Tube Audio DAC
Non-Oversampling Drop-In

€89,- shipping included

This modification to your Tube Audio DAC will change it to a Non-Oversampling DAC. The concept behind a Non-Oversampling DAC is that the whole process of digital filtering is removed. The main benefit is that Digital filters can cause a lot of jitter, hence smearing in the time domain. You will be amazed how much more analog your DAC will sound compared to its original state. The increased level of details, will enhance the soundstage. Even in the low end, the DAC now has better resolution without loosing the details and clarity in the highs.

This modification also changes the way the S/PDIF decoder chip CS8412 is controlled. The decoder now is externally clocked (slave-mode), taking advantage of the low noise characteristics of the internal clock circuit of the Tube Audio DAC. Again an increased level of details is achieved due to the better jitter performance.

The modification requires some minor modifications on the 4-layer digital PCB; three wire connections and the cutting of some PCB traces. Modifying the digital PCB is done using a soldering iron with small tip (<50W), a sharp knife, small cutter, tweezers, de-soldering pump and litze.

The Tube Audio DAC Non-Oversampling Drop-In module is delivered preassembled and accompanied with step by step mounting instructions. Each module is individually tested.

Contact Peter Beyer at *pbeyer@telfort.nl* for availability.

References:
- Tube Audio DAC website *http://members.chello.nl/~m.heijligers/DAChtml/dactop.htm*
- Kusunoki, Non-oversampling Digital filter-less DAC Concept, *http://www.sakurasystems.com/articles/Kusunoki.html*

Note. The step-by-step mounting instructions only apply to the Tube Audio DAC as referred to in this leaflet.
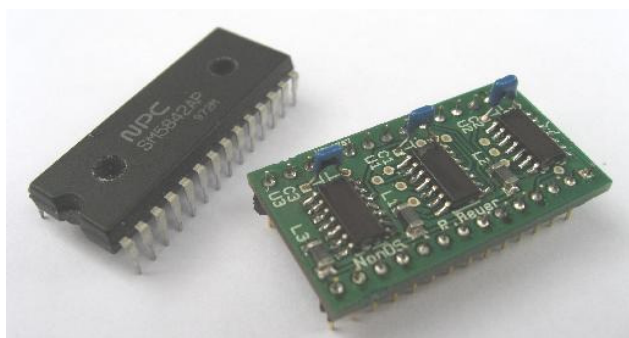
NonOs Drop-In and old SM5842 digital filter
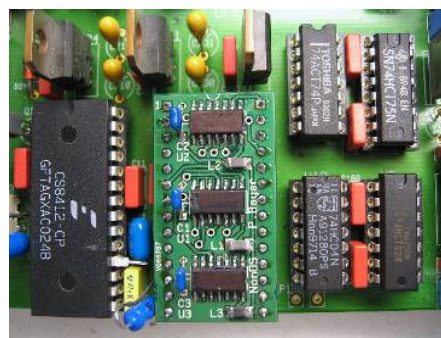
NonOs Drop-In mounted

What users say

Much much clearer and cleaner, with better resolution especially in the low end. Less smearing somehow, with everything sounding more fluid and more precise. The soundstage is better resolved – in summary just better! I am very happy with it!

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I realy enjoy the nuances the DAC shows. Voices are just more tranquil. Less musical stress is the best way to describe this modifcation. Very evident with complex recordings and pieces. The sharp edges made room for a lot af space.

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I hear more air around instruments and voices. It looks like the speed has increased, especially with cymbals. There is more decay of tones, which make it easier to follow. One of the better modifications I think.

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Addendums

Versatile applications

Although this module is intentionally designed to operate in the Tube Audio DAC as referred to in this leaflet, other applications are quit well conceivable. The Block Diagram and Pin Description and associated Timing Diagram of the module should help the advanced to deploy the Non-Os module in other applications of synchronization to serial audio data streams.

Block Diagram
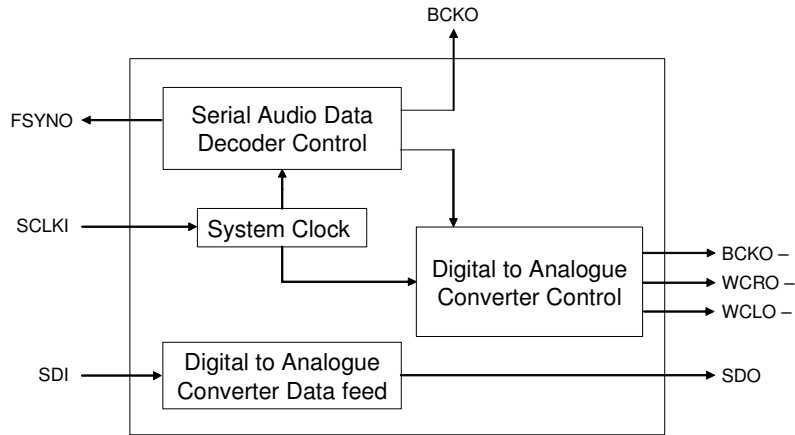
Pin Description

PIN	NAME	DESCRIPTION
1	SDI	Serial Data Input – Audio data serial input
2	BCKO	Bit Clock Output
3,4,5	NC	
6	SCLKI	System Clock input 256x Fs
7	NC	
8	VSS	Ground
9,10,11,12,13,14	NC	
15,16	NC	
17,18	VSS	Ground
19,20	NC	
21	VSS	Ground
22	VDD	Power Supply +5 Volt / 2.14 mA typ.
23,24	SDO	Serial Data output terminal
25	WCRO –	Word Clock Right Output – Indicates end of right channel data in SDATA transmission
26	BCKO –	Bit Clock Output
27	WCLO –	Word Clock Left Output – Indicates end of left channel data in SDATA transmission
28	FSYNO	Frame Sync Output – Alternating L/R enable for 64 bits audio sample

Timing Diagram

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