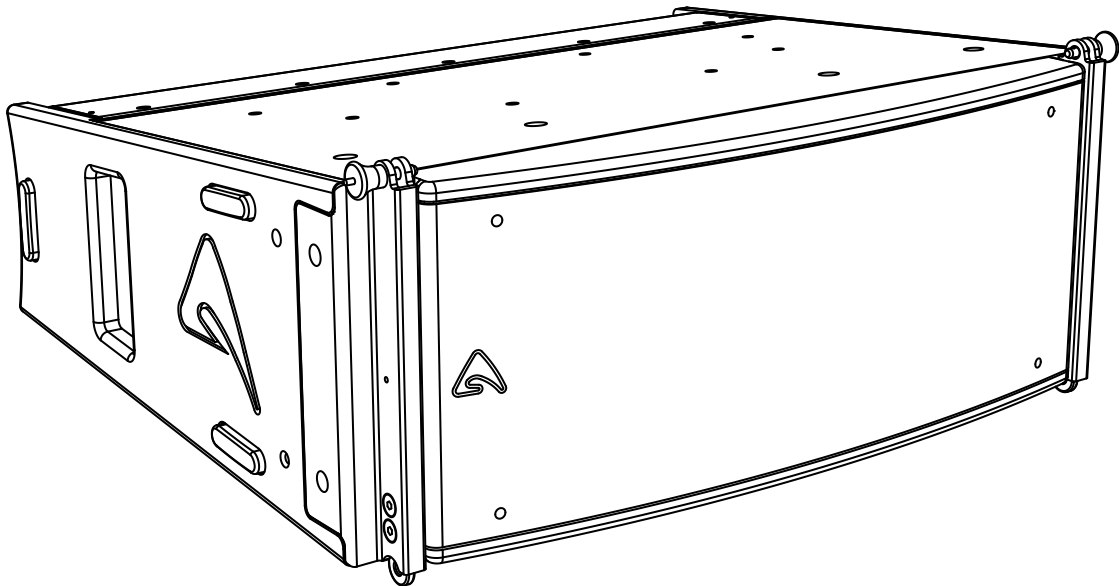# AX2065AV2

Active Vertical Array Loudspeaker

USER MANUAL

AXIOM

IMPORTANT SAFETY INSTRUCTIONS
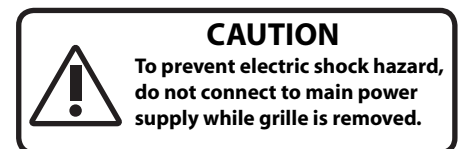
Watch for these symbols:

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.

CAUTION
RISK OF ELECTRIC SHOCK!
DO NOT OPEN!
ATTENTION
RISQUE D'ÉLECTROCUTION !
NE PAS OUVRIR !

CAUTION
To prevent electric shock hazard, do not connect to main power supply while grille is removed.

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.

AXIOM

FEDERAL COMMUNICATIONS COMMISSION (FCC) STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

DECLARATION OF CONFORMITY

The product is in compliance with:
EMC Directive 2014/30/EU, LVD Directive 2014/35/EU, RoHS Directive 2011/65/EU and 2015/863/EU, WEEE Directive 2012/19/EU.

EN 55032 (CISPR 32) STATEMENT

Warning: This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference. Under the EM disturbance, the ratio of signal-noise will be changed above 10 dB.

The product is in compliance with:
S.I. 2016/1091 Electromagnetic Compatibility Regulations 2016, S.I. 2016/1101 Electrical Equipment (Safety) Regulations 2016, S.I. 2012/3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012.

CISPR 32 STATEMENT

Warning: This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference. Under the EM disturbance, the ratio of signal-noise will be changed above 10 dB.

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 be qualified personal. Please contact the manufacturer for further information.

INDEX

INTRODUCTION

The AX2065AV2 Vertical Line Array element is designed for a wide range of sound reinforcement applications where a flexible and easy to use vertical array systems is needed. The AX2065AV2 has been designed both for rental live sound applications and for fixed installations and has been engineered for the simplest use possible but without sacrificing anything in sound quality and performance.

The high frequency range is reproduced by a low-distortion compression driver, equipped with very light-weight Titanium diaphragms and a special new suspension design for very natural sound. A transmission line wave-forming waveguide has been used to load the HF driver, in order to provide a detailed and natural sound and to achieve a long-distance HF projecting capacity.

The two 6.5" woofers are back loaded by a short hybrid transmission line that minimizes the effect of the box resonances and eliminates the "boxy" mid-bass sound commonly obtained from regular bassreflex enclosures.

The AX2065AV2 is processed by 40 bit floating point CORE2 DSP and powered by a high efficiency CLASS D amplifier module with a newly designed power supply equipped with PFC, which reduces the power consumption while enhancing reliability and consistency in all operating conditions. The high efficiency of the output stage improves overall performance delivering pristine power and clean output signal to each AX2065AV2 that is capable to power an additional passive AX2065P module through the available power output on the back panel. This feature will allows to assemble very competitive hybrid solutions both for rental and installation applications.

TECHNICAL SPECIFICATION

SYSTEM

System's Acoustic Principle	Line Array Element Short Transmission Line LF Back Loading Acoustic Transmission Line HF Waveguide
Frequency Response (±3dB)	80 Hz – 18 KHz (Processed)
Horizontal/Vertical Coverage Angle	110° x 12° (-6dB)
Maximum Peak SPL @ 1m	129 dB

TRANSDUCERS

LF	Two 6.5" (165 mm), 1.5" (38 mm) aluminium voice coil, 16Ω each, paralleled
HF	One 1.4" drivers, 2.5" (64 mm) edgewound voice coil, titanium diaphragm, 8Ω

ELECTRICAL

Input Impedance	20 kΩ balanced, 10 kΩ unbalanced
Input Sensitivity	+4 dBu / 1.25 V
Signal Processing	CORE2 processing, 40bit floating point SHARC DSP, 24 bit AD/DA converters
Direct access Controls	4 Presets (Standard/Long Throw/Down Fill-Single Box, User), Network Termination, GND Link.

Remote Controls	PRONET AX control software
Network protocol	CANBUS
Amplifier Type	Class D amplifier with SMPS & PFC
Output Power	2x 1400 W
Mains Voltage Range (Vac)	100 - 240 V~ ±10% 50/60 Hz
Consumption*	700 W (nominal) 1700 W (max)
IN / OUT Connectors	Neutrik XLR-M / XLR-F
IN / OUT Network Connectors	ETHERCON® (NE8FAV)
Mains Connector	PowerCon® (NAC3MPXXA)
Mains Link Connector	PowerCon® (NAC3MPXXB)
Cooling	Variable speed DC fan

ENCLOSURE & CONSTRUCTION

Dimensions (W x H x D)	583 mm (22.95") x 244 mm (9.60") x 481 mm (18.93")
Taper angle	5°
Construction	15 mm, reinforced Phenolic Birch
Paint	High resistance, water based paint
Front Suspension	Aluminium Fast Link structure
Back Suspension	High Strength Steel
Net Weight	23.2 Kg (51.2 lbs.)

Nominal consumption is measured with pink noise with a crest factor of 12 dB, this can be considered a standard music program.

AXIOM

MECHANICAL DRAWING

48.1 cm
18.93"

58.3 cm
22.95"

14.5 cm
5.70"

5°

24.4 cm
9.60"
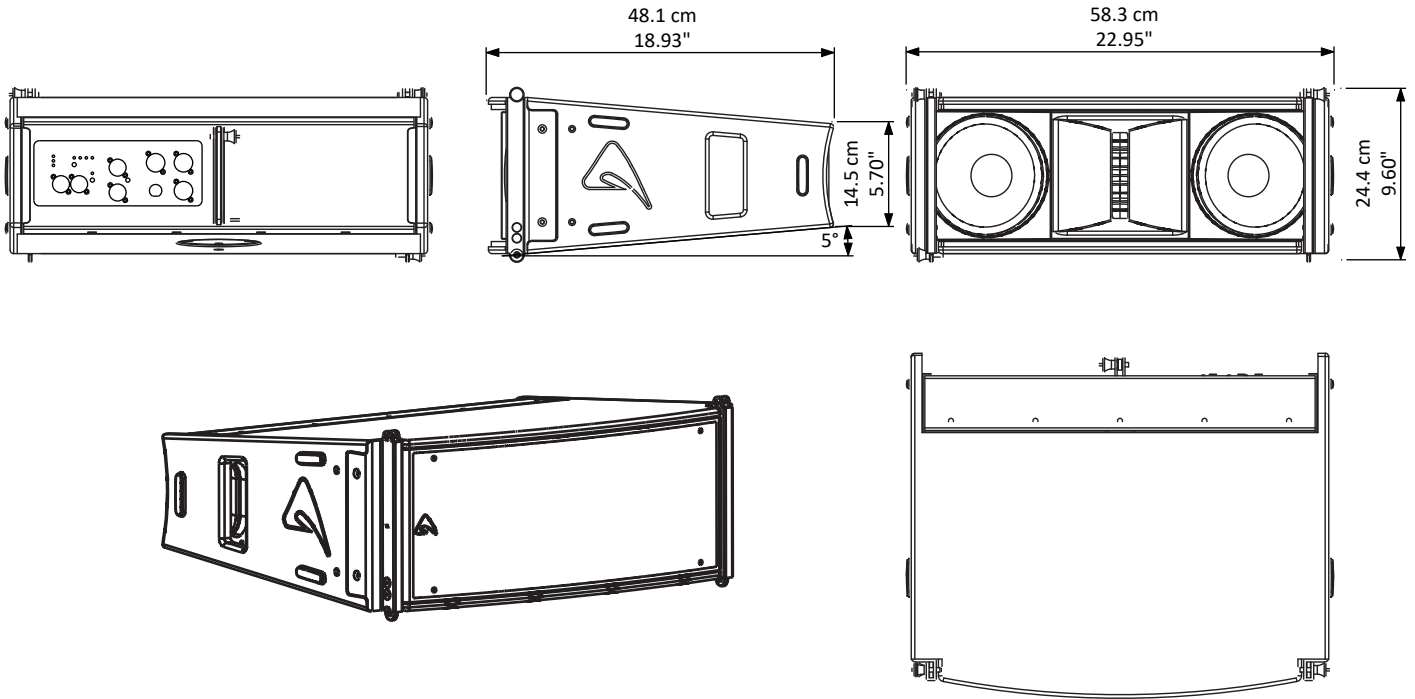
OPTIONAL ACCESSORIES

AXCASE05	Carrying Case for 4 box unit + Flying Bar	KPTSW215	Fly bar for Axiom AX2065 and SW215 Loudspeakers
AXCASE06	Carrying Case for 4 box unit	KPTAX2065	Fly bar for 6 MAX Axiom AX2065 Loudspeakers only
NAC3FXXA-W-L	Neutrik Powercon® BLUE PLUG	AXFEETKIT	Kit of 6pcs BOARDACF01 M10 foot for stacked installation
NAC3FXXB-W-L	Neutrik Powercon® WHITE PLUG	KPAX265	Pole Adaptor
NE8MX-B-TOP	Neutrik Ethercon PLUG	KP010	0° to 10° tilt adaptor
NC3MXXBAG	Neutrik XLR-M	DHSS10M20	Sub-Speaker ø35mm Pole with M20 screw
NC3FXXBAG	Neutrik XLR-F	RAINCOV2065	Rain cover for input sockets
CAT5SLU01/05/10	LAN5S - Cat5e - RJ45 plugs and NE8MC1 connectors. 1/5/10 m Length	SW215A	Active Subwoofer
		SW215FA	Flyable Active Subwoofer
AR100LUxx	Hybrid cable 1x Cat6e - 1x Audio with NEUTRIK connectors 0.7/1.5/2.5/5/10/15/20 m Length	USB2CANDV2	Dual output PRONET network converter
AVCAT5PROxx	Cat5e on cable drum, RJ45 plugs and NEUTRIK connectors 30/50/75 m Length		

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

SPARE PARTS

91CBL300060	Powercon® sockets kit with internal wiring
NAC3MPXXA	Neutrik Powercon® BLUE SOCKET
NAC3MPXXB	Neutrik Powercon® WHITE SOCKET
94SPI2265	Locking Pin for AX2065
PLG716	Straight Shackle 16 mm for Fly bar
91DSPKT11	Input, Control and CORE2 DSP PCBA
91CRA300005	CORE2 Interface PCBA
91DALITEMOD4HC	POWERSOFT LITEMOD4HC amplifier module
91CRAIN3	Crossover/protection module
98AXM6W16	6.5'' woofer - 1.5" VC - 16Ω
98DRI2065	1.4'' compression driver - 2.4" VC - 8Ω
98MBN2065	titanium diaphragm for 98DRI2065 HF driver

contact the technical support on http://www.axiomproaudio.com/ for request or detailed spare part list.

AXIOM

I/O AND CONTROL OPERATIONS

MAINS IN
Powercon® NAC3FCA power input connector (blue). To switch the amplifier on, insert the Powercon® connector and turn it clockwise into the ON position. To switch the amplifier off, pull back the switch on the connector and turn it counter-clockwise into the POWER OFF position.

MAINS OUT
Powercon® NAC3FCB power output connector (grey). This is connected in parallel with the MAINS ~ / IN. The maximum load applicable depends on the mains voltage. With 230V~ we suggest to link a maximum of 4 AX2065AV2 loudspeakers, with 120V~ we suggest to link a maximum of 2 AX2065AV2 loudspeakers.

FUSE HOLDER
Here is where the mains protection fuse is placed.

⚠️ **WARNINGS:**
- **REPLACE THE PROTECTION FUSE ONLY WITH THE SAME TYPE: BUSSMANN MDA-15-R OR LITTELFUSE 326015.VX**
- **In the case of product failure or fuse replacement, disconnect the unit completely from the mains power.**
- **Use a suitable power cable and mains plug to build the power cable, it must only be connected to a socket corresponding to the specifications indicated on the amplifier unit. See assembly instruction downloadable from NEUTRIK WEB site at: http://www.neutrik.com/**
- **The power cable must only be connected to a socket corresponding to the specifications indicated on the amplifier unit.**
- **The power supply must be protected by a suitably rated thermo-magnetic breaker. Preferably use a suitable switch to power on the whole audio system leaving the Powercon® always connected to each speaker, this simple trick extend the life of the Powercon® connectors.**
- **Connect no more units to the MAINS OUT connector than as specified above.**
- **Turn on each unit one a time starting from the latest unit.**
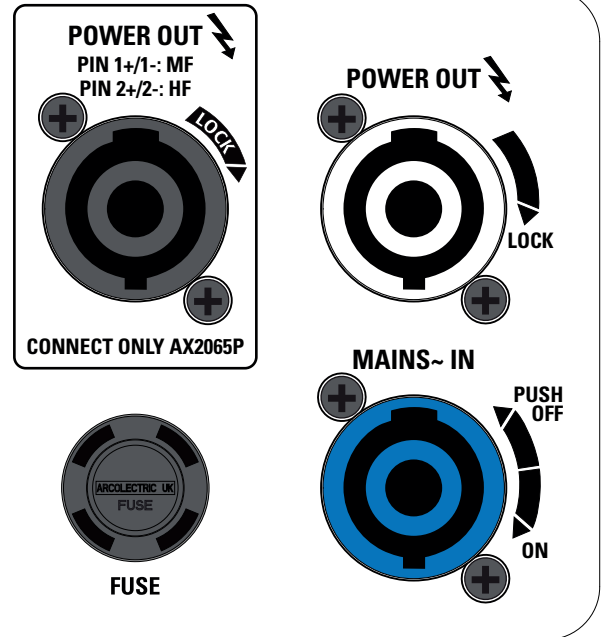
POWER OUT
AX2065AV2 is able to power an additional passive AX2065P module through the available power output on the back panel.

⚠️ **WARNING: connect a single AX2065P module only.**

INPUT
Audio signal input with locking XLR connector. It has a fully electronically balanced circuitry including AD conversion for the best S/N ratio and input headroom.

LINK
A direct connection from the input connector to link other speakers with same audio signal.

ON
This LED indicates power on status.

PROT
This red LED lights when the amplifier module is in protect mode for an internal fault and, consequently, the amplifier is muted.

SIGN/LIMIT
This LED lights in green to indicate the presence of the signal and lights in red when an internal limiter reduces the input level.

GND LIFT
This switch lift the ground of the balanced audio inputs from the earth-ground of the amplifier module.

POWER OUT
PIN 1+/1-: MF
PIN 2+/2-: HF
LOCK
CONNECT ONLY AX2065P

POWER OUT
LOCK

FUSE

MAINS~ IN
PUSH OFF
ON

AXIOM
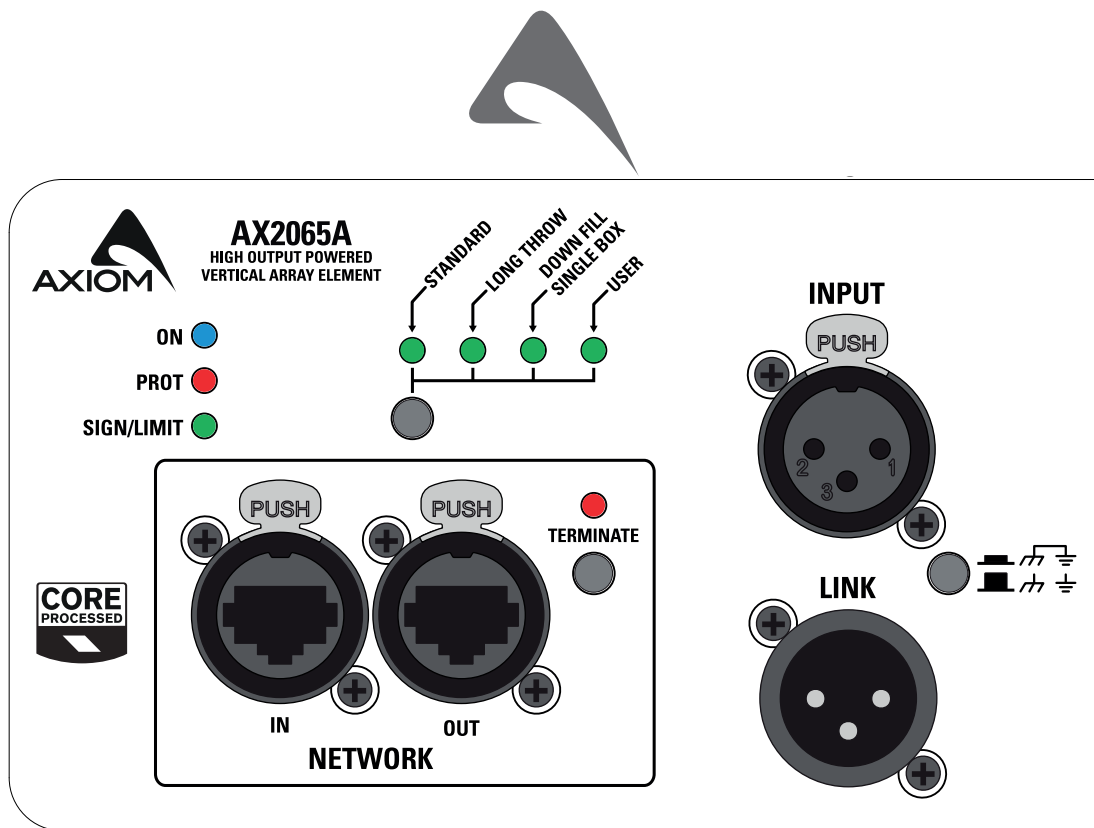
NETWORK IN/OUT

These are a standard RJ45 CAT5 connectors (with optional NEUTRIK NE8MC RJ45 cable connector carrier), used for PRONET network transmission of remote control data over long distance or multiple unit applications.

TERMINATE

In a PRONET AX network the last device must be always terminated (with an inner load resistance): press this switch if you want to terminate the network on this unit.

⚠️ **Only the last devices connected to the PRONET AX network must be always terminated, therefore all units connected between two devices within the network must not be terminated never.**

PRESET BUTTON

This button has two function:

1) Pressing it while powering on the unit:

ID ASSIGN   The internal DSP assigns a new ID to the unit for the PRONET AX remote control operation. Each loudspeaker must have a unique ID to be visible in the PRONET AX network. When you assign a new ID, all the other loudspeakers with the ID already assigned must be ON and connected to the network.

2) Pressing it with the unit ON you can select the DSP PRESET. The selected PRESET is indicated by the corresponding LED:

STANDARD   This PRESET is suitable for vertical flown arrays that may range from 4 to 8 boxes or for the centre region of a bigger flown array. It can be used also for stacked arrays.

LONG THROW   This PRESET can be used in arrays bigger than 6 or 8 boxes and loaded in the top 1 or 2 boxes in order to obtain a more even distribution of the sound pressure, especially if they point very far away or to the upper deck of a large theatre.

DOWN FILL SINGLE BOX   This PRESET, which features a much smoother high frequency response, can be loaded in the bottom boxes (usually 1 or 2 boxes) of a large flown array, in order to reach conveniently the audience close to the stage. This preset could be very useful also when the box is used just on its own as a Front Fill element in the front of very large stages.

USER   This PRESET corresponds to USER MEMORY no. 1 of the DSP and, as a factory setting, it's the same to STANDARD. If you want to modify it, you have to connect the unit to a PC, edit the parameters with PRONET AX software and save the PRESET into USER MEMORY no. 1.

AX2065A - PRESET RESPONSE
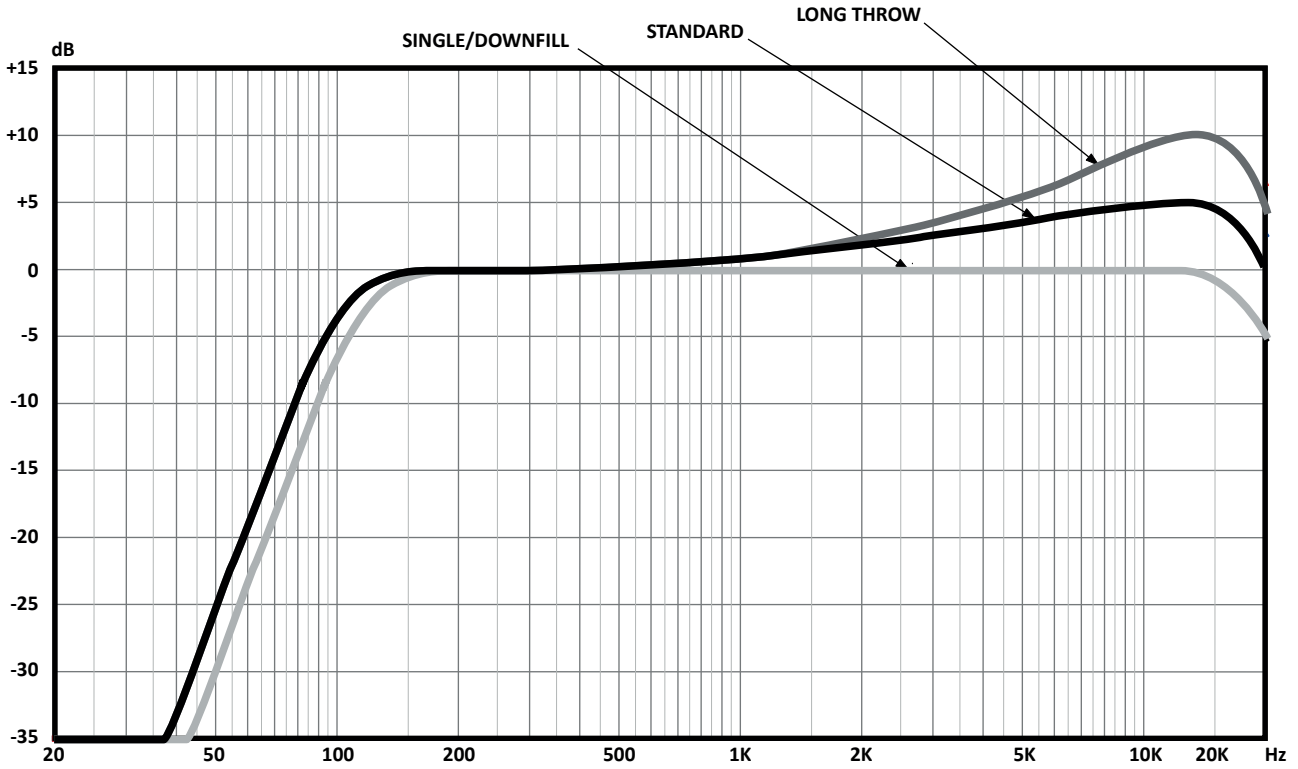
AX2065 used as conventional system

PRESET USING EXAMPLE: STANDARD INSTALLATION

In the following figure you can see how to set up a standard audio system using the minimal configuration consisting of 2 AX2065 box and a sub.

In this case some optional accessories are required: 1x KPAX265, 1x KP10, 1x DHSS10M20 for each system.

Each AX2065AV2 box preset must be set as DOWN FILL/SINGLE BOX.
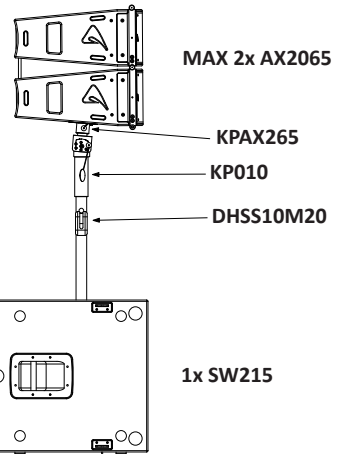
PRESET USING EXAMPLE: INSTALLATION IN A THEATRE WITH BALCONY

In the following figure you can see an example of the use of different PRESETS in an AX2065AV2 flown array installed in a big theatre with balcony:

• The TOP BOXES of the array are aiming at the balcony while the DOWN FILL box is aiming at the audience close to the stage.

• TOP BOXES: the power level at the end of the balcony is lower, as well as the high
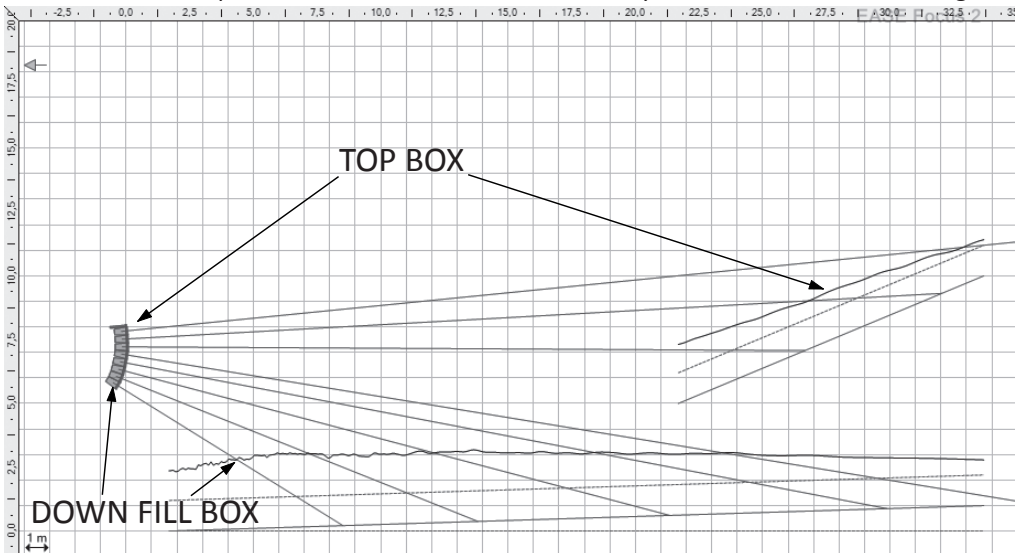
frequency level.

• DOWN FILL BOXES: the power level in the proximity of the stage is higher, as well as the high frequency level.

In order to optimize the array performances for the specific application, the PRESETS should be used in the following way.
• Load the STANDARD preset in the central boxes.
• Load the LONG THROW preset in the TOP 1 or 2 boxes, in order to compensate the loss of power level and high frequencies of the program sent the upper deck of the theatre.
• Load the DOWN FILL / SINGLE BOX preset in the BOTTOM box in order to smooth the high frequency content of the program sent to the audience close to the stage.

PRONET AX - OPERATION

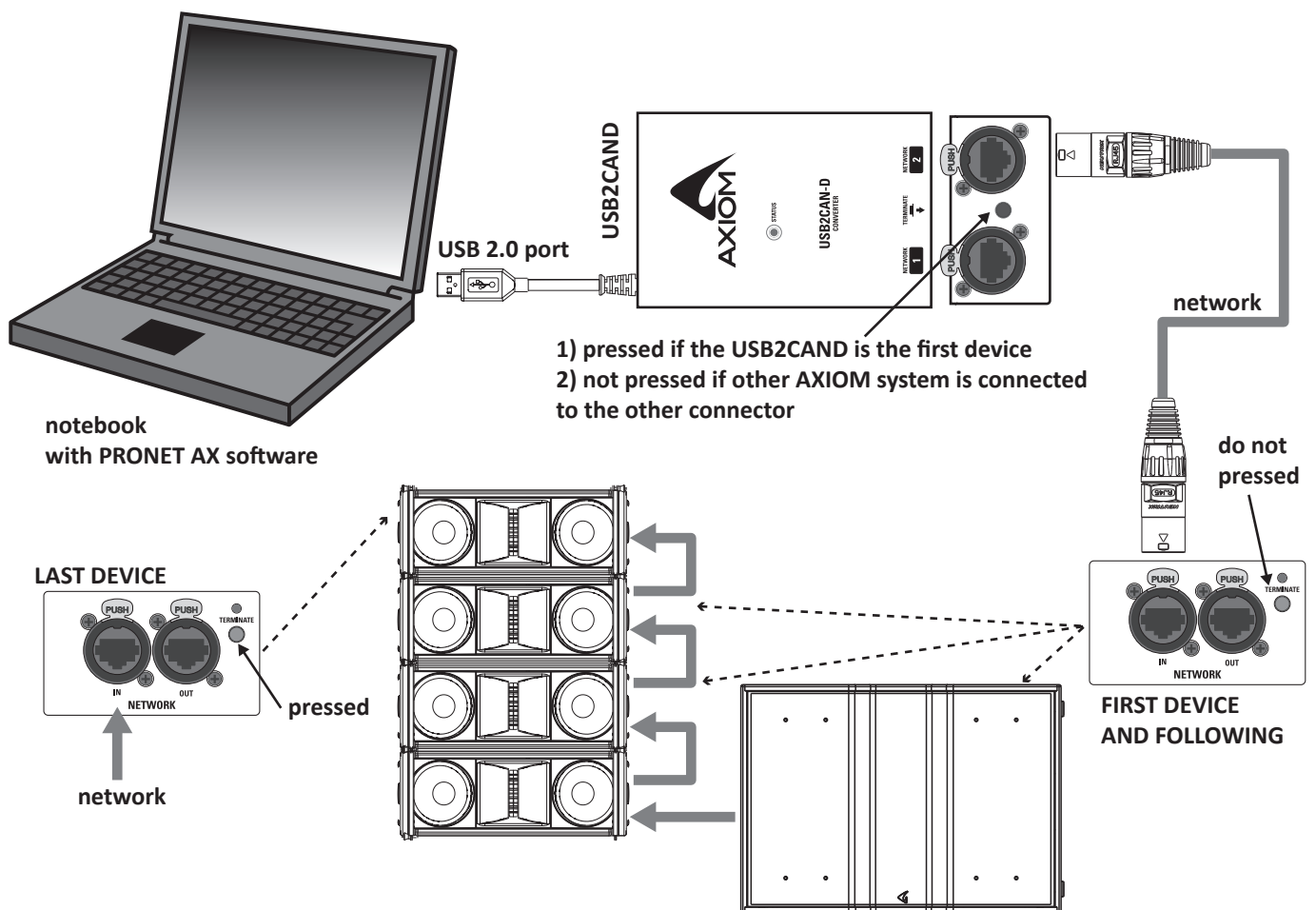The AXIOM active loudspeaker devices can be connected in a network and controlled by the PRONET AX software.
PRONET AX software has been developed in collaboration with sound engineers and sound designers, in order to offer an "easy-to-use" tool to setup and manage your audio system. With PRONET AX you can visualize signal levels, monitor internal status and edit all the parameters of each connected device.

Download the PRONET AX app registering on MY AXIOM at the website at https://www.axiomproaudio.com/.

For the network connection the USB2CAND (with 2-port) converter optional accessory is needed.
PRONET AX network is based on a "bus-topology" connection, where the first device is connected to the input connector of the second device, the second device network output is connected to the network input connector of the third device, and so on. To ensure a reliable communication the first and the last device of the "bus-topology" connection must be terminated. This can be done by pressing the "TERMINATE" switch near the network connectors in the rear panel of the first and the last device. For the network connections simple RJ45 cat.5 or cat.6 ethernet cables can be used (please don't confuse a ethernet network with a PRONET AX network these are completely different and must be fully separated also both use the same kind of cable).

EXAMPLE OF PRONET AX NETWORK WITH AX2065A AND SW215A

USB 2.0 port

USB2CAND

USB2CAN-D CONVERTER

1) pressed if the USB2CAND is the first device
2) not pressed if other AXIOM system is connected to the other connector

network

notebook
with PRONET AX software

LAST DEVICE

pressed

network

do not pressed

FIRST DEVICE
AND FOLLOWING

Assign the ID number

To work properly in a PRONET AX network each connected device must have a unique identifier number, called ID. By default the USB2CAND PC controller has ID=0 and there can be only one PC controller. Every other device connected must have its own unique ID equal or greater than 1: in the network cannot exist two devices with the same ID.

In order to correctly assign a new available ID to each device for working properly in a PRONET AX network, follow these instructions:

1. Switch off all the devices.
2. Connect them correctly to the network cables.
3. "TERMINATE" the end device in the network connection.
4. Switch on the first device keep pressed "PRESET" button on the control panel.
5. Leaving the previous device switched on, repeat the previous operation on the next device, until the latest device is turned on.

The "Assign ID" procedure for a device makes the internal network controller to perform two operations: reset the current ID; search the first free ID in the network, starting from ID=1. If no other devices are connected (and powered on), the controller assume ID=1, that is the first free ID, otherwise it searches the next one left free.

These operations ensure that every device has it's own unique ID, if you need to add a new device to the network you simply repeat the operation of step 4. Every device maintains its ID also when it is turned-off, because the identifier is stored in the internal memory and it is cleared only by another "Assign ID" step, as explained above.

> ⚠️ **With the network made always of the same devices the assigning ID procedure must be executed only the first time the system is turned on.**
> **For more detailed instruction about PRONET AX see the PRONET AX USER'S MANUAL included with the software.**

PREDICTION SOFTWARE: EASE FOCUS 3

To aim correctly a complete system we suggests 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/.

BASIC INSTALLING OPERATION

The EASE FOCUS prediction software is the tool that allows you to evaluate your installation both to meet the acoustic requirements of the project and also to suspend or stack AX2065 systems, the program allows you to simulate the rigging pinpoint on the fly bar to obtain the calculated splay angle of the entire line array system and of the individual angles between each loudspeaker element.

KPTAX2065 FLOWN PINPOINT
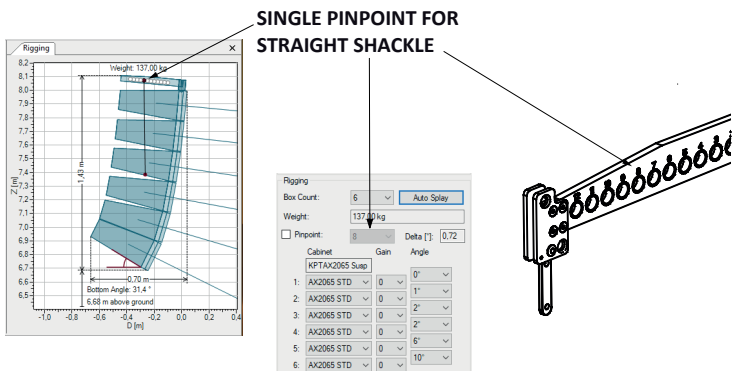
SINGLE PINPOINT FOR STRAIGHT SHACKLE

KPTSW215 FLOWN PINPOINT
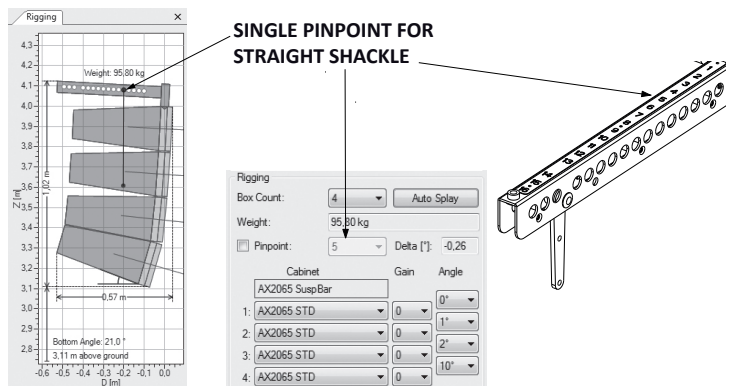
SINGLE PINPOINT FOR STRAIGHT SHACKLE

The following examples shows how to operate correctly to link the loudspeaker box and to suspend or stack the whole system safely and surely, read these instructions with extreme attention:

⚠️ **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, for suspending the system qualified rigger personal is mandatory.

• Proel strongly recommends that this loudspeaker cabinet be suspended taking into consideration all current National, Federal, State and Local regulations. Please contact the manufacturer and local distributor 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.

• **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.

**Fly bar suspension and angle setup (centre of gravity)**

The figure below shows where the normal centre of gravity is with one box or several boxes arranged in a line. Usually the boxes are arranged to make an arc for the best coverage of the audience, so the center of gravity moves backward. The aiming software suggests the ideal suspension pinpoint taking into account this behaviour: fix the straight shackle in this position.

Note that the ideal aiming angle often doesn't correspond to the pinpoint: there is often a little difference between ideal aiming and real aiming and its value is the Delta angle: positive delta angle can be adjusted a little using two ropes, negative delta angle are self adjusted a little because the cables weight on the back of the array. With some experience it's possible to consider preventively these required little adjustments.

During the flown set up you can connect the elements of the array to their cables. We suggest to discharge the weight of the cables from the flying pinpoint by tying them with a textile fibre rope, instead of letting them hang freely: in this way the position of the array will be much more similar to the simulation produced by the software.

KPTSW215 FLY BAR FOR FLOWN ARRAY

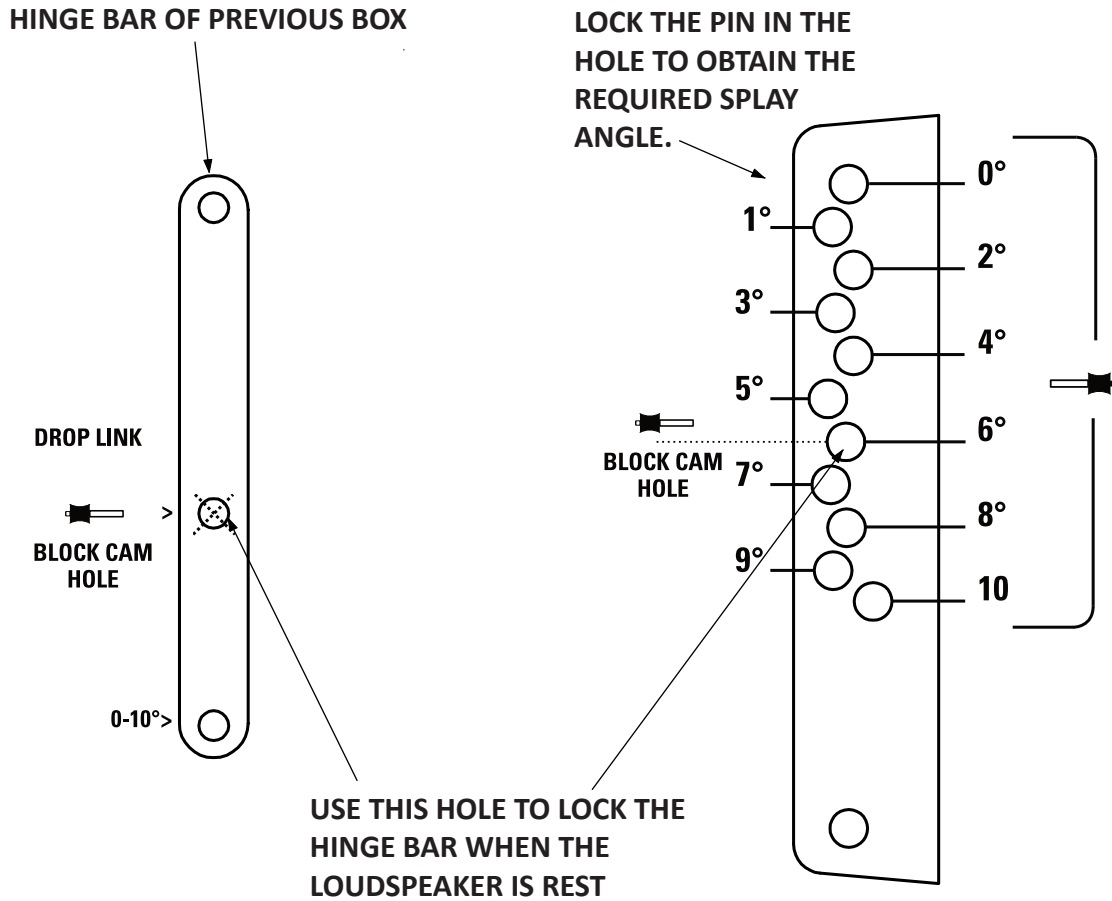## KPTAX2065 FLY BAR FOR FLOWN ARRAY
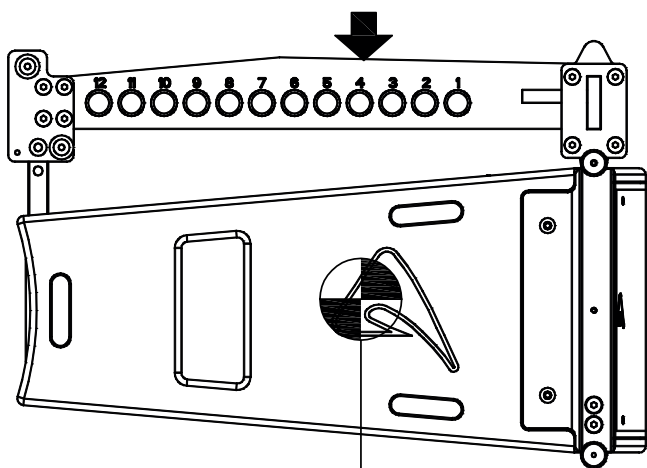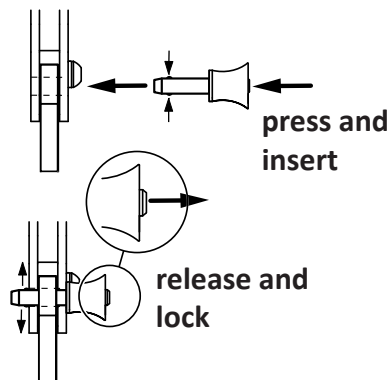

CENTRE OF GRAVITY
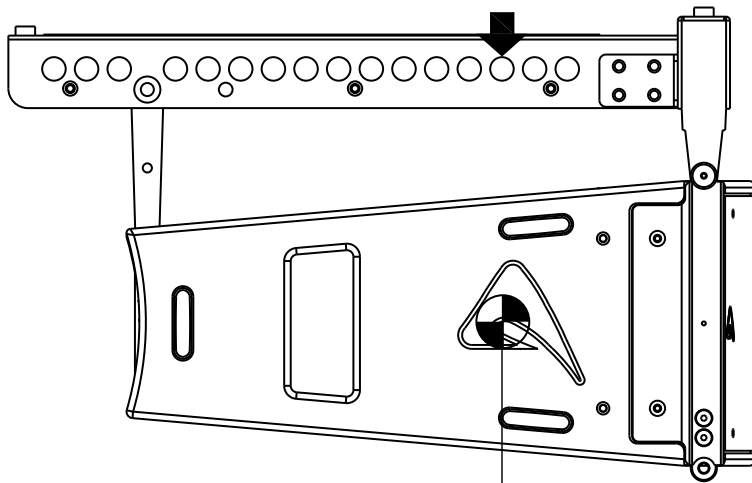
CENTRE OF GRAVITY

Pin locking and splay angles set up

The figures below shows how to insert correctly the locking pin, always carefully check that each pin is fully inserted and locked in the correct position. Set up the splay angle between loudspeakers inserting the pin in the correct hole, please note that the inner holes in the hinge top are for even angles (2, 4, 6 etc.) while the outer holes are for the odd angles (1, 3, 5 etc.).

LOUDSPEAKER SPLAY ANGLES SET UP

HINGE BAR OF PREVIOUS BOX

LOCK THE PIN IN THE HOLE TO OBTAIN THE REQUIRED SPLAY ANGLE.

0°
1°
2°
3°
4°
5°
6°
7°
8°
9°
10

DROP LINK

BLOCK CAM HOLE

BLOCK CAM HOLE

0-10°>

USE THIS HOLE TO LOCK THE HINGE BAR WHEN THE LOUDSPEAKER IS REST

94SPI2265 LOCKING PIN

press and insert

release and lock

AXIOM

FLY BAR AND ACCESSORIES

The AX2065 systems are built to allow the suspension of array with variable shape and dimensions. Thanks to a suspension mechanism designed to be functional, flexible and safe, each system must be suspended or stacked using the **KPTSW215** or **KPTAX2065** fly bars. The loudspeakers are linked together in a column using a series of couplers integrated in the frame of each enclosure. Each system will be set up properly both acoustically and mechanically only using the aiming software.
Coupling 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 which 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.

KPTAX2065 FLY BAR AND ACCESSORIES
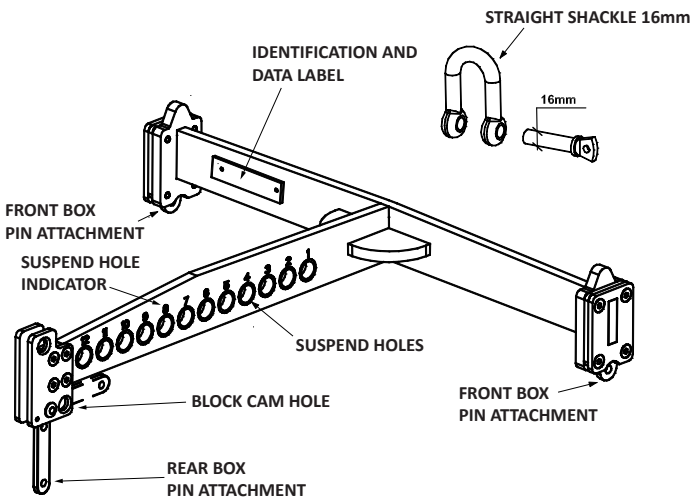
KPTSW215 FLY BAR AND ACCESSORIES
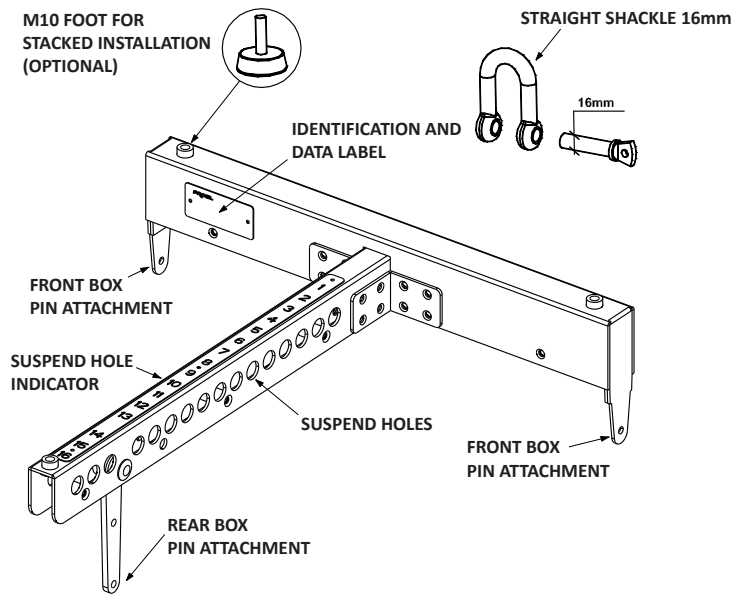
KPTAX2065 fly bar maximum capacity is 200 Kg (441 lbs) with the 0° angle. It can support, with a safety factor of 10:1, up to:

• 6 AX2065 active or passive (flybar from 0° to 10°)

KPTAX2065 can NOT be used for stacked array.

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:
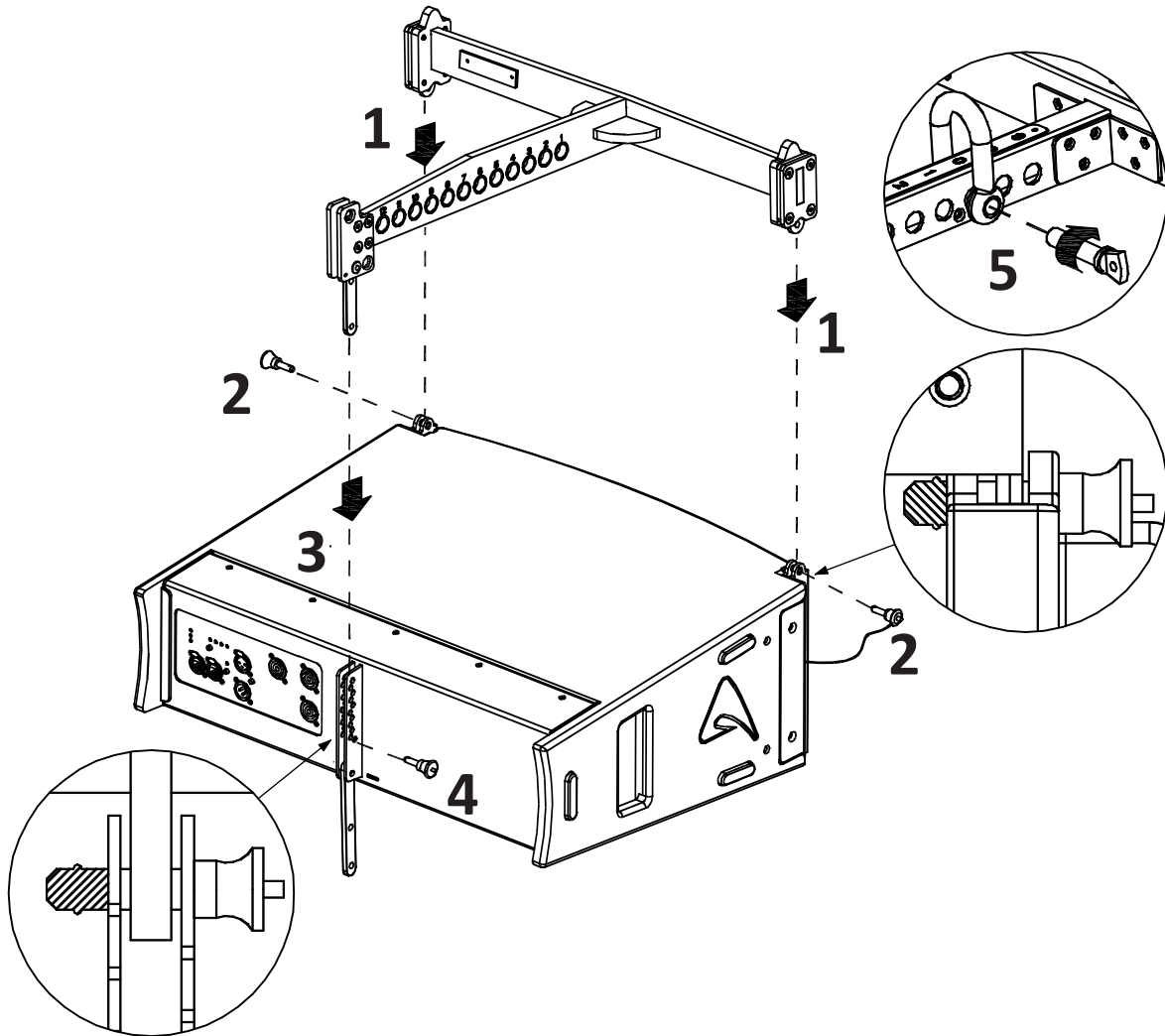
• 8 AX2065AV2 + 8 AX2065P (flybar from 0° to 10°)
• 12 AX2065AV2 (flybar from 0 to 10°)
• 2 SW215AF + 4 AX2065AV2 + 4 AX2065P (flybar at 0°)
• 2 SW215AF + 8 AX2065AV2 (flybar at 0°)
• 6 SW215AF (flybar from 0° to 5°)

KPTSW215 can be used for stacked array, see further on this manual.

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 (2)(3) and the shackle (5) in the right holes as specified by the aiming software.
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.

KPTAX2065 FLY BAR ASSEMBLY SEQUENCE

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 (2)(3) and the shackle (5) in the right holes as specified by the aiming software.
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.

KPTSW215 FLY BAR ASSEMBLY SEQUENCE
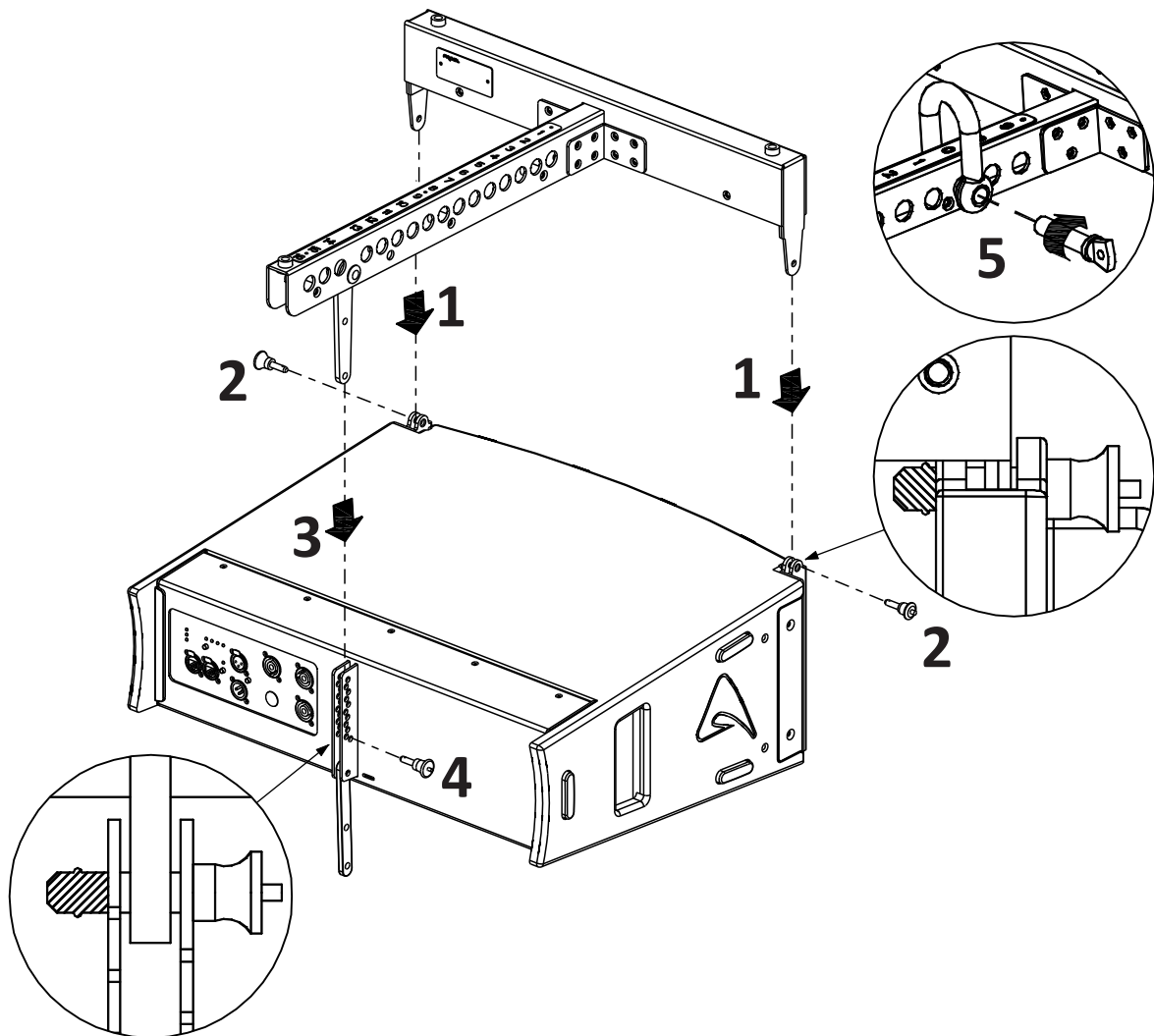
STACKED INSTALLATION

⚠️ **WARNING!**

• The ground where the **KPTSW215** Fly bar serving as ground support is placed needs to be absolutely stable and compact.
• In the stack configuration you have to use the three optional feet **BOARDACF01** (**AXFEETKIT** kit) and the fly bar must be mounted upside down on the ground.
• Adjust the feet so to lie the bar perfectly horizontal.
• Always secure ground stacked setups against movement and possible tipping over.
• A **maximum of 4 x AX2065** cabinets with the **KPTSW215** Fly bar serving as ground support are allowed to be set up as ground stack.

Coupling system in the front do 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 which 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.
The optimal splay angles can be simulated using the EASE Focus 3 software.

KPTSW215 STACKED ARRAY

max splay angle 10°
max splay angle 10°
max splay angle 10°
max splay angle 10°
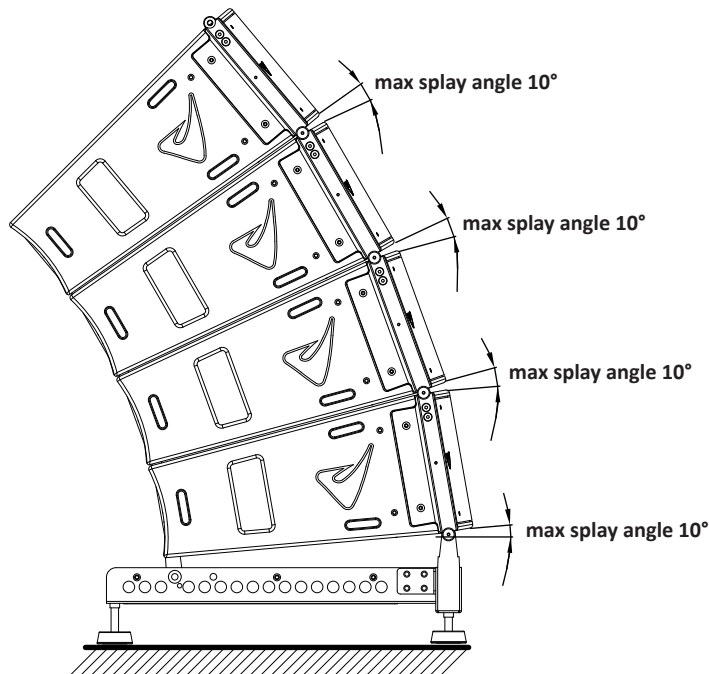
System:	AXIOM AX Series
Company:	PROEL S.p.A.
Label:	AXIOM AX Series
Position:	X=0.00 m
	Y=0.00 m
	Z=0.80 m
Orientation:	Hor=0.0°
	Ver=0.0°
Weight:	96,00 kg
Setup:	AX2065 StackBar
Box Count:	4
Pinpoint Mode:	No Pinpoint
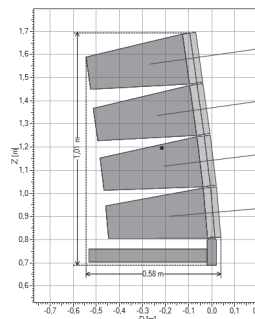
	Box Type	Gain	Rigging Angle	Aiming Angle
Box 4	AX2065 STD	0.0 dB	0°	8.0°
Box 3	AX2065 STD	0.0 dB	1°	8.0°
Box 2	AX2065 STD	0.0 dB	2°	7.0°
Box 1	AX2065 STD	0.0 dB	5°	5.0°
	(Frame)			0.0°

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