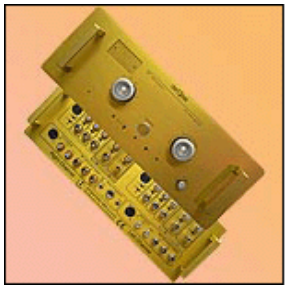
6moons AUDIO REVIEWS

JANUARY 2007



darTZeel NHB-18NS

Reviewer: Mike Malinowski
Source: Walker Black Diamond turntable; Walker Reference phono preamp; Clearaudio Goldfinger
Preamp: VTL 7.5 Reference; d*arTZeel NHB 18NS* [on review]
Amp: darTZeel NHB-108; VTL S400
Speakers: Wilson X-2 Alexandria
Cables: Transparent Opus, Silent Source, Omega Mikro Ebony speaker cables; Transparent XL w/MM interconnect to amp; Silent Source and Xtreme between phono pre and preamp
Stands: Michael Green racks, VPI phono stand, Zoethecus, Walker Prologue Amp Stand
Powerline conditioning: Furman Balanced Power, Walker Audio Velocitor S, PS Audio 300
Sundry accessories: Valid Points resonance control discs; ASC tube traps; Echo Buster absorbent and diffuser panels; Argent Room Lens; separate 90-amp sub panel feeding five dedicated cryo'd outlets; Loricraft Model 4 record cleaner; Walker Talisman
Room size: 22' x 17' x 8' (double sheetrock on 2"x 6" framing in basement)
Review component retail: $23,250 with integrated phono preamp

Introduction
The darTZeel NHB-18NS (Never Heard Before - model 18, No Switches) is Hervé Delétraz's all-out assault on the state-of-the-art of preamp design. At $23,250 it better not be a me-too product. The most common reference path in preamp design is to combine superb sonics with über-control flexibility. The two-chassis VTL 7.5, Boulder 2010 and Levinson 32 all take this course. These are amazing beasts that can adjust levels, select inputs and in the case of the Levinson, vary the resistive and capacitive loading for your phono cartridge – all from the comfort of your listening chair by remote control. These are no sonic slouches either.

Hervé has taken quite the opposite approach. While not calling the 18NS *minimalist*, there is certainly no vibrant digital display, no multi-function remote control nor dozens of buttons and switches to be found anywhere. This baby was designed for one thing: to be the finest sounding preamp anywhere at any price. This is one man's lifelong commitment to produce a sonically spectacular device with revolutionary design elements using common off-the-shelf parts, then build it in Switzerland to a standard that should allow it to outlast most of us.

With a build quality that is off the scale, the 18NS has a stunning look that is unique, simple and elegant. One button, two large knobs, and three lights are its prime distinguishing characteristics. The 18NS was designed to be the companion piece to the **NHB-108 amp** and shares the sonic darTZeel family sound. Far more than sharing just a physical appearance, the circuit design of the 18 is virtually identical to that of the 108. It's fair to say that if you like the 108, you'll love the 18 - and let me tell you, I loved the 108. Hervé is an engineer and designer who truly understands the purpose of musical enjoyment. With unmatched zeal and fully understanding that an amplifier will not cure cancer nor end poverty, Hervé's purpose was not for an edifice to his engineering excellence but to bring ultimate joy and musical pleasure to the listener, with a slight added touch of mischievous whimsy. Did I mention that the 18 includes a superb built-in phonostage? It most certainly does.

Although grossly oversimplified, the darTZeel philosophy is:

(1) Use an exceptionally simple amplifying circuit.
(2) Remove all global feedback and virtually all local feedback.
(3) Provide perfect power.
(4) Design the circuit for exceptional extended bandwidth and minimal phase shift.
(5) Eliminate all switches, relays and traditional volume controls.
(6) Build it to a quality level that would make NASA proud.

This in essence defines the 18 NS.

This is one heavy piece, weighing 23 kilograms (50 lbs) with 16mm (.63 inch) thick front panels, 10mm (.4 inch) side panels all evidencing fanatical attention to milling and construction. This is obviously a no-compromise component which was not made to a price point. It is elegant and sophisticated in design, meticulous in execution.

The rear panel
Unlike the simplicity of the front, there's a little more going on in the rear. In addition to the standard single-

Description
If you are expecting dozens of controls, knobs and switches for your $20K, then you might be disappointed. The most obvious physical characteristics of the 18NS are two large knobs, symmetrically placed on the front panel, which compare physically to the power lights of the 108 amp. The left knob called *Enjoyment Source* is the input selector. The right *Pleasure Control* knob is what most others call a volume control. Both controls have rubberized bands around the circumference and a silky elegance that you must feel to believe. The center on/off button is called the *Power Nose* (again identical to the 108 amp).

While the 18NS visually matches the 108 amp, I can assure you that it will match nothing else on your equipment rack. No one will mistake this gold and red beauty for any other brand. It's not going to blend in with your other silver and black components but who cares? This sucker was built for sound, not to blend in. Don't get me wrong though. While the unit is visually different, it really is stunning. If color or style matching are your prime concern, however, there are certainly other routes to go.

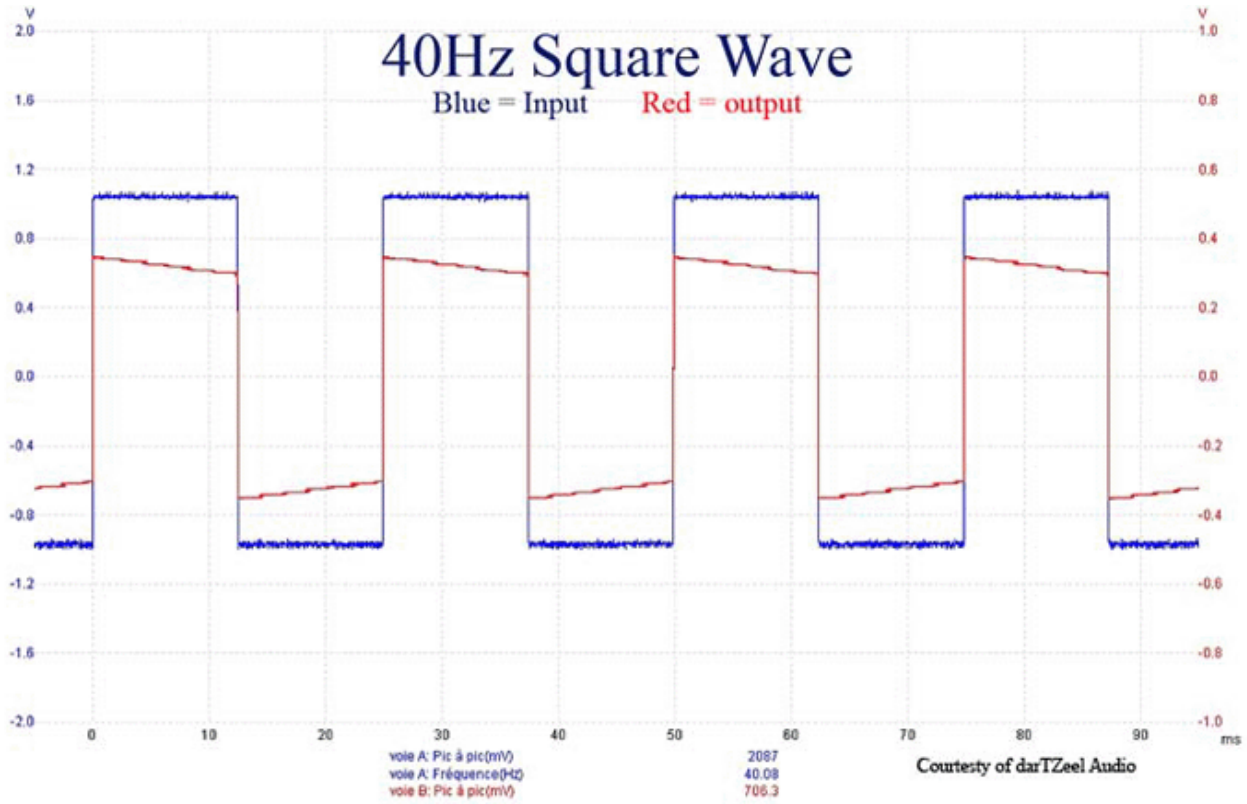
ended RCA and balanced I/Os, there are fourteen 50-ohm connectors which darTZeel calls Zeel inputs and outputs. More on this later but they are an important element relative to Hervé's vision of sonic perfection.

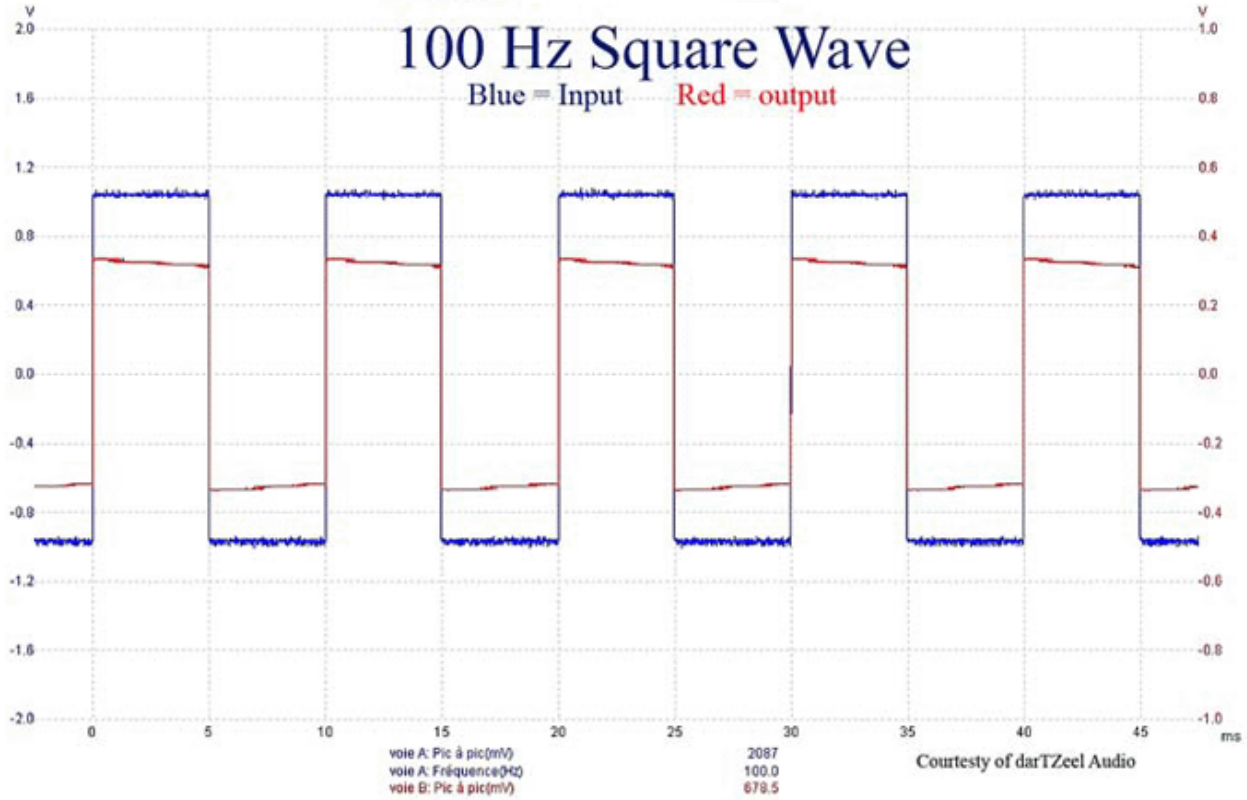
A small toggle switch below each input allows switching between various grounding schemes if you run into hum problems. Select either chassis ground, earth ground or floating ground. Line inputs one through five are switchable between single-ended or Zeel inputs. A small toggle switch below each selects between single-ended, Zeel or a 6dB attenuation setting. Input number six is for XLR balanced sources with a switch toggling between standard 600-ohm impedance for professional gear and 6dB attenuation. Another switch offers various grounding paths for minimizing ground loops. Standard outputs include balanced XLR, RCA, a single buffered recording output and three buffered Zeel outputs which, with optional filters, can be used to feed the 108 amplifier for either bi-amp or tri-amp applications.

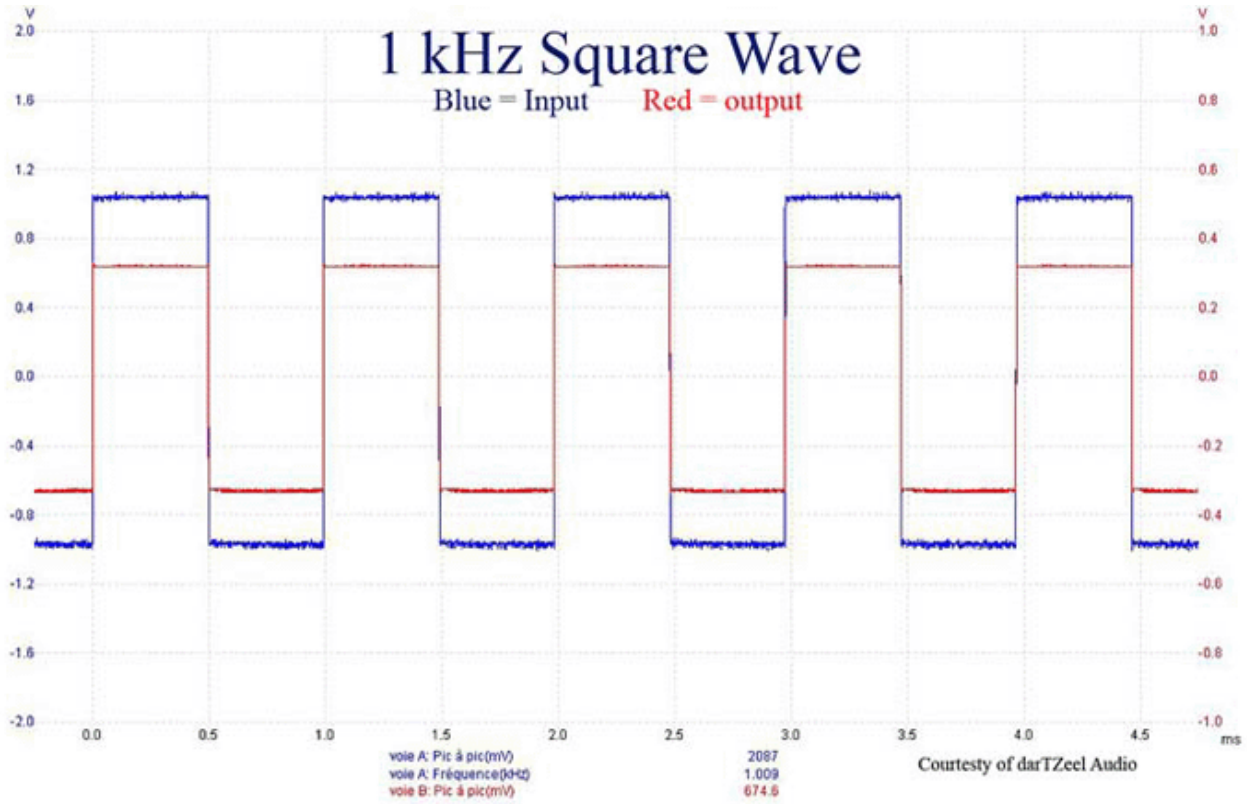
Remote control

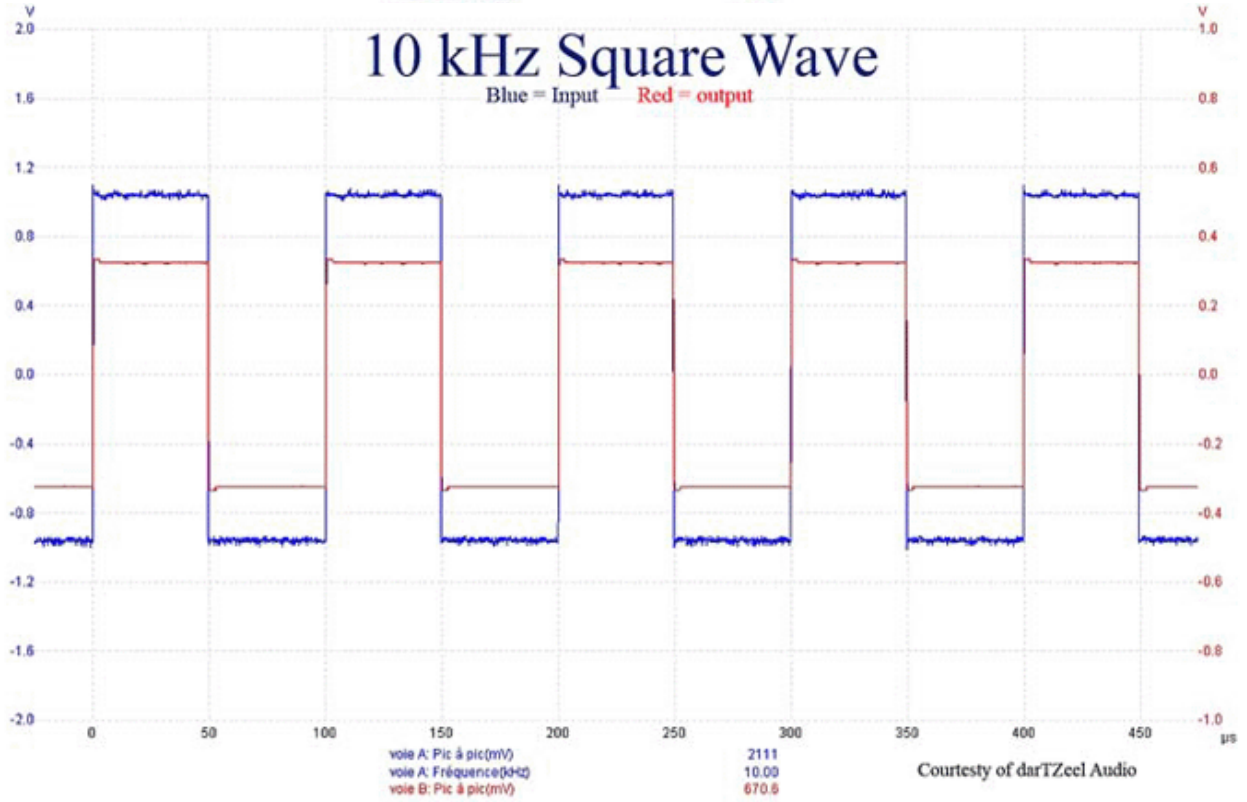
You can't get much simpler than the 18's remote, machined from a solid billet of aluminum. It's heavy and well-balanced but really does only a few things: raising and lowering the volume, full muting and turning the front face panel indicator lights on and off. The design is minimalist squared. If you're looking for a remote to control the universe with like the VTL 7.5, look elsewhere. Because the 18 doesn't have digital readouts, pressing volume up or volume down causes the three fascia indicator lights to momentarily flash green, indicating that the unit is receiving volume change instructions from the remote, a neat little feature. As to input source changes, Hervé's philosophy is that if you're going to change a source -- from phono to CD let's say -- you have to get up anyway to cue the record or load the CD.

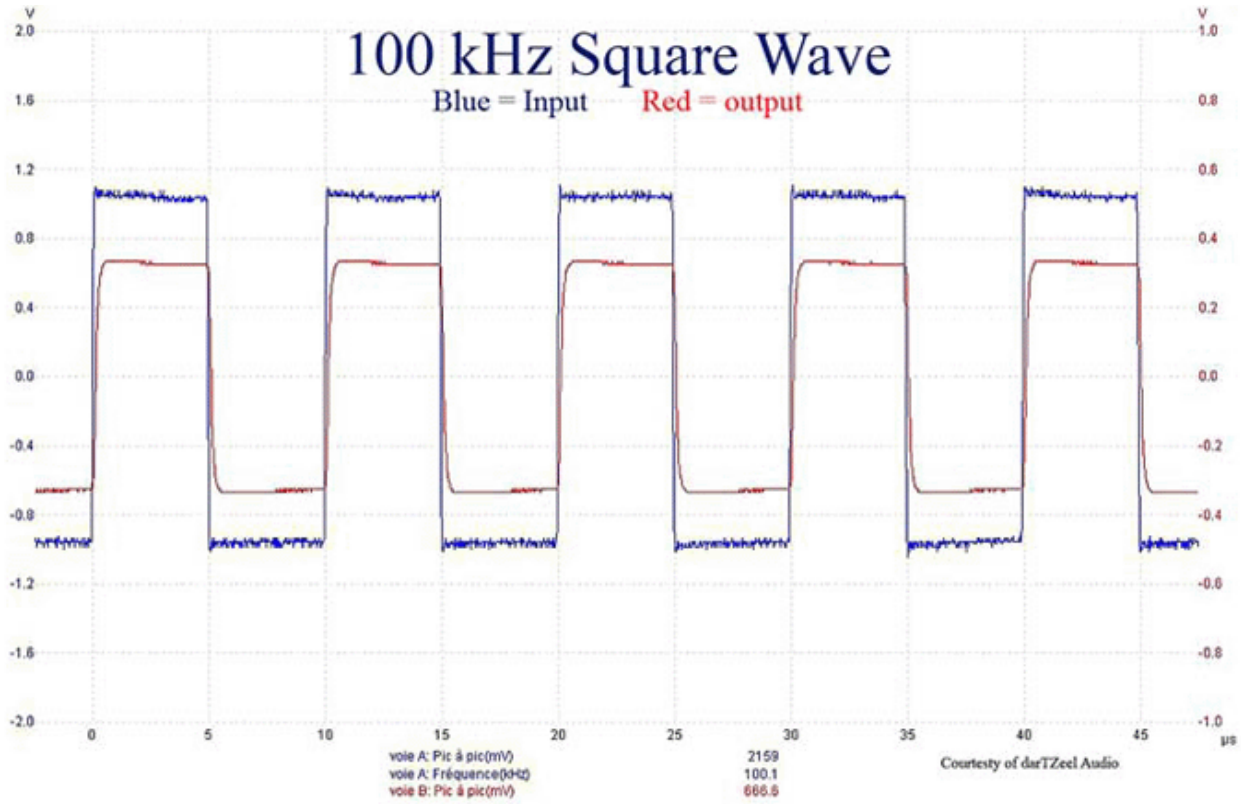
Design
According to Hervé, the fundamental problem in amplification is transient intermodulation distortion (TIM) which occurs "when the negative feedback loop is in a state of overflow which is something that arises more often than you might think since a negative feedback loop correction always applies after the phenomena to be corrected appears. During these very short instances, the amplifier can produce more than 100% THD and/or IMD." In darTZeel speak, this is *temporal distortion*. The other contributor to temporal distortion is phase shift, especially at very low and high frequencies. Hervé challenges listeners to look at a square wave response of an amplifying circuit at, let's say 40Hz, not just at 1k or 10k. Although a square wave at 40Hz might have an excellent rise time, significant tilting at the top indicates problems. "Ideally the amplifying circuit should reach 10 times lower and 10 times higher than the audio band to maintain correct phase. Our circuits extend 50 times lower and 50 times higher... at 20Hz we are quasi flat ... at high frequencies we extend to about 1MHz - 50 times more than 20kHz to obtain 1° phase shift at 20kHz."

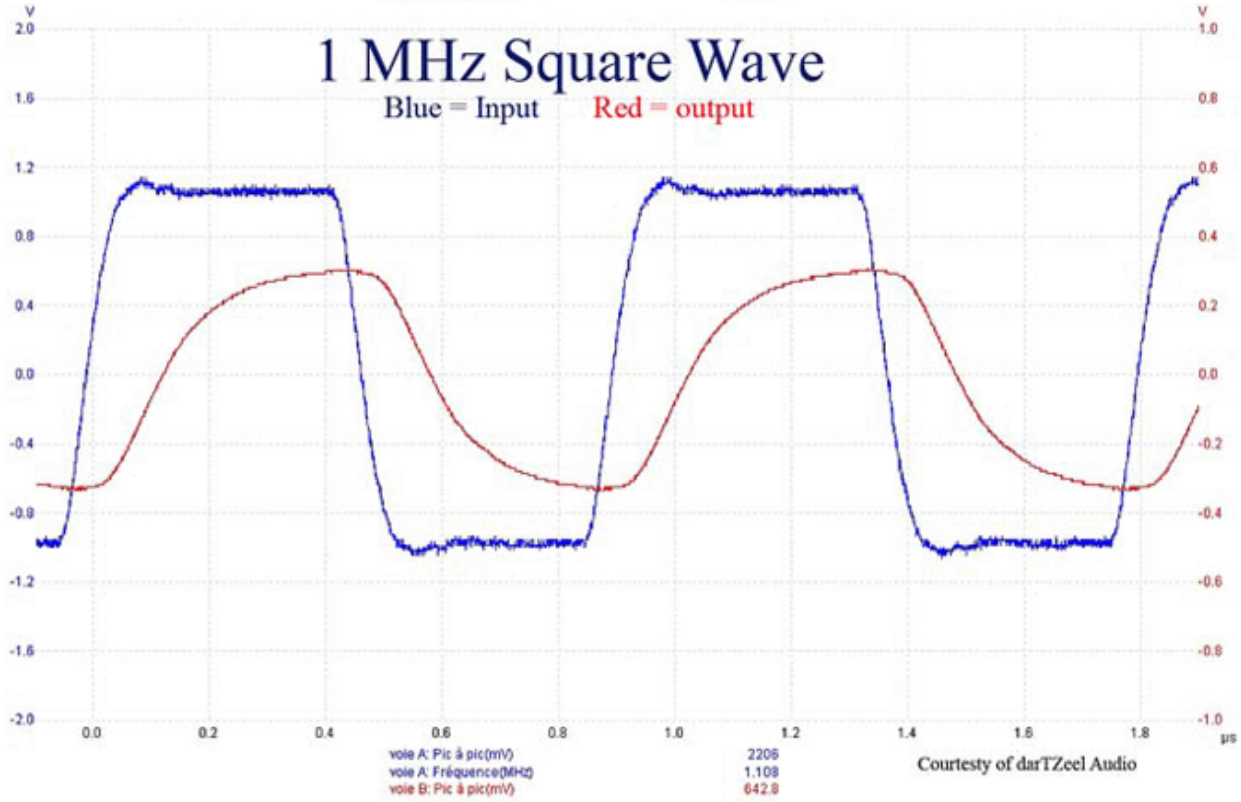

40Hz Square Wave
Blue = Input Red = output
V
2.0
1.6
1.2
0.8
0.4
0.0
-0.4
-0.8
-1.2
-1.6
-2.0
V
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
0 10 20 30 40 50 60 70 80 90 ms
voie A: Pic à pic(mV) 2087
voie A: Fréquence(Hz) 40.08
voie B: Pic à pic(mV) 706.3
Courtesy of darTZeel Audio


100 Hz Square Wave
Blue = Input Red = output
V
2.0
1.6
1.2
0.8
0.4
0.0
-0.4
-0.8
-1.2
-1.6
-2.0
V
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
0 5 10 15 20 25 30 35 40 45 ms
voie A: Pic à pic(mV) 2087
voie A: Fréquence(Hz) 100.0
voie B: Pic à pic(mV) 678.5
Courtesy of darTZeel Audio

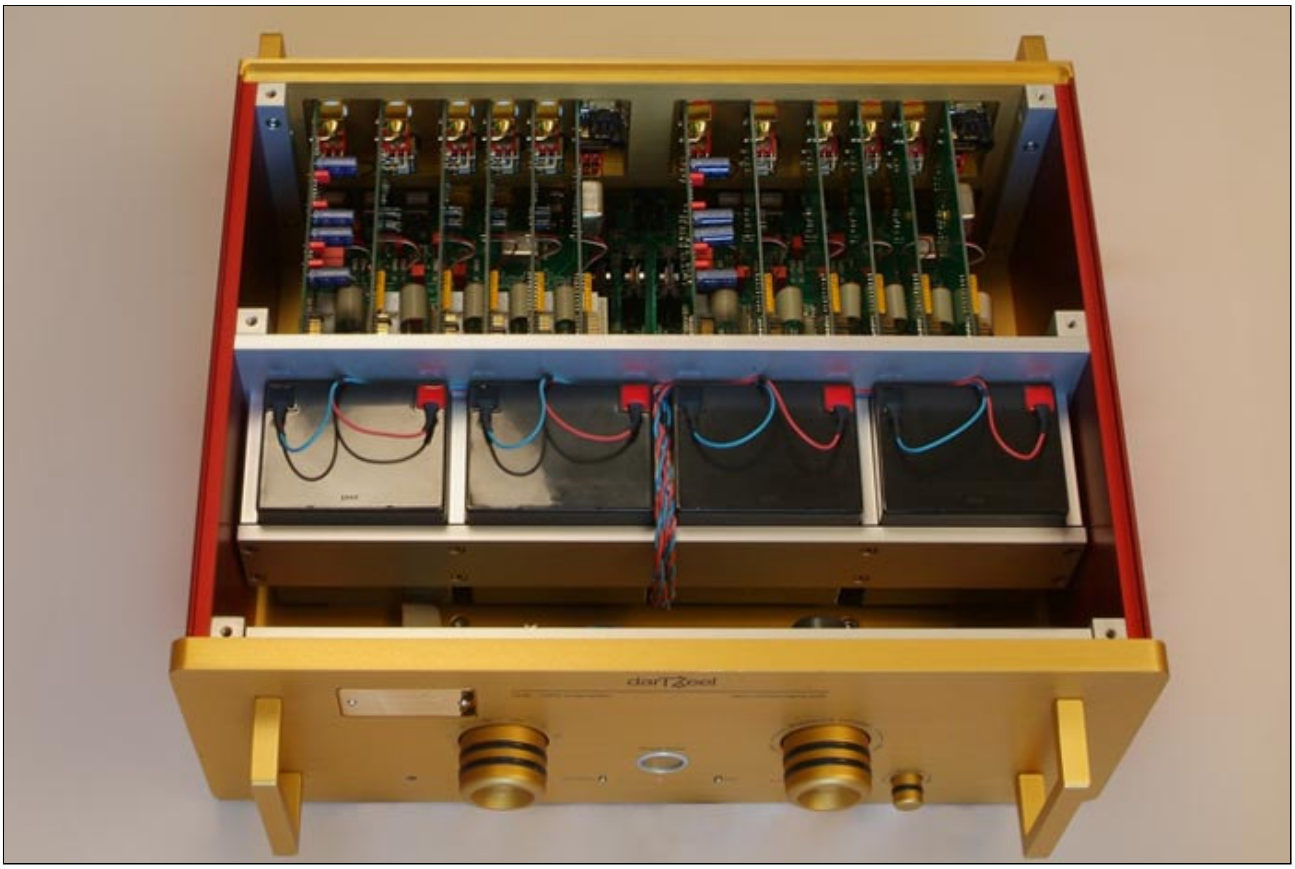

1 kHz Square Wave
Blue = Input Red = output
V
2.0
1.6
1.2
0.8
0.4
0.0
-0.4
-0.8
-1.2
-1.6
-2.0
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 ms
voie A: Pic à pic(mV) 2087
voie A: Fréquence(kHz) 1.009
voie B: Pic à pic(mV) 674.6
Courtesy of darTZeel Audio


10 kHz Square Wave
Blue = Input Red = output
V
2.0
1.6
1.2
0.8
0.4
0.0
-0.4
-0.8
-1.2
-1.6
-2.0
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
0 50 100 150 200 250 300 350 400 450 µs
voie A: Pic à pic(mV) 2111
voie A: Fréquence(kHz) 10.00
voie B: Pic à pic(mV) 670.6
Courtesy of darTZeel Audio



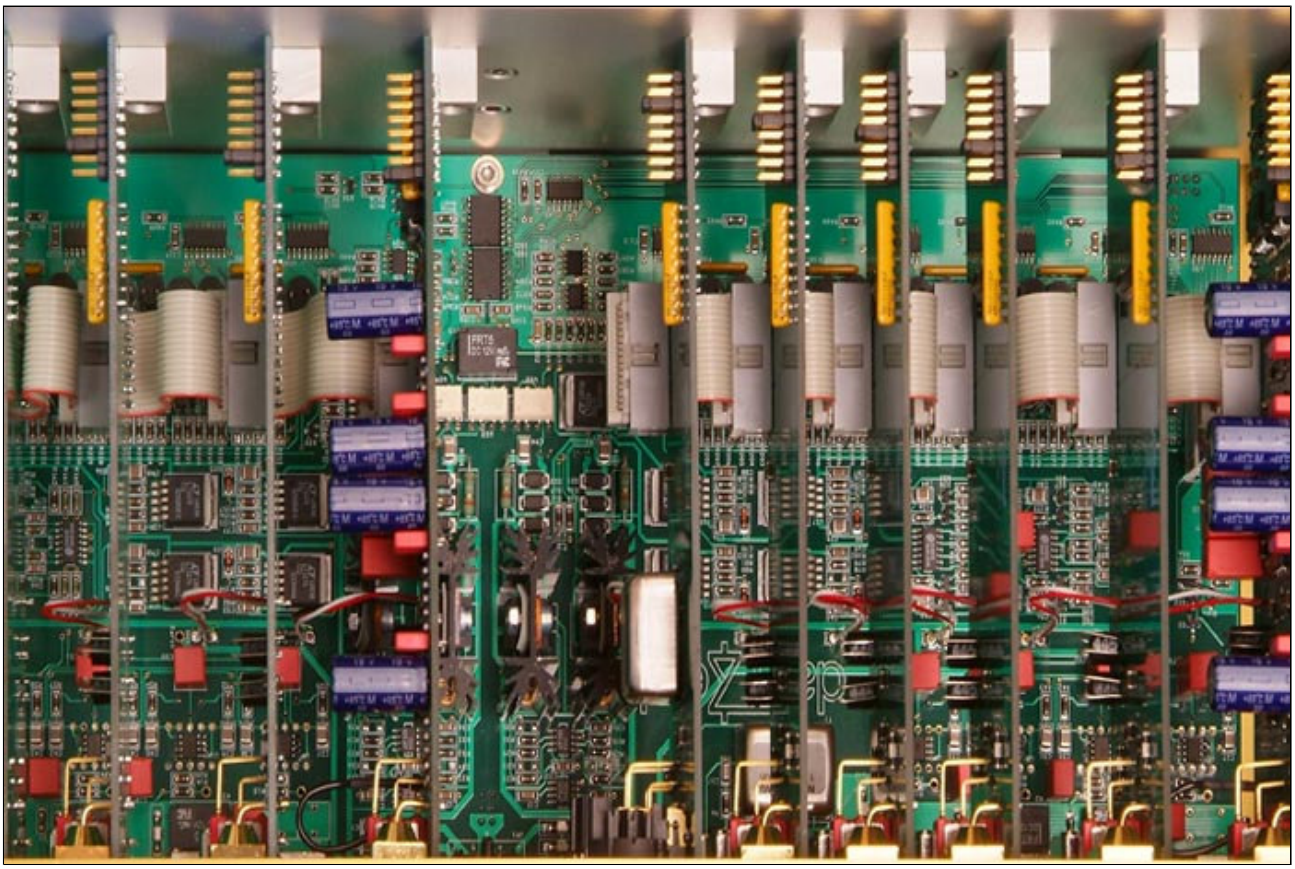


According to darTZeel, eliminating phase shift and global feedback solves the temporal distortion problem. Therefore, all darTZeel amplifying circuits operate only with small local negative feedback loops instead of a global loop. It is an interesting academic solution in theory but apparently difficult to execute in practice. High bandwidth generally requires global feedback, and low feedback equals poor frequency response. It's taken Hervé 20 years to develop and perfect his solution and the interview following the review will shed some light on specific design implementations.



Back to the front panel. The only other knob there is a small balance control and like most things here, it is slightly different. There is no audible difference in balance until the balance control is moved approximately 5° off center. When you're close to the center position, the system keeps the channel balance exact. A full turn right or left equates to 3.5dB maximum cut, automatically boosting the opposite channel by the same amount for a maximum of 7dB tilt. This allows for an exceptionally fine tuning of the overall soundstage without affecting the overall volume, permitting utterly precise imaging and balance control.

There also are two small spring-loaded switches for mute and stereo/mono. The central front panel LED glows yellow when the preamp is operating in the battery mode and red when charging. The other two LEDs indicate red or green for mute and stereo/mono. There are two small red indicator lights on the enjoyment and pleasure knobs to indicate their relative position. The LEDs are innocuous to me even in a darkened room but can be turned off. A home theater bypass mode is provided.



Again, you don't switch an input, you "enjoy a line source". A quick twist of the enjoyment knob allows you to change your *enjoyment* from one input to another; with about a one second delay and a soft audible click, your enjoyment begins.