onstage.

The D12 incorporates d&b SenseDrive* for accurate control of driver membranes in d&b subwoofers, resulting in an extremely precise bass performance, even at high levels. SenseDrive is only available using a D12 fitted with EP5 or NL8 connectors and appropriate 5-wire cabling.

* For further information please refer to the d&b T1340 SenseDrive which is available for download at www.dbaudio.com.

The J-Series rigging system

J-Series rigging system

The J-Series loudspeakers are mechanically connected using a BGV C1 compliant three-point suspension system. This consists of the Z5300 J Flying frame from which the cabinets are suspended using rigging links and pins located on both sides of the front of the cabinets, and a central rear splay link. This J-Series rear splay link allows quick and easy selection of vertical angles between cabinets. These are all permanently attached to the cabinets. The Z5300 J Flying frame is supplied with two J Load adapters, a Z5303 J Safety chainset, a central rear splay link with a pair of Locking pins 11 mm and two sets of Front links, each with a pair of Locking pins 10 mm.

The Z5300 J Flying frame is a welded steel frame designed to suspend a maximum of twenty-four J8/J12 cabinets, or fourteen J-SUB cabinets.

The J Load adapters are locked into the J Flying frame's central track using their fixed Locking pinsets 12 mm. The array can be suspended from the two J Load adapters either directly, or the Z5305 J Hoist connector chain may be inserted to allow space for a chain bag.

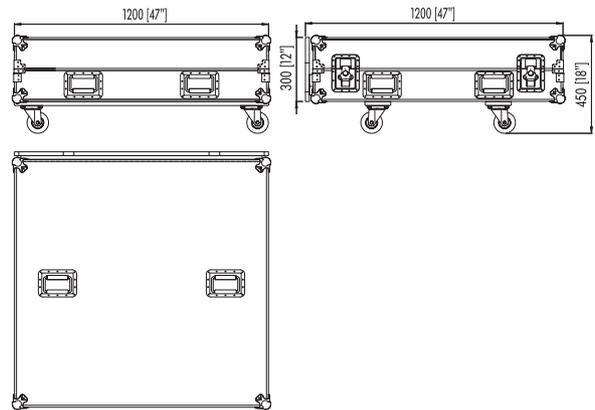
The Z5303 Safety chainset should always be fitted to the J Flying frame using the integrated safety points and attached to an independent suspension point.

The J Flying frame also has a mounting plate that accepts industry standard inclinometers such as those from the Rieker Instrument Company Inc. or the SSE ProSight Inclinometer System.

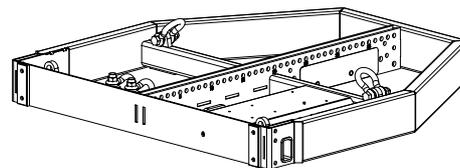
The E7441 Touring case 1 x J Flying frame is designed to accommodate one Z5300 J Flying frame including the Z5303 J Safety chainset and the Z5305 J Hoist connector chain. It weighs 66 kg (145.5 lb) empty and 145 kg (320 lb) with the frame and chains. When positioned on end the case holds the frame in the exact vertical position for the J8 or J12 Front links when face down on their Wheelboards. This holds the J Flying frame in the perfect position for assembling and dismantling an array. It has four standard butterfly catches to secure the lid, four wheels, four handles, a wooden baseboard and a moulding with fixing points to secure the frame.

Safety approval

d&b rigging accessories are designed to comply with BGV C1 Rule for the Prevention of Accidents.



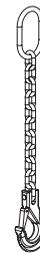
E7441 Touring case 1 x J Flying frame



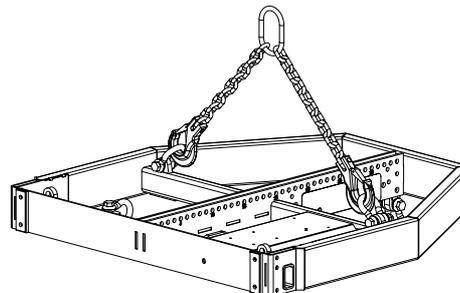
Z5300 J Flying frame



Z5303 J Safety chainset

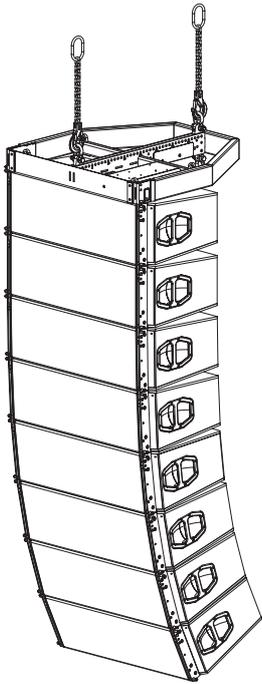


Z5305 J Hoist connector chain



**Z5300 J Flying frame
supplied with
Z5303 J Safety chainset
2 x J Load adapter
2 x J Front links
2 x Locking pinsets 10 mm
1 x Locking pinset 11 mm**

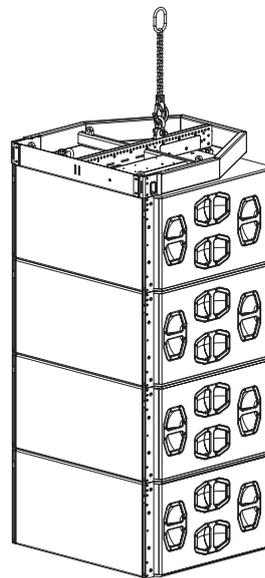
The J-Series rigging examples



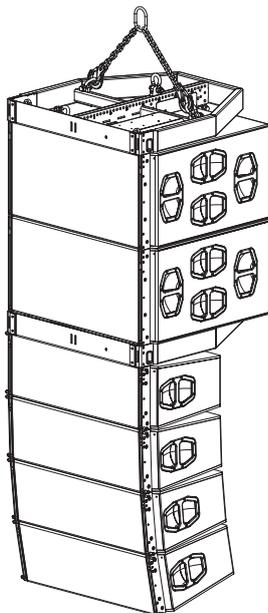
**J8/J12 array with
Z5300 J Flying frame
2 x Z5305 J Hoist connector chains**

J-Series rigging examples

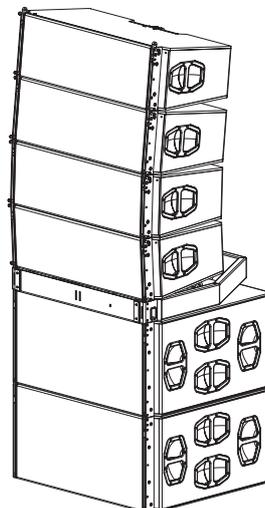
These rigging examples are for illustration only. In addition to the J Hoist connector chain the J Safety chainset should always be fitted to the J Flying frame and attached to an independent suspension point. For further information please refer to the d&b TI 380 J-Series system design and ArrayCalc which is available for download at www.dbaudio.com.



**J-SUB array with
Z5300 J Flying frame
Z5305 J Hoist connector chain**



**J-Series mixed array with
2 x Z5300 J Flying frames
Z5303 J Safety chainset**



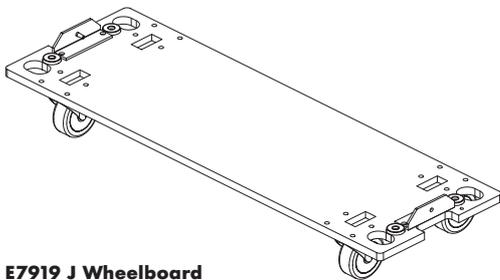
**J-Series ground stack with
Z5300 J Flying frame**

The J-Series lids

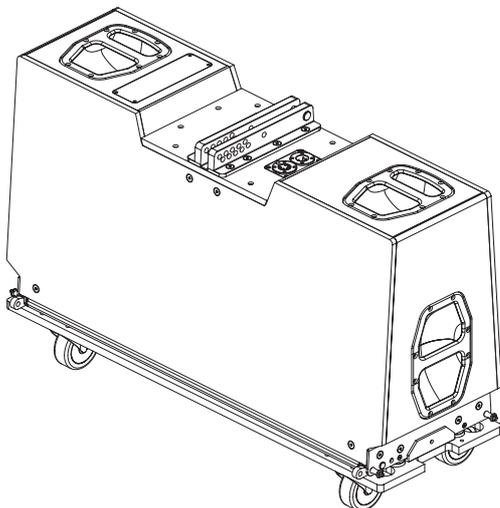
J-Series lids

The E7919 J Wheelboard consists of a wooden base board that has openings to access the loudspeaker Front links, and is fitted with four 80 mm wheels, recessed grip moulds, rubber bumpers and securing plates. These plates secure the 8.8 kg (19.4 lb) Wheelboard to the front of a J8 or J12 loudspeaker using one Locking pin 10 mm that is made from high grade metal and fixed to the Wheelboard. The E7919 J Wheelboard protects the front of the loudspeaker and allows single cabinets to be transported easily. It is also an essential element in the array assembling and dismantling procedure, enabling complete J8 and J12 arrays to be linked on the ground before hoisting with the Z5300 J Flying frame.

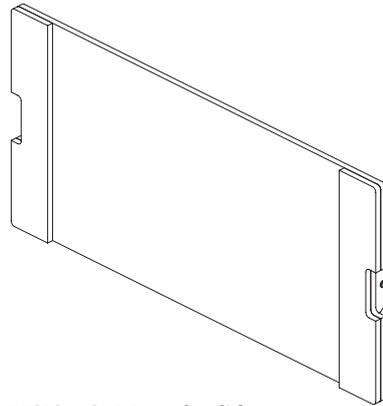
The E7910 J-SUB Wooden lid consists of a wooden board, rubber bumpers and a set of securing plates. These plates secure the 9 kg (20 lb) Wooden lid to the J-SUB by one Locking pin 10 mm made from high grade metal and is fixed to the lid. The E7910 Wooden lid protects the front of the subwoofer during transportation.



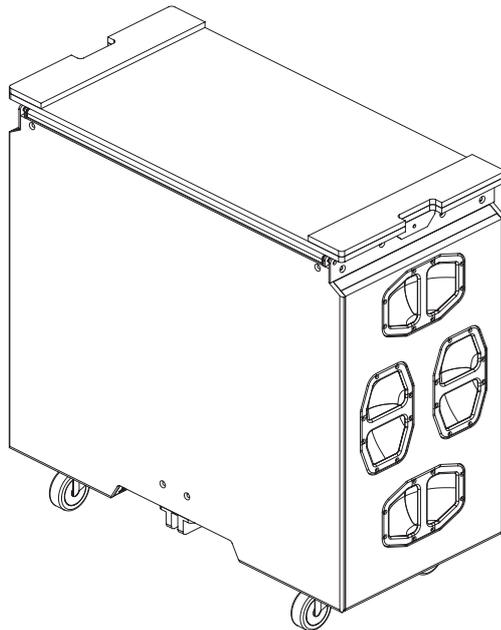
E7919 J Wheelboard



E7919 J Wheelboard with J8/J12

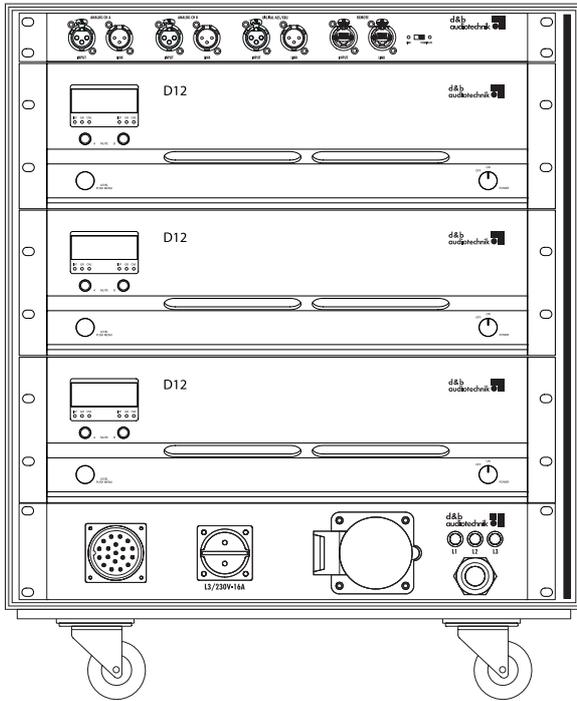


E7910 J-SUB Wooden lid

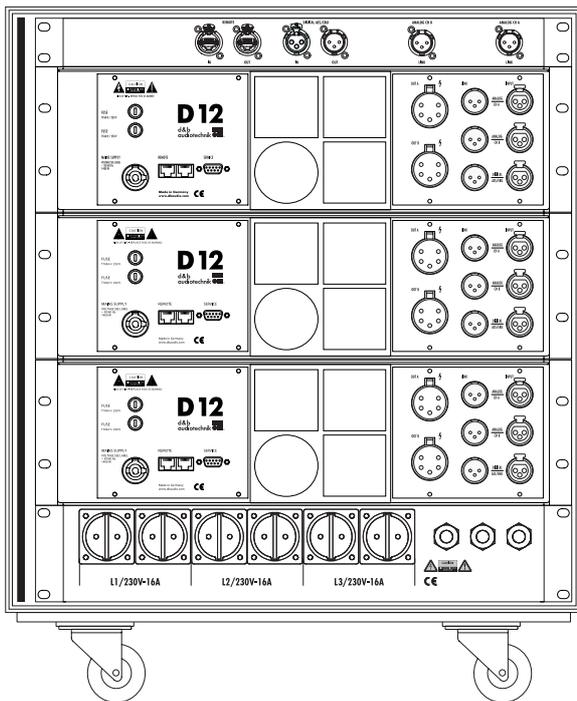


E7910 J-SUB Wooden lid with J-SUB

The Touring rack assembly and cables



Z5310 Touring rack assembly front view



Z5310 Touring rack assembly rear view

Touring rack assembly

The Z5310 Touring rack assembly is a bespoke D12 touring package targeted for the J-Series and Q-Series user. The rack assembly comprises the following:

The E7440 Touring rack 12 RU 19" with sliding doors has a 60 cm x 60 cm footprint and is designed to fit standard truck widths, has four 100 mm wheels, six handles, a Perspex window and recessed stacking moulds. The shock mounted 19" internal steel frame accommodates three D12 amplifiers and the requisite connection panels as detailed below.

The Z5313 I/O patch panel 1 RU 19" includes ten XLRs for analog and digital In/Out, four Neutrik RJ 45* and a CAN-Bus termination switch.

The Z5312 Mains distribution panel 2 RU 19" includes a CEE 16 A, 400 V, 5 pin mains input with link out, seven 16 A, 250 V Schuko outlets and an LKS19 pin female Sockapex compatible multipin connector with three internal EP5 male breakouts.

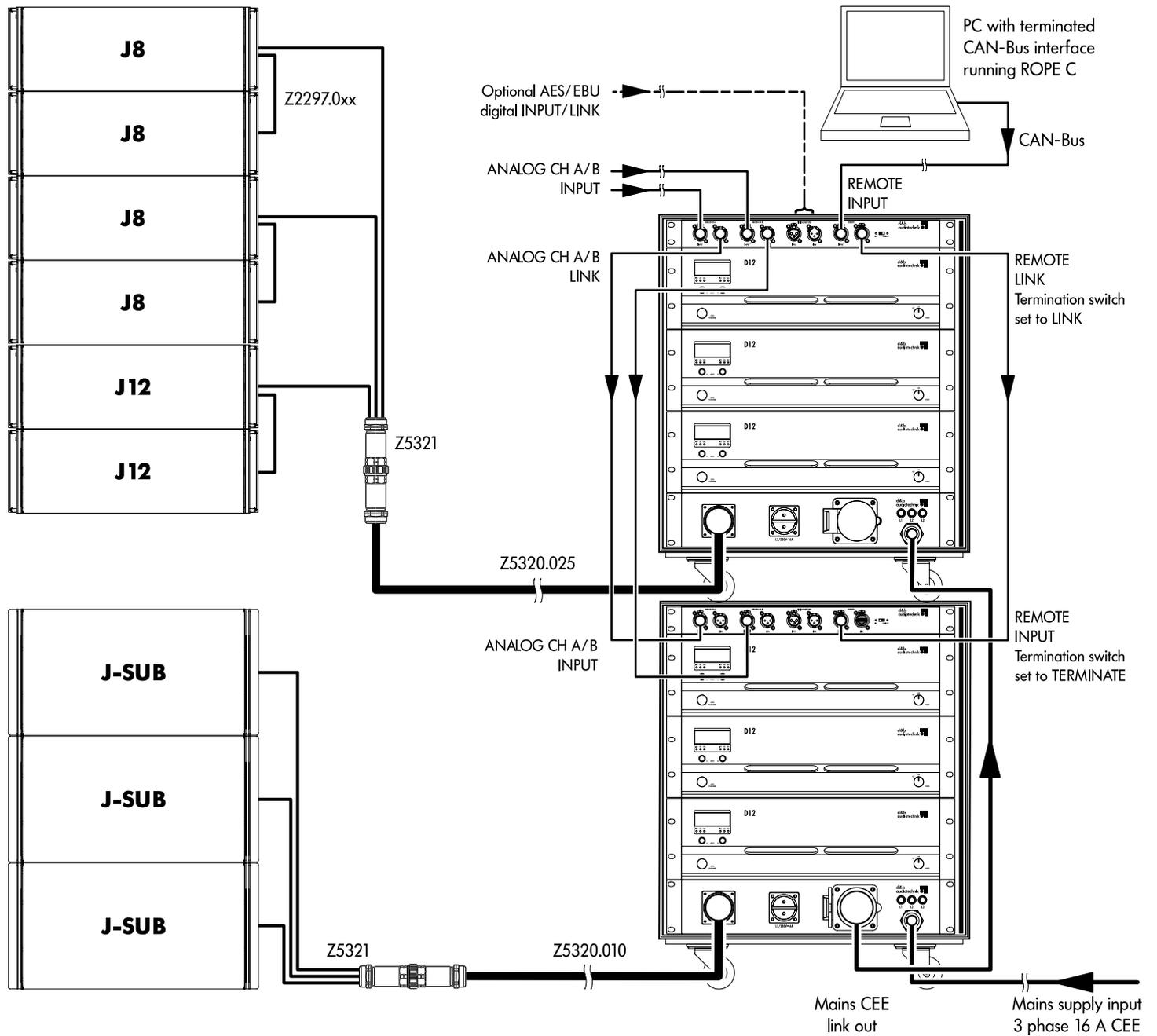
The Z5310 Touring rack assembly is supplied pre-wired with XLR cabling for channels A and B, AES/EBU and CAT5/CAN-Bus. All parts of the assembly are d&b audiotechnik factory tested including full functionality of audio, mains and loudspeaker connections. The Touring rack assembly does not include the three D12 amplifiers.

Cables

d&b strongly recommend the use of bespoke multicore cables as detailed below to provide the highest quality and performance. The 4 mm² (AWG12) loudspeaker conductors used in these cables are specially spun from 0.15 mm² strands to deliver high sonic quality and flexibility. The K3111 MC4SD cable provides four loudspeaker conductors and two 0.5 mm² (AWG 24) conductors to carry the d&b SenseDrive signals. The K3115 MC12SD cable provides twelve loudspeaker conductors and three 1.0 mm² (AWG 18) conductors to carry the SenseDrive signals. While both have relatively small outside diameters of 11.5 mm and 20 mm respectively, they are also capable of safely supporting their own weight when flown. The Z2297 MC4SD EP5 cable is supplied in a selection of standard lengths and is fitted with EP5 male to female connectors. The Z5320 MC12SD LKS19 cable is supplied in a selection of standard lengths and is fitted with LKS19 pin male to female Sockapex compatible multipin connectors. The Z5321 LKS19 adapter M to 3 x EP5 F has one LKS19 pin male Sockapex compatible multipin connector to three different length EP5 female breakouts for the connection of loudspeakers. The Z5322 LKS19 adapter F to 3 x EP5 M has one LKS19 pin female Sockapex compatible multipin connector to three EP5 male breakouts for connection to D12 amplifier outputs.

* Neutrik is a registered trademark of the Neutrik AG, Liechtenstein

The J-Series system block diagram



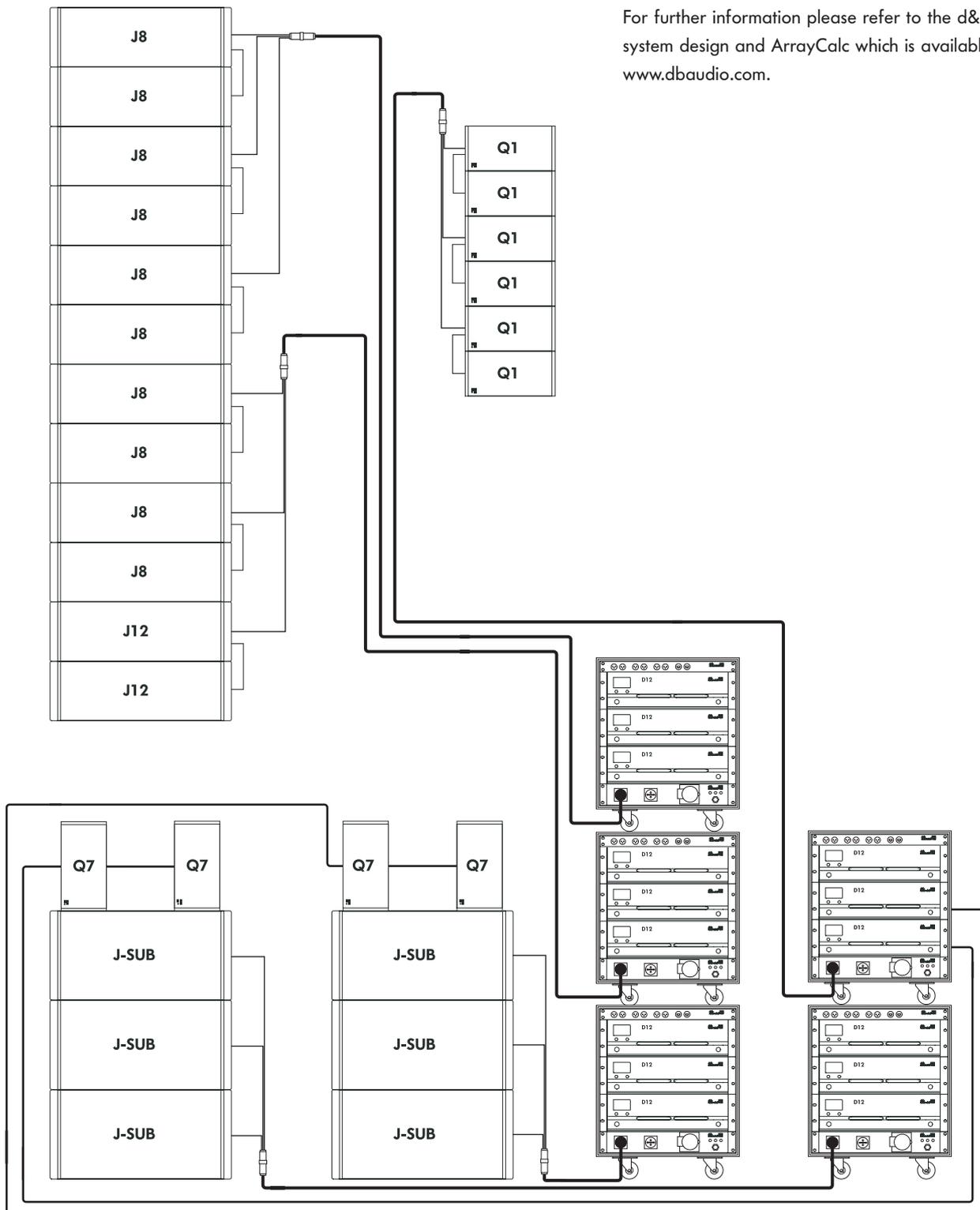
Z2297 MC4SD EP5 cable

Z5320 MC12SD LKS19 cable

Z5321 LKS19 adapter M to 3 x EP5 F

Z5322 LKS19 adapter F to 3 x EP5 M

The J-Series configuration example



For further information please refer to the d&b T1 380 J-Series system design and ArrayCalc which is available for download at www.dbaudio.com.

J-Series configuration example with a d&b Q1 array as outfill and d&b Q7 loudspeakers as nearfills

The d&b ArrayCalc calculator

d&b ArrayCalc calculator

For both acoustical and safety reasons J-Series arrays should be designed using the d&b ArrayCalc simulation tool. It runs on Microsoft Excel for Windows 2000/XP*.

ArrayCalc supports d&b audiotechnik loudspeakers from the J-Series and Q-Series; it is used for planning system configurations.

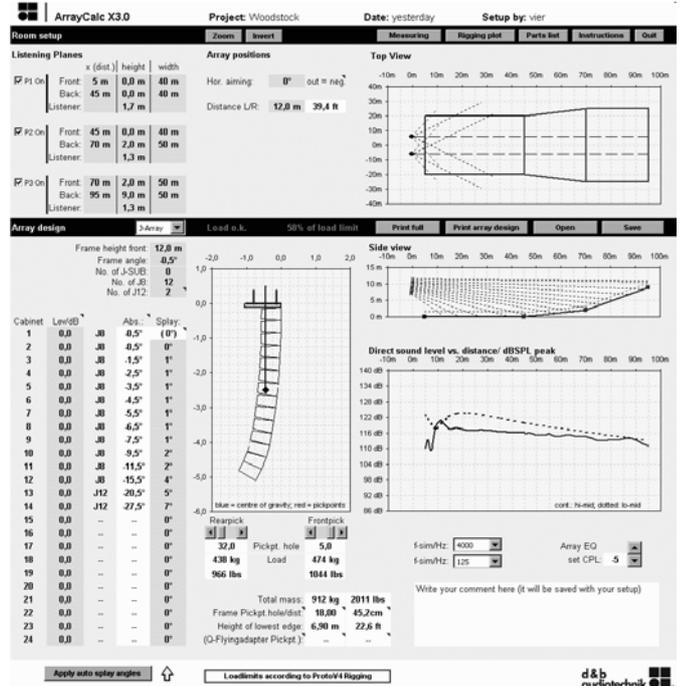
This includes defining the quantity and optimum aiming of loudspeakers, documenting details of array weights and overall dimensions as well as producing printable rigging plots and parts lists. ArrayCalc calculates and displays the physical parameters of the array including the mechanical load conditions within a column, load safety information, load values for rigging points and displays warnings should an overload occur. ArrayCalc uses a sophisticated mathematical model synthesizing each loudspeakers wave front with an array of narrowly spaced point sources. Using complex data (phase information) it calculates level distribution in multiple frequency bands on up to three audience areas.

The ArrayCalc software comprises five sheets; Setup, Measuring, Rigging plot, Parts list and Instructions, of which four are shown here. There are also Zoom and Invert tabs that allow a user definable zoom level to be set for the screen and inversion of the screen background respectively. This latter function is shown and is particularly useful when working in high ambient light. The Instructions tab opens the Instruction sheet (not shown) that contains a link to the technical information document TI 380 J-Series system design and ArrayCalc in PDF format.

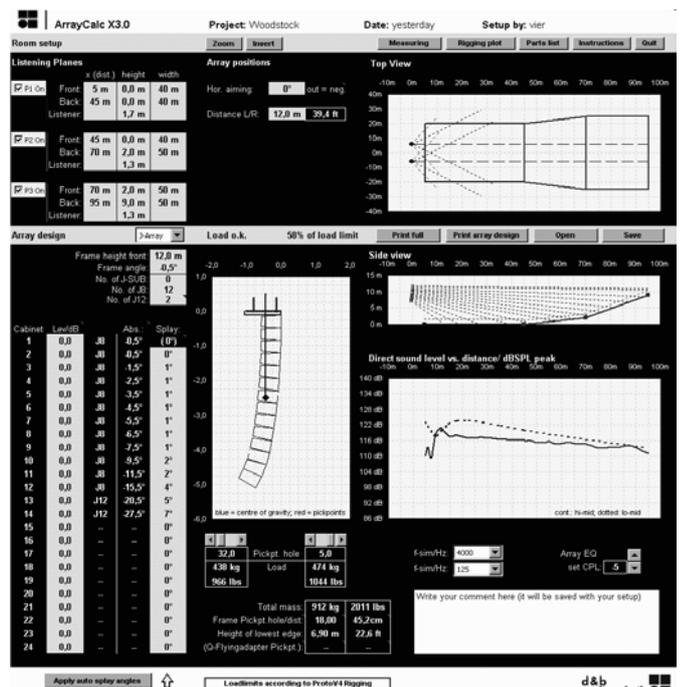
The Setup sheet that is viewed immediately on opening the software contains fields for entering parameters of the room and array designs, which is then displayed graphically. A second navigation line provides Print functions and Open and Save that stores the project data in a small text file format. Up to three different listening planes can be entered. The top view graphic shows a plan view of the audience area, the locations of up to two loudspeaker arrays and their horizontal aiming.

The Array design section of the sheet allows the selection of loudspeaker types, quantities, individual levels and definition of the vertical profile of the array. It includes a side elevation of the complete array, showing the overall dimensions, centre of gravity and the pickpoints for either single or dual hoist suspension, which are displayed graphically. All relevant load parameters such as total mass, the weight loading for each suspension point and height of the array are displayed numerically.

The Side view shows a cross section through the active listening planes at listener ear height on the horizontal centre axis of one

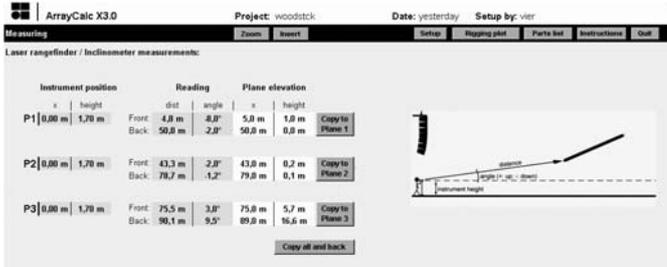


Setup sheet

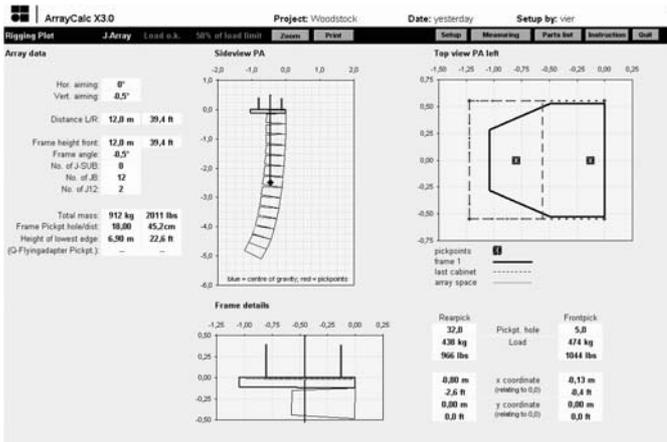


Setup sheet with inverted display

The d&b ArrayCalc calculator



Measuring sheet



Rigging plot

Cabinets:	d&b Part No.	Image	required Nos.:	
			per Array	Stereo setup
J-SUB	Z0660		0	0
J8	Z0650		12	24
J12	Z0651		2	4
RIGGING-Parts:				
J Flying frame	Z5300		1	2
J Hoist connector chain 4t	Z5305		1	2
J Safety chainset 4t 2 leg	Z5303		1	2

Parts list

array and the centre axis of each loudspeaker.

The Direct sound level vs. distance/dB SPL peak plot shows the peak direct sound level over distance of two frequency bands for all active listening planes. The frequencies displayed by these two lines can be selected from three low/mid and four high frequencies. These provide a reliable prediction of the direct sound distribution on the centre axis of the array. Setting the splay angles between the loudspeakers allows the coverage and sound distribution in the audience areas to be adjusted.

The Auto splay function creates a first proposal for the splay angles between the loudspeakers, which can then be adjusted manually. The array EQ function shows the effects of different settings for the amplifier CPL circuit on the response shown in the Direct sound level vs. distance/dB SPL plot.

The Measuring sheet can be used to define the coordinates of the listening planes using trigonometry and the data from a laser inclinometer and a range finder.

The Rigging plot is a printable sheet that displays the physical parameters and load information such as array dimensions, weights and rigging point locations.

The Parts list is a printable sheet that provides a complete list detailing all the loudspeakers and rigging components that are required to configure both a single column and a stereo system. For further information please refer to the d&b TI 380 J-Series system design and ArrayCalc which is available for download at www.dbaudio.com.

* Microsoft Excel and Windows 2000/XP are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries

The J-Series product overview

	Code	Description
System units	Z2600.000	D12 Amplifier EP5 (115/230 V)
	Z2600.001	D12 Amplifier NL8 (115/230 V)
	Z2600.300	D12 Amplifier EP5 (100/200 V)
	Z2600.301	D12 Amplifier NL8 (100/200 V)
	Z2700.000	ROPE C Remote control software (available as a download from www.dbaudio.com)
	Z3001.000	R10 Service software (available as a download from www.dbaudio.com)
	Z0650.000	J8 Loudspeaker EP5 connector
	Z0650.010	J8 Loudspeaker NL8 connector
	Z0651.000	J12 Loudspeaker EP5 connector
	Z0651.010	J12 Loudspeaker NL8 connector
	Z0660.000	J Subwoofer EP5 connector
	Z0660.010	J Subwoofer NL8 connector
	Cables	Z2297.xxx
Z5320.010		MC12SD LKS19 10 m
Z5320.025		MC12SD LKS19 25 m
Z5321.000		LKS19 adapter M to 3 x EP5 F
Z5322.000		LKS19 adapter F to 3 x EP5 M
K3111.000		MC4SD cable
K3115.000		MC12SD cable

The J-Series product overview

	Code	Description
Racks	Z5310.000	Touring rack assembly
Cases	E7441.000	Touring case 1 x J Flying frame
Lids	E7919.000	J Wheelboard
	E7910.000	J Subwoofer wooden lid
Accessories	Z5300.000	J Flying frame
	Z5303.000	J Safety chainset
	Z5305.000	J Hoist connector chain

