



ATOHM, a specialist in the design and manufacture of high-end loudspeakers also develops and provides amplifier modules offering an extremely high level of technology and performance. Thanks to sophisticated signal processing, ATOHM amp modules offer a wide range of settings and connections in order to meet various applications - such as sealed-enclosure or bass-reflex active subwoofers, powered monitors, or monoblock power amps. Major studies were conducted on components, circuit diagrams, layouts, as well as global manufacture. High technical and musical performance is afforded from a minimum amount of space!

ATOHM S500 and S250 amp modules incorporate important features, including:

ICEPOWER® power stage with output of **220Wrms/4ohms** for the S250 module and **500Wrms/4ohms** for the S500 module. Thanks to their Class-D technology, their excellent efficiency (80%) and their high damping factor, **they can power and control all variants of drivers with an impedance equal to or greater than 3 ohms.** Current and power capacity coincides with musicality and dynamics in the modules. The two units are equipped with specific circuits responsible for comprehensive detection and protection of the module against short circuits, overcurrent and overheating (transient muting at the moment of detection).



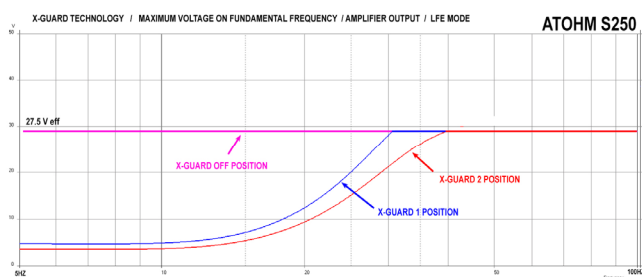
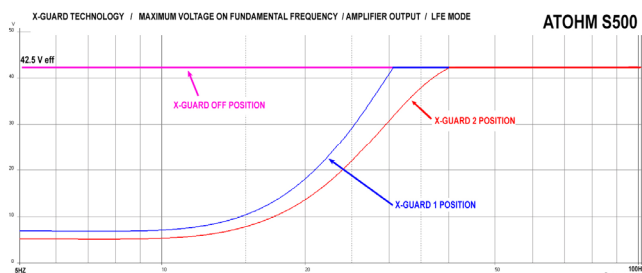
The S500 and S250 amp modules are provided with a two-level peak limiter (0 and -1 dB) with « soft clipping ». When clipped (excess of input level), a sinusoidal signal becomes a square signal, containing an infinite amount of perfectly audible odd harmonics (distortion). For a subwoofer application, this distortion deforms the sound and makes its location easier because the signal exhibits high frequencies. The peak limiter, in association with low-pass filtering stages (adjustable or LFE) decreases or eliminates any clipping-related distortions.



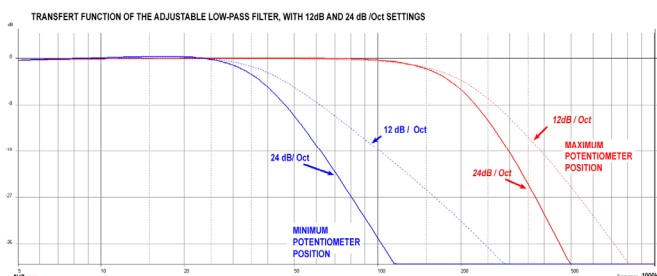
X-guard™ technology avoids the typical shortcomings of the classic subsonic filter while ensuring that the driver's excursion never exceeds an absolute limit (risks of mechanical breakdown, high distortion) - regardless of the input signal's amplitude. The X-guard technology maintains the signal and its phase (unlike the subsonic filter). The very low frequencies are reproduced as accurately as possible, the coupling with the main speakers is more homogeneous and the driver is protected.

To maintain the integrity of the signal and ensure a group delay (temporal coherence) as consistent as possible, those two amp modules do not employ a subsonic filter. This type of filter is generally used to reduce excursion at very low frequencies. However, this kind of filter modifies the envelope and phase of the signal, while only offering relative amount of driver protection (a subsonic filter cannot provide an absolute limit and an overloaded audio track can push the driver beyond its limits). X-guard™ technology avoids this problem while ensuring an absolute limit which varies according to the reproduced frequency. This circuit ensures that the driver's excursion never exceeds its maximum permissible value (regardless of the signal sent at the input of the module). Its frequency-variable action depends on a curve (which is optimized according to the driver, its Xmax value and the load with which it is associated). As a result, the dedicated X-guard™ circuit offers a level of optimization to a wide range of different finished products and applications. However, since this circuit offers two levels of setting, it is flexible enough to be used to advantage in a very large number of subwoofer applications. (*) However, on very specific applications, the X-guard™ circuit can be bypassed if desired.

(*)For the most demanding customers, custom boards can be supplied on demand (analysis + manufacture upon request from your retailer)



In order to be compatible with any configuration, the S500 and S250 modules are designed with low-pass filters that range from 38Hz (-6dB) to 200 Hz (-6dB). According to the driver's technology and the main speakers' design characteristics (sealed, bass-reflex, etc.), the slope of the frequency roll-off can be set to 12dB/octave or to 24dB/octave in order to achieve the best coupling. As a part of a home cinema system, these variable filters can be disengaged in favour of the « LFE » setting, in which bandwidth reaches 250Hz to ensure that the module doesn't interfere with the audio-video processor.

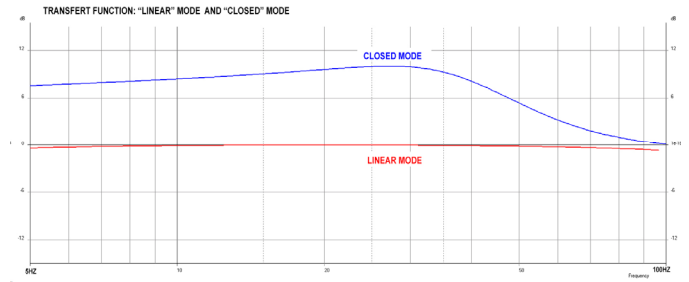




Compact, sealed subwoofers require an appropriate equalization to properly explore the infra-bass register. A simple “boost” centered on a frequency is not adequate.

The S500 and S250 modules are equipped with a 2nd order “shelving low pass” EQ (« closed » position on the front panel). This filter extends the frequency response in a linear

manner while enhancing the acoustical phase as well as the group delay (temporal coherence).



The finely brushed/anodized aluminum front panel features high and low level inputs. Consequently, it is possible to connect the modules through the « pre-out/subwoofer out » outputs of a preamplifier/processor or directly to the speaker outputs of a conventional power amplifier (parallel connection).

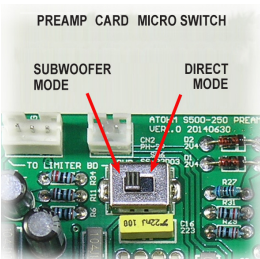


Besides the power stages’ miniaturization, the implementation of the various stages as well as the main topology were extensively researched in order to obtain an excellent Signal-to-Noise ratio from minimum space. This compact design (55mm deep) greatly benefits the development of compact subwoofers and powered loudspeaker designs.

(Please note that those two modules have the exact same dimensions, and

furthermore, they can replace previous versions of Atohm amp modules)

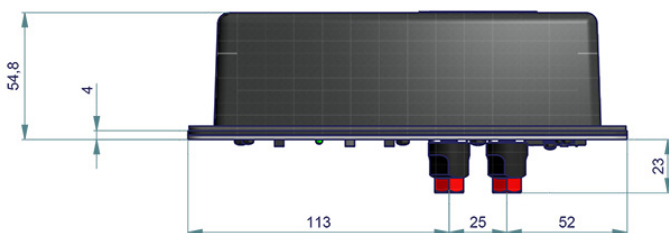
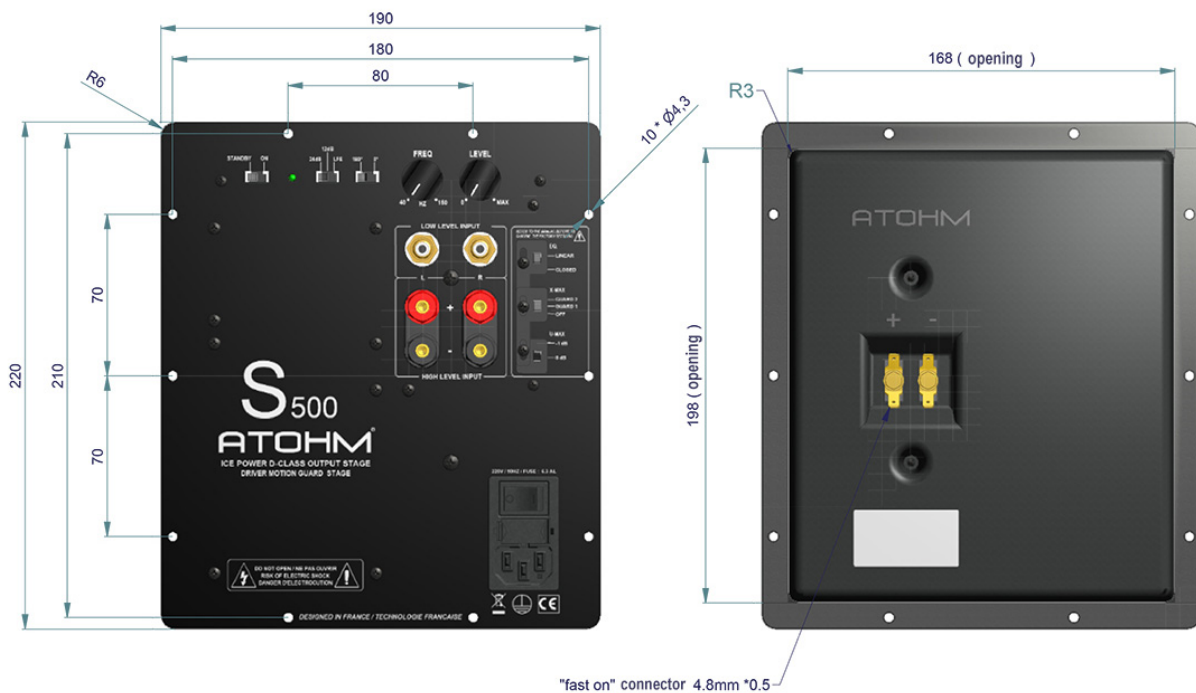
The modules are provided with tight strengthened covers. The electronic boards therefore aren’t subject to detrimental vibrations. It also prevents leaking through the panel and connections without need to compartmentalize the cabinet. The connection to the driver(s) is simplified. It uses 4 « Fast-on » connectors on the back cover (cables provided).



A great amount of concern has been paid to the preamplifier/ signal processing function (components quality selection, low-noise potentiometers, double-sided circuit board with ground plane, etc.). A major part of this signal processing is dedicated to subwoofer applications (filtering, X-guard™ technology, peak limiter, etc.). Nevertheless, these various stages can be bypassed in favor of operation as a broadband hi-fi amplifier (mono power amp) via a simple internal switch. In that case, only the volume knob remains active. For example, this configuration may be exploited for the manufacture of powered monitors.

TECHNICAL SPECIFICATIONS

Model :	S250	S500
RMS power /4ohms / 20Hz to 20kHz (cold start / 80s duration/direct mode)	220 Watts	500 Watts
Nominal load impedance	4 - 16 Ohms	4- 16 ohms
Minimal load impedance	3 ohms	3 ohms
Frequency response (direct mode)	20Hz-20kHz (+/- 0.2dB) 1.5Hz-75kHz (+/- 3dB)	20Hz-20kHz (+/- 0.3dB) 1.5Hz-90kHz (+/- 3dB)
Signal-to-Noise ratio (direct mode) :	115dB (A weighted)	111dB (A weighted)
Signal-to-Noise ratio (subwoofer mode) :	96dB (A weighted)	96dB (A weighted)
Damping factor (8 ohms, 100Hz)	Higher than 1000	Higher than 1000
Total Harmonic Distortion (1kHz/1W/8ohms, direct mode)	Less than 0.1%	Less than 0.1%
Adjustable low-pass filter	38 to 200Hz 24dB/oct or 12dB/oct (« LFE » disengageable)	38 to 200Hz 24dB/oct or 12dB/oct (« LFE » disengageable)
Phase switch	0 - 180°	0 - 180°
Supply voltage : selectable by internal jumper (factory setting)	230V / 115V / 50 Hz	220V / 115V / 50 Hz
Consumption	320W maxi	700W maxi
Weight	0.90kg	1.2kg



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