



# USER MANUAL

# SW2100A

## active subwoofer

### KEY FEATURES

- Band-Pass/Bass-Reflex Active Subwoofer
- Single 21" Neodymium woofer with 4" ISV voice coil
- Water repellent cone
- Compact cabinet with very good output-to-weight ratio
- 18mm birch plywood enclosure with Heavy duty castors
- 4000 Watt Class D amplifier with PFC Switch Mode Power Supply
- 96kHz / 40 bit floating point CORE processing with PRONET AX remote control
- Optimized presets for use in combination with AX12C line array modules

### INTRODUCTION

The SW2100A is a very compact Band-Pass/Bass-Reflex subwoofer providing high output and extended low frequency response.

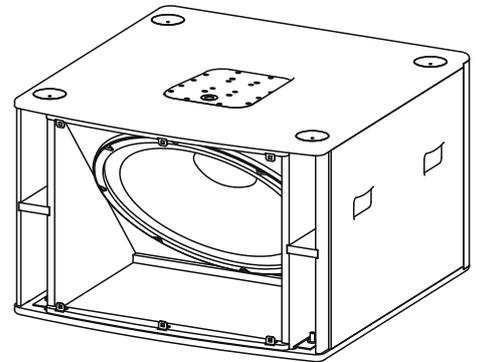
It is equipped with a single 21" neodymium transducer with a 4" ISV voice coil, large displacement suspension system, and composite reinforced, water repellent cone, able to provide clean and undistorted LF reproduction at very high SPL .

The system processing is based on the CORE DSP platform designed by the PROEL R&D Laboratories using one of the most advanced SHARC DSP for audio applications. It features 40bit, 96kHz floating point resolution and top-quality 24bit AD/DA converters, for a perfect signal integrity, dynamic range in excess of 110dB, and superior sonic performance. The PRONET AX control software, working on a solid and reliable CANBUS based network protocol, provides an intuitive interface for the remote control of the whole system, with the possibility of EQing, delaying, managing the protection functions, and monitoring the status of the amplifier.

The SW2100A is powered by a DA SERIES digital power module, a new generation of CLASS D power amplifier with digitally-controlled SMPS. The innovative technology used for these amplifiers (including also the use of a variable switching frequency) offers performance at the top of the range, such as superior sound definition at any audio frequency, very high dynamics for low level signals, and very low distortion even at maximum power. The DA module employed for powering the SW2100A features also PFC (Power Factor Correction), a technology able to guarantee always the highest level of power regardless of any eventual fluctuations of the power supply.

The SW2100A has been mainly designed to provide the optimal low frequency extension to the AX12C line array module. The built-in DA power module can provide 2000W to drive the 21" woofer and 2000W to power up to four AX12C line array modules connected to the output SPEAKON. The built-in CORE DSP provides 4 presets for different combinations: 2, 4 or 1 columns plus 1 user preset (additional presets for processing other AXIOM speakers are also available).

The SW2100A features on the top panel a special metal plate and it comes with a dedicated aluminium bracket for fast coupling with the AX12C's rigging hardware. Using this simple system, up to two AX12C modules can be easily installed on an SW2100A.



### TECHNICAL SPECIFICATION

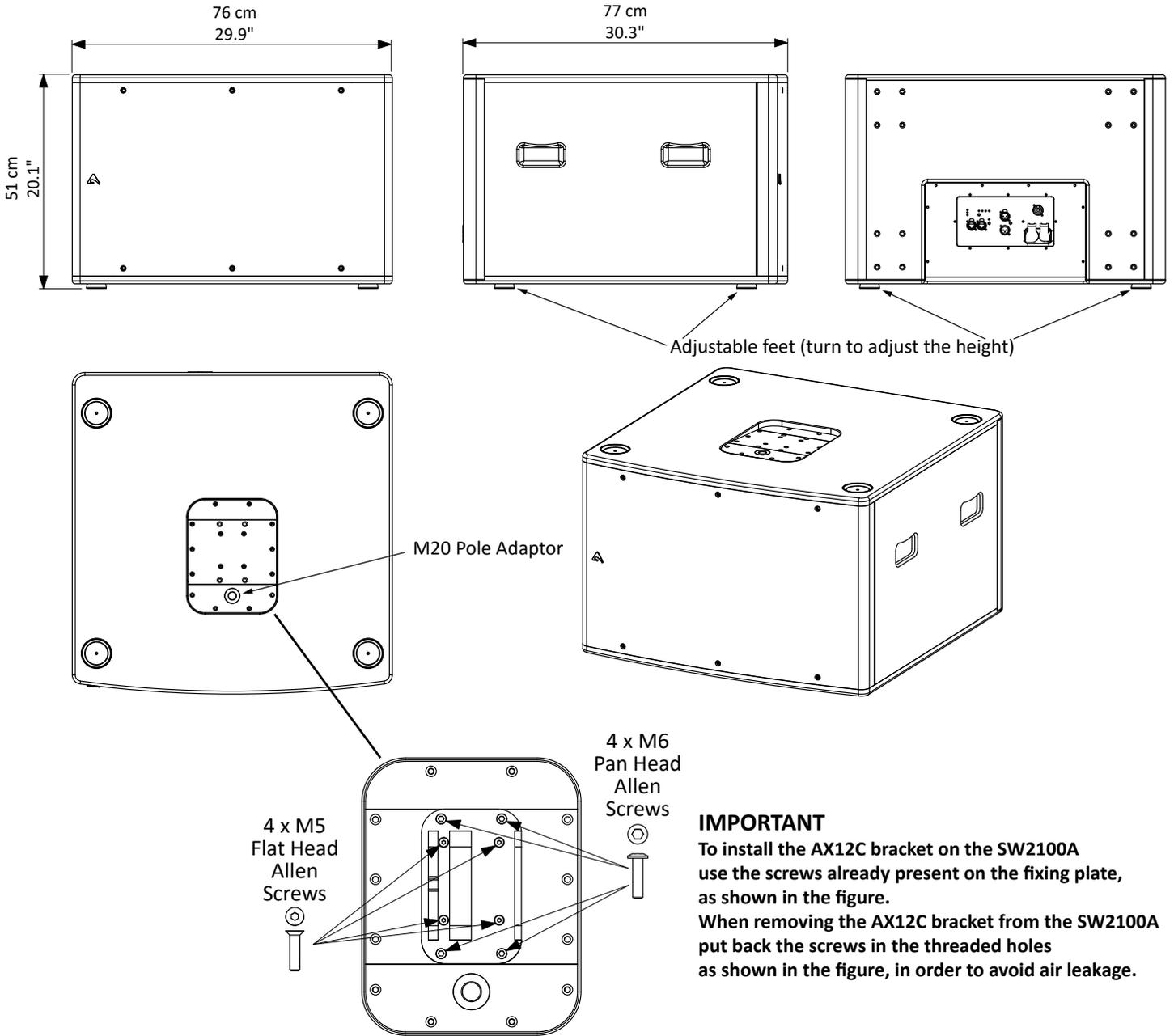
SYSTEM		ENCLOSURE & CONSTRUCTION	
System's Acoustic Principle	Band-pass / bass-reflex	Amplifier Type	Class D with SMPS and PFC, Variable Switching Frequency
Frequency Response (-6dB)	34 Hz - 180 Hz (Processed)	Output Power	2000W + 2000W (Out1: SW2100A - Out2: AX12C or other AXIOM loudspeakers)
Maximum (peak) SPL	132dB SPL @ 1m	Mains Voltage Range (Vac)	90 - 260V 50/60Hz
TRANSDUCER		Consumption*	600 W (nominal) / 1800 W (max)
Type	21" Neodymium magnet, 4" (100mm) VC	IN / OUT Connectors	Neutrik XLR-M / XLR-F
Cone	High stiffness, water repellent	IN / OUT Network Connectors	ETHERCON®(NE8FAV)
Voice Coil Type	Interleaved Sandwich Voice coil (ISV)	Mains Input and Link Connector	PowerCon® TRUE 1 (NAC3PX)
Suspension	Triple-roll	Cooling	Variable speed DC fan
ELECTRICAL			
Input Impedance	20 kΩ balanced, 10 kΩ unbalanced	Dimensions (W x H x D)	760 mm (29.9") x 511 mm (20.1") x 770 mm (30.3")
Input Sensitivity	+4dBu / 1.25 V	Depth Including Wheels	881 mm (34.6")
Signal Processing	CORE processing, 96kHz / 40bit floating point SHARC DSP, 24 bit AD/DA converters	Enclosure Material	18mm, reinforced phenolic birch
Direct access Controls	4 Presets (2 x AX12C / 4 x AX12C / 1 x AX12C / User), Network Termination, GND Link	Paint	High resistance, water based paint
Remote Controls	PRONET control software	Transport	4 x heavy duty 100mm (4") castors, 4 handles
Network protocol	CANBUS	Net Weight	61 Kg (134.2 lbs.) without wheels

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





**MECHANICAL DRAWING**



**IMPORTANT**

To install the AX12C bracket on the SW2100A use the screws already present on the fixing plate, as shown in the figure.  
 When removing the AX12C bracket from the SW2100A put back the screws in the threaded holes as shown in the figure, in order to avoid air leakage.

**OPTIONAL ACCESSORIES**

<b>NAC3FXW</b>	Neutrik Powercon® TRUE1 (for power in)*	<b>USB2CAN</b>	PRONET network converter
<b>NAC3MXW</b>	Neutrik Powercon® TRUE1 (for power out)*	<b>USB2CAND</b>	Dual Port PRONET network converter
<b>HTAC</b>	Hand tool for tightening powerCON TRUE1*	<b>DHSS10M20</b>	Sub-Speaker ø35mm 1-1.7m Pole with Handle and M20 screw
<b>NE8MCB</b>	Neutrik Ethercon PLUG	<b>KP210S</b>	Sub-Speaker ø35mm 0.7-1.2m Pole with M20 screw
<b>NC3MXXBAG</b>	Neutrik XLR-M	<b>COVERSW2100</b>	Cover for SW2100A
<b>NC3FXXBAG</b>	Neutrik XLR-F		

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

\*Note: See assembly instruction downloadable from NEUTRIK WEB site at: <http://www.neutrik.com/>

**SPARE PARTS**

<b>AC103GS</b>	100 mm Swivel Castor without brake	<b>NAC3PX</b>	Neutrik Powercon® TRUE1 Appliance inlet-outlet
<b>94SPI10100</b>	Locking Pin for AX12C	<b>SCNACPX</b>	Neutrik Rubber Sealing for NAC3PX
<b>95MET300003</b>	AX12C Bracket	<b>91AMDSW2100</b>	Amplifier module assembly
<b>98SW2100WZ4</b>	21" woofer - 4" VC - 4 ohm		





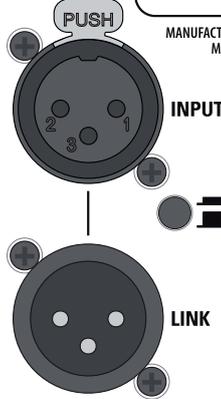
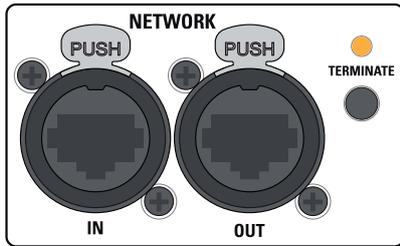
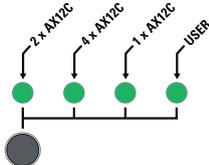
## I/O AND CONTROL OPERATIONS



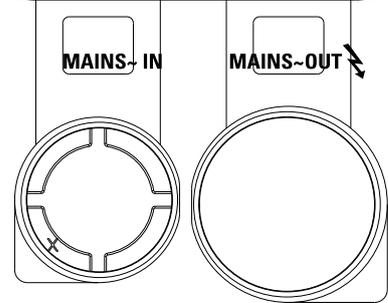
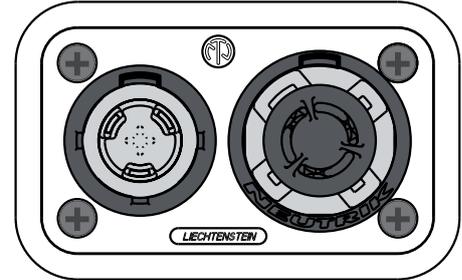
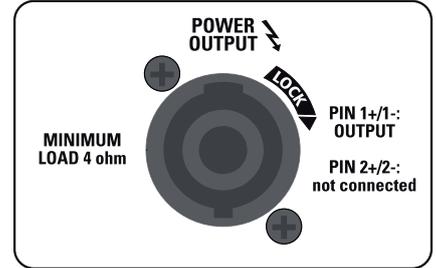
**SW2100A**  
POWERED  
SUBWOOFER



- ON
- PROT
- SIGN/LIMIT



MANUFACTURED by PROEL S.p.A.  
MADE IN ITALY



**MAINS~ IN** - Powercon® NAC3PX power inlet connector. 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® NAC3PX power outlet connector. This is connected in parallel with the MAINS~ IN.



**WARNING!** Connect no more than one subwoofer unit to the MAINS~ OUT connector.

**WARNING!** If you use the MAINS~ OUT turn on each subwoofer unit one a time.

**WARNING!** In the case of product failure or fuse replacement, disconnect the unit completely from the mains power.

**WARNING!** 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/>

**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.

**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.

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

**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 remote control operation. Each loudspeaker must have a unique ID to be visible in the PRONET 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:

**2 x AX12C** This PRESET allows to connect two AX12C column array elements to POWER OUTPUT speakon connector, see example.

**4 x AX12C** This PRESET allows to connect four AX12C column array elements to POWER OUTPUT speakon connector, see example.

**1 x AX12C** This PRESET allows to connect one AX12C column array elements to POWER OUTPUT speakon connector, see example.

**USER** This LED lights when the USER PRESET is loaded. 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 software and save the PRESET into USER MEMORY no. 1.

**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 network the last loudspeaker device must be terminated (with an inner load resistance) especially in a long run cabling: press this switch if you want to terminate the unit.

**POWER OUT** - SW2100A is able to power the passive AX12C column array module (or other loudspeakers) through the available power output on the back panel.



**WARNING:** for the optimal protection and equalization connect the exact number of AX12C modules specified by the selected PRESET.





## POWER AMPLIFIERS

The SW2100A is powered by DA SERIES digital power modules, a new generation of CLASS D power amplifier with digitally-controlled SMPS. The innovative technology used for these amplifiers (including also the use of a variable switching frequency) offers performances at the top of the range, such as a superior sound definition at any audio frequency, very high dynamics also for low level signals and very low distortion even at the maximum power. The superior sound quality can be compared with top-of-the-range AB-class analog systems, while the DA modules feature a higher dynamics, very compact size and light weight and efficiency above 90%. The DA module employed for powering the SW2100A features also PFC (Power Factor Correction), a technology able to guarantee always the highest level of power regardless of any eventual fluctuations of the power supply. It delivers in an ultra-compact package 2000W (@ 4 ohm) from each of its two channels: one channel is used to drive the 21" woofer, the other, through an output SPEAKON connector, can power AX12C line array modules or other loudspeakers.

## SIGNAL PROCESSING

The system processing is based on the CORE DSP platform, which has been designed by the PROEL R&D Laboratories using one of the most advanced SHARC DSP for audio application. It features 40bit, 96kHz floating point resolution and high quality 24bit AD/DA converters, for a perfect signal integrity, a dynamic range in excess of 110dB and a superior sonic performance. Thanks to its massive processing power, the CORE platform is capable of providing the most sophisticated algorithms for speaker processing, together with remote control and networking capability. The PRONET control software, working on a solid and reliable CANBUS based network protocol, provides an intuitive interface for the remote control of the whole system, with the possibility of eqing, delaying, increasing the protections and monitoring the status of the amplifier.

## PRONET AX

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.

**You can download the PRONET AX app from the AXIOM website at <http://www.axiomproaudio.com/>.**

The AXIOM active loudspeaker devices can be connected in a network and controlled by the PRONET AX software, for the network connection the PROEL **USB2CAN** (with 1-port) or the **USB2CAN-D** (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 network 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).

### 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 USB2CAN-D 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 its 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 see the PRONET AX USER'S MANUAL included with the software.

## TOOLS

This is a list of tools that can be useful to set properly a vertical column array system or a complex point source system.

### CABLE TESTER

It is a good practice to check all cables before each installation, because even one faulty cable can compromise heavily the system performance.

### INCLINOMETER WITH LEVER

This tool can be used to verify the vertical array angle. It can be used at the top or at the bottom of the array In this case you have to sum all splay angles, so the maximum precision is needed for aiming the vertical array, particularly for long throw applications.

### LASER DISTANCE METER

This instrument can be useful to measure the height of the vertical array and to know the distance between FOH-Subs and FOH-Array for setting the delay time.

### ACOUSTIC MEASUREMENT SYSTEM (SMAART, SATlive or similar)

These are useful to measure delays, phase and response of the system.





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

- SW2100A is NOT designed to be suspended, use it in ground stack only.
- 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.

**BASIC INSTALLATION INSTRUCTIONS**

**Stacked installation of AX12C using SW2100A subwoofer as base**



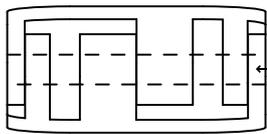
**WARNING!**

- The ground where the SW2100A is placed needs to be absolutely stable and compact.
  - Adjust the feet so to lie the SW2100A perfectly horizontal to ground. Use a spirit level to obtain the best result.
  - Always secure ground stacked setups against movement and possible tipping over.
  - A maximum of 2 x AX12C speakers are allowed to be installed over a SW2100A serving as ground support.
- Other installation examples are explained in the AX12C user manual.

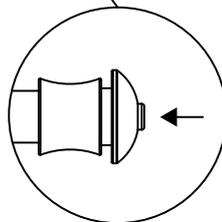
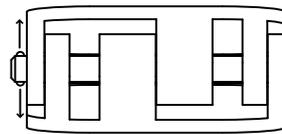
**Pin locking and splay angles set up**

The figure below shows how to insert correctly the locking pin and how to set up the splay angle between loudspeakers.

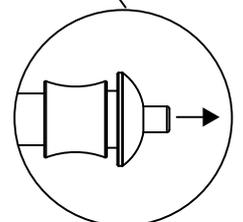
**LOCKING PIN INSERTION**



SW2100A-AX12C  
and  
AX12C-AX12C  
locking pin



press and  
insert



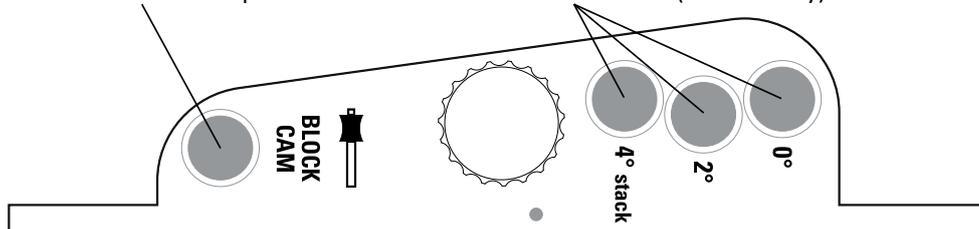
release  
and lock

**AX12C SPLAY ANGLE SET UP**

When connecting two speakers together or one speaker to an installation accessory, insert the pin in this hole first, also use it to rest the pin when unused.

Use these holes for the splay angle:

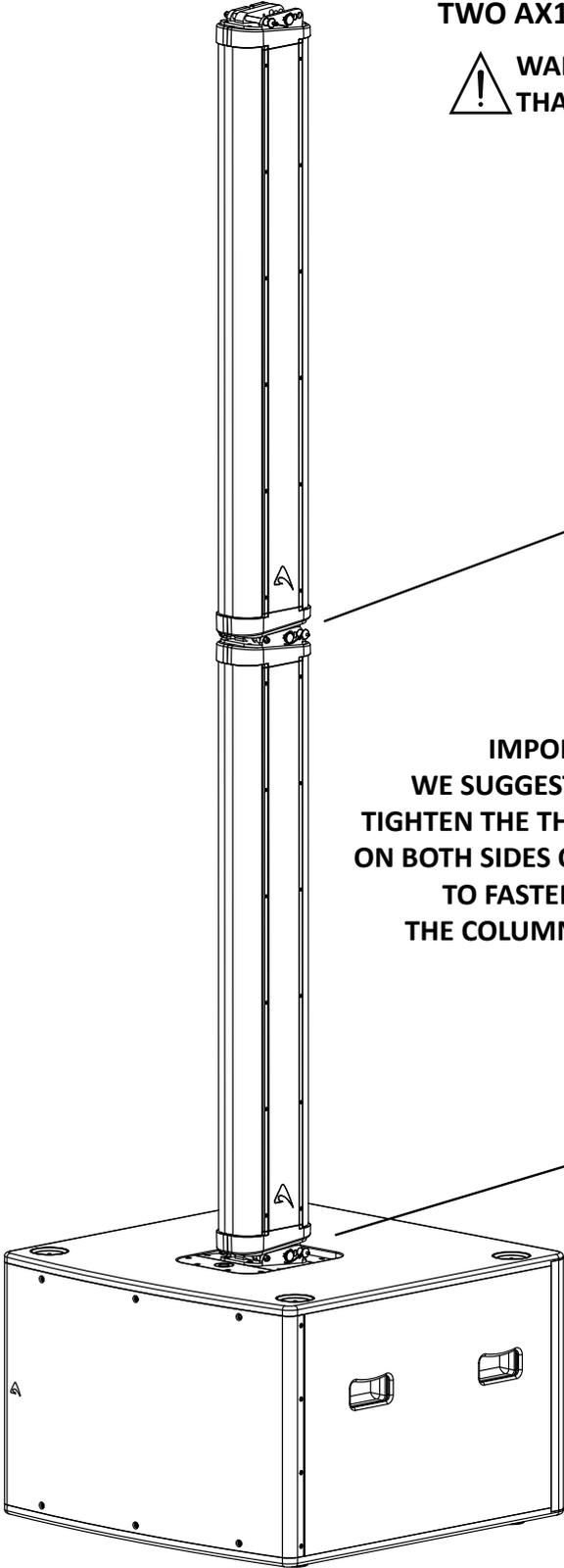
- 0° as no splay.
- 2° as normal splay angle to obtain a curved vertical array.
- 4° as splay angle to aim the first speaker downward (stacked only).



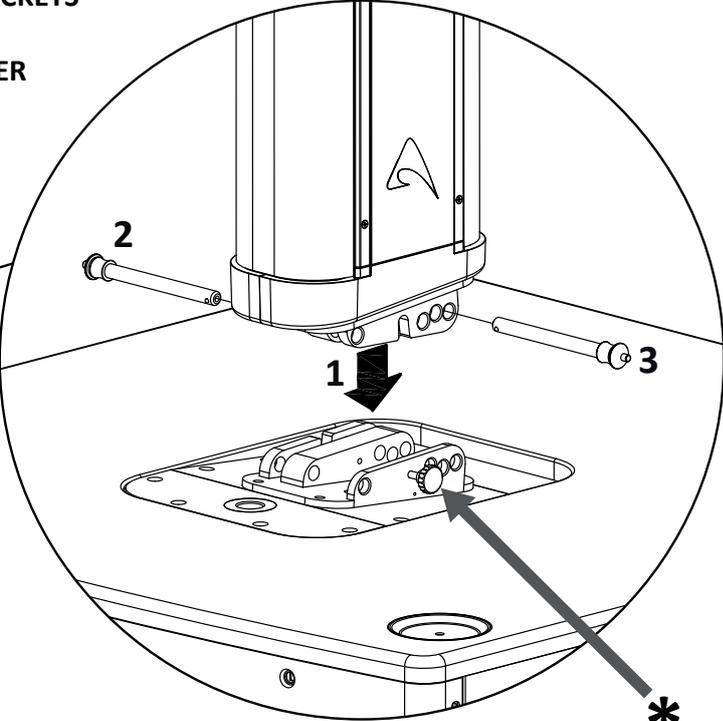
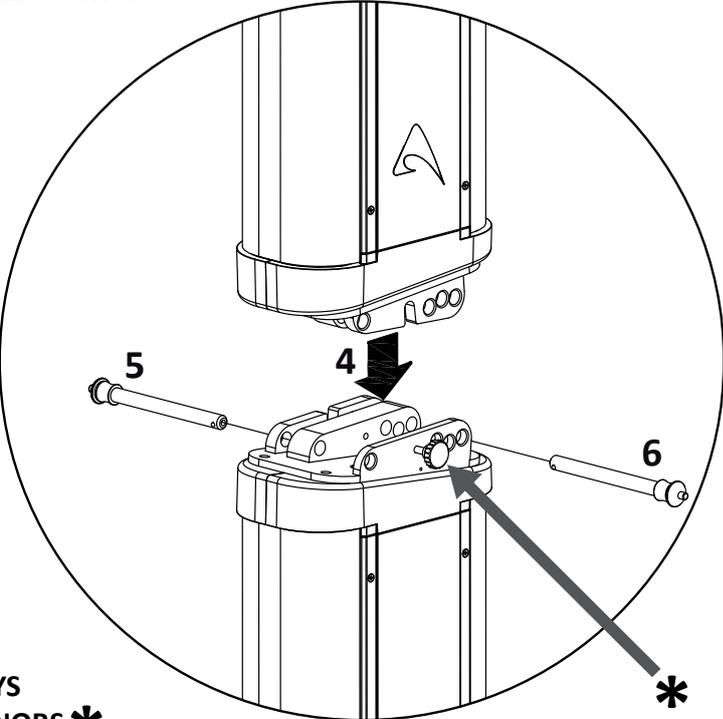


**TWO AX12C STACKED ON A SW2100A**

 **WARNING: DO NOT STACK MORE THAN TWO AX12C UNITS.**



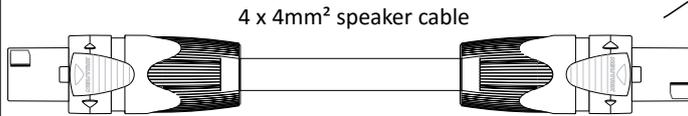
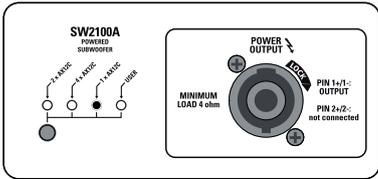
**IMPORTANT:**  
WE SUGGEST TO ALWAYS  
TIGHTEN THE THREADED KNOBS \*  
ON BOTH SIDES OF THE BRACKETS  
TO FASTEN TIGHTLY  
THE COLUMNS TOGETHER



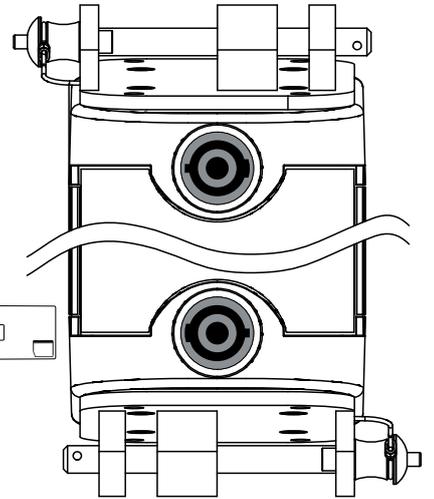


## SW2100A + AX12C connection examples

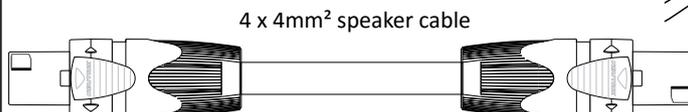
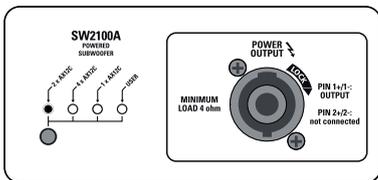
### SW2100A + 1 x AX12C



ESO2500LU2 - lenght 2m      ESO2500LU15 - lenght 15m  
ESO2500LU5 - lenght 5m      ESO2500LU20 - lenght 20m  
ESO2500LU10 - lenght 10m    ESO2500LU25 - lenght 25m

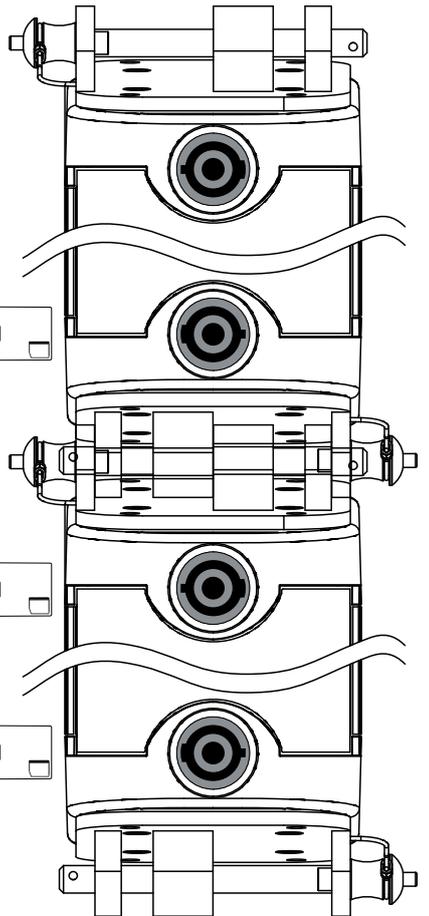


### SW2100A + 2 x AX12C



ESO2500LU05 - lenght 0,25m

ESO2500LU2 - lenght 2m      ESO2500LU15 - lenght 15m  
ESO2500LU5 - lenght 5m      ESO2500LU20 - lenght 20m  
ESO2500LU10 - lenght 10m    ESO2500LU25 - lenght 25m



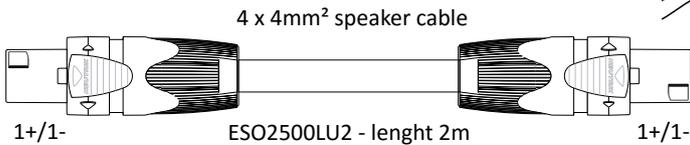
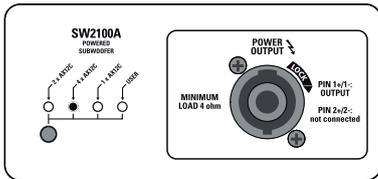


SW2100A + 4 x AX12C

ESO2500LU05 - lenght 0,25m

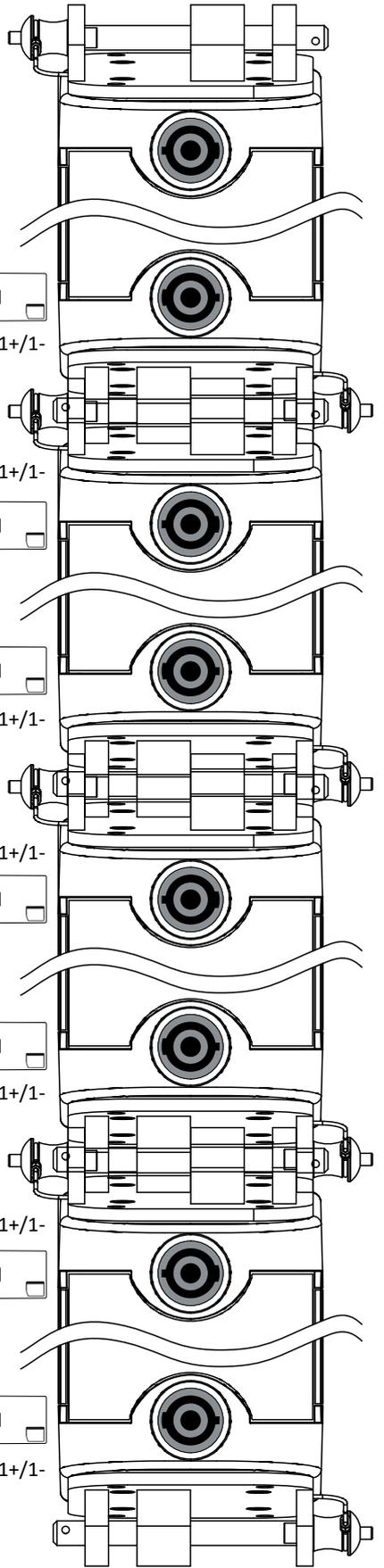
ESO2500LU05 - lenght 0,25m

ESO2500LU05 - lenght 0,25m



4 x 4mm<sup>2</sup> speaker cable

- ESO2500LU2 - lenght 2m
- ESO2500LU5 - lenght 5m
- ESO2500LU10 - lenght 10m
- ESO2500LU15 - lenght 15m
- ESO2500LU20 - lenght 20m
- ESO2500LU25 - lenght 25m







#### **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.

#### **SAFETY INSTRUCTIONS**

- To reduce the risk, close supervision is necessary when the product is used near children.
- Protect the apparatus from atmospheric agents and keep it away from water, rain and high humidity places.
- This product should be site away from heat sources such as radiators, lamps and any other device that generate heat.
- This product should be located so that its location or position does not interfere with its proper ventilation and heating dissipation.
- Care should be taken so that objects and liquids do not go inside the product.
- The product should be connected to a power supply mains line only of the type described on the operating instructions or as marked on the product. Connect the apparatus to a power supply using only power cord included making always sure it is in good conditions.
- **WARNING:** The mains plug is used as disconnect device, the disconnect device shall remain readily operable.
- Do not cancel the safety feature assured by means of a polarized line plug (one blade wider than the other) or with a earth connection.
- Make sure that power supply mains line has a proper earth connection.
- Power supply cord should be unplugged from the outlet during strong thunderstorm or when left unused for a long period of time.

#### **CE CONFORMITY**

Proel products comply with directive 2014/30/UE (EMC), as stated in EN 55103-1 and EN 55103-2 standards and with directive 2014/35/UE (LVD), as stated in EN 60065 standard.

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**Tel: +39 0861 81241 Fax: +39 0861 887862 [www.axiomproaudio.com](http://www.axiomproaudio.com)**

