DX12 & DX15 speakers
Technical brochure

Multi purpose speakers DX12 & DX15

Overview

DX12 and DX15 were developed together with the aim of producing a pair of loudspeakers that are completely compatible from an acoustic point of view. In fact, apart from the low frequency drivers, the two models offer the same ergonomics and utilize the same technologies and components. In terms of size, DX12 is a perfectly scaled down model of DX15.

The highly sophisticated ergonomics make these loudspeakers incredibly versatile and perfectly adapted to any FOH or monitoring application.

DX12 and DX15 utilize coaxial technology to offer coherent conical acoustic fields of 90 and 80°.

- DX12 is a 12" LF driver with a 1" HF unit
- DX15 is a 15" LF driver with a 1" HF unit

The two models use exactly the same HF compression driver to offer perfect sonic compatibility when both speakers are used together.

This new range is specifically designed to offer maximum versatility for the live and corporate AV markets including TV studios.

Benefits

DX Series speakers are fitted with highly optimized transducers for maximum acoustic performance: wide bandwidth, high dynamic capacity, power handling, low distortion, frequency and phase response linearity, exceptional feedback control…
"All inclusive" ergonomics :

- 2 floor monitoring angles : 30° and 45°
- Protective skids which may be replaced when worn
- Multiple handles and recesses for ease of handling
- Protected and concealed connector inputs
- Integrated pole-mount adaptor
- Two flying systems:
    - 8 inserts for hanging – choice between rings or quick-release pins
    - Ultra-fast lyre bracket system – 90° angle aiming tuning plate
- Reinforced grille
- Metal screws and fixings throughout

Corporate AV applications:

- Elegant design with high quality chassis
- Concealed and discrete rigging systems
- Optional shell available in many different colours

1. DX Series loudspeakers

DX12 / DX15 couple in floor monitoring or FOH

Handling

Hanging : ring screw and lyre bracket

Ergonomic innovations/advantages:

- 2 floor monitor angles: 30° and 45° (protective skids which may be replaced when worn)

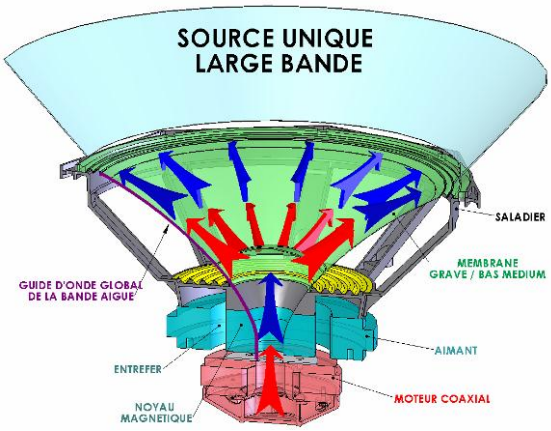
All rigging/fixing points and connectors concealed in the side panels including:

- Multiple handles and recesses for ease of handling in any position
- Side connectors concealed and protected means cabling remains discreet at all times
- Integrated pole-mount adaptor
- Two flying systems:
  - 8 inserts for hanging – choice between rings or quick-release pins
  - Ultra-fast lyre bracket system – less than 10 seconds implementation from start to finish. Once the lyre bracket is installed it is virtually invisible from the front.
  - 90° angle aiming calibration plate with angles printed on the plate for even faster implementation
- Metal screws and fixings throughout for greater durability and reliability over time.
- Reinforced grille that will always return to original shape if deformed.

Corporate AV applications:

- Elegant design and quality finish makes it very suitable for AV use
- Concealed rigging points and lyre bracket
- Optional shell available in many different colours – the same speaker can be any colour you like!

2. Acoustic technologies



Coaxial loudspeakers

A coaxial loudspeaker is one in which the individual driver units are placed one inside the other to radiate sound from the same axis. The resulting single point source generates a perfectly coherent acoustic field.
The overall weight of the DX12 is just 19 kg and 22 kg for the DX15 thanks to the use of lightweight neodymium magnet drivers.
The 15" and 12" take advantage of the small ported enclosures to deliver low frequency response while the 1" HF driver offers a response up to 19 kHz.
The loudspeakers have been optimized in order to reduce distortion. Similarly, a "pure" coaxial technology approach (no horn) has been adopted to avoid diffraction in mid/high frequency zone.

Side wood panels replaced by metal grille

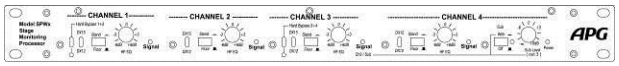
Acoustic load

Thanks to modern metal and woodworking techniques DX series loudspeakers have been constructed such that the loudspeaker baffle comprises just two and not four wooden panels –in fact the grille closes the frame on the sides. The result is that diffraction is reduced by 50%, which correspond to an improvement in gain of 3 dB before feedback.
DX12 and DX15 make possible to exploit virtually all of the documented power rating before running into feedback.

3. Electronics and cabling

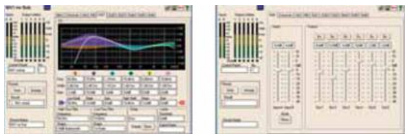
SPX12 and SPX15 Static processor

LPX12 and LPX15 Dynamic Processor

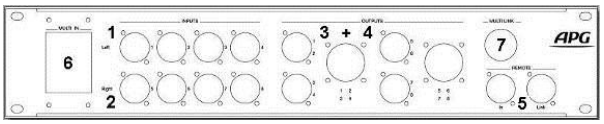


SPWX Stage Monitoring Processor

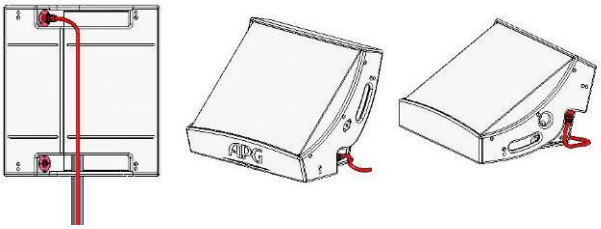
DMS26 Digital Processor



PWAPG software control



PCM and PCS connection panel



SIGNAL PROCESSING :

Analog processors : 3 possibilities

- **SPX12 and SPX15** : static processors for low power FOH applications
- **LPDX12 and LPDX15** : dynamic processors for high power FOH and monitoring applications
- **SPWX** : 4-channel processor for DX12 **AND** DX15, for stage monitoring applications

Digital processing DMS26

The DMS26 processor features 2 inputs and 6 analog outputs (96kHz/24 bits).
The DMS26 comes pre-loaded with the APG loudspeaker presets. It is also possible to create and save your own presets.
Several DMS26 devices may be networked together using a **BVNETCARD** card and the **BVNETADAPT** interface for large scale configurations with remote control via the **PWAPG** software.

CONNECTION PANEL FOR AMP RACKS :
PCM panel (mono) and PCS panel (stereo)

1. 4 XLR 3 inputs
2. 4 XLR 3 links (PCM) OR 4 XLR 3 inputs (PCS)
3. 2 SpeakonTM 8 point outputs
4. 4 SpeakonTM 4 point outputs
5. Network connectors (In + Link)
6. Location for Harting™ 24 point connector
7. Location for cable insert adapter (Ø 26mm)

CABLING

Cabling is done with Speakon™ connectors and 2.5mm² conductors. Daisy-chaining is carried out using discrete cables, thus avoiding the risk of breaking connectors.

POWER AMPLIFICATION

APG recommends the use of professional amplifiers with following minimum power values :

- **DX12:** 400W into 8 Ohms
- **DX15:** 600 W into 8 Ohms

4. Low frequency extension

Subwoofers

APG recommends the use of TB Series subwoofers (K-horn technology) in order to extend the system's bandwidth down to infra bass.

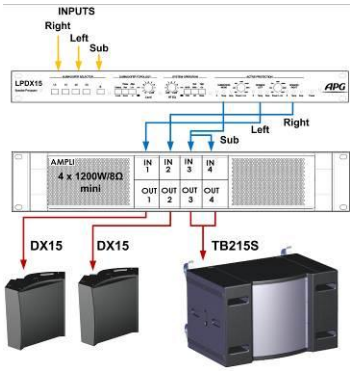
DX12 in full range:	65Hz – 19KHz
DX15 in full range:	55Hz – 19KHz
DX + TB115S :	45Hz – 19KHz
DX + TB118S :	40Hz – 19KHz
DX + TB215S :	45Hz – 19KHz
DX + TB218S :	35Hz – 19KHz

The subwoofer and cardioid network configuration presets for the DMS26 digital signal processor are provided on demand.

Combination examples :

2 x DX and 2 x TB115S subs
2 x DX and 2 x TB118S subs
2 x DX and 1 x TB215S sub
2 x DX and 1 x TB218S sub

5. System configuration

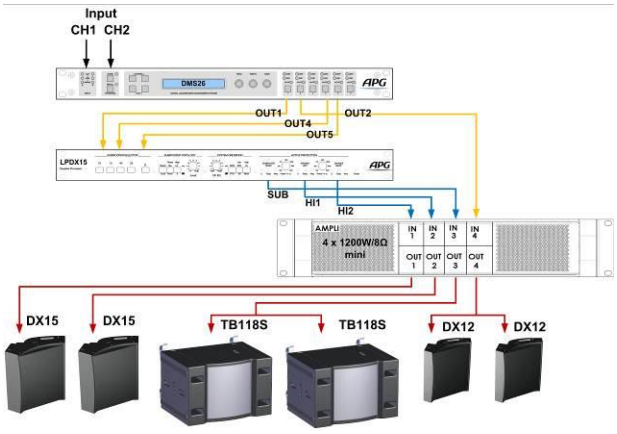


DX15/TB215S stereo FOH

Stereo FOH

Main elements:
2 x DX15
1 x PCM
1 x DMS26
1 x amp (4 x 1200W/8Ωmini)

This configuration can be used as main FOH or side fill system and rental inventory.
In this example, channels 3 and 4 are used in bridge.



4-channel SMX15 system

Distributed FOH configuration

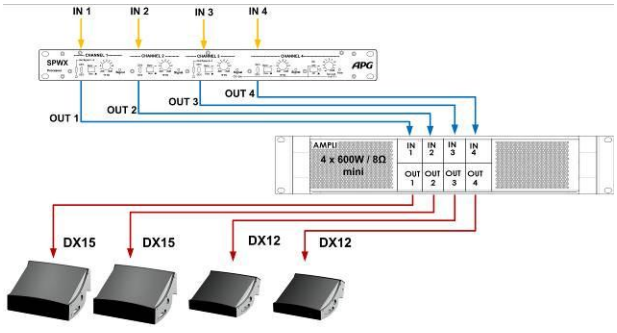
Main elements:
4 x DX15
1 x PCM
2 x DMS26
1 x amp type 1 (4 x 600W/8Ω mini)
1 x amp type 2 (4 x 1200W/8Ωmini)

Network and remote control option :
2 x BVNET Card
1 x BVNET Adapt

This kit is an example of theatre or medium size venue installation.

Stage monitoring configuration 1 :

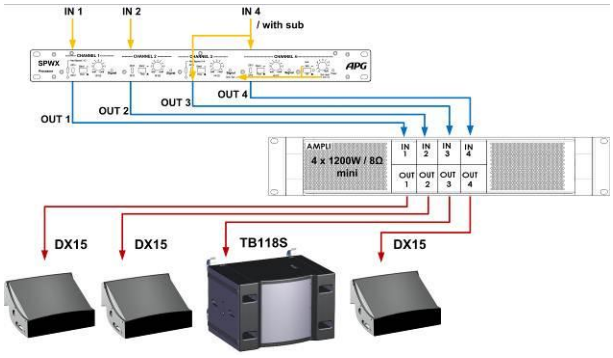
Utilisation of the SPWX to combine DX15 and DX12
4 independent monitor channels
The dedicated SPWX processor enables the choice of either a DX15 or DX12 channel for each output.



Main elements :
2 x DX15
2 x DX12
1 x SPWX
1 x amp (min 4 x 600W / 8Ω)

Stage monitoring configuration 2 :

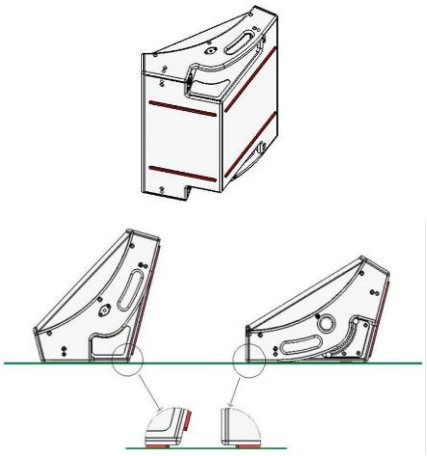
Here the SPWX is configured for 3 independent monitor channels with a combination of loudspeakers and subs for drum fill or side fill applications. Channels 3 and 4 have been combined: Hi on 4 and Sub on 3.



Main elements :
3 x DX15
1 x TB118S
1 x SPWX
1 x amp (4 x 1200W / 8Ω recommended or min 600W)

The presets adapted to the different configurations (FOH, stage monitor, with or without processing, etc...) are available on APG's web site : www.apg.tm.fr

6. Install



Set up on the floor

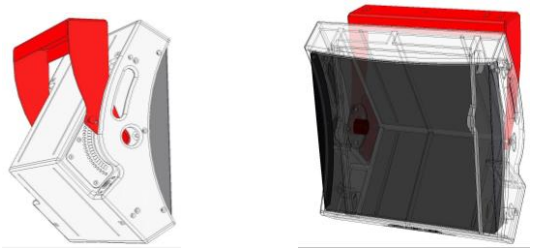
Stage monitoring use

When used as floor wedges, DX12 and DX15 provide 2 orientation angles : 30° and 45°.

The choice of the angle depends on stage configuration and the position of the artist.

The 30° angle is used for near field – this position offers the lowest profile
The 45° angle is used for far field.

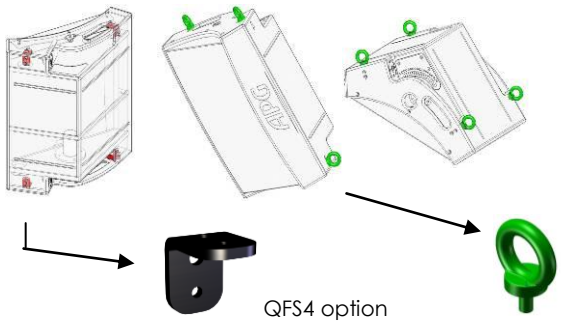
Protective skids (which may be replaced when worn) allow to protect paint and cabinets.



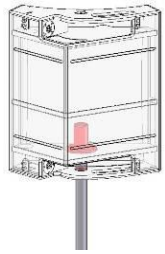
ETDX12 and ETDX15 lyre bracket principle

For the permanent or temporary installation, different rigging options are available:

- ETDX12 and ETDX15 lyre brackets enable a horizontal position when flown, either from the roof or from trussing.
  The lyre brackets require the 12ATP90 and 15ATP90 angle-tuning plates which offer 21 angle choices in 5° increments.



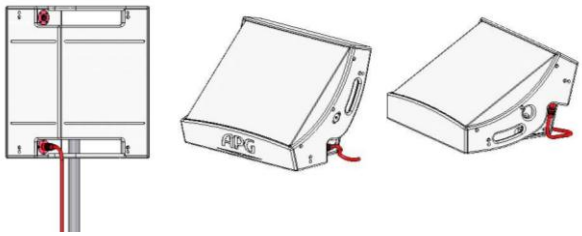
QFS4 option



« DX » speaker on stand

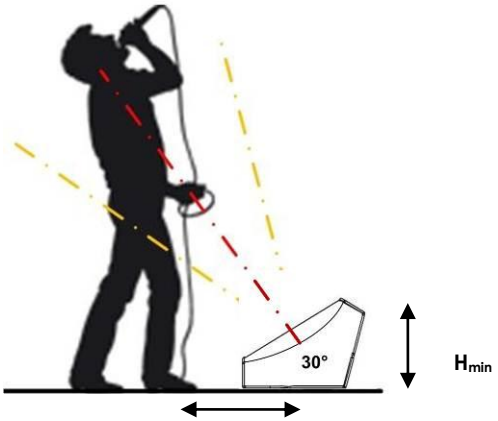
DX12 and DX15 can be pole-mounted. They are equipped with a standard 36mm pole insert for close FOH use or side fill on stage.

Thanks to the location of the connectors, even in a FOH configuration, the cables run against the pole and thus remain discreet.



Use on a stand or on the floor

7. Use of angles

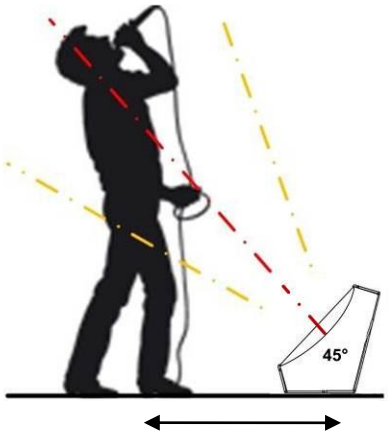


From approx. 0.5m to 1.5m

A 30° angle is ideal for use in close range on stage.

In this position, the speaker presents its lowest profile, reducing the visual impact for the audience in front of the stage. This angle is adapted to small stages and when the speakers are on the edge of the stage.

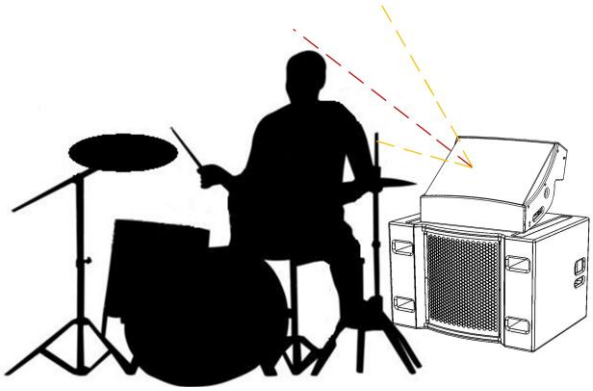
Min Height : 0.32m



From approx. 1m to 2.5m

A 45° angle is better adapted for medium range stage use.

This angle offers a more extended coverage.



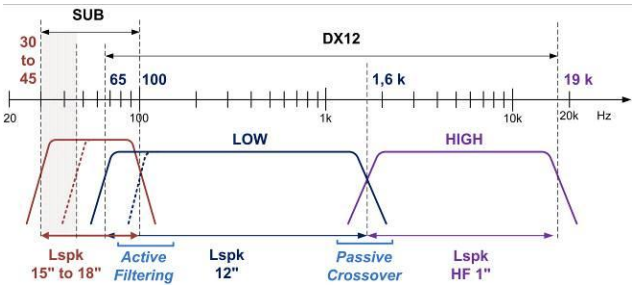
Example of a DX15 with a TB118S Sub for drum fill

For monitoring applications such as drum fill or side fill, DX12 and DX15 speakers can be paired with a subwoofer from the TB range or with low profile subs such as SUB138P and SUB238S.

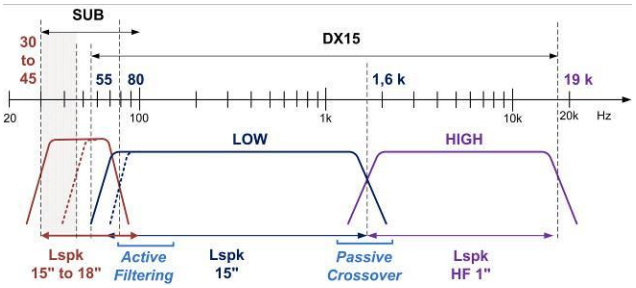
This makes for a very compact and visually unobtrusive system on stage which is ideal for, say, drummers and keyboard players.

Acoustics fields represented at -3dB from axle.

8. Characteristics



DX12 filter mode



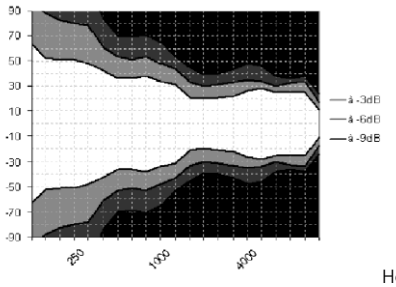
DX15 filter mode

Technical specifications

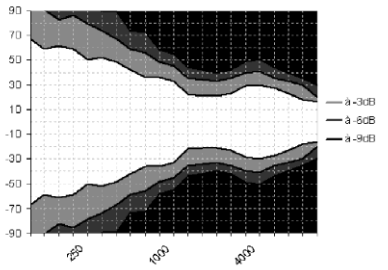
Speaker

	DX12	DX15
Response (± 3dB) *	65 – 19 K Hz	55 – 19 K Hz
Efficiency @ 1W /1m	98 dB SPL	100 dB SPL
Power AES	400 W	600 W
Max SPL @1m	124 dB SPL	127 dB SPL
Peak SPL @1m	130 dB SPL	133 dB SPL

*Frequency response measured with processor



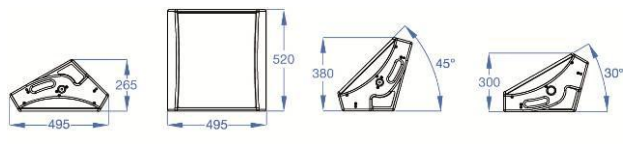
Horizontal dispersion



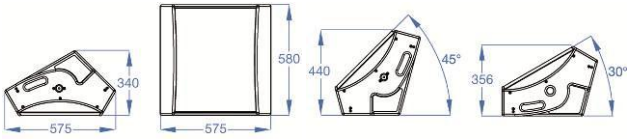
Vertical dispersion

Components	DX12	DX15
Low freq. transducers Coil diameter	1 x 12'' (30cm) 75 mm	1 x 15'' (30cm) 75 mm
High freq. transducers Coil diameter	1 x HF 1'' 45 mm	1 x HF 1'' 45 mm
Crossover	Passive	Passive
Impedance	8 Ohms	8 Ohms
Average angle directivity *from 1 KHz*	90° conical	80° conical

The measures of directivity in the horizontal and vertical planes show an acoustic field with no defects or "hot spots" This confirms the absence of diffraction that appears with most other traditional horn-based products.



Cotes DX12



Cotes DX15

Physical characteristics

Dimensions	520 x 495 x 265	520 x 495 x 265
Weight (unit)	19 kg	22 kg

Materials

The cabinet is constructed from birch plywood covered with a high resistance black aquarethan coating.
There are metal screws and fixings throughout for greater durability and reliability over time and a reinforced grille that will always return to its original shape if deformed. A layer of acoustic foam is glued under the front grille to protect the speakers against projections of dust and liquids.

Sundry

Training

APG organises a number of training days on the use of its products aimed at different areas of specialisation within the world of professional sound reinforcement.
There are two levels of training: sound technician and sound engineer.

Technical support

APG's technical support engineers offer an advanced level of ongoing technical support with the aim of finding the optimum solution from both a technical and economic point of view.

Also, as well as acoustic simulation performed using traditional acoustic modelling software, APG has developed two "project specification" tools – APG Project Manager, and the APG Project Specification Guide software – which will enable third party installers to create and document an APG installation, which can then be easily reviewed and ratified by our technical department.

General information

APG takes no responsibility for errors committed on behalf of the users of their products.
APG has a comprehensive research and development policy for the continual improvement of its products and service.
Due to this, new materials, manufacturing methods and technological changes may be introduced without prior notice.
As a result, an APG product may differ from its published description in certain areas. However, unless otherwise indicated, its characteristics will always equal or better the published specifications.

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