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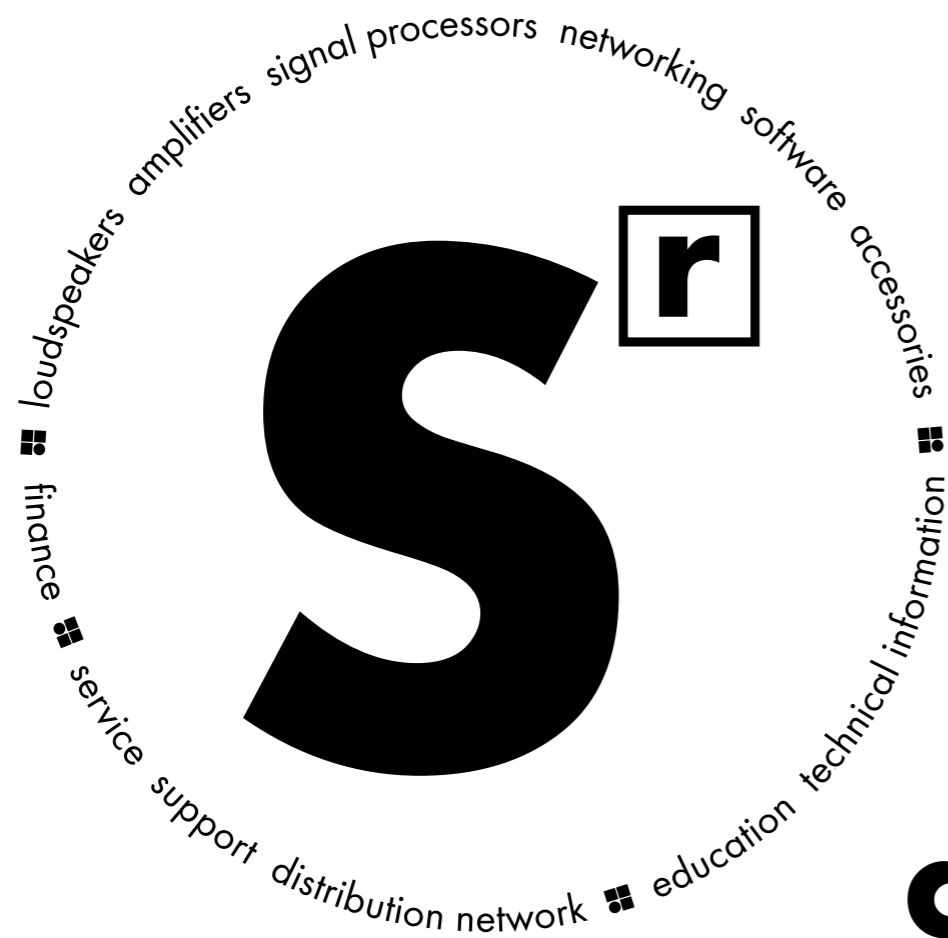
Installation
Amplifiers
Software



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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, signal processors, networking, software and accessories. Right from the outset the d&b audiotechnik approach was to build integrated sound reinforcement systems

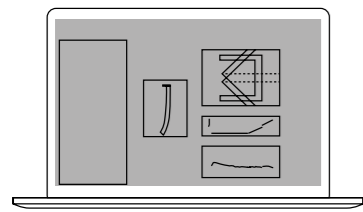
that actually are more than the combination of parts: an entirety where each fits all. Every element is tightly specified, precisely aligned and carefully matched to achieve maximum efficiency. For ease of use, all the user-definable parameters are incorporated, allowing the possibility of adjustment, either

directly, via remote control surfaces, or integrated within wider networks. Neutral sound characteristics leave the user all the freedom needed to realize whatever the brief. At the same time d&b offers 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.

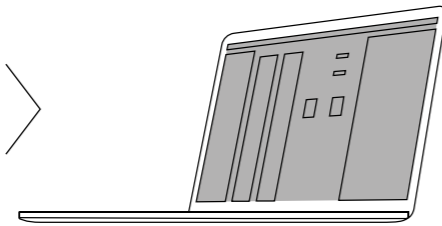
The d&b Workflow

Planning and simulation



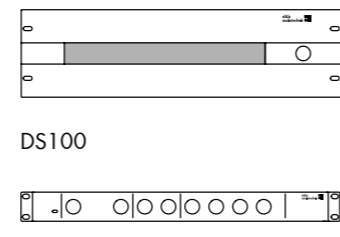
d&b ArrayCalc simulation software

Control and operation



d&b R1 Remote control software

Processing and distribution

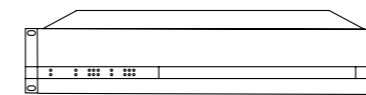


DS100

DS10 and DS20

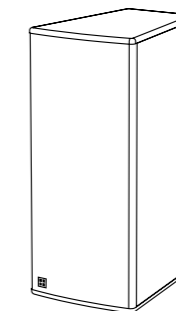
d&b audio network devices

Management and amplification



d&b amplifiers

Reproduction



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

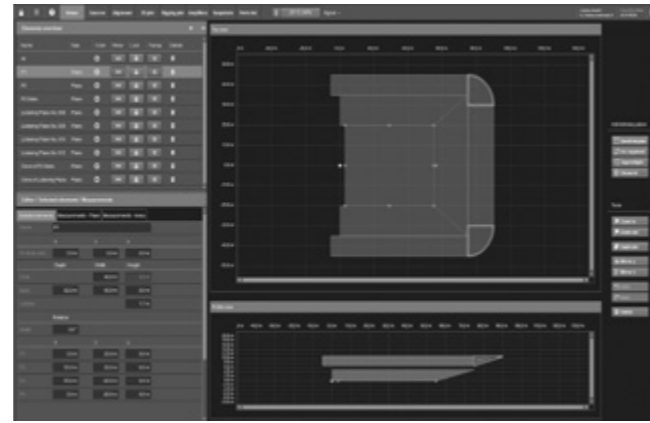
The d&b ArrayCalc simulation software is the prediction tool for d&b systems. This is a comprehensive toolbox for all tasks associated with acoustic design, performance prediction, alignment, rigging and safety parameters. For safety reasons d&b line arrays must be designed using the d&b ArrayCalc simulation software. d&b ArrayCalc is available as a native stand-alone application for both Microsoft Windows¹ (Win7 64-bit or later) and Mac OS X² (10.12 or later) operating systems and is available at www.dbaudio.com, along with further information and video tutorials.

Simulation

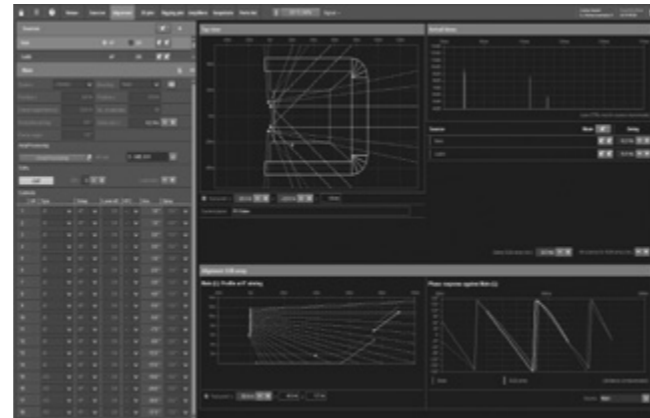
Listening planes can be defined in the venue tab, creating a three dimensional representation of any audience area in a given venue. Special functions assist in obtaining accurate dimensions with laser distance finders and inclinometers. Flown arrays or subwoofer columns can be defined in a project file as single hangs or in pairs. Point source loudspeakers can also be fully integrated as well as a ground stacked SUB arrays. 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 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 the SUB array and a flown source is calculated at a definable reference point. The level distribution resulting from the interaction of all active sources can be mapped onto the audience areas in a three-dimensional view. EASE and DXF data export capabilities are also available.

System setup

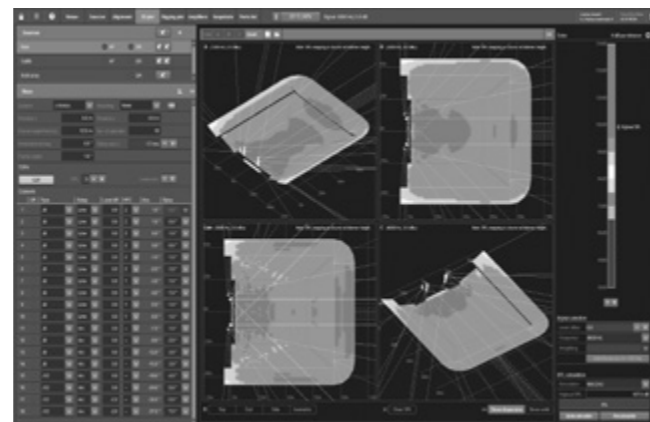
A rigging plot with all necessary coordinates, dimensions and weights of arrays is generated for export and printing and a parts list, detailing all components required. The d&b ArrayCalc Viewer app presents this key information for positioning and



Venue



Alignment



3D Plot quad

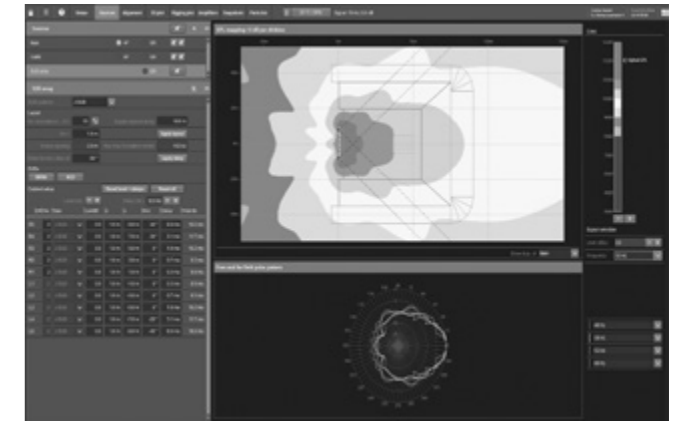
flying a d&b audiotechnik loudspeaker system on a mobile device. Once the system has been designed, calculated and optimized, the project files can be shared via email, AirDrop, or downloaded onto any iOS or Android device.

ArrayProcessing

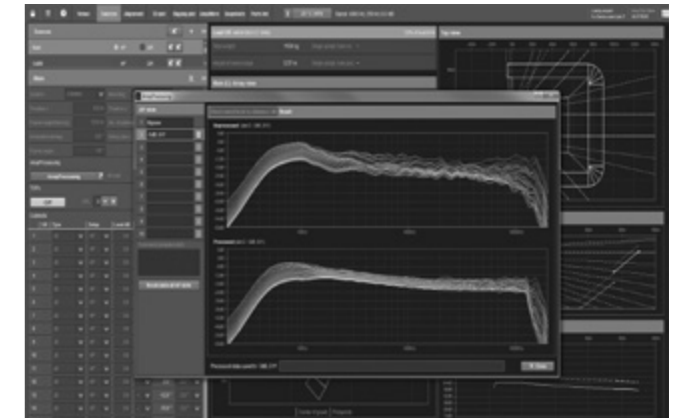
The optional ArrayProcessing function applies powerful filter algorithms to optimize the tonal (spectral) and level (spatial) performance of a line array column over the audience area defined by its mechanical vertical coverage angle. Temperature and Humidity Control (THC) for ArrayProcessing introduces a workflow that permits a system to adapt to changing atmospheric conditions in real time via the R1 Remote control software. 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.

d&b Soundscape

The d&b ArrayCalc Software is also used for planning and simulation of d&b Soundscape. An Early reflections area can be defined in the Venue view, for which the En-Space software will calculate additional convolutions to better represent the early reflections of the original venue. Additionally Positioning areas can also be defined for use in combination with the En-Space software, which are used as a reference plane for positioning Sound objects either from R1 or via external controllers. The d&b Soundscape loudspeaker system is also planned, configured and simulated in ArrayCalc, with loudspeakers assigned to Function groups, for which the Soundscape algorithms calculate individual transfer functions according to their function within the system. DS100 Signal Engine devices can be added to a project, together with the necessary DS10 Audio network bridges. Signal routing can be defined for the whole signal path, from DS100 to loudspeaker, through the DS10 and amplifier devices. A Dante Controller preset file can be automatically generated in ArrayCalc, including the complete Dante routing for the whole system. This preset file can be later loaded in Dante Controller, so that no manual Dante patching is required.



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 X is a trademark of Apple Inc., registered in the U.S. and other countries

The 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. In the typical user workflow, the d&b Remote network takes settings optimized in the ArrayCalc simulation software and applies these to all the d&b devices within the network. In mobile situations R1 Remote control software 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, while the Array verification function automatically identifies the physical position of a loudspeaker in an array to check that the system is cabled correctly. 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, with password protection available to restrict access to advanced functions if necessary. R1 enables d&b devices to be remotely controlled, using both Ethernet (AES70/OCA) and CAN-Bus in parallel. The software runs on both Microsoft Windows¹ (Win7 64-bit or later) and Mac OS X² (10.12 or later) operating systems and is available at www.dbaudio.com, along with further information and video tutorials.

R1 Remote control software

The R1 Remote control software uses the same project file created in ArrayCalc to automatically generate an intuitive graphical user interface including complete details of the simulated system. This user interface can be customized by the user, in order to fit particular user needs. Changes to the project file can be performed at any time in both ArrayCalc and R1. This workflow removes the need to manually transfer data from one software program to the other.

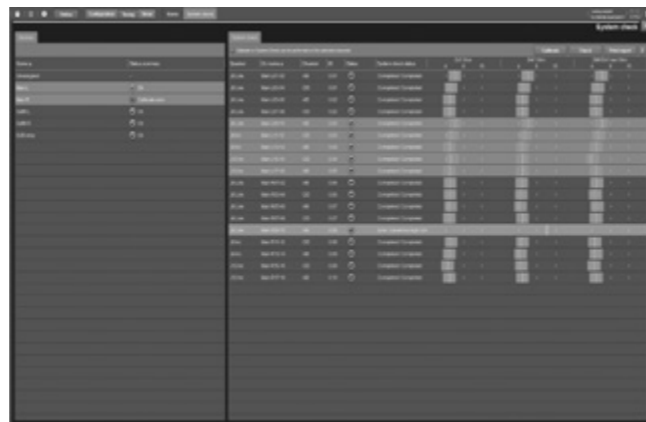
All features, functions and controls from d&b devices can be remotely controlled and/or monitored using R1 Remote control software. It allows each channel of the amplifiers or the DS100 Signal Engine matrix to be controlled and enables the creation of groups of channels. When grouped together, a button 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 physical devices being present or connected. The Home view provides an overview of all views in R1 and access to all user defined remote views. Each user definable Remote view can be populated with control functions of the system and can be optimized for different screen resolutions, either for large monitors or for smaller tablet devices.



R1 home screen



R1 in configuration mode



System check in R1

R90 Touchscreen remote control

In installation projects the R90 Touchscreen remote control can be used for quick and reliable operation of day-to-day functions of a pre-configured d&b system without needing expert level knowledge of audio. The built-in 7" panel PC provides users with one-touch control over power, mute, level, grouping and recall of up to nine AmpPresets, entirely independent of R1.

DS10 and DS20 Meta data

The d&b Audio network bridges interface between audio transport networks and AES3 digital audio signals while also providing distribution of Ethernet control data. The DS10 supports Dante networks, while the DS20 is used for the open standards-based Milan protocol.

d&b Soundscape

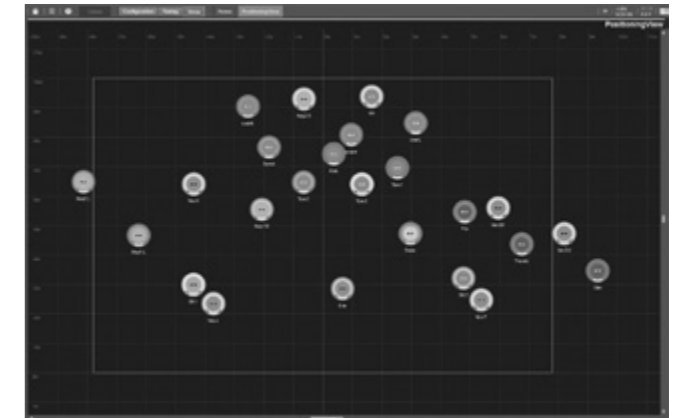
After system planning and simulation in ArrayCalc, the d&b Soundscape is completely configured, monitored and controlled in R1. The DS100 Signal Engine matrix can be operated manually by the controls on the Device view tabs or, alternatively, by controls in a Remote view. The Matrix crosspoint control provides an array of level and delay controls for a user defined range of matrix crosspoints. Input and Output processing is also available, with a combination of Polarity, Level and Delay available on all inputs and outputs. Additionally, an 8-band parametric EQ is provided on all inputs, and a 16-band parametric EQ on all outputs. Special Positioning remote views can be created for En-Space systems, in which Sound objects can be individually placed within the venue. En-Space sampled spaces can be selected within R1 from the available library provided with the En-Space software license. En-Space levels for inputs and outputs can also be controlled within the Device or Remote views, and additional EQ for each of the four zones of the space is provided.

Service functions

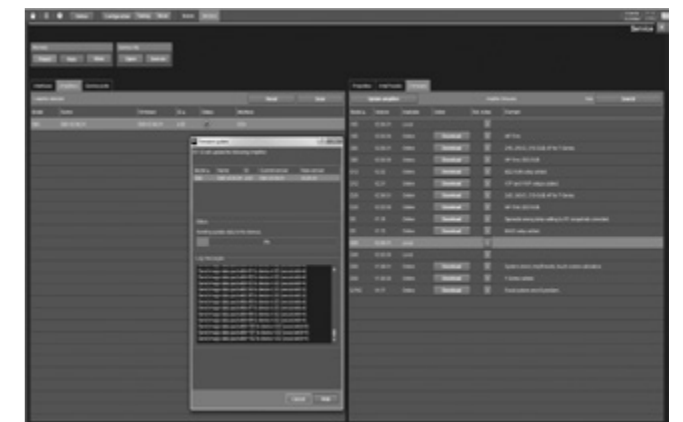
R1 enables the simultaneous firmware update of multiple devices from a central location. The software will automatically search the d&b website and on demand, downloads the latest available firmware versions and R1 Remote control software updates. Defined settings can be created, saved on a computer and loaded into the devices, 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 devices. For service purposes, information may be read from a device, 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.



16-band equalizer in R1



Positioning view in Soundscape



Service, Firmware update in R1

¹ Microsoft Windows is a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries

² Mac OS X is a trademark of Apple Inc., registered in the U.S. and other countries

The d&b Remote network topology

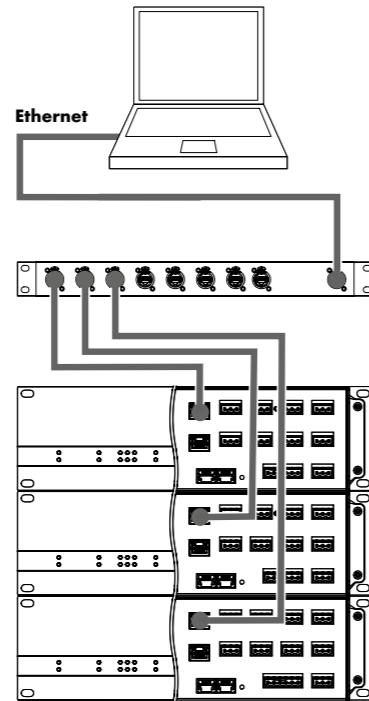
The 10D and 30D amplifiers offer both OCA and CAN-Bus protocols. The 40D uses the OCA protocol via Gigabit Ethernet. d&b amplifiers are controlled using the d&b R1 Remote control software, which is available on both Windows and MAC operating systems. This remote user interface enables d&b amplifiers to be remote controlled, using both Ethernet and CAN-Bus in parallel.

d&b Remote network – OCA/AES70 via Ethernet

The 10D, 30D and 40D amplifiers can be remotely controlled via a standard Ethernet network. This latest generation of d&b amplifiers are all fitted with a dual Ethernet port, 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 V3, 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.



Star topology

| | 10D | 30D | 40D |
|------------------|-----|-----|-----|
| CAN | x | x | |
| OCA/AES70 | x | x | x |

Remote protocols

The DS10 and DS20 Audio network bridges The DS100 Signal Engine

DS10 Audio network bridge

The DS10 Audio network bridge interfaces between Dante networks and AES3 digital audio signals, while also providing distribution of Ethernet control data. Positioned within the signal chain in front of the amplifiers, this 1 RU device expands the d&b system approach. Each unit can deliver up to sixteen Dante network channels via AES3 digital signal outputs. Additionally, four AES3 input channels provide access to the Dante audio network for applications such as a break-in from a Front of House console. The DS10 incorporates an integrated 5-port switch, offering a primary and redundant network for the Dante protocol, as well as advanced functions such as Multicast Filtering and VLAN modes. Using the DS10 Audio network bridge, audio signals and remote control data can be combined using a single Ethernet cable.

DS20 Audio network bridge

The DS20 Audio network bridge supports the open standards-based Milan protocol rather than Dante. Milan (Media integrated local area networking) is a high level interoperability solution based on Audio Video Bridging (AVB) technology. The main advantages are deterministic behaviour (zero network congestion); improved reliability; optimum synchronization and hassle free network setup, as no special settings, such as QoS, need to be set within the switches to ensure delivery.

DS100 Signal Engine

The DS100 Signal Engine is the platform underneath the Soundscape, based on a specialized rack mount 3 RU audio processor with Audinate Dante networking. It provides a 64 x 64 audio matrix with level and delay adjustments at all cross points. Additional software modules provide dynamic source positioning and emulated acoustics functions. The DS100 is a versatile tool for use within complex audio systems to route and distribute multiple audio channels to numerous amplifiers driving loudspeaker positions and zones, show relay and break out rooms. The networking capabilities with a Dante enabled processor are significant, particularly for busy, multi-room complexes. The DS100 completely integrates with the overall d&b system approach, including loudspeakers, amplifiers, rigging, transport and networking accessories and the DS10 Audio network bridge. The complete system is designed and optimized in the d&b ArrayCalc simulation software, and controlled via the d&b R1 Remote control software.



The DS10 Audio network bridge front view



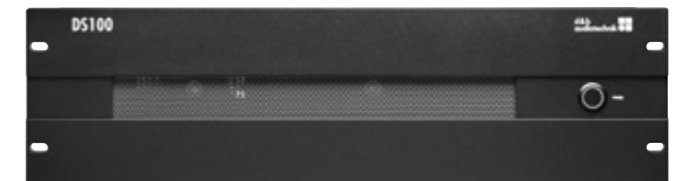
The DS10 Audio network bridge rear view



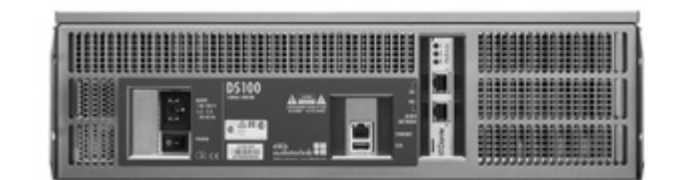
The DS20 Audio network bridge front view



The DS20 Audio network bridge rear view



The DS100 Signal Engine front view



The DS100 Signal Engine rear view

The 10D, 30D and 40D 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 and 2-Way Active mode, to drive appropriate loudspeakers actively.

In addition, 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 also have the functionality to enable system status monitoring and protection features, increasing the longevity of d&b systems. These features are designed for incorporation in applications specified to the requirements of sound systems for emergency purposes. The AutoStandby option automatically changes the amplifiers to Standby mode after a predefined time without any signal to individually specified inputs. The AutoWakeup function reactivates an amplifier when an input signal is active.

A powerCON¹ 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 AES3 signal inputs with link outputs. The AES3 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. Integration and interoperability of d&b installation amplifiers is possible with a wide range of third party system manufacturers, including Q-SYS, Crestron, Beckhoff, AMX and MediaMatrix. All installation amplifiers also incorporate separate Euroblock connectors for General Purpose Input/Output (GPIO) for easy control and monitoring.

For mobile and touring applications, the d&b D6, D20 and D80 amplifiers are recommended. Further information is available in the d&b D Amplifier and Software brochure, which is available to download from www.dbaudio.com.



10D amplifier



30D amplifier



40D amplifier

Comparison of the d&b amplifiers

| | 10D | 30D | 40D |
|--------------------------------------|--|--|---|
| Output channels | 4 | 4 | 4 |
| Input channels | 4 x AES3 and 4 x analog | 4 x AES3 and 4 x analog | 4 x AES3 and 4 x analog |
| Latency | 0.3 msec | 0.3 msec | 0.3 msec |
| User equalizers (per channel) | 2 x 16-band | 2 x 16-band | 2 x 16-band |
| Delay | 10 sec/3440 m | 10 sec/3440 m | 10 sec/3440 m |
| Configurations | Current d&b loudspeakers and linear mode except A, SL, J, V-Series, M2 and B22-SUB | Current d&b loudspeakers and linear mode except SL-Series | Current d&b loudspeakers and linear mode except GSL, SL-SUB, J-Series, M2 and B22-SUB |
| Maximum output power | 4 x 350 W into 8 ohms 4 x 700 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 2400 W into 4 ohms |
| Output routing | 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 | Phoenix Euroblock | Phoenix Euroblock | Phoenix Euroblock |
| GPIO connector | Phoenix Euroblock | Phoenix Euroblock | Phoenix Euroblock |
| Fault contact | Phoenix Euroblock | Phoenix Euroblock | Phoenix Euroblock |
| Cable compensation | LoadMatch | LoadMatch | LoadMatch |
| Power supply | Universal range switched mode power supply with active PFC | Universal range switched mode power supply with active PFC | Autosensing switched mode power supply with active PFC |
| Mains voltage | 100 - 240 V, 50 - 60 Hz | 100 - 240 V, 50 - 60 Hz | 100 - 127/208 - 240 V, 50 - 60 Hz |
| Weight (kg/lb) | 10.6/23.4 | 10.6/23.4 | 13.3 kg/29.3 lb |
| Dimensions | 2 RU x 19" x 435 mm | 2 RU x 19" x 435 mm | 2 RU x 19" x 465 mm |
| Remote | OCA via Ethernet/CAN | OCA via Ethernet/CAN | OCA/AES70 via Ethernet |
| Airflow | | | |

The d&b amplifiers

Input routing

The 10D, 30D and 40D amplifiers provide four analog inputs, four digital AES3 channels through two inputs as well as separate digital links, all on Euroblock connectors. The digital input pairs contain independent Sample Rate Converters (SRC). Each input features a separate input gain, meaning sources with various input sensitivities can be used without requiring an external mixing device. All eight individual inputs can be used simultaneously, then summed and routed to any of the four outputs.

System status monitoring

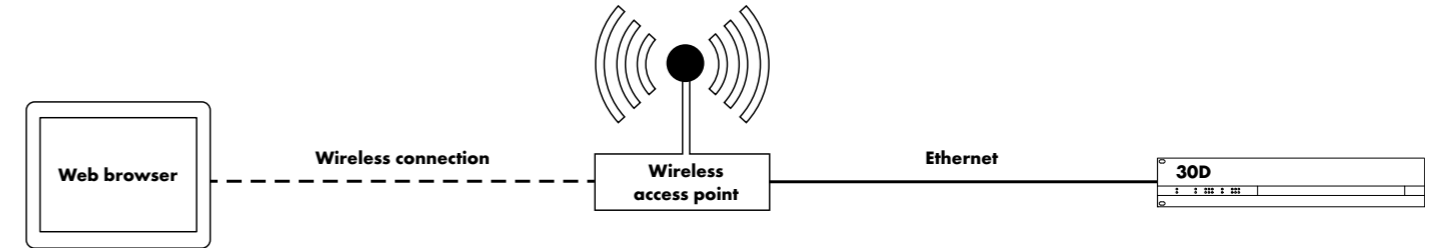
d&b amplifiers incorporate specific functions to check, monitor and control a d&b system. The System check feature can verify the status of a complete reinforcement system by measuring the impedance of the connected loudspeakers. Each driver in the system is checked and compared to the default impedance values for each particular cabinet. This calibration ensures that each loudspeaker performs within a tolerance band, and indicates possible damage to system components. The Input monitoring function can detect an incoming pilot signal regardless of whether this input is routed to an output. The Load monitoring function can detect a possible loudspeaker malfunction. This feature automatically checks load impedance to calculate individual driver status and report any failure. The Fallback and Override features ensure that any secondary or emergency signal is transmitted when required. The Fallback function ensures that the device will switch from the program material to an alternative source via a different input. The Override feature ensures that any general message or emergency signal takes priority. These functions can be triggered manually or automatically. These capabilities mean that the 10D, 30D and 40D amplifiers are suitable for applications specified to the requirements of evacuation systems for emergency purposes.

GPIO and General Fault Contact

The d&b installation amplifiers incorporate separate Euroblock connectors for General Purpose Input/Output (GPIO) and a fault contact providing additional digital control lines. This enables the use of external devices to control and detect certain functionalities within the 10D, 30D and 40D amplifiers. The GPIOs can be configured to power the device, mute individual or all channels, change the AmpPreset or to check the Mains Voltage, Power or individual channel status. The separate fault contact allows a general device error to be remotely indicated.

Integrated Web Remote interface

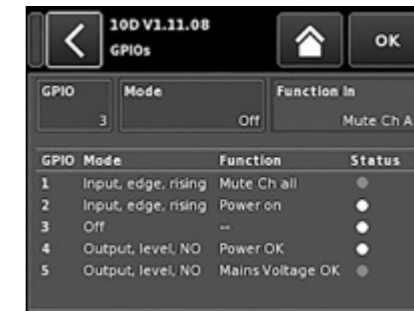
The 10D, 30D and 40D amplifiers can be controlled via the integrated web interface, which enables the remote control of a single device using a browser window. Once the amplifier is connected to the d&b Remote network, an intuitive user interface becomes available after the IP address of the device is entered into the address bar of a web browser. Each amplifier in a system is managed individually, meaning that a new window or tab will be required for each device. The amplifiers can be accessed using a mobile device if the network features a wireless access point.



Application controlled via web browser for small setups



Input gain



GPIOs

The 10D and 30D amplifier

The installation specific four channel 10D and 30D amplifiers are intended for permanent integration with applications that require low to medium Sound Pressure Level (SPL) capabilities. The Digital Signal Processing platform of the 10D and 30D provides a linear mode as well as configurations for smaller d&b loudspeakers. Applications which demand the highest Sound Pressure Levels require the higher output power of the d&b 40D amplifier. The DSP integrated within the 10D and 30D incorporates comprehensive loudspeaker management, switchable filtering functions as well as user definable equalization and delay capabilities. This includes two 16-band equalizers, providing optional parametric, asymmetric, shelving or notch filtering and up to 10 s (= 3440 m/11286 ft) signal delay, all of which can be applied independently to each channel. The 10D and 30D are accessible via the d&b Remote network, either via Ethernet using the Open Control Architecture protocol (OCA) or CAN-Bus. Both can be controlled using the integrated web interface, which enables access via a browser, or using the d&b R1 Remote control software. The devices themselves contain LEDs to display power, input, data and mute status. The LoadMatch function integrated within the 10D and 30D amplifiers electrically compensates for the properties of loudspeaker cable used. Both devices incorporate Class D amplifiers utilizing a power supply with active Power Factor Correction (PFC) suitable for mains voltages 100 V - 240 V, 50 - 60 Hz. Input and output connectors are all Euroblock sockets. The 10D and 30D integrate with the d&b Remote network using either the OCA via Ethernet protocol or CAN-Bus using RJ 45 connectors.

Control and indicators 10D • 30D

POWERMains power switch
ISP, GR, OVL A/B LED indicators

Digital Signal Processing 10D • 30D

Equalizer2 x 16-band PEQ/notch/shelving/asymmetric
Latency analog and digital inputs.....0.3 msec
Delay setting 0.3 - 10000 msec
Function switchesd&b loudspeaker specific circuits
Frequency generatorPink noise or Sine wave
Sampling rate.....96 kHz/27 Bit ADC/24 Bit DAC

Connectors 10D • 30D

INPUT ANALOG (A1 - A4)3-pin male Phoenix Euroblock
ANALOG LINK (A1 - A4).....3-pin male Phoenix Euroblock
INPUT DIGITAL (D1 - D4) 3-pin male Phoenix Euroblock, AES3
DIGITAL LINK (Output) 3-pin male Phoenix Euroblock, AES3
Sampling Digital AES3.....48 kHz/96 kHz
SPEAKER OUTPUTS A/B/C/D4-pin Phoenix Euroblock female
CAN 2 x RJ 45 parallel
ETHERNET 2 x RJ 45, 10/100 Mbit Ethernet
GPIOs 1 - 5 and GND (6)6-pin Phoenix Euroblock male
FAULT contact.....3-pin Phoenix Euroblock male
Mains connector.....powerCON¹

Data (linear setting with subsonic filter) 10D • 30D

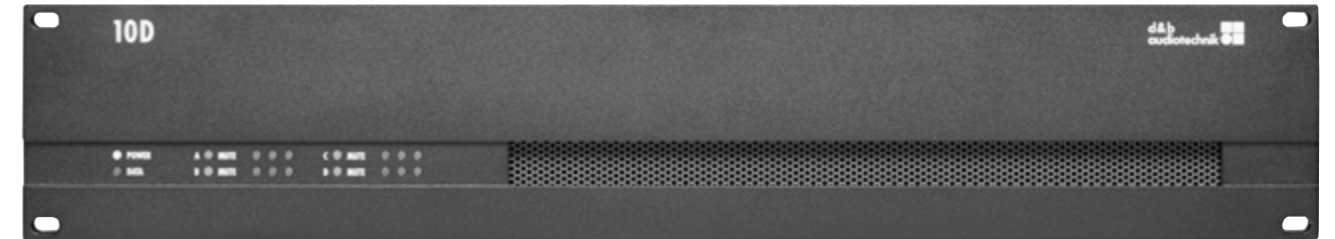
Maximum output power per channel (THD + N < 0.5 %, all channels driven).....
CF = 6 dB at 4/8 ohms...2 x 700/350 W • 2 x 1000/800 W
CF = 12 dB at 4/8 ohms...2 x 700/350 W • 2 x 1600/800 W
S/N ratio (unweighted, RMS)
Analog input 101 dB • 104 dB
Digital input..... 103 dB • 106 dB

Power supply 10D • 30D

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

Dimensions, weight 10D • 30D

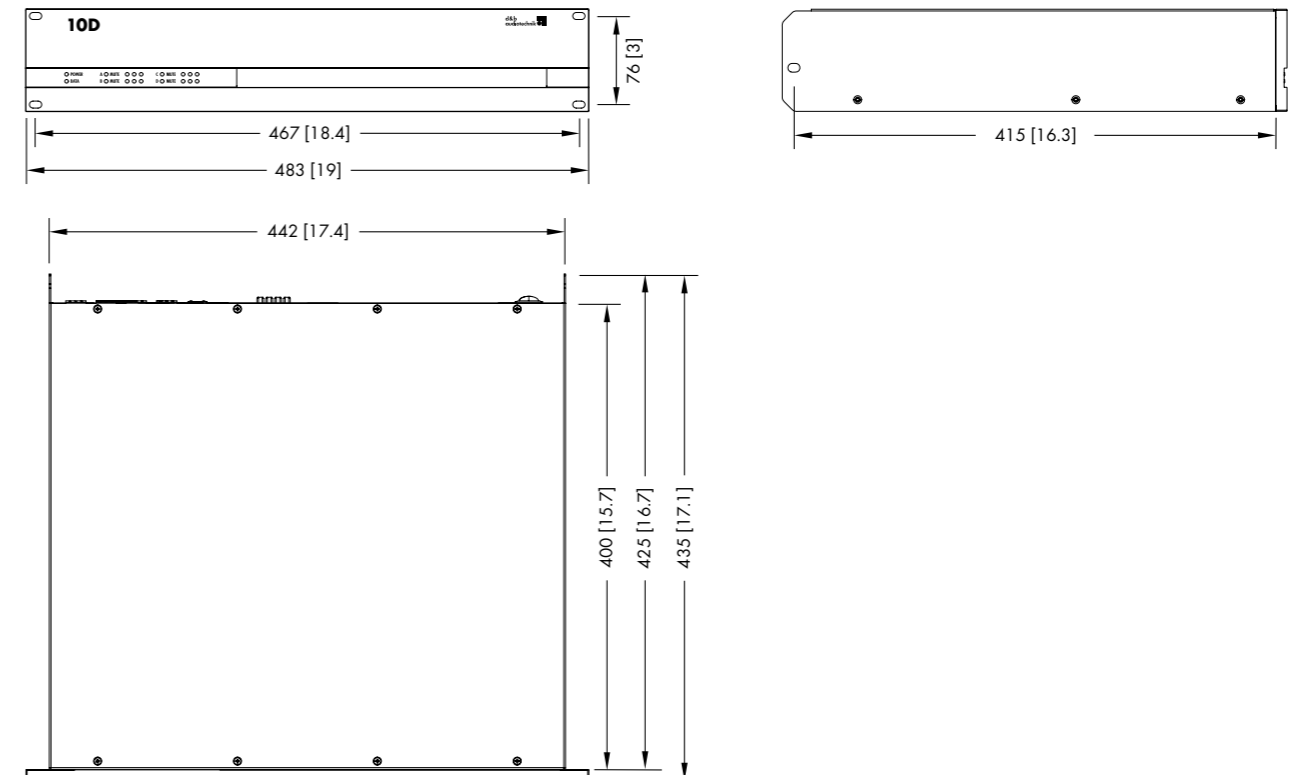
Height x width x depth.....2 RU x 19" x 435 mm/17.1"
Weight..... 10.6 kg (23.4 lb)



Front view of 10D and 30D amplifier, represented by the 10D amplifier



Rear view of 10D and 30D amplifier, represented by the 10D amplifier



10D and 30D amplifiers

The 40D amplifier

The 40D amplifier represents the next generation of high power four channel Class D amplifiers. It is developed and manufactured by d&b using Digital Signal Processing (DSP) to incorporate loudspeaker specific configurations and user definable setups, equalization and delay functions. The high power capabilities provide increased power to fully drive all applicable d&b loudspeaker cabinets and sufficient headroom for any future systems. The DSP integrated within the 40D incorporates comprehensive loudspeaker management, switchable filtering functions as well as user definable equalization and delay capabilities. This includes two 16-band equalizers, providing optional parametric, asymmetric, shelving or notch filtering and up to 10 s (= 3440 m/11286 ft) signal delay, all of which can be applied independently to each channel. The front panel display of the 40D provides a wealth of monitoring features such as device status and fault indication. Being a read-only display, any accidental changes to the amplifier setup are reliably prevented. The 40D is accessible via the d&b Remote network via Ethernet using the Open Control Architecture protocol (OCA) only. The 40D is controlled using the integrated web interface, which enables access via a browser, or using the d&b R1 Remote control software. The LoadMatch function integrated within the 40D amplifier electrically compensates for the properties of loudspeaker cable used. The 40D incorporates Class D amplifiers utilizing a power supply with active Power Factor Correction (PFC) suitable for mains voltages 100 - 127 V / 208 - 240 V, 50 - 60 Hz. Input and output connectors are all Euroblock sockets. The 40D integrates with the d&b Remote network using the OCA via two Gigabit Ethernet ports on RJ 45 connectors.

Control and indicators

RESETRecessed push-button (rear panel)
Color touchscreen.....4.3" / 480 x 272 pixel

Digital Signal Processing

Conversion 96 kHz
Latency analog and digital (AES3) inputs.....0.3 msec.
Equalizertwo user definable 16-band equalizers
..... Filter types: PEQ/Notch/HiShlv/LoShlv/Asym
Delay.....0.3 msec. - 10 sec.
Frequency generator Pink noise or Sine wave 10 Hz - 20 kHz

Audio input connectors

Analog INPUT (A1 - A4)3-pin Phoenix Euroblock male
CMRR @ 100 Hz/1 kHz/10 kHz.....>80/>80/>70 dB
Maximum input level (balanced/unbalanced)+25/+18 dBu
.....+26.2 dBu @ 0 dBFS
Digital INPUT (D1/2, D3/4)..... 3-pin
.....Phoenix Euroblock male, AES3
Sampling frequency.....44.1, 48, 96, 192 kHz
Word length.....16 - 24 bit
Digital LINK (D1/2, D3/4).....3-pin Phoenix Euroblock male

Output connectors

SPEAKER OUTPUTS A/B/C/D2 x 4-pin
.....Phoenix Euroblock female

Network connectors

ETHERNET2 x RJ 45
.....Dual Ethernet port with built-in 2-port Ethernet switch
.....1 Gbit / 100 Mbit

GPIOs/FAULT contact

GPI8 x Opto-coupled (galvanic isolation)
.....9-pin Phoenix Euroblock male
GPO4 x Low-Side-Switch-Relay
.....5-pin Phoenix Euroblock male
FAULT.....3-pin Phoenix Euroblock male

Audio power outputs

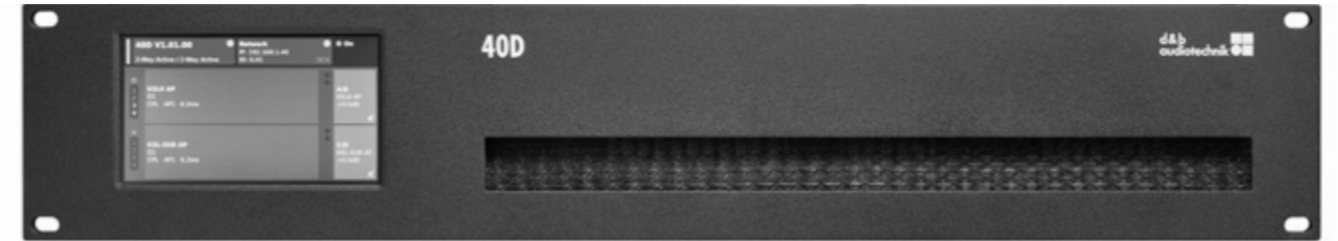
Output power.....4 x 2000 W into 8 ohms/
.....4 x 2400 W into 4 ohms
.....Signal: EIA-426-B noise with CF =12 dB
Frequency response (-1 dB, Linear mode)35 Hz - 25 kHz
THD+N (20 Hz - 20 kHz)<0.01 %
Crosstalk (20 Hz - 20 kHz).....<-70 dB

Power supply

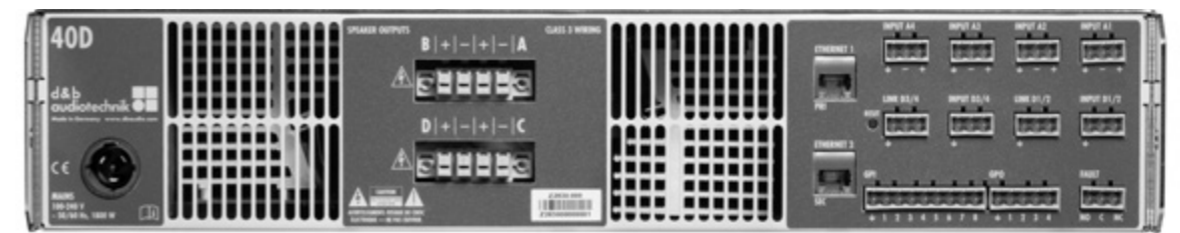
Switched mode power supply with automatic mains range selection
..... and active Power Factor Correction (PFC).
Mains connectorpowerCON® TRUE1 TOP
Rated mains voltage high range 208 - 240 V, 50 - 60 Hz
Rated mains voltage low range 100 - 127 V, 50 - 60 Hz

Dimensions, weight

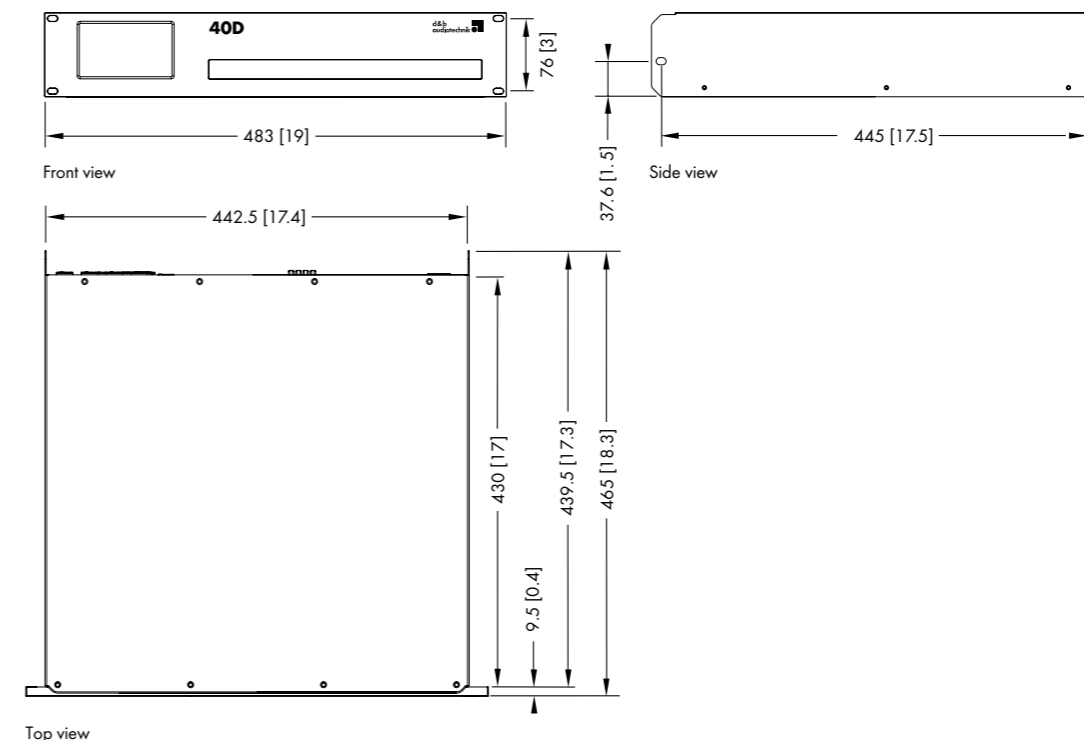
Height x width x depth.....2 RU x 19" x 465 mm /18.3"



The 40D amplifier front view



The 40D amplifier rear view



Top view

40D amplifier dimensions in mm [inch]

Installation amplifiers and software product overview

| | | |
|------------------------------------|----------------------------|---|
| Processing and distribution | Z4010.000 | DS10 Audio network bridge |
| | Z4011.000 | DS20 Audio network bridge |
| | Z4100.000 | DS100 Signal Engine |
| Amplifiers | Z2760.000 | 10D Amplifier |
| | Z2760.400 | 10D Amplifier China |
| | Z2760.500 | 10D Amplifier USA |
| | Z2770.000 | 30D Amplifier |
| | Z2770.400 | 30D Amplifier China |
| | Z2770.500 | 30D Amplifier USA |
| | Z2830.000 | 40D Amplifier |
| | Z2830.400 | 40D Amplifier China |
| | Z2830.500 | 40D Amplifier USA |
| Z2830.600 | 40D Amplifier India | |
| Amplifier accessories | Z2622.000 | Accessory kit for 10D/30D Phoenix Euroblock connectors |
| | Z2623.000 | Accessory kit for 40D Phoenix Euroblock connectors |
| Remote network | Z6118.000 | R60 USB to CAN interface |
| | Z6124.000 | R70 Ethernet to CAN interface |
| | Z6126.000 | R90 Touchscreen remote control |

