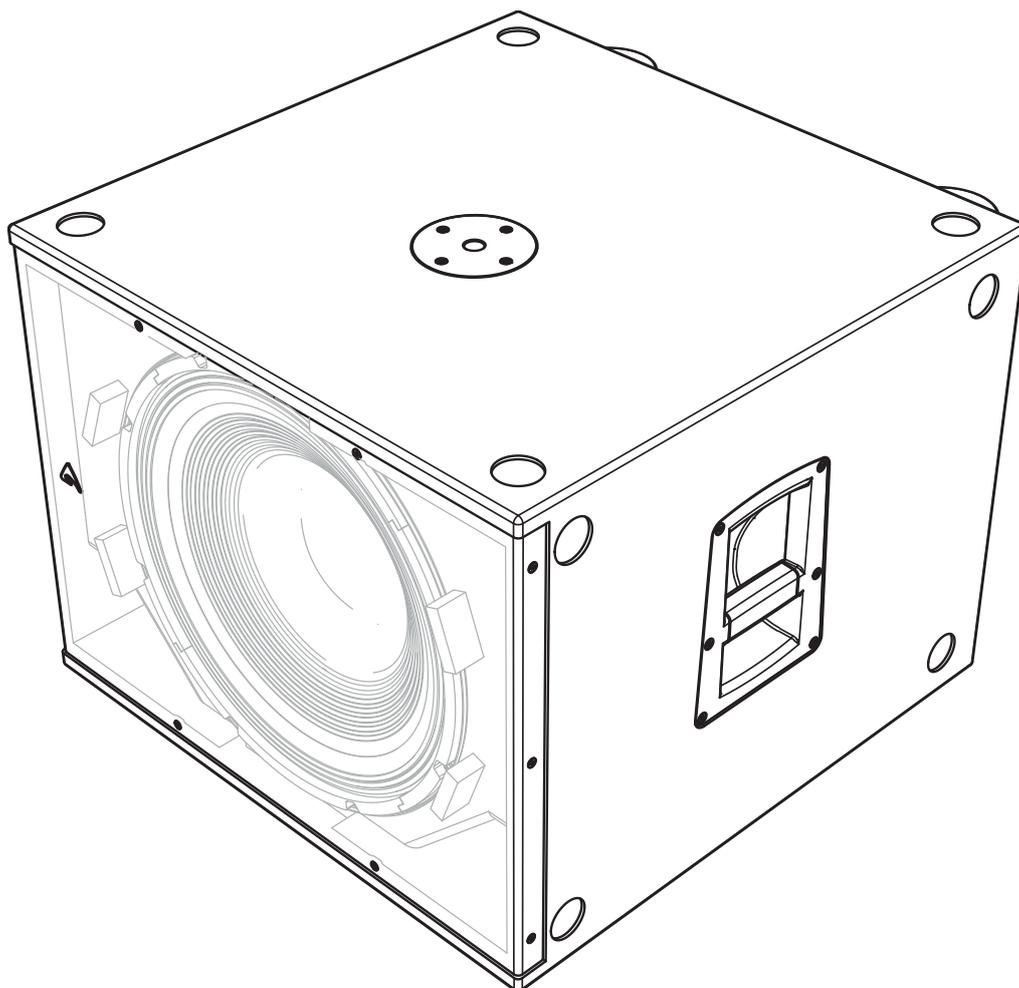




FLSUB180A

active portable subwoofer



USER MANUAL

revision 2025-11-21





IMPORTANT SAFETY INSTRUCTIONS

Watch for these symbols:



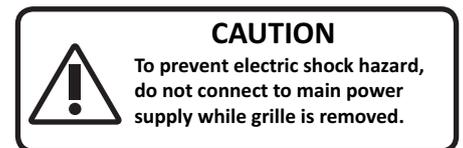
The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.



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.
25. Be careful: in the case of a product supplied by manufacturer only with POWERCON connectors and without a power cord, jointly to POWERCON connectors type NAC3FXXA-W-L (power-in) and NAC3FXXB-W-L (power-out), the following power cords compliant to national standard shall be used:
 - EU: cord type H05VV-F 3G 3x2.5 mm2 - Standard IEC 60227-1
 - JP: cord type VCTF 3x2 mm2; 15Amp/120V~ - Standard JIS C3306
 - US: cord type SJT/SJTO 3x14 AWG; 15Amp/125V~ - Standard ANSI/UL 62



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

C E 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.

UK CA 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

FLSUB180A is a high-power compact subwoofer designed to be the ideal complement to the FL Series 2-way speakers. It is capable not only of extending the low frequency response, but also of significantly increasing the efficiency and performance of a satellite/subwoofer system. FLSUB180A is suited for a wide range sound reinforcement applications requiring high quality sound, repeatable performance, and convenience of operation in an easily portable format.

The subwoofer uses a custom 18" (460mm) high-efficiency, long-excursion woofer with 4" voice coil, driven by a powerful 1000 W CLASS-D amplifier with high headroom, for maximum output power without distortion.

The system processing is based on an advanced DSP platform featuring 56bit, double precision processing and high-resolution 24bit AD/DA converters for perfect signal integrity and superior sonic performance. Thanks to its massive processing power, the DSP is capable of providing the most sophisticated algorithms for speaker processing.

A user interface with color LCD display and single-knob control is available for quick selection and viewing of the processor parameters. These parameters include the selection of LPF and HPF frequency, phase and delay, for a perfect coupling with the satellite used.

The cardioid configuration is also available, which allows the coupling of two FLSUB180A to double the frontal efficiency of the system and, at the same time, drastically reduce the rear radiation.

The connections feature dual inputs and outputs, which allow use in a mono or stereo system.

FLSUB180A is housed in a lightweight and ultra-resistant phenolic birch plywood cabinet, with steel protection grille, two flush handles, stacking feet on two sides and pole mount socket with M20 connection. 4 heavy-duty polyurethane wheels are also supplied as standard to enable easy handling and transportation.

TECHNICAL SPECIFICATION

SYSTEM

System's Acoustic Principle	Direct radiation, vented
Frequency response	38 Hz – 100 Hz (Processed)
Maximum Peak SPL @ 1m	134 dB

TRANSDUCERS

Type	18" (457 mm) LF driver, 4" (100 mm) Voice Coil, 4Ω
------	--

ELECTRICAL

Input Impedance	20 kΩ balanced, 10 kΩ unbalanced
Input Sensitivity	+4 dBu / 1.25 V
Signal Processing	DSP 56 bit
Direct access Controls	LCD, DIAL
Amplifier Type	Class D amplifier with SMPS
Output Power	1000W
Mains Voltage Range (Vac)	220-240V~ / 100-120V~ ±10% 50/60 Hz (auto-range)
Consumption*	480 W (nominal) 990 W (max)

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

IN / OUT Connectors

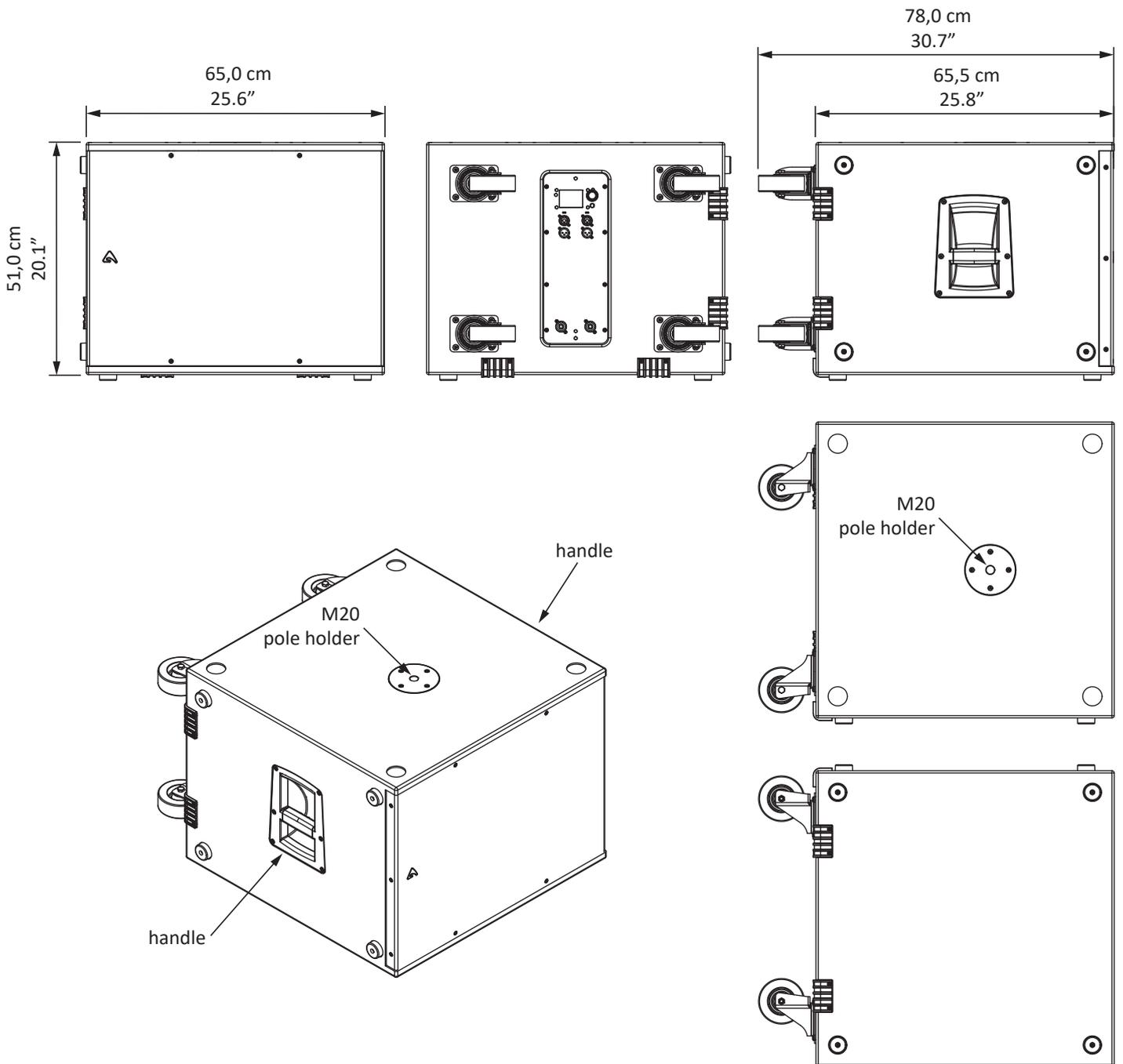
Mains Input Connector	COMBO XLR-F JACK / XLR-M
Mains Link Connector	PowerCon® (NAC3MPXXA)
Cooling	PowerCon® (NAC3MPXXB)
	Passive

ENCLOSURE & CONSTRUCTION

Width	650 mm (25.6")
Height	510 mm (20.1")
Depth	655 mm (25.8")
Depth with wheels	780 mm (30.7")
Enclosure Material	Reinforced phenolic birch plywood
Wheels	4 x 100mm Polyurethane Wheels
Transport	2 handles
Pole Holder	1x M20 top
Net Weight	46.5 kg (102.5 lbs) with wheels



MECHANICAL DRAWING



OPTIONAL ACCESSORIES

KP210S Sub-Speaker \varnothing 35mm 0.7-1.2m Pole with M20 screw

COVERFL180 Cover for transport

NAC3FXXA-W-L Neutrik Powercon® BLUE PLUG

NAC3FXXB-W-L Neutrik Powercon® WHITE PLUG

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

DHSS10M20 Sub-Speaker \varnothing 35mm 1-1.7m Pole with Handle and M20 screw

NC3MXXBAG Neutrik XLR-M

NC3FXXBAG Neutrik XLR-F

SPARE PARTS

98AXFL180WZ8 18" woofer - 4" VC - 8 ohm

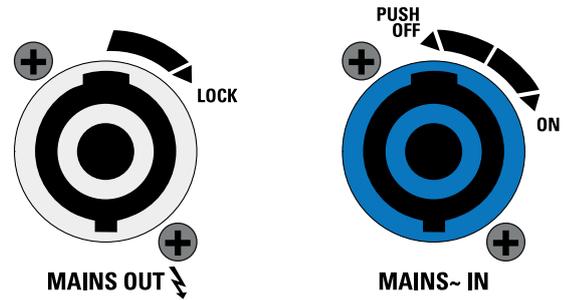
91AMDFLSUB180A Power amplifier module



I/O AND CONTROL OPERATIONS

MAINS IN

Powercon® NAC3FXXA-W-L 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® NAC3FXXB-W-L power output connector (gray). This connector is connected in parallel with MAINS ~ / IN. The maximum applicable load depends on the mains voltage. For 230 V~, we recommend connecting a maximum of 2 speakers; for 120 V~, we recommend connecting just one more speaker.



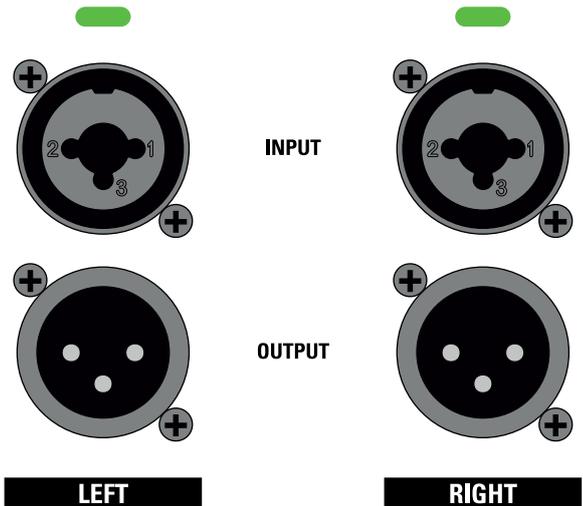
WARNING

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

SIGN/PEAK LED

These LEDs light up green to indicate the presence of the signal and red when the corresponding input level reaches +21dBu, a few dB before the maximum acceptable level, in any case avoid the red signal to have a clean sound without distortion.



INPUT LEFT & RIGHT

Audio inputs with female XLR/JACK COMBO connectors. These connectors feature a fully electronically balanced circuit, including AD conversion for the best signal-to-noise ratio and input headroom.

OUTPUT LEFT & RIGHT

Audio signal outputs with male XLR connectors. These feature a fully electronically balanced circuit, including DA conversion for the best signal-to-noise ratio and output headroom. The output signal matches the signal of the LEFT or RIGHT input channel. You can connect it directly to other speakers with the same audio signal, or filter it with a 24 dB/octave Linkwitz-Riley high-pass filter to send the same signal to a satellite speaker.

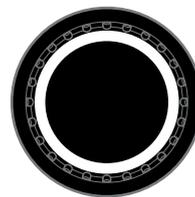
DIGITAL SIGNAL PROCESSOR LCD

This display shows the subwoofer's DSP parameters..

DIGITAL SIGNAL PROCESSOR



MASTER VOLUME
PUSH FOR DSP SETTINGS

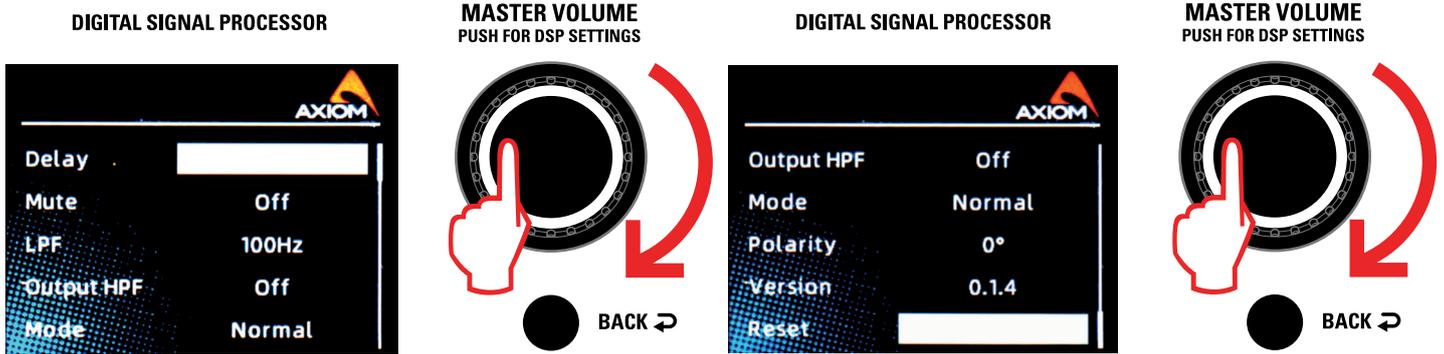


MASTER VOLUME PUSH FOR DSP SETTING

Rotating the DIAL you can change the subwoofer master volume from -80dB to +10dB. When the subwoofer is turned on, the level set when it was turned off is restored.



Pressing the Dial you can change the subwoofer parameters.



PARAMETER	VALUE	DESCRIPTION
Delay	from 0 m to 115,6 m	Sets the delay in meters considering the standard sound speed velocity 343,4 m/s at 20 °C. Delay can be used to compensate for any difference in distance between the subwoofer and the main speakers from the listening position.
Mute	on or off	Mutes the subwoofer in absence of input signal.
LPF	40 / 50 / 60 / 70 / 80 / 90 / 100 Hz	Sets the frequency of the LR 24dB/octave low-pass filter on the signal sent to the internal amplifier. Choose the best frequency for the optimal coupling with the main speakers
Output HPF	off / 40/ 50 / 60 / 70 / 80 / 90 / 100 Hz	Sets the frequency of the LR 24dB/octave high-pass filter on the signal sent to the output connectors. The OFF position can be used if your main system is already provided with an high-pass filter or when the outputs are connected to another subwoofer. When on, it's typically set at the same frequency of the previous LPF filter.
Mode	Normal Cardioid Front Cardioid Rear	Set the operative mode of the subwoofer: Normal is the standard mode in a typical L&R or mono sub appliance. The cardioid operation allows you to enhance the lows emission in the frontal direction and reduce the lows backwards (see further for detailed explanations).
Polarity	0° 180°	0° is Normal polarity, 180° is Reverse polarity. Choose the polarity to obtain the optimal summing of bass at the crossover frequency between the subwoofer and the main speakers.
Version	0.1.4	Shows the DSP firmware version.
Reset		Allows to restore all the factory parameters.

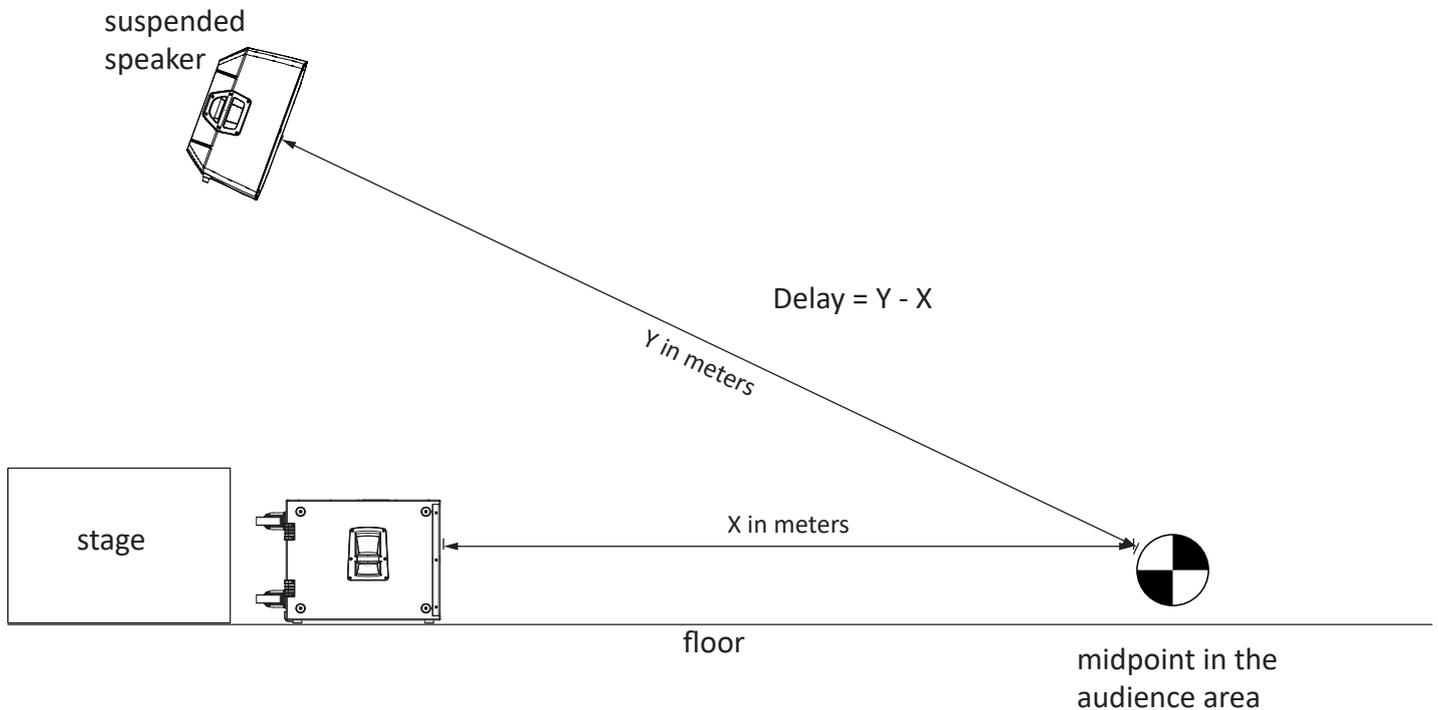
BACK BUTTON

Pressing this button to return to the main screen.



HOW TO SET DELAY

To compensate for any difference in distance between the subwoofer and the main speakers from the listening position, the Delay value in meters can be calculated as shown in the figure below:



Check by listening if there is actually a better sum at the crossover point between the subwoofer and the main system: an audible increase in the low range must be perceived by the entire audience area.

HOW TO SET THE SUBWOOFERS IN CARDIOID MODE

The FLSUB180A can be also used in cardioid mode. In this configuration the low frequencies will be added (+6dB) only to the front side and they will be substantially attenuated on the rear side. This configuration is very useful in those cases where you want to push the basses on the audience side, but you want to reduce them on the stage side.

The following figure shows the arrangement of the two SUBs with a FL120A satellite above and the sound emission on the horizontal plane.

Note: the cardioid arrangement works correctly in open or very large spaces, in the presence of large obstacles less than 1 meters away the cardioid-shaped emission is compromised and therefore not recommended.

- Whether the FLSUB180A used as single mono cardioid (2 sub) or dual mono cardioid (4 sub, 2 at each side), to operate correctly the audio signal must be connected to a single input (LEFT or RIGHT) and to the same output (LEFT or RIGHT).
- If the two FLSUB180A are used in stereo configuration, to operate correctly the audio signal must be connected to both LEFT and RIGHT of the first unit and sent to the second unit using both LEFT and RIGHT outputs.
- LPF, POLARITY and DELAY parameters must be the same on both subwoofers.
- The HPF parameter must be the OFF in the first unit. In the second unit it can be OFF or at ON with the same frequency of the LPF parameter.
- To be sure all parameters are the same is preferable to RESET both FLSUB180A, then set the same LPF or other, then finally change the MODE from NORMAL to CARDIOID FRONT or CARDIOID REAR.
- The audio signal must be the same in both the units, so their MASTER VOLUME must also be the same.

The CARDIOID presets are designed to be used with two FLSUB180A placed one above the other, with the upper using CARDIOID FRONT preset and the lower using CARDIOID REAR preset.

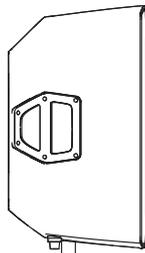
To obtain an efficient cardioid sound emission, it is necessary to respect a minimum distance between the subwoofers and adjacent structures such as the stage or side walls.



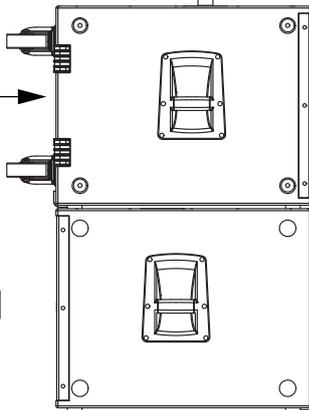
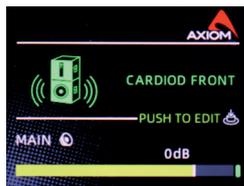
CARDIOD SYSTEM VERTICAL STACK



IMPORTANT
Both FLSUB180A must have
the same level and the same
signal.

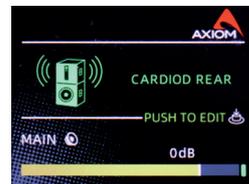


FL120A or other



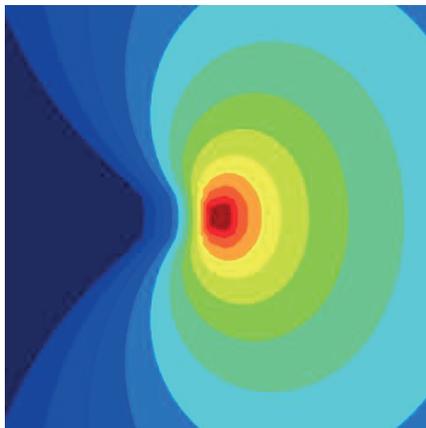
AUDIENCE SIDE

STAGE SIDE

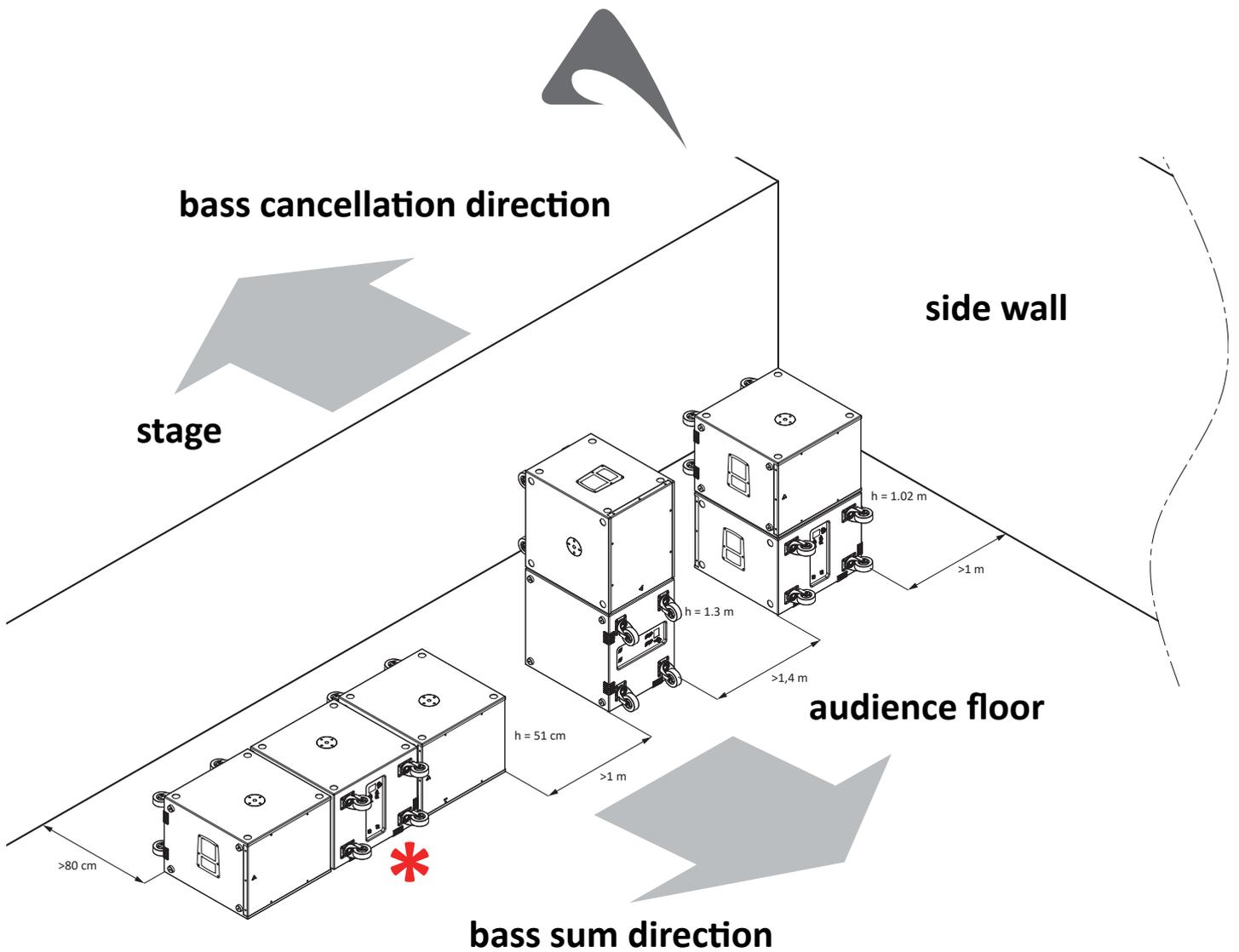


LOW FREQUENCY HORIZONTAL SOUND EMISSION

STAGE SIDE



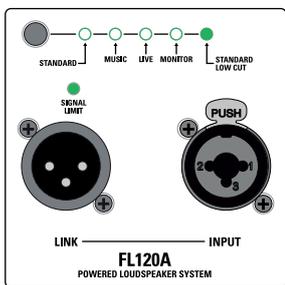
AUDIENCE SIDE



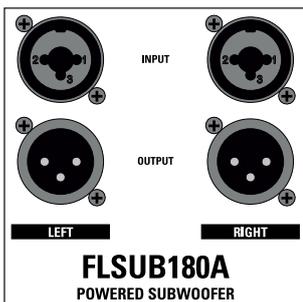
* Sometimes with a low-height stage it may be preferable to position the cardioid subwoofer array in center position. In this case, a symmetrical cardioid pattern can be achieved using **three subwoofers positioned as shown above**, either horizontally or vertically, adjacent to each other. **The center subwoofer, that one using the CARDIOID REAR preset, requires a gain adjustment of +4 dB compared to the outer subwoofers, which can be achieved using the LEVEL control.**

To simplify connections and configurations, some examples are shown below.

FLASHSUB180A with FLASH120A



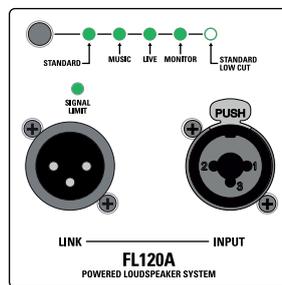
STANDARD
LOW CUT



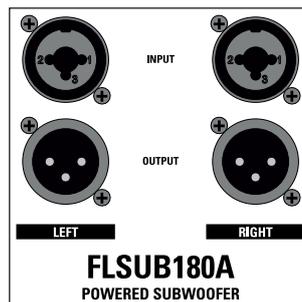
LPF 100 Hz
Output HPF off
Mode Normal
Polarity 0°

SINGLE OR DUAL MONO

FLASHSUB180A with FLASH120A or other SAT



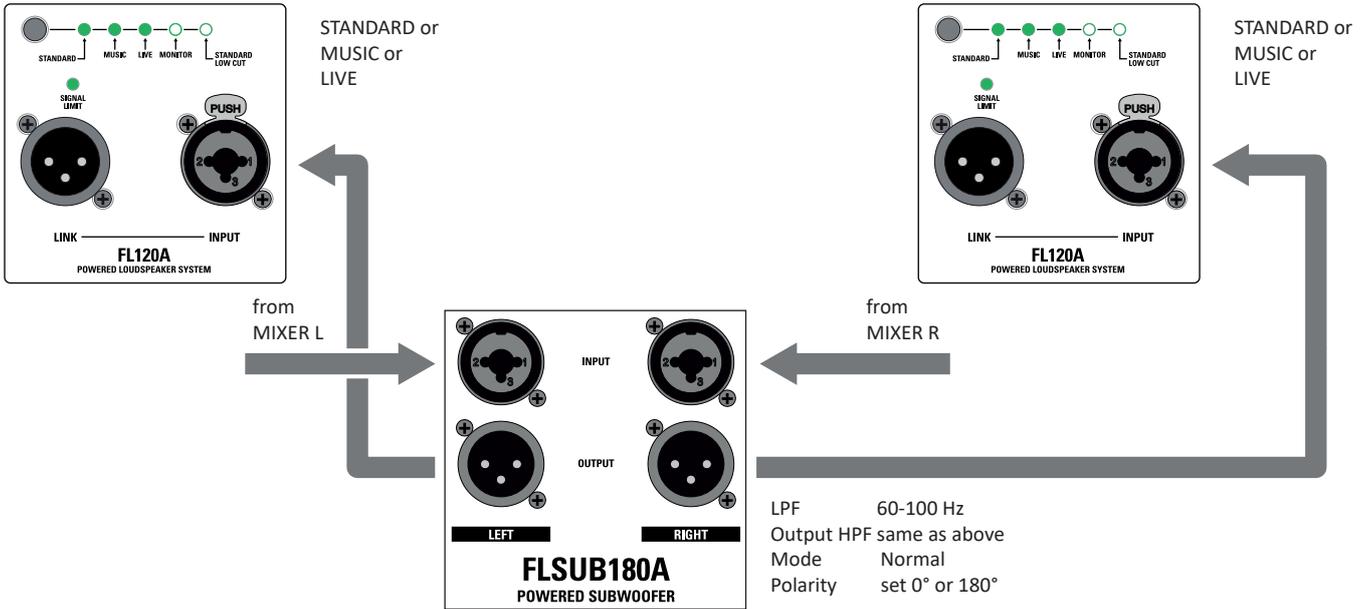
STANDARD or
MUSIC or
LIVE or
MONITOR



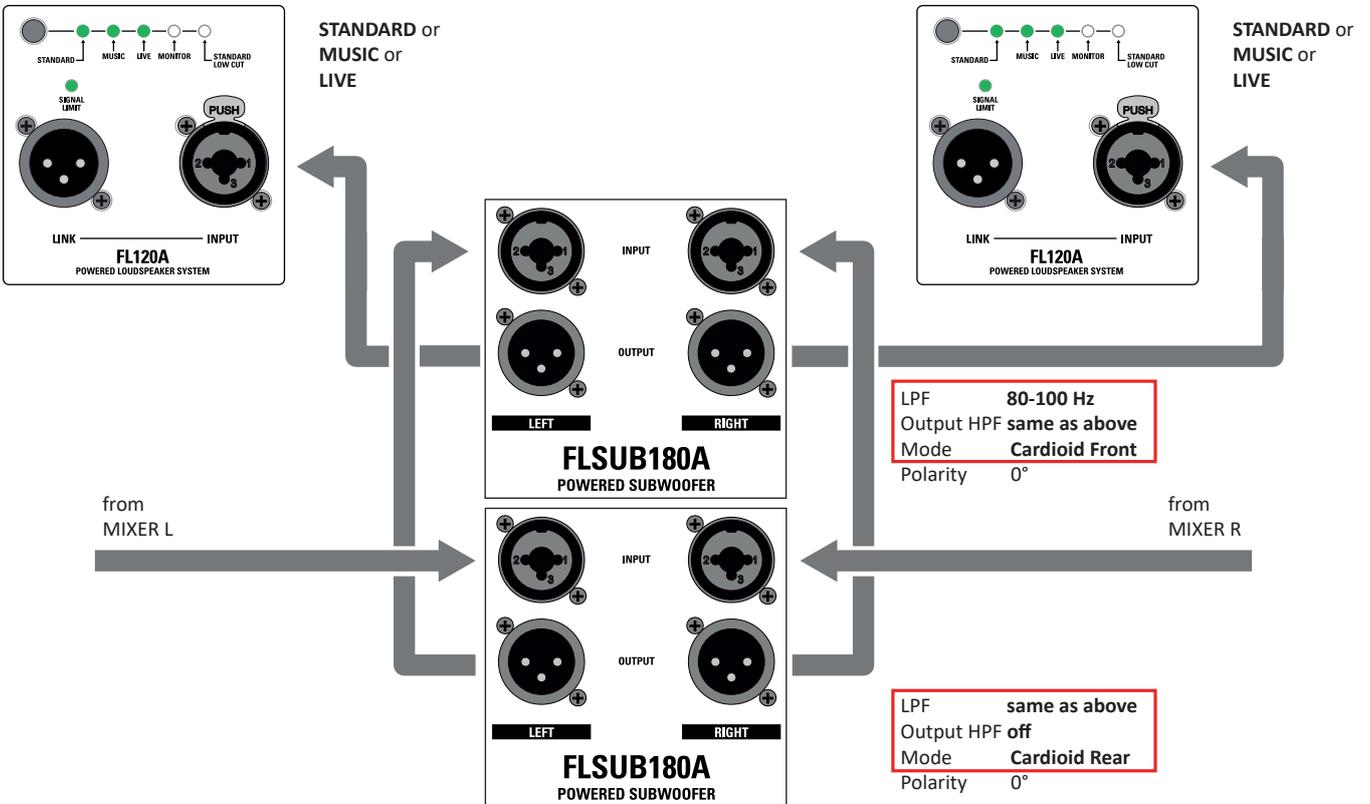
LPF 60-100 Hz
Output HPF same as above
Mode Normal
Polarity 0°



FLASHSUB180A with FLASH120A or other SAT - STEREO

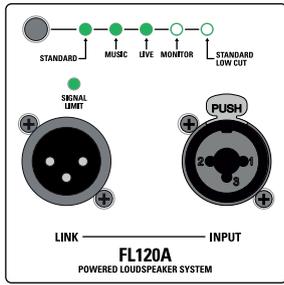


2x FLASHSUB180A CARDIOID with FLASH120A or other SAT - STEREO

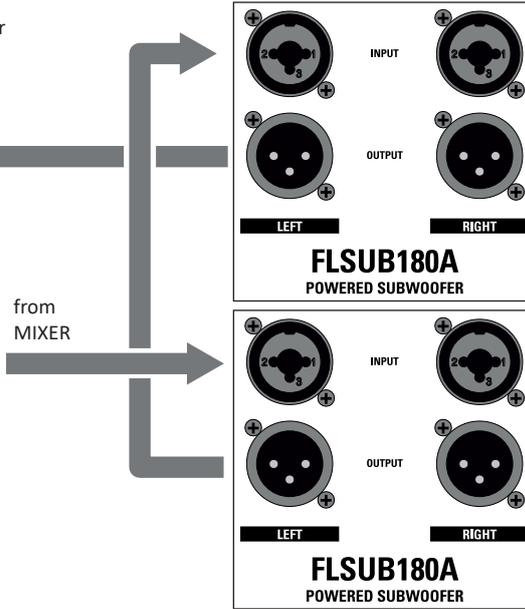




2x FLASHSUB180A CARDIOID with FLASH120A or other SAT - MONO or DUAL MONO



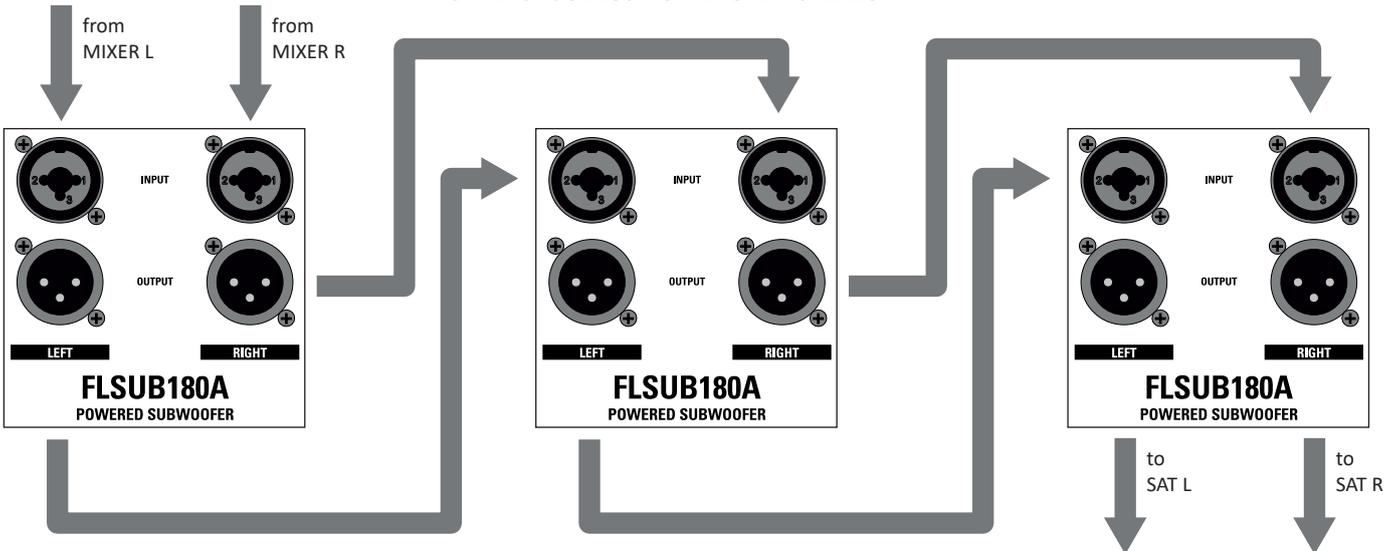
STANDARD or MUSIC or LIVE



LPF **80-100 Hz**
Output HPF same as above
Mode **Cardioid Front**
Polarity 0°

LPF **same as above**
Output HPF **off**
Mode **Cardioid Rear**
Polarity 0°

3x FLASHSUB180A CARDIOID - STEREO



LEVEL **0dB**
LPF **80-100Hz**
Output HPF **off**
Mode **Cardioid front**
Polarity 0°

LEVEL **+4dB**
LPF **same**
Output HPF **off**
Mode **Cardioid rear**
Polarity 0°

LEVEL **0dB**
LPF **same**
Output HPF **same**
Mode **Cardioid front**
Polarity 0°



CONDITIONS OF USE

Proel does 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 local regulations. The product must be installed by qualified personal. Please contact the manufacturer for further information.

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