

## F5X-P, an All-FET, Pure Class A Preamplifier (iv)

XEN Audio

December 2012

### Case Design and Thermal Management

The case design for the F5X Preamp matches that of the F5X power amp, with the same minimalistic accent. The front panel is 350mm wide, same as the F5X, and 70mm high. As in any real high end preamp, the power supply belongs to a separate case, in order to provide proper shielding and isolation of any magnetic stray field from the mains transformers. Only electrolytic caps close to the main amplifier boards are incorporated in the main amplifier case. Transformers, rectifiers, and regulators are placed inside the power supply case. A matching case was also designed for this external PSU, similar to the Pass XP-20. However, for those who prefers a remote PSU away from the audio stack, there is no reason why one could not use a case of sufficient size from a third party supplier. There is no real limit to the length of the connecting power cables, since the last bank of capacitors after the capacitor multipliers are placed inside the preamp case.

The MOSFETs for the preamp dissipates about 10W per channel when using +/-24V power supplies. There is little performance loss, if any at all, even if the rail voltages are reduced to +/-18V, or even less, for line level operations. Thus, we consider the preamp case itself to be sufficient for heat sinking, although additional heat sinks can also be mounted internally onto the heat spreaders onto which the MOSFETs are mounted.

The rectifiers and the regulator MOSFETs dissipates much less heat, in the order of 2W per channel. Thus, no provision for further heat sinks was made for the PSU case.

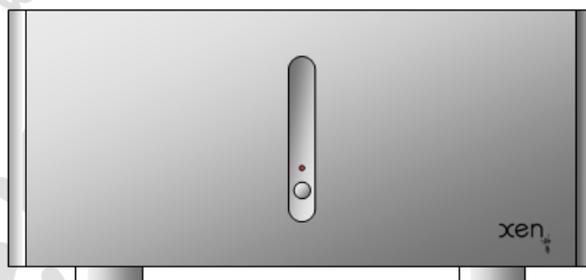
For those who, like us, prefer battery operation, 40x AA size NiMH rechargeable batteries per channel can be placed in the same PSU box. With a capacity of 2500mAH, they should easily supply enough power for more than 12 hours of continuous operation. Space has also been reserved inside the PSU case for the charger / control circuits.



F5X Class A  
Pre-Amplifier  
Housing



F5X Pre-Amplifier  
Power-Supply  
Housing



F5X Class A  
Power Amplifier  
Housing