WATERFALL AUDIO
SOUND DESIGNERS

MADE IN FRANCE

INSTRUCTIONS
RS700 WATERFALL SPECIAL EDITION
W1.0

FEATURING :
X-GUARD™/U-GUARD™/T-GUARD™/X-TEND™/ CSC™

READ BEFORE USE

INTRODUCTION

Thank you for choosing the RS700 « Waterfall Audio Special Edition » amplifier which has been designed and manufactured from the ground up in France. It is the result of more than 6000 hours of R&D by the engineering team at ATOHM, Waterfall's trusted partner for developing all of our electronics. The digital signal processing (DSP) in this amplifier is optimized for the WATERFALL PRO CUSTOM SERIES a speaker range designed specifically for premium residential cinema installations. The RS700 also offers other configurations for specific professional applications such as Studio Monitoring with this range of speakers.

There are numerous technical aspects associated with the configuration of this high voltage amplifier. It is therefore recommended that this amplifier is commissioned by an authorized reseller or integrator.

IMPORTANT NOTES:

The W1.0 program implemented in this version of the RS700 is dedicated for use with the LCR300, LCR500 and SUB600 & SUB600S speakers. This program is the direct result of in-depth engineering and design which has been verified using practical measurements and tests. It is imperative that the installer reads these instructions in full and ensures that the amplifier is setup accordingly for the intended application.

When connecting any devices to the RS700 you must ensure that the power is turned off. This applies to any device, such as a pre-amp or projector, and applies to any type of cable such as power or HDMI.

Please note that Waterfall's warranty does not cover any defects arising from configuration errors or poor installation. The warranty does not cover its use with any other model of speakers or subwoofers.

INFORMATION:

Please note that when the device is shut down or the power is cut, a characteristic 'pop' will be heard in the speakers or subwoofer(s). This response is normal and does not damage the equipment.

IMPORTANT SAFETY INSTRUCTIONS AND WARNINGS

Safety 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. This voltage may be of sufficient magnitude to constitute a risk of electric shock. The exclamation mark 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 product.

Before installing your RS700 amplifier, it is imperative to read this manual entirely. Follow and keep these instructions. If in any doubt about the configuration or any of the connections to be made, consult your dealer.

- Do not expose the device to moisture, dripping or splashing.
- Do not introduce foreign objects into the device.
- Do not use the device near heat sources such as radiators, heaters, etc.
- **The power cord supplied with the device corresponds directly to the power requirements. It should never be replaced by one of a lesser capacity.**
- Only connect the device to the type of connector indicated by the labeling on the device.
- **Before connecting the device to the mains, ensure that your electrical installation can provide sufficient power and is earthed. If you are unsure, consult your electrician.**
- If the power cord does not fit your AC outlet perfectly, consult an electrician and replace the outlet.
- The power cord must not be trampled, crushed or pinched.
- The wall outlet that the RS700 is connected to must remain accessible.
- Do not overload wall outlets or extension cords this will create the risk of fire or electric shock.
- **Risk of Electrocution - Never open the appliance whilst it is connected to the mains**
- **Take great care when making the required internal configuration of the amplifier, it must be disconnected from the mains and the cover properly replaced before testing. Never operate the internal switches when the device is connected to mains power.**
- "Power off" the amplifier when not in use. In case of thunderstorms or if the device is not to be used for long periods of time ensure that it is unplugged at the power outlet (24).
- Ventilation: Ensure that fan outlets are never obstructed and that there is adequate ventilation to allow cooling. Keep the air intakes clean by periodically removing the air intake grilles, carefully cleaning them and replacing them.
- Fuse: In the event of a complete failure, check the mains fuse (after disconnecting the device from the mains). When replacing fuses use exactly the same specification as the original, NEVER use a higher rated fuse. If the problem persists, contact your reseller.
- Never short a speaker output terminal/wire (21) of the amplifier to ground or to the chassis.
- Never swap the + and - of the speaker outputs (21) between the right channel and the left channel.
- **Connect only one speaker per speaker output. Never connect multiple speakers or subwoofers either in parallel or in series on the same channel.**
- Never change the configuration switches (5, 6, 7, 8, 9) when the "Mute" switch (4) is set to 1. Changes may only be made when mute is set to position 0.
- The "Prog" connector (2) on the front of amp is strictly reserved for manufacturer's use only.
- Do not use accessories other than those supplied with the device or explicitly recommended by the manufacturer.
- Transportation: The device must always ship in its original packaging. This device is heavy, be sure to follow proper manual handling techniques.
- Ensure that all maintenance instructions are carefully followed
- Risk of Choking - Do not leave the packaging bags within the reach of children
- In the event of any technical issues or servicing, refer this device to your dealer and/or an authorized technical service agent.

Note: Numbers shown in brackets refer to the diagrams in Section B: Getting Started

Failure to comply with these important safety instructions and warnings will result in the immediate termination of the manufacturer's warranty.

SECTION A : DESIGN & INNOVATIONS

1. TECHNICAL ARCHITECTURE & FUNCTIONS

The specifications and construction of the RS700 makes it an uncompromising amplifier with new technical possibilities delivering an exceptional user experience. This 2U 19-inch rack format device uses two fully independent high-power amplifier stages (2 x 700W dual mono architecture) which are driven by the high-performance DSP board.

The RS700 offers audio connections via 2 analog inputs usingeither RCA or XLR. It also offers 2 analog XLR outputs driven by the DSP (for specific applications covered later) and a highly innovative digital link which uses digital S/PDIF for both input and output. The exceptional computing power of the DSP board and the quality of the D to A converters used guarantees unrivalled audio signal processing. The input audio signals are routed via the DSP to the 2 amplifier power stages, the 2 analog outputs and the S/PDIF digital audio output. The DSP optimizes the power amplifier stages by providing optimal amplifier speaker driver coupling which ensures the ultimate performance. The DSP also provides the two analog outputs and the S/PDIF output with additional filtered signals that can be used in conjunction with other RS700 or other analog audio hardware.

The RS700-WATERFALL AUDIO SPECIAL EDITION has two DSP processing modes which are specific to this version of the RS700:

- **SUB »** mode for the SUB600 & SUB600S subwoofers
- **SPEAKER »** mode for LCR300 & LCR500 speakers

In these 2 modes, it is possible to filter the input signals to low pass or high pass (depending on the selected mode) then distribute them accordingly between amplified outputs and the XLR outputs so as to create 2.1 or 2.2 systems.
The proprietary S/PDIF protocol makes it possible to chain two RS700 together so that the 2 power channels of the "primary" device are replicated by the "secondary " device with identical power outputs.

The RS700 has a 12V trigger (In and Out), along with silent cooling which incorporates accessible and reusable dust filters. There is also a mechanical locking plate that prevents accidental changes to the settings.

The functionality and behaviour of certain device controls & settings will depend on the selected mode. Please note that when the device is shut down or the power is cut off, a characteristic 'pop' will be heard in the speakers or subwoofer(s). This response is normal and does not damage the equipment.

2. PROPRIETARY TECHNOLOGICAL INNOVATIONS

The RS700-WATERFALL AUDIO SPECIAL EDITION integrates, via the DSP board the latest technological innovations developed by the ATOHM R&D department. This creates the perfect optimization between the power amplifier stages and the characteristics of the speakers or subwoofers being used.

• X-GUARD™ PROCESSING (« SUB MODE » ONLY)

The X-GUARD™ processing circumvents the disadvantages of the classic subsonic (or high-pass) subwoofer filter conventionally used in all bass reflex subwoofers. The DSP continuously monitors the amplitude of the input signal along with its parameters (including frequencies).

X-GUARD™ ensures that the excursion of the speaker never exceeds an absolute limit (to prevent very high distortion and damage). Unlike the traditional subsonic (or high-pass) filter, X-GUARD™ preserves the integrity of the audio signal along with its phase and does not induce group delay. This technology creates pure and deep bass which is exceptionally natural. The overall bass is more faithful and the coupling with the main speakers more homogeneous whilst the speakers are protected in all circumstances.

IMPORTANT NOTES:

In "SPEAKER" mode, the W1.0 program is designed for Cinema applications where the speakers are configured high pass (usually at 80Hz) by the Audio-Video processor, X-GUARD™ processing is not operational. By listening at high power in "pure stereo" mode or if the speakers have been configured to "WIDE" mode in a Cinema installation, then there will be increased risk of mechanical damage of the loudspeakers.

- **U-GUARD™ PROCESSING**

U-GUARD™ processing aims to reduce the formation of square audio signals (also known as clipping distortion) at the output of the device when the maximum volume level is reached. The DSP continuously measures the amplitude of audio signals and limits them so as to never let the power stages crest to a square signal. The analog circuits are used to create what is known as "soft clipping" to provide protection from a square signal, which in turn alters the original signal.

The U-GUARD™ processing goes further by maintaining the form of the "clipped" signal closer to the original which is more natural to listen to. This technology also helps protect power stages and speakers in extreme cases. This processing is also applied on low-level outputs to avoid overdriving of the XLR outputs.

- **T-GUARD™ PROCESSING**

When listening at very high sound levels over an extended period of time, the moving coils within the Loudspeakers will get hot (this may exceed 200°C) and may lead to a loss in performance of the speakers or subwoofers. This decrease in efficiency is also known as "thermal compression". Correspondingly with the power stages of the amplifier being driven hard to achieve high sound levels, the overall operating temperature of the electronics will be increased.

The T-GUARD™ processing manages, in real time, the thermal parameters of the power stages and also those of the moving coils in the speakers or subwoofers connected (according to the chosen setup.) It can help mitigate issues when the devices and/or speakers are being used inappropriately.

The DSP continuously analyses and measures the audio signals transmitted to the power stages and calculates the average power during a rolling period (from 3 to 12 sec). When the thresholds are exceeded, the algorithm triggers a drop of -15 dB on all outputs of the RS700 (speaker outputs, XLR outputs, and digital S/PDIF link) in order to reduce the power level of the system. Depending on the nature of the audio signals and if the input levels are not reduced, the thermal protection can remain continuously active. With a drop in the input audio level (about 10 dB), normal operation will resume after about 25 seconds.

When this protection is active, the 2 red LEDs (13) will be permanently lit . At the same time, the levels on the power outputs, XLR outputs as well as on the digital output are reduced by 15 dB in order for this audible alert to be propagated to the equipment connected downstream of the amplifier.
The sudden and general drop in the noise level combined with the permanent lighting of the red LEDs is a prompt to the user to lower the volume.

NOTE 1 : This processing does not protect the system against errors of installation, handling and use such as (but not limited to): *Improper connection – handling of cables (modulation, networks ...) - switches at full level - feedback - ground loop - inappropriate signal measurement - short circuits etc.*

NOTE 2 : *Short-circuit protection is operated directly on the amplifier power stages. It intervenes in case of a short circuit on the output connections but also in some cases of damage to the speakers and filters. It generally results in quick cut outs with a degradation of the signal depending on the sound level. If this occurs, the amplifier should be turned off immediately. Wiring and enclosures must be thoroughly inspected before recommissioning. If in doubt, consult your dealer and/or authorized service agent.*

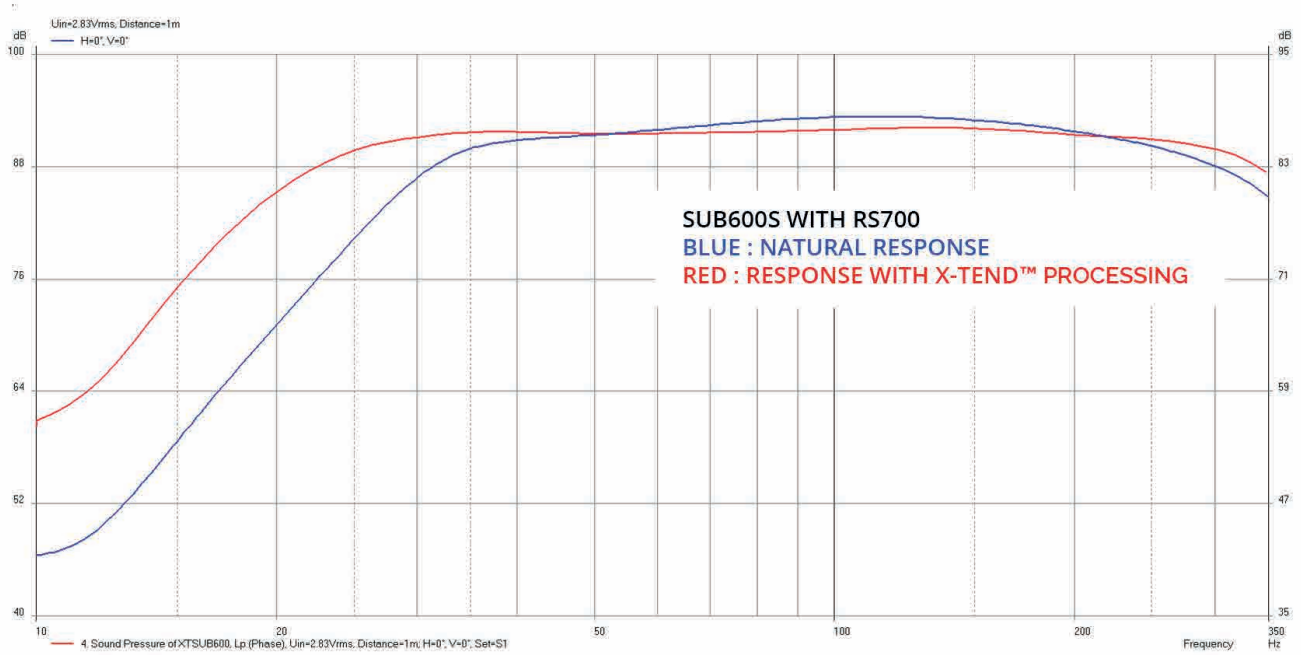
• X-TEND™ PROCESSING

The speaker drivers and their bass-reflex cabinet combine to form a whole whose acoustic response is equivalent to that of a high-pass filter. X-TEND™ processing is based on the very precise knowledge of this relationship and all the associated electro-acoustic parameters. By conditioning the audio signal in relation to this model, this processing extends the response in the infra bass amplitude while reducing the group delay which creates an improvement of the impulse response and phase response.

The extension of the bass response induces a greater excursion of the subwoofer speaker drivers. X-TEND™ works with X-GUARD™ to get the most out of the speakers whilst never exceeding their limits.

NOTE 1 : X-TEND™ can only be used with SUB600S

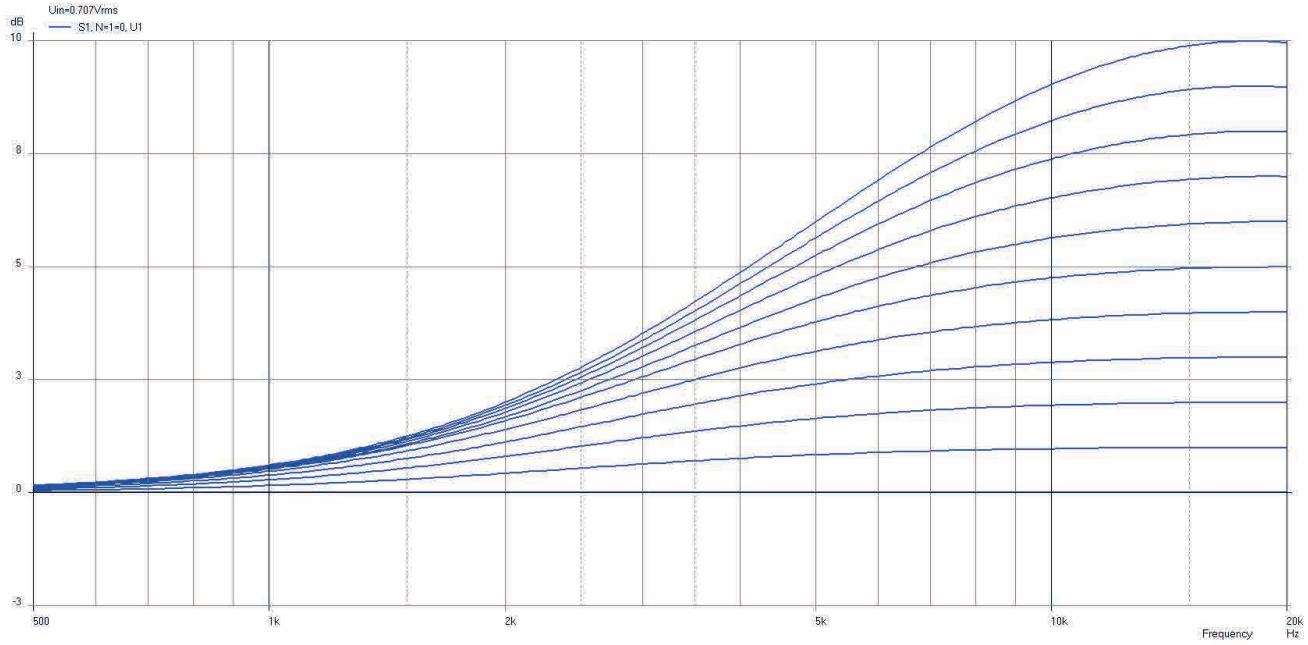
NOTE 2 : *The use of X-TEND™ and the resulting extension of the response to very low frequencies may reduce maximum SPL of the SUB600S depending on the nature of the incoming audio signal.*



• **CSC™ (« SPEAKER » MODE ONLY):**

« Cinema Screen Compensation » technology allows you to change the frequency response above 1KHz for the speakers which are placed behind cinema screens to compensate for the acoustic absorption of the screen material.

Projection screens are made using materials which are optimized for the contrast of the image and, depending on the fabric used, they can to a greater or lesser extent reflect and/or absorb high-pitched sounds. When a loudspeaker is placed behind a screen, it's frequency response curve exhibits attenuation and reflections (resonance) in the high frequencies of the soundtrack typically from around 1 KHz. The attenuation of the high frequency audio is related to the damping and absorption of energy by the screen fabric. This attenuation can be compensated for to a certain extent by the use of DSP.



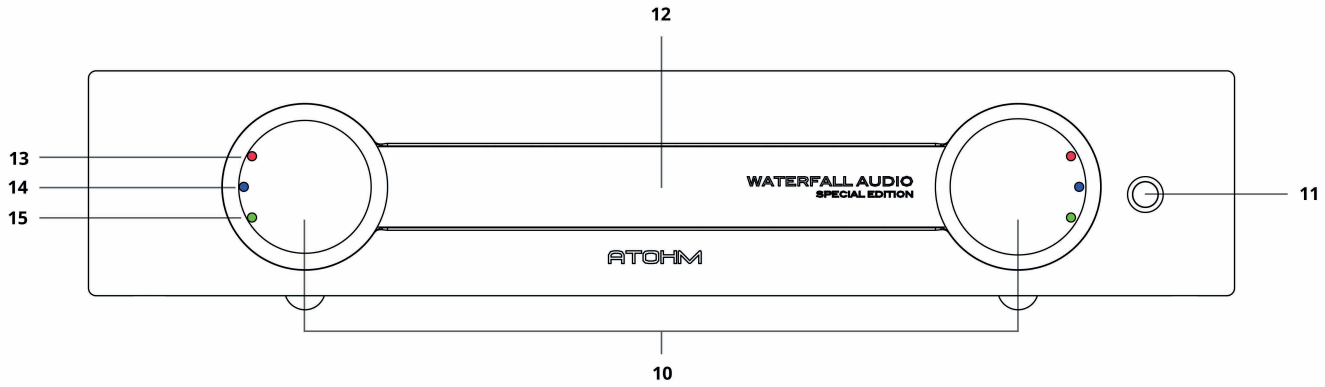
NOTE : *Anomalies are related to the audio reflections between the tweeters and the back of the screen surface. The "dips" correspond to phase cancellations, and the "humps" correspond to resonances. The exact distance between the sound source and the screen determines very precisely the amplitudes and frequencies of these anomalies.*

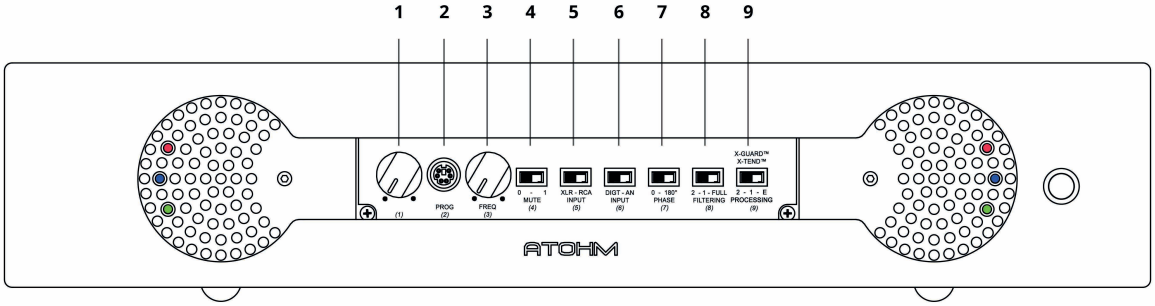
.

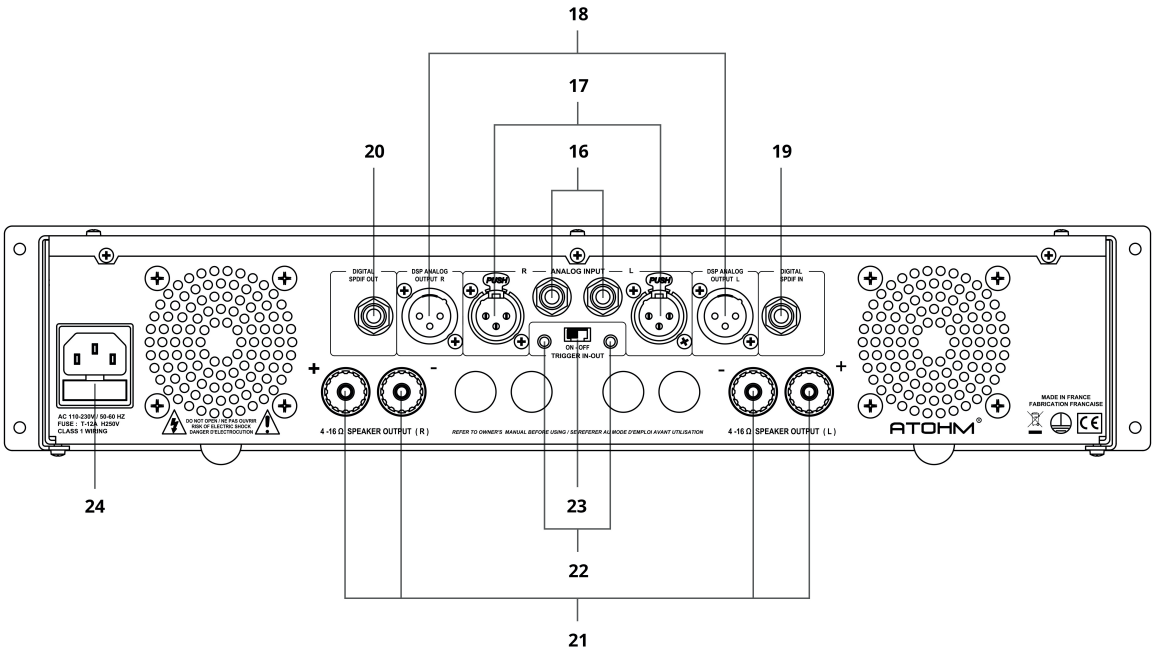
CSC™ processing aims to compensate for the attenuation and energy loss in high frequencies without introducing artifacts. Its fine adjustability makes it possible to provide powerful correction for the majority of screens thereby creating an ideal sound balance in the minimum of time.

SECTION B : GETTING STARTED

1. LAYOUT, CONNECTIONS & INFORMATION







KEY :

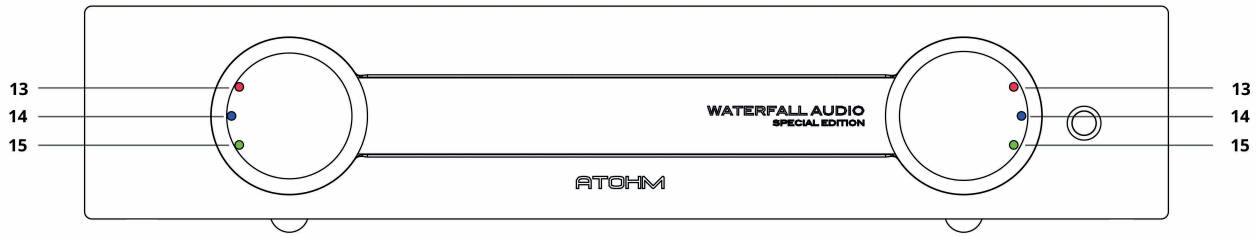
1. Input Level Adjustment Control *(volume)*
2. Programming interface *(factory reserved)*
3. Frequency controller - function depends on the selected operation mode
4. Mute selector
5. RCA/XLR input selector
6. Analog/Digital input selector

   (in most cases this switch must be in the Analog "AN" position)
7. Phase selector
8. Bandwidth management selector – function dependant on the selected operation mode
9. Signal processing selector – function dependant on the selected operation mode
10. Ventilation grilles with cleanable dust filter
11. Main power switch
12. Aluminum faceplate / tamper protection
13. Red LEDS – U-GUARD™ power management and T-GUARD™ thermal protection indicator
14. Blue LEDS – power indicator
15. Green LEDS – X - GUARD™ excursion control processing indicator *(«SUB» mode only)*
16. RCA unbalanced line-level input
17. Line-level XLR balanced inputs
18. Line-level XLR outputs

    (for use with an external analog amplifier controlled by the DSP)
19. 75 Ohm RCA type S/PDIF digital input
    (exclusively for use with a second RS700)
20. 75 Ohm RCA type SPDIF digital output
    (exclusively for use with a second RS700)
21. Speaker outputs
22. 12Vdc trigger Input/output (3.5mm mono jack)
23. Trigger operation selector
24. AC outlet with integral fuse holder

Supplied accessories : 1 mains cord - 2 rack mount adapters + screws - 4 hemi-spherical feet

2. LED INDICATORS



13. **RED LEDS:**

- **U-GUARD™ Processing** works in both « SUB » & « SPEAKER » mode

U-GUARD™ processing analyses the audio signal and makes adjustments to avoid clipping. A repetitive or rhythmical audio signal will activate the processing and is not a problem even at high levels. **This is not indicative of the amplifier clipping.** A very sustained flashing of the LEDs indicates that the average power delivered is very high and suggests that the user lowers the volume level in order to avoid thermal compression of the speakers.

- **T-GUARD™ Processing** works in both « SUB » & « SPEAKER » mode

When the system is used to the extreme limits, the T-GUARD™ processing will trigger the thermal management to protect itself along with speakers/subwoofer and also the power amplification. When this protection is activated, the 2 red LEDs (13) are permanently lit. Correspondingly, the levels on the speaker outputs, XLR outputs and digital output are all reduced by 15 dB in order to propagate this "audible alert" to the equipment connected downstream of the amplifier.

The sudden and overall drop in the volume level combined with the red LEDs being permanently lit indicates that it is necessary to lower the volume. After a delay of about 25 seconds the red LEDs will turn off and normal listening can resume.

NOTE : *The amplifier and its ventilation have been designed for a maximum ambient temperature of 40°C at full power.*

14. **BLUE LEDS :** Device is powered on.

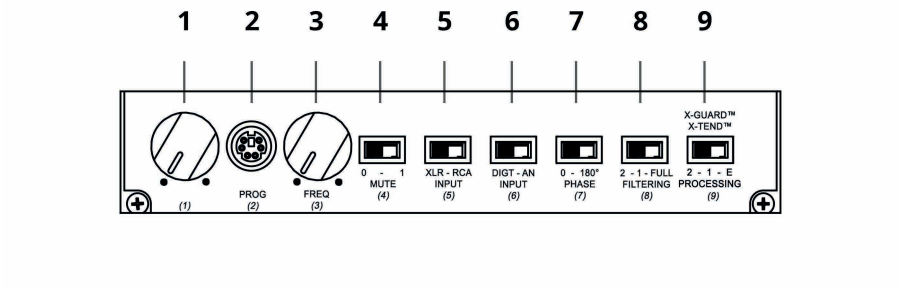
15. **GREEN LEDS :**

- X-GUARD™ Processing works only in « SUB » mode.

X-GUARD™ processing works on the low frequency signals in order to control the excursion of speaker driver by adjusting the frequency/voltage sent to the driver. A repetitive or rhythmical audio signal will activate the X-GUARD™ processing and does not indicate a problem. Persistent flashing of the green LEDs associated with a sustained flashing of the red LEDs suggests that the user reduces the volume level in order to avoid thermal compression of the speakers.

3. DETAILED FEATURES OF THE FRONT CONTROL PANEL :

Depending on the chosen operation mode (SPEAKER or SUB), the selectors 3, 8 and 9 on the panel manage different functions. The other selectors are common to both modes, some of which may be inactive. (See details in sections D&E)



1. The volume control (1) adjusts the volume on the L&R channels simultaneously.

2. Programming interface *(factory reserved)*

3. Frequency controller - function depends on the selected operation mode

   SUB MODE : - Control disabled in LFE mode (Cinema application) if the band width management selector (8) is set to "FULL".

   - Setting of the cut-off frequency (stereo mode) if the bandwidth management selector (8) is set to "1" or "2"

   SPEAKER MODE : - CSC™ setting if the bandwidth management selector (8) is set to "FULL"

4. Mute. This switch mutes all amplifier stages and it is imperative that it used when making connections or changing selectors 5, 6, 8 and 9

5. Analog input selector. Choice of balanced (17) (XLR) or unbalanced (16) (RCA) inputs

6. Selector for Analog inputs or S/PDIF digital input. Ensure the RS700 is turned off or muted before switching. The "DIGT" position is only to be used on the Secondary RS700 whenRS700s are chained together. The digital S/PDIF is proprietary and exclusively designed for linking between RS700s. **Never connect other types of devices to the digital S/PDIF**

7. Phase Inverter. Active in <<SUB>> mode only

8. Bandwidth management:

   FULL : LFE use in <<SUB>> mode | Wideband use in <<SPEAKER>> mode.
   POSITIONS 1 : 12 dB/Oct (Butterworth) crossover
   POSITIONS 2 : 24 dB/Oct (Linkwitz Riley) crossover

9. Signal management

   SUB MODE : Management of X-Guard and X-Tend settings for SUB600 and SUB600S
   SPEAKER MODE: Frequency management - high pass to the speakers

4. TRIGGER CONTROL

DEVICE STANDBY AND POWER UP CAN BE CONTROLLED REMOTELY VIA THE TRIGGER INPUT. TO IMPLEMENT TRIGGERING, IT IS NECESSARY TO :

- Connect your control system or processor to either of the 12Vdc 3.5mm jacks (22). The other jack can then be used to pass the 12Vdc control signal on to another device.
- Set the "TRIGGER" operation selector (23) to the "ON" position.
- Turn the main power switch (11) "ON".
- Set the "MUTE" switch (4) to the position "1 ".

NOTE : *when trigger control is enabled, it is not possible to turn on the device in the conventional manner.*

5. MAINS CABLE AND CONNECTION

Designed with a "dual insulation" architecture, the RS700 amplifier is equipped with Class 1 protection, this means that it **must be earthed**. It is designed to operate with a mains voltage of between 100V and 240 V (50 Hz -60 Hz). It will automatically detect the voltage and adapt accordingly.

The mains cable supplied with the device is of heavy gauge (type H05VV-F 1.5MM2 -3G section $3*1.5^2$) with an earth connection. Under no circumstances should it be replaced by a cable of lesser gauge (including the export version) or by a cable that does not have a connection to the earth.

6. INSTALLATION

The RS700 can be installed in a 19-inch RACK. The device comes with 2 adapters and 4 screws; the adapter flanges are mounted by simple screwing on the rear part of the front panel, ensuring that they are adequately tight. Alternatively the RS700 can be set on a flat surface; 4 adhesive hemi-spherical pads are included for this use.

Ventilation: Ensure that fan outlets are never obstructed and can dissipate heat sufficiently. The device and its cooling have been designed for a maximum ambient temperature of 40°C running at full power.

7. MAINTENANCE

For exterior cleaning **(after disconnecting from the mains outlet)**, use only a soft, lint-free, dry microfiber cloth which may be slightly moistened with a mild glass cleaning product. Never use products such as solvents or detergents. Periodically (depending on the level of dust accumalation) the ventilation grilles (10) must be removed and cleaned. This cleaning is done outdoors with compressed air (preferably dehumidified and oil-free e.g. a compressed air aerosol can). It is also possible to use a vacuum cleaner to clean the filters.

In time, depending on the dust levels where the device is installed, the interior and fans in the device can become clogged. When necessary internal cleaning is also to be carried out outdoors with compressed air (dehumidified and oil-free). If in doubt, take the device to your dealer or an authorized service agent.

8. GENERAL INFORMATION

A. DSP Implementation :

The on board DSP allows an optimal amp/speaker pairing for the speakers predefined within the DSP which is implemented in the RS700 amplifier "Waterfall Audio Special Edition". It is still essential to strictly adhere to the installation instructions and bear in mind the following:

• The speakers and enclosures of the "Pro Custom Series" range are designed to operate recessed with the facias flush with the wall. Installation in any other manner will result in a significant decrease in performance at low frequencies.

• Waterfall custom installation speakers (excluding subwoofers), have a specific horizontal and vertical mounting requirement for dispersion. It is imperative to adhere to the speaker product manuals regarding the location of the speakers in relation to the listening area.

• Low frequencies are non-directional, but this does not mean that the sound pressure of bass will be equal at all points in the room. The location subwoofers relative to the listening area must be chosen wisely in order to obtain the optimal sound pressure.

Finally, the acoustic qualities of the room plays a predominant role in the final result. Conducting a proper acoustic study and implementing the findings into the design, using appropriate materials and acoustic solutions, will play a pivotal part in the overall success of the project.

B. Equalization / Audio Correction:

The acoustic response of a room is characterized by resonance (modes) and cancellations (nulls). This phenomenon is particularly prevalent at low frequencies. Put simply, the resonances vary in level but relatively little in frequency, it is therefore quite possible to reduce the intensity of these modes by electronic correction to improve the sound balance. On the other hand, the nulls are often high in amplitude (-8dB to -20 dB), and are due to cancellations (caused by phase opposition in a given point between the wave arriving from the original sound source and a sound reflected by a wall). In addition, depending on the measurement and listening position the frequencies at which these cancellations occur will vary. As the null is the result of the positive and negative of the exact same waveform interacting, the amplitude of the wave does not matter as it will always cancel itself. Even if it were possible to add an infinite amount of power the result would still equal a null. It is therefore not possible to correct these by use of DSP. Only the acoustic treatment of the room and the positioning of the speakers can reduce these cancellations.

For correction / equalization, **the best practice is to attenuate the identified modes** (and, if necessary, raise the level in a partial band (shelving) or in the subwoofer band as part of a cinema or stereo 2.1 or 2.2 system. **Any attempt to "boost" the nulls results in a sound imbalance outside the measurement points and unnecessary overdriving of the amplification and loudspeakers** (resulting in a reduction in dynamic range and an increase in distortion). Some processors define the maximum level of positive (boost) and negative (attenuation) equalization within in a given bandwidth.

When using in <<SUB>> mode, we recommend limiting any positive equalization boost to between 0 and +3dB max on the 30-120Hz band (and no equalization boost to frequencies under 30Hz). Once the equalization is done (mode attenuation), if necessary, you can slightly raise the gain of the LFE channel to obtain the desired audio balance. Thanks to the precise knowledge of the speakers and their load, X-TEND™ processing makes it possible to extend the response in the sub bass while reducing the group delay. With this technology, the speakers are able to work much more efficiently and powerfully. When this processing is implemented, **we recommend that you avoid any positive equalization boost so as not to reduce the dynamic range or distort the time optimization that X-TEND™ has produced.**

C. Latency Information :

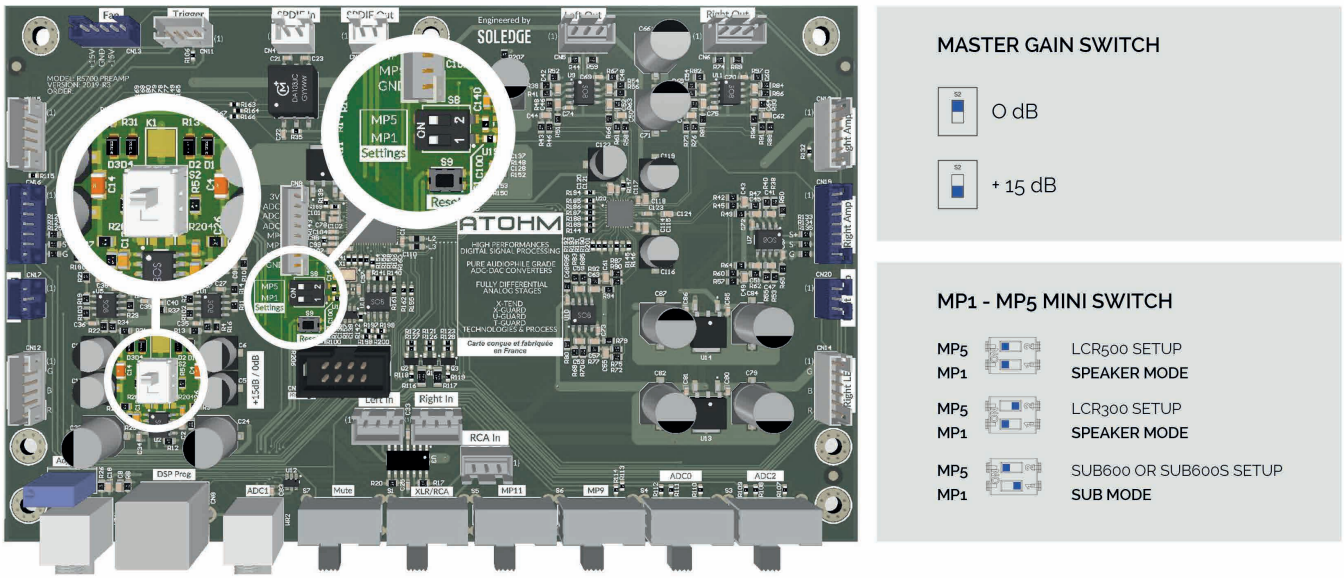
The RS700 circuitry is equipped with high-performance digital signal processing (DSP). Regardless of the mode used, including digitally chaining multiple devices, this DSP induces a total latency of 1.95 ms. In the context of a home theatre system, the use of several RS700s (for SUB and speakers) ensures homogeneous signal processing of the different surround/subwoofer channels. When implementing as a system with other manufacturers amplifiers (with or without internal digital processing), it is imperative to adjust the "delays" in the processor so that all amplifiers in the system work to the same basic timing. Additionally the latency between a speaker and a subwoofer can induce a change in response and a loss of energy in the crossover frequency band. In stereo use the amplified outputs and XLR outputs of the RS700 are perfectly synchronous. When XLR outputs are used, it is preferable to use an amplifier without any internal digital processing so as not to induce relative latency between the two devices.

SECTION C : CONFIGURATION OF SUB & SPEAKER MODE

1. SETTING THE MODE AND MAIN GAIN

Before commissioning, check that the mode chosen corresponds to the model of enclosure or subwoofer connected.

The amplifier must be **de-energized and disconnected the mains**. These settings are made inside the device with the cover removed. They can also be carried out by us at the factory when ordering the device. The default factory setting is « **SUB** » mode.



- The « SUB » mode and the « SPEAKER » mode are defined by the position of switch MP1 (shown above).
- Once the mode is set, switch MP5 manages the **T-GUARD™** processing (thermal protection of electronics and speakers).

- In **« SUB »** mode, the position of the switch MP5 (shown above) corresponds to 700W RMS continuous output for 12 seconds before triggering the T-GUARD™ thermal protection.

- In **« SPEAKER »** mode, switch MP5 allows you to choose whether LCR300 or LCR500 speaker models are connected.

- Depending on the output level of your AV processor or preamplifier, you can choose the input sensitivity level through the master gain switch which is located on the same board. The "0dB" position provides an overall gain of 29.8 dB. **This position is suitable for the vast majority of configurations**. The "+15 dB" position gives an overall gain of 44.8 dB. It is intended for low-level preamplifiers/sources.

Regardless of the chosen settings and the position of the Volume Control (1) the maximum input level (XLR and RCA) **must not exceed 22 dBu (9.75 Vrms).**

NOTE ABOUT DIGITAL SATURATION : *At the moment when the red LEDs are flashing, there is still a margin of about 10 dB before saturation of the A to D input converter (0dB Fs). When the A to D input convetor becomes saturated the result is a significant increase in distortion.*

SECTION D : CINEMA SET-UP

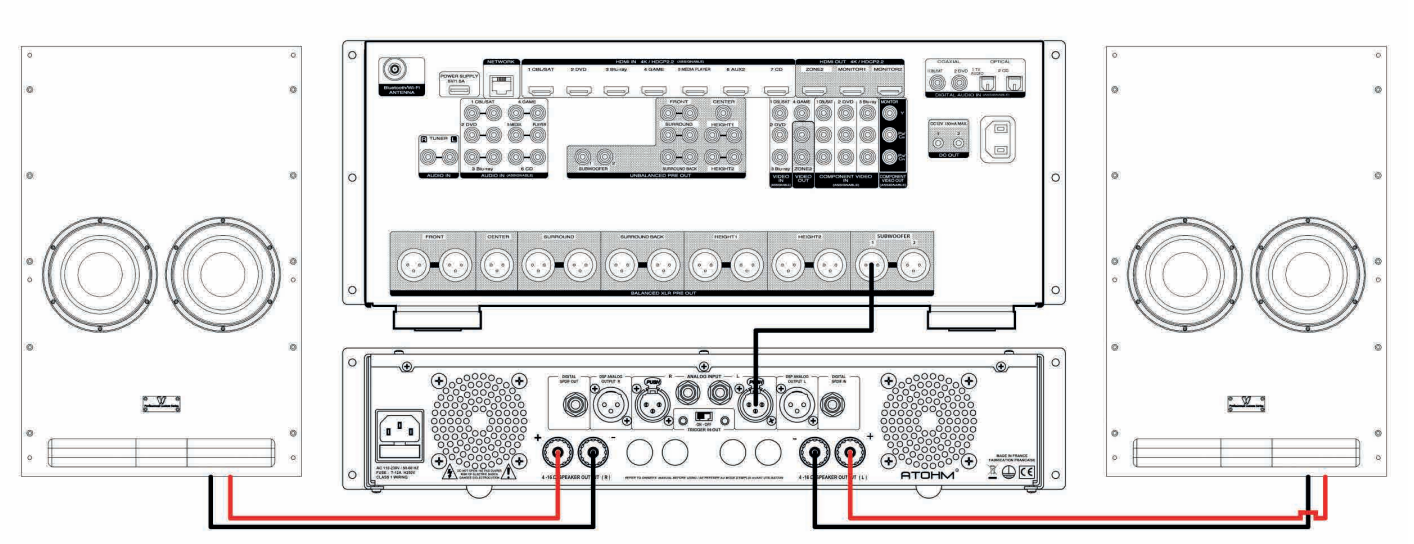
In SUB mode X-GUARD™, U-GUARD ™, T-GUARD™ technologies are active on the (21) amplifier outputs.
X-TEND™ technology can be only be used with SUB600S.

1. CINEMA SET-UP : 2 SUB600S AMPLIFICATION

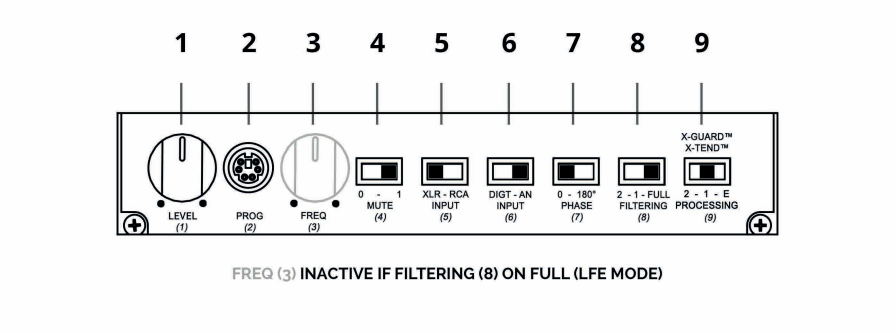
Reminder : Connections are to be made with all electronics turned off.

• Connect the SUB PREOUT output of the AV processor to either the L or R RCA (16) or the L or R XLR (17) input of the RS700. Either the L or R input can be used as the inputs in this mode are automatically summed.

• Connect amplifier outputs (21) to SUB600S.



Control panel settings in CINEMA-SUB configuration



FREQ (3) **INACTIVE IF FILTERING (8) ON FULL (LFE MODE)**

- **Switch (6) must be set to "AN" analog input**
- Set switch (5) to XLR or RCA depending on the type of connector used
- Switch (8) Filtering: **Must be set to the FULL position**
- Switch (9) Processing must be set to:
  Position 2 = X-GUARD™ for SUB600
  Position 1 = X-GUARD™ for SUB600S
  Position E = activates the X-GUARD™ & X-TEND.™ Only for use with SUB600S
- Switch (7) Phase: Operates on the amplifier and the S/PDIF outputs.
- When the connections and settings have been made, turn on the device with the main power switch (11) and switch MUTE (4) to position 1. The volume control (1) must be positioned at the lowest position (fully counter clockwise) on start-up. Then adjust the volume accordingly

Points to note :

- The volume control (1) adjusts the volume on the L&R channels simultaneously.
- The multifunction controller (3) is inactive. The amplifier operates in LFE mode; the cut-off frequency is handled directly by the AV processor.
- Depending on the "Bass Management" implemented by the Audio-Video processor it may be necessary to use the phase reversal Switch (7).
- XLR (18) outputs should not be used in this application
- S/PDIF digital links (19) and (20) should not be used in this application.
- When switch (9) is in the "E" position, the X-GUARD™ and X-TEND™ functions optimize the extension in the sub bass (20-35Hz band). This extension of the response at very low frequencies results in a lower SPL.

2. CINEMA SET-UP : 4 X SUB600S AMPLIFICATION WITH USE OF DIGITAL LINKING BETWEEN 2 X RS700

Before commencing check that the 2 RS700 used are set to operate in the same mode (see setting the mode and the main gain page 13). The digital input and output are exclusively for digital chaining between RS700. Never connect other devices to them.

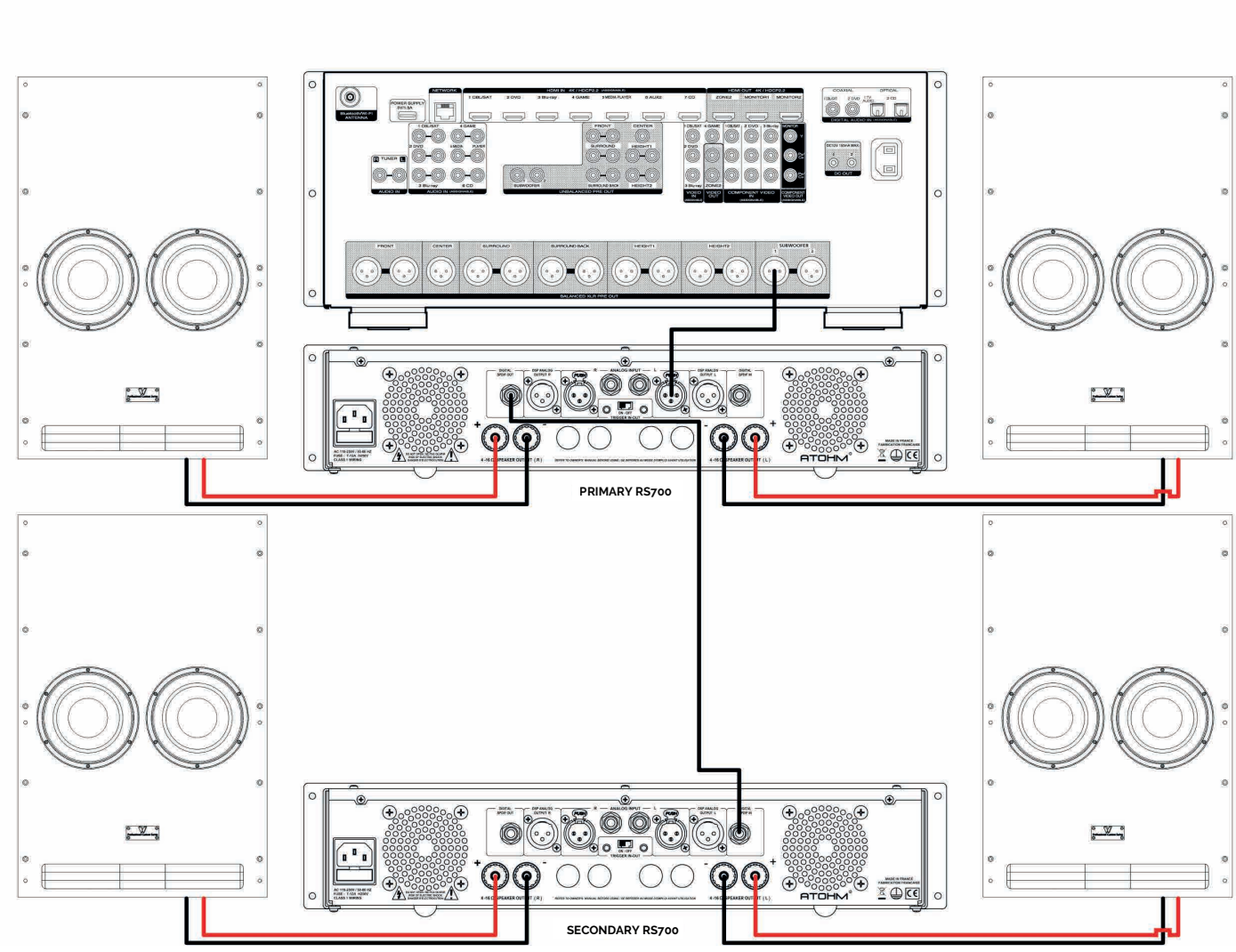
In this configuration a "PRIMARY" RS700 drives a "SECONDARY" RS700 by use of the proprietary S/PDIF digital protocol. The power outputs of the "PRIMARY" RS700 and "SECONDARY" RS700" will be identical and without any additional latency.

Reminder : Connections are to be made with all electronics turned off.

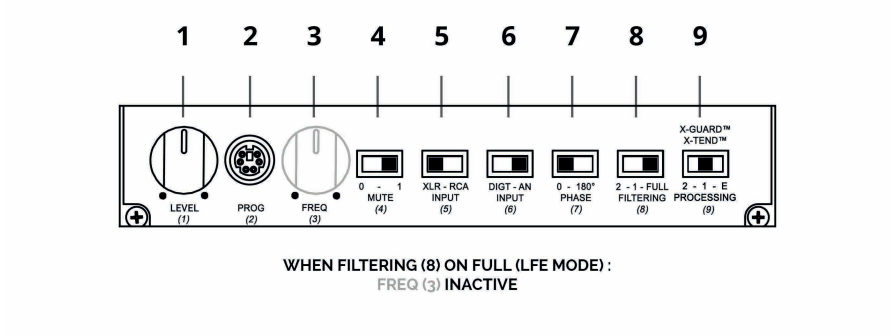
- Connect the SUB PREOUT output of the AV processor to either the L or R RCA (16) or the L or R XLR (17) input of the RS700. Either the L or R input can be used as the inputs in this mode as they are automatically summed.

- Connect the DIGITAL SPDIF OUT (20) output of the "PRIMARY" RS700 to the DIGITAL S/PDIF IN (19) input of the "SECONDARY" RS700 using a 75ohm RCA cable

- Connect amplifier (21) outputs to SUB600S

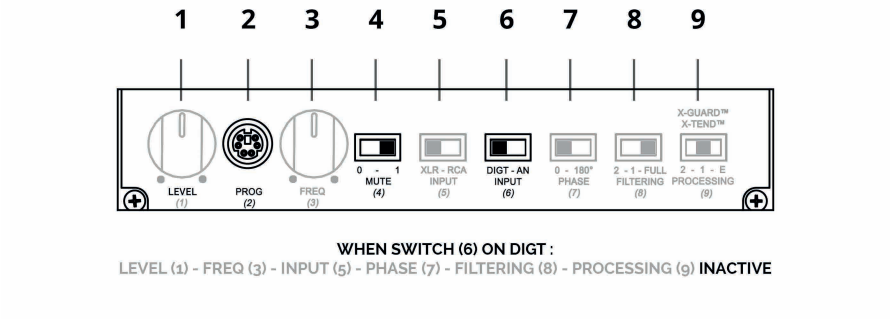


Control panel settings for SUB-CINEMA configuration
« PRIMARY RS700 »



• **Switch (6) must be set to "AN" analog input**
• Set switch (5) to XLR or RCA depending on the type of connector used
• Switch (8) Filtering: **Must be set to the FULL position**
• Switch (9) Processing must be set to:
Position 2 = X-GUARD™ for SUB600
Position 1 = X-GUARD™ for SUB600S
Position E = activates the X-GUARD™ & X-TEND.™ Only for use with SUB600S
• Switch (7) Phase: Operates on the amplifier and the S/PDIF outputs.
• When the connections and settings have been made, turn on the device with the main power switch (11) and switch MUTE (4) to position 1. The volume control (1) must be positioned at the lowest position (fully counter clockwise) on start-up. Then adjust the volume accordingly

« SECONDARY RS700 »



• Switch (6) on the "SECONDARY" RS700 must be set to the "DIGT" position
• When the connections and settings have been made, turn on the device with the main power switch (11) and switch MUTE (4) to position 1.

Points to note :

• All settings are made on the "PRIMARY" RS700. The volume control (1) adjusts the volume simultaneously on the 4 amplifier outputs (21) of the two chained RS700s.
• Once the "DIGT" position is chosen, the front panel settings are inoperative on the "SECONDARY" RS700 " with the exception of the MUTE (4) & TRIGGER switch (23).
• Depending on the "Bass Management" implemented by the Audio-Video processor it may be necessary to use the phase reversal Switch (7) on the "PRIMARY" RS700.
• When switch (9) is in the "E" position, the X-GUARD™ and X-TEND™ functions optimize the extension in the sub bass (20-35Hz band). This extension of the response at very low frequencies results in a lower SPL.
• The information for the X-GUARD™, U-GUARD™, T-GUARD™ LEDs are transmitted by the "PRIMARY" RS700 to the "SECONDARY" RS700.
• XLR outputs should not be used in this application.
• With an AV processor with a dual SUB PRE OUT output it is possible to double this configuration and use 4 x RS700 and 8 x SUB600S.

3. CINEMA SET-UP : AMPLIFICATION FOR LCR300 OR LCR500 FRONT SPEAKERS

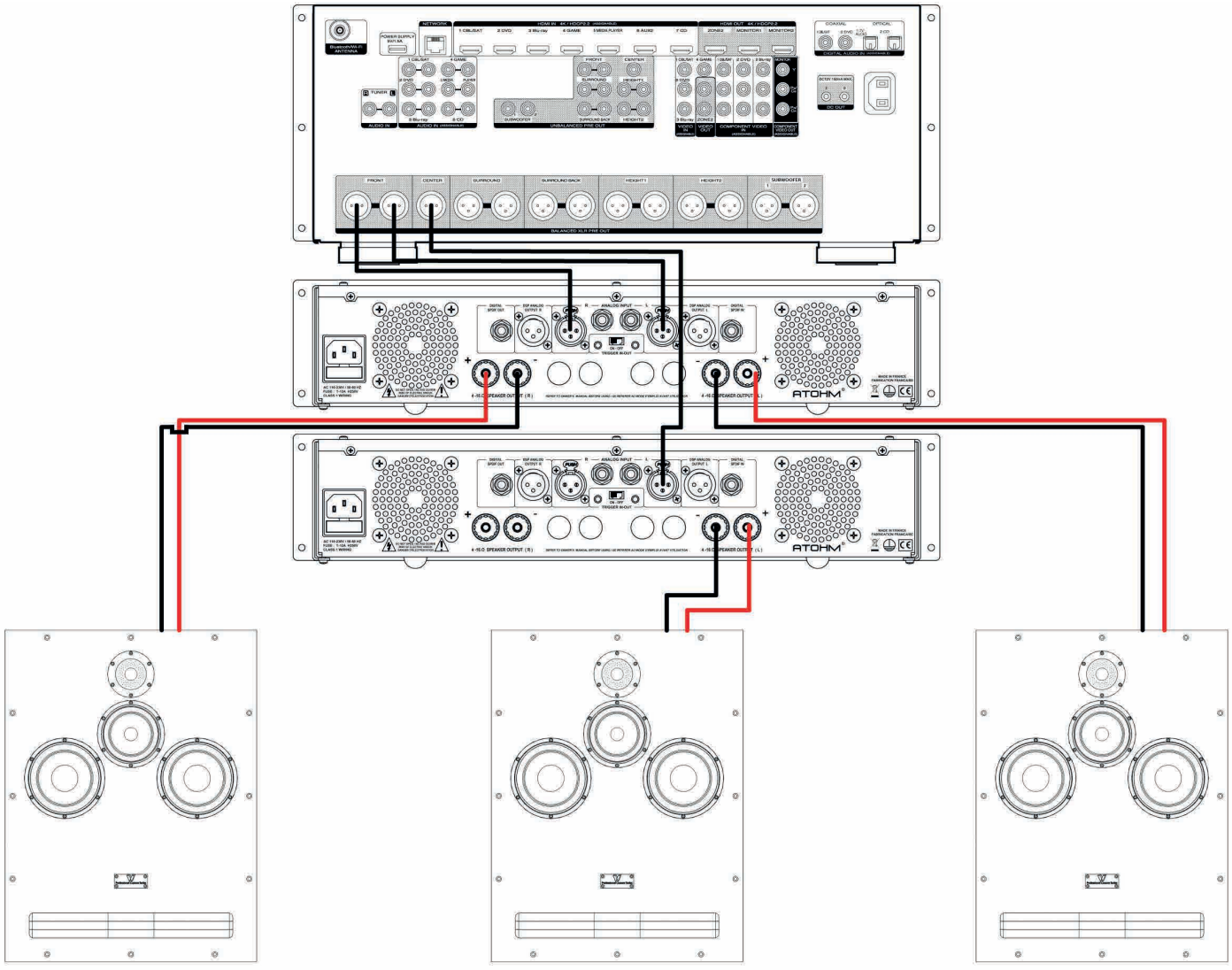
Configure the RS700 to power the speakers in "SPEAKER" mode, and ensure the right choice of speaker model (see page 13).
In the speaker setup menu of the audio-video processor it is imperative to configure the speakers to small mode (with the following crossovers : LCR500: 80Hz, LCR300: 100Hz).
U-GUARD™, T-GUARD™ technologies are active on amplified outputs (21). The illustration below shows the wiring for only the front LCR channels.

Reminder: lThe W1.0 program is designed for Cinema applications where the speakers are filtered in high pass (usually at 80Hz) by the audio-video processor.**X-GUARD™ processing is not operational.** Never set speakers to WIDE/LARGE. Due to the high power, listening at very high volume levels in wideband/large mode may risk mechanical damage to the bass speakers.

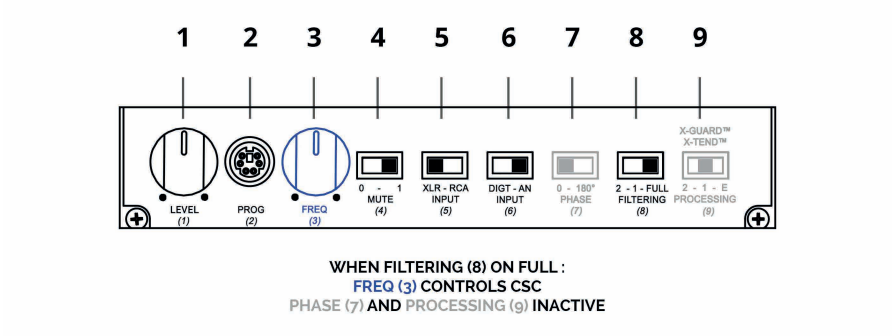
Reminder : Connections are to be made with all electronics turned off.

• Connect the PRE OUT FL & FR outputs from the audio video processor to one RS700 and PRE OUT Center output to either one of the channels on a second RS700 to the ANALOG INPUT (16) or (17) RCA or XLR inputs.

• Connect amplifier (21) outputs to the relevant speakers



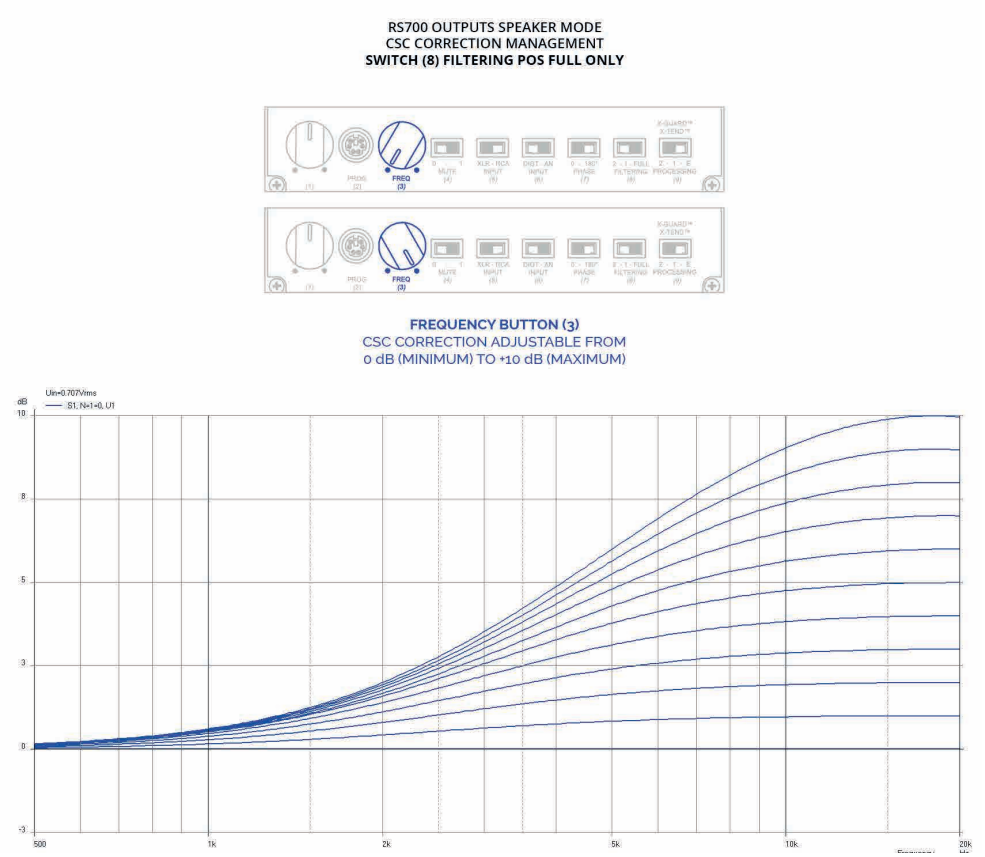
Control panel settings in CINEMA-SPEAKER configuration



• **Switch (6) must be set to "AN" analog input**
• Set switch (5) to XLR or RCA depending on the type of connector used
• Switch (8) Filtering: **Must be set to the FULL position**
• The multifunction controller (3) controls the screen correction "CSC™" (cinema screen compensation).
• When the connections and settings have been made, turn on the device with the main power switch (11) and switch MUTE (4) to position 1. The volume control (1) must be positioned at the lowest position (fully counter clockwise) on start-up. Then adjust the volume accordingly.

Points to note :

• The volume control (1) adjusts the volume on the L&R channels simultaneously.
• Switch (7) Phase: Does not operate. By default leave it set to 0°.
• Switch (9) Processing is inactive when switch (8) Filtering is set to "FULL",
(do not use Position 1 or 2 for this application).
• XLR (18) outputs should not be used in this application.
• S/PDIF digital links (19) and (20) should not be used in this application.
• The amp powering the center channel can work either the L or R channel according to your preference, the unused channel will remain inactive.
• The minimum position (fully counter clockwise) of the multifunction controller (3) sets the "CSC™" correction inactive and is in essence "FLAT" mode. **CSC™ technology can be implemented via the digital multifunction controller (3) on the front speakers. Apply the same level of correction on both amplifiers.**



SECTION E : STEREO SET-UP WITH STEREO PREAMP
BI-AMPLIFICATION : 2 X SUB600S + 2 X LCR500 (OR LCR300)

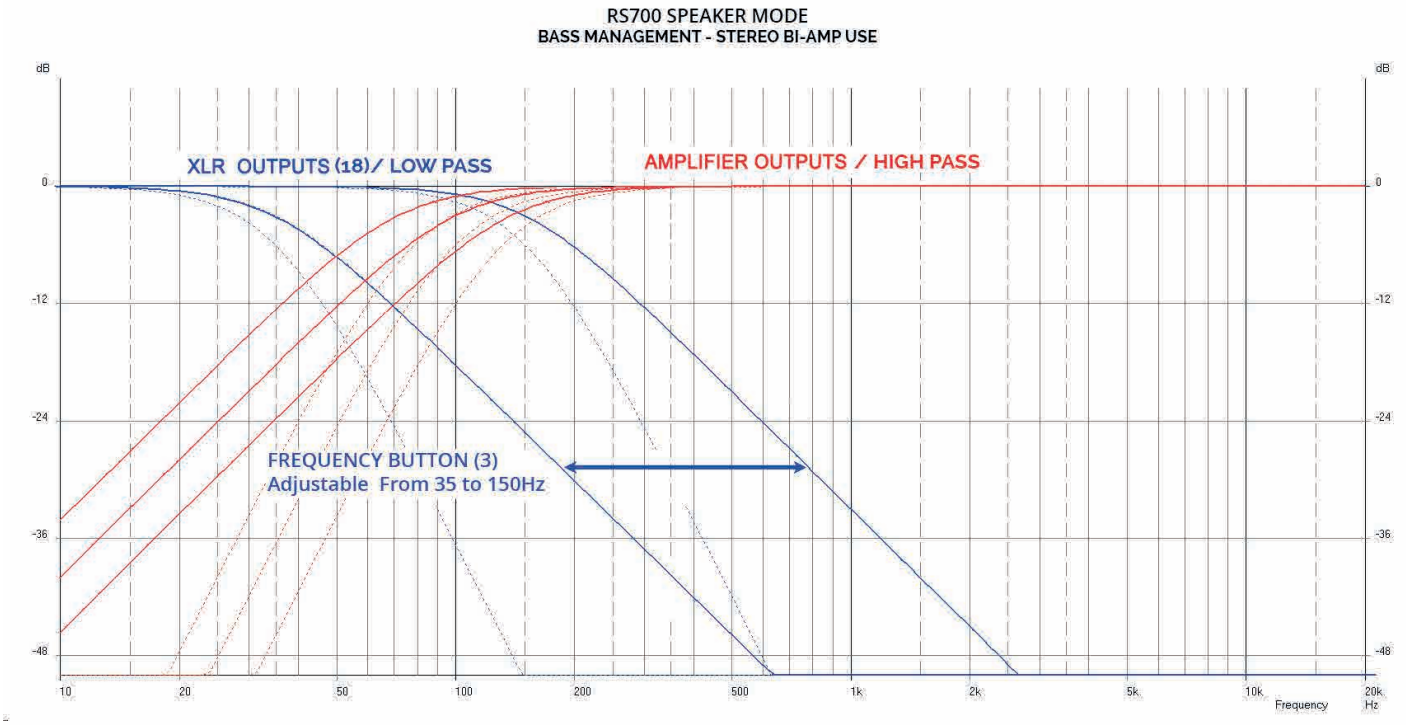
For studio monitor and stereo solutions that must deliver very high sound pressure levels, the RS700 can be used for active bi-amplification. Two implementations are possible from a either preamp or mixing desk with two pre-out outputs.

Important notes :
Configure the RS700 which is powering the speakers in "SPEAKER" mode, and ensure the right choice of speaker model.
In stereo use it is imperative that the speakers must be high-pass filtered.
The switch (8) FILTERING **must be set to position 1 or 2 and NEVER in set in FULL position.** Due to the high power, listening at very high volume levels in wideband/large mode may present risks of mechanical damage to the speakers.

INFORMATION ABOUT THE RS700 BASS MANAGEMENT IN SPEAKER MODE:

U-GUARD™, T-GUARD™ technologies are active on amplifier outputs (21)
The amplifier stages (21) operate as high-pass filtered and the XLR (19) outputs in low-pass mode.

The choice of frequencies and cut-off slopes is made via the switches (8) and (9)
The multifunction controller (3) (frequency button) controls the adjustment of the low-pass frequency slope applied to the XLR (18) outputs to power subwoofers in LFE mode.



SWITCH (8) FILTERING

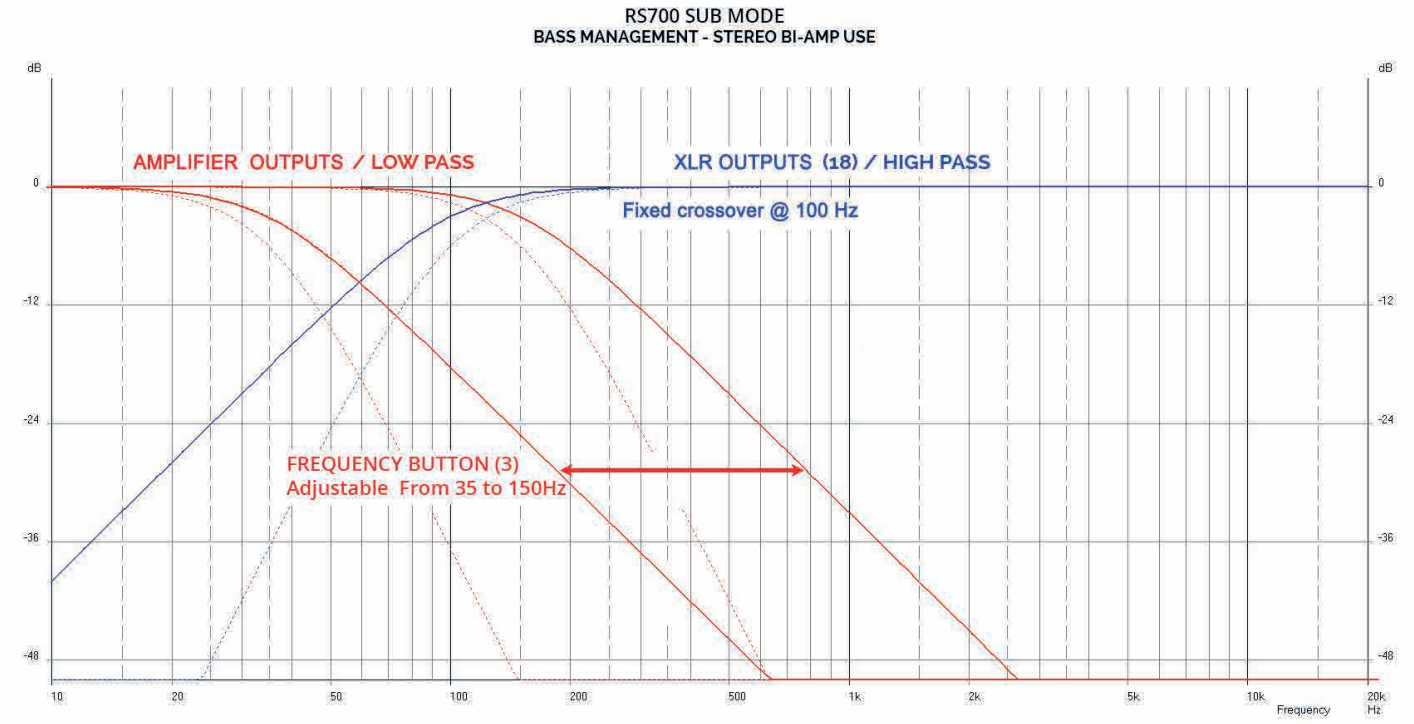
POS 1	12 dB/OCT. CROSSOVER SLOPE STEREO USE ONLY FREQUENCY BUTTON (3) ACTIVE
POS 2	24 dB/OCT. CROSSOVER SLOPE (LR) STEREO USE ONLY FREQUENCY BUTTON (3) ACTIVE
POS FULL	DO NOT USE FOR STEREO MODE

SWITCH (9) PROCESSING
AMPLIFIER OUTPUTS / HIGH PASS FREQ. CHOICE

POS 2	CROSSOVER @ 80Hz
POS 1	CROSSOVER @ 100Hz
POS E	CROSSOVER @ 120Hz

INFORMATION ABOUT BASS MANAGEMENT OF RS700 IN SUB MODE :

X-GUARD™, U-GUARD™, T-GUARD™ technologies are active on the amplifier outputs (21). X-TEND™ technology can only be activated on SUB600S.
The multifunction controller (3) (Freq/frequency button) controls the frequency of the low-pass filter applied to the amplifier outputs (21), position 1 or 2 of switch (8) determines the type of slope and it's cut-off. Switch (9) controls the X-GUARD™ and X-TEND™ settings.
The XLR (18) outputs have a fixed 100 Hz high-pass filter to power speakers using a generic amplifier (without DSP).



SWITCH (8) FILTERING

POS 1	12 dB/OCT. CROSSOVER SLOPE STEREO USE ONLY FREQUENCY BUTTON (3) ACTIVE
POS 2	24 dB/OCT. CROSSOVER SLOPE (LR) STEREO USE ONLY FREQUENCY BUTTON (3) ACTIVE
POS FULL	DO NOT USE FOR STEREO MODE

SWITCH (9) PROCESSING
AMPLIFIER OUTPUTS / X-GUARD MANAGEMENT

POS 2	X-GUARD SUB600
POS 1	X-GUARD SUB600S (OR HF3-500S PASSIVE)
POS E	X-GUARD + X-TEND SUB600S (OR HF3-500S PASSIVE)

The DSP architecture offers the possibility to create bi-amplified systems using 2 RS700 (Option A) or a single RS700 for the bass speakers using a generic amplifier via XLR the outputs using the RS700s onboard DSP (Option B).

Two types of filter configurations are possible :

- 12 dB BUTTERWORTH
- 24 dB LINKWITZ RILEY

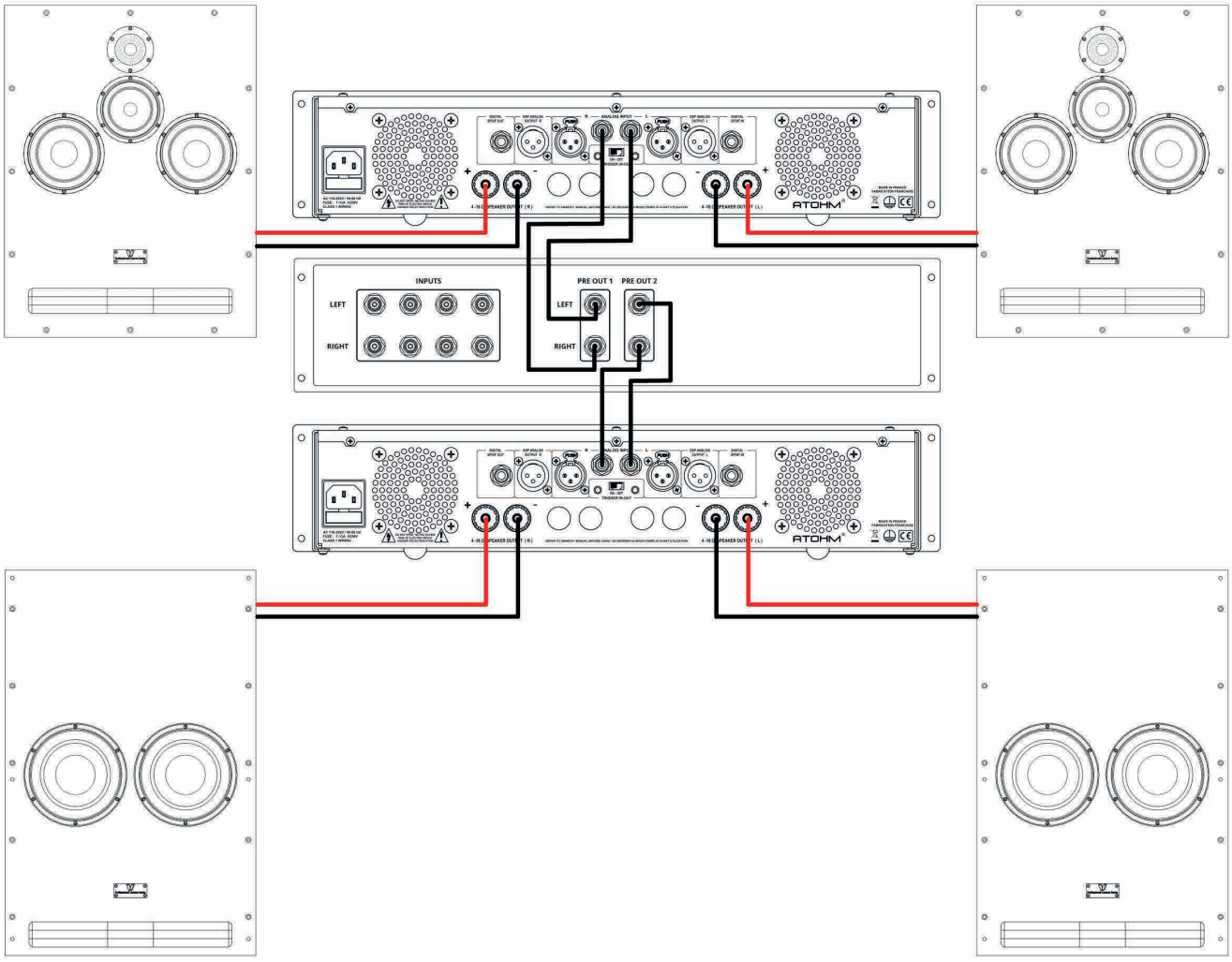
OPTION A : BI AMPLIFICATION WITH 2 X RS700

Two LCR500/300 powered by a RS700 (« SPEAKER » mode).
Two SUB600S powered by a RS700 (« SUB » mode)

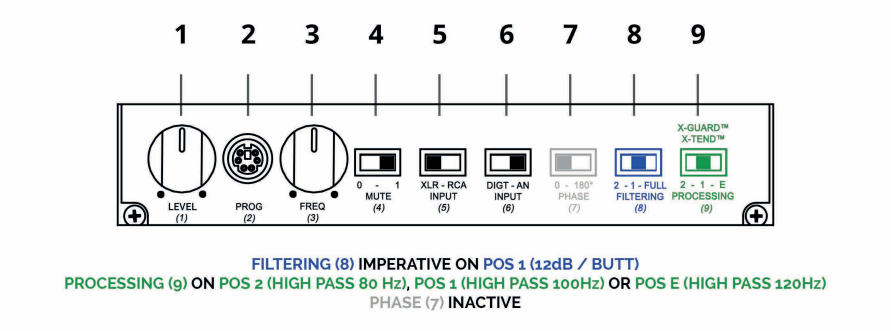
Reminder: Connections are to be made with all electronics turned off.

• Connect from the first PREOUT L&R output of your audio preamplifier to the ANALOG INPUT inputs (16) or (17) of the first RS700 configured in <<SPEAKER>> mode. Connect amplified outputs (21) to speakers.

• Connect the second PREOUT L&R output of your audio preamplifier to the ANALOG INPUT (16) or (17) inputs of the second RS700 configured in <<SUB>> mode. Connect the amplified outputs (21) to the SUB600S.

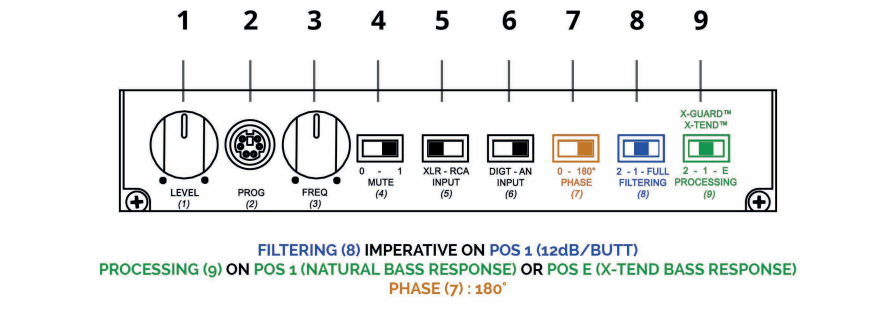


Control panel settings in SPEAKER-STEREO configuration
2 x LCR300/500 HI-PASS 12dB Butterworth



- **Switch (6) must be set to "AN" analog input.**
- Set switch (5) to XLR or RCA depending on the type of connector used.
- **Switch (8) Filtering: must be set to Position 1.**
- Switch (9) Processing allows the following crossover frequencies on the amplifier outputs (21):
  - Position 2 : High-pass speaker frequency 80 Hz.
  - Position 1 : High-pass speaker frequency 100 Hz.
  - Position E : High-pass speaker frequency 120 Hz.
- When the connections and settings have been made, turn on the device with the main power switch (11) and switch MUTE (4) to position 1. The volume control (1) must be positioned at the lowest position (fully counter clockwise) on start-up. Then adjust the volume accordingly.

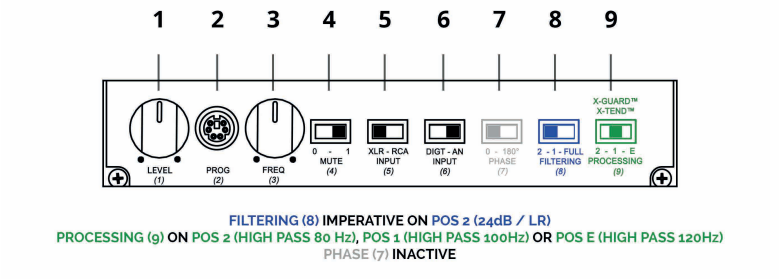
Points to note :
- The volume control (1) adjusts the volume on the L&R channels simultaneously.
- Switch (7) (Phase) does not operate on the amplifier powering the speakers. By default leave set to 0°.
- XLR (18) outputs should not be used in this application.
- S/PDIF digital links (19) and (20) should not be used in this application.
- CSC™ technology is inactive.



- **Switch (6) must be set to "AN" analog input**
- Set switch (5) to XLR or RCA depending on the type of connector used.
- **Switch (8) Filtering: must be set to Position 1.**
- Switch (7) PHASE **must be in the 180° position.**
- The multifunction controller (3) (FREQ) manages the cut-off frequency of the low-pass filter (variable from 35 to 150 Hz).
- Switch (9) PROCESSING must be set to
  - Position 2 = X-GUARD™ for SUB600.
  - Position 1 = X-GUARD™ for SUB600S.
  - Position E = activates the X-GUARD™ and X-TEND™. <u>This can only be used with SUB600S.</u>
- When the connections and settings have been made, turn on the device with the main power switch (11) and switch MUTE (4) to position 1. The volume control (1) must be positioned at the lowest position (fully counter clockwise) on start-up. Then adjust the volume accordingly.

Points to note :
- The volume control (1) adjusts the volume on the L&R channels simultaneously.
- XLR (18) outputs should not be used in this application
- S/PDIF digital links (19) and (20) should not be used in this application
- If the preamp does not have 2 pre out outputs it is possible to use a "Y" split cable
- When switch (9) is in the "E" position, the X-GUARD™ and X-TEND™ functions optimize the extension in the sub bass (20-35Hz band). This extension of the response at very low frequencies results in a lower SPL.

Control panel settings for SPEAKER-STEREO :
2 x LCR300/500 SETUP HI-PASS 24dB Linkwitz-Riley

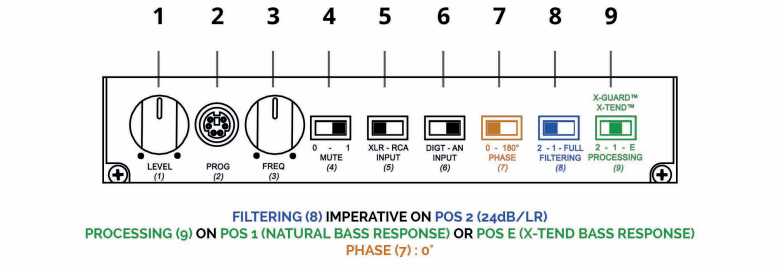


FILTERING (8) IMPERATIVE ON POS 2 (24dB / LR)
PROCESSING (9) ON POS 2 (HIGH PASS 80 Hz), POS 1 (HIGH PASS 100Hz) OR POS E (HIGH PASS 120Hz)
PHASE (7) INACTIVE

- **Switch (6) must be set to "AN" analog input**
- Set switch (5) to XLR or RCA depending on the type of connector used
- **Switch (8) Filtering: must be set to Position 2**
- Switch (9) Processing allows the following crossover frequencies on the amplifier outputs (21):
  - Position 2 : High-pass speaker frequency 80 Hz
  - Position 1 : High-pass speaker frequency 100 Hz
  - Position E : High-pass speaker frequency 120 Hz
- When the connections and settings have been made, turn on the device with the main power switch (11) and switch MUTE (4) to position 1. The volume control (1) must be positioned at the lowest position (fully counter clockwise) on start-up. Then adjust the volume accordingly.

Points to note :
- The volume control (1) adjusts the volume on the L&R channels simultaneously
- Switch (7) (Phase) does not operate on the amplifier powering the speakers. By default leave set to 0°
- XLR (18) outputs should not be used in this application
- S/PDIF digital links (19) and (20) should not be used in this application
- CSC™ technology is inactive

Control panel settings for SUB-STEREO :
2 x SUB600S SETUP LOW-PASS 24dB Linkwitz Riley



FILTERING (8) IMPERATIVE ON POS 2 (24dB/LR)
PROCESSING (9) ON POS 1 (NATURAL BASS RESPONSE) OR POS E (X-TEND BASS RESPONSE)
PHASE (7) : 0°

- **Switch (6) must be set to "AN" analog input.**
- Set switch (5) to XLR or RCA depending on the type of connector used.
- **Switch (8) Filtering: must be set to Position 2.**
- Switch (7) PHASE) **must be in the 180° position.**
- The multifunction controller (3) (FREQ) manages the cut-off frequency of the low-pass filter (variable from 35 to 150 Hz).
- Switch (9) PROCESSING must be set to
  - Position 2 = X-GUARD™ for SUB600.
  - Position 1 = X-GUARD™ for SUB600S.
  - Position E = activates the X-GUARD™ and X-TEND™. <u>This can only be used with SUB600S.</u>
- When the connections and settings have been made, turn on the device with the main power switch (11) and switch MUTE (4) to position 1. The volume control (1) must be positioned at the lowest position (fully counter clockwise) on start-up. Then adjust the volume accordingly.

Points to note :
- The volume control (1) adjusts the volume on the L&R channels simultaneously.
- XLR (18) outputs should not be used in this application.
- S/PDIF digital links (19) and (20) should not be used in this application.
- If the preamp does not have 2 pre out outputs it is possible to use a "Y" split cable.
- When switch (9) is in the "E" position, the X-GUARD™ and X-TEND™ functions optimize the extension in the sub bass (20-35Hz band). This extension of the response at very low frequencies results in a lower SPL.

OPTION B : BI AMPLIFICATION WITH 1 X RS700 + 1 GENERIC AMPLIFIER

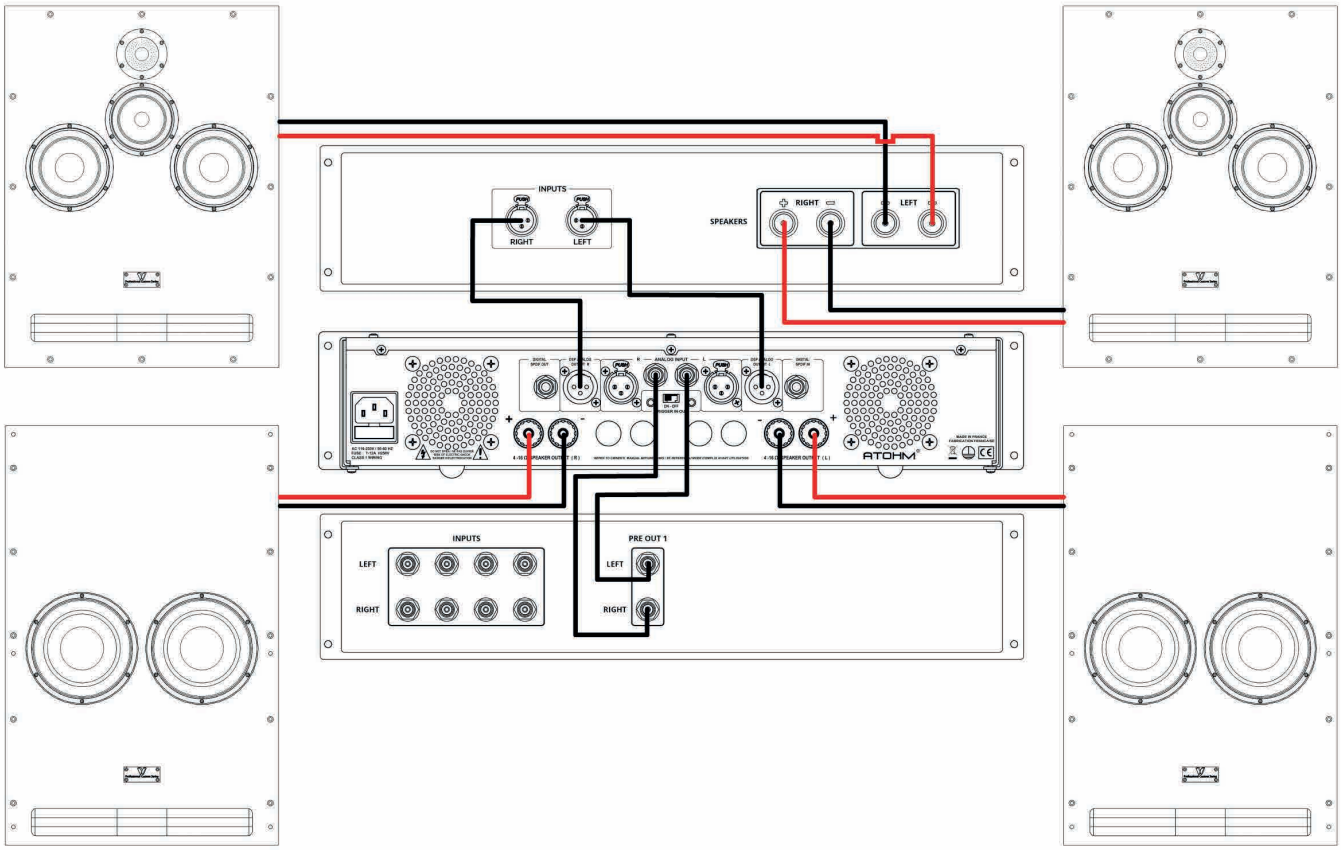
Two SUB600S are powered by an RS700 (« SUB » mode)
In SUB mode the X- GUARD™, U- GUARD™, T- GUARD™ technologies are active on the « 21 » amplifier outputs. The X-TEND™ technology can be activated exclusively on the SUB600S.

Two LCR500/300 peakers are powered by a generic amplifier without DSP, controlled by the XLR DSP ANALOG OUTPUT « 19 » of the RS700 that powers the SUB600S.

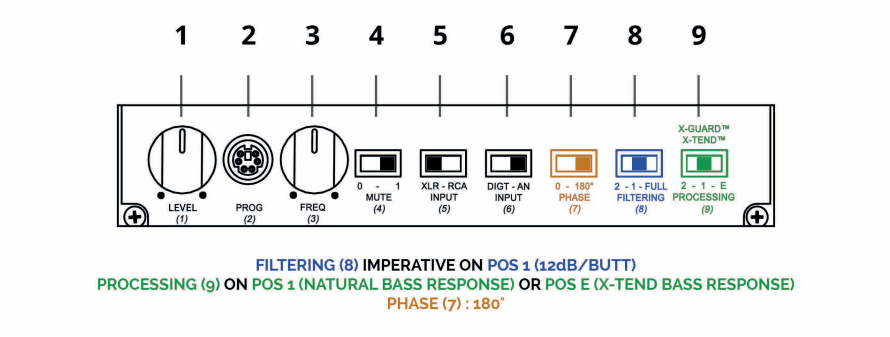
Reminder: Connections are to be made with all electronics turned off.

• Connect the L&R PREOUT output of your audio preamplifier to the ANALOG INPUT (16) or (17) of the first RS700 configured in « SUB » mode, and connect the amplifier power outputs (21) to the SUB600S.

• Connect the XLR DSP ANALOG OUTPUT (18) to the XLR inputs of the generic amplifier and connect the power outputs to the speakers.



RS700 IN « SUB » MODE WITH 2 x SUB600S
2 x SUB600S SETUP LOW-PASS 12dB Butterworth

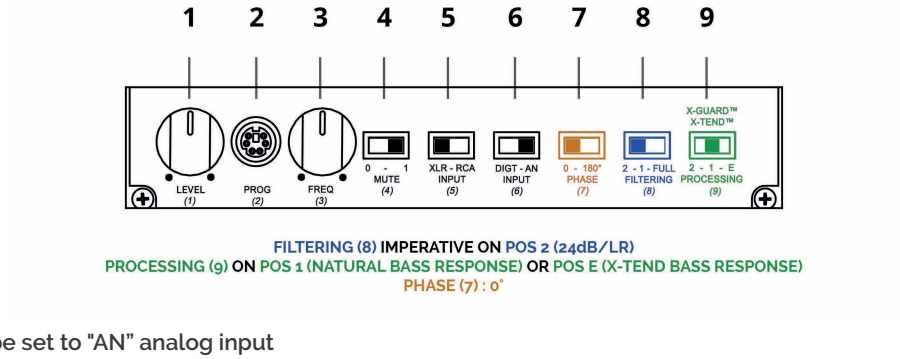


FILTERING (8) IMPERATIVE ON POS 1 (12dB/BUTT)
PROCESSING (9) ON POS 1 (NATURAL BASS RESPONSE) OR POS E (X-TEND BASS RESPONSE)
PHASE (7) : 180°

- **Switch (6) must be set to "AN" analog input**
- Set switch (5) to XLR or RCA depending on the type of connector used
- **Switch (8) Filtering: must be set to Position 1**
- Switch (7) PHASE) **must be in the 180° position.**
- The multifunction controller (3) (FREQ) manages the cut-off frequency of the low-pass filter (variable from 35 to 150 Hz).
- Switch (9) PROCESSING must be set to
  - Position 2 = X-GUARD™ for SUB600
  - Position 1 = X-GUARD™ for SUB600S
  - Position E = activates the X-GUARD™ and X-TEND™. This can only be used with SUB600S.
- When the connections and settings have been made, turn on the device with the main power switch (11) and switch MUTE (4) to position 1. The volume control (1) must be positioned at the lowest position (fully counter clockwise) on start-up. Then adjust the volume accordingly.

Points to note :
- The volume control (1) adjusts the volume on the L&R channels simultaneously
- XLR (18) outputs should not be used in this application
- S/PDIF digital links (19) and (20) should not be used in this application
- When switch (9) is in the "E" position, the X-GUARD™ and X-TEND™ functions optimize the extension in the sub bass (20-35Hz band). This extension of the response at very low frequencies results in a lower SPL.

RS700 IN « SUB » MODE with 2 x SUB600S
2 x SUB600S SETUP LOW-PASS 24dB Linkwitz Riley



FILTERING (8) IMPERATIVE ON POS 2 (24dB/LR)
PROCESSING (9) ON POS 1 (NATURAL BASS RESPONSE) OR POS E (X-TEND BASS RESPONSE)
PHASE (7) : 0°

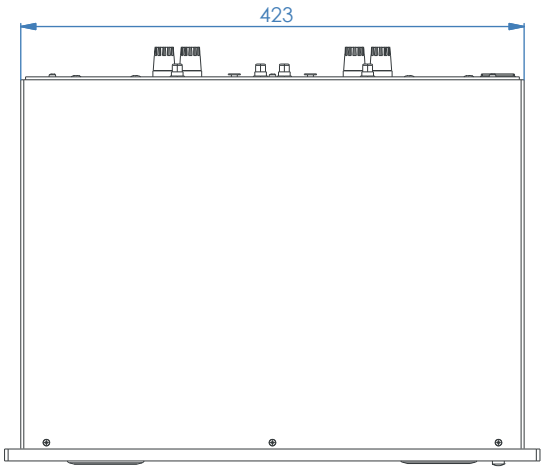
- **Switch (6) must be set to "AN" analog input**
- Set switch (5) to XLR or RCA depending on the type of connector used
- Switch (8) Filtering: must be set to Position 2
- Switch (7) PHASE) must be in the 0° position.
- The multifunction controller (3) (FREQ) manages the cut-off frequency of the low-pass filter (variable from 35 to 150 Hz).
- Switch (9) PROCESSING must be set to
  - Position 2 = X-GUARD™ for SUB600
  - Position 1 = X-GUARD™ for SUB600S
  - Position E = activates the X-GUARD™ and X-TEND™. This can only be used with SUB600S.
- When the connections and settings have been made, turn on the device with the main power switch (11) and switch MUTE (4) to position 1. The volume control (1) must be positioned at the lowest position (fully counter clockwise) on start-up. Then adjust the volume accordingly.

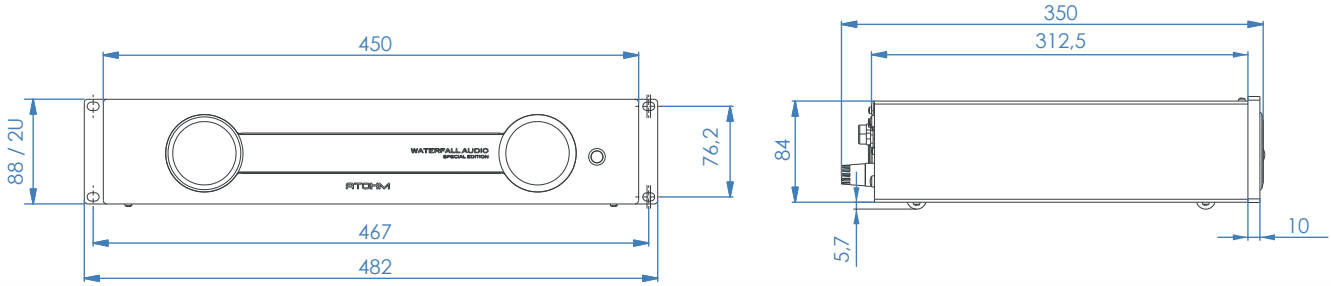
Points to note :
- XLR (18) outputs should only be used with an amp without DSP (so as not to induce any latency)
- S/PDIF digital links (19) and (20) should not be used in this application
- The volume control (1) adjusts the volume on the L&R channels simultaneously
- When switch (9) is in the "E" position, the X-GUARD™ and X-TEND™ functions optimize the extension in the sub bass (20-35Hz band). This extension of the response at very low frequencies results in a lower SPL.

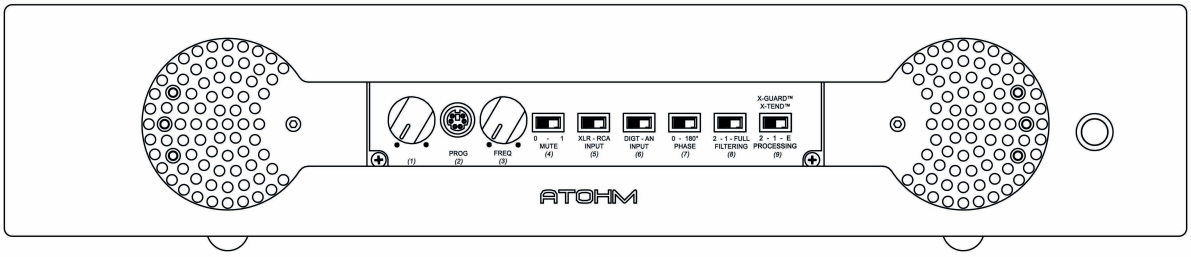
SPECIFICATIONS

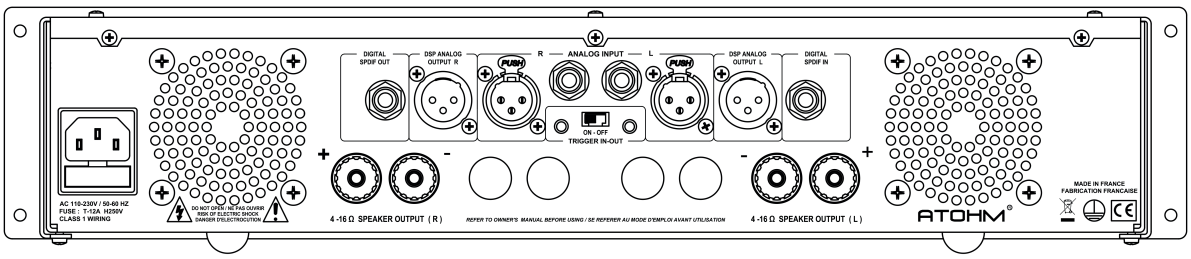
RATED POWER/4 OHMS/SINE WAVE 12 SECONDS BOTH CHANNEL WORKING	2 x 700 W RMS
NOMINAL OUTPUT IMPEDANCE	4 - 16 Ohms
MIMIMUM OUT OUT IMPEDANCE (ON IMPEDANCE CURVE)	3 Ohms
PEAK CURRENT (AMP PROTECTION THRESHOLD)	2 x 30 A
FREQUENCY RESPONSE IN « SPEAKER » MODE	2 Hz - 45 kHz (-3dB)
PHASE PHASE ROTATION IN « SPEAKER » MODE	2° @ 30 kHz
FREQUENCY RESPONSE IN « SUB » MODE	2 Hz à 35-150 Hz (regl. 12 or 24 dB/oct) or 2 - 350 Hz (LFE) / (-3dB)
DISTORTION THD+N AT RATED POWER	∞ TO 0.06%
DAMPING FACTOR (1 KHZ / 4 OHMS)	> 1000
A TO D/D TO A CONVERSION « PREMIUM »	2 inputs / 4 differential outputs - 32-bit
DSP TECHNOLOGY	32 bits - 295 MHz Sigma DSP
SAMPLING FREQUENCY	96 kHz - 24-bit audio resolution
LATENCY (INCLUSIVE OF DSP)	1.95 ms
SIGNAL-TO-NOISE RATIO	110 dB
CROSSTALK (1 KHZ @ RATED POWER)	< - 95 dB
MAXIMUM INPUT LEVEL (RCA - XLR)	+22 dBu (XLR inputs on INA type differential audio receiver)
MAXIMUM OUTPUT LEVEL (XLR)	+16 dBu (5Vrms-diff.) max / U-GUARD™
INPUT IMPEDANCE	XLR : 18 kOhms/2 (com) - 36 kOhms (diff) - RCA ; 21 kOhms
OUTPUT IMPEDANCE (XLR)	480 Ohms/2 (com) - 960 Ohms (diff)
MAXIMUM GAIN (DEPENDING ON INTERNAL SWITCH 0 OR +15DB)	29.8 dB / 44.8 dB
ACTIVE EXCURSION CONTROL («SUB» MODE ONLY)	X-GUARD™ Processing
LIMITER « SOFT CLIPPING » («SUB» & «SPEAKER» MODE)	U-GUARD™ Processing
AMPLIFIER THERMAL PROTECTION (POWER STAGE, «SUB» & «SPEAKER» MODE)	T-GUARD™ Processing Level drop of 15 dB with auto reset after 20 sec
THERMAL PROTECTION ENCLOSURES (LOUDSPEAKER MOVING COILS, «SUB» & «SPEAKER» MODE)	T-GUARD™ Processing- Power and duration according to parameters. Level drop of 15 dB with auto reset after 20 sec
SUB BASS EXTENSION PROCESSING («SUB» MODE ONLY)	X-TEND™ Processing Response extension up to 20 Hz (SUB600S only)
CINEMA SCREEN COMPENSATION («SPEAKER» MODE ONLY)	Processing CSC™ Progressive correction of frequency response (1 - 20 kHz band)
AVAILABLE FILTERS «SPEAKER» MODE (SETTINGS DEPENDANT)	High pass 80/100/120 Hz - 12 or 24 dB / oct on speaker Adjustable low pass 35 to 150 Hz - 12 or 24 dB / oct on XLR outputs
AVAILABLE FILTERS «SUB» MODE (SETTINGS DEPENDANT)	Low pass adjustable 35 to 150 Hz - 12 or 24 dB / oct on speaker outputs High pass 100 Hz - 12 or 24 dB / oct on XLR outputs
PROPRIETARY S/PDIF DIGITAL LINK	S/PDIF IN & OUT via RCA 75 Ohms / 96 kHz - 24 Bit resolution
INDICATOR LEDS	2 blue leds : Powered On 2 red leds : U-GUARD™ and T-GUARD™ 2 green leds : X-GUARD™
COOLING & REGULATION	2 «low noise » fans - 2500 RPM Triggering at approx. 2 x 40W RMS @ 22°C (Ambient Temp.) 5° - 40°C
AMBIENT TEMPERATURE OPERATING RANGE	5° - 40°C
SHORT CIRCUIT PROTECTION	Yes
TRIGGER VOLTAGE (MONO JACK 3.5MM)	12V DC
INPUT VOLTAGE	(auto) 100 - 240V / 50 - 60 Hz
POWER CONSUMPTION	Switched off in trigger control (standby): 400 mW Mute (amp off): 14W / Rest: 36W / Maximum peak: 2300W
ACCESSORIES INCLUDED	2 rack mount adapters / 4 hemi-sperical feet 1 power cord 3 x 1.5^2 - 16 A Length : 1.5 m
DIMENSIONS (W x H x D) (H= 2U)	482 x 88 x 348 mm (rack) - 450 x 88 x 348 mm (standard)
WEIGHT	8.7 Kg

MEASUREMENTS IN MILLIMETERS









CLEANING

For cleaning **(with the amplifier turned off)** you can use a window cleaner with a soft, lint-free cloth.
Never use any kind of abrasive product.

GUARANTEE

Waterfall speakers are guaranteed for 5 years - covering both parts and manufacturing defects. Amplifiers are guaranteed for 2 years.
For detailed warranty conditions see **www.waterfallaudio.com** (warranty section).

WATERFALL AUDIO

ZA les praderies - 83 570 Carcès - France
waterfallaudio.com

Made in France. 5-year Parts & Manufacturing warranty (excliuding amplifiiers : 2year warranty). Our research and development policy allows us to be able to these develop products. Waterfall Audio reserves the right to modify these features without notice.

All drivers and amplifiers are developed and manufactured by ATOHM (France).