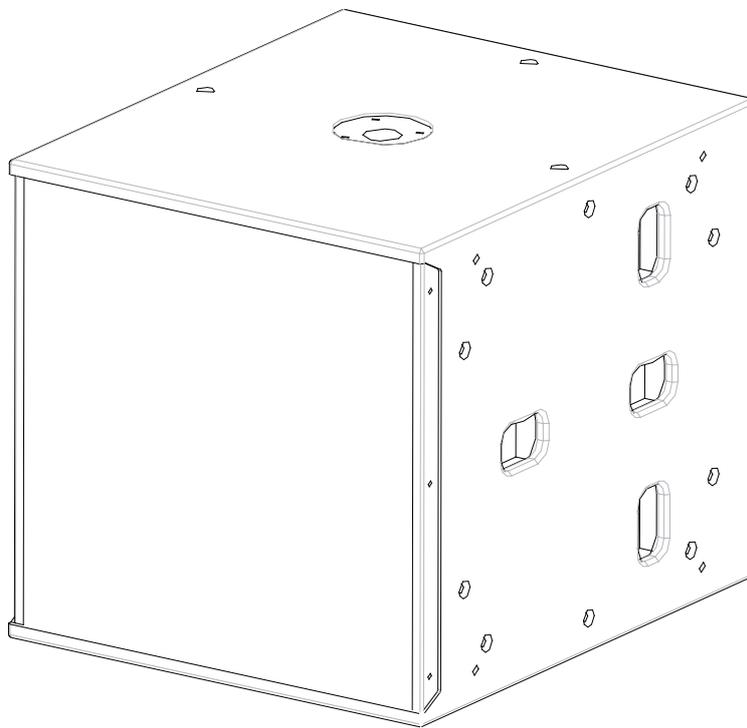




Operation Manual



Sub-Series

SW-118M
Compact Subwoofer

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

General Information

Sw-118M Operation Manual

Ver.: 2.0_UK 11/2016

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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.

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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 and 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 **SW-118M** y sus respectivas opciones, cumple con las Directivas:

*Declare under our sole responsibility that devices in the **SW-118M** 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*

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1 Introduction

1.1 Welcome to Tecnare

Thank you for choosing the high-quality Tecnare® **SW-118M 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 Overview the SW-118M Subwoofer

The **SW-118M** is a compact, high-output 1x18-inch vented subwoofer cabinet designed to extend the power bandwidth of other TecnaRE loudspeaker, enhancing the low-frequency headroom in a variety of full range systems.

The response given with this subwoofer is very deep, starting at 35Hz. The cabinet is made in 18mm birch plywood and covered with rugged polyurea texture finish and protected with epoxy powder coating grills.

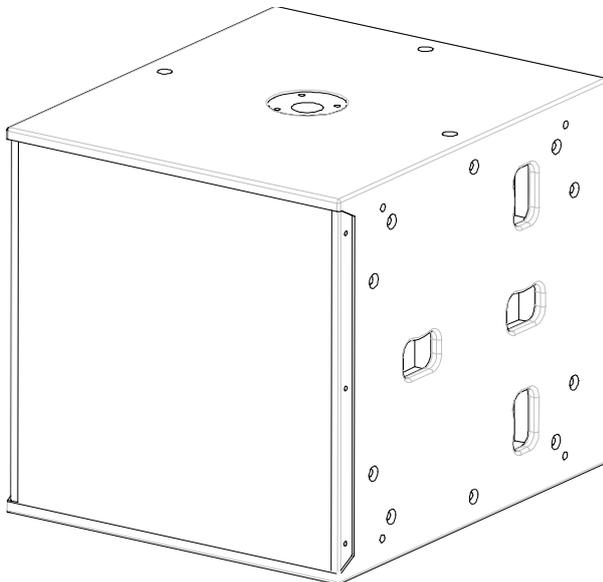
Suitable for both fixed installation and touring application, the SW-118M is available in four versions:

- With side panels including handles
- With integrated rigging system allows SW-118M subwoofer to be flown or ground-stacked, as a standalone array or within a vertical SW-118M/CLa208 array.
- SW-118M-A is a self-powered with a one-way amplification with DSP fixed in factory
- SW-118M-PCC3 is a self-powered with one-way amplification and controlled with a DSP.

When the subwoofer is used with the optional bumper THV-118, it can be arrayed with other SW118Ms and **CLa208** curvilinear line array system together the optional **TTF-118-208** transition frame, in either flown or ground stacked configuration. Rigging frame also allow working in cardioid array configuration.

The SW-118M operating frequency response is starting at 35Hz to 400Hz (+/-3dB measured on axis) and the peak SPL of 135dB. Designed and manufactured at *Exel Acoustics'* Spain headquarters, the SW-118M are engineered for extreme efficiency at low frequency.

The cabinet also features a pole mount socket. The SW-118M passive version is driven and amplified by TecnaRE PA-Series and DP-Series Controller or T-44/48 Amplifier. These ones ensure linearization, protection and optimization for the loudspeaker system in its different configurations, cardioid included. Do not used this options is a risk o damaging the loudspeaker components.



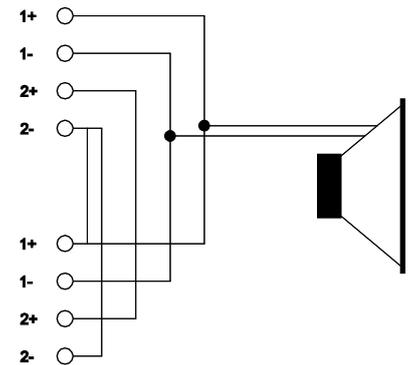
1.2 Connections

SW-118M loudspeaker utilizes Neutrik® SpeakON® connectors. There are two NLT4 connectors on the rear of each SW-118M. These connectors mate with Neutrik NL-4 or NL-4 compatible in-line cable connectors. All four pins of both connectors are wired in parallel. The following subsections describe the electrical connections.

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

The SW-118M uses the pin assignment 1+/1+. Under special order, the customer can required the assignments 2+/2- and appoint the pin 1+/1- to TOP cabinets.

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



1.3 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. Our **DP2696** or **DP4896**. The options vary depending on the final application. *Refer to DP2696 or DP4896 user manual.*

1.3.2 Amplification

To power Sub 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 subwoofers. 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 **DP4896** processors also include:

- Thermal protection from power surges or overload
- Excursion displacement protection

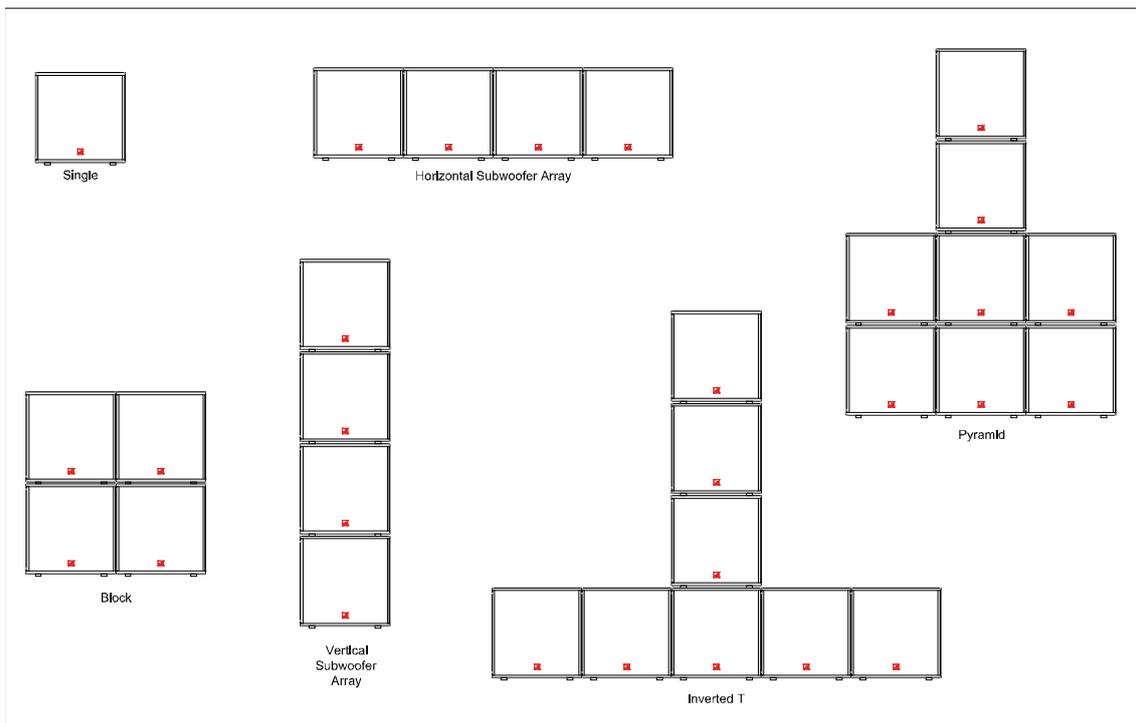
The **T20-44** amplifier is the ideal companion for maximum performance of the Sub Series loudspeakers. This amplifier controller with DSP offer a complete both preset and protection solution for any application.

2 Loudspeaker Configuration

2.1 Standard Operation

The standard operation corresponds to the use of subwoofers as single elements or as standard subwoofer arrays.

In this configuration the system operates with an omni-directional or quasi-omni-directional directivity pattern.

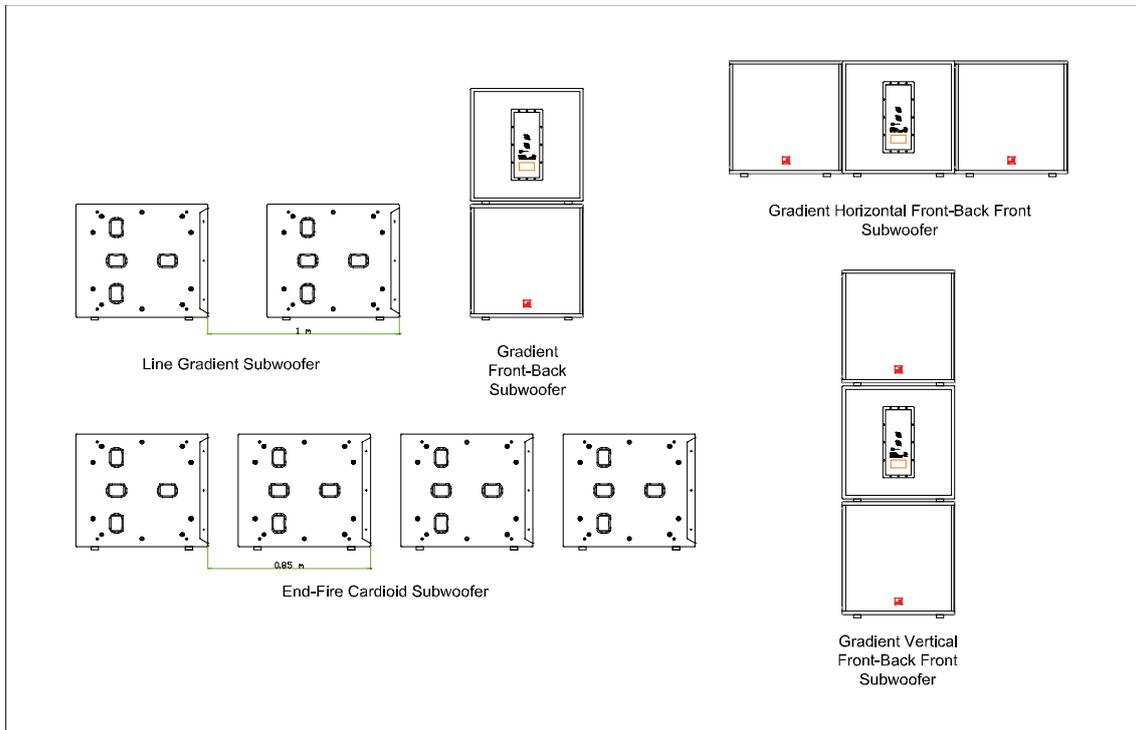


SW-118M Standard operation

2.2 Cardioid Operation

SW-118M subwoofer can be configured in cardioid arrays to reduce the amount of output heard behind the subwoofers. Subwoofer cardioid arrays are achieved by placing three units coplanar to each other (in either a ground stacked or flown array) with one unit facing the opposite direction. The output of the reversed subwoofer cancels the output of the other subwoofers normally present behind the units.

TecnaRE has specifically designed cardioid presets. However, we recommend calculating the appropriate ratio of forward to rear facing loudspeakers, as well as the measurement of required parameter setting of polarity, delay, and gain. For more information, contact TecnaRE Technical Support.



3 Configuration

Tecna® Sound Systems recommended operating the SW-118M loudspeaker together Tecna loudspeaker controllers.

Tecna® only recommends using preset/amplifier developed *by Tecna*; 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.

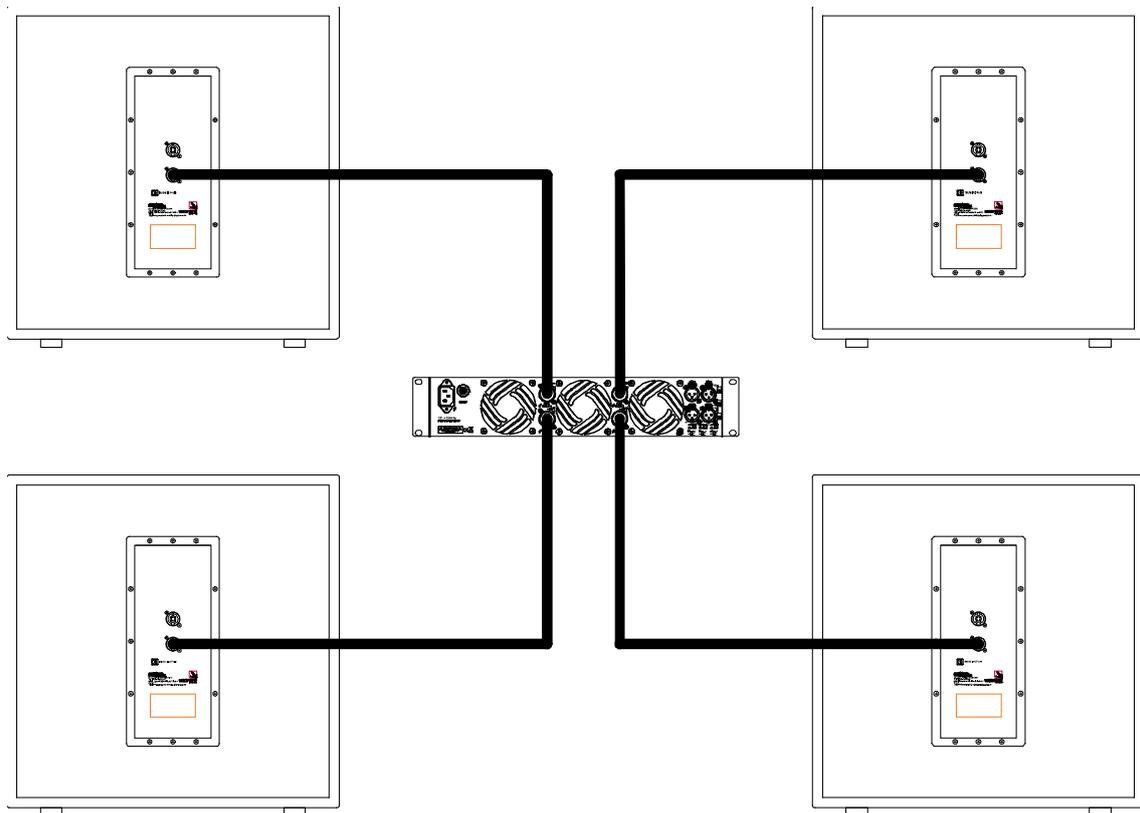
3.1 Connection to PA4.1500

MAXIMUM OF 4 ENCLOSURES PER PA4.1500

1 x SW-118M can be connected to each output channel on the PA4.1500. Therefore, a single PA4.1500 amplifier controller can drive up to 4 enclosures.

See the preset manual connect the reverse subwoofer to use the cardioid preset.

Impedance load: 8Ω



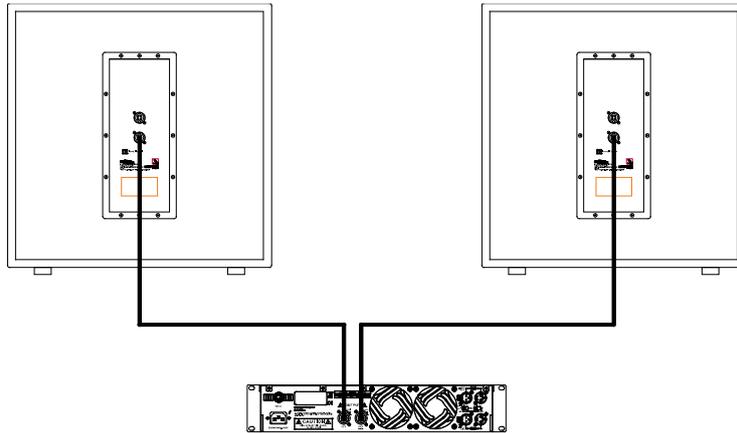
3.2 Connection to PA3000

MAXIMUM OF 2 ENCLOSURES PER PA3000

1 x SW-118M can be connected to each output channel on the PA3000. Therefore, a single PA3000 amplifier controller can drive up to 2 enclosures.

See the preset manual connect the reverse subwoofer to use the cardioid preset.

Impedance load: 8Ω.



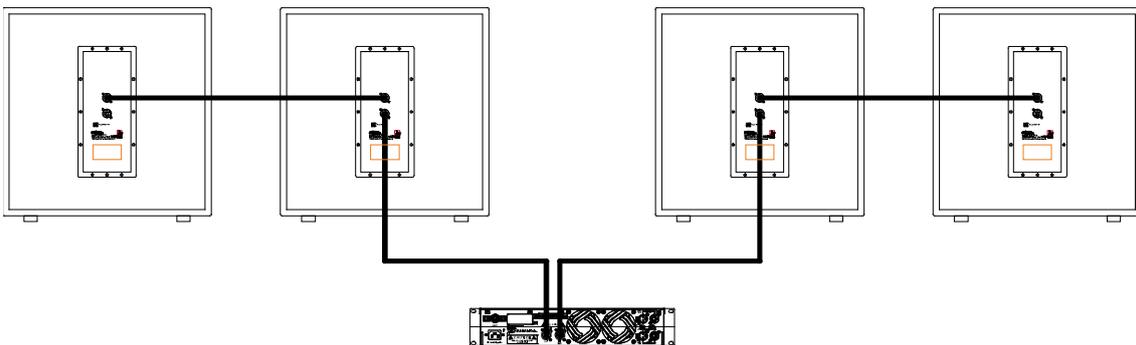
3.3 Connection to PA5000

MAXIMUM OF 4 ENCLOSURES PER PA5000

2 x SW-118M can be connected to each output channel on the PA5000. Therefore, a single PA5000 amplifier controller can drive up to 4 enclosures.

See the preset manual connect the reverse subwoofer to use the cardioid preset.

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



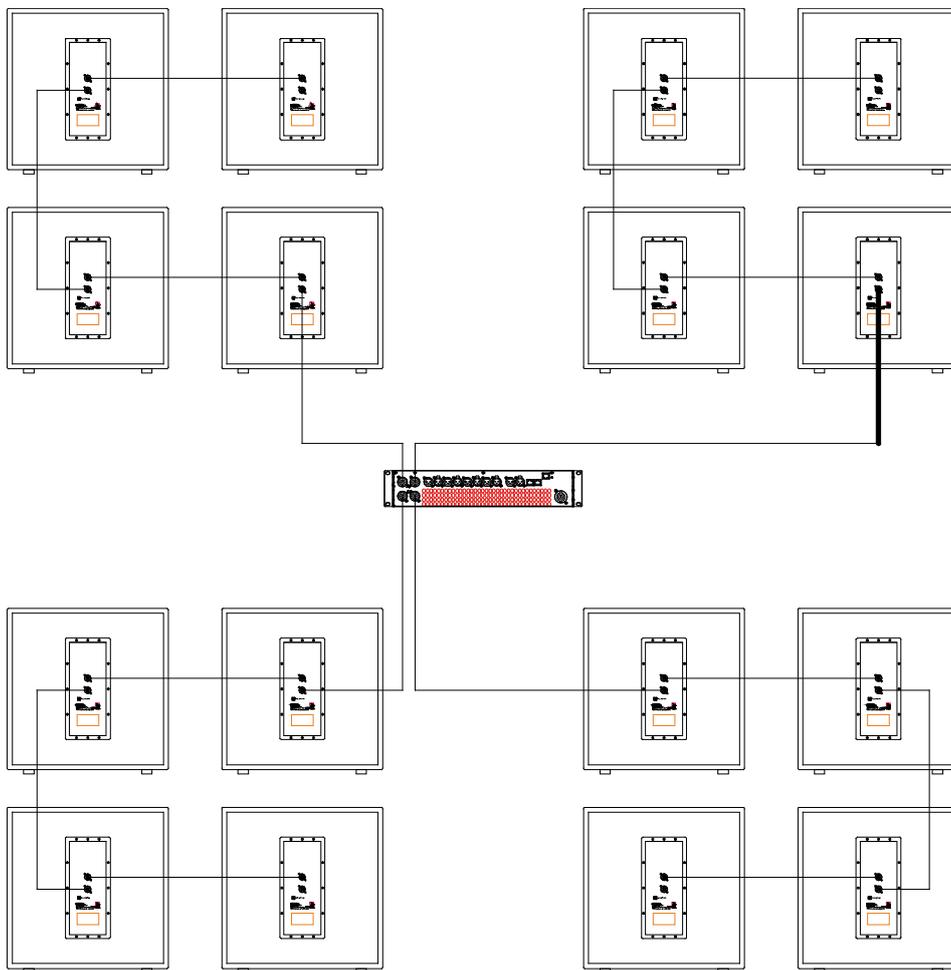
3.4 Connection to T20-44

MAXIMUM OF 16 ENCLOSURES PER T20-44

4 x SW-118M can be connected to each output channel on the T20-44. Therefore, a single T20-44 amplifier controller can drive up to 16 enclosures.

See the preset manual connect the reverse subwoofer to use the cardioid preset.

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



4 Integrating SW-118M

4.1 Integrating SW-118M subwoofer with TecnaRE Loudspeaker Systems

Although the low frequency performance of the most of TecnaRE loudspeaker allows them to be used without subwoofers for some events, it is often necessary to augment mid-high and full-range loudspeaker systems with subwoofers when higher SPL is needed, or when the program content requires additional low-frequency energy (for example, for sound reinforcement for live music performance).

The SW-118M subwoofer can achieve frequencies down to 35 Hz, extending the system response appreciably and increasing the acoustic power of the system in the lowest frequencies. Common applications for the SW-118M subwoofer include using it with **CLa208** curvilinear array loudspeakers, as well as using it with **Ibza** or **V Series** loudspeakers.

Bass performance is often highly program - or venue - dependent, as well as subjective as to quantity and quality. For this reason the type, quantity, and disposition of subwoofers may vary considerably with the application. The quantity recommendations below are for general purposes, providing a balanced system for most music applications. Quantities may need to be adjusted up or down for specific situations.

4.2 Integrating SW-118M subwoofer with CLa208 Curvilinear Array Loudspeaker

When fitted with rigging hardware, SW-118M subwoofers may either be ground stacked, flown as part of a CLa208 array, or flown separately alongside a CLa208 array, to boost the system's low-frequency output and headroom. For flown arrays, the SW-118M attaches to the THV-118 rigging grid; the CLa208 attach to the bottom of the SW-118M via the TTF208-118 Transition frame, which support both uptilt and downtilt for the flown loudspeakers. When flown separately, SW-118Ms should be flown so that the spacing between the line of CLa208 enclosures in less than 1 m / 3.3ft.

See the THV-118 and TTF-118 Rigging & Ground stack Instructions for more detailed information on rigging a SW-118M

The SW-118M extends the low-frequency response of the system by approximately one octave, as well as provides additional headroom in the lowest octave of the CLa208's range.

A general recommendation is to use CLa208s and SW-118Ms in a 2:1 ratio.

4.2.1 Signal Delay on Subwoofers

If SW-118Ms are flown or stacked with CLa208 as configured in DP-Series Loudspeaker controlled or T-Series Amplifier, use the factory preset setting.

For other configuration, it will usually be necessary to determine the signal delay setting by measurement.

4.3 Integrating SW-118M with Ibza Series and V Series Loudspeakers

The SW-118M subwoofer can be used with the **IBZA Series** and **V Series** loudspeakers to boost the low-frequency output and headroom for these systems. The IBZA Series and V Series loudspeakers can be easily integrated with the SW-118M using the subwoofer's integral 35mm (1/2-inch) pole-mount receptacle.

4.4 Optimum Loudspeaker to Subwoofer Ratio

As previously stated Bass performance dependent as different variables:

- Loudspeaker model
- System configuration
- Frequency content of sound program
- Headroom required for low frequencies

For the most applications, the ratio in the next table should yield good results. Remember to adjust this quantity to up or down for specific situations.

Loudspeaker model	Recommended Ratio (Loudspeaker per SW118M)
CLa208	2/1 for flat frequency applications 2/2 for DJ Booth monitor applications
lbza6	3/1 for bass-heavy applications 4/1 for flat frequency response
lbza8	3/1 for bass-heavy applications 4/1 for flat frequency response
lbza10/lbza12/V10/V12	1/1 for bass-heavy applications 2/1 for flat frequency response
lbza15/V15	1/1 for flat frequency response 1/2 for bass-heavy applications

NOTE: If the SW-118's amplifier/DSP Limit LED begins to light before reaching the required SPL, consider adding more SW-118M to meet the SPL requirements without exposing the drivers to excessive heat and excursion.

4.5 Placement for SW-118M

An important factor governing subwoofer response is their placement relative to adjacent surfaces. Subwoofers gain significant power by coupling (or loading) with nearby floors and walls. Placing any loudspeaker against a large plane (relative to wavelength) produces a half-space loading condition, meaning that all the energy radiating spherically (equal energy in all directions) from the loudspeaker is now being radiated into a hemisphere, or half the area. This result in a 6 dB increase in energy radiating into the hemisphere, the same increase that happens by doubling the number of subwoofers, compared to the same subwoofer in free space (suspended).

4.5.1 Flying SW-118M subwoofer

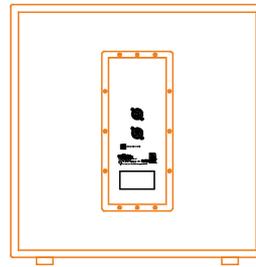
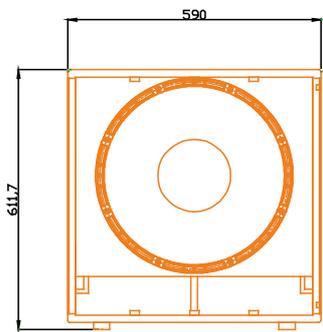
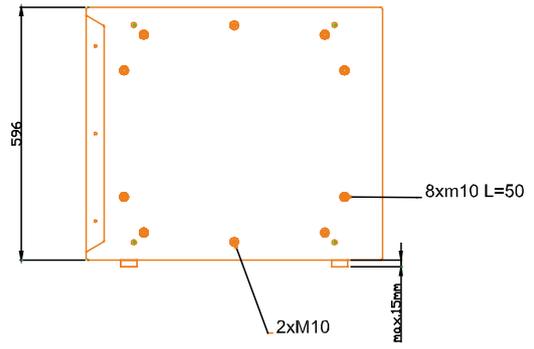
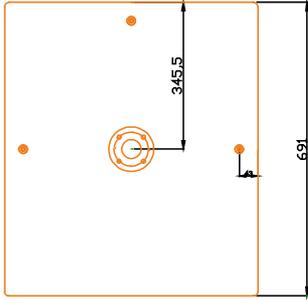
It is beneficial in some cases to fly subwoofers, even though they will not benefit from half-space loading. For example, placing subwoofers in a flown array of mid-high loudspeakers can create a smoother full-range frequency image because the subwoofers are not separated by distance from the flown array to the floor. When flying subwoofers, consider deploying some sort of low-frequency directional array to keep the low-frequency energy going to the audience and headroom requirements of the system.

5 Technical specifications

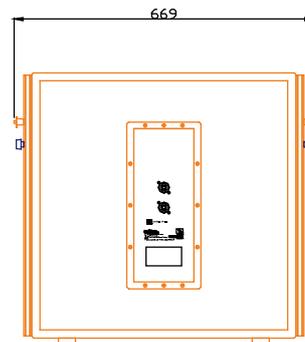
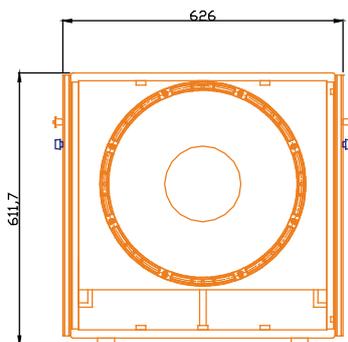
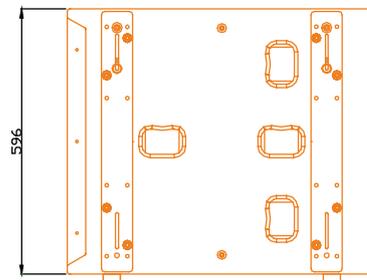
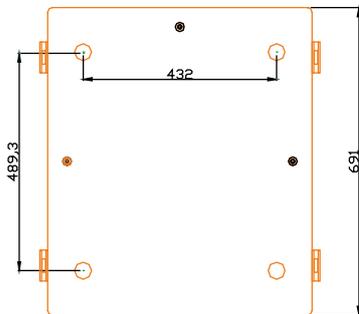
SW-118M COMPACT SUBWOOFER SPECIFICATIONS

ACOUSTICAL	
Operating Frequency Range	35Hz -400 Hz±3dB, measured on axis. 35Hz-140Hz Recommended operating frequency range. Response depends on loading conditions and room acoustics
Axial Sensitivity	98 dB (1w/1m)
Calculated SPL	129 dB continuous/135 Peak
Nominal Dispersion	360° for a single unit; varies with number of units and configurations
COMPONENTS	
Low Frequency	1 x 18-inch cone driver ferrite magnets, direct radiation, bass-reflex Nominal impedance: 8Ω Voice coil size: 4-inch Power Handling Capability: 1200 W AES / 2400 W continuous <i>Note:</i> 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+/-: LF+/- ; Pin 2+/- : Parallel; Optional wiring: Pin 1+/-: Parallel; Pin 2+/-: LF+/-
PHYSICAL	
Enclosure	18mm birch plywood. Finished in Polyurea surface
Protective Grille	Powder-coated perforated steel with acoustically transparent reticulated foam
Rigging	Integral 38 mm (1-1/2-inch) pole-mount receptacle on top; Optional TRK-118 rigging kit for arrays with CLa208 curvilinear array loudspeaker. Eight recessed carrying handle
Dimensions (HxWxD)	596mm x 590mm x 691mm (23.46" x 23.23" x 27.20")
Dimensions w/rigging	556mm x 622mm x 691mm (23.46" x 24.48" x 27.20")
Weight	46 Kg. (101.41lbs), with rigging, 60 kg. (132.28 lbs)

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 on-going development program Exel Acoustics SL tries to maintain the highest degree of product compatibility.



SW-118M Dimensions



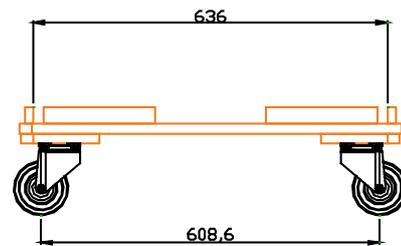
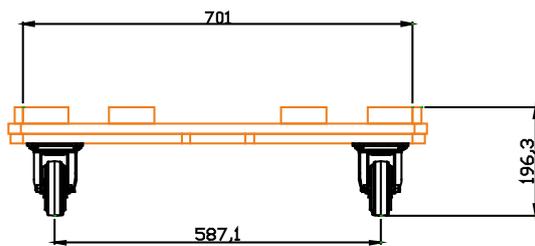
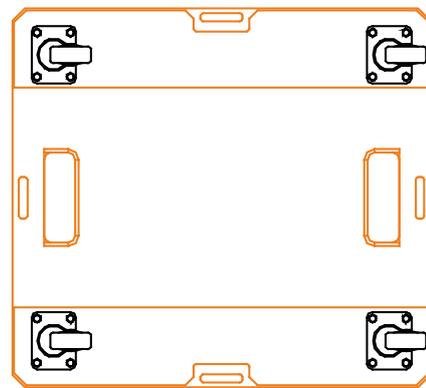
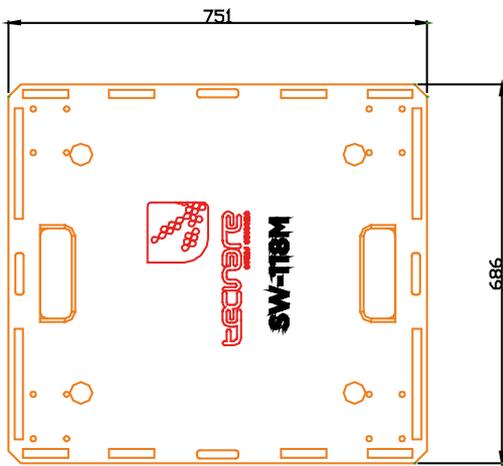
SW-118M Dimensions with Rigging

TWD-118 WOODEN DOLLY SPECIFICATIONS

The heavy-duty TWD-118 dolly-board can transport stack of up to three SW-118M (fitted with or without rigging frames).

TWD-118 Specifications

PHYSICAL	
Material	Premium birch plywood with black finish; on all four side
Dimensions (H x W x D)	196,3mm (7.61") x 751mm (29.56") x 686mm (27")
Weight	17.9 kg. (39.46 lbs)



Reinventing The Rules



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SW-118M Operation manual

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Printed in Spain.



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