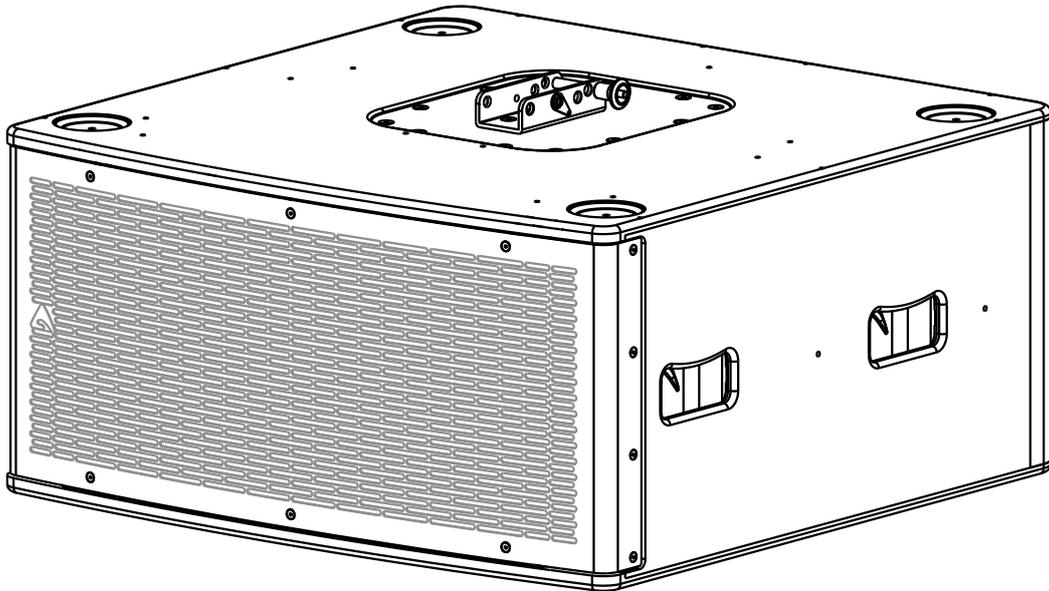




SW212A

Active Subwoofer



USER MANUAL

revision 2023-08-08







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.



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



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INTRODUCTION

The SW212A is a very compact Bass-Reflex subwoofer providing high output and extended low frequency response. It is equipped with two 12" neodymium transducer with a 3.5" aluminium 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 CORE2 DSP platform designed by the PROEL R&D Laboratories using one of the most advanced SHARC DSP for audio applications. It features 40bit 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 SW212A is powered by a CLASS D power amplifier with digitally-controlled SMPS equipped with PFC, reducing power consumption (less than 0.9W in standby) 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.

The SW212A has been mainly designed to provide the optimal low frequency extension to the AX16CL/AX8CL line array modules. The built-in power module can provide 1400W to drive the two 12" woofers and 1400W to power up to four AX16CL line array modules connected to the output SPEAKON. The built-in CORE2 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 SW212A features on the top panel a special metal plate and it comes with a dedicated bracket for fast coupling with the AX16CL's rigging hardware. Using this simple system, up to two AX16CL modules can be easily installed on an SW212A.

TECHNICAL SPECIFICATION

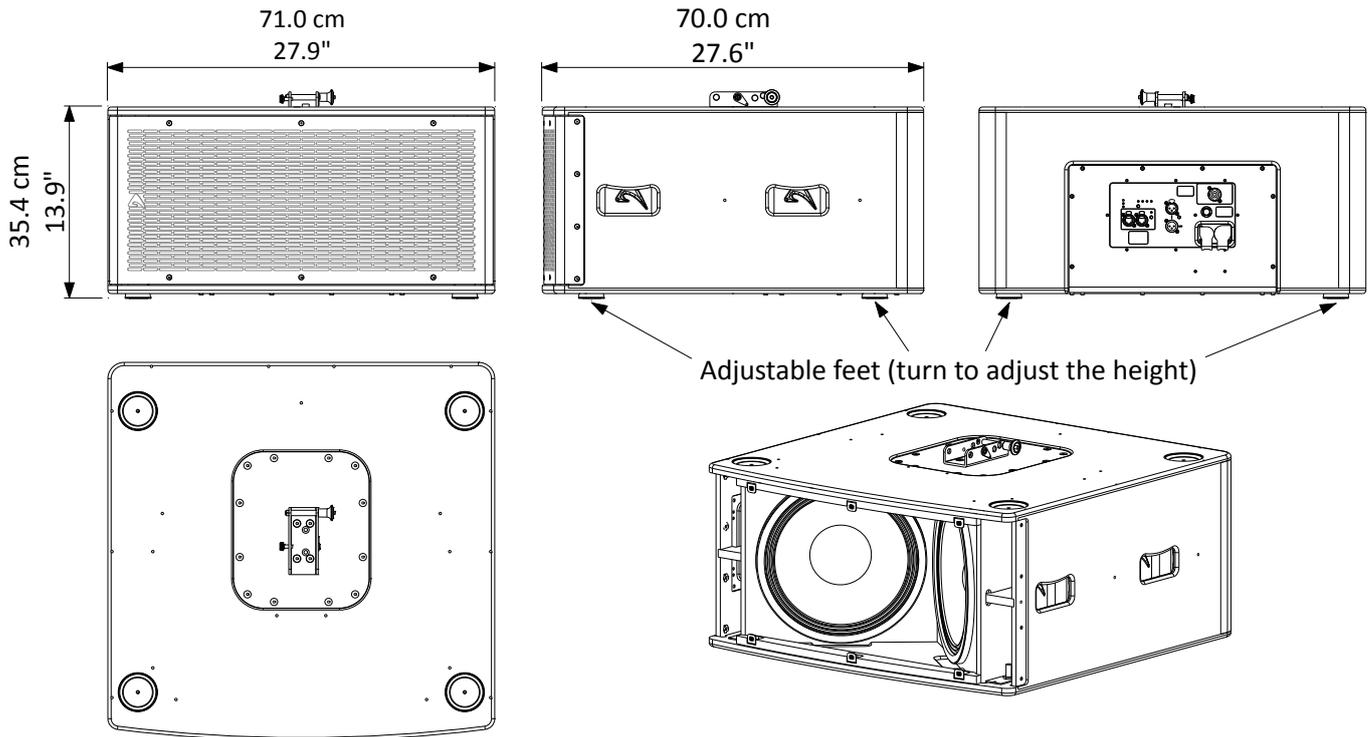
SYSTEM		Amplifier Type	Class D with SMPS and PFC
System's Acoustic Principle	Band-pass / Bass-reflex	Output Power	1400W + 1400W (Out1: SW212A - Out2: AX16CL or other AXIOM loudspeakers)
Frequency Response (-6dB)	38 Hz - 220 Hz (Processed)	Mains Voltage Range	100 - 240 V AC @ 50/60Hz
Maximum Peak SPL @ 1m	133 dB	Consumption*	700 W (nominal) / 2500 W (max)
TRANSDUCERS		IN / OUT Connectors	Neutrik XLR-M / XLR-F
Type	Two 12" (320mm) woofer, neodymium magnet, 3.5" (88mm) VC	IN / OUT Net Connectors	ETHERCON® (NE8FAV)
Cone	High stiffness, water repellent	Mains Connectors	PowerCon® TRUE 1 (NAC3PXTOP)
ELECTRICAL		Cooling	Variable speed DC fan
Input Impedance	20 kΩ balanced, 10 kΩ unbalanced	ENCLOSURE & CONSTRUCTION	
Input Sensitivity	+4dBu / 1.25 V	Dimensions (W x H x D)	710 mm (27.9") x 354 mm (13.9") x 700 mm (27.6")
Signal Processing	CORE2 processing, 40bit floating point SHARC DSP, 24 bit AD/DA converters	Enclosure Material	18mm, reinforced phenolic birch
Direct access Controls	4 Presets (2 x AX16CL / 4 x AX16CL / 1 x AX16CL), Network Termination, GND Link	Paint	High resistance, water based paint
Remote Controls	PRONET AX control software	Transport	4 handles
Network protocol	CANBUS	Net Weight	43.5 Kg (95.9 lbs)

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





MECHANICAL DRAWING



OPTIONAL ACCESSORIES

NAC3FXWTOP	Neutrik Powercon® TRUE1 (for power in)*
NAC3MXWTOP	Neutrik Powercon® TRUE1 (for power out)*
NC3MXXBAG	Neutrik XLR-M*
NC3FXXBAG	Neutrik XLR-F*
AXCASE13PT	Flight-case for SW212A

NE8MXB	Neutrik Ethercon PLUG* (carrier only for pre-made cables)
NE8MX6BT	Neutrik Ethercon PLUG* (crimping CAT6a connector)
USB2CAND	Dual Port PRONET network converter

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

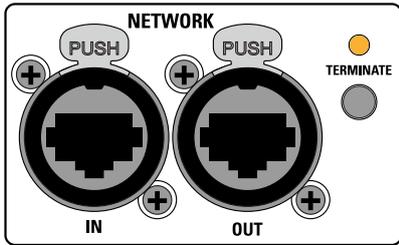
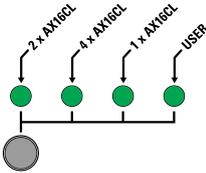
NL4MP	Neutrik Speakon® panel socket
94SPI10555O	Locking Pin for AX16CL (with eyelet)
95AXSTAX16CL	AX16CL Bracket
98SW212WZ4	12" woofer - 3.5" VC - 4 ohm

NAC3PXTOP	Neutrik Powercon® TRUE1 Appliance inlet-outlet
SCNACPX	Neutrik Rubber Sealing for NAC3PXTOP
91AMDSW212A	Amplifier module assembly
91FSV15A	MDA15R 6.3x32mm 15 A T Fuse



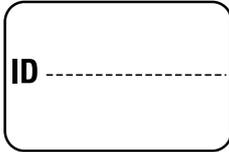
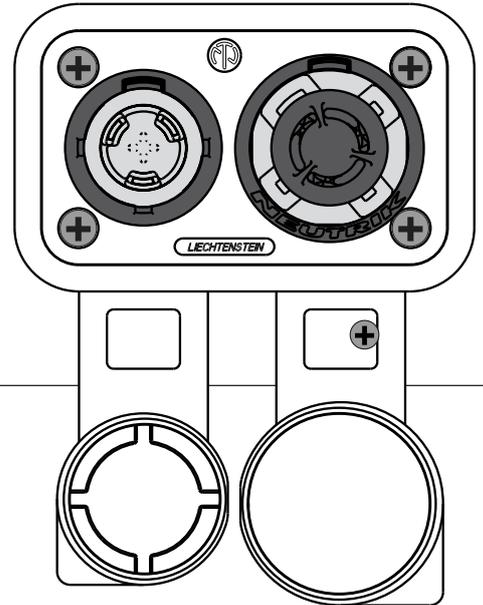
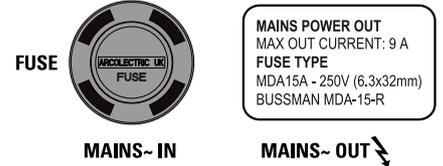
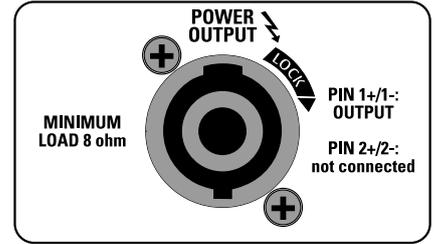
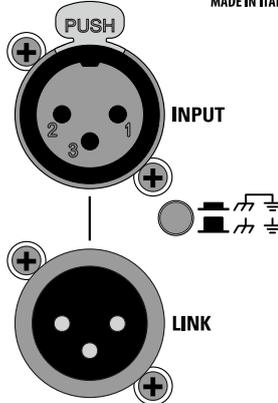
SW212A
POWERED
SUBWOOFER

- ON
- PROT
- SIGN/LIMIT



CODE: SW212A
MAINS: 100-240 V~ 50/60 Hz
SUPPLY: 700 W
WEIGHT: ___ Kg
S/N: 00001

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



WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE

I/O AND CONTROL OPERATIONS

MAINS IN

Powercon® NAC3FXWTOP 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® NAC3MXWTOP power outlet connector. This is connected in parallel with the MAINS IN. It is suited to link the supply of another SW212A loudspeaker or other system for a maximum absorption of 9A.



WARNINGS:

- Connect no more than one SW212A subwoofer unit to the MAINS OUT connector.
- Turn on each subwoofer unit one a time starting from the latest unit.
- 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/>

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 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:

2 x AX16CL This PRESET allows to connect two AX16CL column array elements to POWER OUTPUT speakon connector, see example.

4 x AX16CL This PRESET allows to connect four AX16CL column array elements to POWER OUTPUT speakon connector, see example.

1 x AX16CL This PRESET allows to connect one AX16CL column array elements to POWER OUTPUT speakon connector, see example.

USER This PRESET corresponds to USER MEMORY no. 1 of the DSP and, as a factory setting, it's the same to 2 x AX16CL. 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.

NETWORK IN/OUT

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

TERMINATE

In a PRONET AX network the last 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.



WARNING: 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.

POWER OUT

SW212A is able to power the passive AX16CL 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 AX16CL modules specified by the selected PRESET.



PRONET AX OPERATION

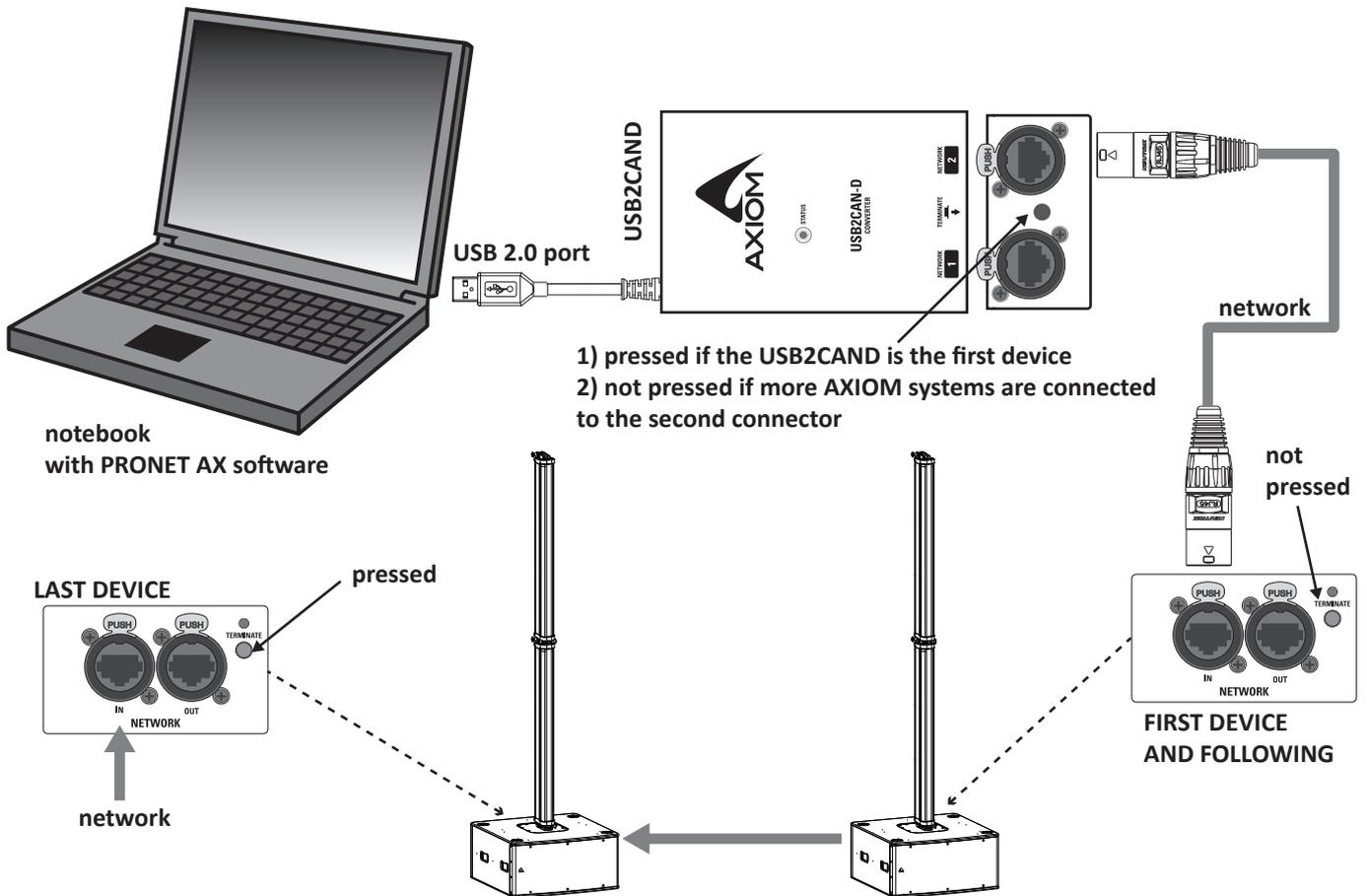
PRONET AX software has been developed in collaboration with sound engineers and sound designers, in order to offer an “easy-to-use” tool to setup and manage your audio system. With PRONET AX you can visualize signal levels, monitor internal status and edit all the parameters of each connected device.

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

For the network connection the **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).

EXAMPLE OF PRONET AX NETWORK WITH SW212A AND AX16CL



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.

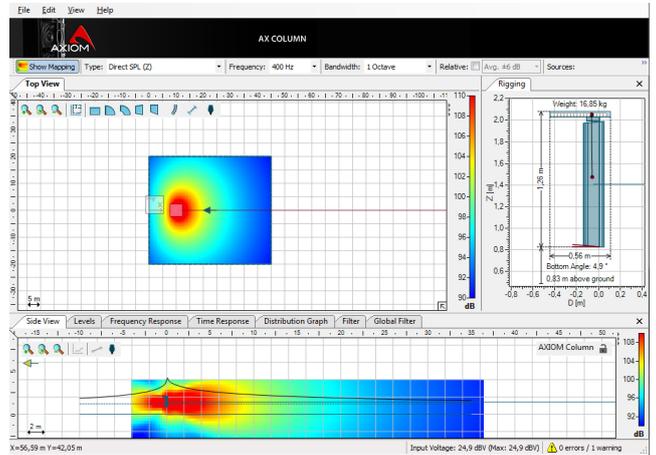
For more detailed instruction about PRONET see the PRONET AX USER'S MANUAL included with the software.

PREDICTION SOFTWARE: EASE FOCUS 3

To aim correctly a complete system of AX16CL and/or AX8CL (SW212A always stays on the floor) we suggests to use always the suitable aiming software:

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 INSTALLATION INSTRUCTIONS



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

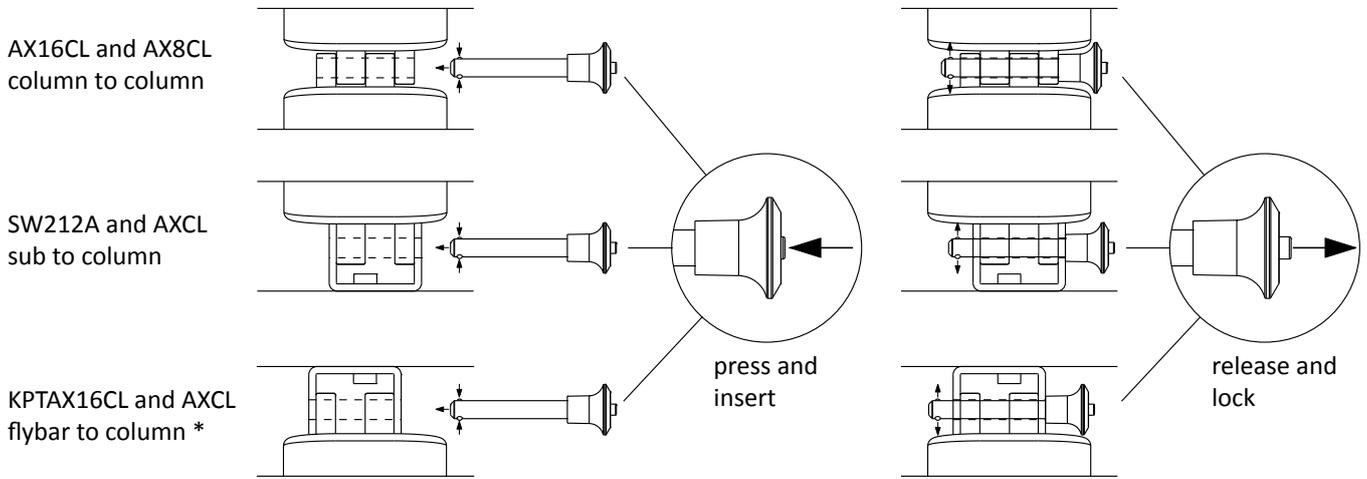
- SW212A is NOT designed to be suspended, use it in ground stack only.
- This loudspeaker is designed exclusively for Professional audio applications. The product must be installed by qualified personal only.
- Proel strongly recommends that this loudspeaker cabinet be suspended taking into consideration 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.



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

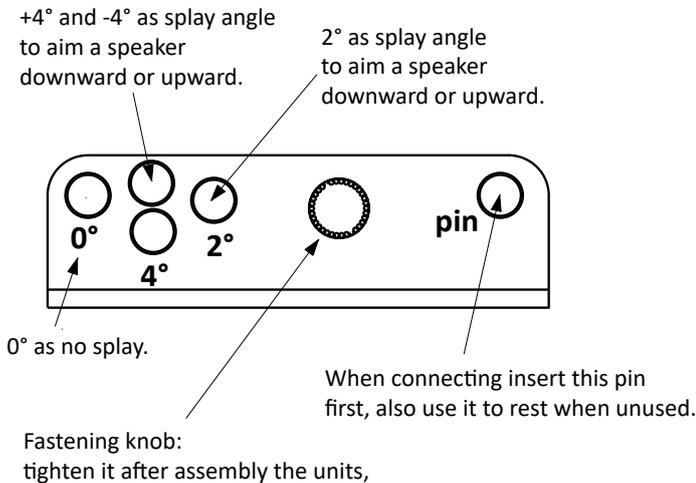


* all accessories have similar insertion and locking

SPLAY ANGLE SET UP

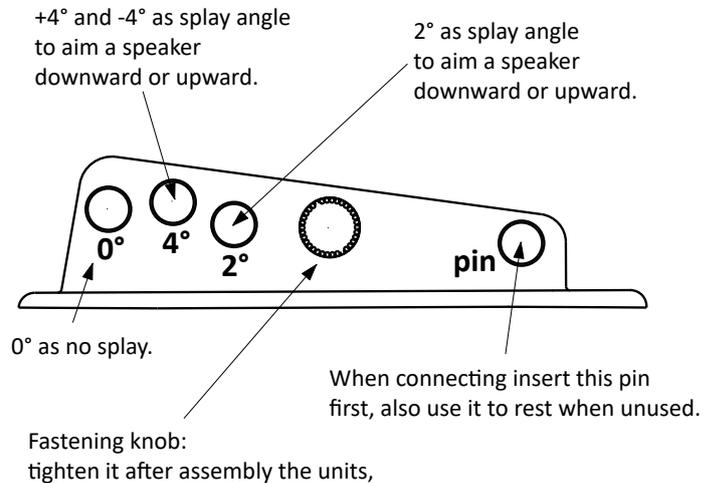
SW212A

Use these holes for the SW212A splay angle:



AX16CL/AX8CL

Use these holes for the column speaker splay angle:



Each of the following examples have some symbols at the connection points, these symbols indicate if a splay angle is allowed or is prohibited for safety or acoustical reason:



4° convex angle is prohibited



4° upward angle is prohibited



2° concave angle is allowed



0° is allowed

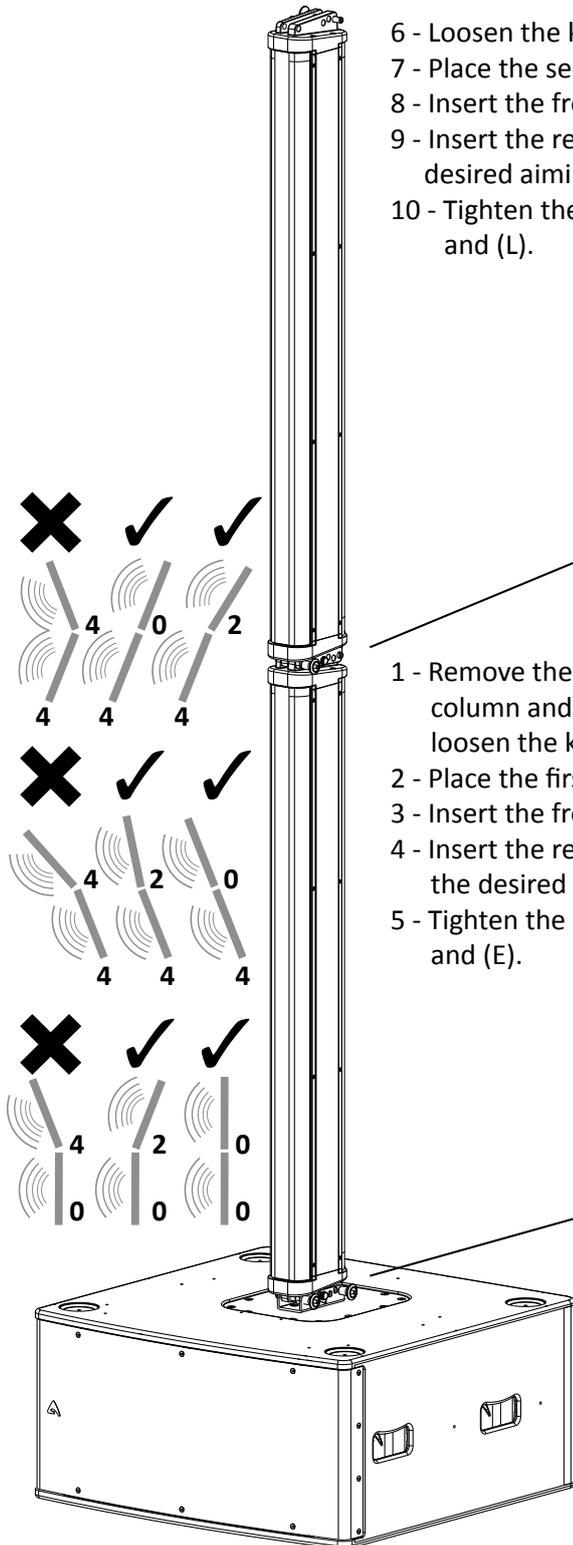


STACKED INSTALLATION USING SW212A SUBWOOFER AS BASE

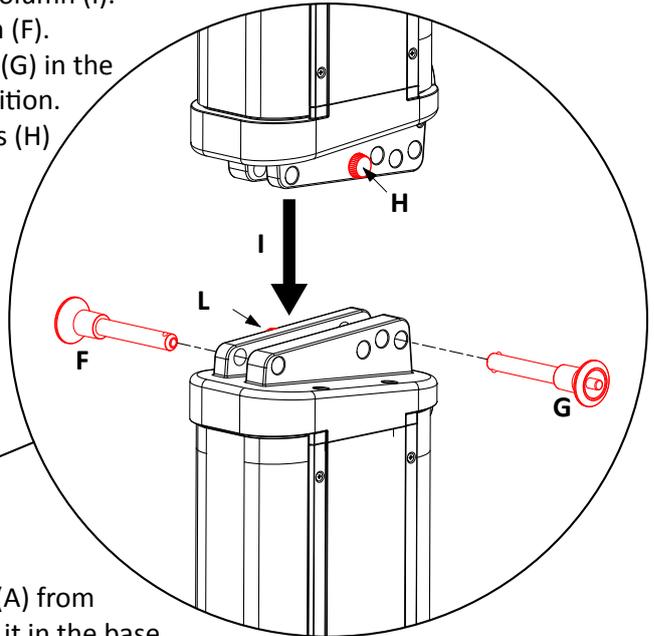


WARNINGS:

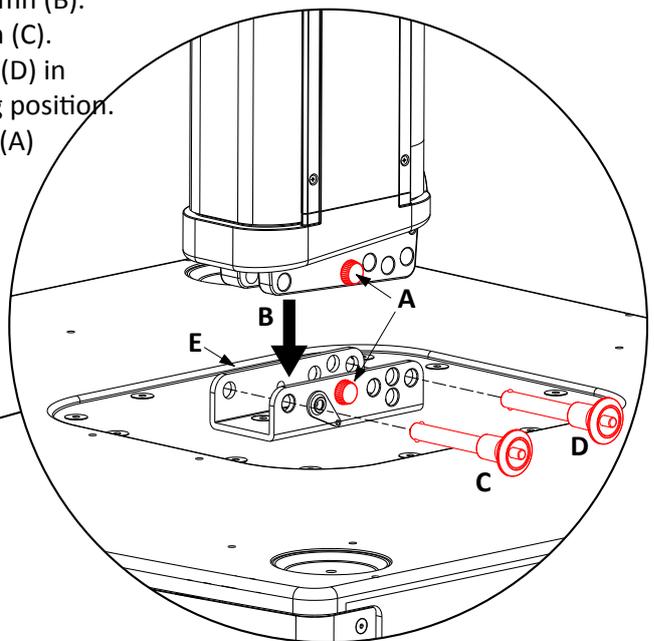
- The ground where the SW212A is placed needs to be absolutely stable and compact.
- Adjust the feet so to lie the SW212A perfectly horizontal. Use a spirit level to obtain the best result.
- Always secure ground stacked setups against movement and possible tipping over.
- A maximum of 2x AX16CL or 4x AX8CL or 1x AX16CL + 2x AX8CL speakers are allowed to be installed over a SW212A serving as ground support.
- Other installation examples are explained in the AX16CL/AX8CL user manual.



- 6 - Loosen the knobs (H) and (L).
- 7 - Place the second column (I).
- 8 - Insert the front pin (F).
- 9 - Insert the rear pin (G) in the desired aiming position.
- 10 - Tighten the knobs (H) and (L).



- 1 - Remove the knob (A) from column and screw it in the base, loosen the knob (E).
- 2 - Place the first column (B).
- 3 - Insert the front pin (C).
- 4 - Insert the rear pin (D) in the desired aiming position.
- 5 - Tighten the knobs (A) and (E).



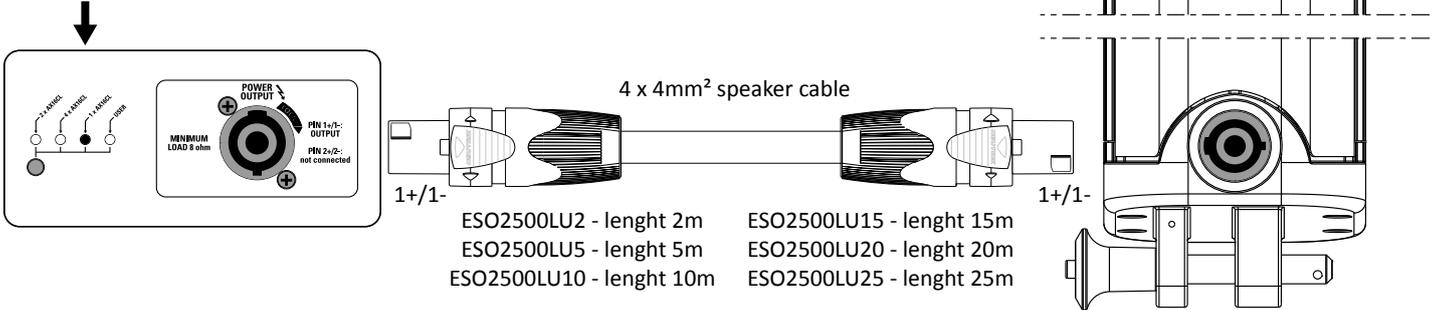


SW212A + AX16CL CONNECTION EXAMPLES

The following examples show all the possible connections between the SW212A amplified subwoofer and the AX16CL column speaker, using the PRESETs available in the subwoofer's DSP. Note that one AX16CL unit corresponds to two AX8CL units.

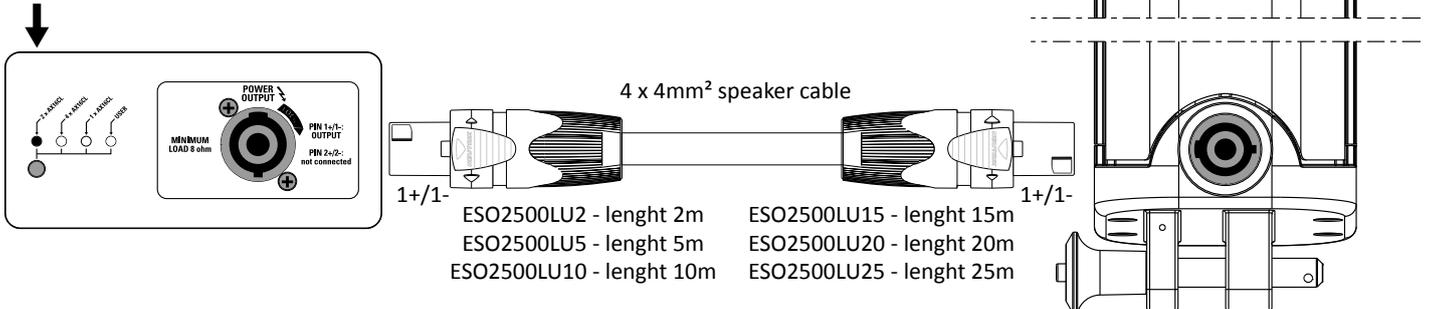
SW212A + 1 x AX16CL

set preset 1 x AX16CL



SW212A + 2 x AX16CL

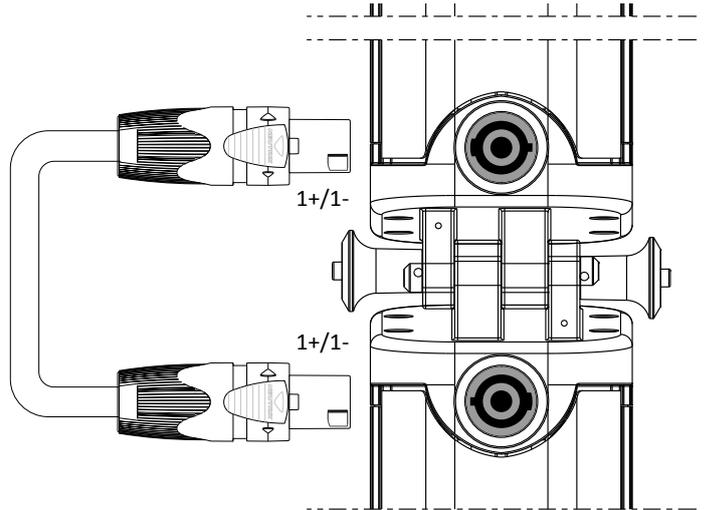
set preset 2 x AX16CL



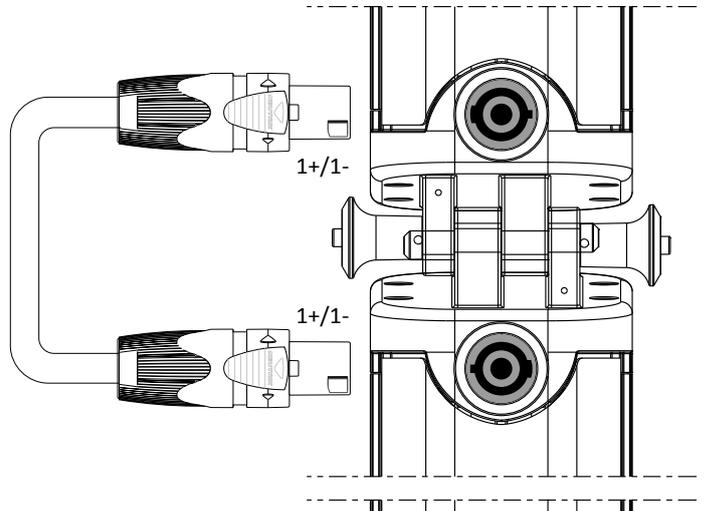


SW212A + 4 x AX16CL

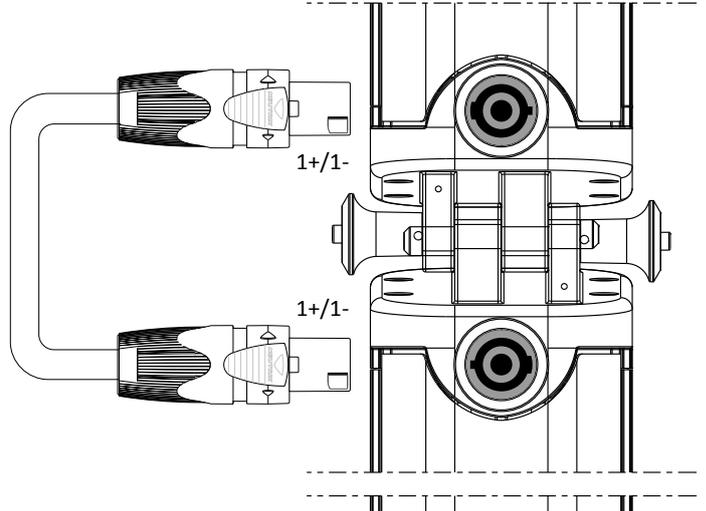
ESO2500LU05 - lenght 0,25m



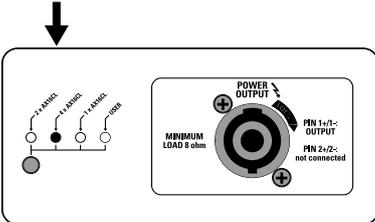
ESO2500LU05 - lenght 0,25m



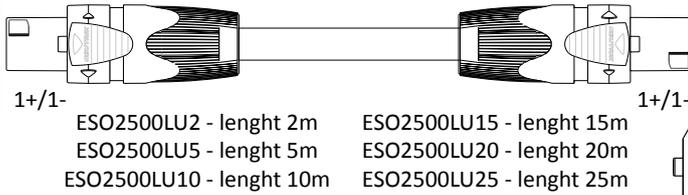
ESO2500LU05 - lenght 0,25m



set preset 4 x AX16CL



4 x 4mm² speaker cable



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







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