The E-Series

d&b audiotechnik

The E-Series

The **E-Series** loudspeaker range from d&b audiotechnik comprises the smallest cabinets within the product range and are systems that are predominantly used as single units or in distributed sound reinforcement environments. Their highly compact and unobtrusive design makes them visually discreet yet audibly impressive, with their combination of directivity control, bass response and maximum sound pressure level all being realized from such small cabinets. These incredibly flexible loudspeakers are therefore ideally suited for use in distributed speech reinforcement systems in a variety of applications such as industrial presentations, broadcast studios, surround sound, delay and infill systems. The E-Series loudspeakers, together with the E-PAC amplifier, can also provide an ultra compact and lightweight mobile PA system for smaller sound reinforcement tasks.

The "d&b specific" combination of a neutral, intelligible sound character that is clear and transparent even for the smallest systems 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.

To realize the full deployment potential of the E-Series a full portfolio of rigging accessories is available, all designed to comply with the world's most stringent standards.

The **E0** is the littlest d&b loudspeaker. The coaxially mounted 5" LF driver and 1" HF dome tweeter produce a wide conically symmetric directivity up to very high frequencies. Consequently the E0 delivers the same performance characteristic whether mounted horizontally or vertically. It is specifically suited for near field applications such as delay and surround sound systems in close proximity to the audience where the audio source should not be obvious. It can also be used as a full range system for background music and for distributed sound. For extended SPL requirements the E12 subwoofer can complement up to four E0 loudspeakers.

The **E3** is an extremely small and versatile high performance system with astonishing sound and excellent headroom. The loudspeaker enclosure houses a 6.5" LF driver passively crossed over to a 1" exit HF compression driver fitted to a 90° x 60° rotatable horn. Compared to the E0 it has twice the cabinet volume and peak SPL but is still a surprisingly compact sound solution. Its directivity control helps for critical speech reinforcement in distributed systems with larger distances to the audience. It can also be used as a space saving, unobtrusive small stage monitor.

The **E12-SUB** is a bass-reflex design employing a long excursion 12" driver. The large, specially shaped reflex port enables the E12-SUB to achieve high sound pressure levels with minimal power compression and breathing effects. The E12 has sufficient output for up to four E0 or two E3 loudspeakers providing effortless bass with good transient response.

The d&b **D12** and **E-PAC** amplifiers both contain loudspeaker specific controller configurations for the E-Series loudspeakers and provide the necessary amplification. These devices are specially designed and manufactured by d&b utilizing digital signal processing and incorporate specific configuration set ups for the d&b loudspeaker range including switchable functions for precisely tailoring the system response for a wide variety of applications. A user definable 4-band parametric equalizer and a delay capability is provided in every amplification channel to reduce the need for external processing devices and increase the control permutations for the loudspeaker system elements. Both use switch mode power supplies and the D12 automatically selects the mains supply voltage, with the intention of achieving complete consistency of system behaviour. These units also have network remote control and monitoring of the system functions as well as incorporating d&b Load monitoring and System check which can monitor loudspeaker driver status. The D12 amplifier has both analog and digital signal inputs as well as link outputs.

To complete the picture, the **E-Series** maintains 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 – an important requirement for simple, effortless set ups in ever changing, fast and flexible production environments.

The E-Series

E0 loudspeaker

E3 loudspeaker

E12 subwoofer

E-PAC power amplifier controller

D12 amplifier

The D12 amplifier

D12 amplifier

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

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

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

The D12 amplifier can detect incoming Pilot signals at its input (Input monitoring) and uses the Load monitoring and System check function to ascertain the status of the loudspeaker impedance. d&b System check is designed to verify that the system performs within a predefined condition and can be initiated at the end of a show for example. d&b Load monitoring on the other hand enables an automatic and continuous impedance monitoring and along with Input monitoring is designed for incorporation within applications specified to the requirements stated in the International Standard IEC 60849 'Sound Systems for Emergency Purposes'. Both can determine the status of an LF or HF driver in systems with multiple elements, even if these are crossed over passively. Errors are reported on the front panel display and/or with audible tones. System check errors can be monitored using the remote control and monitoring functions provided via the REMOTE interface.

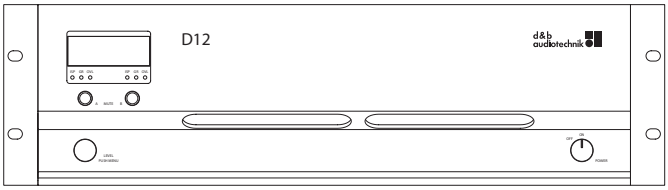
The D12 utilizes an autosensing switch mode power for mains supply voltages 115/230 V, 50 - 60 Hz (optional 100/200 V) with overvoltage protection. A temperature and signal controlled fan is used to cool the internal assemblies.

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

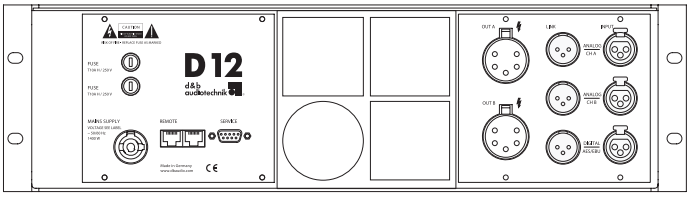
The D12 provides d&b SenseDrive for use with the LF drivers in d&b active loudspeakers and subwoofers. In the LF region the impedance of a loudspeaker can change significantly with frequency, cone excursion and cable length, leading to considerable linear and non-linear distortion. SenseDrive uses an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

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

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



D12 front view



D12 rear view

The D12 amplifier

Displays

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

Controls

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

Monitoring according to IEC 60849
'Sound Systems for Emergency Purposes'

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

Connectors

INPUT ANALOG CH A / CH B.....3 pin XLR female*
Input impedance.....44 kohm, electronically balanced
Maximum input level.....+25 dBu
LINK ANALOG CH A / CH B.....3 pin XLR male*
.....parallel to INPUT
INPUT DIGITAL AES / EBU.....3 pin XLR female*
Input impedance.....110 ohms, electronically balanced
Sampling.....48 kHz / 96 kHz / 2 Ch/n
Synchronisation.....Word-Sync: PLL-locked to source (slave mode)
LINK DIGITAL output.....3 pin XLR male
.....electronically balanced, analog signal buffering
.....power fail relay (Bypass)
OUT CHANNEL A / B.....Optional EP5 / NL4 / NL8
REMOTE.....2 x RJ 45 parallel
SERVICE.....SUB-D9 female

Protection circuits

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

Data (linear setting with subsonic filter)

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

Digital Signal Processing

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

Power supply

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

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

Dimensions, weight

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

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

The E-PAC power amplifier controller

E-PAC power amplifier controller

The E-PAC amplifier is a single channel power amplifier developed and manufactured by d&b utilizing Digital Signal Processing (DSP) to incorporate loudspeaker specific configuration information and functions. It is designed for use with d&b loudspeakers, has remote control and monitoring capabilities and a switch mode power supply. The E-PAC is housed in a 190 mm (7.5"), 2 RU enclosure; accessories allow installation of a single E-PAC in a 19" or 9.5" rack, or a pair mounted side by side.

The front panel level control incorporates a digital rotary encoder, which enables selection of all operating modes in conjunction with a Liquid Crystal Display (LCD). Loudspeaker specific configuration set ups for all current d&b loudspeakers (except 2-way active) and subwoofers (except B1 and B2) are contained within the E-PAC and a linear mode is provided for loudspeakers such as the d&b MAX and MAX12. The Digital Signal Processing is used to provide the loudspeaker specific configurations, sophisticated protection circuits modelling thermal and mechanical driver behaviour, and the switch functions such as CUT / HFA / HFC / CPL as detailed in each loudspeaker section. User definable equalization and delay functions are incorporated in the E-PAC and can be used for applications, such as front fills, or under balcony delays, without the need for external processors. The 4-band parametric equalizer provides optional Boost / Cut or Notch filtering and the signal delay capability allows delay settings of up to 220 msec. (≙ 75.68 m / 246.1 ft) to be applied.

A signal generator offering pink noise or sine wave program is also incorporated for test and alignment purposes. Each unit can be given a unique Device Name to simplify identification and a password protected LOCK function is also incorporated to inhibit unauthorized set up changes.

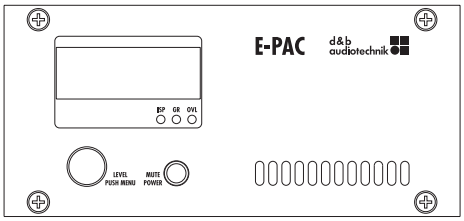
The E-PAC amplifier can detect incoming Pilot signals at its input (Input monitoring) and uses the Load monitoring and System check function to ascertain the status of the loudspeaker impedance. d&b System check is designed to verify that the system performs within a predefined condition and can be initiated at the end of a show for example. d&b Load monitoring on the other hand enables an automatic and continuous impedance monitoring and along with Input monitoring is designed for incorporation within applications specified to the requirements stated in the International Standard IEC 60849 'Sound Systems for Emergency Purposes'. Both can determine the status of an LF or HF driver in systems with multiple elements, even if these are crossed over passively. Errors are reported on the front panel display and / or with audible tones. System check errors can be monitored using the remote control and monitoring functions provided via the REMOTE interface.

The E-PAC incorporates a switch mode power supply with Power Factor Correction (PFC) with a universal supply voltage range of 85 - 265 V, 50 - 60 Hz with overvoltage protection. A low noise thermostatically controlled fan is used to cool the internal assemblies.

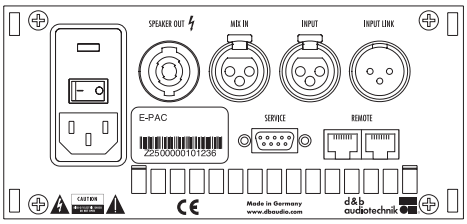
The E-PAC is specifically designed for high impedance loads (200 W into 16 ohms, 300 W into 8 ohms). If low impedance (LO IMP) mode is selected the E-PAC can drive up to two d&b loudspeakers with a nominal impedance of 8 ohms or up to four d&b loudspeakers with a nominal impedance of 16 ohms, at reduced output (–6 dB). This is useful for situations such as front fill or under balcony use where multiple loudspeakers are needed but maximum output is not required. The relevant loudspeaker manual details the recommended maximum number of cabinets that may be driven.

The rear panel of the E-PAC is fitted with an analog signal input with a link output and an NL4 loudspeaker output connector. A MIX IN input is provided, a second signal fed to this input is summed with the main INPUT. When left and right components of a stereo source are fed to the main INPUT and MIX IN, a mono sum is derived at the loudspeaker output and the resultant output is 3 dB higher.

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



E-PAC front view



E-PAC rear view

The E-PAC power amplifier controller

Displays

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

Controls

I / O.....Main power switch
MUTE / POWER.....On / Mute / Standby switch
LEVEL / PUSH MENU.....Digital rotary encoder
.....access to all functions including:
Level control.....–57.5 dB - +6 dB with 0.5 dB detents
Configurations.....Filter_1 / Filter_2
4-band equalizer.....Optional PEQ / Notch
Delay setting.....1 - 220 msec. with 0.1 msec. detents
System set ups...All current (except active, B1, B2) d&b loudspeakers /
.....linear (MAX / MAX12)
Impedance measurement (Z).....0 - 255 ohms
Protection.....Operator input inhibit / password protection
Remote control.....RIB / CAN-Bus
Device name.....15 alphanumeric digits
Display illumination.....Off / On / Timeout 10 sec.
Frequency generator.....Pink noise or Sine wave, 10 Hz - 20 kHz
.....with 1 Hz detent, Level: –57.5 dB - +6 dB with 0.5 dB detents
Buzzer.....Acoustical signal for error messages

Monitoring according to IEC 60849
'Sound Systems for Emergency Purposes'

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

Connectors

INPUT / MIX IN.....3 pin XLR female*
INPUT LINK.....3 pin XLR male*
.....parallel to INPUT
Input impedance.....22 kohms, electronically balanced
Maximum input level.....+21 dBu
SPEAKER OUT.....NL4
Pin assignments full range speakers.....1+ / 1–, 2+ / 2–
Pin assignments active subwoofers.....2+ / 2–
REMOTE.....2 x RJ 45 parallel
SERVICE.....SUB-D9 female

Protection circuits

Mains inrush current limiter.....2 A peak at 230 V, 4 A at 115 V
Speaker switch on delay.....Approx. 2 sec.
Overvoltage protection.....Up to 400 VAC
Self-resetting overtemperature protection.....75° C / 167° F
Output short and open circuit protection.....±20 A peak

Data (linear setting with subsonic filter)

Rated output power (THD + N < 0.1%).....1 x 200 W into 16 ohms
.....1 x 300 W into 8 ohms
LO IMP mode.....1 x 150 W into 4 ohms
Frequency response (–1 dB).....35 Hz - 22 kHz
THD+N (20 Hz - 20 kHz).....< 0.05 %
IM (SMPTE).....< 0.1 %
Slew rate.....50 V / msec.
S / N ratio (unweighted, RMS, 0 dB).....> 94 dBr
S / N ratio with MUTE (unweighted).....> 104 dBr
Damping factor (20 Hz - 1 kHz into 16 ohms).....> 160
Input-CMR (20 Hz - 1 kHz).....> 50 dB
Maximum input level.....+21 dBu (sum of INPUT and MIX IN)

Digital Signal Processing

Sampling rate.....48 kHz / 24 bit
Basic delay.....1 msec.
Maximum delay setting.....220 msec. (75.68 m / 246.1 ft)

Power supply

Universal voltage range switched mode power supply.....
.....with active power factor correction (PFC)
Mains voltage rating.....85 - 265 V, 50 - 60 Hz
Mains connector.....3 pin IEC socket

Dimensions, weight

Height x width x depth.....2 RU x 190 mm x 331 mm
.....2 RU x 7.5" x 13"
Weight.....4.7 kg / 10.4 lb

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

The d&b Remote network

d&b Remote network

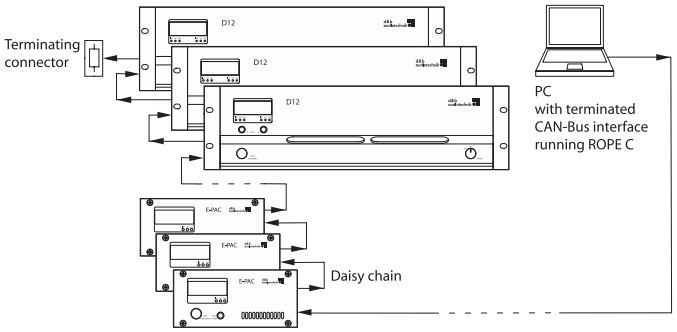
Remote interfaces are fitted into d&b's amplifiers for control and monitoring of functions and features provided within these units. The architecture of the d&b Remote system allows control of each channel of the amplifier as a single entity and enables the creation of groups of loudspeakers in as little,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

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

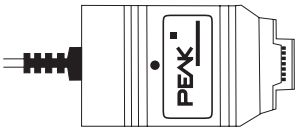
Power on/off and MUTE
Loudspeaker configuration
Input selection
Level control, range 63.5 dB in 0.5 dB steps
Function switches; CUT/HFA/HFC/CPL/etc.
User definable delay
User definable four band parametric equalizer
System check
All front panel indicators
Gain reduction
Device diagnostic

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

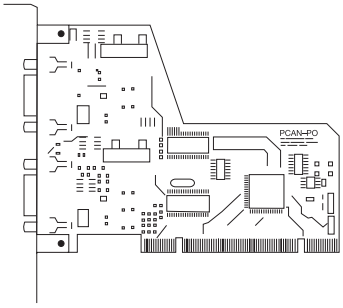
A simple d&b Remote network application consists of a computer, a Peak USB to CAN interface (ISO) or Peak PCI to CAN interface (ISO), a D-SUB 9 F to 2 x RJ 45 F CAN adapter, CAT 5 shielded twisted pair cable with shielded RJ 45 connectors and d&b D12 or E-PAC amplifiers. Up to 504 devices can be incorporated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



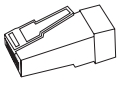
d&b Remote network with ROPE C



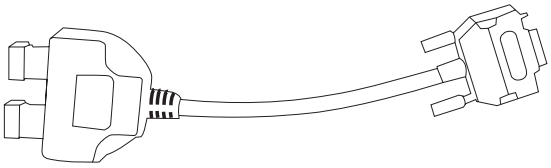
Z6110
Peak USB to CAN interface (ISO)



Z6111
Peak PCI to CAN interface (ISO)

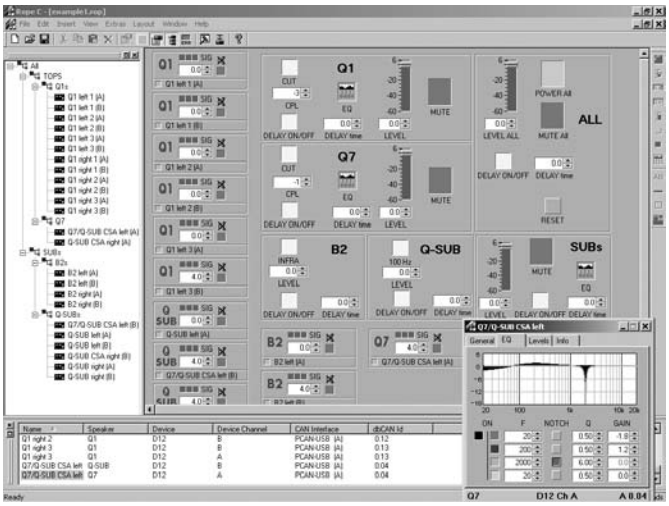


Z6116
RJ 45 M Terminator

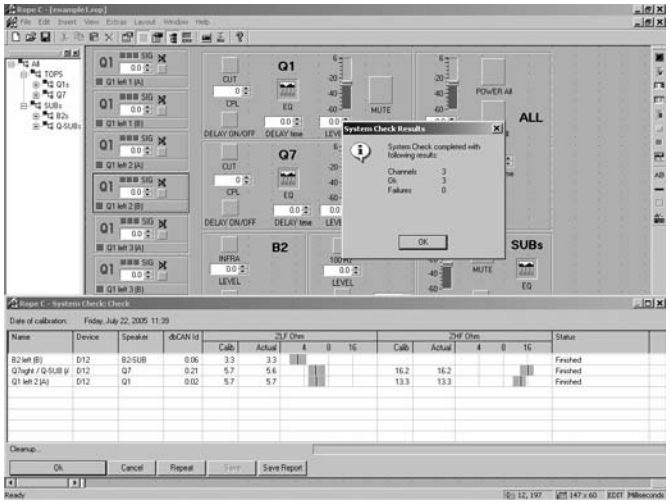


Z6117
D-SUB 9 F to 2 x RJ 45 F CAN adapter

The ROPE C remote control software
The R10 service software



ROPE C



ROPE C with System check

ROPE C remote control software

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

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

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

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

R10 service software

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

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

The E0 loudspeaker

E0 loudspeaker

The E0 is the smallest d&b system. This bass-reflex 2-way coaxial loudspeaker is fitted with a 5" LF driver and 1" HF dome tweeter that are housed in a cleverly shaped robust polyamide cabinet containing magnetic shielding of the LF driver. With a frequency response that covers the 80 Hz to 20 kHz band and a 100° conical dispersion, the E0 displays an identical response whether deployed horizontally or vertically. A rigid metal grill protects the front of the loudspeaker cabinet, whilst recessed into the rear is either a quad push or two NL4 connectors and a self-locking ball joint with integrated mounting arm that incorporates an M10 thread.

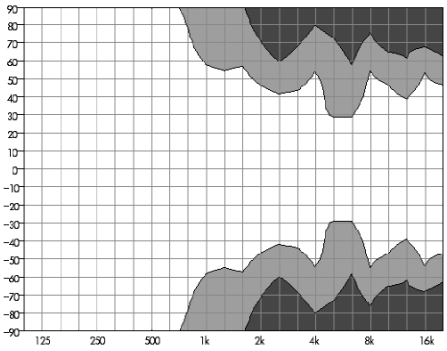
A selection of d&b rigging accessories enables the E0 to be deployed quickly and easily in a variety of configurations. It is extremely well suited for near field applications: delay and surround sound systems where a discreet yet distortion free reproduction of speech and music is required. This makes the E0 ideal for fast and flexible production situations in theatres, corporate presentations, road shows and exhibitions, or as sound reinforcement in showrooms, clubs, theme bars, cafés and restaurants. In applications where more bass is required either the E12 or Q subwoofers can be used.

System data

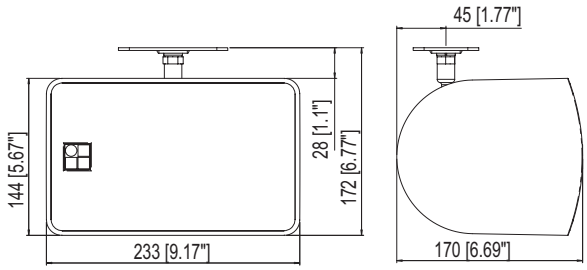
Frequency response (–5 dB).....80 Hz - 20 kHz
Max. sound pressure (1 m, free field)*.....
with D12.....117 dB
with E-PAC.....116 dB
Input level (100 dB SPL / 1 m).....–4 dBu
Polarity to amplifier INPUT (XLR pin 2: + / 3: –).....LF: + / HF: –

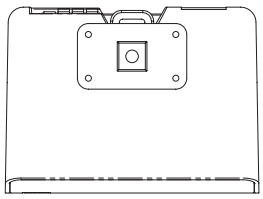
Loudspeaker data

Nominal impedance.....16 ohms
Power handling capacity (RMS / peak 10 ms).....50 / 400 W
Nominal dispersion angle.....100° conical
Components.....5" driver / coaxially mounted 1" dome tweeter
.....Passive crossover network
Connections.....Push connector, two pairs wired in parallel
.....cross sectional area up to 6 mm^2
.....optional 2 x NL4 (1+ / 1–)
Weight.....2.5 kg (5.5 lb)



E0 dispersion characteristics**



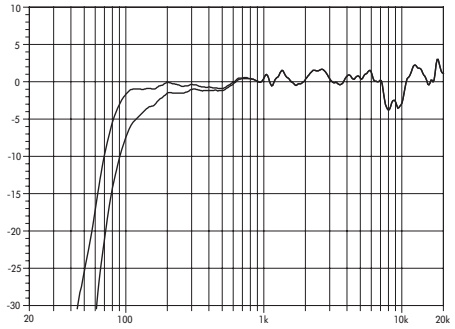


E0 cabinet dimensions in mm (inch)

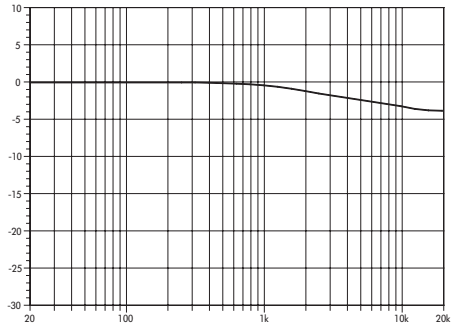
* Broadband measurement, pink noise, crest factor 4, peak measurement, linear weighting

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

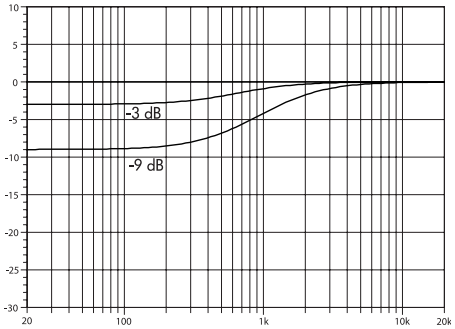
The D12 configuration
The E-PAC configuration



E0 frequency response, standard and CUT mode



Frequency response correction of HFA circuit



Frequency response correction of CPL circuit

E0 with D12

Selecting E0 mode in the D12 enables up to four E0 cabinets to be driven by each channel.

For acoustic adjustment the settings CUT and HFA can be selected. Set to CUT, a high pass filter with a 120 Hz cut off frequency is inserted in the controller signal path. The E0 is now configured for use with d&b active subwoofers.

In HFA mode (High Frequency Attenuation), the HF response of the E0 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 250 Hz, providing a balanced frequency response when E0 cabinets are 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.

E0 with E-PAC

Selecting E0 mode enables the E-PAC to drive up to two E0 cabinets at full output power. LO IMP mode configures the E-PAC to drive a maximum of four E0 loudspeakers with a 6 dB reduction of input level to the loudspeakers. For acoustic adjustment the settings CUT and HFA can be selected.

The E0 rigging accessories

E0 rigging accessories

Recessed into the rear is a self-locking ball joint with integrated mounting arm that incorporates an M10 thread.

The E0 rigging accessories allow different mounting of the E0 loudspeaker to walls and ceilings using the B2123 Fixing plate.

Single cabinets can be hung from a truss or bar using the E6532 Super Clamp together with the E6533 M10 adapter for Super Clamp.

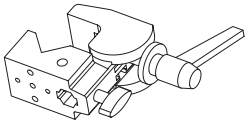
The jaw of the Super Clamp can be adjusted to fit bars or other supporting structures with tube diameters from 13 to 55 mm (0.5" to 2.2").

Alternatively the Z5029 TV spigot together with the Z5012 Pipe clamp can be used for tube diameters from 32 to 50 mm (1.25" to 1.97").

The Z5035 M10 to 3/8" adapter enables the E0 to be mounted to a microphone stand, whilst the Z5034 Stand adapter allows the E0 to be mounted to a loudspeaker stand. The E0 is mounted horizontally when using either a microphone or loudspeaker stand.

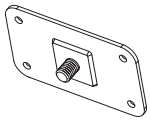
Safety approval

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

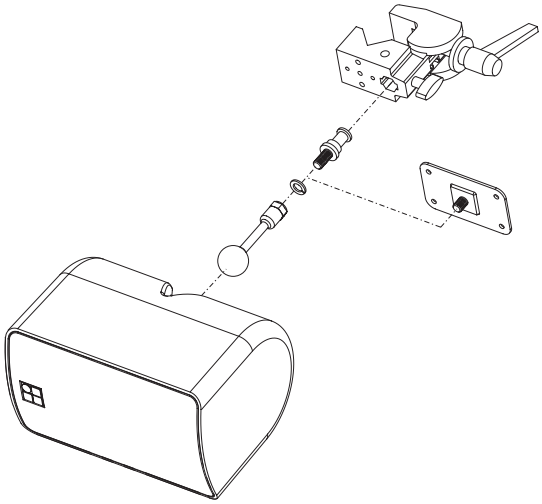


E6532
Super Clamp

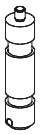
E6533
M10 adapter for Super Clamp



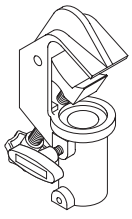
B2123
Fixing plate



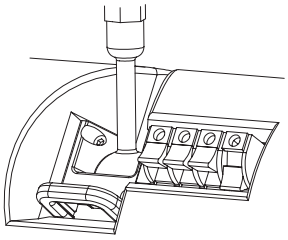
B2123 or
E6532/33 mounting diagram for E0



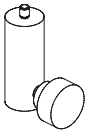
Z5029
TV spigot 02



Z5012
Pipe clamp for TV spigot



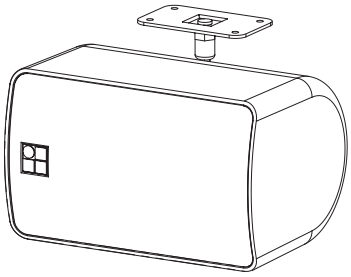
Recessed self-locking ball joint with integrated mounting arm M10



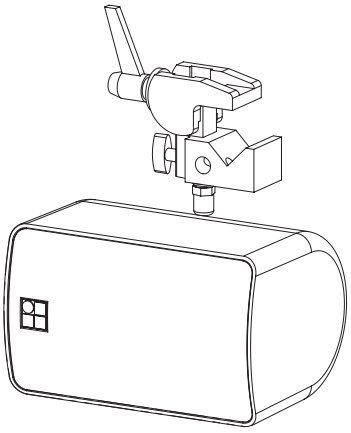
Z5034
Stand adapter

Z5035
M10 to 3/8" adapter

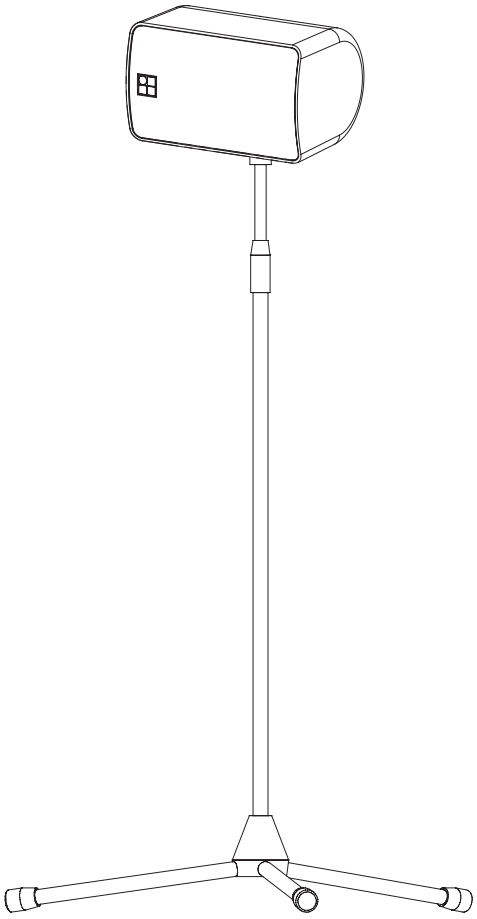
The E0 rigging examples



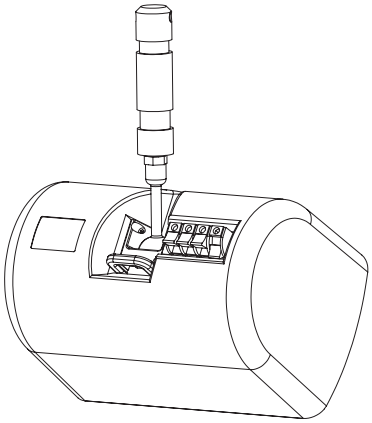
E0 with
B2123 Fixing plate



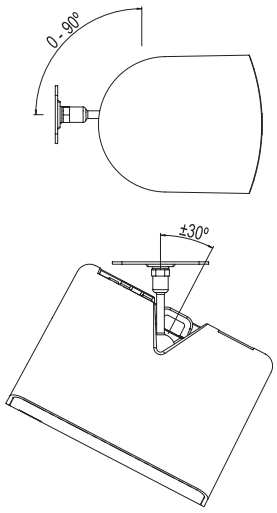
E0 with
E6532 Super Clamp



E0 mounted on microphone stand using the
Z5035 M10 to 3/8" adapter



E0 with
Z5029 TV spigot 02



E0 angle settings

The E3 loudspeaker

E3 loudspeaker

The E3 is an ultracompact and visually unobtrusive loudspeaker with an exceptionally high output capability for its size. The full range, 2-way bass-reflex enclosure is fitted with a single 6.5" LF driver passively connected to a 1" exit HF compression driver. This is coupled to a constant directivity horn with a 90° x 60° dispersion (h x v), which can be rotated through 90° for a 60° x 90° dispersion. The E3 is particularly suited to environments where space is at a premium and where there is a need for controlled high frequency coverage. With a subwoofer, the E3 can also easily reproduce high level music program, and depending on the total SPL requirements and available space, either the E12 or Q subwoofers can be used.

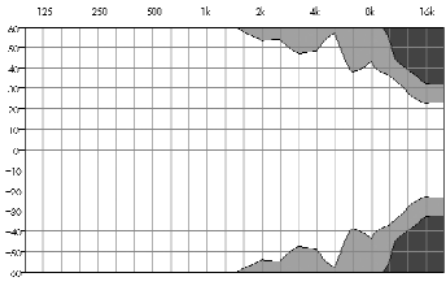
The E3 cabinet is constructed from marine plywood and has an impact resistant paint finish. The front of the loudspeaker cabinet is protected by a rigid metal grill, covered with a replaceable acoustically transparent foam. Eight M8 threaded inserts for mounting accessories allow the E3 to be deployed in almost any position. The asymmetrical cabinet shape enables pairs of cabinets to be simply arrayed together (one of them placed upside down) to form 120° or 180° clusters, or as a stage monitor by simply placing the cabinet on one of its angled side panels. Two mounting locations are incorporated for the NL4 connector plate that facilitates numerous deployment possibilities.

System data

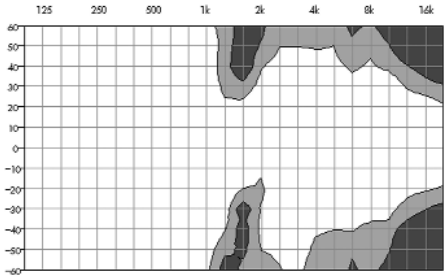
Frequency response (–5 dB).....80 Hz - 18 kHz
Max. sound pressure (1 m, free field)*.....
with D12.....123 dB
with E-PAC.....122 dB
Input level (100 dB SPL / 1 m).....–10 dBu
Polarity to amplifier INPUT (XLR pin 2: + / 3: –).....LF: + / HF: –

Loudspeaker data

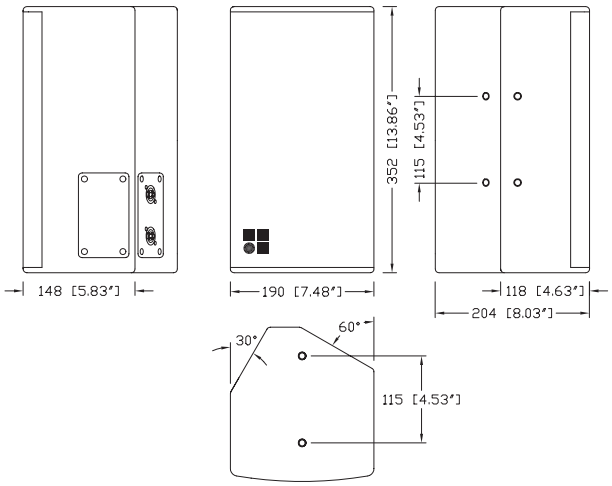
Nominal impedance.....16 ohms
Power handling capacity (RMS / peak 10 ms).....120 / 480 W
Nominal dispersion angle (h x v).....90° x 60°
.....(rotatable through 60° x 90°)
Components.....6.5" driver / 1" compression driver with CD horn
.....Passive crossover network
Connections.....2 x NL4 (1+ / 1–)
Weight.....7.2 kg (16 lb)



E3 horizontal dispersion characteristics**



E3 vertical dispersion characteristics**

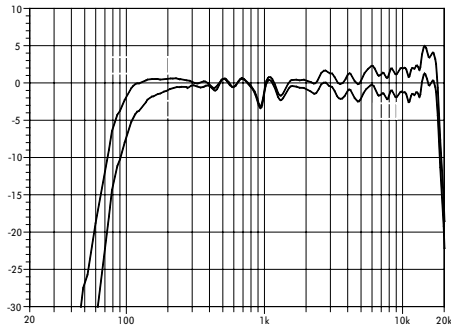


E3 cabinet dimensions in mm (inch)

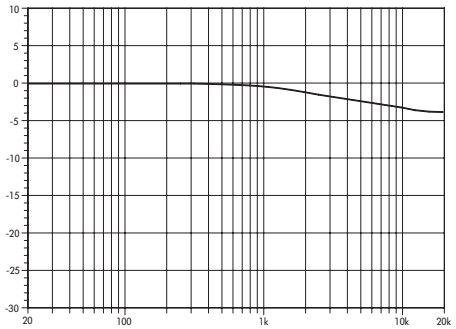
* Broadband measurement, pink noise, crest factor 4, peak measurement, linear weighting

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

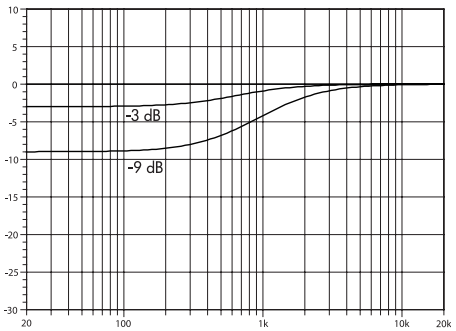
The D12 configuration
The E-PAC configuration



E3 frequency response, standard, CUT and HFA mode



Frequency response correction of HFA circuit



Frequency response correction of CPL circuit

E3 with D12

Selecting E3 mode in the D12 enables up to four E3 cabinets to be driven by each channel.

For acoustic adjustment the settings CUT and HFA can be selected. Set to CUT, a high pass filter with a 110 Hz cut off frequency is inserted in the controller signal path. The E3 is now configured for use with d&b subwoofers.

In HFA mode (High Frequency Attenuation), the HF response of the E3 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 250 Hz, providing a balanced frequency response when E3 cabinets are 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.

E3 with E-PAC

Selecting E3 mode enables the E-PAC to drive up to two E3 loudspeakers at an output power of 300 Watts. LO IMP mode allows the E-PAC to drive four E3 cabinets with a 6 dB reduction of input level to the loudspeakers. For acoustic adjustment the settings CUT and HFA can be selected.

The E3 rigging accessories

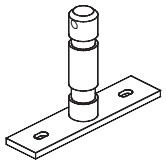
E3 rigging accessories

A comprehensive range of accessories for fixing to walls, ceiling, truss or stand mounting enhances the versatility of the E3 system. Using these brackets, cabinets can be easily fixed or flown in pairs for a set 120° or 180° horizontal dispersion.
Three types of loudspeaker stands are also available for use with the E-Series as illustrated.

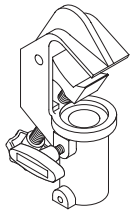
Safety approval

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

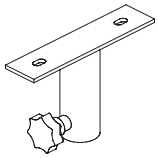
Z5029
TV spigot 02



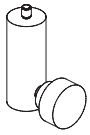
Z5010
TV spigot with fixing plate



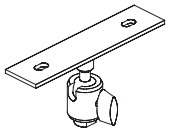
Z5012
Pipe clamp



Z5024
Loudspeaker stand adapter

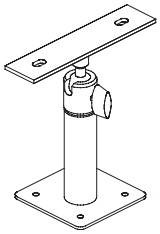


Z5034
Stand adapter



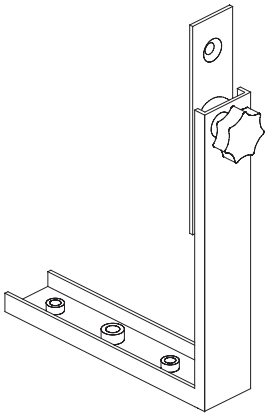
Z5033
E3 Ball joint adapter

Z5035
M10 to 3/8" adapter

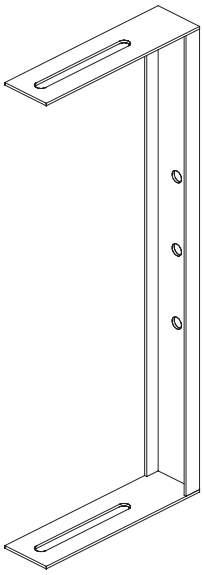


Z5027
E3 Ball joint wall bracket

Q9031
M8 Safety eyebolt

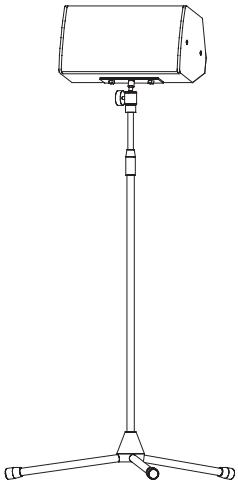


Z5032
E3 Swivel bracket

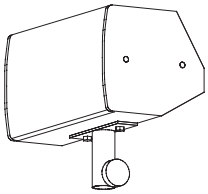


Z5028
E3/Ci80 Horizontal bracket

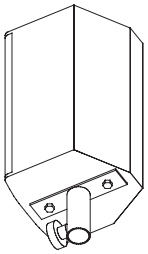
The E3 rigging examples



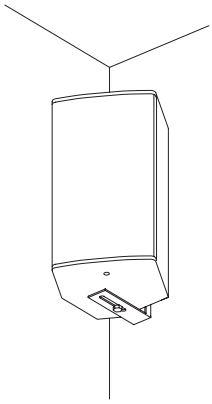
E3 with
Z5033 E3 Ball joint adapter
mounted on microphone stand



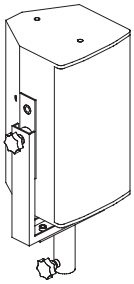
E3 horizontally with
Z5024 Loudspeaker
stand adapter



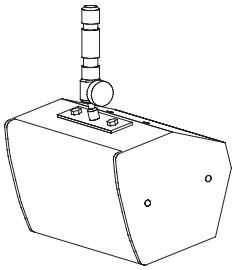
E3 vertically with
Z5024 Loudspeaker
stand adapter



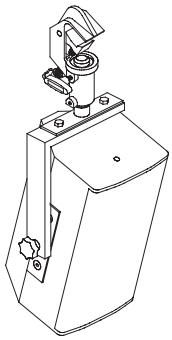
E3 wall mounted with
Z5028 E3/Ci80
Horizontal bracket



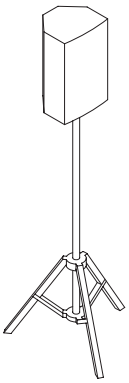
E3 vertically with
Z5024 Loudspeaker
stand adapter and
Z5032 Swivel bracket



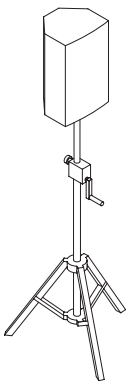
E3 horizontally with
Z5033 E3 Ball joint adapter and
Z5029 TV spigot



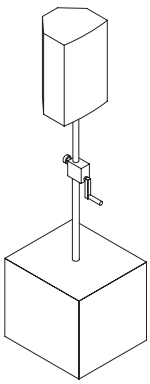
E3 vertically with
Z5032 Swivel bracket,
Z5010 TV spigot with fixing plate and
Z5012 Pipe clamp for TV spigot



E6001
Loudspeaker stand



Z5009
Loudspeaker stand with winder



Z5013
Loudspeaker stand with winder M20

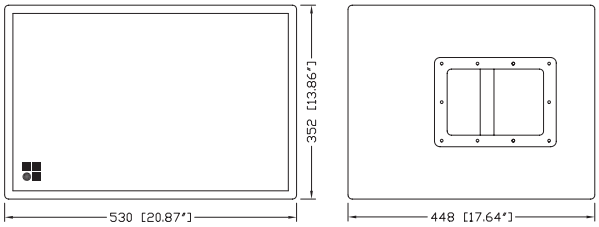
The E12 subwoofer

E12 subwoofer

The E12-SUB can be used to supplement E0 and E3 cabinets in various combinations. The E12-SUB is a bass-reflex design employing a long excursion 12" driver. The large, specially shaped reflex port enables the E12-SUB to achieve high sound pressure levels with minimal power compression and breathing effects. Its frequency response extends from 50 Hz to 120 Hz.

The compact E12 has an extraordinarily high output capability for a cabinet of its size, sufficient for use with up to four E0 or two E3 loudspeakers. It is ideal for permanent or mobile use in small and medium size venues or where space is restricted.

The E12 cabinet is constructed from marine plywood and has an impact resistant paint finish, a steel handle in one side, and an M20 threaded flange on the top to accept the d&b Z5013 Loudspeaker stand. The front of the loudspeaker cabinet is protected by a rigid metal grill, covered with an acoustically transparent foam. Mounted on the rear panel are two NL4 connectors wired in parallel.



E12-SUB cabinet dimensions in mm (inch)

System data

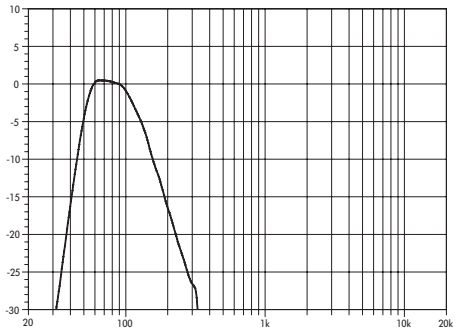
Frequency response (–5 dB).....50 Hz - 120 Hz
Max. sound pressure (1 m, free field)*.....
with D12.....129 dB
with E-PAC.....125 dB
Input level (100 dB SPL / 1 m).....–8 dBu
Polarity to amplifier INPUT (XLR pin 2: + / 3: –).....LF: +

Loudspeaker data

Nominal impedance.....8 ohms
Power handling capacity (RMS / peak 10 ms).....200 / 800 W
Components.....1 x 12" driver
Connections.....2 x NL4 (2+ / 2–)
Weight.....20 kg (44 lb)

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

The D12 configuration
The E-PAC configuration



E12 frequency response

E12 with D12

Selecting E12-SUB mode in the D12 enables up to two E12-SUBs to be driven by each channel.

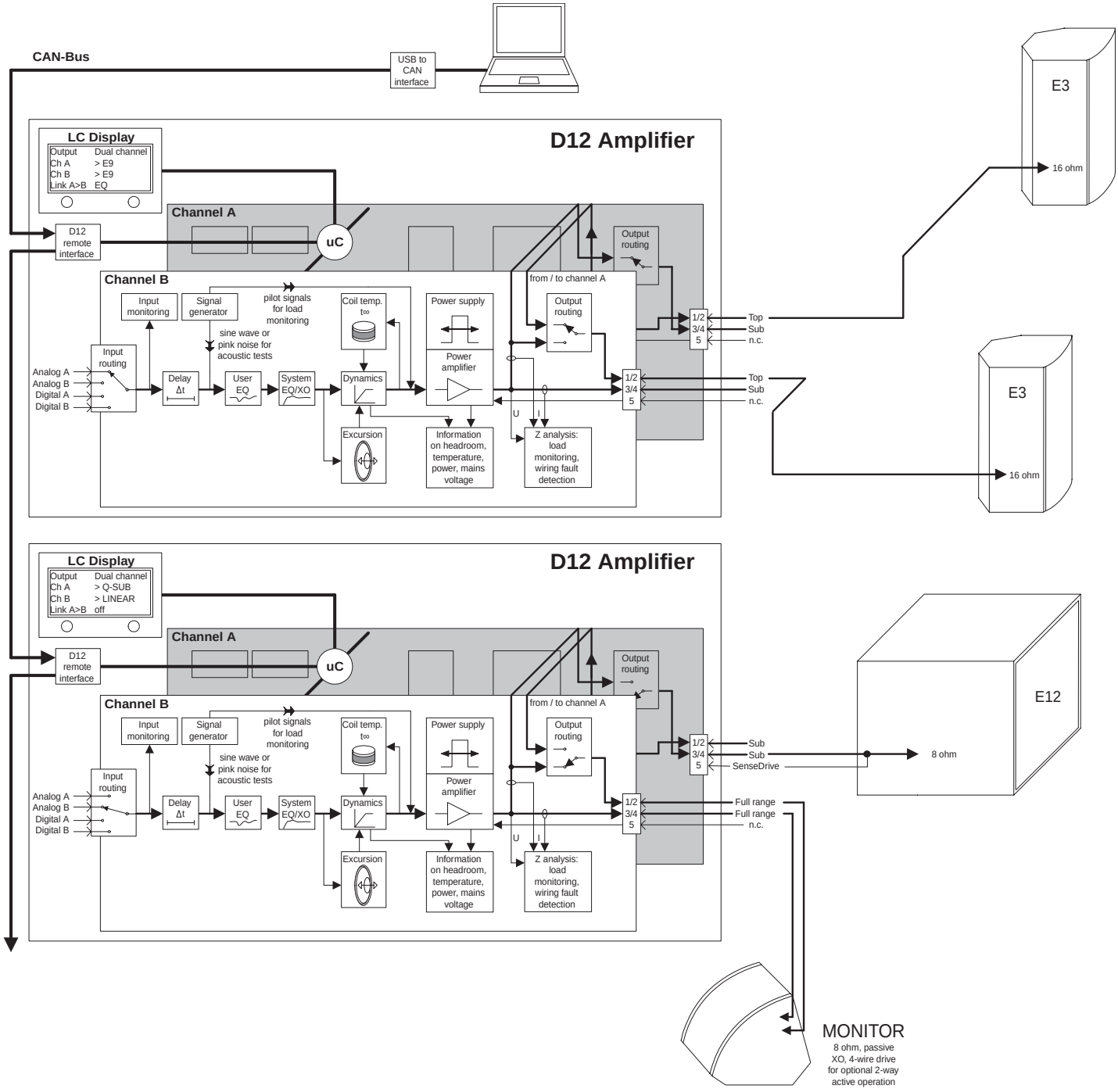
For acoustic adjustment the 140 Hz setting can be selected.

If the 140 Hz setting is selected, the upper operating frequency of the system is increased from 120 Hz to 140 Hz. This setting allows the E12-SUB to operate with up to four E0 loudspeakers.

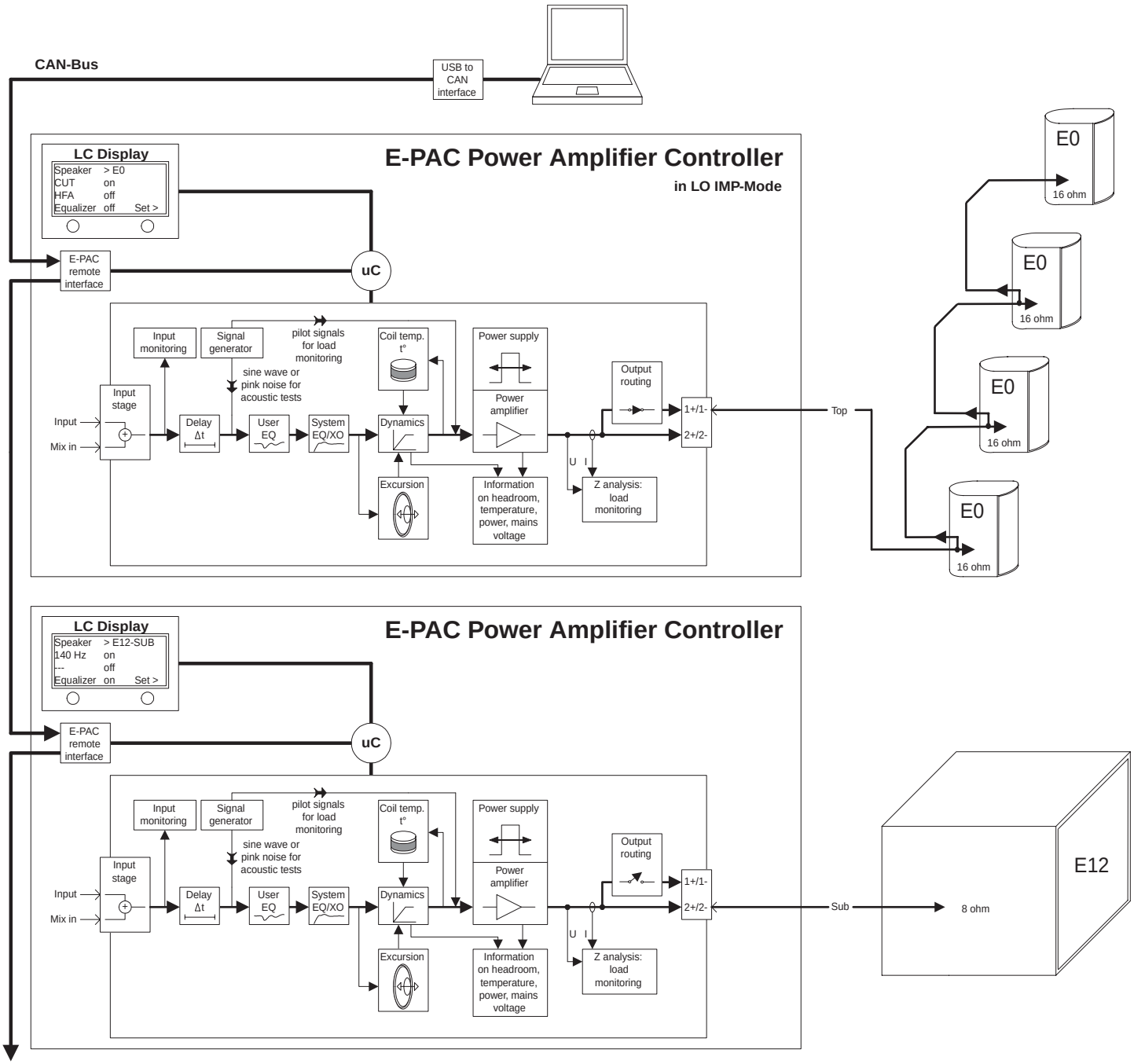
E12 with E-PAC

Selecting E12 mode enables the E-PAC to drive a single E12 subwoofer. We do not recommend that two E12 cabinets are driven in LO IMP mode as the 6 dB reduction in input level to the loudspeakers results in no gain in acoustical output. The 140 Hz setting is available.

The D12 system block diagram



The E-PAC system block diagram



The E-Series product overview

	Code	Description
System units	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)
	Z2510.000	**E-PAC Power amplifier controller** (85 - 285 V)
	Z3000.000	**ROPE C Remote control software** (available as a download from www.dbaudio.com)
	Z3001.000	**R10 Service software** (available as a download from www.dbaudio.com)
	Z0400.000	**E0 Loudspeaker black**
	Z0400.001	**E0 Loudspeaker white**
	Z0400.200	**E0 Loudspeaker NL4 black**
	Z0400.201	**E0 Loudspeaker NL4 white**
	Z0300.000	**E3 Loudspeaker NL4**
	Z0200.000	**E12 Subwoofer NL4**
Options		**Special colours** (cabinets and grill foam) on request
Cables	Z2291.000	**MC4 NL4 cable** various lengths
	Z2296.000	**NL4 Extension adapter**
	K3106	**MC4 cable** unterminated
Racks	E7419.000	**Touring rack 3 RU, 19"** DD, shock mounted, handles, window
	E7420.000	**Touring rack 6 RU, 19"** DD, shock mounted, handles, window, wheels
	E7424.000	**Touring rack 9 RU, 19"** DD, shock mounted, handles, window, wheels
	E7210.000	**Touring rack 2 RU, 9.5"** for 1 x E-PAC, DD, shock mounted, handles
	E7211.000	**Touring rack 2 RU, 19"** for 2 x E-PAC, DD, shock mounted, handles
	Z2501.000	**E-PAC Rack mount kit** solo, 19"
	Z2502.000	**E-PAC Rack mount kit** dual, 19"
	Z2503.000	**E-PAC Rack mount kit** solo, 9.5"
Cases	E7428.000	**Touring case 4 x E0** sleeve, moulded speaker profile, handles
	E7410.000	**Touring case 4 x E3** sleeve, integral tray, wheels
	E7412.000	**Touring case 2 x E3** sleeve

The E-Series product overview

	Code	Description
Accessories	B2123.000	**Fixing plate black**, M10 for E0
	B2123.201	**Fixing plate white**, M10 for E0
	E6532.000	**Super Clamp** for E0
	E6533.000	**M10 adapter** for Super Clamp
	E6001.000	**Loudspeaker stand**
	Z5009.000	**Loudspeaker stand** winder
	Z5013.000	**Loudspeaker stand** winder M20
	Z0127.000	**T bar adapter**
	Z5034.000	**Stand adapter** for E0 and E3 (Z5030 / 32 / 33)
	Z5032.000	**E3 Swivel bracket**
	Z5033.000	**E3 Ball joint adapter**
	Z5028.000	**E3 / Ci80 Horizontal bracket**
	Z5027.000	**E3 Ball joint wall bracket**
	Z5012.000	**Pipe clamp** for TV spigot (WLL 50 kg / 110 lb)
	Z5029.000	**TV spigot** for E0 and E3 (Z5030 / 32 / 33)
	Q9031.000	**M8 Safety eyebolt**
	Z5035.000	**M10 to 3/8" adapter**
Misc.	Z5060.000	**Anti-slip coating** 1 kg / 2.2 lb
	Z5061.000	**Standard cabinet paint** 1 kg / 2.2 lb

For worldwide distribution details: www.dbaudio.com

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