D

**Amplifiers
Software**

Contents
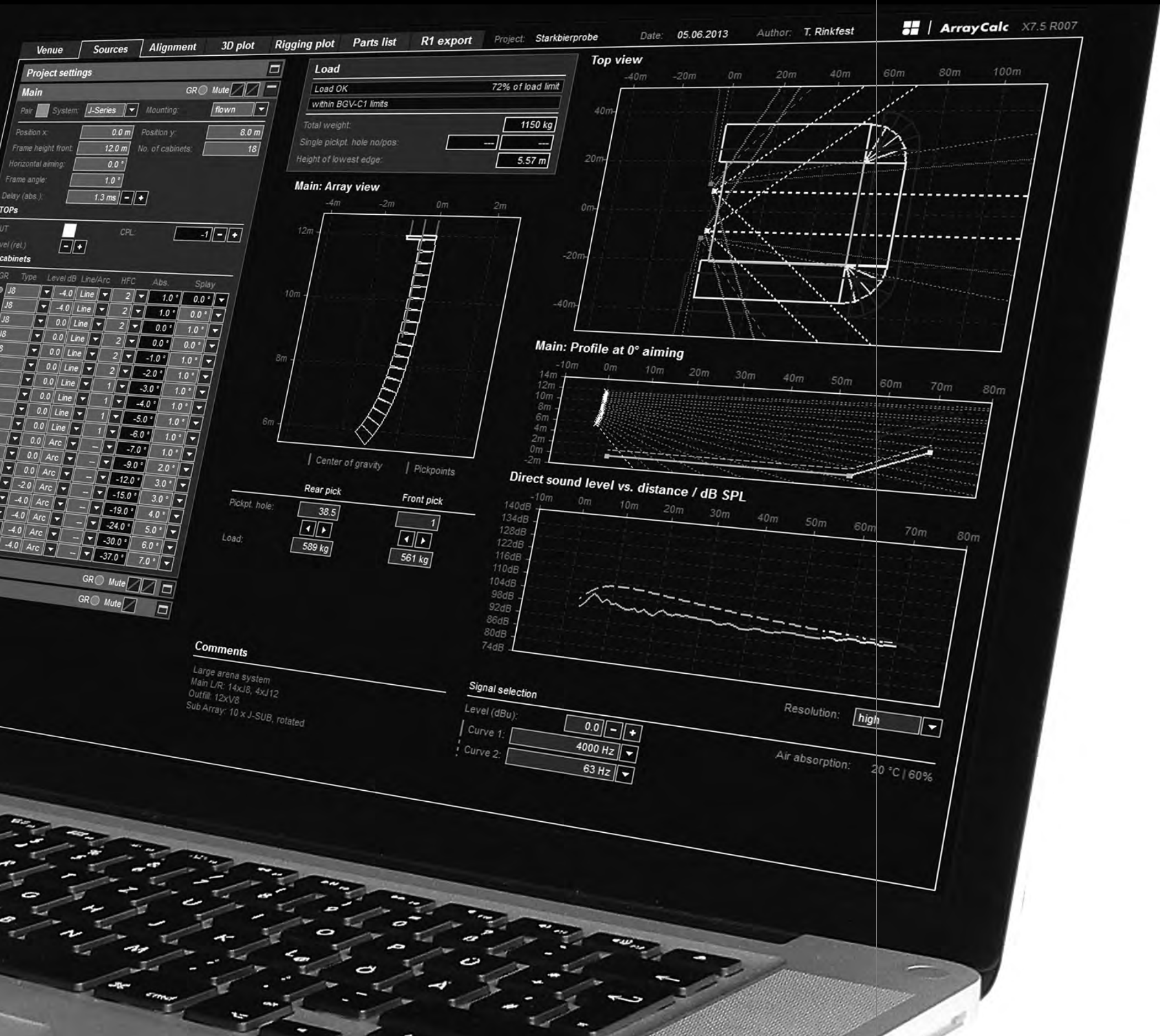
The laptop screen displays the d&b ArrayCalc X7.5 R007 software interface with various panels including Venue, Sources, Alignment, 3D plot, Rigging plot, Parts list, and R1 export tabs.

d&b System reality

As the name implies a d&b audiotechnik system is not just a loudspeaker. Nor is it merely a sum of the components: loudspeakers, amplifiers, accessories and software. Right from the outset the d&b audiotechnik approach was to build integrated sound reinforcement systems that actually are more than the combination of parts: an entirety where each fits all. Every element is tightly specified, precisely aligned and carefully integrated to achieve maximum efficiency. For ease of use, all the user-definable parameters are integrated, allowing the possibility of adjustment, either via remote control surfaces or directly on the amplifiers. Neutral sound characteristics leave the user all the freedom needed to realise whatever the brief. At the same time d&b offers integrated finance, service and support, a knowledgeable distribution network, education and training as well as technical information, so the same optimal acoustic result is achieved consistently by every system anywhere, at any time. In reality: the d&b System reality.

The d&b workflow

| d&b ArrayCalc simulation software | d&b R1 Remote control software | d&b amplifiers | d&b loudspeakers |
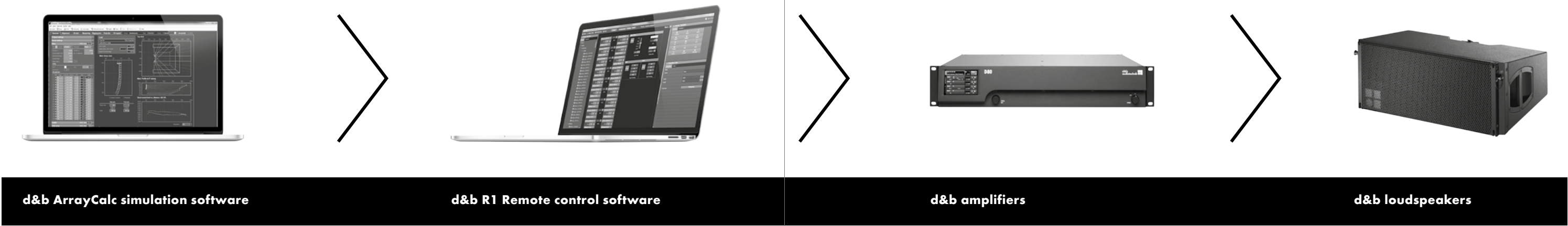
The integrated **d&b workflow** improves efficiency all the way from the start of a project through planning and simulation to control of the final result. Venue data is used to create a model in the d&b ArrayCalc simulation software. The choice of the loudspeakers, placement, levels and configuration is also entered into this room model. The effect of the scheme can be simulated, carefully checked and optimised, until the desired performance is achieved. When the mechanical array settings have been finalized, the optional ArrayProcessing function within ArrayCalc applies powerful filter algorithms to optimize the level and tonal balance of a line array over the entire audience area. ArrayCalc then generates rigging plans and parts lists for the final proposal. Once ready, the complete system configuration can be opened in the R1 Remote control software. A graphical user interface is generated automatically for the complete system and applies all the defined settings to the amplifiers. The R1 Remote control software is used to make adjustments and monitor the system in as much detail as needed to ensure the sound is in line with the original intention.

The d&b ArrayCalc simulation software

The d&b ArrayCalc simulation software is the prediction tool for d&b line arrays, column and point source loudspeakers as well as subwoofers. This is a comprehensive toolbox for all tasks associated with acoustic design, performance prediction, alignment, rigging and safety parameters. For safety reasons d&b line arrays must be designed using the d&b ArrayCalc simulation software. d&b ArrayCalc is available as a native stand-alone application for both Microsoft Windows[1] (Win7 or higher) and Mac OSX[2] (10.6 or higher) operating systems. In combination with the d&b Remote network, this can significantly reduce setup and tuning time in mobile applications and allows for precise simulations when planning installations. Listening planes can be defined in the venue tab, creating a three dimensional representation of any audience area in a given venue. This can also include balconies, side stalls, arenas, in the round scenarios or festivals. Special functions assist in obtaining accurate dimensions with laser distance finders and inclinometers.
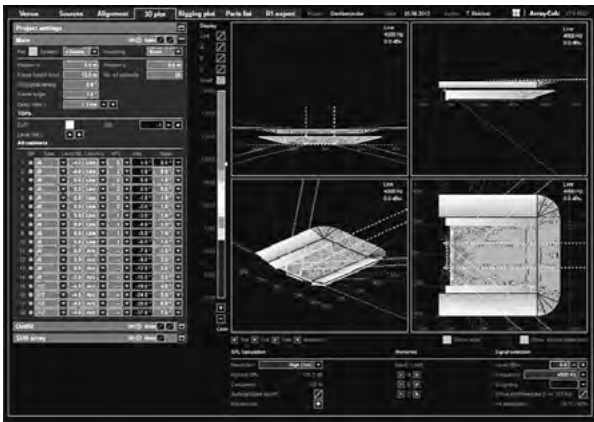
Simulation

Up to fourteen flown arrays or subwoofer columns can be defined in a project file as single hangs or in pairs within the source tab. A selection of d&b point source loudspeakers can also be fully integrated as well as a ground stacked SUB array consisting of up to fifty one positions. All can be freely positioned according to their intended application, for example as main hang, outfill, nearfill or delay. Position, orientation, aiming and coverage details are displayed. Level over distance is calculated for each source with high resolution in real time, for either band limited or broadband input signals. The comprehensive simulation precisely models the actual performance of the system, taking into account input level, all system configuration options (such as CUT, CPL, HFC or INFRA), limiter headroom and air absorption. Acoustic obstacles, such as video screens, can be added to a model. Acoustic shadowing, whether by these obstacles, or a balcony overhang, is taken into consideration. The load status of all array rigging components is calculated accurately and displayed to determine whether a given array is within the load tolerance. Subwoofer array design is assisted by coverage and polar plot prediction. A specialized algorithm allows the user to specify subwoofer positions and a coverage angle, which is then converted into appropriate delay settings that result in the desired dispersion. The alignment tab enables different sources to be time aligned to one another, as well as showing arrival times and Sound Pressure Levels at a freely definable reference point on one of the audience areas. For alignment of the flown system with the ground stacked SUB array, the phase response of both
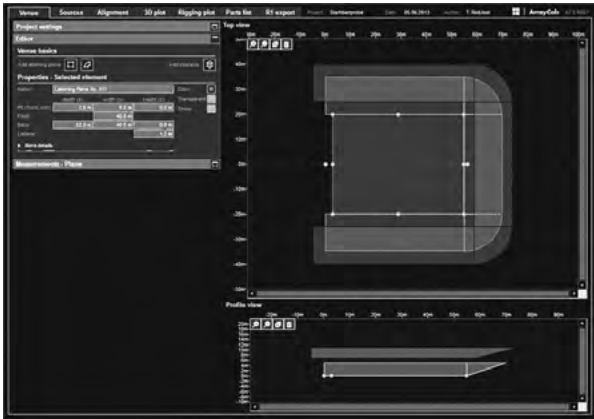
Venue editor
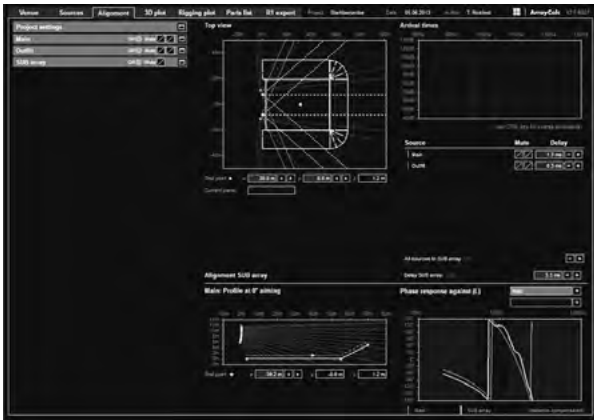
Alignment

3D Plot quad

the SUB array and a selectable flown source is calculated at a definable reference point. Both simulations reflect changes in delay time to the single sources in real time, greatly obviating the need for time consuming acoustic measurements to that end.

Prediction

The level distribution resulting from the interaction of all active sources can be mapped onto the previously defined audience areas in a three-dimensional view, which can also be zoomed, rotated and exported as a graphics file. EASE and DXF data export capabilities are also available. Up to four different configurations and their mappings can be temporarily stored for comparison. A comprehensive rigging plot with all necessary coordinates, dimensions and weights of arrays is generated for export and printing and a parts list, detailing all the loudspeakers and rigging components required.
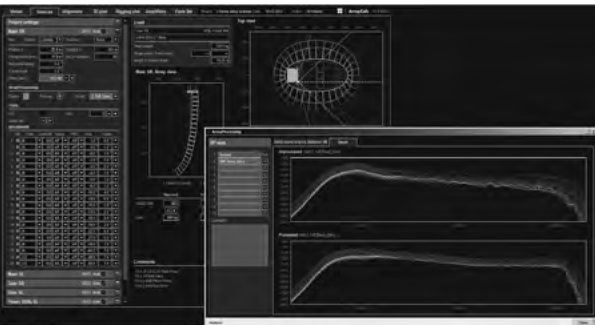
ArrayProcessing

The optional ArrayProcessing function applies powerful filter algorithms to optimize the tonal (spectral) and level (spatial) performance of a line array column over the audience area defined by its mechanical vertical coverage angle. Within the d&b ArrayCalc simulation software, spectral and level performance targets over the listening areas can be defined while specific level drops or offsets can be applied to certain areas, to assign reduced level zones. ArrayProcessing applies a combination of FIR and IIR filters to each individual cabinet in an array to achieve the targeted performance, with an additional latency of only 5.9 ms. This significantly improves the linearity of the response over distance as well as seamlessly correcting for air absorption. In addition, ArrayProcessing employs the same frequency response targets for all d&b line arrays, to ensure all systems share a common tonality. This provides consistent sonic results regardless of array length or splay settings. The resulting coverage is enhanced with spectral consistency and defined level distribution, achieving more linear dispersion and total system directivity to cover longer distances or steep listening areas effectively.

R1 Remote control software

R1 uses the data defined in ArrayCalc to generate an intuitive graphical user interface including complete details of the simulated system, loudspeakers, amplifiers, remote IDs, groups, ArrayProcessing data and all configuration information. This workflow removes the need to manually transfer data from one software program to the other.

Sources, SUB array

ArrayProcessing
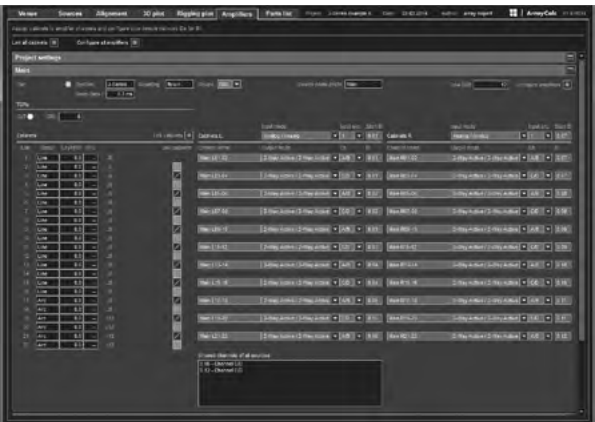
Amplifiers

---

[1] Microsoft Windows is a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries
[2] Mac OS is a trademark of Apple Inc., registered in the U.S. and other countries

The d&b Remote network

d&b Remote network

The remote control capability of the d&b Remote network enables central control and monitoring of a complete d&b loudspeaker system from anywhere in the network, be it from a laptop in the control room, at the mix position, or on a wireless tablet computer in the auditorium. This central access to all functions through the d&b Remote network, to controls as well as detailed system and device diagnostics information, unlocks the full potential of the d&b system approach. In the typical user workflow, the d&b Remote network takes settings optimized in the ArrayCalc simulation software and applies these to all the amplifiers within the network. In mobile situations R1 provides extensive functionalities for storing and recalling system settings, enabling setups to be repeated as and when required. Project files can be adjusted for use with different equipment at another location. d&b System check verifies that the system performs within a predefined condition. For permanent installations, system integrators can configure the d&b Remote network to allow access to different levels of control, according to the operational needs of the venue. R1 Remote control software enables d&b amplifiers to be remotely controlled, using both Ethernet and CAN-Bus in parallel. The software is optimized for use with touchscreen, mouse and keyboard and runs on both Microsoft Windows (Win7 or higher) and Mac OS X (10.6 or higher) operating systems. Password protection is available to restrict access.

R1 Remote control software

The R1 Remote control software provides a flexible workplace for the d&b user. All features, functions and controls are accessible via the front panel of d&b amplifiers, which can be remotely controlled and/or monitored using R1 Remote control software. It allows each channel of the amplifier to be controlled and enables the creation of groups of loudspeakers. When grouped together, a button or fader can control the overall system level, zone level, equalization and delay, system power ON/OFF, MUTE as well as loudspeaker specific function switches, such as CUT/HFA/HFC, CPL and ArrayProcessing. An offline mode is provided for preparation in advance of an event, without the need for amplifiers being present or connected. The Home view provides an overview of all views in R1 and access to all user defined remote views. The Home button featured on each view returns directly to the Home view. The Open views bar offers quick navigation to any open view. Each user definable Remote view can be populated with control

Home

**Remote in Configuration mode**

Open views

functions of the system and can be optimized for different screen resolutions, either for large monitors or for smaller tablet devices.

Equalizer

The R1 Remote control software provides enhanced equalization functionalities for the d&b amplifiers, via an easy to use and efficient user interface. R1 accesses the 4-band equalizer in both channels of the D6 and D12 amplifiers, or the two 16-band equalizers in each of the four channels of the D20 and D80 amplifiers. The system technician can use one D20/D80 16-band equalizer, lock it, and offer the second EQ to the visiting sound engineer for artistic adjustments. The R1 software enables an instant A/B comparison of two different equalizer curves. The D6 and D12 equalizer includes parametric and notch filters types, while the D20 and D80 equalizers also incorporate shelving and asymmetric filters. All filters available in the d&b amplifiers can be manipulated in R1 for fine adjustment; simple and intuitive control, via touchscreen or mouse and keyboard.

Service functions

R1 enables the simultaneous firmware update of multiple amplifiers from a central location. The software will automatically search the d&b website and on demand, downloads the latest available amplifier firmware versions and R1 Remote control software updates. Defined settings can be created, saved on a computer and loaded into amplifiers, for example to ensure that configuration switches are set to a known status, or the user definable equalization is set flat. Settings can be copied to additional or spare amplifiers. A Wink function is included to provide an effective method of locating specific amplifiers; this flashes the amplifier display. For service purposes, information may be read from an amplifier, concerning its condition during operation and errors reported. When additional support is required, the error report can be saved and sent to the d&b service departments for further assessment and diagnosis. The R1 Remote control software V2 and video tutorials are available at www.dbaudio.com.
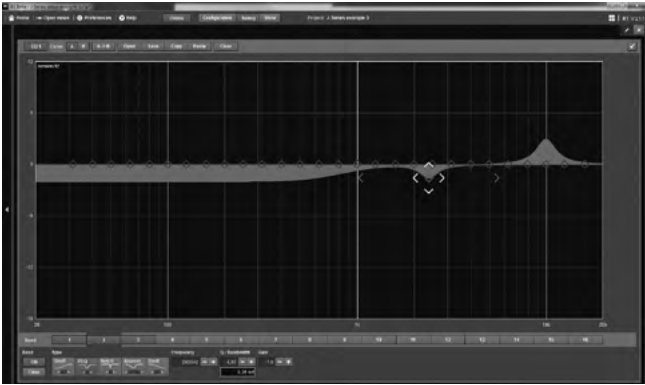
D20 / D80 16-band equalizer
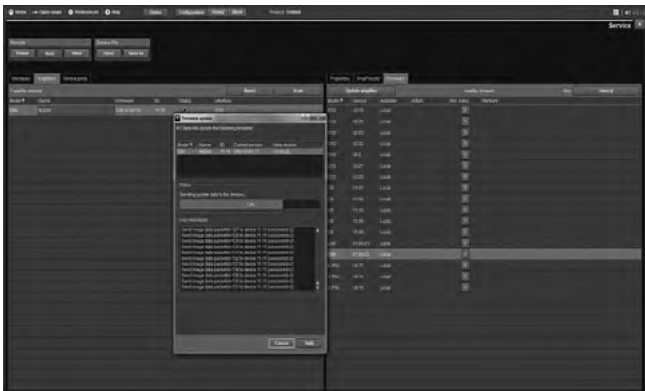
Service, Firmware update

d&b Remote network topology

The D20 and D80 amplifiers can be remote controlled using the industry standard OCA protocol via Ethernet and through the established CAN-Bus, which can also control the D6 and D12 amplifiers as well. d&b amplifiers are controlled using the d&b R1 Remote control software, which is available on both Windows and MAC operating systems. This Remote user interface can control the D20 and D80 amplifiers via Ethernet (OCA) and the D6, D12 and E-PAC amplifiers through CAN-Bus networks simultaneously. The D20 and D80 amplifiers also provide a web interface, offering access to individual D20 and D80 amplifiers through a web browser.

d&b Remote network – OCA via Ethernet

The D20 and D80 amplifiers can be remotely controlled via a standard Ethernet network, providing higher bandwidth and quicker response compared to the CAN-Bus network. This latest generation of d&b amplifiers are fitted with two etherCON® connectors, allowing simple networks to be set up, without requiring an extra switch. The industry standard Open Control Architecture (OCA) protocol is used, created by the OCA Alliance of which d&b is a founding member. For further information please refer to the d&b TI 310 Ethernet networking, which is available for download at www.dbaudio.com.

d&b Remote network – CAN-Bus

The d&b amplifiers can be integrated within the CAN-Bus network and are fitted with two REMOTE/CAN connectors (RJ 45) to link the CAN-Bus signal and enable daisy chaining. The network may contain any combination of up to a total of 504 devices. It is connected to a PC or MAC running R1 Remote control software V2, using R60 USB to CAN, or R70 Ethernet to CAN interfaces. While the CAN-Bus network covers distances up to 600 m the Ethernet connection to the R70 can be made using standard Ethernet technologies, including wireless or fibre optic networks. For further information please refer to the TI 312 d&b Remote network, which is available for download at www.dbaudio.com

d&b Remote network – web interface

The D20 and D80 amplifiers feature an integrated web interface to control individual amplifiers via a standard web browser. In small applications, this allows direct control of each device without the need to create an R1 Remote control software file. The amplifier and the computer must be connected to an Ethernet network. Using a wireless access point, these d&b amplifiers can be controlled using mobile devices.

Combined Ethernet topology

Z6118 R60 USB to CAN interface

Z6124 R70 Ethernet to CAN interface

Mixed application with D80s driven via Ethernet and D6/D12 via CAN-Bus and Ethernet

Application controlled via web browser for small setups
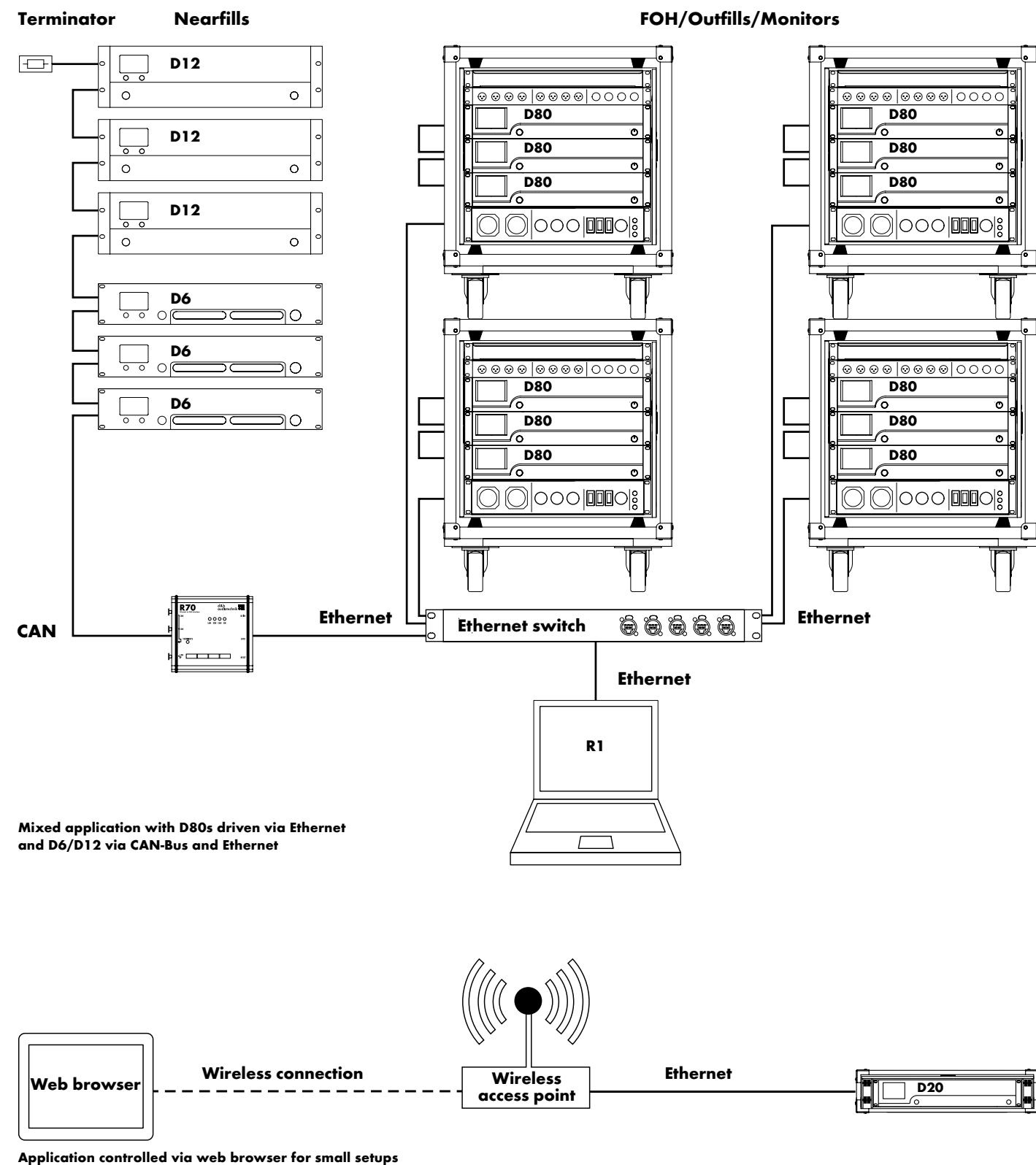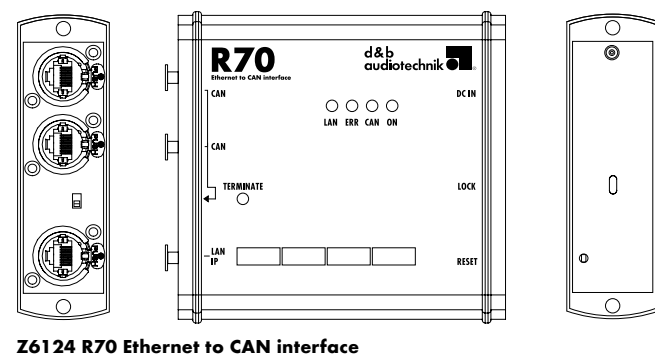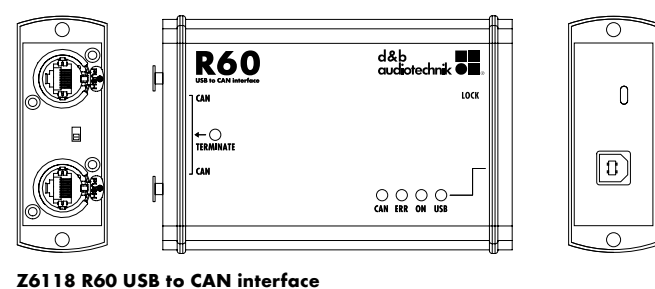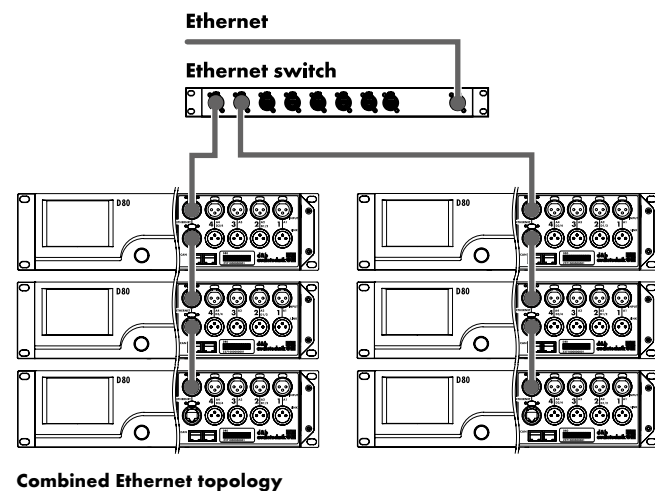
The D6, D12, D20 and D80 amplifiers

The d&b amplifiers are designed specifically to power d&b loudspeakers and are the beating heart of the d&b System reality. As such, they incorporate Digital Signal Processing for comprehensive loudspeaker management, switchable filter functions, remote capabilities and user-definable controls, to fulfil the exact needs of each application.

Every loudspeaker configuration combines comprehensive system limiting, equalization and crossover settings to ensure consistent results and optimal performance. d&b amplifiers offer different output configurations for different loudspeaker setups, including Dual Channel mode, for passive setups, Mix TOP/SUB mode, in which two channels are driven through a single output connector, and 2-Way Active mode, which also sends the output of two channels down one connector to drive appropriate loudspeakers actively.

The d&b switch functions provide selected filters to precisely tailor a wide variety of setups to their applications. Examples of these switch functions are the CSA (Cardioid Subwoofer Array) and HFC (High Frequency Compensation) modes. CSA increases low frequency directivity control by minimising energy transmission towards the rear while HFC compensates for air absorption for loudspeakers covering far field listening positions. In addition to these functions, d&b amplifiers offer a comprehensive set of specific filters such as CUT, a cut mode for TOP loudspeakers when used with d&b subwoofers; CPL, to compensate for the coupling effect between loudspeakers in close proximity to other loudspeakers or hard objects and HFA mode, to attenuate the high frequencies of a loudspeaker to mimic the effect of far field listening. d&b amplifiers offer extended, user-definable equalization and delay capabilities, eliminating the need for external processing devices in the signal chain.

Sophisticated protection circuits modelling thermal and mechanical driver behaviour are provided, resulting in the sustained reliability of d&b systems. These amplifiers[1] also have the functionality to enable system status monitoring and protection features, increasing the longevity of d&b systems. They provide the d&b System check function, which is designed to verify the system performs within a predefined condition; this can be used to report the system condition after a show. Input monitoring can detect incoming pilot tones to verify the integrity of the signal path to the amplifier, while the Load monitoring function determines the status of the loudspeaker impedance. Both d&b System check and Load monitoring can determine the status of an LF or HF driver in systems with multiple elements, even if these are crossed over passively. Automatic and continuous impedance monitoring, along with Input monitoring are designed for incorporation in applications specified to the requirements of International Standard IEC 60849 'Sound Systems for Emergency Purposes'. A password protected LOCK function prevents unauthorized changes.

A powerCON[2] mains connector socket is fitted on the rear panel. The switch mode power supply of each amplifier incorporates mains overvoltage protection, inrush current limiting and loudspeaker protection at start up. Temperature and signal controlled fans cool the internal assemblies. d&b amplifiers offer analog and digital AES/EBU signal inputs, with link outputs for each channel. The AES/EBU link output carries a refreshed signal, while a power fail relay is incorporated to prevent interruption of the signal chain, in the event of a power failure. All d&b amplifiers integrate with the d&b Remote network to enable the remote control and management of systems from anywhere within a network. Firmware updates containing new loudspeaker configurations or additional functions can be loaded to the amplifiers via the d&b Remote network.

D6 amplifier

D12 amplifier
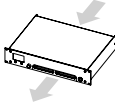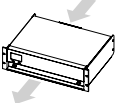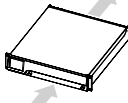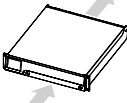
D20 amplifier

D80 amplifier

[1] At the time of print, the Input monitoring function required for applications specified to achieve compliance with IEC 60849 is not yet implemented in the D20 or D80 amplifiers. Please contact your distributor for further information.

[2] powerCON® is a registered trademark of the Neutrik AG, Liechtenstein

The D6, D12, D20 and D80 amplifiers

Comparison of the D6, D12, D20 and D80 amplifiers

	D6	D12	D20	D80
User interface	Encoder/LC display	Encoder/LC display	Encoder/colour TFT touchscreen	Encoder/colour TFT touchscreen
Output channels	2	2	4	4
Input channels	2 AES or analog	2 AES or analog	4 AES or analog	4 AES or analog
Latency	0.3 msec	0.3 msec	0.3 msec	0.3 msec
User equalizers (per channel)	4-band	4-band	2 x 16-band	2 x 16-band
Delay	340 msec/116.9 m	340 msec/116.9 m	10 sec/3440 m	10 sec/3440 m
Rated output power (THD+N < 0.5%, 12 dB crest factor)	2 x 350 W into 8 ohms 2 x 600 W into 4 ohms	2 x 750 W into 8 ohms 2 x 1600 W into 4 ohms	4 x 800 W into 8 ohms 4 x 1600 W into 4 ohms	4 x 2000 W into 8 ohms 4 x 4000 W into 4 ohms
Output routing	Dual Channel w/o B1 and B2	Dual Channel, Mix TOP/SUB 2-Way Active	Dual Channel, Mix TOP/SUB 2-Way Active	Dual Channel, Mix TOP/SUB 2-Way Active
Output connectors	NL4	NL4/EP5/NL8	NL4 plus central NL8	NL4/EP5 plus central NL8
Cable compensation	No	SenseDrive	LoadMatch	LoadMatch
Power supply	Autosensing switched mode power supply with active PFC	Autosensing switched mode power supply	Universal range switched mode power supply with active PFC	Autosensing switched mode power supply with active PFC
Mains voltage	100 - 120/220 - 240, 50 - 60 Hz	115/230 V or 100/200 V, 50 - 60 Hz	100 - 240 V, 50 - 60 Hz	100 - 127/208 - 240 V, 50 - 60 Hz
Weight (kg/lb)	8/17.6	13/28.7	10.8/23.8	19/42
Dimensions	2 RU x 19" x 353 mm	3 RU x 19" x 353 mm	2 RU x 19" x 460 mm	2 RU x 19" x 530 mm
Remote	CAN	CAN	OCA via Ethernet/CAN	OCA via Ethernet/CAN
Airflow				

The D6 amplifier

The 2 RU two channel lightweight D6 amplifier delivers medium power into low impedance loads between 4 and 16 ohms and is ideally suited for use in both mobile and installation environments.

The D6 contains setups for d&b loudspeakers and a linear mode; exceptions are 2-Way Active mode, V-Series and B2- SUB. The signal delay capability enables user definable settings of up to 340 msec (=100 m/328.1 ft) to be applied independently to each channel. The same applies to the 4-band parametric equalizer, providing optional boost/cut or notch filtering.

The D6 incorporates a digital rotary encoder and a LC display to configure the amplifier.

The D6 incorporates Class D amplifiers utilizing a switch mode power supply with active Power Factor Correction (PFC), suitable for mains voltages 100 V/120 V/200 V/ 240 V, 50 - 60 Hz and maintains a stable output when used with weak or unstable mains supplies. It is supplied with two NL4 loudspeaker output connectors.

Control and indicators

POWER ....Mains power switch
SCROLL/EDIT... Digital rotary encoder
Display .... Liquid Crystal Display (LCD)/120 x 32 pixel
ISP, GR, OVL A/B .... LED indicators

Digitial Signal Processing

Equalizer .... 4-band PEQ/Notch
Latency analog and digital inputs.......................................0.3 msec
Delay setting ....0.3 - 340 msec with 0.1 msec detents
Configurations.............current d&b loudspeakers and linear mode
......................................except 2-Way Active, V-Series and B2-SUB
Function switches ....d&b loudspeaker specific circuits
Frequency generator ....Pink noise or Sine wave
Sampling rate...............................96 kHz/27 Bit ADC/24 Bit DAC

Connectors

INPUT ANALOG (A1, A2)....................................3 pin XLR female
ANALOG LINK (A1, A2)..3 pin XLR male
INPUT DIGITAL (D1, D2) .... 3 pin XLR female AES 3
DIGITAL LINK (Output) ....3 pin XLR male
Sampling rate...48 kHz/96 kHz
OUT CHANNEL A/B NL4
REMOTE..2 x RJ 45 parallel, CAN-Bus
SERVICE ....USB type B
Mains connector...powerCON[1]

Data (linear setting with subsonic filter)

Maximum output power per channel (THD + N < 0.5 %, both channels driven)...
CF = 6 dB at 4/8 ohms .... 2 x 600/350 W
CF = 12 dB at 4/8 ohms.................................... 2 x 600/350 W
S/N ratio (unweighted, RMS).. > 110 dBr

Power supply

Autosensing switch mode power supply with active Power Factor Correction (PFC) ....
Rated mains voltage ....
High range... 208 - 240 V, 50 - 60 Hz
Low range .... 100 - 127 V, 50 - 60 Hz

Dimensions, weight

Height x width x depth.................... 2 RU x 19" x 353 mm/13.9"
Weight..8 kg/17.6 lb

The D6 amplifier front view

The D6 amplifier rear view
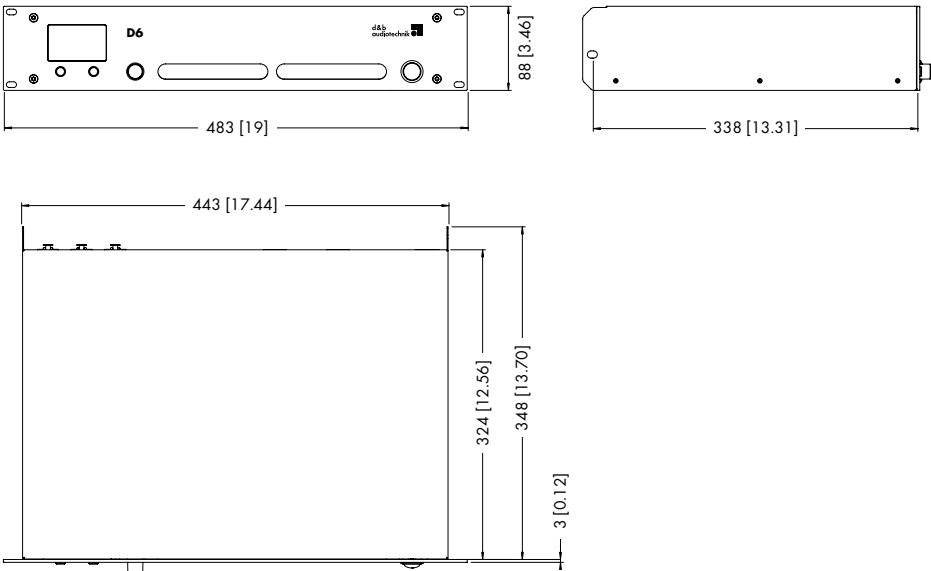
D6 amplifier dimensions in mm [inch]

The D12 amplifier

The 3 RU two channel D12 amplifier delivers medium to high power into low impedance loads between 4 and 16 ohms and is ideally suited for use in both mobile and installation environments.

It contains setups for all d&b loudspeakers and a linear mode. The signal delay capability enables user definable settings of up to 340 msec (=100 m/328.1 ft) to be applied independently to each channel. The same applies to the 4-band parametric equalizer, providing optional boost/cut or notch filtering.

The D12 incorporates a digital rotary encoder and a LC display to configure the amplifier.

The D12 utilizes an autosensing switch mode power supply for mains voltages 120 V/230 V, 50 - 60 Hz (optional 100/200 V). The D12 amplifier incorporates d&b SenseDrive for accurate control of LF drivers in d&b loudspeakers driven in 2-Way Active mode or in actively driven d&b subwoofers. When the D12 is fitted with EP5 connectors and appropriate 5 wire cabling, d&b SenseDrive can be used, resulting in an extremely precise bass performance even at high levels. NL4 and NL8 connector options are also available.

Control and indicators

POWER ....Mains power switch
SCROLL/EDIT.. Digital rotary encoder
Display .... Liquid Crystal Display (LCD)/120 x 32 pixel
ISP, GR, OVL A/B .... LED indicators

Digitial Signal Processing

Equalizer .... 4-band PEQ/Notch
Latency analog and digital inputs.......................................0.3 msec
Delay setting ....0.3 - 340 msec with 0.1 msec detents
Configurations.............current d&b loudspeakers and linear mode
Function switches ....d&b loudspeaker specific circuits
Frequency generator ....Pink noise or Sine wave
Sampling rate..............................96 kHz/27 Bit ADC/24 Bit DAC

Connectors

INPUT ANALOG (A1, A2)....................................3 pin XLR female
ANALOG LINK (A1, A2) ....3 pin XLR male
INPUT DIGITAL (D1, D2) .... 3 pin XLR female AES 3
DIGITAL LINK (Output) ....3 pin XLR male
Sampling rate...48 kHz/96 kHz
OUT CHANNEL A/B NL4
....optional EP5/NL8
REMOTE..2 x RJ 45 parallel, CAN-Bus
SERVICE ....SUB-D9 female
Mains connector...powerCON[1]

Data (linear setting with subsonic filter)

Maximum output power per channel (THD + N < 0.5 %, both channels driven)..
CF = 6 dB at 4/8 ohms .... 2 x 1200/750 W
CF = 12 dB at 4/8 ohms................................... 2 x 1600/750 W
S/N ratio (unweighted, RMS)... > 110 dBr

Power supply

Autosensing switch mode power supply for.....................................
.... 120/230 V, 50 - 60 Hz
....optional 100/200 V, 50 - 60 Hz

Dimensions, weight

Height x width x depth.................... 3 RU x 19" x 353 mm/13.9"
Weight..13 kg/29 lb

The D12 amplifier front view
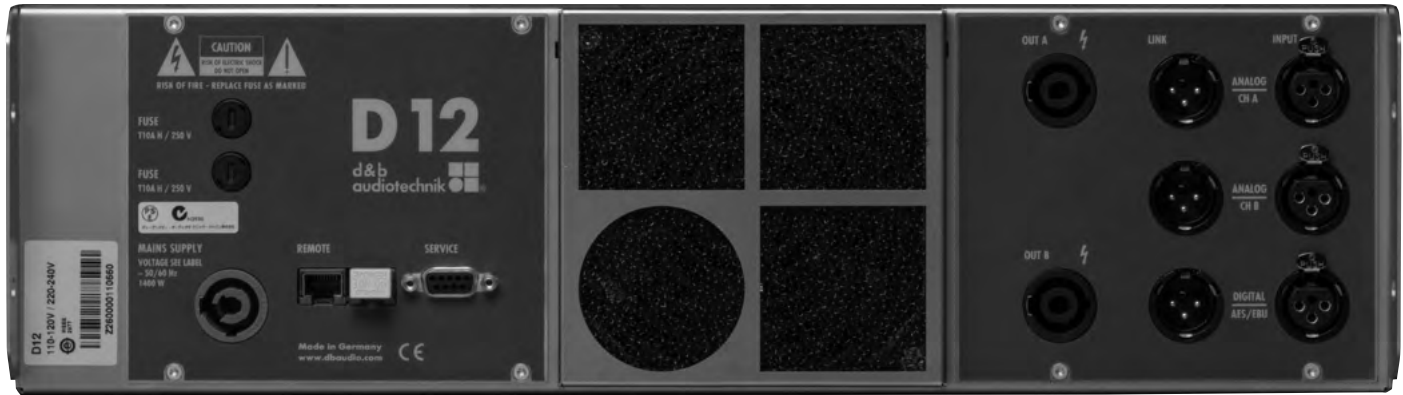
The D12 amplifier rear view
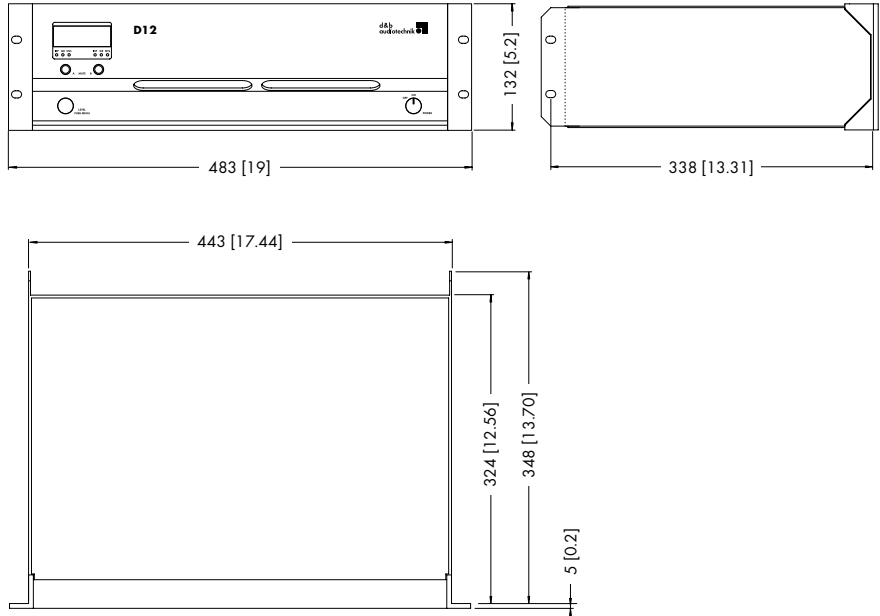
D12 amplifier dimensions in mm [inch]

The D20 amplifier

The 2 RU four channel D20 amplifier is ideally suited to mobile and installation applications which require low to medium Sound Pressure Level (SPL) capabilities. The D20 features the same Digital Signal Processing (DSP) platform as the latest generation of d&b amplifiers, containing configurations for all d&b loudspeakers except the J-Series and the M2 monitor, and a linear mode.

The signal delay capability enables user definable settings of up to 10 s (= 3440 m/11286 ft), which can be applied independently to each channel. The same applies to the two 16-band equalizers, providing optional parametric, asymmetric, shelving or notch filtering.

The D20 incorporates a colour TFT touchscreen, offering quick access to the menu structure, while the rotary encoder can be used for fine adjustment. The front panel and the integrated touchscreen are tilted up for easy operation when the amplifier is below eye level.

The equal ratio of signal input to amplifier output channels increases application flexibility particularly for monitor, frontfill or effect channel use. The LoadMatch function integrated within the D20 amplifier electrically compensates for the properties of loudspeaker cable used.

The D20 incorporates Class D amplifiers utilizing a power supply with active Power Factor Correction (PFC) suitable for mains voltages 100 V - 240 V, 50 - 60 Hz and maintains a stable output when used with weak or unstable mains supplies. An NL8 provides all outputs on a single connector for loudspeaker multicores. Dual channel mode is driven through four individual NL4 connectors, while Mix TOP/SUB and 2-Way Active mode output configurations for applicable d&b loudspeakers are available via two dedicated NL4 connectors.

Control and indicators
POWER ....Mains power switch
SCROLL/EDIT... Digital rotary encoder
Display .... Colour TFT touchscreen, 3.5"/320 x 240 pixel

Digitial Signal Processing
Equalizer ....2 x 16-band PEQ/notch/shelving/asymmetric
Latency analog and digital inputs.......................................0.3 msec
Delay setting .... 0.3 - 10000 msec
Configurations.............current d&b loudspeakers and linear mode
.... except J-Series and M2 monitor
Function switches ....d&b loudspeaker specific circuits
Frequency generator ....Pink noise or Sine wave
Sampling rate..............................96 kHz/27 Bit ADC/24 Bit DAC

Connectors
INPUT ANALOG (A1 - A4) ....3 pin XLR female
ANALOG LINK (A1 - A4)...3 pin XLR male
INPUT DIGITAL (D1/2, D3/4) .... 3 pin XLR female AES 3
DIGITAL LINK (Output) ....3 pin XLR male
Sampling Digital AES/EBU ....48 kHz/96 kHz
SPEAKER OUTPUTS A/B/C/D NL4
Mix TOP/SUB / 2-Way Active output A/B and C/D NL4
4 CHANNEL OUTPUT NL8
CAN ....2 x RJ 45 parallel
ETHERNET.........................2 x etherCON[1], 10/100 Mbit Ethernet
Mains connector.. powerCON[1]

Data (linear setting with subsonic filter)
Maximum output power per channel (THD + N < 0.5 %, all channels driven)..
CF = 6 dB at 4/8 ohms......................................4 x 1000/800 W
CF = 12 dB at 4/8 ohms....................................4 x 1600/800 W
S/N ratio (unweighted, RMS)..
Analog input .... > 104 dBr
Digital input.. > 106 dBr

Power supply
Universal range switched mode power supply with active Power Factor Correction (PFC)..
Rated mains voltage .... 100 - 240 V, 50 - 60 Hz

Dimensions, weight
Height x width x depth.....................2 RU x 19" x 460 mm/18.1"
Weight...10.8 kg/23.8 lb

The D20 amplifier front view

The D20 amplifier rear view
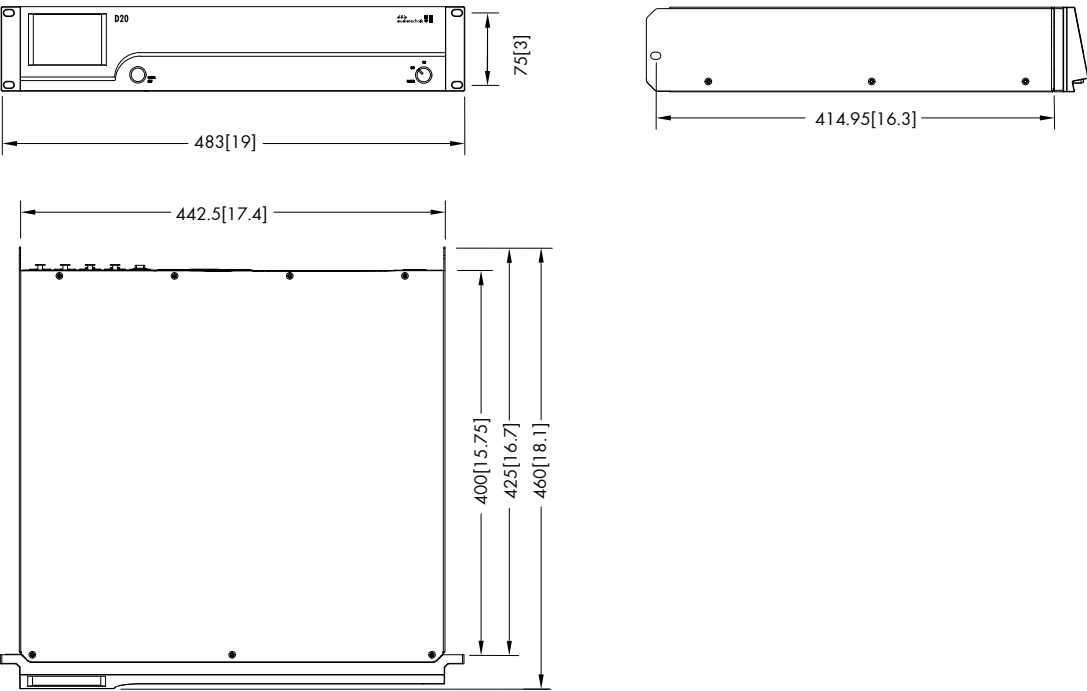
D20 amplifier dimensions in m [inch]

The D80 amplifier

The 2 RU four channel D80 amplifier is a high power density amplifier, ideally suited for use in both mobile and installation environments.

It contains setups for all d&b loudspeakers and a linear mode. The signal delay capability enables user definable settings of up to 10 s (= 3440 m/11286 ft) to be applied independently to each channel. The same applies to the two 16-band equalizers, providing optional parametric, asymmetric, shelving or notch filtering. The R1 Remote control section of this brochure gives a full explanation of the equalization section of the D80 amplifier.

The D80 incorporates a colour TFT touchscreen, offering quick access to the menu structure, while the rotary encoder can be used for fine adjustment. The front panel and the integrated touchscreen of the D80 amplifier is tilted up for ease of operation when the amplifier is below eye level.

The equal ratio of signal input to amplifier output channels increases the application flexibility particularly for monitor, frontfill or effect channel use.

The LoadMatch function integrated within the D80 amplifier electrically compensates for the properties of loudspeaker cable used. The D80 incorporates Class D amplifiers utilizing a switch mode power supply with active Power Factor Correction (PFC) suitable for mains voltages 100 V/127 V, 50 – 60 Hz and 208 V/240 V, 50 - 60 Hz and maintains a stable output when used with weak or unstable mains supplies. An NL8 provides all outputs on a single connector, while individual outputs are optionally NL4 for EP5 connectors.

Control and indicators
POWER ....Mains power switch
SCROLL/EDIT... Digital rotary encoder
Display .... Colour TFT touchscreen, 3.5"/320 x 240 pixel

Digitial Signal Processing
Equalizer ....2 x 16-band PEQ/notch/shelving/asymmetric
Latency analog and digital inputs.......................................0.3 msec
Delay setting .... 0.3 - 10000 msec
Configurations.............current d&b loudspeakers and linear mode
Function switches ....d&b loudspeaker specific circuits
Frequency generator ....Pink noise or Sine wave
Sampling rate...............................96 kHz/27 Bit ADC/24 Bit DAC

Connectors
INPUT ANALOG (A1 - A4) ....3 pin XLR female
ANALOG LINK (A1 - A4).......................................3 pin XLR male
INPUT DIGITAL (D1/2, D3/4) .... 3 pin XLR female AES 3
DIGITAL LINK (Output) ....3 pin XLR male
Sampling Digital AES/EBU ....48 kHz/96 kHz
SPEAKER OUTPUTS A/B/C/D .... NL4, optional EP5
4 CHANNEL OUTPUT NL8
CAN...2 x RJ 45 parallel
ETHERNET......................... 2 x etherCON[1], 10/100 Mbit Ethernet
Mains connector..powerCON-HC[1]

Data (linear setting with subsonic filter)
Maximum output power per channel (THD + N < 0.5 %, all channels driven)...
CF = 6 dB at 4/8 ohms ....4 x 2600/2000 W
CF = 12 dB at 4/8 ohms.................................4 x 4000/2000 W
S/N ratio (unweighted, RMS)...
Analog input .... > 110 dBr
Digital input... > 114 dBr

Power supply
Autosensing switch mode power supply with active Power Factor Correction (PFC) ....
Rated mains voltage ....
High range... 208 - 240 V, 50 - 60 Hz
Low range .... 100 - 127 V, 50 - 60 Hz

Dimensions, weight
Height x width x depth................. 2 RU x 19" x 530.5 mm/20.9"
Weight...19 kg/42 lb

The D80 amplifier front view

The D80 amplifier rear view
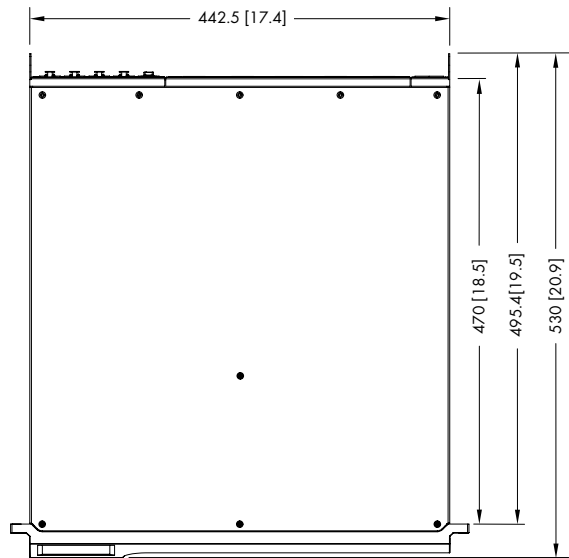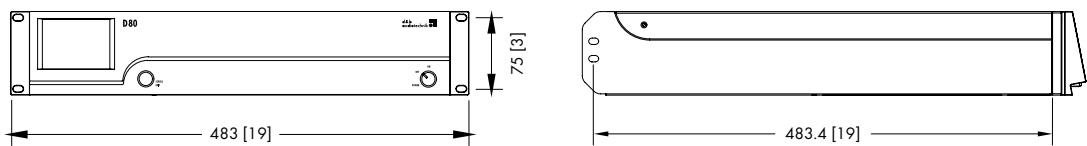
D80 amplifier dimensions in m [inch]

The D80 Touring rack assembly

The D80 Touring rack assembly is designed as a fully equipped and prewired system rack, providing mains power distribution, connector interfaces and all internal cabling for three D80 amplifiers. It is equipped with a 32 A CEE mains power connector, a mains distribution device with a 32 A mains link, and a loudspeaker connector panel.

All internal audio and remote connections are fully prewired. A 1 RU drawer at the top stores the Rack link, providing two colour coded 2 x AES/XLR and one CAT5/etherCON[2] loom.

The 10 RU Touring rack houses a 19" internal shockmount steel frame accommodating three D80 amplifiers and the requisite connection panels as detailed on the next page. It comes with two sliding doors, a perspex window at the front, four wheels, six handles and recessed stacking moulds at the top.

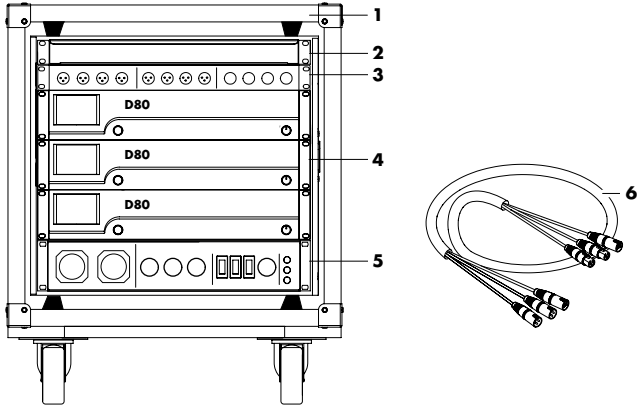The Touring rack assembly does not include the three D80 amplifiers.

D80 Touring rack assembly front view
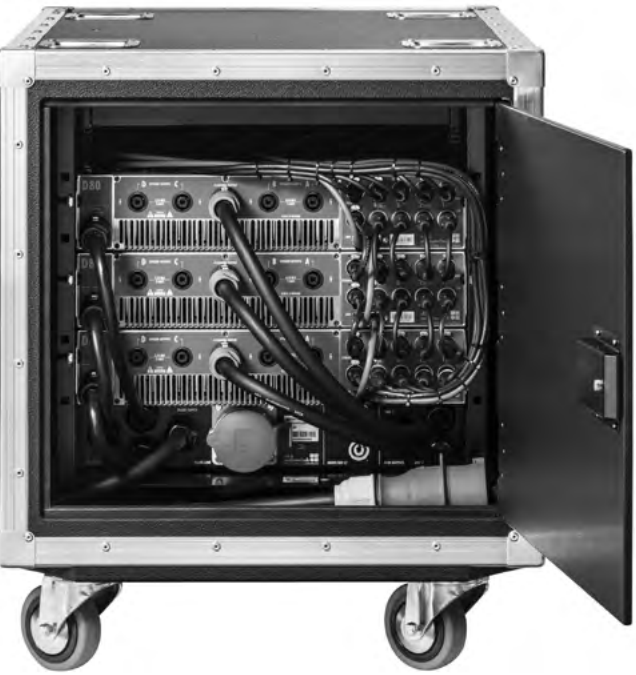
D80 Touring rack assembly rear view

1 - D80 Touring rack assembly 10 RU (CEE) with
   shock mounted 19" frame, 128 kg/282 lb
   (incl. amplifiers)
2 - Rack drawer
3 - I/O panel
4 - D80 amplifiers
5 - Mains power distributor
6 - Rack link

The I/O panel provides the input connectors of the first amplifier while the other two amplifiers are linked within the rack. The INPUT section allows both analog and digital audio signals to be fed while the INPUT LINK section provides the link output connectors of the last amplifier.

The REMOTE section allows the daisy chaining of system racks within a remote network using the enclosed rack link cable.

ETH 1 provides the upper etherCON[2] connector of the first amplifier, ETH 2 provides the bottom etherCON[2] connector of the last amplifier.

CAN input provides the CAN input of the first amplifier while the other two amplifiers are linked within the rack. The last CAN-Bus device of a CAN-Bus segment can be terminated by the TERMINATE switch.
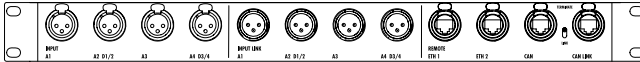
The Mains power distributor is designed and dimensioned to provide and distribute the mains power supply necessary for the three D80 amplifiers.

It also serves as a loudspeaker connection panel for different connection options, two LKS19 or three NL8 allow connection to a total of twelve amplifier channels via these loudspeaker multicore connectors.

Three electrically interlocked auxiliary mains outputs (powerCON[2] 16 A sockets) are provided. They are intended for the connection of low current devices such as notebooks or additional Ethernet switches. Three phase mains indicators are provided.

Z5330.001
D80 Touring rack assembly, CEE 32A 5P[1]
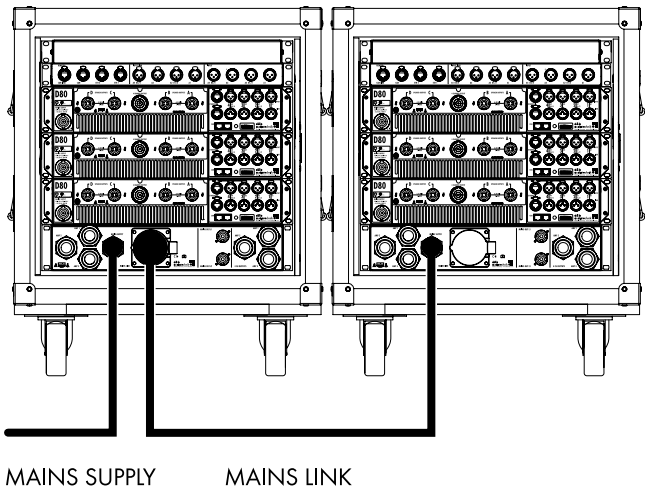

Z5338
I/O Panel 19", 1 RU
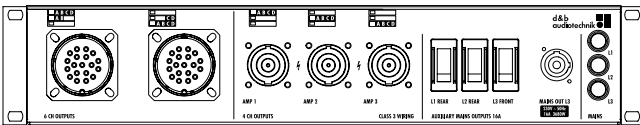

X5335
32A CEE Mains/LS Panel 19", 2 RU

[1] D80 Touring rack assembly, Nema L21-30 (120 V devices) on request
[2] etherCON® and powerCON® are registered trademarks of the Neutrik AG, Liechtenstein

The D80 Touring rack assembly

A maximum of two D80 Touring rack assemblies can be linked to the 32 A CEE 5P mains supply.


MAINS SUPPLY   MAINS LINK

Sliding doors at front and back allow for quick and effective deployment on site.

600 [23.6"]   780 [30.7"]   710 [28"]
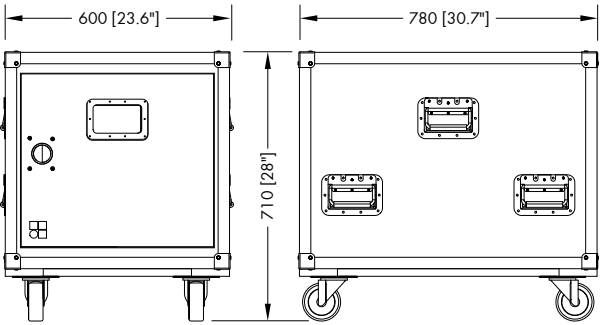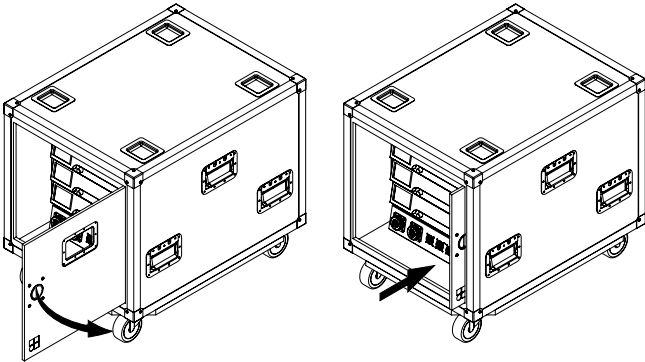
D80 Touring rack assembly dimensions in mm (inch)

The D12 Touring rack assembly

The D12 Touring rack assembly[1] is a package connected with MC12SD LKS19 loudspeaker multicore systems. The rack assembly comprises the following:

The E7440 Touring rack 12 RU 19″ with sliding doors has a 60 x 60 cm footprint and is designed to fit standard truck widths. It 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[2] RJ45 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, 230 V Schuko outlets and an LKS19 pin female Socapex compatible multipin connector with three internal EP5 male breakouts.

The D12 Touring rack assembly is supplied prewired with XLR cabling for channels A and B, AES/EBU and CAT5/CAN-Bus. The assembly is only available in the 16 A CEE 5P version and optionally equipped with EP5 or NL4 connectors.

The Touring rack assembly does not include the three D12 amplifiers. The fully assembled weight is 95 kg/208 lbs.
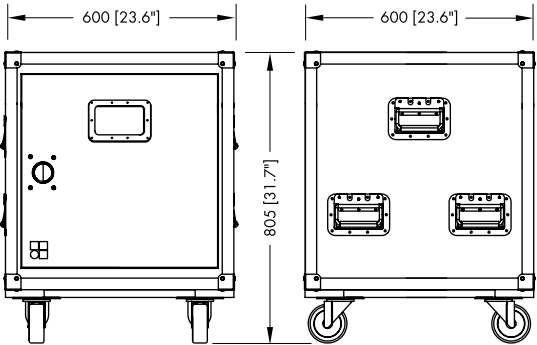
Z5338
D12 Touring rack assembly front view

600 [23.6"]   600 [23.6"]   805 [31.7"]

D12 Touring rack assembly dimensions in mm (inch)
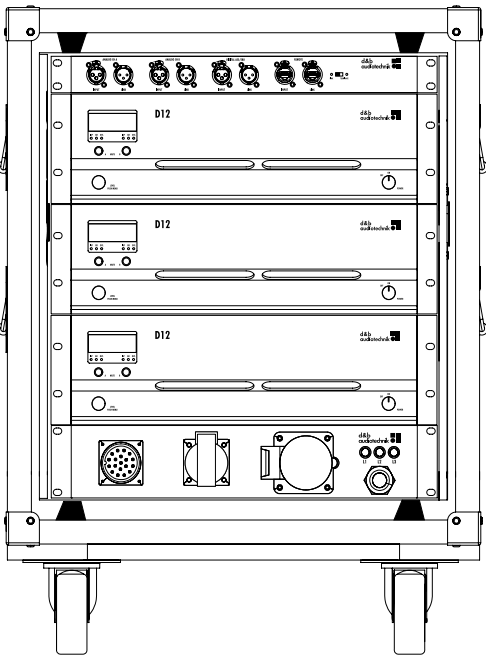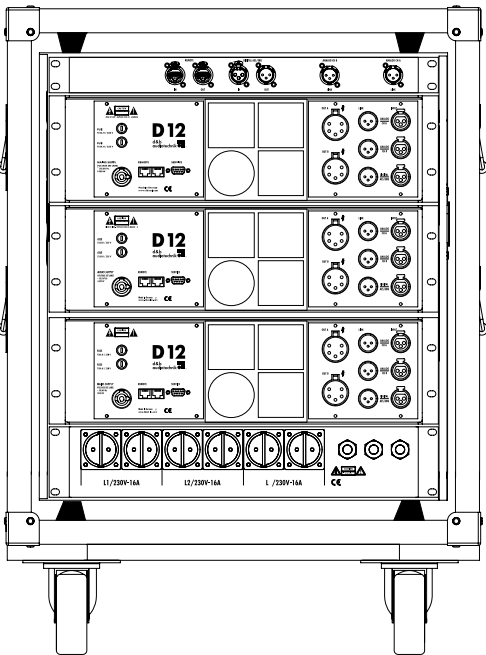
Z5310
D12 Touring rack assembly rear view

1   Touring rack assembly is approved in countries accepting the CE mark
2   Neutrik is a registered trademark of the Neutrik AG, Lichtenstein

The cables and adapters for Dual Channel mode

Z5330.xxx
D80 Touring rack assembly
OUT: 3 x NL8

1 x D80 amplifier
OUT: NL8

1 x D20 amplifier
OUT: NL8

2 x D12 amplifier
OUT: EP5

2 x D12 amplifier
OUT: NL4

Z5330.xxx
D80 Touring rack assembly
OUT: 2 x LKS19

Z5346.000
Adapter 4 x EP5M to NLT8M

Z5345.001
Adapter 4 x NL4 to NLT8M

Z5343.xxx
MC8 Cable NLT8 F/M

Z5320.xxx
MC12SD Cable LKS19 F/M

Z5344.002
Adapter NLT8F to 4 x NLT4M

Z5347.001
Breakoutbox NLT8F/M
to 6 x NL4

Z5344.001
Adapter NLT8F to 4 x NL4

Z5344.000
Adapter NLT8F to 4 x EP5

Z5347.000
Breakoutbox NLT8F/M
to 6 x EP5

Z5341.002
Adapter LKS19M to 6 x NLT4M

Z5341.001
Adapter LKS19M to 6 x NL4

Z5341.000
Adapter LKS19M to 6 x EP5F passive

Z5340.xxx
MC4 Cable NLT4 F/M

Z2299.xxx
MC2.5 Cable NL4

Z2297.xxx
MC4SD Cable EP5

The cables and adapters for 2-Way Active and Mix TOP/SUB modes

Z5330.xxx
D80 Touring rack assembly
OUT: 3 x NL8

D80
1 x D80 amplifier
OUT: NL8

D20
1 x D20 amplifier
OUT: NL8

D12
D12
2 x D12 amplifier
OUT: EP5

D12
D12
2 x D12 amplifier
OUT: NL4

Z5346.000
Adapter 4 x EP5M to NLT8M

Z5345.001
Adapter 4 x NL4 to NLT8M

Z5330.xxx
D80 Touring rack assembly
OUT: 2 x LKS19

Z5343.xxx
MC8 Cable NLT8 F/M

Z5320.xxx
MC12SD Cable LKS19 F/M

Z5348.002
Adapter NLT8F 2-way to 2 x NLT4M

Z5347.001
Breakoutbox NLT8 F/M
to 6 x NL4

Z5348.003
Adapter NLT8F 2-way
to 2 x NL8

Z5348.000
Adapter NLT8F 2-way
to 2 x EP5F

Z5347.000
Breakoutbox NLT8 F/M
to 6 x EP5

Z5321.002
Adapter LKS19M to 3 x NLT4M

Z5321.000
Adapter LKS19M to 3 x EP5F

Z5323.000
Adapter LKS19M to 3 x NL8

Z5340.xxx
MC4 Cable NLT4 F/M

Z5343.xxx
MC8 Cable NLT8 F/M

Z2297.xxx
MC4SD Cable EP5

Z2293.100
MC4SD Cable NL8, 1m
Speaker link

Amplifiers and Software product overview

Amplifiers	Z2700.000	**D6 Amplifier NL4**
	Z2700.400	**D6 Amplifier China NL4**
	Z2700.500	**D6 Amplifier USA NL4**
	Z2600.000	**D12 Amplifier 120/230 V EP5**
	Z2600.001	**D12 Amplifier 120/230 V NL4**
	Z2600.002	**D12 Amplifier 120/230 V NL8**
	Z2600.300	**D12 Amplifier 100/200 V EP5**
	Z2600.301	**D12 Amplifier 100/200 V NL4**
	Z2600.302	**D12 Amplifier 100/200 V NL8**
	Z2600.400	**D12 Amplifier China EP5**
	Z2600.401	**D12 Amplifier China NL4**
	Z2600.402	**D12 Amplifier China NL8**
	Z2750.000	**D20 Amplifier NL4**
	Z2750.400	**D20 Amplifier China NL4**
	Z2750.500	**D20 Amplifier USA NL4**
	Z2710.000	**D80 Amplifier EP5**
	Z2710.001	**D80 Amplifier NL4**
	Z2710.400	**D80 Amplifier China EP5**
	Z2710.401	**D80 Amplifier China NL4**
	Z2710.501	**D80 Amplifier USA NL4**

Amplifier rack assemblies	Z5310.000	**D12 Touring rack assembly EP5**
	Z5310.001	**D12 Touring rack assembly NL4**
	Z5330.001	**D80 Touring rack assembly, CEE 32 A 5P**
	Z5330.xxx	**D80 Touring rack assembly, Nema L21-30 (120 V devices)** on request
	Z5332.xxx	**I/O Panel 19" for Z5330, 1 RU**

Amplifier racks	E7480.000	**D20 Touring Rack 2 RU 19"** SD, shock mounted, handles, window
	E7468.000	**D80 Touring rack 2 RU, 19"** SD, shock mounted, handles, window
	E7419.000	**Touring rack 3 RU, 19"** DD, shock mounted, handles, window
	E7420.000	**Touring rack 6 RU, 19"** DD, shock mounted, handles, window, wheels

Remote network	Z3010.000	**R1 Remote control software**[1]
	Z6118.000	**R60 USB to CAN interface**
	Z6124.000	**R70 Ethernet to CAN interface**
	Z6116.000	**RJ 45 M Terminator**
	Z6122.000	**Bopla mounting clamp**
	Z6123.000	**Bopla mounting clamp upright**

[1] available as a download at www.dbaudio.com

d&b audiotechnik