



Specialized in designing and manufacturing high-end loudspeakers, ATOHM also develops and provides amplifier modules with a very high level of performance. Thanks to sophisticated signal processing, ATOHM modules offers a wide range of settings and connections in order to meet various applications such as closed or bass-reflex active subwoofers, powered monitors, or mono power blocks. Major studies were conducted on components, circuit diagrams, layouts, just as global manufacture. High technical and musical performances in the minimum space!

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

ICEPOWER® power stage 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 kinds of drivers with an impedance greater than or equal to 3 ohms.** Current and power capacitance rhymes here with musicality and dynamics. **Those two units are equipped with specific circuits responsible for detection and protection of the module against short circuits, overcurrent and overheat (transient muting at the moment of detection).**

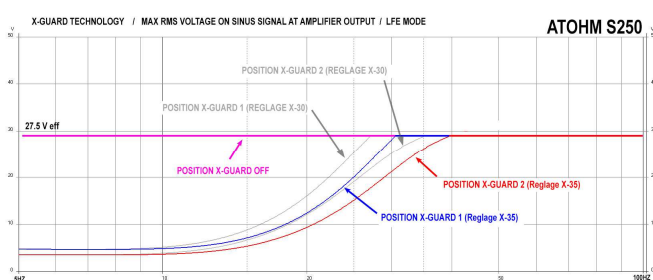
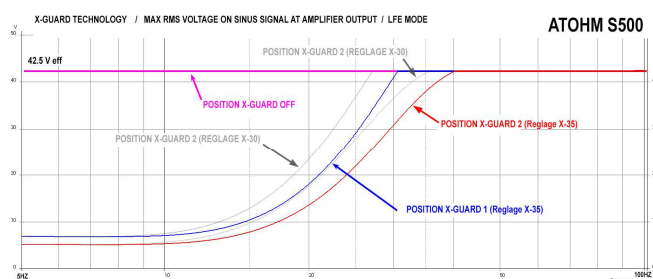


**S500 and S250 modules are provided with a two levels peak limiter (0 and -1dB) with « soft clipping ». When clipped (excess of input level) a sinusoidal signal becomes a square signal, containing an infinity of perfectly audible odd harmonics (distortion). For a subwoofer application, this distortion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

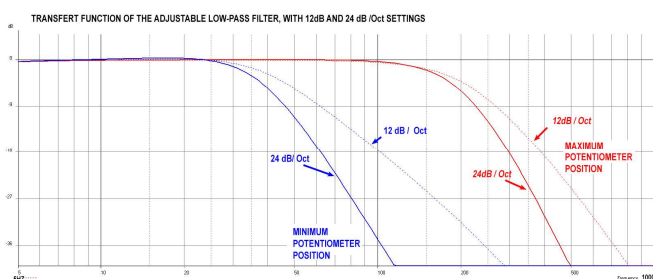


**X-guard™ technology avoids downsides of the classic subsonic filter while ensuring that the driver's excursion never exceed an absolute limit (risks of mechanical breakdown, high distortion) regardless of the input signal's amplitude. This technology maintains the signal and its phase (unlike the subsonic filter). The very low frequencies are as true 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 modules do not use subsonic filter. This type of filter is generally employed to reduce excursion at very low frequencies. However this kind of filter modifies the envelope and phase of the signal, while offering a relative driver protection only (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 exceed 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 consequence, the dedicated X-guard™ circuit has been subject of optimizations regarding the different kits / finished products we propose. However, since **this circuit offers 4 levels of setting**, it is polyvalent enough to be used to advantage in a very large number of subwoofer applications. However, on very particular applications, the X-guard™ circuit can be bypassed if appropriate.



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

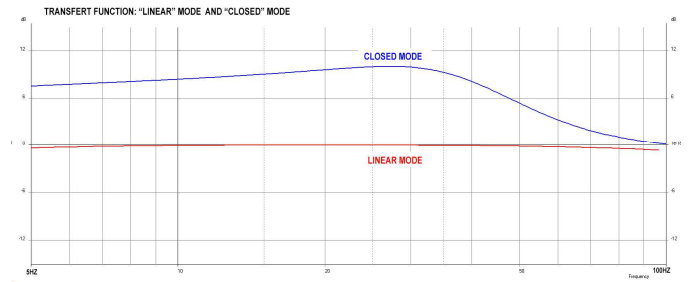




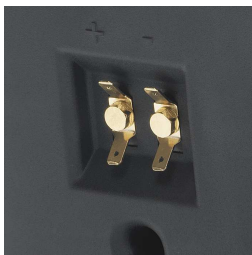
Compact closed subwoofers require an appropriate equalization to explore the infra-bass register properly. A simple “boost” centered on a frequency is not adequate.

**S500 and S250 modules are equipped with a 2<sup>nd</sup> order “shelving low pass” EQ (« closed » position on the front panel).** This filter stretches 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 has high and low level inputs available. Consequently, it is possible to connect the modules through the « pre-out/subwoofer out » outputs of a preamplifier/processor or directly on the speakers outputs of a standard stereo amplifier (parallel connection).

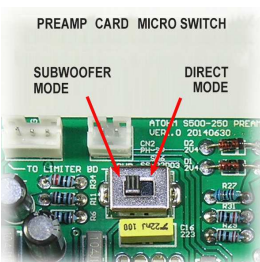


versions of Atohm modules)

Besides the power stages miniaturization, the implementation of the various stages as well as the main topology were studied to obtain an excellent Signal-to-Noise ratio in a minimum space. This compact design (55mm deep) participates in the development of compact subwoofers and speakers.

*(Please note that those two modules have the exact same dimensions, and furthermore, they can replace previous*

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



A great concern has been brought to the whole preamplifier/ signal processing part (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, those various stages can be bypassed in favor of a Hifi broadband amplifier (mono power block) using a simple internal switch. **In that case only the volume knob remains active. For instance, this configuration may be exploited for powered monitors manufacture.**

## TECHNICAL SPECIFICATIONS

Model :	S250 X	S500 X
RMS power /4ohms / 20Hz to 20kHz (cold start / 80s duration/direct mode)	220 Watts	500 Watts
Nominal load impedance Minimal load impedance	4 - 16 Ohms 3 ohms	4- 16 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 max	700W max
Accessories	Main power cable / 85cm speaker cable with fast on connectors / 4.2*20mm screws	Main power cable / 85cm speaker cable with fast on connectors / 4.2*20mm screws
Weight	0.90kg	1.2kg

