
Preface

In 2011, the second edition of my “The Sound of Silence” (TSOS-2) book appeared on the markets. The integration of a broad range of valve solutions became the main difference to the first edition (TSOS-1). In the July/August 2014 volume of their JAES publication, the Audio Engineering Society published an article about “The Vinyl Frontier”¹ showing remarkable sales quantities of vinyl LPs in the UK: from 200,000 in 2009 to 780,000 in 2013. At the same time, I read in US, French and German newspapers about an equally massive sales increase. Parallel to those increase in LP sales, very interesting newly developed turntables and phono-amplifiers of all kinds of technology entered (and still do) the markets. The price range is huge too and a price of $\geq 15,000.00$ EUR/ $\geq 18,000.00$ \$ for a phono-amp or turntable is no longer impossible. Despite the still rather small overall quantities, vinyl is back again, and it produces reasonable revenues and profits.

Having studied the above-mentioned editions of my books, the observant reader might stumble over the fact that the design of a fully balanced RIAA phono-amp is missing. Finally, in these books, all mathematical- and design-oriented efforts led to the semi-balanced “RIAA Phono-Amp Engine I” that includes different modules of solid-state and triode-driven phono-amps; the triode module in the second edition first. Semi-balanced, because Engine I offers balanced and/or un-balanced inputs, followed by an un-balanced treatment of the RIAA transfer function creation—via feedback path in the solid-state environment, via one passive network between two triode gain stages. The outputs are balanced and un-balanced too.

The content of the herewith-presented TSOS-Extension² shall fill the obvious gap. No matter whether actively or passively configured, in this book on hand, fully balanced means that each phono-amp stage ends up in a balanced—or in other words symmetrical—solution, differentially amplified. Un-balanced/single-ended intermediate solutions are not in the scope.

¹“The Vinyl Frontier”, Francis Rumsay, JAES Vol. 62, No. 7/8.

²= TSOS-E.

There are only two exceptions with un-balanced inputs:

1. In cases of input amplifiers for MM cartridges and the MM cartridge has a connection from one of its output leads to the case (eg many Shure cartridges), and
2. In cases of turntables that offer un-balanced connectors and the user does not want to install balanced cables.

In these cases, it makes sense to integrate un-balanced-in/balanced-out gain stages via an external input.

Consequently, I call the presented rather complex phono-amp solution “RIAA Phono-Amp Engine II”. It is thus a kind of platform fulfilling a high number of design goals, focused mainly on MC cartridge usage. Among these goals, Engine II offers the following:

- Many testing possibilities of very different active and/or passive amplifier technologies and cartridge/turntable combinations.
- The selection of a simple-mode Engine II for private use or of a complete test-purpose laboratory instrument.
- A deep insight into all design matters concerning electronic noise and stage circuitry through extensive example calculations with Mathcad worksheets.

These worksheets include signal-to-noise ratio (SN) calculation approaches, and all necessary calculation aspects concerning gain, input and output resistances, and frequency and phase response-settings.

The inclusion of the TSOS-1/-2 indexes should ease follow-ups across the different books. Like in TSOS-1/-2, the lowest noise results and an excellent sound production are still on top of my efforts.

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Balanced Phono-Amps

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