Operation Manual

Version 1.0

IBZA Series

IBZA12

Compact Multipurpose Loudspeaker

Keep these important operating instructions.
Check www.tecnare.com for updates.

General Information
IBZA12 Operation Manual
Ver.: 1.0_UK 12/2017
©EXEL ACOUSTICS SL; all right reserved

The information contained in this manual has been carefully checked for accuracy, at the time of going to press, however no guarantee is given with respect to the correctness.

Exel Acoustics SL accepts no responsibility for any errors or inaccuracies that may appear in this manual or the products and software described in it. Technical specifications, dimensions, weights and properties do not represent guaranteed qualities. As manufacturers we reserve the right to make alterations and modifications within the framework of legal provisions, as well as changes aimed at improving quality.

EXEL ACOUSTICS SL
CL Encinar, 282 – Pol. Ind. Monte Boyal
45950 Casarrubios del Monte (Toledo) Spain
Phone: (+34) 918 170 110 Fax:
e-mail: support@tecnare.com www.tecnare.com

IMPORTANT SAFE INSTRUCTIONS

Before using our product, be sure to carefully read the manual and safe Instructions. Keep this document with the device all time.

1 Read these instructions.

2 Keep these instructions.

3 Heed all warnings.

4 Follow all SAFETY INSTRUCTIONS as well DANGER and OBLIGATION warnings.

5 Only use attachments / accessories specified by the manufacturer.

6 Use only with the cart, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart / apparatus combination to avoid injury from tip-over.

7 If the equipment is used in a manner not specified by the Exel Acoustic, the protection by the equipment may be impaired.

8 Read the entire Product Information document before exploiting the system.

9 Read the Rigging Manual before installing the system. Use the rigging accessories described in the rigging manual a follow the associated procedures.

CAUTION: Rigging should only be done by experience professionals.

10 This speaker enclosure is capable of creating a strong magnetic field. Please use caution around the enclosure with data storage devices such as phones, computers or hard drivers.

11 Handles are for moving the system only.

12 **Beware of sound levels.** Never stand in the immediate vicinity of loudspeaker driven at high level. Professional loudspeaker systems are capable of causing a sound pressure level (SPL) detrimental to human health. Hearing damage can also occur with prolonged exposure to sound: 8h at 90 dB(A), 30 min at 110 dB(A), less than 4 min at 130 dB(A) *Source: European Directive relating to the assessment and management of noise 2002/49/CE*

13 When setting up the loudspeaker or loudspeaker stand, make sure they are standing on a firm surface. If you place several enclosures on top of one another, use straps to secure them against movement.

DECLARACIÓN DE CONFORMIDAD
DECLARATION OF CONFORMITY

EXEL ACOUSTICS SL

CL Encinar, 282. Polígono Industrial Monte Boyal. 45950 – Casarrubios del Monte (Toledo), España (Spain).

Declara que el producto **IBZA12** y sus respectivas opciones, cumple con las Directivas:

*Declare under our sole responsibility that devices in the **IBZA12** range of products, comply with relating Directives:*

(1) Directiva de Baja Tensión - 2006/95/CE
(2) Directiva de Compatibilidad Electromagnética - 2004/108/CE
(3) Directiva **RoHS** - 2011/65/UE
(4) Directiva **RAEE** - 2012/19/UE

(1) Low Voltage Directive 2006/95/CE
(2) EMC 2004/108/CE
(3) RoHS Directive 2011/65/UE
(4) WEEE Directive 2012/19/UE

Table of Contents

IMPORTANT SAFE INSTRUCTIONS 3
DECLARACIÓN DE CONFORMIDAD 4
1 Introduction 6
1.1 Welcome to Tecnare 6
1.2 IBZA Series 7
1.3 The IBZA12 Compact Loudspeaker 8
1.4 Connections 9
1.5 Processing and Amplification 10
2 Loudspeaker Configuration 11
2.1 Configurable Asymmetrical Horn 11
2.2 Vertical Point Source 11
2.3 Horizontal Point Source 12
2.4 Point Source with low-frequency element 12
2.5 Rotating the Horn 14
2.6 Recommended Speaker Cables 15
3 Amplifier Configuration 16
3.1 Connection to PA4.1500 16
3.2 Connection to PA21/PA3000 17
3.3 Connection to T-44 Series 17
4 Integrating IBZA12 Using Subwoofers 18
4.1 Integrating IBZA12 Loudspeakers Systems with Tecnare Subwoofers 18
4.2 Signal Delay 18
5 Technical specifications 19

1 Introduction

1.1 Welcome to Tecnare

Thank you for choosing the high-quality Tecnare® **IBZA12 System "Made in Spain"** from **EXEL ACOUSTICS SL**.

Please spare a little time to study the contents of this manual, so that you obtain the best possible performance from this unit.

All Tecnare® products are carefully engineered for world-class performance and reliability.

If you would like further information about this or any other Tecnare® product, please contact us. We look forward to helping you in the near future.

As part of a continuous evolution of techniques and standards, Exel Acoustics SL as manufacturer of Tecnare® products reserve the right to change the specifications of its products and the content of its documents without prior notice.

Updates and supplementary information are available on the Tecnare® website:

http://www.tecnare.com

Tecnare Technical Support is available at:

- (T): +34 918 170 110 - +34 918 171 001
- (e-mail): support@tecnare.com

Thank you again for placing your confidence in Tecnare® products.

1.2 IBZA Series

IBIZA Series is the ultimate reference for rental productions, fixed installations and dance clubs environments. It is a combination of high-end audio, sound quality, stunning aesthetics, extreme sound pressure level and reliability. IBZA is a family of distinct format of loudspeaker systems, engineered for different short-throw applications, including FOH systems, distributed systems, side-fill monitors, complementary fills and, of course, dance environments, where high-output, low-distortion, and the highest quality sound are required.

The series is formed from:

- **IBZA P204**, passive ultra-compact loudspeaker, 120º axis-symmetric, 80Hz-20KHz.
- **IBZA6**, passive compact loudspeaker, 80º axis-symmetric, 82Hz-20KHz.
- **IBZA6 Plus**, passive ultra-compact loudspeaker, 70º axis-symmetric, 85Hz-18KHz.
- **IBZA8**, passive compact loudspeaker, 110º axis-symmetric, 65Hz-18KHz
- **IBZA10,** passive compact loudspeaker, 70ºx50º, 45-18KHz
- **IBZA12**, passive/active enclosure, (50ºx100º)x60º, 56Hz-18KHz
- **IBZA15**, passive/active enclosure, 80ºx50º, 48Hz-18KHz

IBZA Series constitutes a broad range of point source, full range loudspeakers that providing high SPL, different directivities patterns and a good sonic performance off-axis.

The IBZA Series is suited to various sound reinforcement applications as a main or complementary system.

IBZA Series enclosures are easy to integrate, combining sonic character with style. Its aesthetic appearance makes it ideal for the most demanding architectural environments.

DP Series Processors and ***T-Series*** amplified controllers are the heart of the system. Thanks to their dedicated factory presets, they constitute an extremely advanced and precise drive system for the enclosures.

Applications:

- Dance Clubs.
- Theatre, corporate and live events.
- House of Worship.
- Touring.
- Live music venues.

Main Characteristics:

- Built in proprietary hardware for simple, fast and safe rigging.
- Enclosures made with the latest techniques ensuring a perfect and rigid construction.
- Weatherized finish is provided, as the cabinet is coated with rugged Durawound texture finish and protected with specially treated grills.
- 16mm or 18mm birch plywood. Finished in black semi-matt textured Durawood weatherized coating.
- Powder coated perforated steel grid with acoustically transparent reticulated foam.
- Max SPL: Up to 133dB Continuous.

1.3 The IBZA12 Compact Loudspeaker

The IBZA12 is a trapezoidal compact two-way full-range loudspeaker. The LF/MF section comprises a 12-inch loudspeaker loaded in a vented-bass cabinet and the high frequency section utilizes a 1-inch exit compression driver mounted on an asymmetrical rotatable (50ºx100º)x60 HF horn.

IBZA12 has an exceptional power/size ratio, great clarity in sound reproduction and a highly aesthetics. The wooden enclosure features a recessed Neutrik® SpeakON® connectors and threaded inserts, allowing the use of a 3mm steel bracket for flying or wall/ceiling-mount purposes (optional *TUB-12*). Optional external pole mount socket and "*Array* Frames" are also available to stand up position or array suspension (TAF-12 and TAF3-12. *See all rigging options in the rigging manual*).

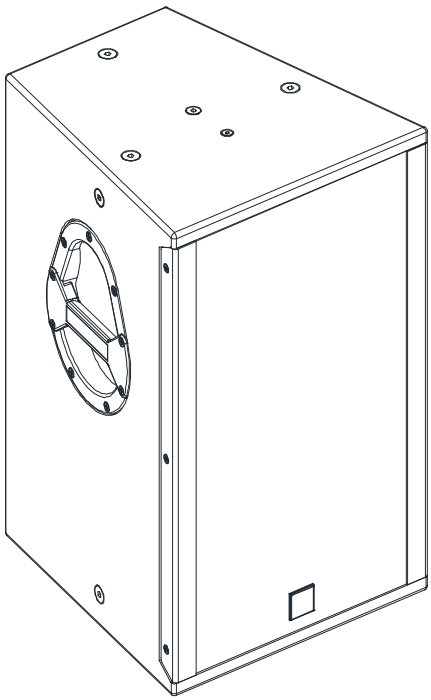
Dedicated preset for **DP Series** processors or T-Series amplifiers are available to operate the **IBZA12** in full-range mode or combined with Tecnare® subwoofers.

The full-range compact IBZA12 loudspeaker offers total versatility between all types of near-field listening applications: stage monitoring; distributed systems; in-fill/near-fill/delay etc; PA with or without subwoofers.

IBZA12 is designed for small to medium size venues or as a distributed system. Its compactness and sonic performance make IBZA12 the perfect loudspeaker for applications where unobtrusiveness and high quality sound reproduction are at a premium.

In full-range mode with or without processor the IBZA12 is perfect for speech or vocal, such as conferencing or place of worship. With a processor, it offers highly accurate music reproduction. Combined with Tecnare® subwoofers, IBZA12 is capable of high level performance in mid-sized venues.

Available series in a grey colour or white custom colour, the IBZA12 can be easily integrated into any building style for ultimate discretion, satisfying the most demanding architectural needs. Rigging options include wall mount, ceiling-mount and optional external pole-mount in various orientations for integration into any possible situation.

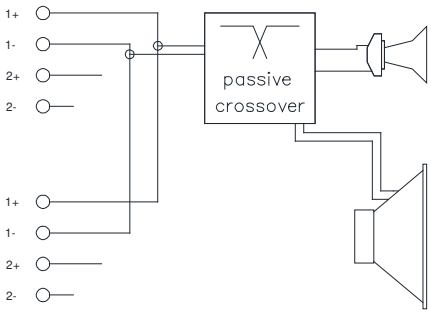


1.4 Connections

IBZA12 loudspeaker utilizes Neutrik® SpeakON® connectors. There are two NLT4 connectors on the rear of each IBZA12. These connectors mate with Neutrik® NL-4 or NL-4 compatible in-line cable connectors. Only two pins (1+/1-) of both connectors are wired in parallel. The following subsections describe the electrical connections. Other configuration should be requested at the purchase time.

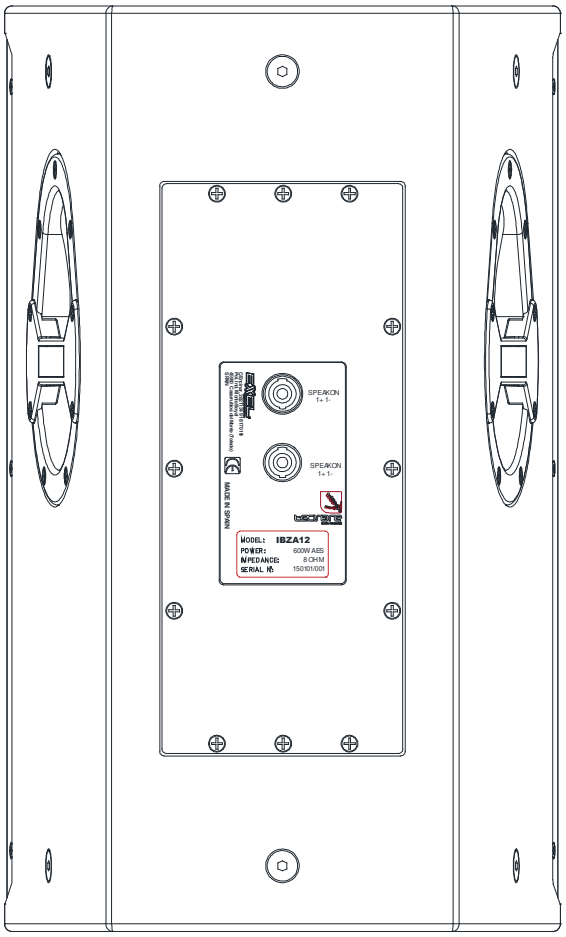
The IBZA12 uses the pin assignment 1+/1+.

Using one as the input, the second connector allows for direct connection to a second cabinet in parallel.



Internal pinout for IBZA12 enclosures

IN speakON® point	1+	1-	2+	2-
Connection	LF +	LF -	NC	NC



1.5 Processing and Amplification

Only operate Tecnare loudspeaker with a correctly configured Tecnare preset. Tecnare offer a complete solution that guarantees the highest level of performance. A complete range of controllers, amplified and amplified controller with DSP are available to get this objective. Otherwise, there is a risk of damaging the loudspeaker components.

1.3.1 Processing

There are two options using our digital controllers. The ***DP2696*** or ***DP4896*** are the approved processor for use whit IBZA Series. The options vary depending on the final application. *Refer to DP2696 or DP4896 user manual.*

You may obtain the settings from the DP Series at http://www.tecnare.com website

1.3.2 Amplification

To power IBZA Series, Tecnare recommends amplifiers with the power ratings enough to feed the loudspeakers. For high power or live applications, it is recommended to oversize the amplifiers relative to the nominal AES output of the loudspeakers. A lower power amplifier will not reduce the chances of driver damage due to over-excursion, and may actually increase the risk of thermal damage due to sustained clipping.

In certain specific cases it is possible to slightly under-power the subs or loudspeakers as long as the amplifier will not be driven to its limits.

In any case, the Tecnare processors should be deployed in front of the amp to ensure that the amplifiers to not go into clip.

The **TSeries** amplifier or **DP4896** processors also include:

- Virtual **X**over Limiter for passive systems
- Thermal protection from power surges or overload
- **Xmax** Excursion displacement protection

The **T10-44**/**T6-44** and **T-48 Series** amplifier is the ideal companions for maximum performance of the IBZA Series loudspeakers. These *Advanced System Amplifiers* controlled with DSP offer a complete both preset and protection solution for any application.

2 Loudspeaker Configuration

2.1 Configurable Asymmetrical Horn

The **IBZA12** loudspeakers are designed for standing, vertical and horizontal operation. A variety of accessories is available from Tecnare® to securely attach the loudspeaker, e.g. on stands or suspended horizontally or vertically from trusses and motor lifts.

In some situations, it may be advantageous to switch the coverage of the high frequency range. For this purpose the *Asymmetrical Dispersion Constant Directivity* rotatable horn is an important feature of the **IBZA12**. The horn can be rotated in four different positions and can be useful for specialized applications such as complex arrays, systems designed with CAD software, etc.

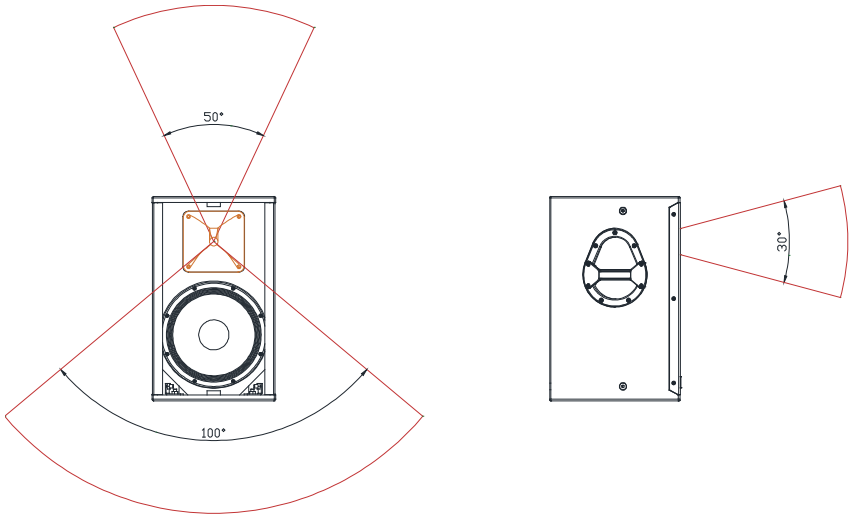
Ensure that the loudspeakers are securely attached to prevent personal injury and property damage.

NOTE

TECNARE recommends using only the accessories specified by TECNARE to secure the loudspeakers.

2.2 Vertical Point Source

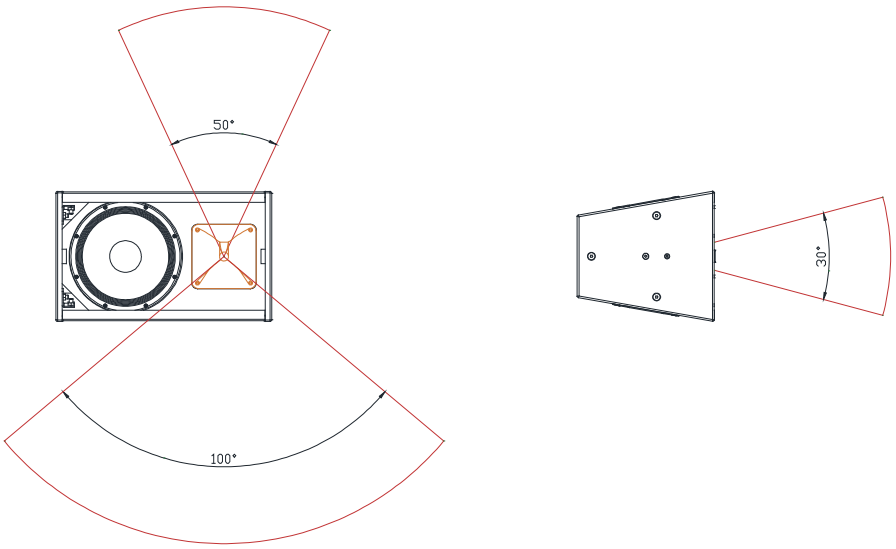
Good coverage of audiences often requires a conflicting combination of wide coverage ("short-throw") for the closest listeners (below cabinet axis) and narrow coverage ("long-throw") for distant areas (on or above axis). The IBZA12 loudspeaker horizontal horn coverage varies from "short-throw" to "long-throw" along the vertical axis to precisely match these practical requirements in a single system. For the majority of applications, the asymmetrical horn should be used with its "wide" dispersion side directed towards the floor, but all four cabinet orientations are usable.



IBZA12 Standalone mode

2.3 Horizontal Point Source

The specific HF dispersion pattern and rotatable horn provides unique flexibility in ceiling mounting, floor mounting applications as well as vertical array mounting.



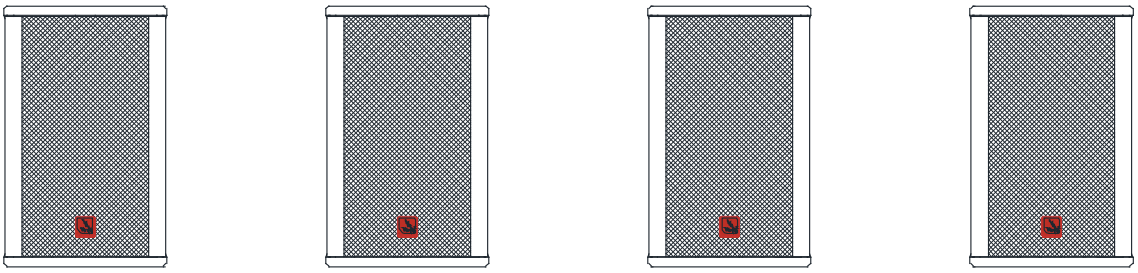
IBZA1 Horizontal mode

2.4 Point Source with low-frequency element

In this configuration, the frequency response of the IBZA12 is extended in the low end.

IBZA12 enclosure is driven by the PA4.1500, PA2100 or PA3000 amplifier with the DP Series Processor or T-44/T-48 Series amplifier controller both with same factory preset as in point source configuration. The subwoofer will be operating with its corresponding factory preset. The upper frequency limit must be 100 Hz for an optimal acoustic coupling with the enclosure.

If your IBZA10 loudspeakers and subwoofers are separated by a greater distance - or delay must be used between them - a measurement system such as *SMAART* should be used to determine the correct delay and polarity.

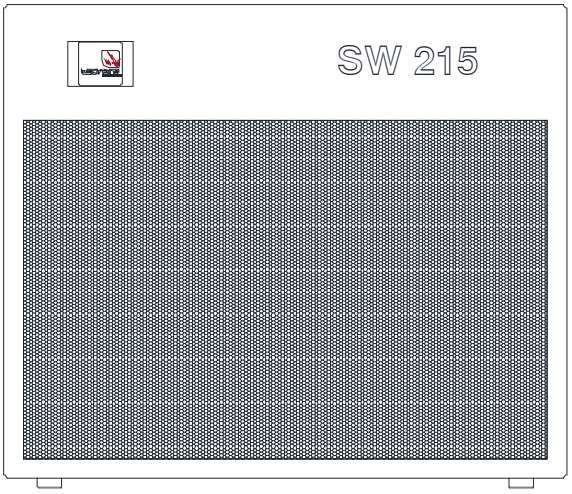


Frequency Range (+/- 6dB)

38- 18KHz

Recommended ratio

1xSW-215: 4xIBZA12

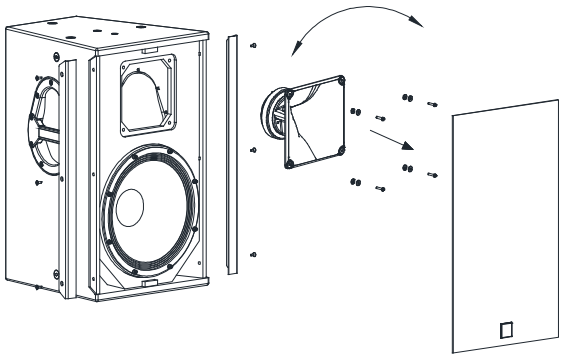


IBZA12 + SW-215

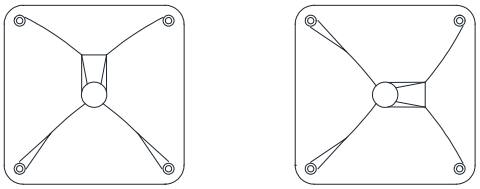
2.5 Rotating the Horn

You can easily re-orient the IBZA12 rotatable horn to its 70º x 50º configuration. To rotate the IBZA12's horn, perform the following steps:

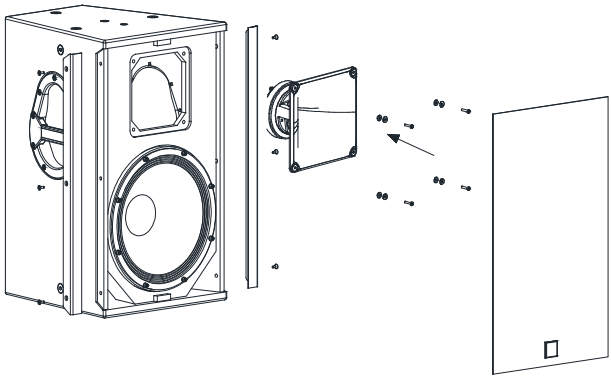
1. Place the IBZA12 loudspeaker with the front grill facing up. Ensure that the working surface is clean with a non-slip finish.
2. Remove the six (6) metal reinforcement profiles screws (three per side) from IBZA12 using a hex key.
3. Carefully remove the grille.
4. Release the four (4) screws of the horn using a hex key. Pull the horn and the compression driver upward out of the loudspeaker enclosure, being careful not to over-stress its wiring.



5. Check that the seal between the enclosure and horn is properly seated.
6. Rotate the horn carefully on the desired position and place the horn and driver back into the cabinet. It will fit comfortably snug.



7. Replace the four (4) horn flange screws.
8. Carefully replace the grille cover and the two (2) metal reinforcement profiles with its six (6) screws.



2.6 Recommended Speaker Cables

Choosing the right wire gauge for your installation is utmost importance to ensure you will get the maximum potential of your system.

The two primary things resistance affects in the amplifier-to-loudspeaker connection are: insertion loss and damping factor, both of which are dependent upon cable resistance. Too small a cable section will increase both its serial resistance and its capacitance; this reduces the electrical power delivered to the loudspeaker and can also induce response (damping factor) variations.

INSERTION LOSS

Insertion loss is the measure of the loss of load power at the speaker due to excessive resistive losses of the cable or any additional component attached between the amplifier and the loudspeaker. We typically express this loss in decibels (dB) using the following formula:

$$IL = 20 \bullet \log\left(\frac{Rload}{Rload + Rcable}\right)$$

DAMPING FACTOR

Damping factor is a ratio of rated loudspeaker impedance (ZL) to the source impedance (Zs). In this case our source impedance is (Rcable + Ramplifier).

Damping Factor = Z_L/Z_S

The table below indicates the cable valour recommended by Tecnare®.

			Recommended maximum length					
cable cross-section			8 Ω		4 Ω		2 Ω	
mm²	**SWG**	**AWG**	m	ft	m	ft	m	ft
2,5	15	13	30	100	15	50	10	33
4	13	11	50	160	25	80	17	53
6	11	9	74	240	37	120	25	80
10	9	7	120	390	60	195	40	130

3 Amplifier Configuration

Tecnare® Sound Systems recommended operating the **IBZA12** loudspeaker together Tecnare loudspeaker controllers.

Tecnare® only recommends using preset/amplifier developed *by Tecnare*; otherwise there is a risk of damaging the loudspeaker components. *DP Series Loudspeaker Controller*, *PA Series* amplifier and *T-Series* amplifier are ideal for this purpose.

Ensure that the right preset was selected before connecting the loudspeaker with the amplifier.

Operating with an incorrect preset can damage part of the loudspeaker.

Ensure that the amplifier is properly size according to requirements. Under-power or oversize power amplifier without the supervision of an expert may damage the loudspeaker.

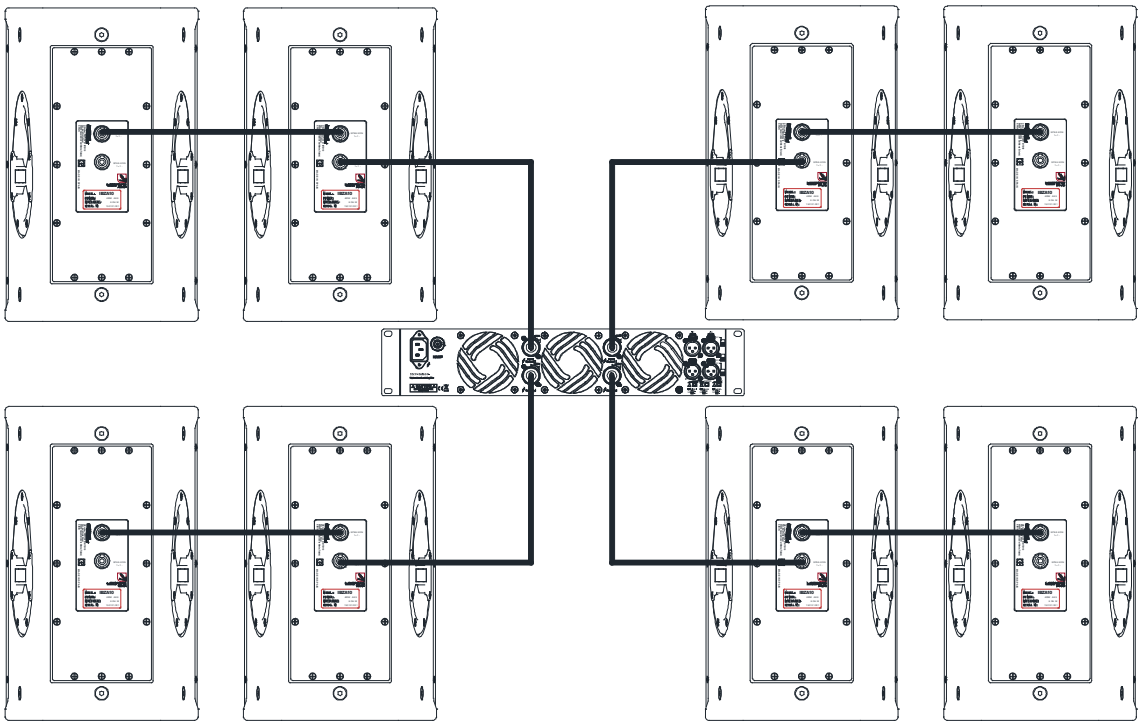
Please note the technical specification section.

3.1 Connection to PA4.1500

MAXIMUM OF 4 ENCLOSURES PER PA4.1500

2 x IBZA12 can be connected to each output channel on the PA4.1500. Therefore, a single PA4.1500 amplifier controller can drive up to 8 enclosures.

Impedance load: 8Ω for 1 enclosure, 4Ω for 2 enclosures.

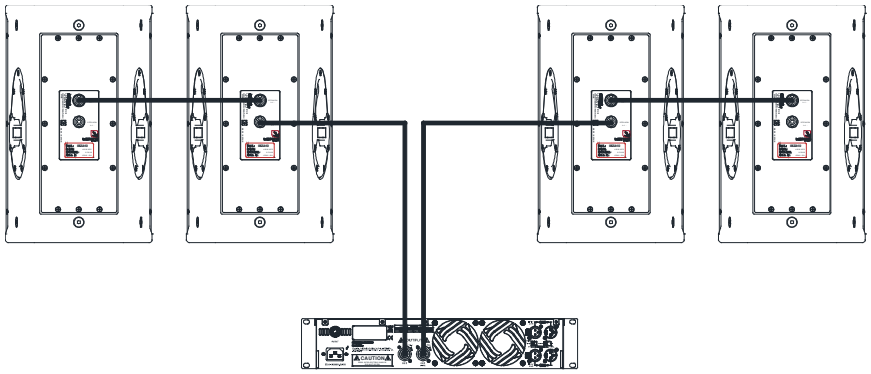


3.2 Connection to PA21/PA3000

MAXIMUM OF 4 ENCLOSURES PER PA2100/3000

2 x IBZA12 can be connected to each output channel on the PA2100/PA3000. Therefore, a single PA2100/PA3000 amplifier controller can drive up to 4 enclosures.

Impedance load: 8Ω for 1 enclosure, 4Ω for 2 enclosures.

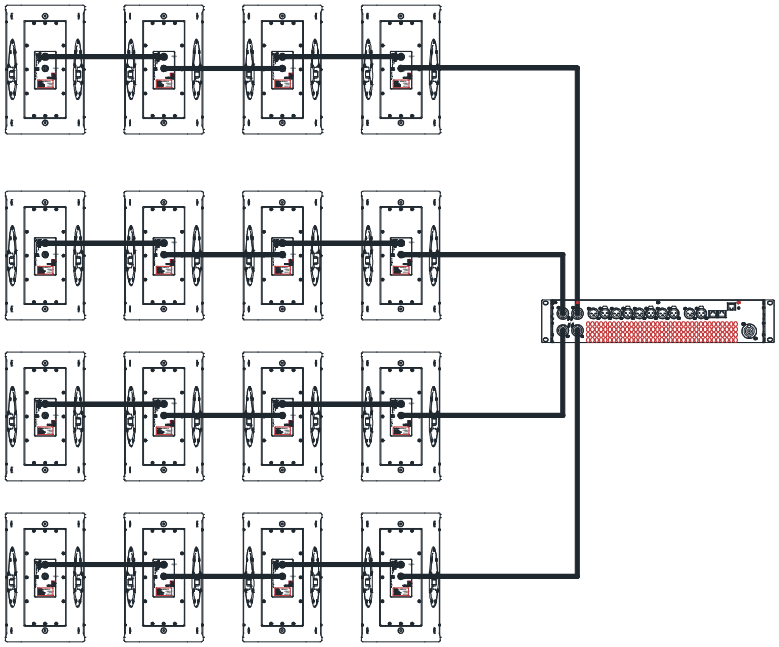


3.3 Connection to T-44 Series

MAXIMUM OF 16 ENCLOSURES PER T-44 Series

4 x IBZA12 can be connected to each output channel on the T-44/T-48 Series amplifier. Therefore, a single T-44 amplifier controller can drive up to **16** enclosures. A single ***T-48*** amplifier controller can driven **32** enclosures

Impedance load: 8Ω for 1 enclosure, 4Ω for 2 enclosures, 2Ω for 4 enclosures.



T-44 Series Amplifier

4 Integrating IBZA12 Using Subwoofers

4.1 Integrating IBZA12 Loudspeakers Systems with Tecnare Subwoofers

An **IBZA12** loudspeaker system can be deployed in combination with Tecnare's subwoofers likes a **SW215**, **SW118M, SW-18VR**. These subwoofers can achieve very low frequency response extending system response appreciably and increasing the overall acoustic power of a system in the lowest frequencies.

The ideal ratio of IBZA12 loudspeakers to subwoofers depends on the subwoofer model, configuration of the system, the application, and the frequency content of the signal being reproduced.

For most application, a ratio of two IBZA12 for each SW-118M subwoofer and four IBZA12 for each SW215 subwoofer yield good results in frequency response and headroom.

4.2 Signal Delay

If IBZAs loudspeaker and subwoofers are used in their full-range configuration together DP-Series Loudspeaker controlled or T-Series Amplifier, use the factory preset setting if they are co-planar or near to each other.

For other configuration or if they are separated by a great distance it will usually be necessary to determine the signal delay and polarity setting with a measurement system such as SMAART audio analyzer.

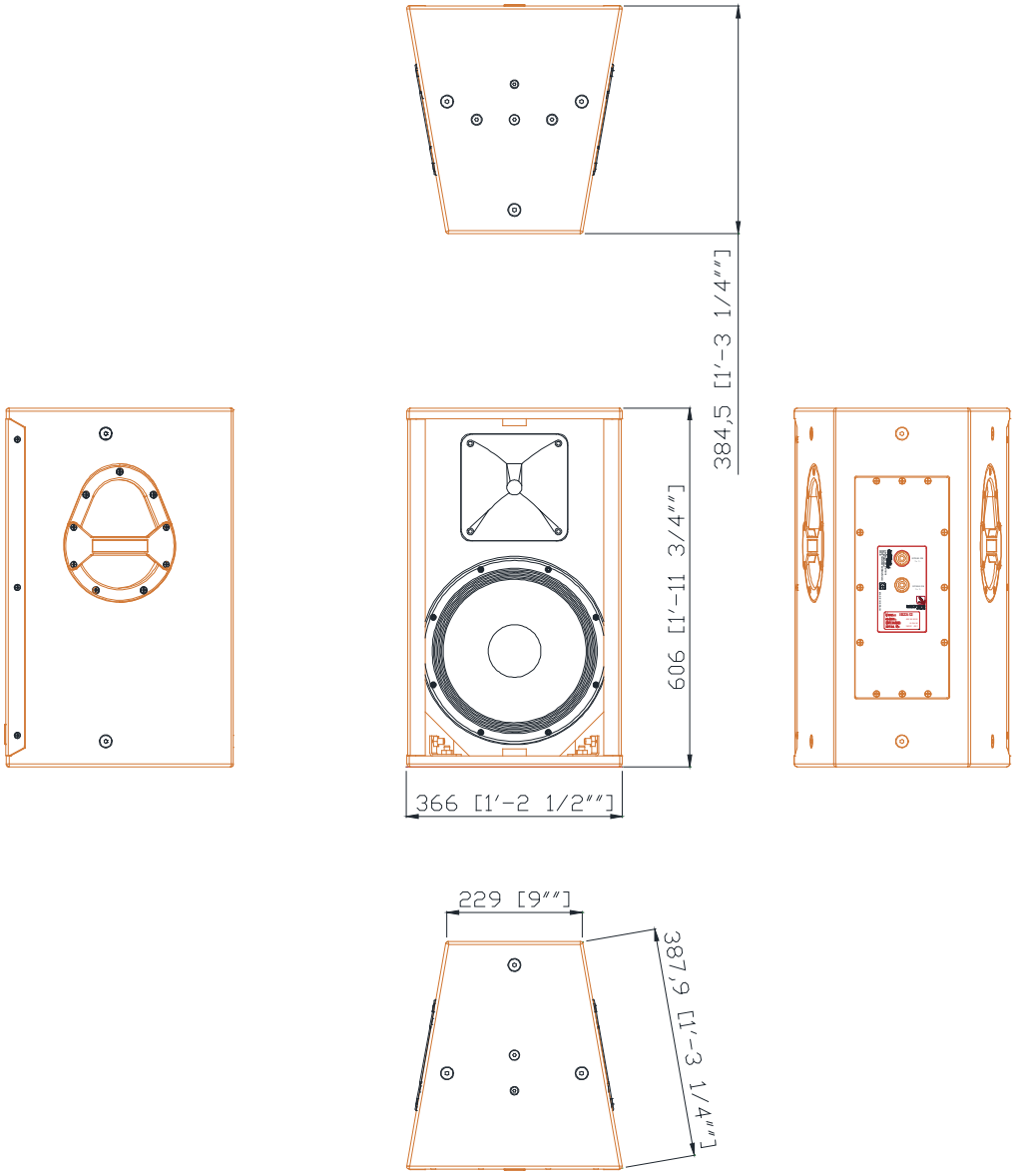
NOTE: If the subwoofer's amplifier/DSP Limit LED begins to light before reaching the required SPL, consider adding more subwoofers to meet the SPL requirements without exposing the drivers to excessive heat and excursion.

5 Technical specifications

IBZA12 FULL-RANGE COMPACT LOUDSPEAKER SPECIFICATIONS

ACOUSTICAL		
Operating Frequency Range	*56Hz -18 kHz±4dB*, measured on axis.	
Axial Sensitivity	96 dB (1w/1m)	
Calculated SPL	124 dB continuous/130 Peak	
Nominal Dispersion	Asymmetric (50º x100º)x60º attached to a rotatable CD horn	
Power Handling	600 W AES / 1200 Continuous	
COMPONENTS		
Low Frequency	1 x 12-inch cone driver neodymium magnet, direct radiation, bass-reflex Nominal impedance: 8Ω Voice coil size: 3-inch Power Handling Capability: 500 W AES / 1000 W continuous *Note*: Power Handling measured using AES Standards= 2 hours test made with continuous pink noise signal (6 db crest factor).	
High Frequency	1x1-inch compression driver. PM4 Diaphragm material Nominal impedance: 8Ω Throat diameter: 25mm / 1.75-inch (44.3 mm) voice coil diameter Power Handling Capability: 100 W AES / 200 W continuous *Note*: Power Handling measured using AES Standards= 2 hours test made with continuous pink noise signal (6 db crest factor).	
AUDIO INPUT		
Connectors	IN: 1 x NL4 SpeakON®	LINK: 1 x NL4 SpeakON®
Wiring	Pin 1+/-: Input Signal ; Pin 2+/- : NC	
PHYSICAL		
Enclosure	16mm birch plywood. Finished in Polyurea surface.	
Protective Grille	Powder-coated perforated steel with acoustically transparent reticulated foam	
Rigging and handling	2xhandle, 2 x M10 insert for TUB-I12 U-Bracket and Horizontal Array Frame. 2 x M8 insert for optional external pole mount socket on the bottom. See the rigging manual before installing and additional information. Use the rigging accessories described in the rigging manual and follow the associated procedures.	
Dimensions (HxWxD)	606mm x 366mm x 384,5mm (23.85” x 14.40” x 15.14”)	
Weight	19 Kg. (41.89 lbs)	
Custom finish	White code available on request Without charge. RAL code on special order.	

Application information is presented for guidance only. Exel Acoustics SL reserves the right to make any necessary changes to the products and the published specifications. As part of the ongoing development program Exel Acoustics SL tries to maintain the highest degree of product compatibility.



IBZA12 Dimensions

Reinventing The Rules

©2017

Tecnare Sound Systems. All rights reserved.
IBZA12 Operation manual

The contents of this manual are furnished for informational purposes only, are subject to change without notice, and should not be construed as a commitment by Exel Acoustics SL. Exel Acoustics assumes no responsibility or liability for any errors or inaccuracies that may appear in this manual. Except as permitted by applicable copyright law, no part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, recording or otherwise, without prior written permission from Exel Acoustics. Tecnare and PCC-Net are trademarks of Exel Acoustics SL. Podware, System Engineer, BvNet, Smaart and all third-party trademarks mentioned herein are the property of their respective trademark holders.

Printed in Spain.

Reinventing The Rules

EXEL ACOUSTICS SL
CL Encinar, 282 - Pol. Ind. Monte Boyal
45950 Casarrubios del Monte (To)
Spain
(e) support@tecnare.com

www.tecnare.com - www.facebok.com/tecnare
(T): +34 918 170 110 - +34 918 171 001
(F): +34 918 183 053

rev.:1.00 2017