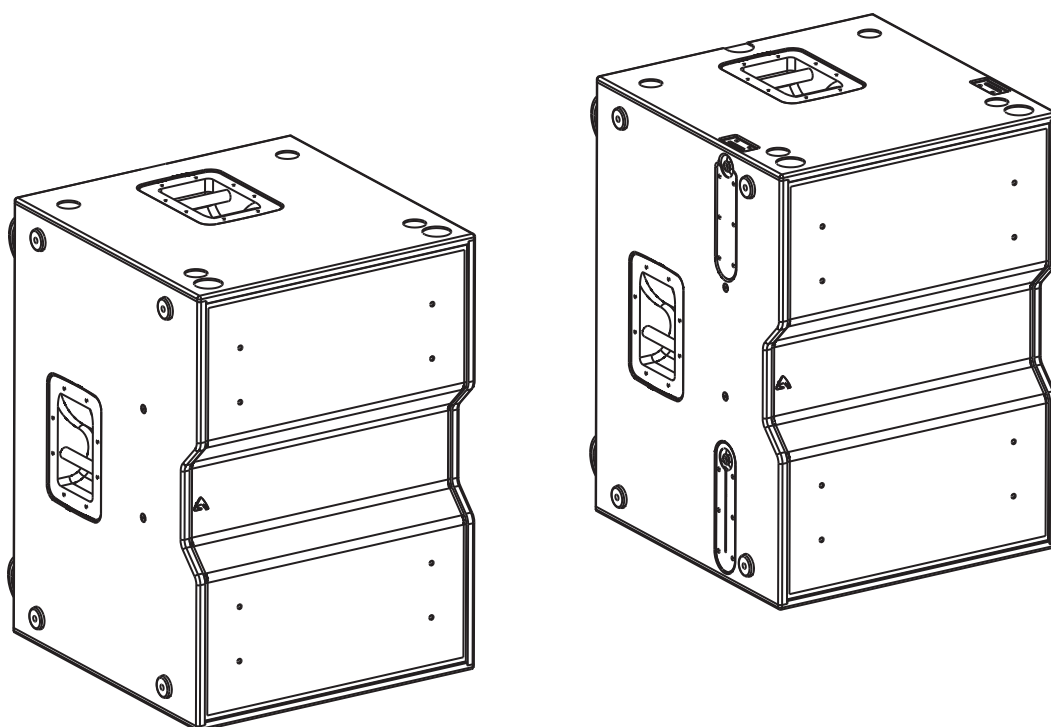




# SW215P - SW215FP

passive subwoofer



## USER MANUAL

revision 2023-09-11





# IMPORTANT SAFETY INSTRUCTIONS

## Watch for these symbols:



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, 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.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Warning: to reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
16. Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.
17. To completely disconnect this apparatus from the ac mains, disconnect the power supply cord plug from the ac receptacle.
18. The mains plug of the power supply cord shall remain readily operable.
19. This apparatus contains potentially lethal voltages. To prevent electric shock or hazard, do not remove the chassis, input module or ac input covers. No user serviceable parts inside. Refer servicing to qualified service personnel.
20. The loudspeakers covered by this manual are not intended for high moisture outdoor environments. Moisture can damage the speaker cone and surround and cause corrosion of electrical contacts and metal parts. Avoid exposing the speakers to direct moisture.
21. Keep loudspeakers out of extended or intense direct sunlight. The driver suspension will prematurely dry out and finished surfaces may be degraded by long-term exposure to intense ultra-violet (UV) light.
22. The loudspeakers can generate considerable energy. When placed on a slippery surface such as polished wood or linoleum, the speaker may move due to its acoustical energy output.
23. Precautions should be taken to assure that the speaker does not fall off a stage or table on which it is placed.
24. The loudspeakers are easily capable of generating sound pressure levels (SPL) sufficient to cause permanent hearing damage to performers, production crew and audience members. Caution should be taken to avoid prolonged exposure to SPL in excess of 90 dB.



This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources. Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling. Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.



## DECLARATION OF CONFORMITY



The product is in compliance with:

RoHS Directive 2011/65/EU and 2015/863/EU, WEEE Directive 2012/19/EU.



The product is in compliance with:

S.I. 2012/3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

## LIMITED WARRANTY

Proel warrants all materials, workmanship and proper operation of this product for a period of two years from the original date of purchase. If any defects are found in the materials or workmanship or if the product fails to function properly during the applicable warranty period, the owner should inform about these defects the dealer or the distributor, providing receipt or invoice of date of purchase and defect detailed description. This warranty does not extend to damage resulting from improper installation, misuse, neglect or abuse. Proel S.p.A. will verify damage on returned units, and when the unit has been properly used and warranty is still valid, then the unit will be replaced or repaired. Proel S.p.A. is not responsible for any "direct damage" or "indirect damage" caused by product defectiveness.

- This unit package has been submitted to ISTA 1A integrity tests. We suggest you control the unit conditions immediately after unpacking it.
- If any damage is found, immediately advise the dealer. Keep all unit packaging parts to allow inspection.
- Proel is not responsible for any damage that occurs during shipment.
- Products are sold "delivered ex warehouse" and shipment is at charge and risk of the buyer.
- Possible damages to unit should be immediately notified to forwarder. Each complaint for package tampered with should be done within eight days from product receipt.

## CONDITIONS OF USE

Proel do not accept any liability for damage caused to third parties due to improper installation, use of non-original spare parts, lack of maintenance, tampering or improper use of this product, including disregard of acceptable and applicable safety standards. Proel strongly recommends that this loudspeaker cabinet be suspended taking into consideration all current National, Federal, State and Local regulations. The product must be installed by qualified personal. Please contact the manufacturer for further information.



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## INTRODUCTION

The SW215P/FP subwoofer is designed to deliver high quality low frequency reproduction where very high output is a key requirement, together with well defined deep bass response and fast transient response. Its compact size and light weight make it suitable for several different uses, ranging from touring applications to fixed installations and high-level dance clubs.

The SW215P/FP is a very high quality powered subwoofer system featuring some of the most advanced technologies for low frequency reproduction. Its unique and innovative design is based on a configuration that can be defined as Manifolded Transmission Line.

It uses manifolding of the front side of the cones to maximize the mutual coupling between the two drivers, while loading the back of the cone with a large-size transmission line that has the function to create a transmission path from the back of the transducers to the front.

The SW215P/FP subwoofer system is equipped with two high power 15" (380mm) transducers capable of long excursion (up to 33mm peak-to-peak), controlled by high stiffness Double Silicon Spider as centering suspension and by heavy duty surround. The motor structure features high strength (BL<sup>2</sup>/Re) with optimized symmetry and excursion controlled by Aluminium Demodulating Ring. The robust copper 75mm (3") voice coil is wound in two different layers both outside and inside the coil support, then doubling the coil surface exposed to air cooling and consequently improving the long term thermal capacity of the loudspeaker. Cones are made of very high-stiffness reinforced paper, featuring also invisible water repellent treatment.

The SW215P is made exclusively for use on the ground, while the SW215FP can also be used suspended with a proper fly bar accessory.

## TECHNICAL SPECIFICATION

### SYSTEM

System's Acoustic Principle	Manifolded Band Pass
Frequency response (±3 dB)	39 Hz – 120 Hz (Processed)
Frequency range (±10 dB)	35 Hz – 300 Hz (Unprocessed)
Nominal Impedance	8 Ω + 8 Ω
Minimum Impedance	6.1 Ω + 6.1 Ω @ 41Hz
Sensitivity (1.41V @ 1m, 2Pi)	102dB (averaged from 40 to 100Hz)
Maximum Peak SPL @ 1m	139 dB

### TRANSDUCERS

Type	Two 15" (380 mm), 3" (75 mm) VC, 8 Ω
Cone	High stiffness water repellent reinforced
Voice Coil Type	Flux Demodulating Ring
Suspension	Double Centering Spider

### INPUT CONNECTIONS

Connector Type	Neutrik® Speakon® NL4 x 2
Input Wiring	LF1 = Pin 1+/-; LF2 = Pin 2+/-

### POWER HANDLING

Power Handling (AES)*	700 W + 700 W
Power Handling (Program)	900 W + 900 W
Power Handling (Peak)	2100 W + 2100 W
	@ -10dB Power (180W+180W) = 0.8 dB
Power Compression	@ -3dB Power (900W+900W) = 1.5 dB
	@ 0dB Power (1800W+1800W) = 2.7 dB

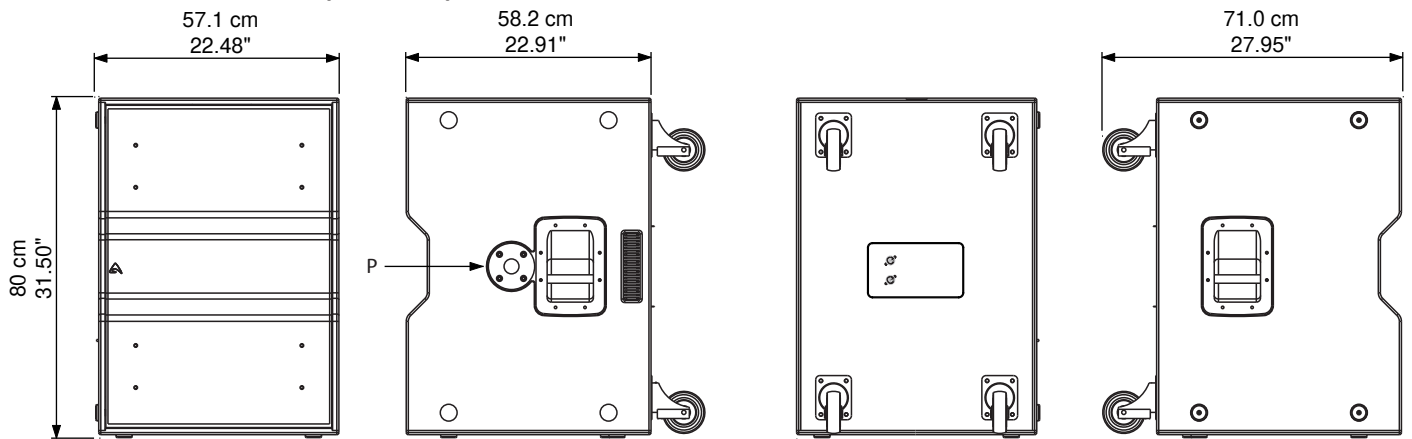
### ENCLOSURE & CONSTRUCTION

Width	571 mm (22.48")
Height	800 mm (31.50")
Depth	582 mm (22.91")
Depth Including Wheels	710 mm (27.95")
Enclosure material	15 mm, reinforced Phenolic Birch
Paint	High resistance, water based paint
Wheels	4 heavy-load 100 mm ø
Transport	4 handles
Side Suspension (SW215FP)	High Strength Steel with ¼ Fast Pin
Back Suspension (SW215FP)	High Strength Steel with ¼ Fast Pin
Net Weight (SW215P)	61 Kg (134.5 lb)
Net Weight (SW215FP)	65 Kg (143.3 lb)

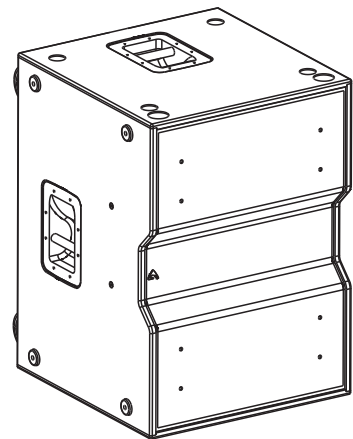
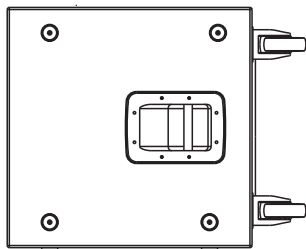
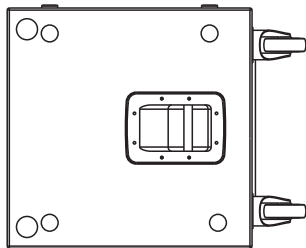
\* AES Pink Noise Continuous Power



## MECHANICAL DRAWING (SW215P)



P = M20 insert for DHSS10M20 pole adaptor for conventional SUB-SAT system.



## OPTIONAL ACCESSORIES (SW215P)

- NL4FX** Neutrik Speakon® PLUG
- PC260** 2 in 6 out digital loudspeaker processor
- USB2CANDV2** PRONET network converter
- DHSS10M20** Sub-Speaker ø35mm Pole with M20 screw

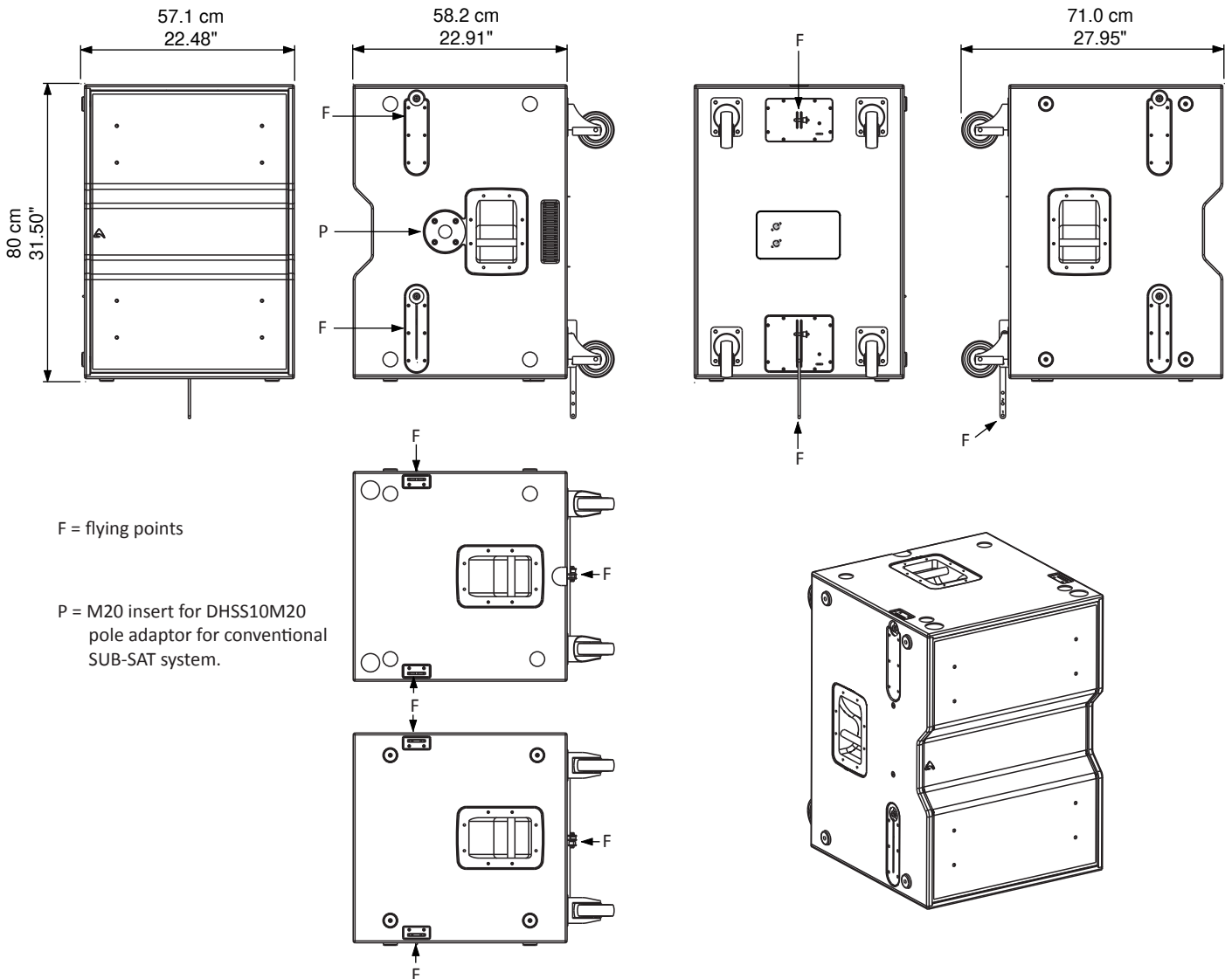
see <http://www.axiomproaudio.com/> for detailed description and other available accessories.

## SPARE PARTS (SW215P)

- AC103GS** 100 mm Swivel castor without brake
- 98AXM215SW8** 15" woofer - 3" VC - 8 ohm
- NL4MP** Neutrik Speakon® panel socket



## MECHANICAL DRAWING (SW215FP)



## OPTIONAL ACCESSORIES (SW215FP)

<b>NL4FX</b>	Neutrik Speakon® PLUG
<b>PC260</b>	2 in 6 out digital loudspeaker processor
<b>USB2CAN</b>	PRONET network converter
<b>RAINCOV215</b>	Rain cover for input sockets
<b>DHSS10M20</b>	Sub-Speaker ø35mm Pole with M20 screw
<b>KPTSW215</b>	Fly bar for Axiom AX2065 and SW215 Loudspeakers
<b>AXFEETKIT</b>	Kit made of 6pcs BOARDACF01 foot

see <http://www.axiomproaudio.com/> for detailed description and other available accessories.

## SPARE PARTS (SW215FP)

<b>AC103GS</b>	100 mm Swivel castor without brake
<b>AC115DN</b>	Black steel handle
<b>98AXM215SW8</b>	15" woofer - 3" VC - 8 ohm
<b>NL4MP</b>	Neutrik Speakon® panel socket
<b>94SPI2265</b>	Locking Pin for AX2265

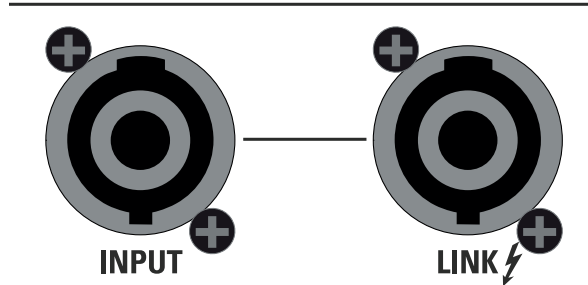


## INPUT

Power input for the external amplifier. The SW215P/FP does not include a passive crossover for filtering the signal. The connections are the following:

INPUT - LINK	
NL4 pin number	internal connection
1+	LF1+
1-	LF1-
2+	LF2+
2-	LF2-

**WARNING**  
To avoid damage, during use  
both loudspeakers must be connected



**WARNING!**  
To avoid speaker damage during use both loudspeaker must be always connected and driven with same input signal and equal amplified power.

## LINK

Power output in parallel with the INPUT socket for connecting the unit to another speaker. The number of SW215P/FP cabinets that can be connected in parallel depends on the amplifier load capacity.

**WARNING! CAREFULLY READ THE FOLLOWING INSTRUCTIONS AND CONDITION OF USE:**

- This loudspeaker is designed exclusively for Professional audio applications. The product must be installed by qualified personal only.
- Proel strongly recommends that this loudspeaker cabinet be suspended taking into consideration all current National, Federal, State and Local regulations. Please contact the manufacturer for further information.
- Proel do not accept any liability for damage caused to third parties due to improper installation, lack of maintenance, tampering or improper use of this product, including disregard of acceptable and applicable safety standards.
- During assembly pay attention to the possible risk of crushing. Wear suitable protective clothing. Observe all instructions given on the rigging components and the loudspeaker cabinets. When chain hoists are in operation ensure that there is nobody directly underneath or in the vicinity of the load. Do not under any circumstances climb on the array.



### PREDICTION SOFTWARE: EASE FOCUS 3

To aim correctly a complete system we suggest to use always the Aiming Software - EASE Focus 3:

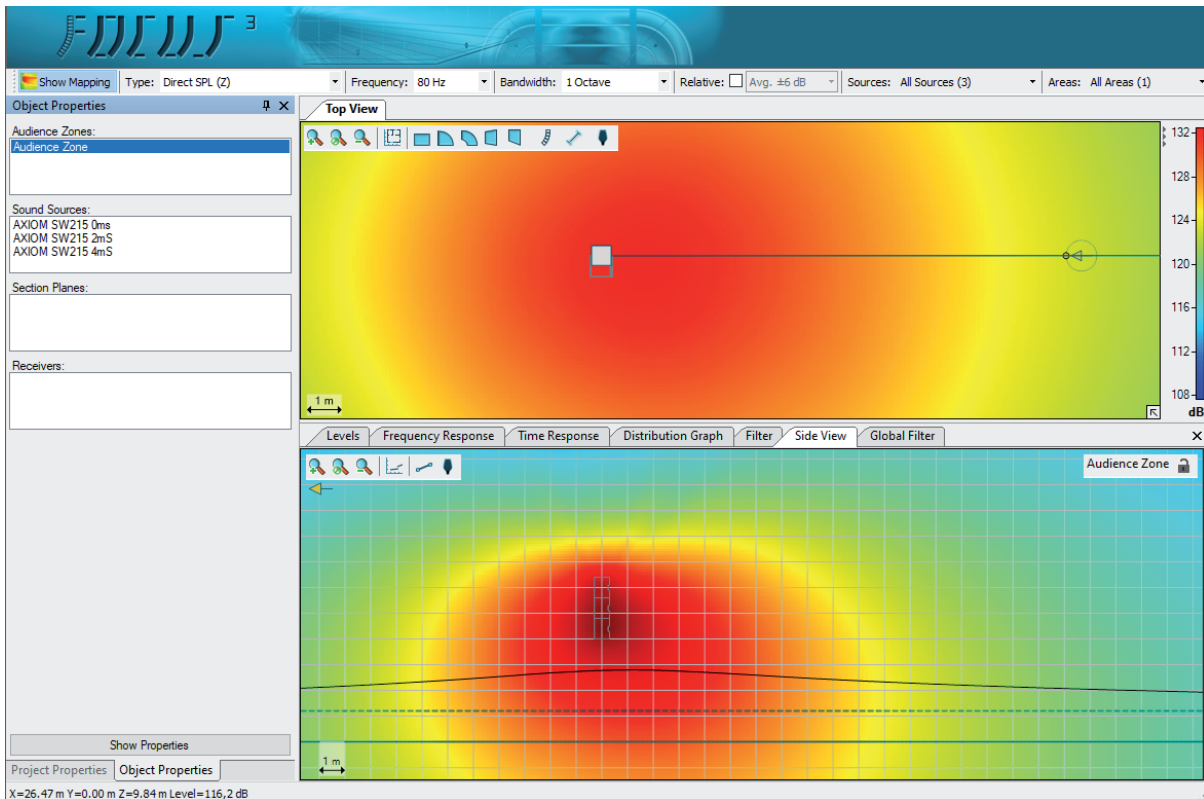
The EASE Focus 3 Aiming Software is a 3D Acoustic Modelling Software that serves for the configuration and modelling of Line Arrays and conventional speakers close to reality. It only considers the direct field, created by the complex addition of the sound contributions of the individual loudspeakers or array components.

The design of EASE Focus is targeted at the end user. It allows the easy and quick prediction of the array performance in a given venue. The scientific base of EASE Focus stems from EASE, the professional electro- and room acoustic simulation software developed by AFMG Technologies GmbH. It is based on the EASE GLL loudspeaker data file required for its use. The GLL file contains the data that defines the Line Array with regard to its possible configurations as well as to its geometrical and acoustical properties.

 **Download the EASE Focus 3 app from the AXIOM website at <https://www.axiomproaudio.com/> clicking on downloads section of the product.**

Use the menu option **Edit / Import System Definition File** to import the **GLL** file, the detailed instructions to use the program are located in the menu option **Help / User's Guide**.

Note: Some windows system can require the .NET Framework 4 that can be download from website at <https://focus.afmg.eu/>.



*NOTE: in this figure is shown the result of an suspended array with each box delayed of 2mS progressively, this method point downward the wave propagation to avoid ceiling reflection at 80Hz octave.*

*NOTE: With SW215P/FP (passive version) use only the "Standard Preset" input configuration for all boxes in the array to obtain a correct EASE 3 prediction.*





## AIMING and SUSPENDING INSTRUCTIONS (SW215FP only)

Suspending the sub-woofers has different advantages and some inconvenient. One inconvenient is that as the sub-woofers don't couple with the ground and indoor usage can have different behaviours depending on ceiling and walls. The advantages are that the space underneath the stage can be free from subs, the coupling between sub and sat is better and, using a column of 4-6 sub boxes, the basses can be steered more deeply into the audience with a more uniform distribution of the low frequencies.

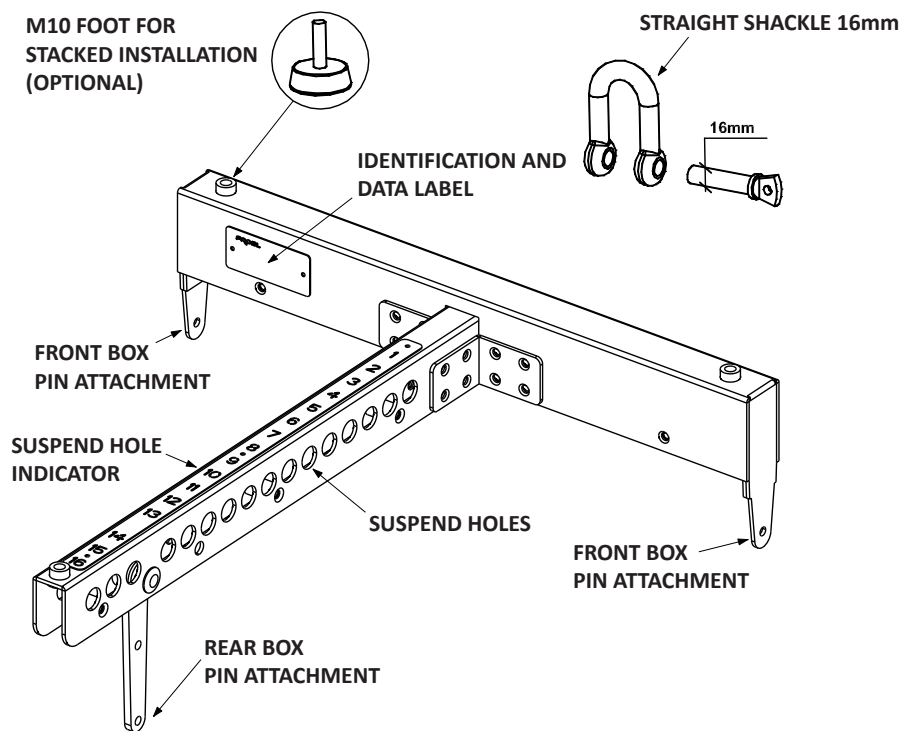
The SW215FP subwoofers can be suspended alone or at the top of a vertical array of AX2065P loudspeakers using the KPTSW215 fly bar. The boxes are linked together in a column using a series of couplers integrated in the frame of each enclosure. Each system can be set properly both acoustically and mechanically, using the aiming software.

Coupling the system in the front does not require any adjustment: using two locking pins, each loudspeaker box is fixed to the previous. The slotted bar in the back is inserted in a U-shaped frame that features a series of numbered holes. Sliding the slotted bar in the U-shaped frame of the next loudspeaker and inserting a locking pin in one of the numbered holes, it is possible to adjust the relative splay angle between two adjacent loudspeakers in the array column.

**KPTSW215 fly bar maximum capacity is 540 Kg (1190 lbs) with the 0° angle. It can support, with a safety factor of 10:1, up to:**

- 12 AX2065P (flybar from 0 to 10°)
- 2 SW215FP + 8 AX2065P (flybar at 0°)
- 6 SW215FP (flybar from 0° to 5°)

### KPTSW215 FLY BAR AND ACCESSORIES



### Wind loads

When planning an open-air event it is essential to obtain current weather and wind information. When loudspeaker arrays are flown in an open-air environment, possible wind effects must be taken into account. Wind load produces additional dynamic forces acting on the rigging components and the suspension, which may lead to a dangerous situation. If according to the forecast wind forces higher than 5 bft (29-38 Km/h) are possible, the following actions have to be taken:

- The actual on-site wind speed has to be monitored permanently. Be aware that wind speed typically increases with height above ground.
- Suspension and securing points of the array should be designed to support double the static load in order to withstand any additional dynamic forces.

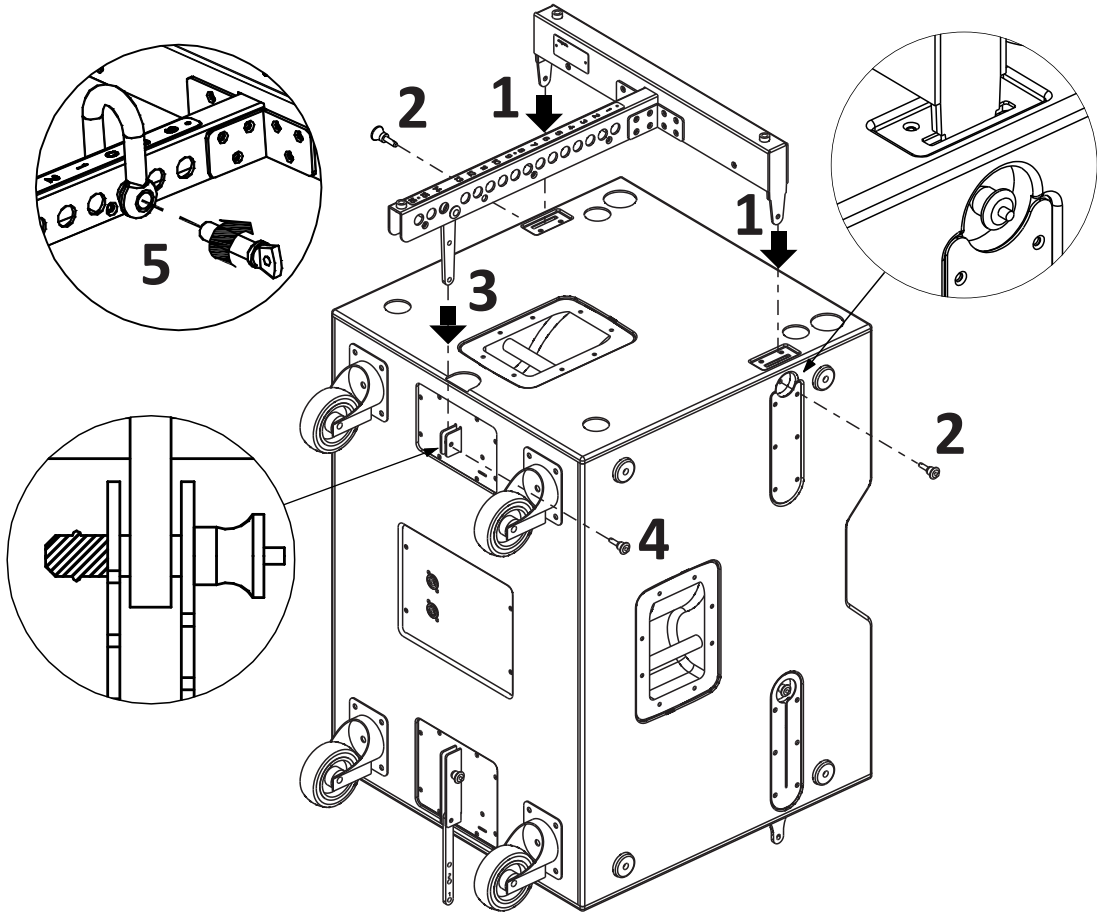
**WARNING!**  
**Flying loudspeakers overhead at wind forces higher than 6 bft (39-49 Km/h) is not recommended.**  
 If the wind force exceeds 7 bft (50-61 Km/h) there is a risk of mechanical damage to the components which may lead to a dangerous situation for persons in the vicinity of the flown array.

- Stop the event and make sure that no person remains in the vicinity of the array.
- Lower and secure the array.



Follow the sequence in the figure for fixing the fly bar at the first box. Usually this is the first step before lifting up the system. Be careful to insert properly all the locking pins (1)(2) and (3)(4) then the shackle (5) in the right holes as specified by the aiming software.

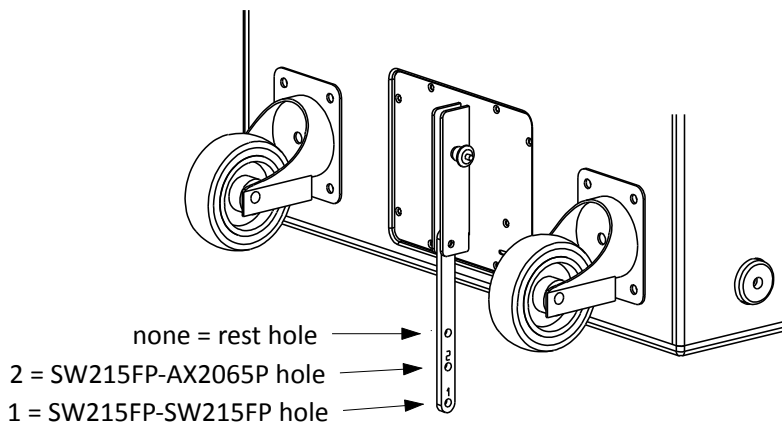
### KPTSW215 FLY BAR ASSEMBLY SEQUENCE



When lifting the system always proceed gradually step by step, paying attention to secure the fly bar to the box (and the box to the other boxes) before pulling up the system: this makes easier to insert properly the locking pins. Also when the system is released down, unlock gradually the pins. During the lifting be very careful to not let the cables enter the space between one enclosure and the other, as their compression could cut them.

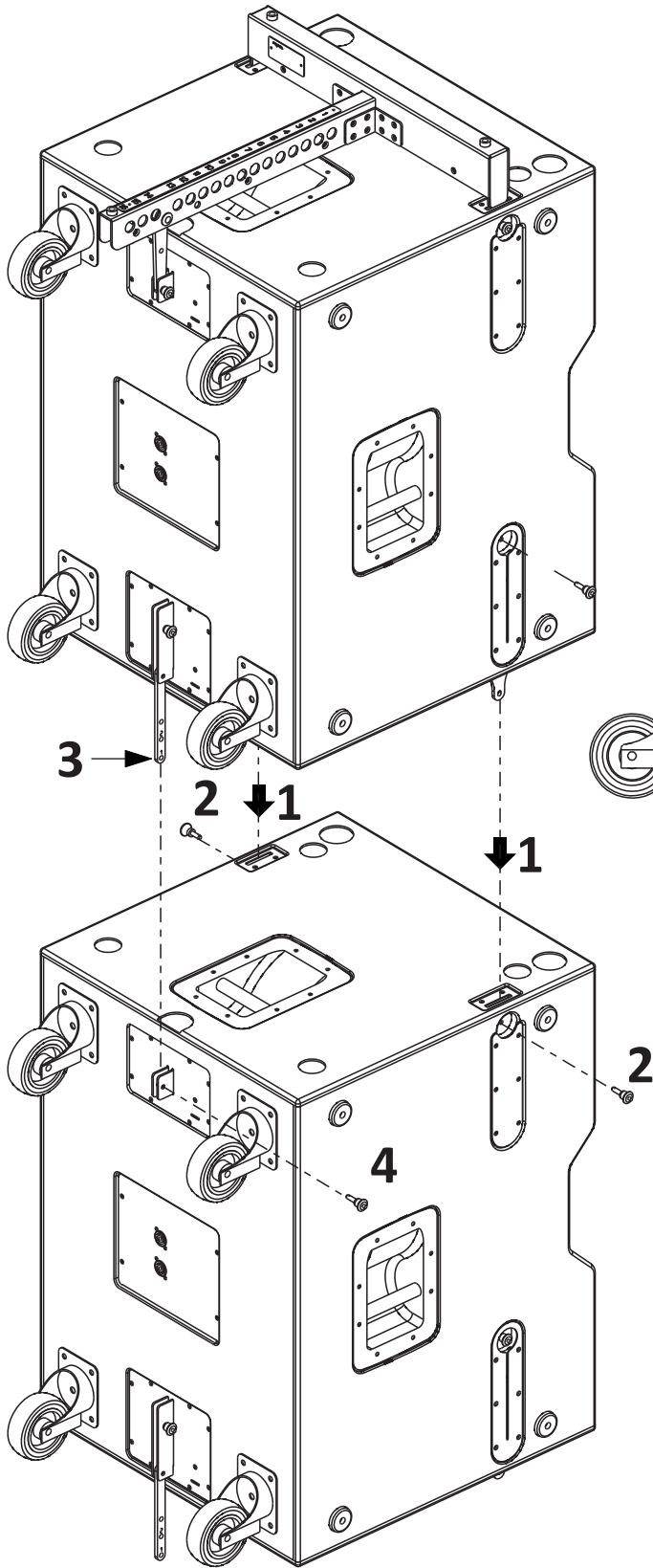
Please note that the Rear Link Bar of the SW215FP cabinet has two holes (see figure):  
 The hole signed as **nr.1** must be used for **SW215FP-SW215FP** sub-sub link.  
 The hole signed as **nr.2** must be used for **SW215FP-AX2065P** sub-sat link.

### SW215FP REAR LINK BAR



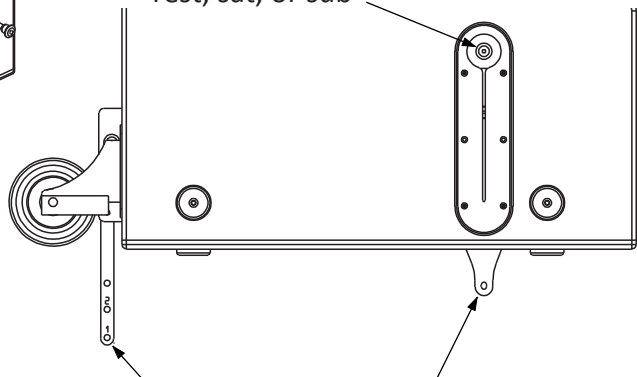


### KPTSW215 - SW215FP ARRAY ASSEMBLING SEQUENCE



**MAX:**  
**KPTSW215**  
**+**  
**6x SW215FP**

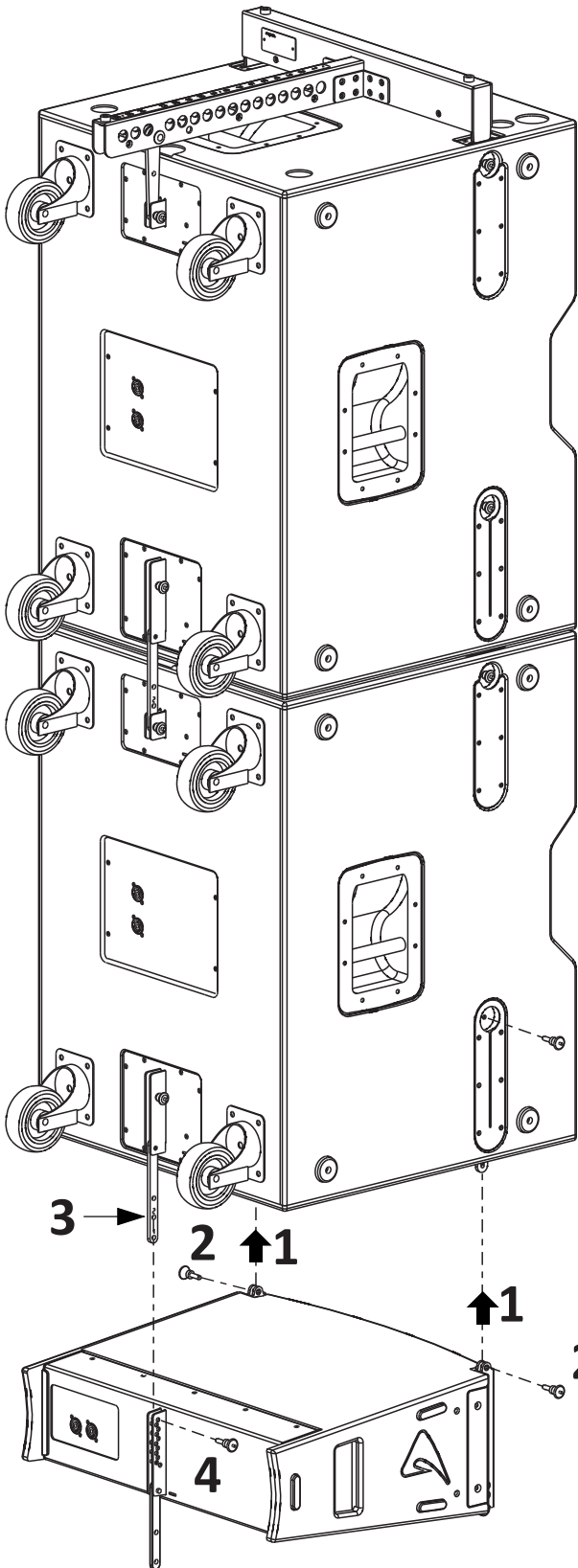
use the pin to set the  
front linking bar:  
rest, sat, or sub



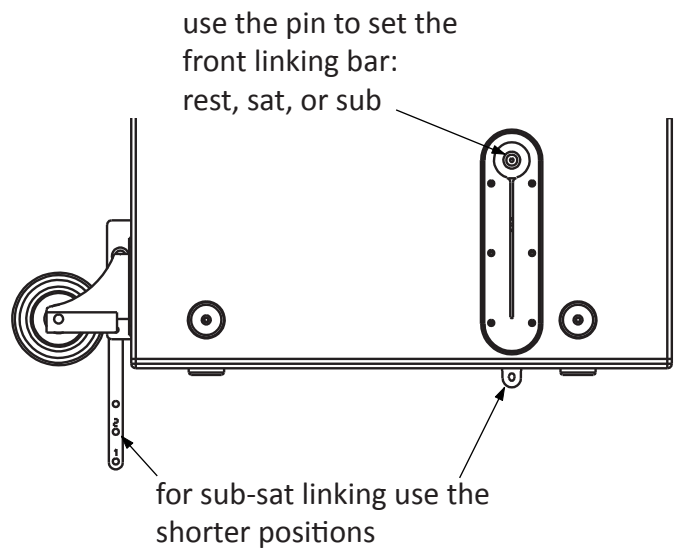
for sub-sub linking use the  
longer positions



**KPTSW215 - SW215FP - AX2065P ASSEMBLING SEQUENCE**



**MAX:**  
**KPTSW215**  
**+**  
**2x SW215FP**  
**+**  
**8x AX2065P**



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