

The Stage monitors



The Stage monitors

Where **Stage monitors** are concerned, d&b applies the same system concept as it does for its front of house systems. Stage monitoring can seriously enhance the performance of the artist and the success of a production. That's why d&b has always maintained that there should be no difference in the quality of sound between front of house and the stage, and that stage monitoring requirements are possibly even more demanding. Consequently d&b's Stage monitors have compact dimensions, functional design and high performance, together with well-defined dispersion control, resulting in systems that are visually discreet, exceptionally powerful and guarantee a high feedback stability. The "d&b specific" combination of a neutral, intelligible sound character that is clear and transparent even at high sound pressure levels provides the engineer with an efficient, effortless tool and a neutral platform. This is achieved through d&b's unique design approach based on a holistic view of the interaction between loudspeakers, electronics and mechanical accessories.

MAX and **MAX12** are 2-way loudspeakers with a coaxially mounted 15" or 12" LF driver respectively and a 2" exit HF compression driver. By virtue of the low profile cabinet design these loudspeakers are ideal for use in visually sensitive situations. Although the HF and LF drivers have separate magnet structures, the d&b design to couple the high frequency horn throat to the low frequency diaphragm creates a 60° radial mid/high horn. While this exhibits a slightly increased directivity towards higher frequencies, the performance is still remarkably close to that of a constant directivity horn. The MAX/MAX12 loudspeakers are passively crossed over, are able to be driven by any appropriate linear power amplifier and may optionally be used in a 2-Way Active mode to increase headroom, particularly in the high frequency range. They can be configured with d&b subwoofers as a drumfill or with a high stand adapter for small PA applications. In addition MAX when fitted with optional MAN CF4 stud plates serve as a downfill for flown C4 systems.

The **M4** is a 2-way high performance stage monitor employing an integrated 15"/1.3" exit coaxial driver, with a CD horn and passive crossover network. The M4 distinguishes itself through a remarkable midrange presence and a dry and deep low end. Combined with the excellent feedback stability, high sensitivity and its discreet design it lines up perfectly with d&b's state of the art M2 monitor. In its 50° x 70° dispersion configuration it provides an accurately defined coverage area on stage and when used upright it is transformed into a powerful PA system. The M4 can optionally be operated in 2-Way Active mode by changing the D12's configuration

without any modifications to the loudspeaker. For its compact dimension and mere 20 kg (44 lb) it produces an incredible 134/138 dB SPL when driven passively with D6/D12 respectively or 140 dB SPL when driven actively with the D12.

The **M2** is d&b's definitive actively crossed over reference stage monitor system. The bass-reflex enclosure is optimized for minimal air compression and houses two 12" LF drivers, which are powered by the d&b D12 amplifier using SenseDrive technology. The 1.4" exit HF compression driver operates into a very low distortion horn with a waveguide oriented design. This superlative cabinet achieves a constant directivity of 45° x 60° (h x v) above the unusually low frequency of 600 Hz, resulting in substantial feedback stability and a very direct voice reproduction. Finally, its peak sound pressure level of 143 dB at 1m will satisfy even the unhealthiest of SPL requests.

The d&b **D6** and **D12** dual channel amplifiers realize the complete system. They provide two different power ranges, incorporate d&b loudspeaker specific configuration information, including the Stage monitor loudspeakers, the exceptions being the M2 and the 2-Way Active mode for MAX, MAX12 and M4 that can only be driven by the more powerful D12. Both amplifiers have analog and digital signal inputs and links. These devices are specially designed and manufactured by d&b utilizing Digital Signal Processing and include switchable functions for precisely tailoring system response for a wide variety of applications. A user definable 4-band parametric equalizer and a delay capability is provided in every amplifier channel to reduce the need for external processing devices. The D12 amplifier additionally offers a 2-Way Active mode and a mixed TOP/SUB output configuration, output connector options as well as d&b SenseDrive.

Both amplifiers have **d&b Remote network** interfaces enabling control and monitoring of a large number of system functions and extensive system integration capabilities. d&b Load monitoring and System check are also incorporated to remotely monitor loudspeaker driver status.

To complete the picture, the **Stage monitors** maintain the d&b maxim of compatibility between systems enabling them to be easily combined with all other d&b products. Together these components create complete, integrated, flexible reinforcement solutions from the simplest to the most complex situations.

The Stage monitors



MAX12 monitor



MAX monitor



M4 monitor



M2 monitor



D6 amplifier



D12 amplifier

The D6 and D12 amplifiers

D6 and D12 amplifiers

The D6 and D12 are dual channel amplifiers developed and manufactured by d&b utilizing Digital Signal Processing (DSP) to incorporate loudspeaker specific configuration information and functions. These are designed for use with d&b loudspeakers, have both digital and analog signal inputs as well as link outputs, remote control and monitoring capabilities and switch mode power supplies. The level control incorporates a digital rotary encoder enabling selection of all operating modes in conjunction with a Liquid Crystal Display (LCD).

Loudspeaker specific configurations for current d&b loudspeakers and a linear mode are contained within them, the exception being that the D6 does not include 2-Way Active and B2-SUB configurations.

The digital elements of the D6 and D12 are specified and constructed to achieve the best possible audio performance while maintaining a very low latency of 0.3 msec. The Digital Signal Processing is used to provide the loudspeaker specific configurations, sophisticated protection circuits modelling thermal and mechanical driver behaviour, and switch functions.

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

The D6 and D12 amplifiers also detect incoming Pilot signals at its input (Input monitoring) and can use Load monitoring and System check functions to determine 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 used to report the system condition after a show.

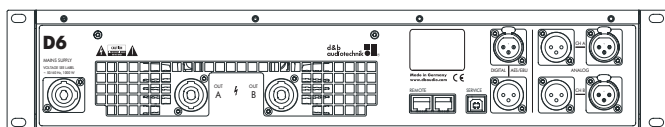
d&b Load monitoring, on the other hand, enables automatic and continuous impedance monitoring and along with Input monitoring is designed for incorporation within applications specified to the requirements stated in the International Standard IEC 60849 'Sound Systems for Emergency Purposes'. Both can determine the status of an LF or HF driver in systems with multiple elements, even if these are crossed over passively.

The D6 utilizes a switch mode power supply with PFC suitable for mains supply voltages 100 V/115 V/200 V/230 V, 50 - 60 Hz whilst the D12 utilizes an autosensing switch mode power supply for mains voltages 115/230 V, 50 - 60 Hz (optional 100/200 V). Both power supplies have over voltage protection and each amplifier has a temperature and signal controlled fan to cool the internal assemblies.

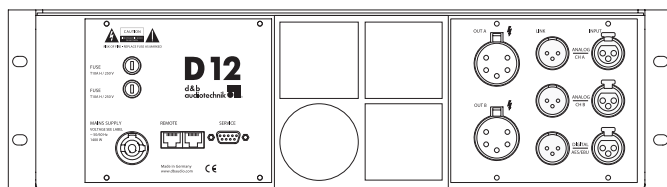
The 2 RU lightweight D6 is specifically designed to deliver medium power into low impedance loads between 4 and 16 ohms. The 3 RU D12 is specifically designed to produce high power into low impedance loads, typically those between 4 and 16 ohms. Due to differences in impedance response against frequency, the maximum number of cabinets driven by each D12 channel varies depending on the loudspeaker type.

Apart from selectable output configurations for dual channel, mixed TOP/SUB and 2-Way Active mode, the D12 also provides d&b SenseDrive for use with the LF drivers in d&b active loudspeakers and subwoofers.

Both amplifiers house an I/O panel containing: analog signal inputs with link outputs for each channel, an AES/EBU digital input with a link output and NL4 loudspeaker outputs. The D12 I/O panel additionally offers the options of EP5 or NL8 loudspeaker outputs. The two RJ 45 REMOTE sockets at the rear of the D6 and the D12 amplifiers integrate them into the d&b Remote network via CAN-Bus, enabling remote control and/or monitoring. A USB-B (D6) or a SUB-D9 (D12) SERVICE interface is provided to enable future firmware updates containing new loudspeaker configurations or additional functions to be loaded to the units.



D6 rear view



D12 rear view

The D6 and D12 amplifier data

D6 Display

ISP, GR, OVL A/B.....LED indicators
Liquid Crystal Display (LCD).....Graphic display/120 x 32 Pixel

D6 Controls

POWER, MUTE / LEVEL.....Switches/rotary encoder
Function switches.....Loudspeaker specific circuits
4-band equalizer.....Optional PEQ/Notch
Delay setting.....0.3 - 340 msec. with 0.1 msec. detents
Configurations.....Current d&b loudspeakers and linear mode
.....except 2-Way Active and B2-SUB
Frequency generator.....Pink noise or Sine wave

D6 Connectors

INPUT/LINK ANALOG A/B.....3 pin XLR female/male¹
INPUT/LINK DIGITAL AES/EBU.....3 pin XLR female/male¹
Sampling rate.....48 kHz /96 kHz
OUT CHANNEL A/B.....NL4
REMOTE.....2 x RJ 45 parallel
SERVICE.....USB Type B

D6 Protection circuits

Mains inrush current limiter.....1.5 A RMS at 230 V
Loudspeaker switch on delay.....Approx. 2 sec.
Overvoltage protection.....Up to 400 VAC

D6 Data (linear setting with subsonic filter)

Rated output power (THD+N < 0.1%).....
.....2 x 350 W into 8 ohms, both channels are driven
.....2 x 600 W into 4 ohms, both channels are driven
S/N ratio (unweighted, RMS).....>110 dB

D6 Digital Signal Processing

Sampling rate.....96 kHz/27 Bit ADC /24 Bit DAC
Basic delay/latency analog input.....0.3 msec.

D6 Power supply

Switch mode power supply for.....
.....100/115/200/230V, 50 - 60 Hz
Mains connector.....PowerCon^{® 2}

D6 Remote network

Remote network.....CAN-Bus

D6 Dimensions, weight

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

D12 Display

ISP, GR, OVL A/B.....LED indicators
Liquid Crystal Display (LCD).....Graphic display/120 x 32 Pixel

D12 Controls

POWER, MUTE / LEVEL.....Switches/rotary encoder
Function switches.....Loudspeaker specific circuits
4-band equalizer.....Optional PEQ/Notch
Delay setting.....0.3 - 340 msec. with 0.1 msec. detents
Configurations.....Current d&b loudspeakers and linear mode
Frequency generator.....Pink noise or Sine wave

D12 Connectors

INPUT/LINK ANALOG A/B.....3 pin XLR female/male¹
INPUT/LINK DIGITAL AES/EBU.....3 pin XLR female/male¹
Sampling rate.....48 kHz /96 kHz
OUT CHANNEL A/B.....Optional EP5/NL4/NL8
REMOTE.....2 x RJ 45 parallel
SERVICE.....SUB-D9 female

D12 Protection circuits

Mains inrush current limiter.....5 A RMS at 230 V
Loudspeaker switch on delay.....Approx. 2 sec.
Overvoltage protection.....Up to 400 VAC

D12 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
S/N ratio (unweighted, RMS).....>110 dB

D12 Digital Signal Processing

Sampling rate.....96 kHz/27 Bit ADC /24 Bit DAC
Basic delay/latency analog input.....0.3 msec.

D12 Power supply

Autosensing switch mode power supply for.....
.....115/230 V, 50 - 60 Hz
.....optional 100/200 V, 50 - 60 Hz
Mains connector.....PowerCon^{® 2}

D12 Remote network

Remote network.....CAN-Bus

D12 Dimensions, weight

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

¹ XLR pin assignment analog, inputs and links: 1 = GND, 2 = pos. signal, 3 = neg. signal
XLR pin assignment digital, input and link: 1 = GND, 2 = signal, 3 = signal

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

The d&b Remote network

d&b Remote network

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 PC in the control room, at the mix position, or on a wireless tablet PC in the auditorium.

This central access to all functions, controls and detailed system information unlocks the full potential of the d&b system approach. It effectively speeds up the execution of various tasks during configuration and offers significant advantages during operation. Extensive monitoring and diagnostics enables detailed examination of the system performance. Control can be undertaken on individual loudspeakers, on multiple groups of loudspeakers or formed into groups that address the complete system.

The flexibility and scalability of this approach, coupled with the inclusion of several types of interfaces, allow the d&b Remote network to be deployed to address the differing control and monitoring requirements in a broad variety of mobile and installed applications, regardless of their size.

In mobile applications, system engineers may use the remote network to verify and tune the system. System check and device diagnostics enable detailed monitoring as and when required, before, during, or after a show.

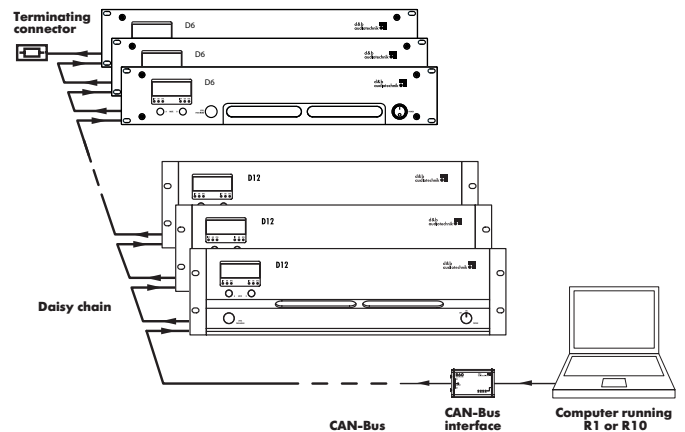
In installation projects system integrators can configure the remote network to offer access to different levels of control tailored to the operational demands. For example, simplified functionality for daily use and more complex functionality when multiple applications are required within one installation. Input and Load monitoring coupled with automatic error messages allow installation operators to ensure the optimum performance at all times.

d&b Remote interfaces

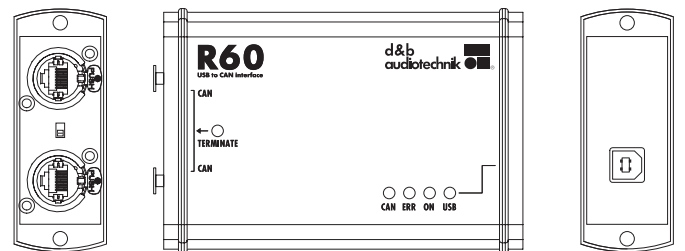
Every d&b amplifier is fitted with a Remote interface for the Controller Area Network (CAN) Bus. Each D6 and D12 has two REMOTE connectors (RJ 45) to enable the CAN-Bus signal to be daisy chained through them. A simple d&b Remote network application consists of a computer running R1 Remote control software, an R60 USB to CAN interface, CAT 5 shielded twisted pair cable with shielded RJ 45 connectors and d&b D6 or D12 amplifiers.

Up to five R60 USB to CAN interfaces can be operated with one computer running R1, while a maximum of 504 amplifiers can be incorporated into one application. The maximum bus cable length of a d&b Remote network is 600 metres, see the adjoining table for cable length examples. The R70 Ethernet to CAN interface can be used for applications over longer distances, in conjunction with a fibre optic network for example.

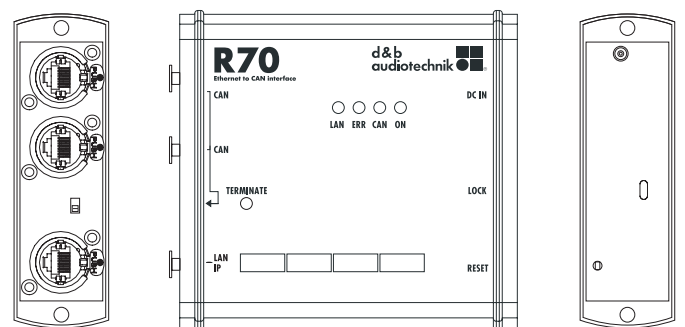
For further information about CAN-Bus cabling requirements and interfaces please refer to the d&b TI 312 d&b Remote network, which is available for download at www.dbaudio.com.



d&b Remote network



Z6118 R60 USB to CAN interface

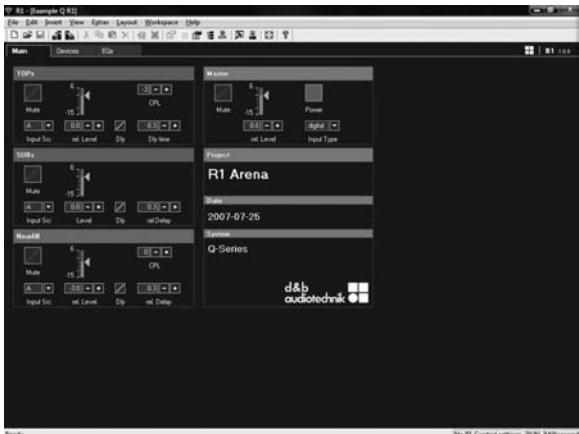


Z6124 R70 Ethernet to CAN interface

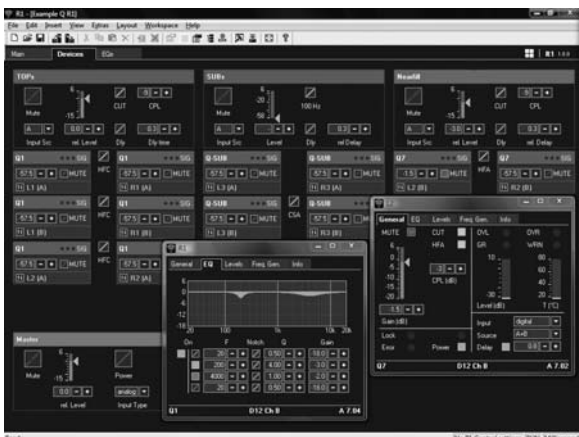
Cable cross section	Maximum bus cable length with numbers of amplifiers	
	32	100
0,25 mm ² (24 AWG)	180 m (600 ft)	140 m (460 ft)
0,75 mm ² (18 AWG)	500 m (1650 ft)	330 m (1100 ft)

Examples of bus cable length

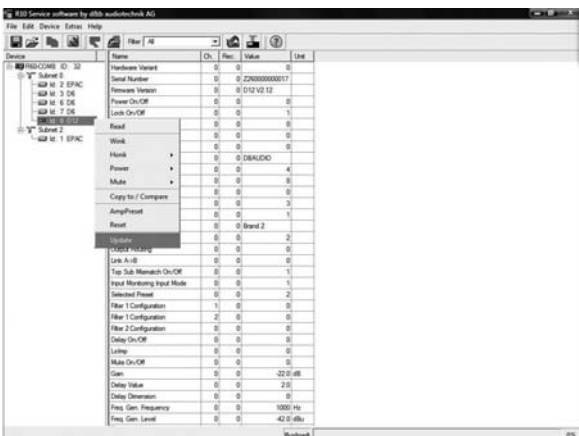
The d&b Remote software



R1 main page, groups and master controls



R1 device page, individual devices, details view and group controls



R10 Service software

R1 Remote control software

R1 Remote control software is a graphical drag and drop user interface enabling the construction of a screen based virtual control surface for d&b systems, using the d&b Remote network.

All major features, functions and controls available on the front panel of the D6 and D12 amplifiers may be remotely controlled and/or monitored using R1. The architecture of R1 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 user. When grouped together, a button or fader can control the overall system level, zone level, equalization and delay, power ON/OFF, MUTE and loudspeaker function switches such as CUT/HFA/HFC or CPL.

R1 has extensive facilities for storing and recalling system settings allowing these to be repeated, as and when required. It is easy to adjust R1 project files for use with a different set of equipment at another location. Password protection is available to restrict access.

R1 runs on PCs operating Microsoft Windows 2000 SP4/XP SP2/Vista¹. A virtual machine enables R1 to run on the newer Intel² Mac³ in parallel to the Mac OS X³, using the Windows driver for R60 USB to CAN interface.

For older, Power PC based Mac computers, Windows emulation needs to be used, together with the R60 driver for Mac/PPC. For R70 Ethernet to CAN, no driver is needed.

All the latest available drivers, R1 example files that can be used as templates and the TI 390 describing the effective use of R1 are available for download at www.dbaudio.com.

R10 Service software

R10 Service software enables the simultaneous amplifier firmware update of up to 63 amplifiers from a central location. Using R10, AmpPresets can be adjusted to the application requirements.

Integration with media control

For integration of d&b audiotechnik loudspeaker systems into media control applications, the R70 Ethernet to CAN interface is used. AMX and Crestron modules (drivers) are available at www.dbaudio.com.

EN 60849 voice alarm applications

For remote control of voice alarm applications Programmable Logic Controllers (PLCs) can be integrated into the d&b Remote network.

¹ Microsoft and Windows 2000/XP/Vista are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries

² Intel is a trademark of the Intel Corporation in the United States and other countries

³ Mac and Mac OS X are trademarks of Apple Inc., registered in the United States and other countries

The MAX monitor

MAX monitor

MAX is a 2-way passively crossed over loudspeaker. The coaxial mounted 15" LF driver and 2" exit HF compression driver both have separate magnet structures. The high frequency horn throat is coupled to the low frequency diaphragm creating a 60° radial mid/high horn. This exhibits a slightly increased directivity at higher frequencies, but has a remarkably similar dispersion performance to that of a constant directivity horn. The inherent time alignment of this topology is a close approximation to the ideal acoustic point source. The result is a loudspeaker with remarkable vocal presence and clarity, a neutral, balanced sound, high feedback stability and a high sound pressure level capability.

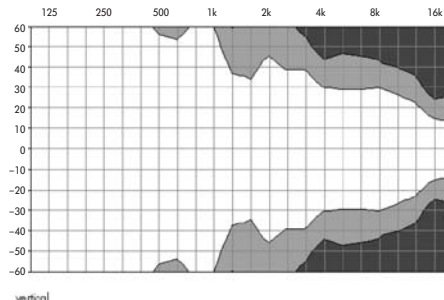
The MAX cabinet is constructed from marine plywood, which incorporates the handles, has an impact resistant paint finish and M10 threaded inserts. The front of the loudspeaker cabinet is protected by a rigid metal grill, covered with a replaceable acoustically transparent foam. A socket to accept loudspeaker stands, ratchet strap helping bar and an optional version with MAN CF4 stud plates complete the multiple application choices. Additionally MAX may be used in a 2-Way Active mode to increase the headroom, particularly in the high frequency range. Mounted on the rear panel are two EP5 or NL4 connectors wired in parallel.

System data

Frequency response (-5 dB, MAX set up).....	55 Hz - 18 kHz
Max. sound pressure (1 m, free field) ¹	
with D6 (passive mode).....	131 dB
with D12 (passive mode).....	135 dB
with D12 (active mode).....	136 dB
Input level (100 dB SPL / 1 m) passive / active.....	-17 dBu / -17 dBu
Polarity to amplifier INPUT (XLR pin 2: + / 3: -).....	
Passive mode.....	LF: + / HF: -
Active mode.....	LF: + / HF: +

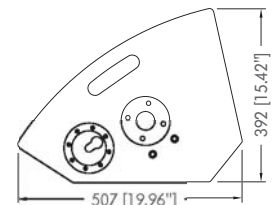
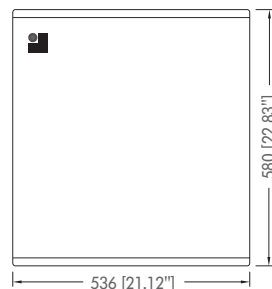
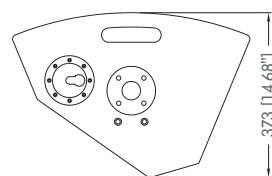
Loudspeaker data

Nominal impedance.....	8 ohms
Power handling capacity (RMS / peak 10 ms) ³	250 / 1200 W
Nominal dispersion angle.....	60° conical
Components.....	15" driver / 2" coaxial mounted compression driver
.....	Passive crossover network
Connections.....	2 x EP5, optional 2 x NL4
Pin assignments ⁴	EP5: LF+: 1 / LF-: 2, HF+: 3 / HF-: 4
.....	NL4: LF+: 1+ / LF-: 1-, HF+: 2+ / LF-: 2-
Weight.....	26 kg (57 lb)



vertical

MAX dispersion characteristics²



MAX cabinet dimensions in mm (inch)

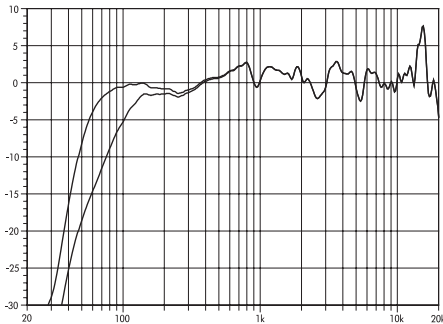
¹ Broadband measurement, pink noise, crest factor 4, peak measurement, linear weighting

² Dispersion angle vs frequency plotted using lines of equal sound pressure (isobars) at -6 dB and -12 dB

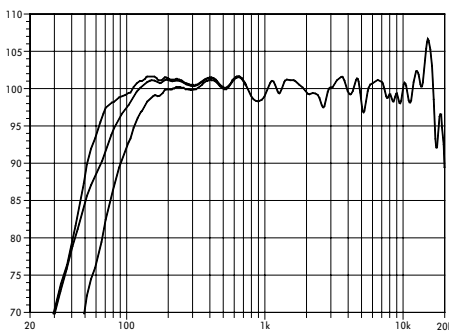
³ Recommended amplifier power rating 300 W to 500 W into 8 ohms

⁴ Standard connector wiring allows passive or active operation with D12. For dedicated passive use, internal wiring can be altered to 2-wire speaker cables (NL4: 1+ / 1-)

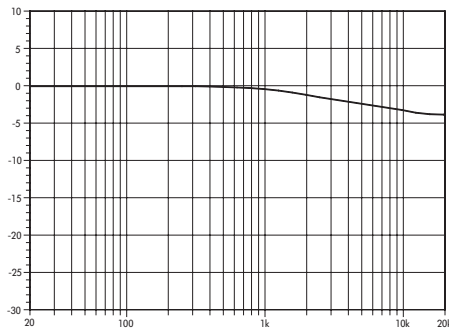
The D6 and D12 configurations



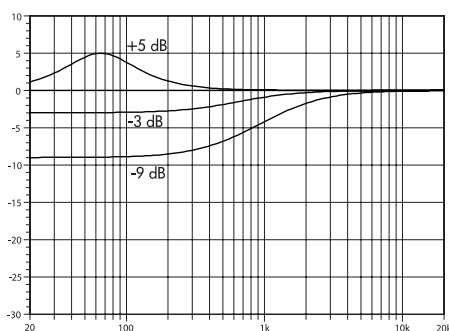
MAX frequency response, standard and CUT modes (MAX configuration, floor coupling)



Frequency response, standard, CPL +5 and CUT modes (linear mode, free field)



Frequency response correction of HFA circuit



Frequency response correction of CPL circuit

MAX with D6 and D12

The D6 and D12 dual channel amplifiers allow the MAX cabinet to be driven in a passive mode, whilst the D12 also allows the 2-Way Active mode.

Selecting passive mode with the MAX configuration enables up to two MAX cabinets to be driven by the respective channel. In applications with low continuous levels and low ambient temperatures up to three loudspeakers per D12 channel may be connected. Selecting the 2-Way Active mode in the D12 amplifier with the MAX configuration uses both channels to drive up to two MAX cabinets actively.

In order to achieve the best possible performance we recommend that the specific MAX configuration is selected, however the MAX cabinet can also be amplified using the D6 or D12 linear mode. For acoustic adjustment the functions CUT, HFA and CPL can be selected.

Set to CUT, the MAX low frequency level is reduced. The MAX is now configured for use with the d&b active subwoofers.

If the HFA (High Frequency Attenuation) circuit is selected the HF response of the MAX is rolled off. The HFA provides a natural, balanced frequency response when a unit is placed close to listeners in near field or delay use. HFA begins gradually at 1 kHz, dropping by approximately 3 dB at 10 kHz. This roll off mimics the decline in frequency response experienced when listening to a system from a distance in a typically reverberant room or auditorium.

The CPL (Coupling) circuit compensates for coupling effects between the cabinets when building closely coupled arrays. CPL begins gradually at 1 kHz, with maximum attenuation below 400 Hz, providing a balanced frequency response when the MAX cabinet is used in arrays of two or more. The function of the CPL circuit in these amplifiers is shown in the diagram opposite and can be set in dB attenuation values between -9 and 0, or a positive CPL value which creates an adjustable low frequency boost around 65 Hz (0 to +5 dB).

MAX with other amplifiers

MAX may be driven by any high quality power amplifier provided the output power does not exceed 500 Watts into 8 ohms and an additional subsonic filter (25 Hz and 12 dB/octave) is used.

The MAX12 monitor

MAX12 monitor

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The MAX12 cabinet is constructed from marine plywood, which incorporates the handles, has an impact resistant paint finish, M10 threaded inserts and a socket to accept loudspeaker stands. The front of the loudspeaker cabinet is protected by a rigid metal grill, covered with a replaceable acoustically transparent foam.

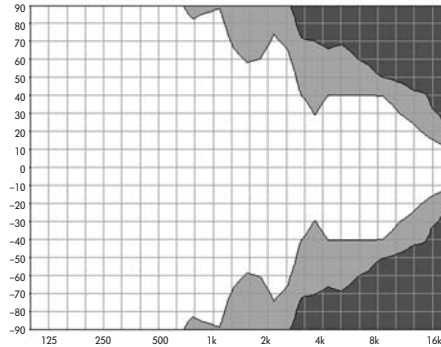
Additionally MAX12 may be used in a 2-Way Active mode to increase the headroom, particularly in the high frequency range. Mounted on the rear panel are two EP5 or NL4 connectors wired in parallel.

System data

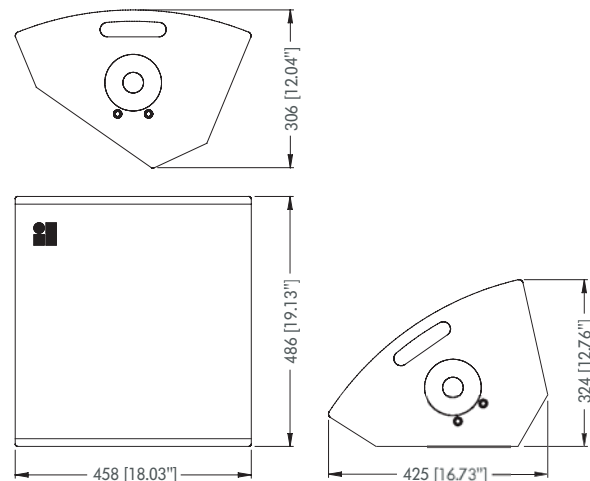
Frequency response (-5 dB, MAX set up)	65 Hz - 18 kHz
Max. sound pressure (1 m, free field) ¹	
with D6 (passive mode).....	130 dB
with D12 (passive mode).....	134 dB
with D12 (active mode).....	135 dB
Input level (100 dB SPL / 1 m) passive / active.....	-16 dBu / -16 dBu
Polarity to amplifier INPUT (XLR pin 2: + / 3: -).....	
Passive mode.....	LF: + / HF: -
Active mode.....	LF: + / HF: +

Loudspeaker data

Nominal impedance.....	8 ohms
Power handling capacity (RMS / peak 10 ms) ³	250 / 1200 W
Nominal dispersion angle.....	80° conical
Components.....	12" driver / 2" coaxial mounted compression driver
.....	Passive crossover network
Connections.....	2 x EP5, optional 2 x NL4
Pin assignments ⁴	EP5: LF+: 1 / LF-: 2, HF+: 3 / HF-: 4
.....	NL4: LF+: 1+ / LF-: 1-, HF+: 2+ / LF-: 2-
Weight.....	22 kg (48 lb)



MAX12 dispersion characteristics²



MAX12 cabinet dimensions in mm (inch)

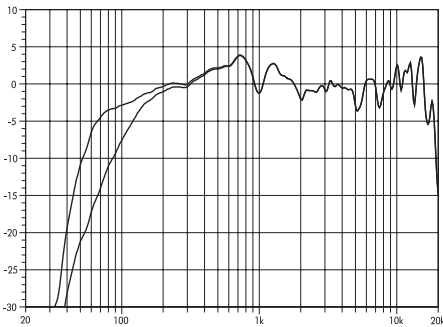
¹ Broadband measurement, pink noise, crest factor 4, peak measurement, linear weighting

² Dispersion angle vs frequency plotted using lines of equal sound pressure (isobars) at -6 dB and -12 dB

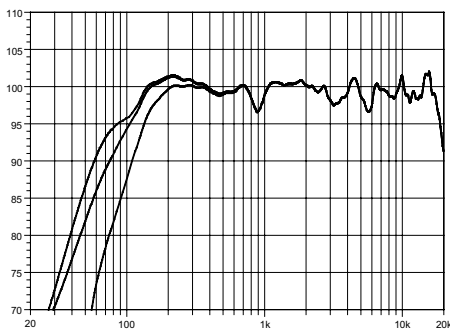
³ Recommended amplifier power rating 300 W to 500 W into 8 ohms

⁴ Standard connector wiring allows passive or active operation with D12. For dedicated passive use, internal wiring can be altered to 2-wire speaker cables (NL4: 1+ / 1-)

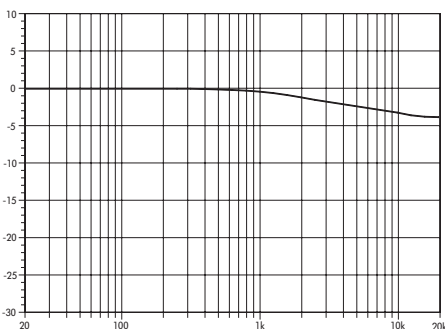
The D6 and D12 configurations



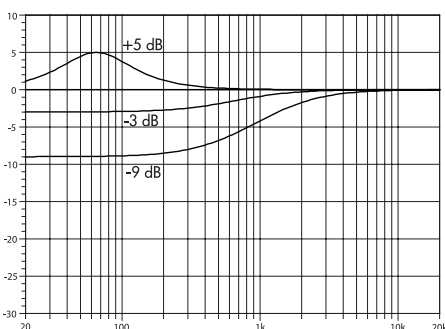
MAX12 frequency response, standard and CUT modes (MAX configuration, floor coupling)



Frequency response, standard, CPL +5 and CUT modes (linear mode, free field)



Frequency response correction of HFA circuit



Frequency response correction of CPL circuit

MAX12 with D6 and D12

The D6 and D12 dual channel amplifiers allow the MAX12 cabinet to be driven in a passive mode, whilst the D12 also allows the 2-Way Active mode.

Selecting passive mode with the MAX configuration enables up to two MAX12 cabinets to be driven by the respective channel. In applications with low continuous levels and low ambient temperatures up to three loudspeakers per D12 channel may be connected. Selecting the 2-Way Active mode in the D12 amplifier with the MAX configuration uses both channels to drive up to two MAX12 cabinets actively.

In order to achieve the best possible performance we recommend that the specific MAX configuration is selected, however the MAX12 cabinet can also be amplified using the D6 or D12 linear mode.

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

Set to CUT, the MAX12 low frequency level is reduced. The MAX12 is now configured for use with the d&b active subwoofers. If the HFA (High Frequency Attenuation) circuit is selected the HF response of the MAX12 is rolled off. The HFA provides a natural, balanced frequency response when a unit is placed close to listeners in near field or delay use. HFA begins gradually at 1 kHz, dropping by approximately 3 dB at 10 kHz. This roll off mimics the decline in frequency response experienced when listening to a system from a distance in a typically reverberant room or auditorium.

The CPL (Coupling) circuit compensates for coupling effects between the cabinets when building closely coupled arrays. CPL begins gradually at 1 kHz, with maximum attenuation below 400 Hz, providing a balanced frequency response when the MAX12 cabinet is used in arrays of two or more. The function of the CPL circuit in these amplifiers is shown in the diagram opposite and can be set in dB attenuation values between -9 and 0, or a positive CPL value which creates an adjustable low frequency boost around 65 Hz (0 to +5 dB).

MAX12 with other amplifiers

MAX12 may be driven by any high quality power amplifier provided the output power does not exceed 500 Watts into 8 ohms and an additional subsonic filter (25 Hz and 12 dB/octave) is used.

The M4 monitor

M4 monitor

The M4 is a 2-way high performance stage monitor employing an integrated 15" LF and 1.3" exit horn loaded HF coaxial driver design that utilizes neodymium magnets. The constant directivity dispersion of 50° x 70° (h x v), which this unique horn provides, delivers an accurately defined coverage area on stage. The M4 can also be operated in 2-Way Active mode.

When the cabinet is used in an upright position the M4 serves as a powerful PA loudspeaker with a 70° x 50° dispersion suitable for a variety of applications. For dedicated installation applications the dispersion characteristics of the M4 driver assembly can be rotated in 45° increments.

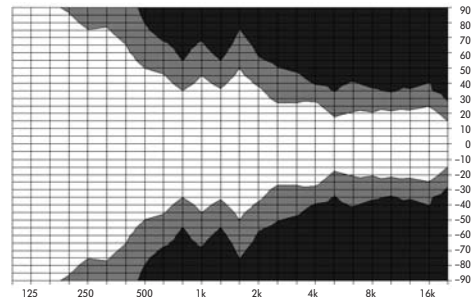
The M4 cabinet is constructed from marine plywood, which incorporates the handles, has an impact resistant paint finish, M10 threaded inserts and a socket to accept loudspeaker stands. The front of the loudspeaker cabinet is protected by a rigid metal grill backed with an acoustically transparent foam. Two runners recessed in the bottom panel protect the cabinet from scratching and prevent movement. Mounted on the rear panel are two EP5 or NL4 connectors wired in parallel.

System data

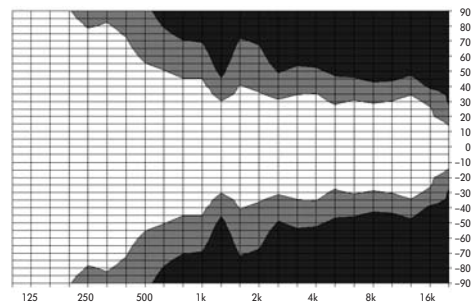
Frequency response (-5 dB).....	55 Hz - 17 kHz
Max. sound pressure (1 m, free field) ¹	
with D6 (passive mode).....	134 dB
with D12 (passive mode).....	138 dB
with D12 (active mode).....	140 dB
Input level (100 dB SPL/1 m) passive/active.....	-22 dBu / -22 dBu
Polarity to amplifier INPUT (XLR pin 2: +/3: -).....	
Passive mode.....	LF: - / HF: +
Active mode.....	LF: - / HF: -

Loudspeaker data

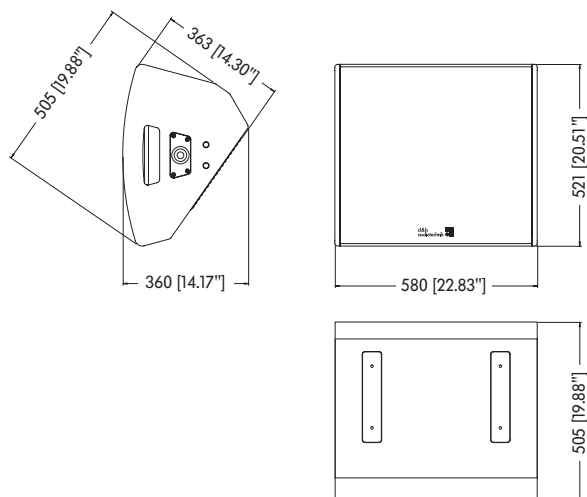
Nominal impedance.....	8 ohms
Power handling capacity (RMS/peak 10 ms).....	400/1600 W
Nominal dispersion angle (h x v).....	50° x 70°
Components.....	15" driver with neodymium magnet
.....	coaxial 1.3" exit compression driver with 3" coil and CD horn
.....	Passive crossover network
Connections.....	2 x EP5, optional 2 x NL4
Pin assignments.....	EP5: 1: LF+ / 2: LF- / 3: HF+ / 4: HF-
.....	NL4: 1+: LF+ / 1-: LF- / 2+: HF+ / 2-: HF-
Weight.....	20 kg (44 lb)



M4 horizontal dispersion characteristics²



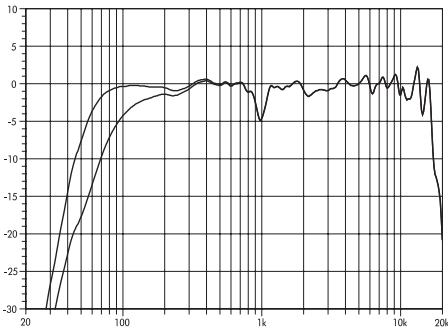
M4 vertical dispersion characteristics²



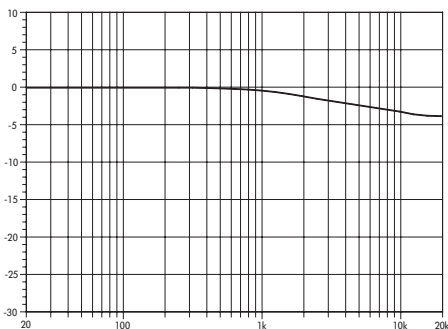
M4 cabinet dimensions in mm (inches)

¹ Broadband measurement, pink noise, crest factor 4, peak measurement, linear weighting
² Dispersion angle vs frequency plotted using lines of equal sound pressure (isobars) at -6 dB and -12 dB

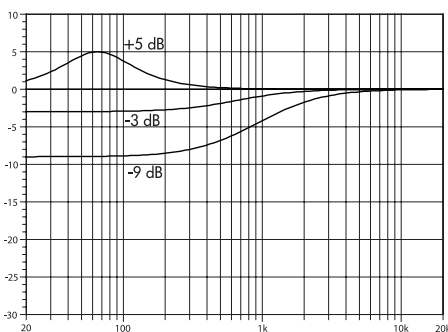
The D6 and D12 configurations



M4 frequency response, standard and CUT modes (floor coupling)



Frequency response correction of HFA circuit



Frequency response correction of CPL circuit

M4 with D6 and D12

The D6 and D12 dual channel amplifiers allow the M4 cabinet to be driven in a passive mode, whilst the D12 also allows the 2-Way Active mode.

Selecting passive mode with the M4 configuration enables up to two M4 cabinets to be driven by the respective channel. In applications with low continuous levels and low ambient temperatures up to three loudspeakers per D12 channel may be connected. Selecting the 2-Way Active mode in the D12 amplifier with the M4 configuration uses both channels to drive up to two M4 cabinets actively.

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

Set to CUT, the M4 low frequency level is reduced. The M4 is now configured for use with the d&b active subwoofers.

If the HFA (High Frequency Attenuation) circuit is selected the HF response of the M4 is rolled off. The HFA provides a natural, balanced frequency response when a unit is placed close to listeners in near field or delay use. HFA begins gradually at 1 kHz, dropping by approximately 3 dB at 10 kHz. This roll off mimics the decline in frequency response experienced when listening to a system from a distance in a typically reverberant room or auditorium.

The CPL (Coupling) circuit compensates for coupling effects between the cabinets when building closely coupled arrays. CPL begins gradually at 1 kHz, with maximum attenuation below 400 Hz, providing a balanced frequency response when the M4 cabinet is used in arrays of two or more. The function of the CPL circuit in these amplifiers is shown in the diagram opposite and can be set in dB attenuation values between -9 and 0. A positive CPL value (0 to +5 dB) creates an adjustable low frequency boost and can be set when the M4 is used as a full range PA loudspeaker.

The MAX/MAX12/M4 rigging accessories

MAX/MAX12/M4 rigging accessories

The MAX/MAX12/M4 cabinets are fitted with threaded inserts to accept the Flying adapter 02 and 03. The Flying adapter 02 can be used together with the TV spigot and Pipe clamp allowing attachment to overhead bars or truss with a tube diameter up to 51 mm/2", however any commercial DIN pipe clamp as long as it is specified to a WLL greater than 50 kg/110.2 lb can be used.

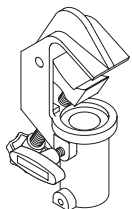
The MAX and MAX12 Horizontal brackets enable these cabinets to be attached to walls or ceilings, and when joined with MAX Bracket connectors two MAX or MAX12 cabinets can be suspended as a cluster from a single flying point. The Flying studs together with the 1t chains allows MAX cabinets, which are fitted with CF4 stud plates, to be flown as a downfill underneath C4 systems.

The threaded inserts on each side panel of the M4 cabinet accept the M4 Flying bracket for vertical upright deployment and is designed to fit tightly round the loudspeaker to produce minimum visual impact. The M4 Flying bracket can be flown and also be fitted onto loudspeaker stands.

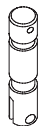
The Qi Horizontal bracket enables the M4 to be mounted directly to walls or ceilings and, when joined with MAX Bracket connectors, two M4 cabinets can be suspended as a cluster from a single flying point.

Safety approval

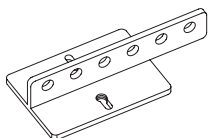
d&b loudspeakers and accessories are designed for set up and use within situations requiring compliance with the provisions and directives of BGV C1 Rule for the Prevention of Accidents.



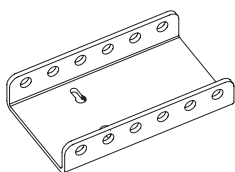
Z5012
Pipe clamp for TV spigot



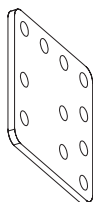
Z5015
TV spigot 02



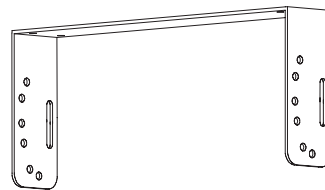
Z5020
Flying adapter 02



Z5025
Flying adapter 03



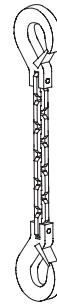
Z5044
MAX Bracket connector



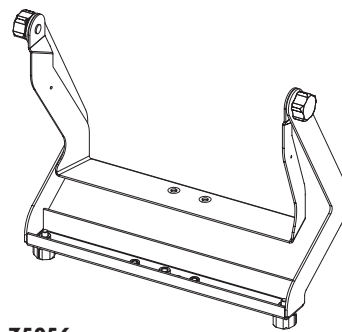
Z5043
MAX Horizontal bracket
Z5047
MAX12 Horizontal bracket



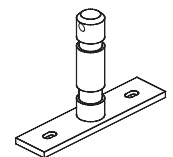
Z5040
MAN Flying stud



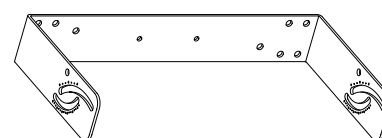
E6521
1t Chain, 23 links



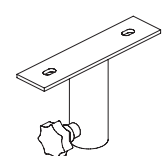
Z5056
M4 Flying bracket



Z5010
TV spigot with fixing plate

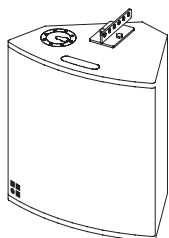


Z5175
Qi Horizontal bracket

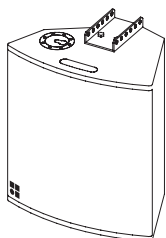


Z5024
Loudspeaker stand adapter

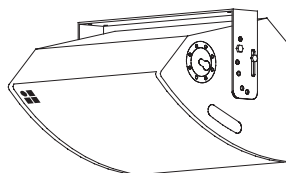
The MAX/MAX12/M4 rigging examples



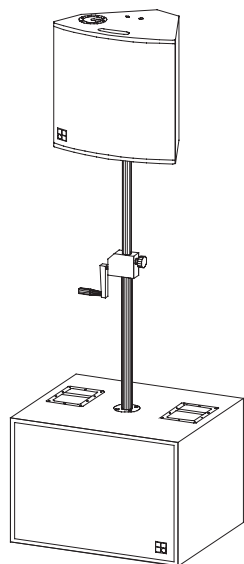
**MAX/MAX12 with
Z5020 Flying adapter 02**



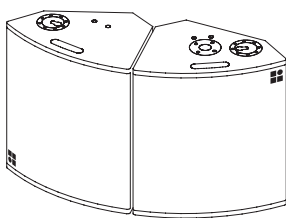
**MAX/MAX12 with
Z5025 Flying adapter 03**



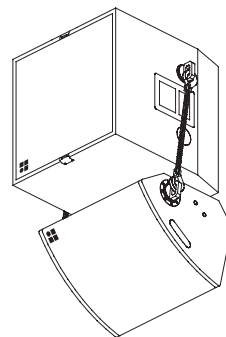
**MAX/MAX12 with
Z5043 MAX or Z5047 MAX12
Horizontal bracket
for ceiling and wall mounting**



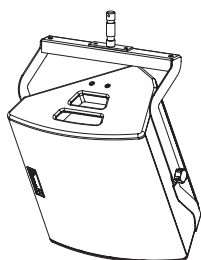
**MAX/MAX12 with
Z5013 Loudspeaker stand winder M20**



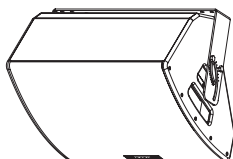
MAX/MAX12 as an array



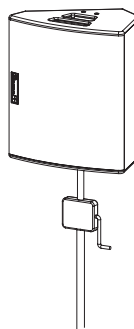
**MAX as downfill for flown
C4 system**



**M4 with
Z5056 M4 Flying bracket
Z5010 TV spigot with fixing plate**



**M4 with
Z5175 Qi Horizontal bracket**



**M4 with
Z5009 Loudspeaker stand with winder or
Z5013 Loudspeaker stand winder M20**

The M2 monitor

M2 monitor

The M2 is designed as d&b's definitive high performance stage monitor system. The bass-reflex enclosure is optimized for minimal air compression and houses two 12" LF drivers. It is actively crossed over and powered by both channels of the d&b D12 amplifier, using SenseDrive for the low frequency channel. The 1.4" exit HF compression driver has a compact but extremely strong neodymium magnet assembly operating into a very low distortion waveguide oriented horn, optimized for monitor applications. The component configuration permits the use of an extremely low profile cabinet which achieves a constant directivity from an unusually low frequency of 600 Hz upwards with a nominal dispersion of 45° x 60° (h x v). Together with a cabinet baffle angle of 40° to the floor, this dispersion offers a realistic artist listening area starting directly above the cabinet and ranging quite far upstage.

The M2 bestows its full dynamics across the entire frequency range without compromising the solo voices or instruments, which always stay clearly and audibly in front of the mix.

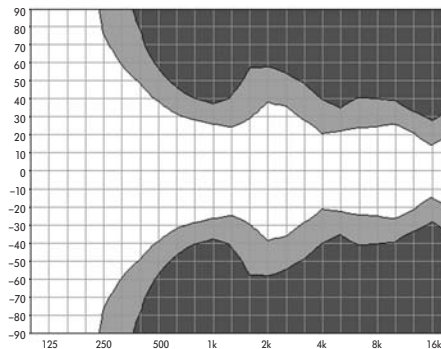
The M2 cabinet is constructed from marine plywood and has an impact resistant paint finish. The cabinet is protected by a rigid metal grill backed with an acoustically transparent foam. Two fittings that accept the Flying pin 10 mm are located on both sides of the cabinet allowing quick and flexible rigging. For applications that require deep bass the LF response can be extended using the C7-SUB. Mounted on the rear panel are two EP5 connectors wired in parallel.

System data

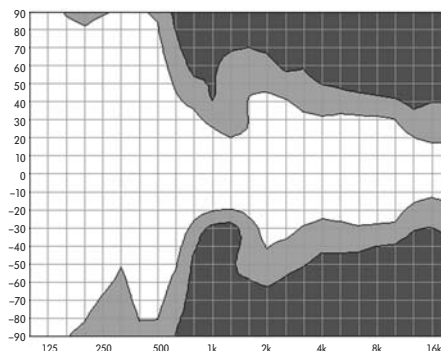
Frequency response (-5 dB).....50 Hz - 17 kHz
 Max. sound pressure level (1 m, free field)¹.....
 with D12.....143 dB
 Input level (100 db SPL / 1 m).....-26 dBu
 Polarity to amplifier INPUT (XLR pin 2: + / 3: -).....LF: - / HF: -

Loudspeaker data

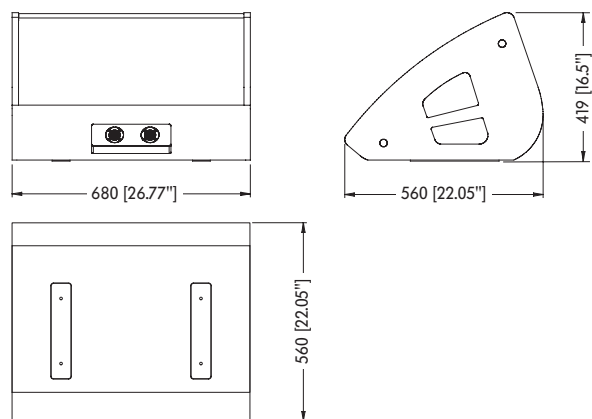
Nominal impedance LOW / HIGH.....4 / 8 ohms
 Power handling capacity LOW (RMS / peak 10 ms).....500 / 2000 W
 Power handling capacity HIGH (RMS / peak 10 ms).....50 / 200 W
 Dispersion characteristics (h x v).....45° x 60°
 Components.....2 x 12" driver / 1.4" compression driver with CD horn
 Connections.....2 x EP5
 Pin assignments.....1: LF+ / 2: LF- / 3: HF+ / 4: HF- / 5: SenseDrive
 Weight.....38 kg (83 lb)



M2 horizontal dispersion characteristics²



M2 vertical dispersion characteristics²



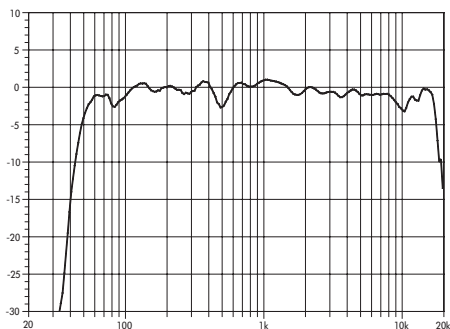
M2 cabinet dimensions in mm (inch)

¹ Broadband measurement, pink noise, crest factor 4, peak measurement, linear weighting

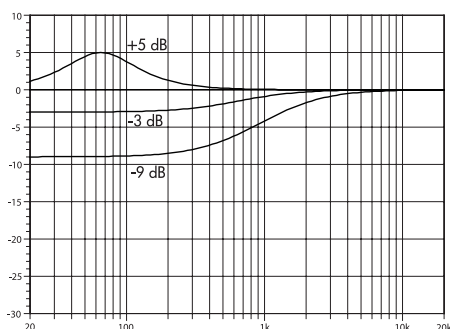
² Dispersion angle vs frequency plotted using lines of equal sound pressure (isobars) at -6 dB and -12 dB

The D12 configuration

The M2 rigging accessories



M2 frequency response



Frequency response correction of CPL circuit

M2 with D12

Selecting 2-Way Active mode with the M2 configuration enables up to two M2 cabinets to be driven actively by the D12 dual channel amplifier.

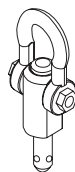
To apply SenseDrive for the LF driver of both cabinets they should be linked together locally and connected to output A of the D12 amplifier.

Set to CUT, the M2 low frequency level is reduced. The M2 is now configured for use with the d&b active subwoofers.

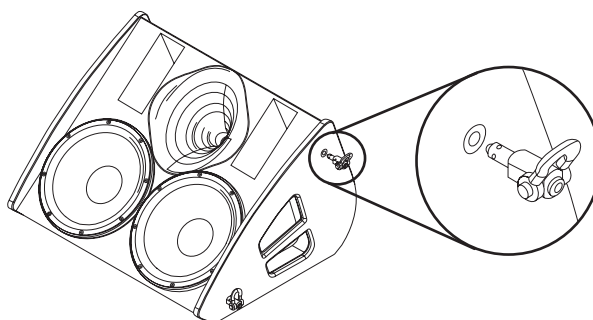
The CPL (Coupling) circuit compensates for coupling effects between the cabinets when building closely coupled arrays. CPL begins gradually at 1 kHz, with maximum attenuation below 400 Hz, providing a balanced frequency response when the M2 cabinet is used in arrays of two or more. The function of the CPL circuit in the D12 amplifier is shown in the diagram opposite and can be set in dB attenuation values between -9 and 0, or a positive CPL value which creates an adjustable low frequency boost around 65 Hz (0 to +5 dB).

M2 rigging accessories

The M2 cabinet is equipped with two mounting sockets on either side that accept two or four Flying pins 10 mm depending on the method of deployment. Consequently an M2 stage monitor can be flown quickly and easily either vertically, as a sidefill for example, or horizontally under a stage fitted with grill apertures.



Z5048 Flying pin 10 mm



M2 monitor with Z5048 Flying pin 10 mm

The Stage monitors product overview

	Code	Description
Loudspeakers	Z1100.002	MAX Monitor EP5 connector
	Z1100.001	MAX Monitor NL4 connector
	Z1100.012	MAX Monitor EP5 connector CF4 stud plates
	Z1100.010	MAX Monitor NL4 connector CF4 stud plates
	Z1300.002	MAX12 Monitor EP5 connector
	Z1300.001	MAX12 Monitor NL4 connector
	Z0800.000	M4 Monitor EP5 connector
	Z0800.010	M4 Monitor NL4 connector
	Z0061.020	M2 Monitor EP5 connector
Amplifiers	Z2700.000	D6 Amplifier NL4 (85 - 285 V)
	Z2600.000	D12 Amplifier EP5 (115 / 230 V)
	Z2600.001	D12 Amplifier NL4 (115 / 230 V)
	Z2600.300	D12 Amplifier EP5 (100 / 200 V)
	Z2600.301	D12 Amplifier NL4 (100 / 200 V)
Remote network	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
	Z3000.000	R1 Remote control software (available as a download from www.dbaudio.com)
	Z3001.000	R10 Service software (available as a download from www.dbaudio.com)
Cables	Z2292.xxx	MC4 EP5 cable various lengths
	Z2291.xxx	MC4 NL4 cable various lengths
	Z2296.000	NL4 Extension adapter
	K3110.000	MC5 cable unterminated
	K3106.002	MC4 cable unterminated
Cases	E7422.000	Touring case 2 x MAX sleeve, moulded speaker profile, wheels
	E7426.000	Touring case 2 x MAX12 sleeve, moulded speaker profile, wheels
	E7425.000	Touring case 2 x M2 door, sleeve, wheels

The Stage monitors product overview

	Code	Description
Racks	E7419.001	Touring rack 3 RU, 19" DD, shock mounted, handles, window
	E7420.001	Touring rack 6 RU, 19" DD, shock mounted, handles, window, wheels
	E7424.001	Touring rack 9 RU, 19" DD, shock mounted, handles, window, wheels
	E7211.000	Touring rack 2 RU, 19" DD, shock mounted, handles
Accessories	Z5009.000	Loudspeaker stand with winder
	Z5013.000	Loudspeaker stand winder M20
	Z5024.000	Loudspeaker stand adapter
	Z5020.000	Flying adapter 02
	Z5025.000	Flying adapter 03
	Z5010.000	TV spigot with fixing plate
	Z5012.000	Pipe clamp for TV spigot
	Z5015.000	TV spigot 02
	Z5043.000	MAX Horizontal bracket
	Z5047.000	MAX12 Horizontal bracket
	Z5044.000	MAX Bracket connector
	Z5040.000	MAN Flying stud
	E6521.000	1t Chain, 23 links , black, 2 hooks
	Z5056.000	M4 Flying bracket
	Z5175.000	Qi Horizontal bracket
Z5048.000	Flying pin 10 mm	
Misc.	Z5060.000	Anti-slip coating 1kg / 2.2 lb
	Z5061.000	Standard cabinet paint 1 kg / 2.2 lb

