REASONS FOR CHOOSING
RS700 WATERFALL SPECIAL EDITION
POINT OF SALES

ATOHM, historical partner & exclusive supplier of Waterfall's drivers has developed the RS700-WATERFALL AUDIO SPECIAL EDITION, a highly technical DSP amplifier for the most demanding private cinema installations.

Find out the great features this amplifier will bring to your customer's installation and why choose it **especially for low frequencies use.**

1) General maters

- **POWER**

One of the first parameter often taken into account by the consumer is « how many Watts? ».
Low frequencies are very demanding especially in home theater applications where a lot of power could be needed to reproduce the enormous impact in some movies. Having a lot of available power is necessary.

But this classical question needs to get the right answer and it is important to know « how to read » some manufacturer's specifications.
Unfortunately for the past decades some manufacturers are "playing" with figures optimizing them for « marketing » reasons.

In some technical specifications you could possibly read information like « one channel driven, 1kHz, 10% distortion, 20ms duration… » These are laboratories measurements and do not represent "real life" home situation meaning the amplifier is far to deliver the official figures. In such cases the real amount available is around 1/3 of what is claimed.

If not indicated, the best way to know what an amplifier can deliver is to check the claimed RMS power versus power consumption. Quite often power delivered is higher than the power consumption!
No need to be an engineer to understand that this is against the laws of physics in electricity! No one can generate more power that it consumes.
It is also important to understand that in every conversion there is a loss. The efficiency of a device is always inferior to 100%.
A 70 % efficiency rate is already very high. As an example a 1000W power consumption amplifier should give at its best 700W. Then this amount will to be split on the different channels. A quick calculation will give an idea of reality

- RS700 delivers a full 2 x 700Watts, a total of 1.4 KW with a max power consumption of 2.3 KW according to the laws of physics and not marketing figures.
- RS700 is built on the best configuration: a true double mono architecture whereas most of the amplifiers share a common power supply for 2 channels (or more)

- **CONNECTIVITY**

1. RS700 offers true balanced/unbalanced inputs
2. RS700 offers an innovating digital link : SPDIF IN/OUT (to be used only between two RS700)
3. RS700 offers a 12V trigger IN/OUT
4. RS700 offers DSP processed XLR outputs for specific stereo bi-amp use in professional stereo applications

- **QUALITY OF BUILT AND ATTENTION TO DETAILS**

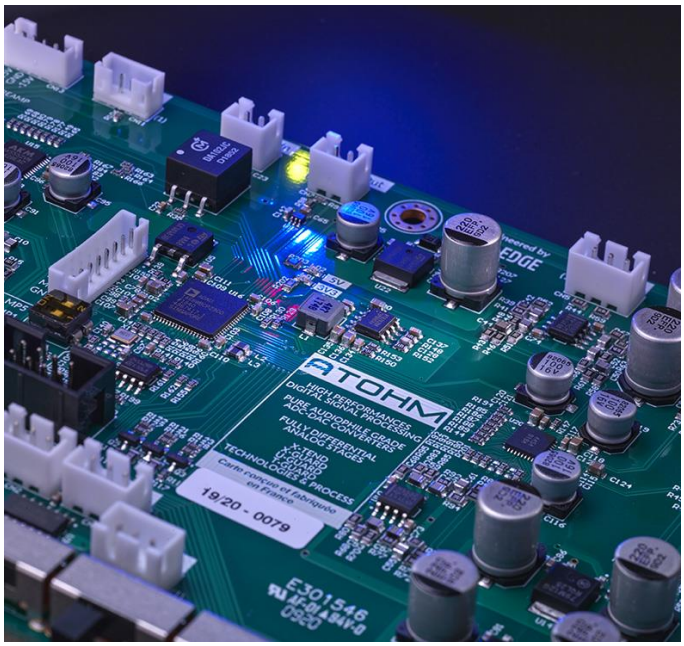
RS700 represents more than 6000 hours of R&D by ATOHM laboratories and is fully assembled in ATOHM production plant based in a part of France near Besançon known for being a « high precision location » for the mechanical industry.
Looking at the front part of the RS700 made out of massive aluminum will immediately make you feel the difference between most of the regular amplifiers.

Attention to details shows the great care taken into the product's design; for example the front aluminum center panel avoids unauthorized users to have direct access to the settings. The front removable fabric grills guarantee a perfect filtering of the air going into the amp and allow for quick maintenance, unlike many others. Rack plate accessories are also removable if needed.

2) KEY innovations embedded in the RS700-WATERFALL AUDIO SPECIAL EDITION

Even if you select a great amplifier, power without control could put your installation at risk when playing at extremely high SPL levels

The most important part of RS700-WATERFALL AUDIO SPECIAL EDITION is its fantastic ultra-high performance **DSP**. It has been developed to provide the absolute optimization between the amp's power stages and the speakers or sub by knowing their exact technical characteristics.



- RS700 DSP enables the power stages to work in SUB mode or SPEAKER mode.

- RS700 DSP works in real time cycles varying from 12 to 3 seconds depending of the level of power and controls all the driver's parameters with three innovating processing technologies: **X-GUARD™ (SUB mode only) / U-GUARD™ (all mode)/ T-GUARD™(all mode)**

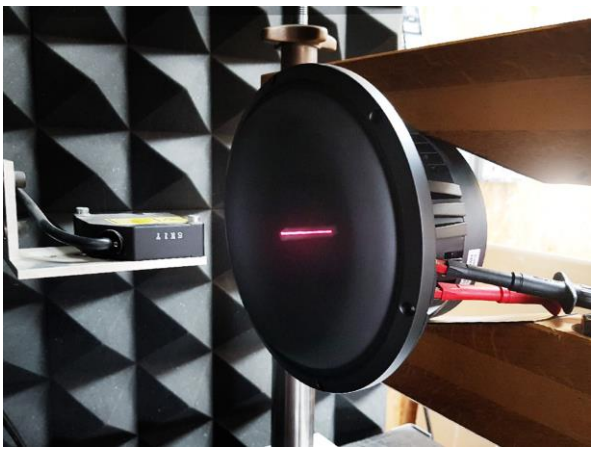
- RS700 DSP also provides two acoustical innovations:
  X-TEND™ Processing (SUB mode only) & CSC™ Processing (SPEAKER mode only)

- RS700-WATERFALL AUDIO SPECIAL EDITION with W1.0 program have been carefully designed and validated for SUB600/SUB600S/LCR300/LCR500

A. ***Processing X-GUARD™ (SUB Mode only)***

Acoustical engineers perfectly know the rules about bass reflex enclosures. They provide maximum efficiency down to the tuned frequency; below that point the SPL level is decreasing with a 24dB slope and mechanical power handling of the driver is dropping.
In order to protect drivers from dangerous cone excursion at extremely low frequencies all manufacturers of active subwoofer implement a subsonic crossover and usually also a power limitation to provide clipping of the amplifier.
If efficient to protect the bass driver these options create **phase rotation** (due to subsonic filter) and **degrade global dynamic** (power limitation).

X-GUARD™ processing avoids these drawbacks as the DSP analyses in real time frequencies & signal amplitude sent to the driver.
Only the « dangerous zone » is removed if needed making sure the drivers do not reach critical mechanical limits.
X-GUARD™ keeps signal integrity by preserving phase and dynamic, therefore ensuring pure and powerful bass at any time with total security.



SUB600S driver reaches an amazing 40mm cone excursion (+/-20mm)

X-GUARD™ processing implemented in RS700-WATERFALL AUDIO SPECIAL EDITION is specific to SUB600 & SUB600S and validated by sophisticated laser measurements with Klippel software.

B. ***Processing U-GUARD™ (all mode)***

Clipping occurs when power stages of an amplifier reach their maximum capacities. Clipping is critical either for the power stages themselves or for any speaker or sub with high risk of destroying the voice coils. Burnt voice coils are not taken under warranty by any manufacturer.

In order to limit this phenomenon some amplifiers are incorporating analog circuits with « soft clipping » solution.

U-GUARD™ processing is going further by preventing any clipping. The real time analysis of the DSP controls the amplitude of the signal and avoids reaching this critical point.

U-GUARD™ processing protects both the speaker/subwoofer and the amplifier itself.

C. Processing T-GUARD™ (all mode)

While listening at very high SPL for a long time both power stages of the amplifier and voice coils of the drivers will have an increase of temperature after a certain period of time.
Voice coils can reach temperature over 150/200°C. Even if these temperature are handled by the drivers, efficiency will drop. This phenomenon is known as « heat compression ».

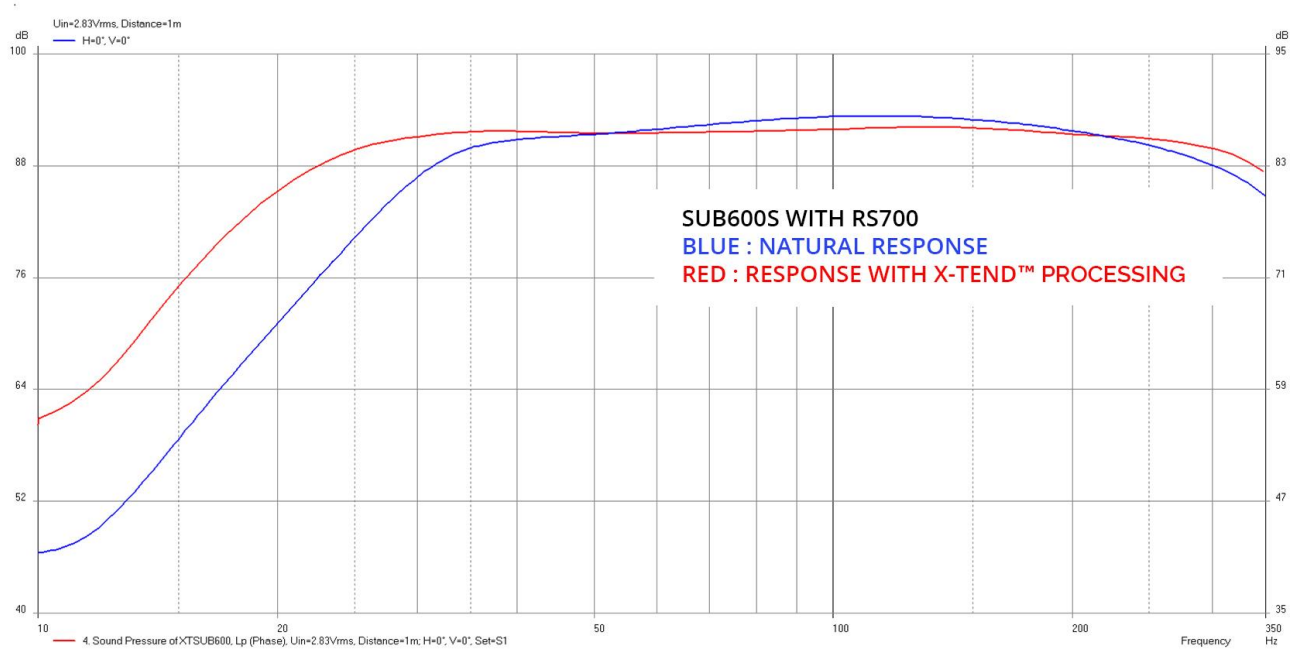
T-GUARD™ processing handles thermal monitoring in real time (with cycles varying from 12 to 3 seconds) by checking power stage temperature and calculating amount of power sent to the drivers. Depending of the set up (SUB600, SUB600S, LCR300, LCR500) DSP will estimate heat behavior of the drivers and will shut down the level by 15 dB before reaching a critical zone for both drivers or amplifier.

T-GUARD™ processing protects both the speaker/subwoofer and the amplifier itself from critical heat in extreme cases.

D. Processing X-TEND™ (SUB Mode only)

X-TEND™ processing relies on the perfect knowledge of the drivers and bass reflex parameters of the enclosure. A complex processing optimizes the electrical signal by correcting group delay and extending bass response according to these parameters.

X-TEND™ processing improves low frequency response, phase and impulse response.



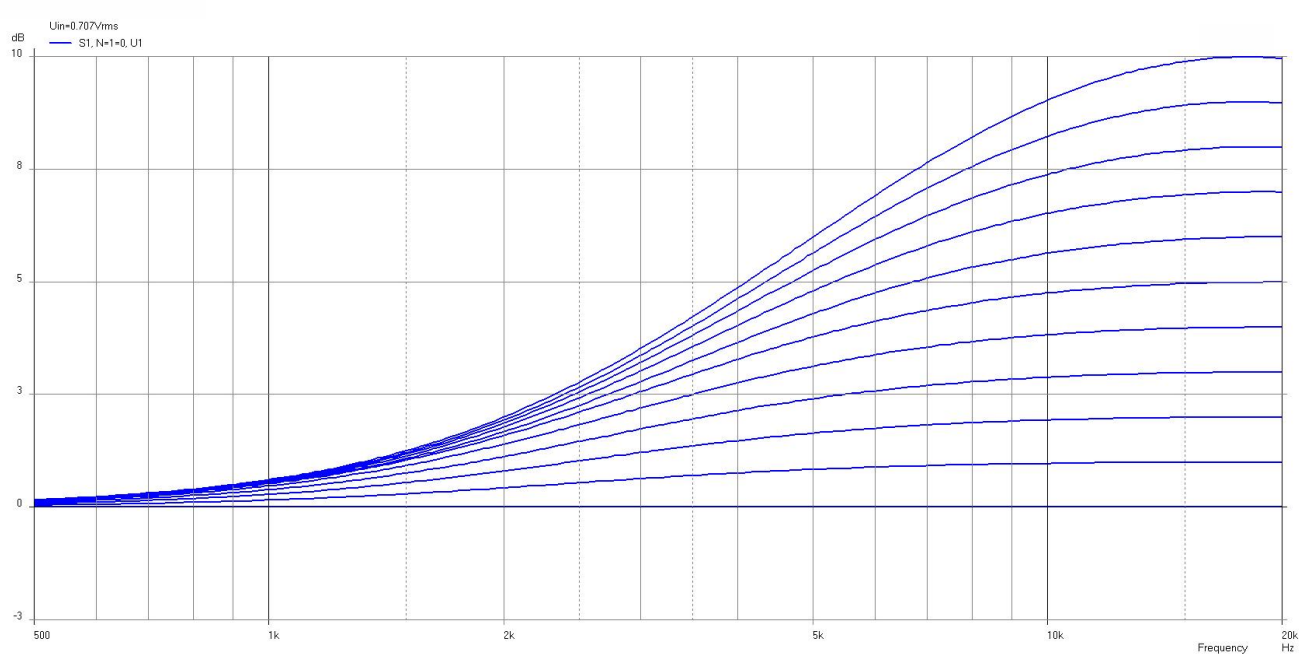
Note: X-TEND™ processing provides more extension and works simultaneously with X-GUARD. It has been optimized for SUB600**S** only. Depending of the signal profile at extremely low frequencies max SPL might be reduced in some cases.

E. CSC™ <u>Processing</u> (« SPEAKER » mode only):

CSC™ <u>Processing</u> (*cinema screen compensation)*

Projection screens are made with materials optimizing image contrast. Depending on their technical characteristics they impact the frequency response in different ways due to absorption and in some cases reflections.

CSC™ Processing is based on screen acoustical parameters and allows a fast and efficient correction above 1 kHz.



<u>Note</u>: Screen made with acoustically transparent fabric will have little impact (1 to 1.5 dB) in the upper frequencies. Micro perforated screen will have a stronger impact on the frequency response over 1 kHz.

The purpose of the RS700-WATERFALL AUDIO SPECIAL EDITION is to offer your customer the best performances with a perfect control of all the parameters and a total safety, making it the perfect amplifier to work in the cinema application with the Waterfall “Pro Custom Series” sub & speakers.