ATOHM®

OWNER'S MANUAL
RS 700 « GT EDITION » V1.2

PLEASE READ BEFORE USE

• T-GUARD™ • U-GUARD™ • X-GUARD™ • X-TEND™
EXCLUSIVE DIGITAL PROCESSING

PRECAUTIONS & WARNINGS

The lightning flash with arrowhead symbol, within the 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.

Before installing your amplifier, this user manual must be read thoroughly. If you have any doubts about how to connect the equipment, ask for advice from your dealer.

- Do not expose to moisture (dripping, splashing) and do not introduce any foreign bodies into the device.
- Do not use near an excessive heat source (heating radiator, etc.).
- The power cord provided with the device meets power requirements. It should never be replaced with a lower capacity model.
- Only connect the device to the type of power supply indicated on the device labeling or specific label. Before connecting to the power supply, make sure your electrical installation can support the consumption of this device and has a ground line. If in doubt, consult your electrician or the seller of your device.
- If the power cord does not fit perfectly into your power outlet, consult an electrician and replace the outlet. The power cord should not be stepped on, crushed or pinched. The wall outlet must remain accessible.
- Do not overload wall outlets, multiple outlets or electrical extensions, as this poses a risk of fire or electrical shock.
- Never open the device when it is connected to the power supply (risk of electrocution). When making an internal adjustment, always make sure to put the cover back on before connecting the device to the power supply.
- Turn the amplifier "off" when not in use. During a storm or during long absences, make sure to unplug the power cord (3).
- Ventilation: Ensure that the fan outlets are never blocked and can evacuate heat into a sufficient large volume.
- Fuse: In case of complete shutdown, check the power fuse (after disconnecting the power cord). For any fuse replacement, use only an identical model to the original. If the problem persists, contact your dealer.
- Never connect a power output terminal (rep 21) of the amplifier to ground/earth (device chassis).
- Never interchange the "+" and "-" of the power outputs (REF 21) between the right and left channels.
- Never connect 2 pairs of speakers to the amplifier.
- Be careful to avoid short circuits on the speaker cables and the relevant terminals.
- Never manipulate switches 5,6,7,8,9 when the "Mute" switch (4) is on 1. Always do it when it is in position 0.
- For exterior cleaning of the device (not connected to the power supply), use only a soft, non-shedding, dry cloth (we recommend using soft "microfiber" cloths). If the use of alcohol or soap-based products is possible, never use products such as solvents or detergents.
-Once a year or according to their dirtiness, the ventilation grids (REF10) should be removed to be cleaned. This cleaning is done outside with compressed air (preferably dehumidified and oil-free - prefer a spray can).
- Do not use any accessories other than those supplied with the device or explicitly recommended by the manufacturer.
- Transportation: The device should always be transported in its original packaging. When using a cart, be careful when moving the device to avoid injury from tipping over.
- Do not leave packaging bags within reach of children, as there is a risk of suffocation.
- In case of a technical problem, entrust this product to your dealer and/or an authorized service station.

Failure to follow these usage guidelines will result in the immediate voiding of the manufacturer's warranty.

PREAMBLE

Thank you for choosing our high performances ATOHM RS700 power amplifier "GT EDITION" for your audio system.

With about 6000 hours of R&D, the RS700 power amplifier is highly innovative and resolutely "hi-fi". It is based on a "double mono" structure driven by a high-performance analog/digital board incorporating a DSP. Its signal processing capabilities are used to drive the power stages (limiting, soft clipping, phase and amplitude correction, etc.) but also and especially to offer advanced coupling of this amplifier with speakers through exclusive processing based, among other things, on our knowledge of electroacoustics and, ultimately, on the exact specifications of our driver units and coupled speakers.

The device's topology, the vast possibilities of programming and digital chaining make the ATOHM RS700 base very versatile. Each unit is fully assembled, wired, controlled, and programmed in our workshops. Depending on the applications, different versions are developed and offered.

The ATOHM RS700 amplifier in this "GT EDITION" is a power unit operating in 4 modes. The first mode (GENERAL mode) allows you to "drive" any type of speakers with power, dynamism, finesse, and precision. The U-GUARD processing limits the power stages just before they saturate and provides a soft clipping. Just like the other three modes, this first setup allows, if needed, to (digitally) filter the speakers with a "high-pass" filter in order to truly relieve them in the bass region and to associate, via the XLR outputs, one or two subwoofers to relieve them in the lower frequency spectrum.

The other three modes (GT1-GT2 and GT3) are specific to each model of our GT SERIES speakers. Amplification and speakers then work in symbiosis. The exclusive X-GUARD, T-GUARD, U-GUARD, and X-TEND processing then come into action, allowing an increase in the performance of our GT SERIES speakers in order to extract their ultimate essence.

Given the technologies and powers available, it is highly recommended to entrust the commissioning to your dealer or a professional.

Before installation, the user should read this manual. He or she must also ensure the correct internal configuration (choice of operating mode) of the device and that it corresponds well with the connected audio devices (especially the speakers).

The three specific modes "GT1, GT2, and GT3" are very precisely calibrated for our ATOHM GT1, GT2, and GT3 speakers. They should never be used with other speaker models.

During installation, all audio system components must be turned off.

We decline any warranty in case of error in configuration and/or improper setup implementation.

NOTES REGARDING ATOHM'S EXCLUSIVE PROCESSING

• U-GUARD™ Processing (All Modes)

The U-GUARD™ processing aims to reduce the formation of square signals (clipping distortion) at the output of the device and to avoid the saturation of the power stages at maximum power. The DSP constantly measures the amplitude of audio signals. When it exceeds the set thresholds, the processing limits the amplitude of the signal while maintaining its original form as best as possible. This process is calibrated so that the power stages are never in saturation.

Typical analog circuits, often referred to as "soft clipping," provide a gentler clipping than a square signal. However, they are often placed in a feedback loop and only react once the first rising front is established. U-GUARD™ processing goes further by acting from the first rising front and maintaining a signal shape that is closer to the original and more pleasant to listen to. It also contributes to protecting the power stages and speakers in extreme cases. This same processing is also applied to the low-level outputs to avoid any saturation on the XLR outputs.

In GT1 and GT2 modes, it is also U-GUARD™ that lowers the output power to make it compatible with these two speaker models coupled with X-GUARD™ and X-TEND™ processing.

• T-GUARD™ Processing (General and GT1-GT2-GT3 Modes)

The power stages (class D) and their switch mode power supplies are designed to reproduce musical signals and noise when considering a home theater use. Despite their excellent efficiency, from a thermal point of view, they are not designed to deliver their full power for long periods on fixed signals. (which does not exist in an audio signal)

In "general" mode, the T-GUARD™ processing manages the thermal parameters of the power stages in real-time. It eliminates certain situations where the device is used inappropriately.

The DSP constantly analyzes and measures the audio signals transmitted to the power stages and calculates the average power over a sliding period of 12 seconds. At the exceeding of the set thresholds, the algorithm triggers a drop of -18 dB on all outputs of the device (power outputs and XLR outputs) to greatly reduce the power level for a period of approximately 25 seconds.

In "GT1 GT2 and GT3" modes, the thermal limits are no longer those of the power stages but those of each speaker model. In this context, the algorithm calculates an average over a sliding period of 6 seconds and compares this average to the respective thresholds of each model. The high-frequency speakers have a lower permissible power compared to the boomers. The protection therefore includes a weighting for high frequencies.

> ***Note 1:*** *This processing does not protect the system against installation, handling, and usage errors such as (but not limited to) inappropriate connection, manipulation of cables (modulation, networks, etc.) with an under powered device, full-level switch-flipping, feedback, inappropriate measurement signal, short-circuits, etc.*

> ***Note 2****: Short-circuit protection is directly applied to the power stages. It intervenes in case of a short-circuit on the connections, but also in some cases of damage to speakers & filters. It is generally indicated by micro-cuts with a more or less significant degradation of the signal depending on the sound level. If this occurs, the amplifier must be immediately turned off. The wiring & speakers must undergo a complete inspection before being put back into operation. If in doubt, consult your dealer and/or an authorized service center.*

• X-GUARD™ Processing (GT1-GT2-GT3 modes only)

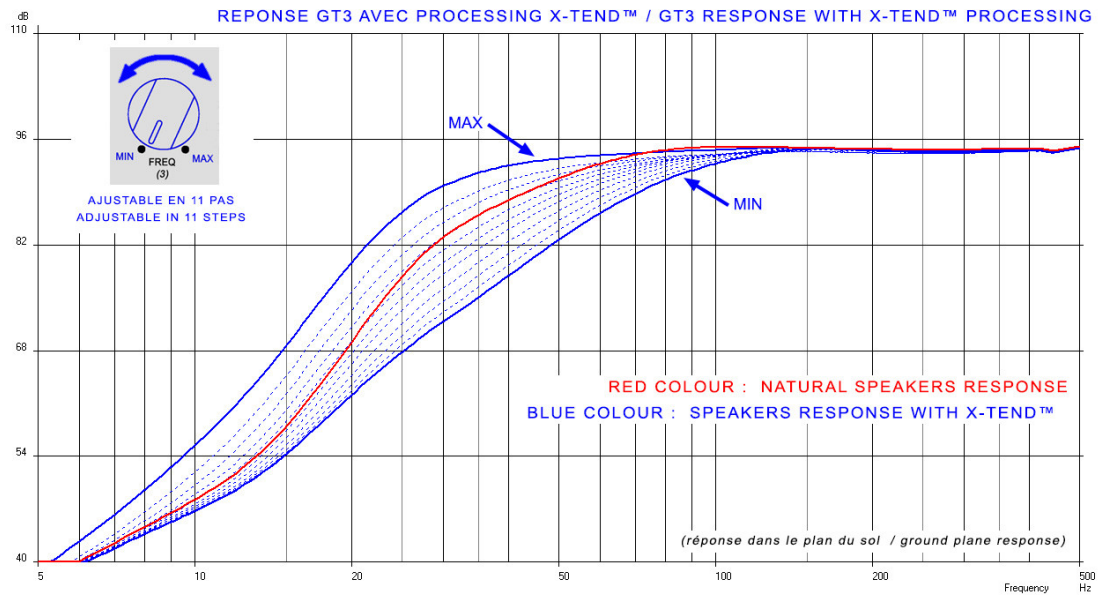
The X-GUARD™ processing ensures that the excursions of the bass speakers never exceed an absolute limit (too high distortion and risk of breakage). This excursion control processing constantly analyzes the input signal and its parameters (especially frequencies/amplitude) and compares them to a set of instructions. When the signal becomes greater than the latter, it intervenes immediately to limit the amplitude of the signal without inducing audible artifacts. X-GUARD™ preserves the integrity of the signal, its phase, and does not introduce group delay. Its presence is completely undetectable to any measurement when it does not intervene on the signal. This technology allows for the exploitation of all the available dynamics of the bass speakers without putting them in danger. To some extent, the X-GUARD™ processing even allows for the reproduction of a musical range at slightly higher sound levels.

> ***IMPORTANT NOTE 1 (GT1, GT2 or GT3 mode):*** *X-GUARD™ is very precisely calibrated for the bass-reflex loads of the GT1-GT2 and GT3 speakers.* ***It is therefore mandatory never to partially or totally obstruct the vents*** *(especially with the foam provided with the speakers). Given the available power, such action can lead to the destruction of the bass speakers. We will decline any warranty claim in the case of destruction due to implementation and setup error.*
>
> ***NOTE 2:*** *FOR HOME THEATER USES (all modes): The various processes in use in the device induce a latency of approximately 7.5ms. This value must be taken into account in the setting of your audio-video processor. It should be noted that the subwoofer outputs (XLR) remain perfectly synchronized with the power outputs regardless of the mode or setting used.*

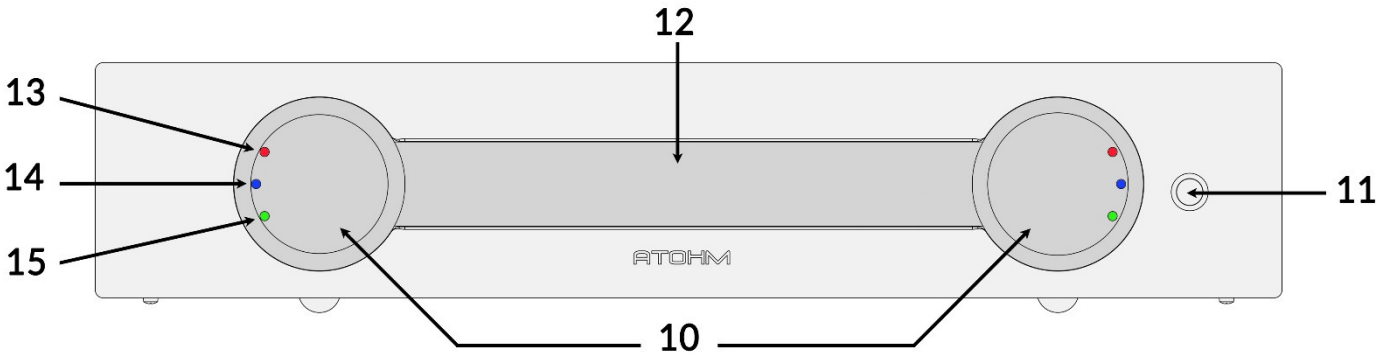
• X-TEND™ Processing (GT1-GT2-GT3 modes only)

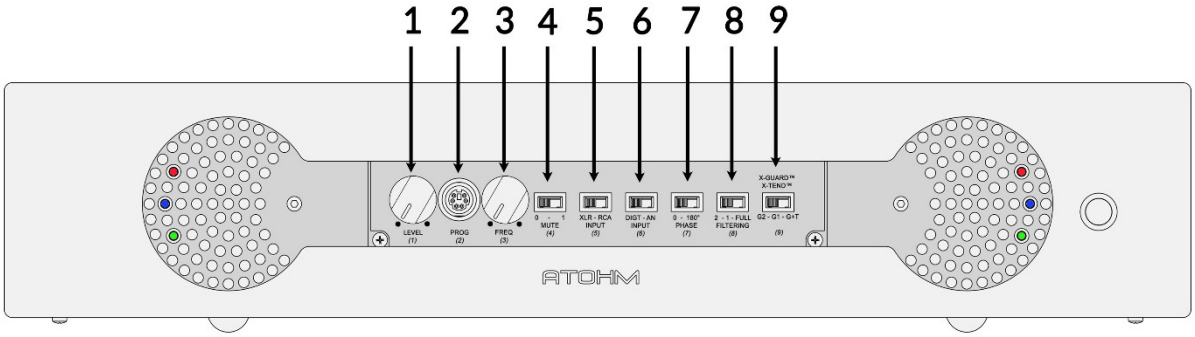
The X-TEND™ processing uses the precise knowledge of the bass-reflex speaker and its load, which has an acoustic response equivalent to that of a high-pass filter. By conditioning the electrical signal relative to this model, the X-TEND™ processing allows for the "reconstruction" of the speaker's response in the low frequencies. Unlike a simple "boost" (EQ), its action aims to improve the group delay (especially deviations due to vents and speaker alignment). Adjustable, it also allows you to choose the extension in the low frequency spectrum and, depending on the setting, obtain a notably extended response compared to a conventional amplifier. This adjustable response also allows, to some extent, to more or less "dose" the extreme bass depending on the room acoustics and speaker placement. The extension of the response in the extreme bass causes larger excursions on the speakers. The X-TEND™ processing works in conjunction with X-GUARD™ to maximize the speakers without ever exceeding their limits.

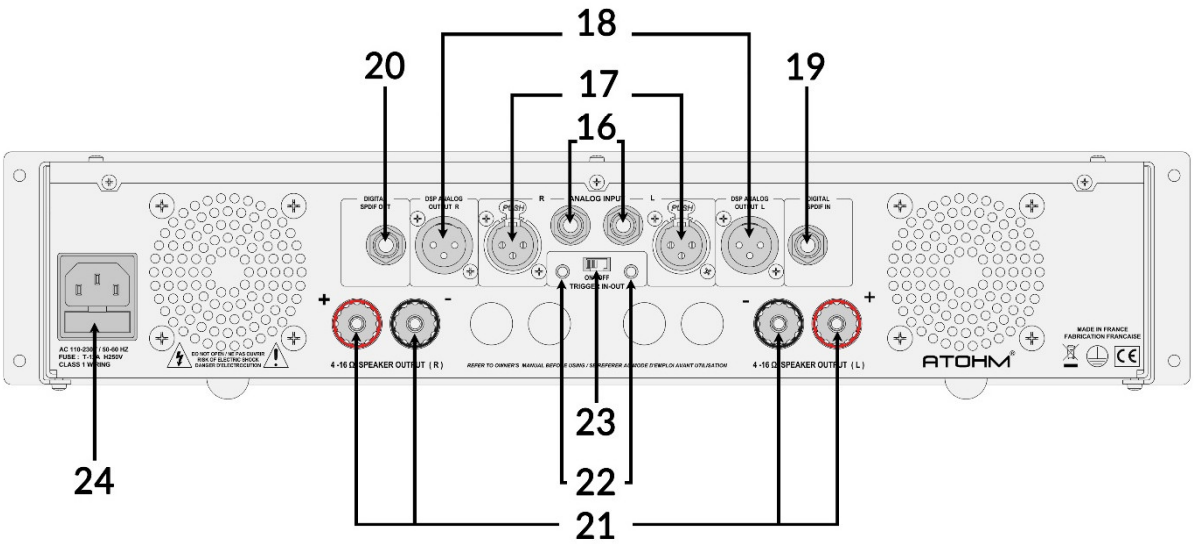
> ***NOTE 1:*** *FOR HOME CINEMA USES (GT1-GT2 and GT3 modes): The X-TEND processing is not compatible with home cinema use where the bass is managed/filtered by the audio-video processor's bass management.*



LANDMARKS AND GETTING STARTED







1- Input level potentiometer

2- Programmation connector (for factory using only)

3- Multifunction digital potentiometer (can respond differently based on certain settings)

4- Mute (position 0 = no output)

5- Analog input selector (RCA or XLR)

6- Digital input selector (not used in this amplifier version)

7- Phase selector for XLR output (subwoofers)

8- Filtering selector

9- Processing selector (can respond differently based on certain settings)

10- Venting grids

11- Main power switch

12- Aluminum control panel (setting protection)

13- Red LEDs – indicator for U-GUARD™ and T-GUARD™ thermal protection

14- Blue LEDs - Power-on indicator

15- Green LEDs –X-GUARD™ processing indicator

16- Low level asymmetrical RCA input

17- Low level asymmetrical XLR input

18- Low level asymmetrical XLR ouputs (for subwoofers)

19- S/PDIF digital input RCA 75ohms (not used in this amplifier version)

20- S/PDIF digital output RCA 75ohms (not used in this amplifier version)

21- Speakers power output (left and right)

22- 12V dc Trigger input output (3.5mm jack)

23- Trigger selector

24- Power inlet with fuse holder

Included accessories: 1 power cord - 1 BTR key for the aluminum panel

Please note that the digital inputs and outputs are exclusively intended for daisy chaining our devices. In the context of this "GT EDITION" version, these inputs and outputs are not usable.

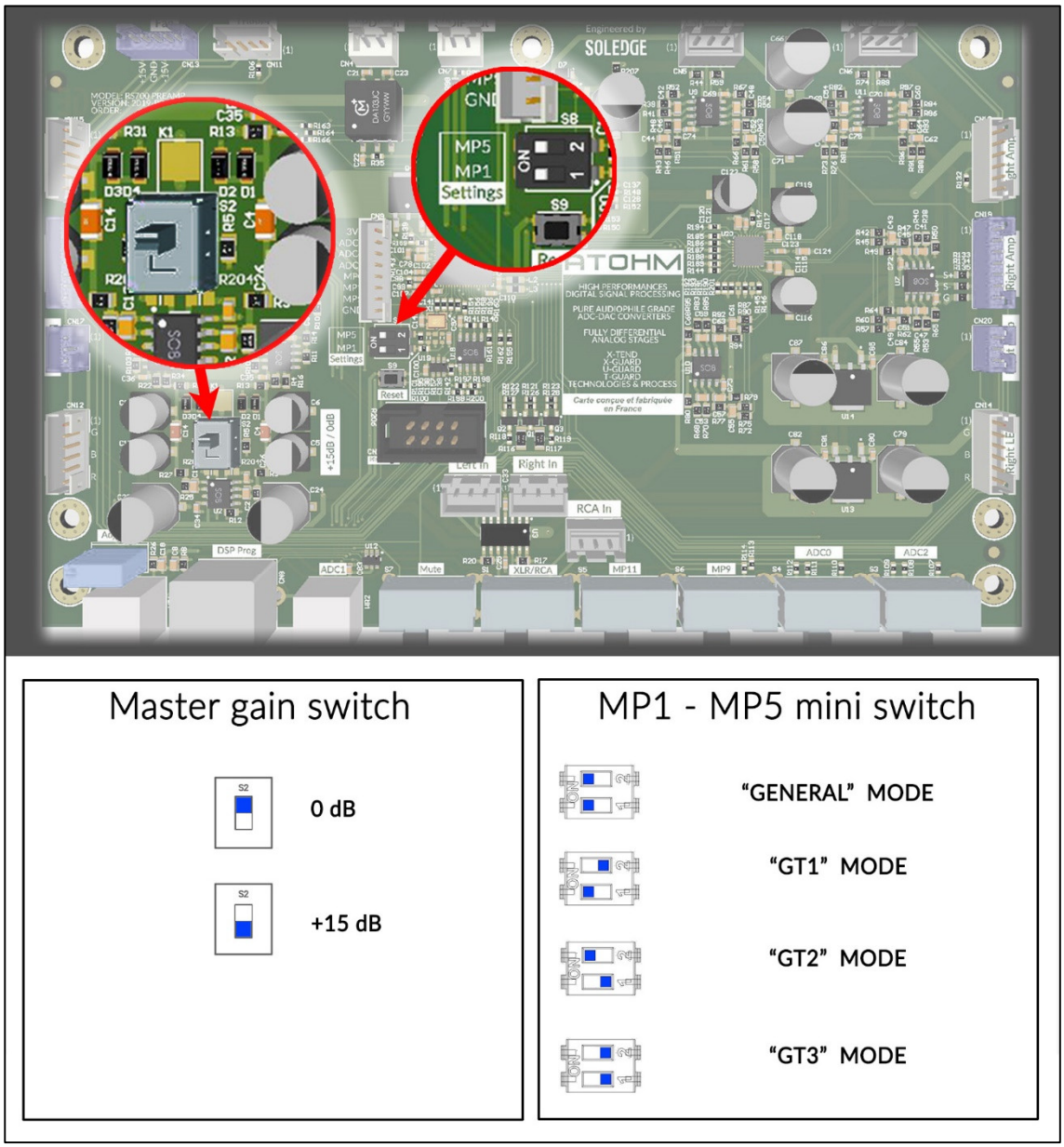
Although it is not its primary purpose, it is possible to connect the XLR and RCA inputs with 2 different sources and use the switch (REF 5) to choose the input source. However, you must make sure to lower the level of the source or input level to a minimum (REF 1) during such an operation.

1) CHOICE OF OPERATING MODE AND MAIN GAIN

Before starting, verify that the selected mode corresponds to the speaker model.

The choice of operating mode involves removing the device cover. The device must therefore be turned off with the power cord definitely disconnected.

With a crosshead screwdriver (Type pozidrive 1), unscrew the 10 cover fixing screws. Then slide the cover to access the DSP card settings on the front of the device.



"GENERAL" mode: usable with any type of speaker (minimum 3 ohms). Power output: 2*700W RMS / 4ohms.

"GT1" mode: to be used exclusively with ATOHM GT1 speakers. Power output: 2*220W RMS / 4ohms.

"GT2" mode: to be used exclusively with ATOHM GT2 speakers. Power output: 2*280W RMS / 4ohms.

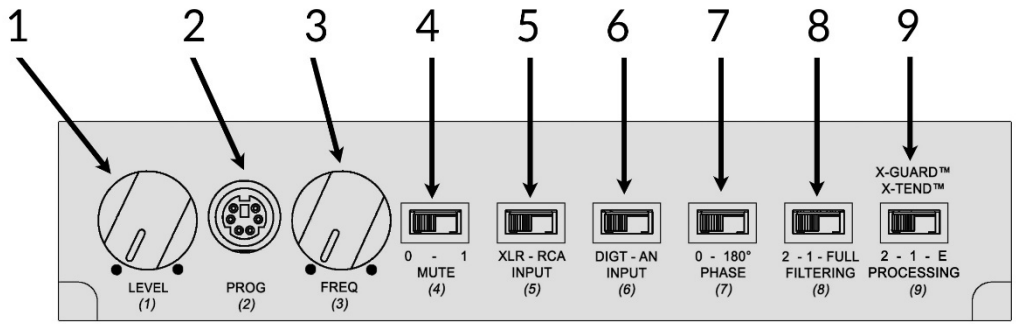
"GT3" mode: to be used exclusively with ATOHM GT3 speakers. Power output: 2*700W RMS / 4 ohms.

Depending on the output level of your AV processor or preamplifier, you can choose the input sensitivity level via a switch located on the same board. The "0dB" position provides a total gain of 29.8 dB. This setting is suitable for the vast majority of system configurations. The "+15 dB" position provides a total gain of 44.8 dB. It is intended for low-level preamplifiers/sources only.

Regardless of the chosen setting and the position of the potentiometer (Reference 1), the maximum input level (XLR and RCA) should not exceed 22 dBu (9.75 Vrms).

NOTE ON DIGITAL SATURATION: When the red LEDs (REF 13) blink, there is a dynamic margin of about 10 dB before saturation of the AD input converter (0dB Fs). When it is reached (inadequate level and dynamic), this saturation results in a significant increase in distortion (digital saturation)

2) FONCTIONNALITY OF THE FRONT PANEL CONTROL



Regardless of the used mode(GENERAL or GT-1/GT2/GT3), except for control 9, the controls are common to all 4 modes.

REF 1: Input level adjustment potentiometer
REF 2: Programming socket (reserved for the factory)
REF 3: Multifunction digital potentiometer
REF 4: Mute (Position "0" silences the power stages)
REF 5: Source selector: balanced inputs (XLR) or unbalanced inputs (RCA)
REF 6: Digital input selector. Leave in "AN" position (analog)
REF 7: Phase adjustment for XLR subwoofer outputs
REF 8: High-pass filtering switch for speaker outputs

Position "2": 24dB/octave slope (Linkwitz Rilley filter type)
Position "1": 12dB/octave slope (Butterworth filter type)
Position "FULL": No filtering (Response from 2Hz to 45kHz)

When in positions "1" or "2", the digital potentiometer REF3 adjusts the level of the XLR subwoofer outputs.

REF 9: X-TEND™ processing switch (When REF 8 is in "FULL" position and only in GT1/GT2/GT3 modes)

Position "2": Without X-TEND™ processing (normal response)
Positions "1" and E: X-TEND™ processing activated

The digital potentiometer REF 3 then adjusts the X-TEND™ processing.

REF 9: Cut-off frequency switch (when filtering switch REF 8 is in position "1" or "2") (for all modes)

Position « 2 »: 60 Hz
Position « 1 »: 80 Hz
Position « E »: 100 Hz

3) TRIGGER CONTROL (12v)

The device's standby and power-on modes can be remotely controlled through the trigger input. To perform the control, follow these steps:

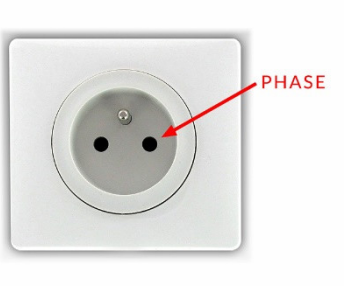
- Connect one of the 12Vdc trigger jack inputs (3.5mm jack, REF 22) to the control system (preamplifier, processor, or home automation) via a cable that is exclusively intended for this purpose (consult your dealer). The other jack can then be used to transmit the control signal to another device.
- Set the rear TRIGGER switch (REF 23) to the "ON" position.
- Set the main power switch (REF 11) to the "ON" position.
- Set the "MUTE" switch (REF 4) to position "1".

NOTE: When this trigger control is configured, it is no longer possible to turn on the device in a conventional manner.

4) MAINS CABLE AND CONNECTION

Designed with a "double isolation" architecture, the RS700 amplifier is nevertheless equipped with class 1 protection. **This means it must be grounded**. Amplifier is designed to operate with a mains voltage between 100 and 240 V (50 Hz - 60 Hz). It automatically detects this voltage and adjusts accordingly.

The mains cable supplied with the device has a large section (type H05VV-F 1.5MM2 -3G section 3 * 1.5^2) with a ground connection. It must not be replaced by a cable with a smaller section (including export version) or by a model without a ground connection.



5) SPEAKER & MODULATION CABLES

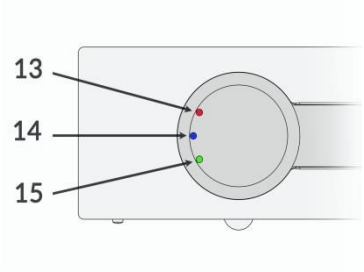
The speaker output terminals (REF21) can accept high-section speaker cables. Depending on the speakers model and distance the minimum section should be between 2.5^2 and 5^2.
Make sure to properly strip the cables (17mm) and that no strand of cable causes a short circuit between the (+) and (-) terminals or with the device's chassis. In the case of using forks (spades), make sure the ends of the forks do not touch and cause a short circuit.

Asymmetrical RCA modulation cable connections never exceed a few meters. Longer connections require the use of symmetrical modulation cable via the XLR inputs (REF 17) of the device.

Our "ZEF SERIES" cables range meets all needs for connecting this device. We invite you to consult your dealer.

NOTE: The circuit protection located on the power stages only protects the device from short circuits between the (+) and (-) respective terminals.

6) LED INDICATORS



Blue LEDs (REF 14): device is powered on / main switch is on

Red LEDs (REF 13): U-GUARD™ Processing (operates in all modes)
T-GUARD™ Processing (operates in all modes)

The U-GUARD™ processing intervenes on the signal to limit power and prevent clipping/saturation of power stages. A brief or rhythmic flashing of the LEDs indicating activation of the processing is normal and poses no problem even at high levels. Sustained flashing of the LEDs indicates that the average power delivered is very high and should prompt the user to lower the sound level (audio signal degradation, speaker thermal compression).

The T-GUARD™ processing provides thermal protection for the amplifier (GENERAL mode) and the associated speakers (GT1-GT2 or GT3 mode only). When the system is subjected to extreme stress, the processing triggers protection by lowering the level by 18dB and lighting the red LEDs permanently. This level drop is also propagated to the subwoofer outputs.

In "GENERAL" mode, the processing is set to protect the amplifier power output stages. In "GT1-GT2 or GT3" mode, the processing is set to protect the speakers (and therefore the amplifier power output stages).

The sudden and general drop in sound level combined with the permanent lighting of the red LEDs requires lowering the volume. After a delay of approximately 25 seconds, the red diodes will turn off and listening can resume normally.

Green LEDs (REF 15): X-GUARD processing
These LEDs flash when the X-GUARD™ (speaker excursion control) processing intervenes on the signal to prevent excessive excursions on woofer(s) units. If this is only briefly or slightly in rhythm with the audio signal, this is not a problem in itself. However, sustained flashing of these green LEDs indicates inappropriate use and should prompt the user to lower the sound level and/or reduce the correction amplitude of the X-TEND™ processing when it is used.

Note: when power is on and depending on the setting, the red and green LEDs may flash briefly. This is a normal process. A delay of approximately 5 seconds then occurs to allow the circuits to stabilize.

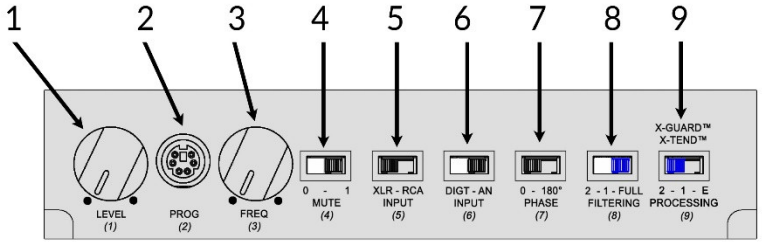
7) INPUT LEVEL ADJUSTMENT

To obtain the best signal-to-noise ratio on your audio system, it is advisable to maximize the level of the source (adjustable level preamp / DAC-streamer / audio-video processor) and reduce the level of the input potentiometer (REF 1) of the amplifier.

As a first approach, you can position the input potentiometer (REF 1) between 12 o'clock and 1 o'clock. You can then adjust if necessary.

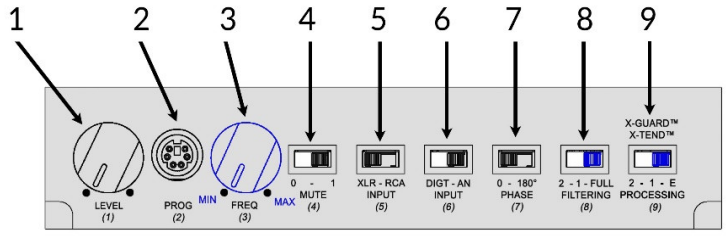
8) NORMAL USAGE WITHOUT X-TEND PROCESSING (all modes)

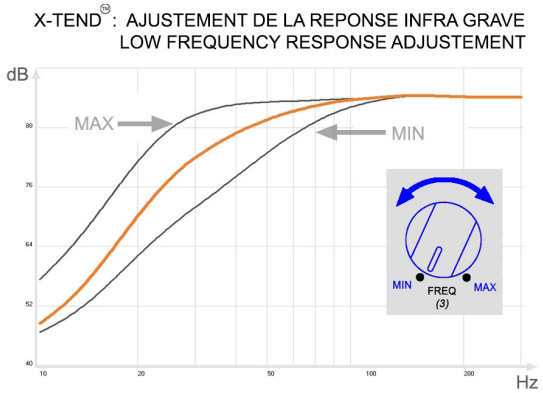
REF 8: Filtering selector in "FULL" position
REF 9: Processing selector in "2" position



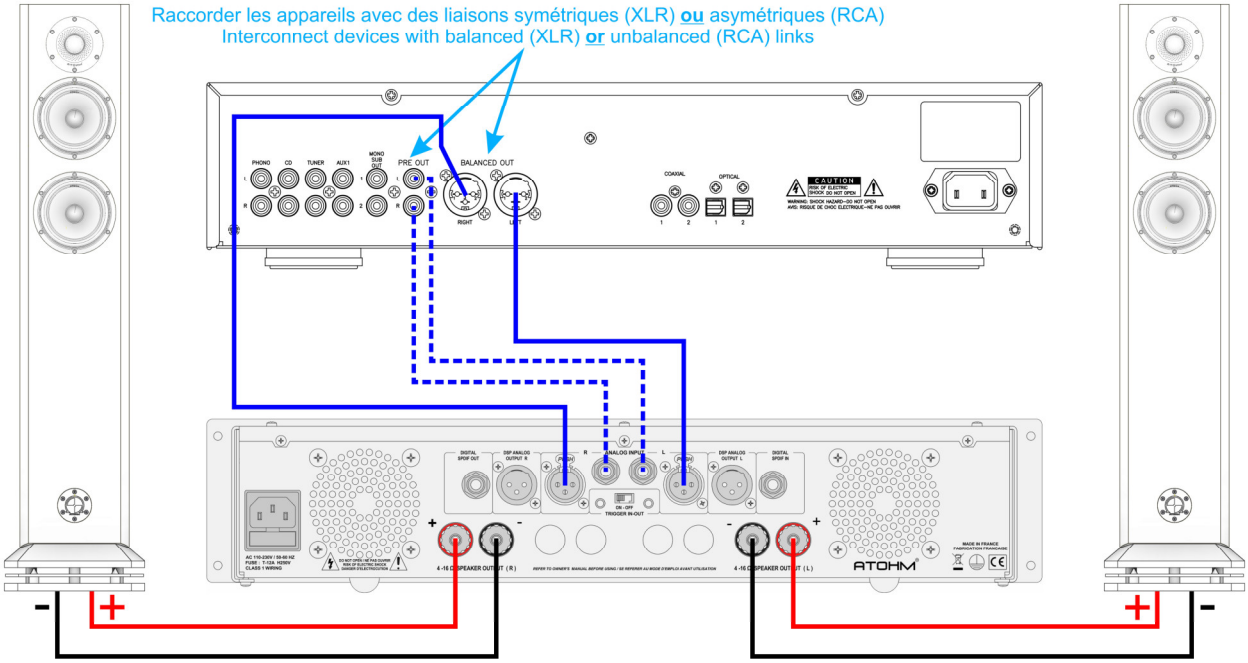
9) USAGE WITH X-TEND PROCESSING (GT1 -GT2 et GT3 mode only)

-REF 8 : filtering selector in position « FULL »
-REF 9 : processing selector in position « 2 » (or 1)
-REF 3 : adjustment « FREQ » potentiometer (11 steps)





10) STEREO SETUP (all mode)



In GENERAL mode: compatible with speakers of all types (impedance of at least 3.3 ohms).

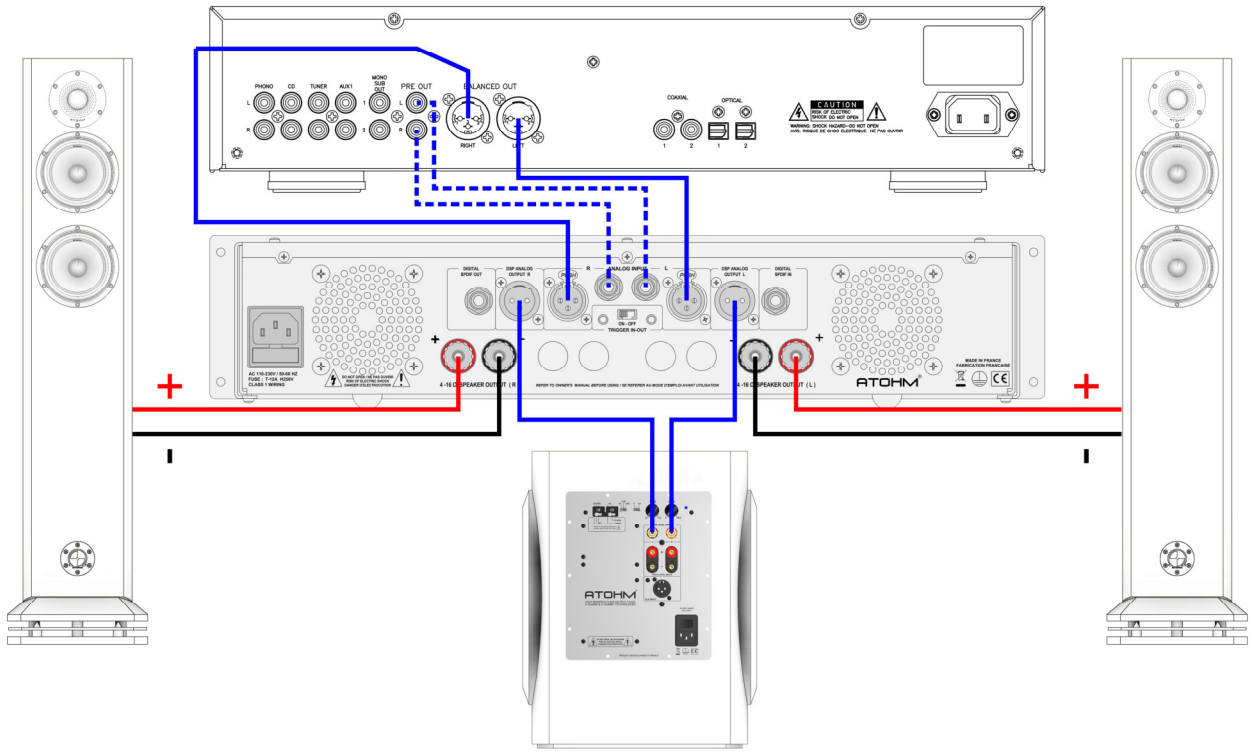
In GT1-GT2 and GT3 mode: compatible with ATOHM GT1-GT2 or GT3 speakers only. The X-GUARD and X-TEND processing specific to each model is then activated.

Depending on the preamp capabilities, you can use XLR inputs (REF 17) or RCA inputs (REF17). You can also use a variable level source (DAC/STREAMER) by making sure the "variable level" option has been activated in the device. Generally, it is strongly advised to turn on the source and check the output level setting before turning on the amplifier.

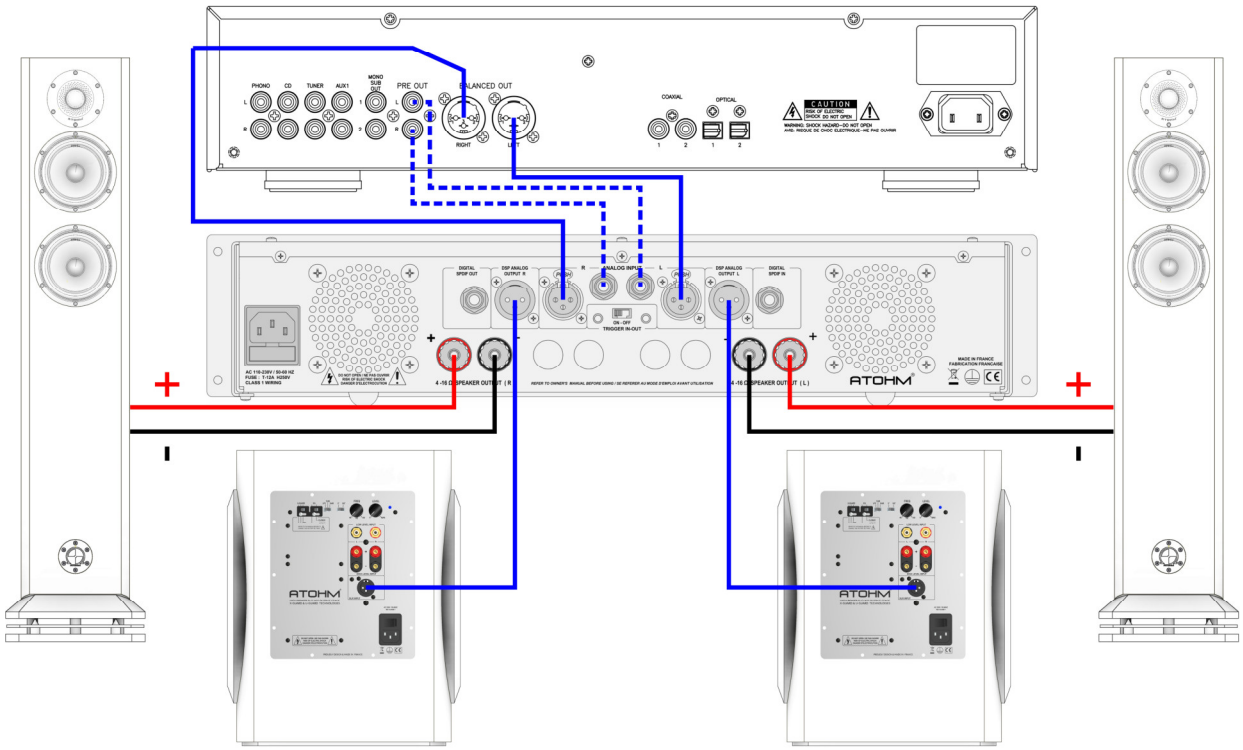
Make sure to never interchange the (+) or (-) polarity of the right channel with the (+) or (-) polarity of the left channel. Make sure to respect the positive and negative polarities of each output channel and the input terminal polarities of the speakers.

11) STEREO WITH SUBWOOFER(S) SETUP (all mode)

TYPE 2.1



TYPE 2.2



Depending on the preamp capabilities, you can use XLR inputs (REF 17) or RCA inputs (REF17). You can also use a variable level source (DAC/STREAMER) by making sure the "variable level" option has been activated in the device. Generally, it is strongly advised to turn on the source and check the output level setting before turning on the amplifier.

For the speakers :

In GENERAL mode: compatible with speakers of all types (impedance of at least 3.3 ohms).

In GT1-GT2 and GT3 mode: compatible with ATOHM GT1-GT2 or GT3 speakers only. The X-GUARD and X-TEND processing specific to each model is then activated.

Make sure to never interchange the (+) or (-) polarity of the right channel with the (+) or (-) polarity of the left channel. Make sure to respect the positive and negative polarities of each output channel and the input terminal polarities of the speakers.

For subwoofer(s)

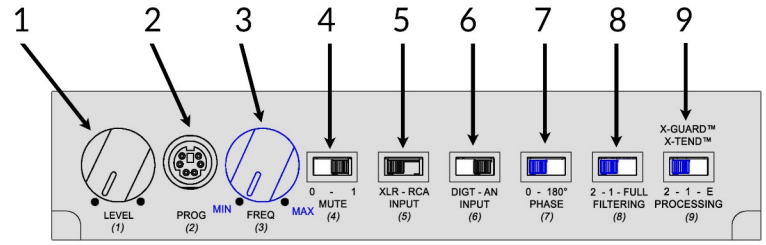
2.1 SETUP

Connect the XLR subwoofer outputs (REF18) to the RCA type low-level inputs of the active subwoofer (This requires a specific XLR to RCA cable/consult your dealer).

2.2 SETUP

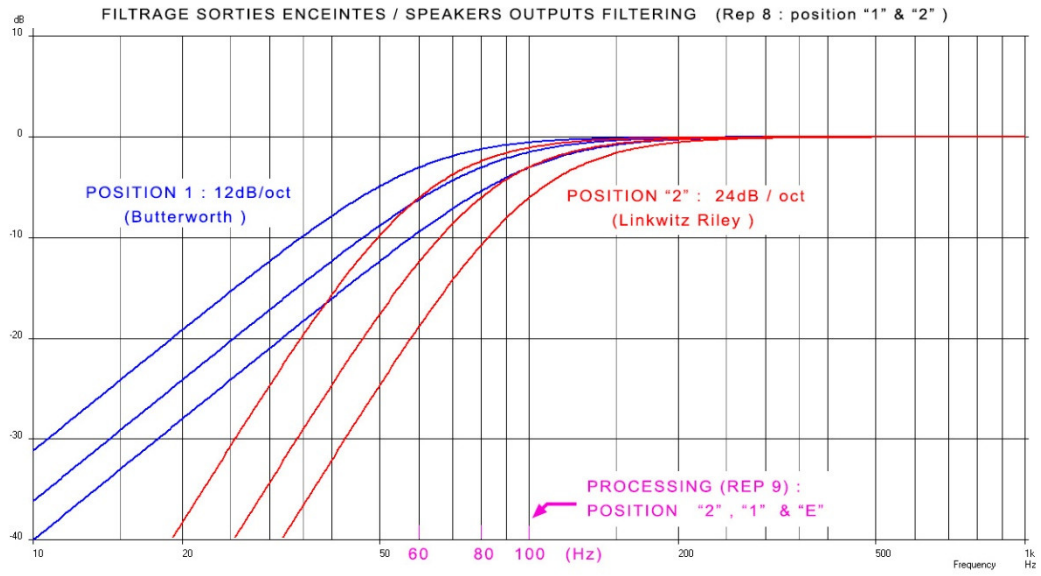
Connect the XLR subwoofer outputs (REF) to the XLR type low-level inputs of the active subwoofers (conventional XLR cables). If your subwoofers do not have XLR inputs, you can use specific XLR to RCA cables (Consult your dealer).

SETUP FOR STEREO CONFIGURATION WITH SUBWOOFER(S)

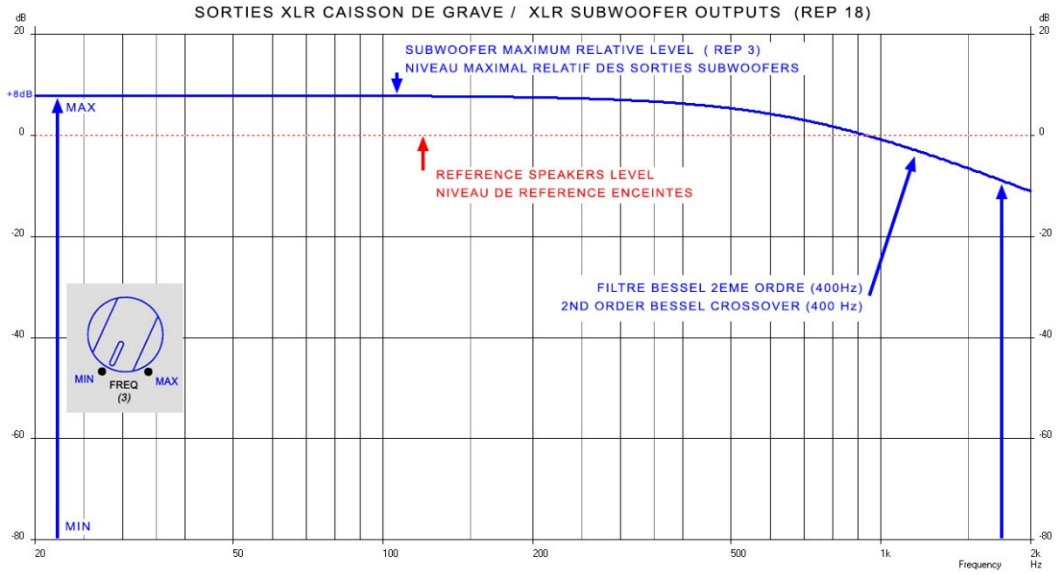


Regardless of the selected mode, the filtering switch (REF 8) should be set to position “2” (24dB/oct slope) or position “1” (12dB/oct slope) based on the chosen filtering type. Once this switch is engaged in position “1” or “2”, the processing switch (REF 9) allows you to choose the cutoff frequency of the high-pass filters applied to the power/speaker outputs (REF 21).

REF (9) processing selector : Position “2” : 60 Hz Position “1” :80 Hz Position” E” : 100 Hz



In this configuration, the potentiometer (REF 3) allows you to adjust the level of the subwoofer outputs (XLR), while the selector (REF 7) allows you to set the phase (0 or 180°).



Note 1: *The subwoofer outputs (XLR) include a Bessel-type low-pass filter (12dB/oct - 400Hz). It is only there to make the work of the limiters on some subwoofers easier. It does not affect the frequency response in their usable band.*

Note 2: *The cutoff frequency (low-pass filter) of the subwoofers must be adjusted on the subwoofer(s) .*

Note 3*: The subwoofer outputs are only active when the REF8 filtering switch is in position "2 or 1".*

Note 4: *The potentiometer (REF3) allows you to adjust the output volume of the XLR outputs (REF 18) for the subwoofers. When it is in the maximum position, the relative level is +8dB relative to the speaker level. Adjust the volume on the subwoofer(s) so that it is approximately +8 to +10 dB higher than that of the speakers. The potentiometer (REF) will then allow you to adjust the subwoofer level downwards.*

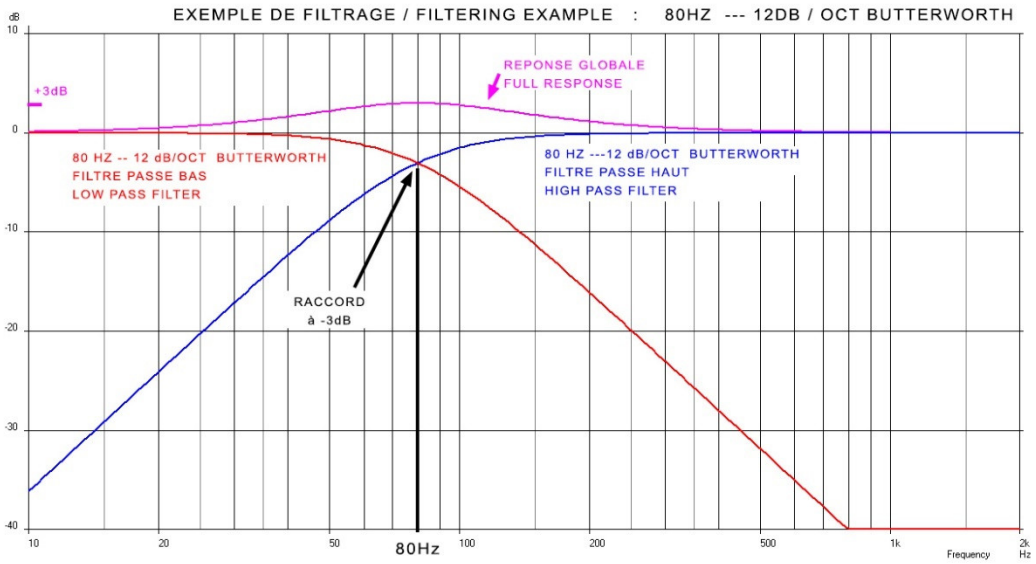
Note 5*: In configuration 2.2, be sure to set both subwoofers exactly the same in all aspects (cutoff frequency, volume, filtering slope, phase at 0°).*

Note 6: *Filtering slope and theoretical principles choice*

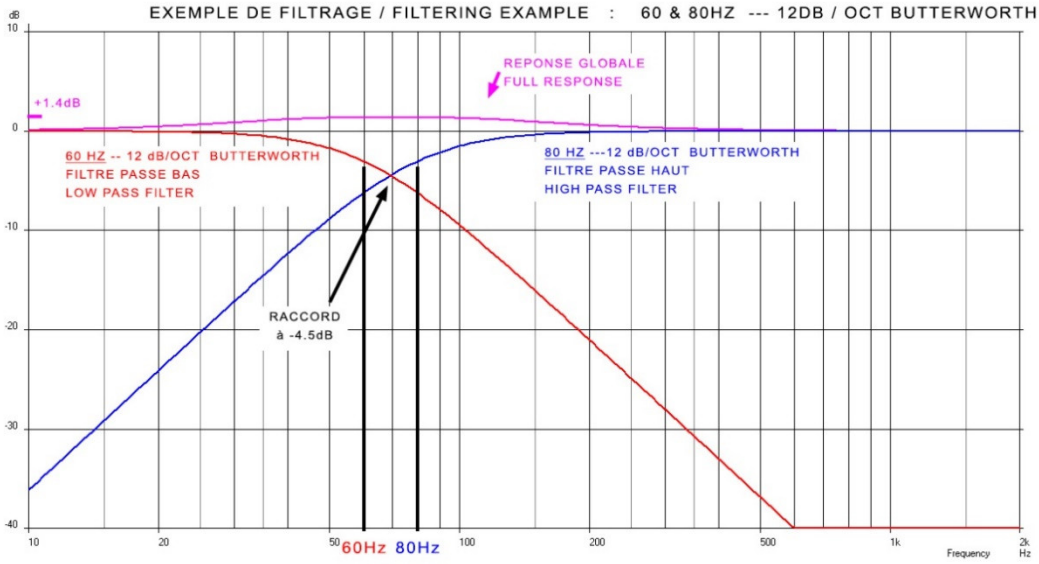
The following notes and graphs are theoretical and deliberately simplified. They do not take into account the actual acoustic responses of the speakers and subwoofers and their placement in a listening room with all its imperfections. Nevertheless, they allow you to understand some basic principles to adjust your system to the best.

The cutoff frequency of the speaker output high-pass filters can be chosen between 12dB/oct and 24 dB/oct. As for the subwoofers, the filtering slope is generally 12 or 24dB/oct depending on the model.

In position "1", the three 12 dB/oct high-pass filters of the amplifier are of the Butterworth type. Ideally, the low-pass filter of the subwoofer(s) should also be of the Butterworth type 12dB/oct. With this type of filter, the connection point is made at -3dB ***with phase inversion (REF7 at 180°)*** *on the subwoofer outputs. This kind of filtering clearly favors energy and dynamics. The amplitude of the sum in the overlap band peaks at +3dB at the connection point (-3dB). Choosing slopes of 12dB/oct generally provides a low group delay.*

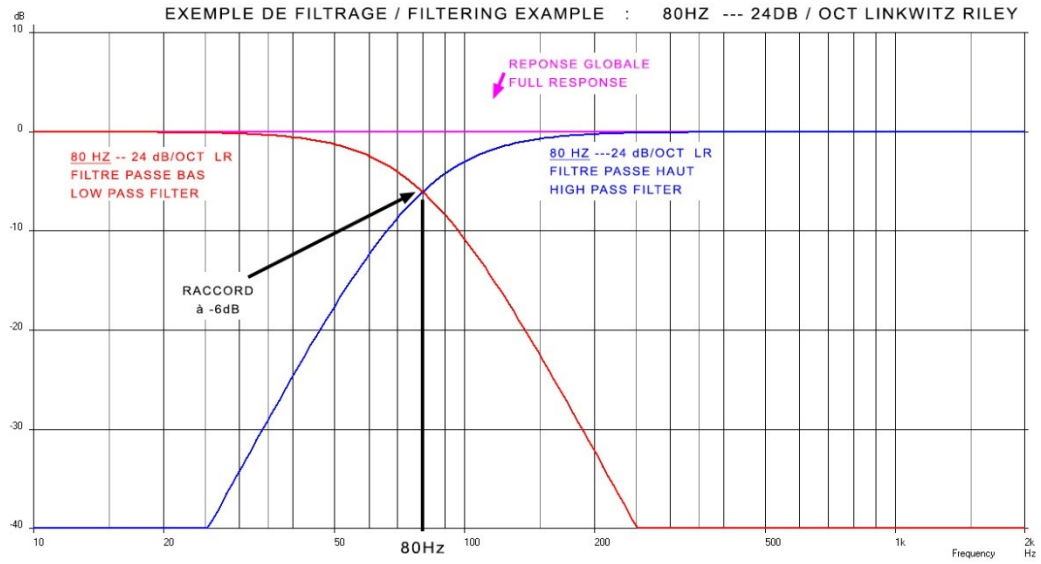


From the previous example, it's possible to make a compromise to obtain a more linear overall response. By shifting the cut-off frequency to 60Hz on the subwoofers, the maximum amplitude of summation in the overlap band decreases from +3dB to only 1.4dB.



By following the same principle, it's possible to obtain a nearly linear overall response. By shifting the cut-off frequency to 60Hz on the subwoofers and shifting that of the speakers to 100Hz, the maximum amplitude of summation in the overlap band decreases from +3dB to only +/- 0.5dB.

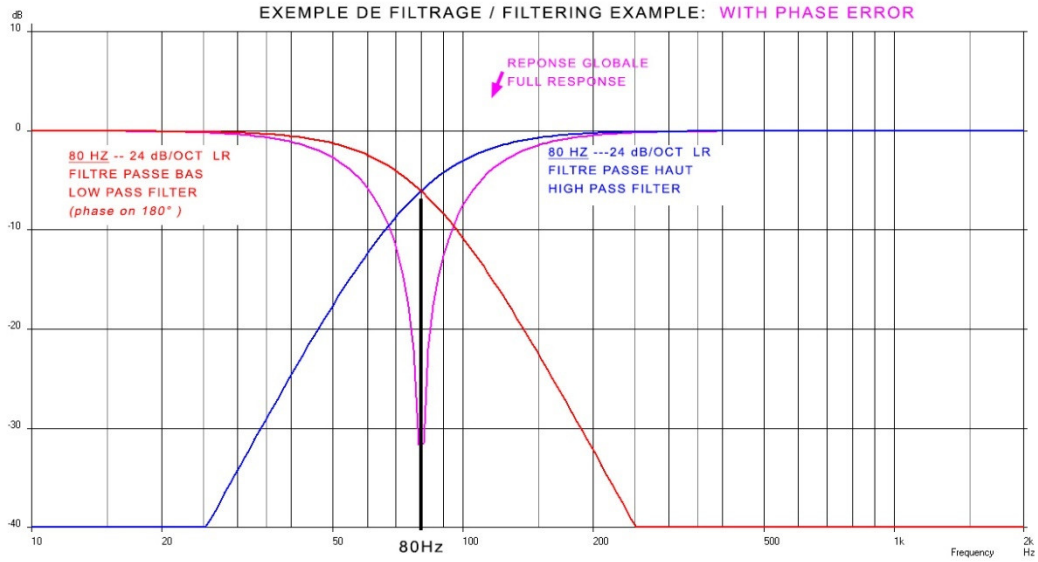
In position "2", the three 24dB/oct high-pass filters of the amplifier are of the Linkwitz Rilley (LR) type. Ideally, the low-pass filter of the subwoofers should also be LR 24dB. With this type of filters, the crossover point is made at -6dB ***without phase inversion on the subwoofer outputs*** ***(Phase selector REF 7 on 0°).*** *This filtering clearly favors the linearity of the system response. The amplitude of the summation in the overlap band remains linear. Choosing slopes of 24dB/oct reduces reduce some distortions in the rejection bands. However, it induces a larger group delay than with slopes of 12dB/oct.*



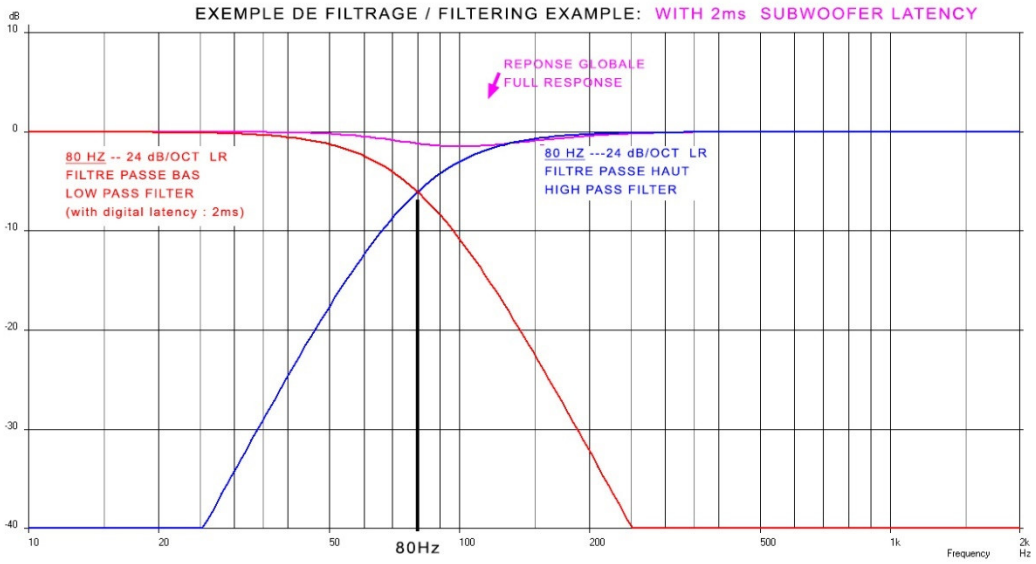
In GT1, GT2 or GT3 mode: we suggest the following cutoff frequencies:

GT1: 80 Hz or 100 Hz (60Hz is possible with slope of 24dB/oct)
GT2: 60Hz or 80Hz
GT3: 60Hz or 80Hz

Note 7: *Regardless of the filtering selected, an incorrect adjustment of the phase selector (REF7) of the subwoofer outputs (XLR) leads to a strongly degraded response with level cancellation in the overlap band. This results in listening by a significant lack of "dynamic" in the bass accompanied by an obvious lack of homogeneity. (The feeling that speakers and subwoofer(s) play on their own).*
Never attempt to correct this type of response with a room correction/equalization device.

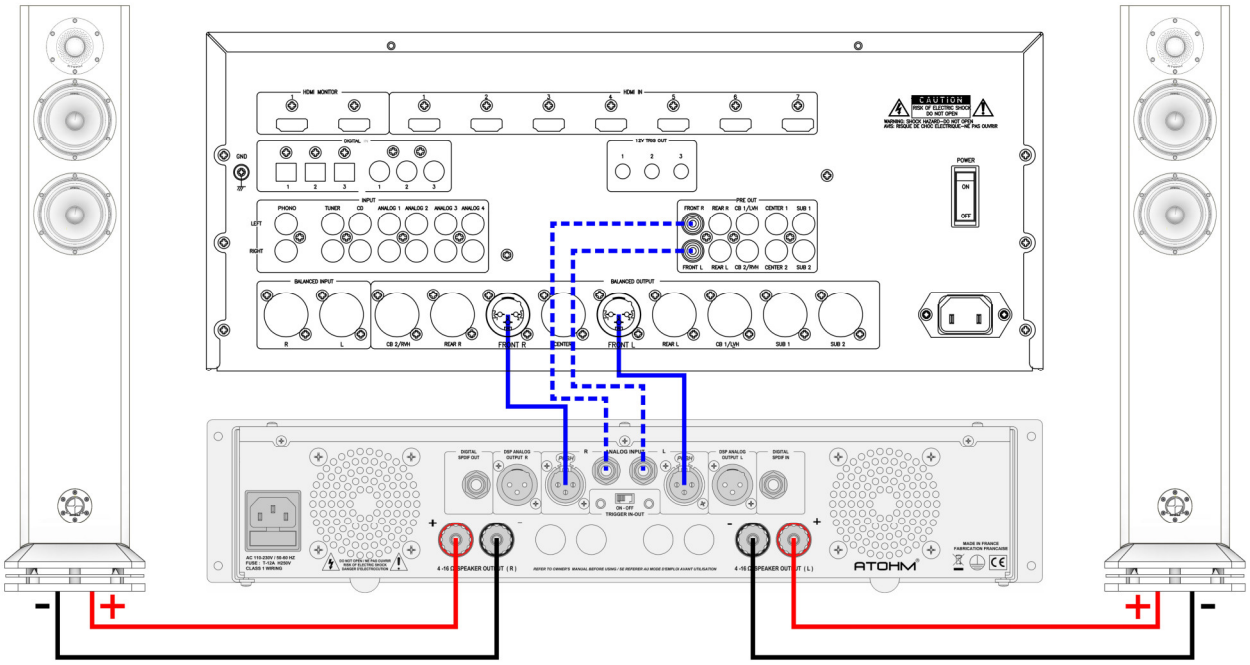


Note 8: *Some subwoofers use internal digital processing to perform low pass filtering and other functions. This digital processing involves a latency often equal to 1 to 2 ms. Unless the loudspeakers are delayed by an identical amount, this pure delay systematically leads to a degradation of the response in the overlap band .*



12) BASIC HOME THEATER CONFIGURATION (All mode)

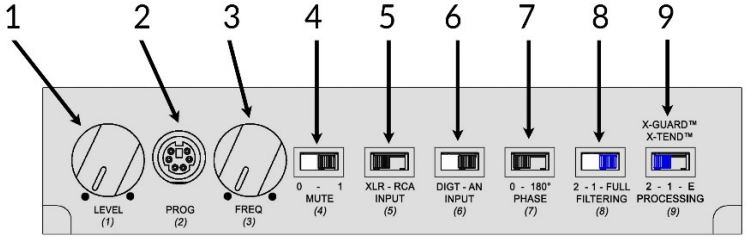
Depending on the preamp/processor capabilities, you can use XLR inputs (REF 17) or RCA inputs (REF17). You can also use a variable level source (DAC/STREAMER) by making sure the "variable level" option has been activated in



the device. Generally, it is strongly advised to turn on the source and check the output level setting before turning on the amplifier.

Make sure to never interchange the (+) or (-) polarity of the right channel with the (+) or (-) polarity of the left channel. Make sure to respect the positive and negative polarities of each output channel and the input terminal polarities of the speakers.

SETTINGS FOR BASIC HOME-THEATER CONFIGURATION (All mode)



-REF 8 : Filtering selector in position « FULL »

-REF 9 : Processing selector in position « 2 »

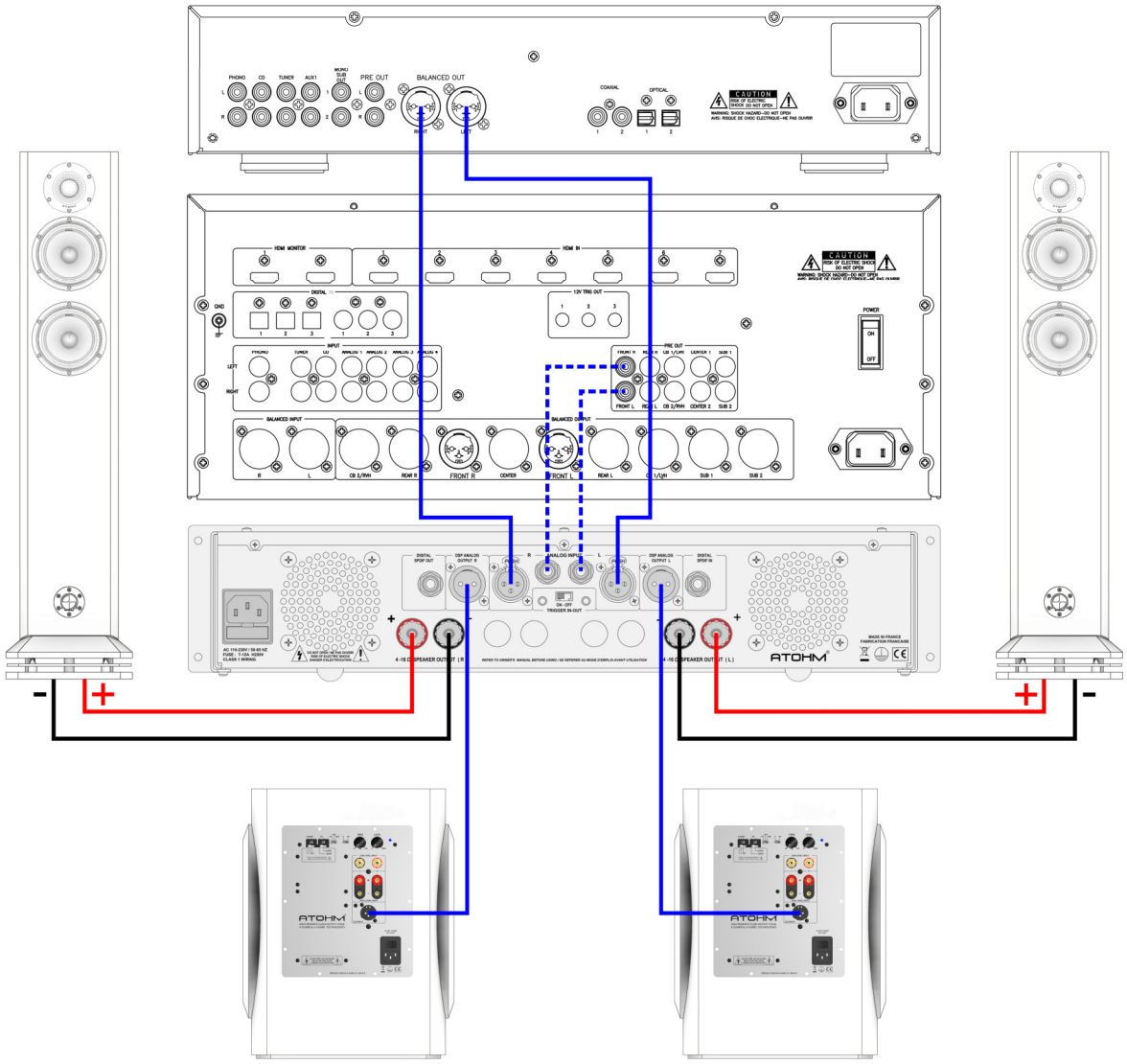
Whatever the mode used, the filtering being carried out by the audio-video processor, the filtering switch (REF8) must remain in the "FULL" position.

In GT1-GT2 and GT3 mode: with ATOHM GT1-GT2 or GT3 loudspeakers only. The X-GUARD and X-TEND processing specific to each model is then activated.

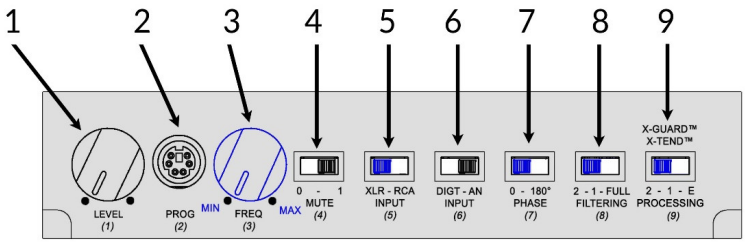
For a home-theater configuration, it is mandatory deactivate X-TEND processing by setting the processing selector (REF9) to position “2” . (This processing is not compatible with the bass management of audio video processors).

> ***Note 1:*** *Digital signal processing and various applied processing induce a* ***latency of 7.5ms****. Please take this value into account for correct home theater processor setting. (For reference, for sound, this corresponds to a traveled distance of 2.57m)*
>
> ***Note 2 (GENERAL mode):*** *The signals sent by the audio-video processor can either be filtered (small mode) or full-band (large mode). High-pass filtering in small mode reduces speaker excursions at low frequencies but does not provide absolute protection.* ***Given the available power, we advise caution regarding the sound levels reproduced on the speakers and ensuring they remain compatible with the speakers. (Including during room calibration/equalization procedures).***

13) MIXED STEREO / HOME THEATER CONFIGURATION (All mode)



This configuration corresponds to that described in Chapter 11 (STEREO CONFIGURATION WITH SUBWOOFER) with the addition of an audio-video processor. The RCA inputs and XLR inputs are used to connect the two input sources (a stereo preamplifier or a variable level source and an audio-video processor) to the device.
Make sure to never interchange the (+) or (-) polarity of the right channel with the (+) or (-) polarity of the left channel. Make sure to respect the positive and negative polarities of each output channel and the input terminal polarities of the speakers.



The input selection is done through the REF5 analog source selector.

In order to obtain the best Hi-Fi and HOME-CINEMA audio performance, the subwoofer(s) must be connected to the XLR subwoofer outputs (Ref 18) as indicated in Chapter 11.

The audio-video processor should be set by indicating the absence of a subwoofer connected to it. It should also be configured with the front two speaker channels (L and R) in **"large" mode** and the other channels in "small" mode. In this way, the LFE channel will be redirected to the 2 main output channels (front L and R) of the audio-video processor.

The L and R signals from the processor are enhanced with the LFE channel. They therefore contain a greater amount of bass and sub-bass. It is therefore imperative to filter the speaker outputs and direct this range to the subwoofer(s). For this purpose, **the filtering selector (REF 8) must be placed in position "2" (24dB/oct filter) or "1" (12dB/oct filter).** Once this switch is engaged in position 1 or 2, the processing selector (Ref 9) allows you to choose the cutoff frequency of the high-pass filters applied to the speakers power output (Ref 21). In this configuration, the potentiometer REF 3 allows you to adjust the level of the subwoofer outputs (XLR) while the switch (REF 7) allows you to adjust the phase (0 or 180°).

For filter adjustment, please refer to notes 1-2-3-4 and 5 in Chapter 11.

Note 1: *The digital signal processing and various processing applied in the device result in a* ***latency of 7.5ms****. Please take this value into account for correct processor configuration. (As a reference, for sound, this corresponds to a distance traveled of 2.57m).*

Note 2: *The subwoofer outputs are only active when the REF8 filtering switch is in position "2" or "1".*

Note 3: *The cutoff frequency (low-pass filter) of the subwoofers must be adjusted on the subwoofer(s). There is no need to change this setting when switching from one source to another.*

Note 4 *("GENERAL" mode): The signals sent by the audio-video processor are increased by the LFE channel.* ***Also, the filtering switch (REF8) must be placed in position "2" (24dB/oct filter) or on "1" (12dB/oct filter).*** *The high-pass filtering reduces speaker excursions at low frequencies but does not provide absolute protection.* ***Given the available power, we advise you to be cautious about the sound levels reproduced on the speakers and to ensure that they are compatible with the speakers in case of calibration (room equalization).***

For small or medium-sized speakers, we recommend setting their cutoff frequency to 80 or 100 Hz (REF9 selector in position "1" or "E") with a 24dB/oct slope (REF8 selector in position "2").

Note 5*: Some audio-video processors offer a "double bass" setting. This option should not be activated.*

Note 6*: Automatic room equalization devices may have erratic behaviors and may change the parameters of speaker output management and the LFE channel. It is therefore imperative to check that the two speaker output channels remain in "wide" mode after calibration and the coherence of the proposed calibration.*

Note 7: *Before proceeding with a calibration, listen to your system and make sure the filtering is properly performed without phase adjustment error (REF 7).*

Note 8: *Be sure to strongly reduce the level of the sources when you want to switch from one to another via the source selector REF5.*

14) CLEANING

For external cleaning (**after disconnecting main plug**), only use a soft, non-fuzzy, dry cloth (microfiber type) possibly slightly dampened with a glass cleaning product (alcohol). Never use products such as solvents or detergents.

Periodically and depending on their accumulation, the ventilation grilles (REF10) must be removed and cleaned. This cleaning is carried out externally with compressed air (preferably dehumidified and oil-free - prefer an aerosol can). Cleaning with a vacuum cleaner is also possible.

Over the years, the interior and fans of the device can accumulate dirt. Internal cleaning is carried out externally and only with compressed air (dehumidified and oil-free). **If in doubt, entrust the device to your dealer or an authorized service center.**

15) MISCELLANEOUS

Room equalization / Correction:

The acoustic response of a room is characterized by resonances (peaks) and cancellations (dips). This phenomenon is particularly sensitive at low frequencies. Simply put, resonances (peaks) vary in level but relatively little in frequency regardless of the measurement position. It is therefore possible to partially reduce the intensity of these modes by electronic correction to improve the sound balance. On the other hand, the "dips", often of high amplitude (-8dB to -20dB), are due to cancellations (opposition of phase at a given point between the wave arriving from the sound source and the one(s) reflected by a wall). Depending on the measurement (and listening) position, the frequencies at which these cancellations occur vary very significantly. It is therefore not possible to correct these dips by electronic correction. Only the acoustic treatment of the room and the positioning of the sound sources can reduce these cancellations.

For a correction / equalization, **the only good practice is to attenuate the identified modes** (peaks) by -3 to -6dB maximum and, if necessary, to slightly increase the level in a partial band ("shelving") or in the subwoofer band in the context of a cinema or stereo 2.1 or 2.2 system. **Any attempt to "boost" the "dips" results in an imbalance outside of the measurement points and an unnecessary exploitation of the amplification and speakers** (with the result being a reduction in the dynamic range and an increased distortions). Some processors allow you to define the maximum level of positive (boost) and negative (attenuation) equalization, including in a given bandwidth.

In GENERAL mode, we recommend limiting positive equalization (boost) to between 0 and +3dB maximum on the 30-150Hz band (and no positive correction under 30Hz). Once the equalization is done (attenuation of the modes), if necessary, you can certainly slightly increase the "envelope" in this band by increasing the target curve to perfect the balance.

In GT1-GT2 and GT3 modes and in the context of use with the X-TEND processing, **we recommend avoiding any positive equalization (boost) in order not to reduce the dynamic range and not to distort the temporal optimization that X-TEND™ provides. Equalization must be done only by lowering with negative equalization (reduction of peaks).**

When using subwoofer(s) (HIFI or HOME CINEMA use), room equalization should be done on the signal BEFORE filtering so that it is applied identically to the speakers and subwoofer(s). In this way, the speaker-subwoofer summation is not affected. **Equalization through the subwoofer(s) only does not yield good results in the overlap band.**

Technical specifications

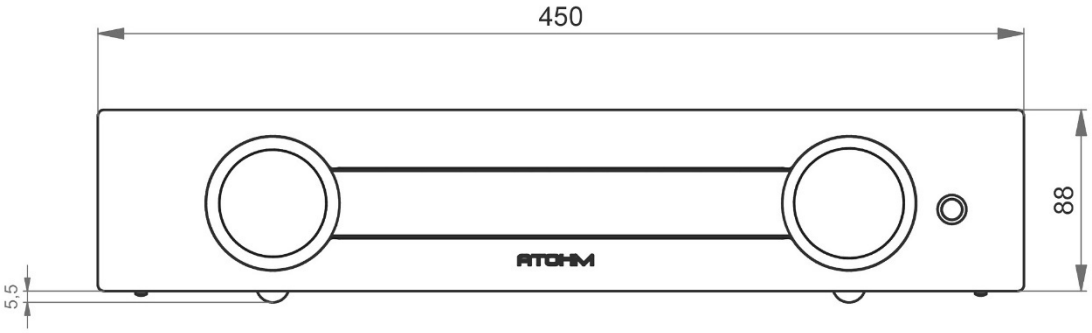
DSP controlled power amplifier with 4 working modes	1 general mode for use with all kinds of speakers 3 specific modes for use with ATOHM GT SERIES speakers only
Nominal Power / 4 ohms (2 channels in operation) in general mode.	2*700 Wrms
Nominal Power / 8 ohms (2 channels in operation) in general mode.	2*350 Wrms
Nominal Power in GT1-GT2 & GT3 mode	GT1 ----- 2*220 Wrms GT2 ------2*280 Wrms GT3- ----- 2*700Wrms
Nominal impedance Minimal impédance on real impedance curve	4-16 Ohms 3 Ohms
Maximal peak current (Protection stage threshold)	2*30A
Frequency response	2Hz – 45 kHz (-3db)
Phase rotation	2 ° @ 30 KHz
THD+N distortions at nominal power	Less than 0.06%
Damping factor (1 Khz / 4 ohms)	Sup. à 1000
AD/DA « PREMIUM » (AKM) conversion	2 inputs / 4 differential outputs - 32 bits
Intelligency	32 bits -295mHz Sigma DSP
Sampling frequency	96 kHz – 24 bits audio resolution
Latency (including all processing)	7.5ms
SNR	110 dB
Diaphony (1 kHz @ nominal power)	<-95 dB
Maximal input level (RCA – XLR)	+22 dBu (XLR input on audio differential buffer INA type)
XLR outputs maximum level	+16 dBu (5Vrms-diff.) max / U-GUARD
XLR and RCA input impedance	XLR : 18kOhms/2 (com) - 36 kOhms (diff) RCA ; 21kOhms
XLR output impedance	480 Ohms /2 (com) – 960 Ohms (diff)
Maximal gain (according internal setting 0 or +15dB)	29.8dB or 44.8 dB
Saturation and clipping limiter (all mode)	U-GUARD™ exclusive processing
Active bass driver(s) excursion control (GT1-GT2 or GT3 mode only)	X-GUARD™ exclusive processing
Bass response optimizer (GT1 -GT2 ou GT3 mode only)	X-TEND™ exclusive processing
High pass filtering on speakers power output with adjustable subwoofer output level (all mode)	Switchable with frequency choices of 60-80 or 100 Hz and slopes choices of 12 or 24 dB/oct on speaker outputs Low-pass Bessel filtering at 350Hz/12dB with adjustable level on the two subwoofer outputs (XLR)
Specific digital link based on S/PDIF with ASRC (Not used in this « GT EDITION » version)	S/PDIF IN & OUT via 75 ohms RCA 96 KHz –24 Bits resolution
Indicators	2 blue Led : power on 2 red leds: U-GUARD™ and T-GUARD™ 2 green leds: X-GUARD (active excursion control)
Cooling (on separated power supply)	2 « low noise » fans -2500 RPM / Triggering from approximately continuous 2*40 watts W rms @22°c ambient temp
Using temperature range	5° - 40°C (46°c on request)
Short circuit protection	Yes
Amplifier thermal protection (T- GUARD™ processing) (+ protection analogique sur étages de puissance)	Yes - 18dB drop in level with automatic reset after 20 seconds
Speakers thermal protection (T- GUARD™ processing) (GT1-GT2 and GT3 mode only)	Yes - 18dB drop in level with automatic reset after 20 seconds
Trigger input voltage (3.5mm jack)	12V dc
Supply voltage	(auto) 100-240V / 50- 60Hz
Consumption	Power off with trigger control (standby) : 400mW Mute (speaker disable) : 18W At rest : 36W Maximum peak :2300W
Provided accessoiries	High power main cord 3*1.5² cuivre - 16 A L=1.5M
Dimensions (L*H*P) *(H= 2U)*	17.71 * 3.46 * 13.70 (inch) / 450 * 88 * 348 (mm)
Weight	19.2 Pounds / 8.7 Kg

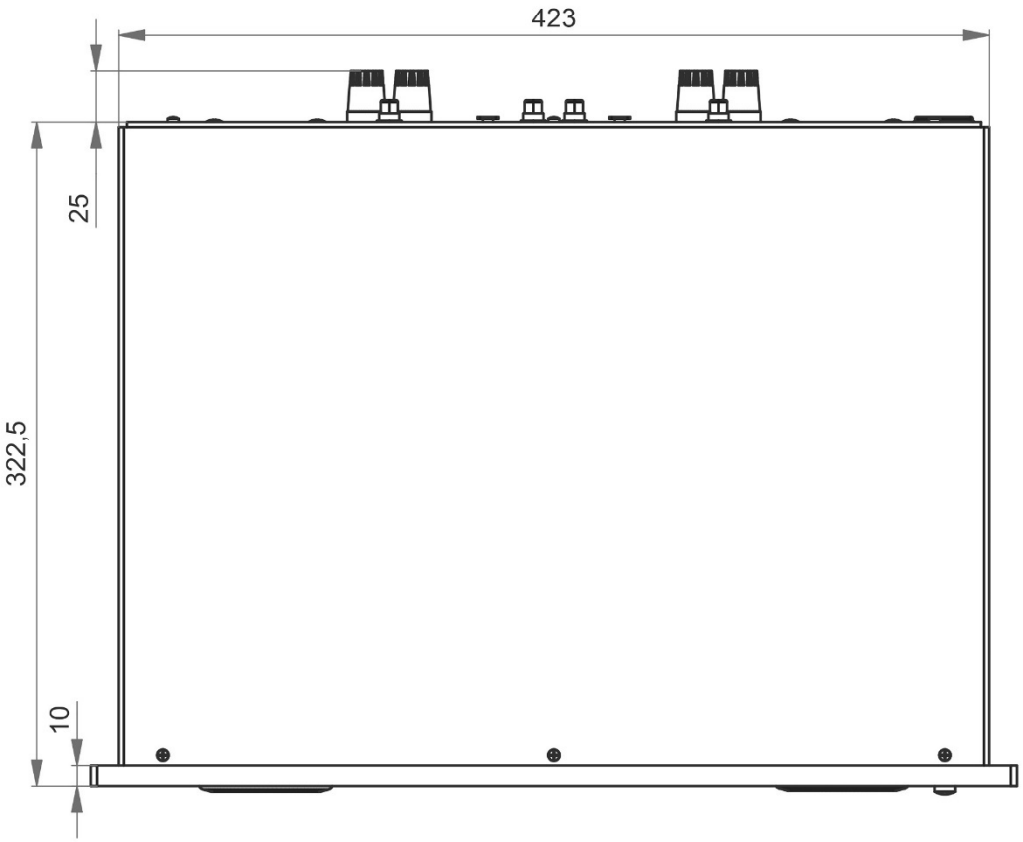
PROUDLY DESIGNED AND MADE IN FRANCE

Our concern for performance is leading us to constantly improve our products. The present features are subject to modification without any notice.

Manufactured and distributed by WELCOHM TECHNOLOGY 12 rue du Breuil, 70150 PIN (France)
Tel : +33 3 81 47 91 01 WWW. ATOHM.COM


DIGITAL SPDIF OUT
DSP ANALOG OUTPUT R
R
ANALOG INPUT
L
DSP ANALOG OUTPUT L
DIGITAL SPDIF IN
ON / OFF
TRIGGER IN-OUT
4-16 Ω SPEAKER OUTPUT (R)
4-16 Ω SPEAKER OUTPUT (L)
ATOHM
MADE IN FRANCE
FABRICATION FRANÇAISE


450
88
5,5
ATOHM


423
25
322,5
10