

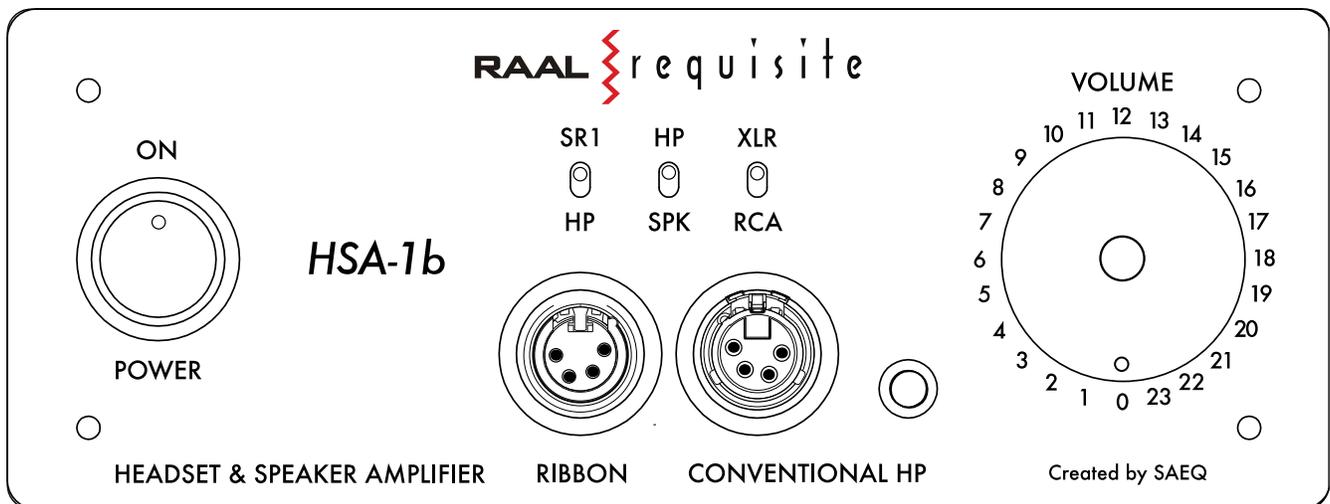


## HSA-1b

### Headphone and Speaker Amplifier

For RAAL-requisite True-Ribbon Earfield Monitor Headphones,  
Speakers, Conventional Dynamic and Planar Magnet Headphones

- Direct Drive Amplifier for True-Ribbon Headphones, Speakers & Conventional Headphones
- Uncompromised Fidelity
- Superbly Synergistic to the SR1a
- Precision 24-Step Attenuator for Rock-Solid Left/Right Balance, at all listening levels
- Output Switchable Between Headphones or Speakers
- Unbalanced, Single-Ended RCA Inputs
- True-Balanced, XLR Inputs
- 115/230V Mains (100V available for Japan)



### Development:

During the development of the SR1a True-Ribbon Earfield Monitor, it became clear, that if the SR1a were to be directly driven, this new technology of drivers would require a new type of amplifier. An amplifier capable of driving a 0.4Ω load (nearly a dead short).

This was an ongoing question and eventually, an associate of RAAL-requisite, Mr. Dragan Domanovic, founder and lead engineer of the SAEQ company (who was intimately aware of the SR1a and its revolutionary abilities) wanted to tackle the issue in a unique way that, he believed, would be superbly synergistic to the SR1a.

For some time now, SAEQ has manufactured a loudspeaker amplifier, which sounds inexplicably beautiful on speakers. Sonically, his amplifier seemed to be a prime candidate to complement the very nature of a true-ribbon driver. Early trials revealed, there was tremendous potential. Dragan believed, however, certain aspects could still be improved, which began a yearlong study...

With the SR1a, being such a revealing instrument, subtle amplifier characteristics become quite obvious. Only the purist (artifact free) level of sound quality would do and that would require a highly systematic approach. In time, as each iteration of the amplifier was built, clear advancement was verified by group listening sessions. The amplifier sample exhibiting significant improvement was kept as a reference-sample for the next comparative listening session.

We didn't know where it would all end up, but as we moved forward, the sound quality kept rising and our appetites were growing with it, wondering how far can this be taken, when all expectations had already been surpassed... Eventually, the sound became so good, we just relaxed and listened to the music.

In all, it took 9 amplifier iterations and over a year until we were satisfied with the synergistic pairing of the SR1a and HSA-1a direct drive amplifier.

## **Topology and Components:**

A BJT quasi-complementary, single-rail supply with a cap at the output and single-ended input. Simple, yet, very effective in minimizing TIM and a range of other types of distortion. Naturally, the topology had to be adapted for driving very low resistance loads with absolute stability, and still offer plenty of room for tweaking the sound in the desired direction.

Most modern topologies are very tight in holding their operational parameters, so working points become hard to change and component selection doesn't matter as much. However, with simpler topologies, aside from inherently healthy sound, there is a lot that can be done with correct component choices and their operational regimes. Also, having a cap at the output ensures that no DC current will pass to the ribbon drivers which could fatally damage them.

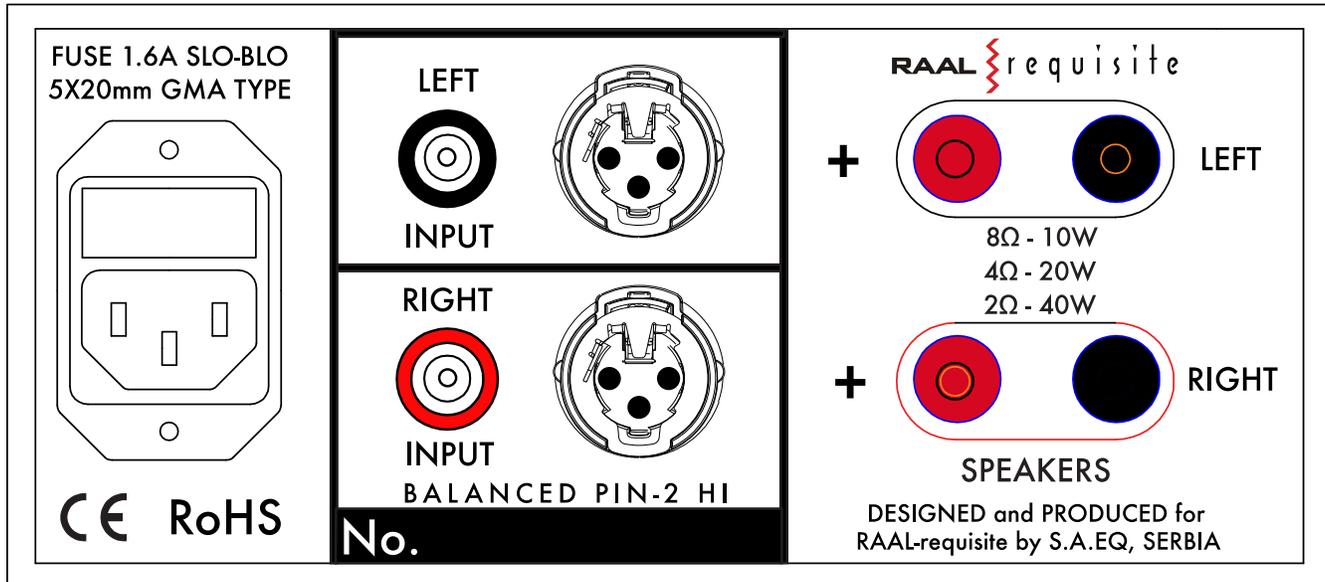
Quasi-complementary output provides another interesting feature in push-pull designs, as opposed to complementary pairs. Basically, both halves of the push-pull are identical. No difference in dynamic behavior of parasitic capacitance at input or output of BJT's and that goes a long way in removing certain coarseness in sound quality.

All semiconductors were carefully chosen according to their sound, when operated in the most appropriate working point for their ratings, using sockets for swapping without thermal shock, through endless hours of listening and measuring.

The final choices are a new generation of power BJT's for output, with linear current gain and 300W of dissipation which could easily drive two sets of SR1a headphones, while input and drive stages are very sensitive to the type of transistors, so the best in those roles are certain older types of BJT's.

Special care was taken in choosing the optimum capacitor for the output to avoid any sound penalty.

There is no protection of output from short-circuit. As with high current peaks, output protection is often the cause of instability. All components were chosen to avoid oscillation and compensations are minimal, preserving speed and authenticity of presentation.



## Specifications:

Load Impedance:	0.3 Ohm – infinity
Output Power (one channel driven):	10W /8Ω, 20W/4Ω, 40W/2Ω, 55W/1Ω @ 1kHz/sine
Ribbon & Headphone Drive	RAAL-requisite SR-1a, Dynamic & Planar Magnetic
Speaker Drive	8Ω, 4Ω, & 2Ω Loads
Freq. Response:	100mv/ in/sin. 15hz – 500kHz
Power Bandwidth:	100kHz (-3db) at 1kHz
Distortion:	< 0,5% at 1kHz
Signal to Noise Ratio:	Better than 90dB
Input Impedance:	40k Ohm
Sensitivity:	0.5V /40kOhm
Input:	IN1- 2 RCA, IN2 - 2 XLR
Max Power Consumption:	150W without signal 25W
Dimensions:	H 90, W 218, D 320mm (3.54 x 8.58 x 12.60 inches)
Weight:	5,3kg (11.68 pounds)
Price:	\$4,500 USD
Optional:	Waterproof Flight Case w/Handle & Casters \$350 USD
Selectable Mains Voltage	115/230V (100V available for Japan)

## CONTACT:

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