

darTzeel

NHB-18NS preamplifier

User Manual (Preliminary)



Table of contents

1. Introduction	4
2. Brief description	4
3. The NHB-18NS in details.....	5
3.1. FRONT PANEL	5
3.2. REAR PANEL	5
3.3. Connecting the NHB-18NS.....	6
3.4. Using the NHB-18NS.....	6
3.5. Special features	7
4. Technical data.....	8

darTZeel NHB-18NS

User Manual

1. Introduction

Congratulations for purchasing a darTZeel NHB-18NS.

Our machines are designed and hand built for *very* long lasting use and musical pleasure.

The darTZeel NHB-18NS is a highly unusual preamplifier, and requires special care. We strongly recommend you **read this manual in its entirety**, in order not to miss *any* reason for enjoying your machine at its very best!

When opening the crate, you certainly noticed the packing/unpacking notice, **printed in green**. Please take some time to mentally note how your preamplifier is packed. It will save you some insomnia nights when you will have to move house one day. Taking some pictures may help you...

2. Brief description

The darTZeel NHB-18NS is the perfect partner of the NHB-108 model one.

The in-house designed, built-in phono stage, is offered as a standard feature.

One of the secrets of the darTZeel NHB-18NS can be found in two words:

Passion and Love... The passion for sound, of course, and love of music, needless to say...

As for the rest, we just put in few electronics, a wee bit of mechanics, and a touch of appropriate software.

The NHB-18NS is a full battery powered machine. Every time you will switch your preamplifier ON, the battery operation mode will be selected, no matter if the batteries are fully charged or not. In case batteries would need a charge, the external supply will charge them automatically. When batteries are charged, you can expect for a battery life of about 17 hours. We recommend switching the preamplifier OFF when not listening to it, so you

will be sure that battery mode will be activated when listening to music.

As for the embarked technology, the NHB-18NS is truly at the peak that is possible to realise today.

With more than 1,200 electronic parts involved, we however kept our very first aims untouched. The signal path only travels through 7 junctions (7 transistors) from input to output, while the phono stage only adds 6 junctions for the sake of best transparency.

All basic circuits – phono stage included – are directly derived from the internationally patented NHB-108 model one amplifier's. No global feedback, open loop output stages, very wide bandwidth and extremely low phase shift: this *is* the NHB-18NS.

Our proprietary volume control involves a very new approach, never achieved before: no any contacts, relays, switches or silicon devices are used. The delicate sound then remains untouched, for your greatest pleasure, so the reason why we did not write "Volume" on the front plate, but simply Pleasure Control... The way we do it is still a bit confidential at the moment; we just can say that some light is involved in the control.

The Enjoyment Source – commonly called "input selector" – also benefits from the very same kind of approach: we do not select the input, we do *enable* it. Here again, no switch, relay or the like.

NS stands for No Switch. We are very proud that the NHB-18NS is the very first "zero contact" preamplifier in the world. And even more proud that you can enjoy it now.

This present user manual is still under its preliminary state, so please excuse us for the still missing detailed explanations and less than perfect presentation...

3. The NHB-18NS in details

3.1. FRONT PANEL



- | | |
|---------------------|-------------------------|
| 1. Power Nose | 5. Mute / HT Bypass |
| 2. Enjoyment Source | 6. Mono-Stereo / Dimmer |
| 3. Pleasure Control | 7. Identity Plate |
| 4. Balance Control | |

3.2. REAR PANEL



- | | |
|---------------------------|-----------------------------------|
| 1. Phono Input | 6. Line RCA Output |
| 2. Line RCA / Zeel Input | 7. Line darT Outputs |
| 3. Line RCA / Zeel Inputs | 8. Line RCA Fixed Output |
| 4. Line XLR Input | 9. Power Supply / Trigger Outputs |
| 5. Line XLR Output | |

3.3. Connecting the NHB-18NS

First connect the external power supply's umbilical cord to the power connector located on the **Rear Panel (Chapter 3.2. fig 9)**.

Phono input:

Use inputs I (**Chapter 3.2. pos. 1**). You can either connect the ground wire to left or right channel. The toggle switch allows choosing phono ground path between signal ground, AC earth, or floating. Default position is Gnd (right). If you hear some abnormal rumble, you can play with both channels' toggles in order to minimize it.

Phono settings: You can change the phono input settings by a wide margin, allowing for most MM and MC cartridges. This can be done using a solder iron. This will be explained in details in the final manual release. Factory settings are:

MC, gain = 60 dB, load = 836 ohms

This setting works well for most audiophile cartridges with an output level from 0.3 to 1 mV.

Line inputs:

Inputs II to V (**Chapter 3.2. pos. 2 & 3**) are for RCA single ended sources, input VI is for XLR true balanced sources.

Toggle switches:

For inputs II to V, default position is center. Left position provides 6 dB of attenuation in the case your source would exhibit a very high output level. Right position is for Zeel 50-ohm purpose, dedicated to future darTZeel sources.

For input VI (**Chapter 3.2. pos. 4**), the upper toggle default position is center. Right position offers 600-ohm input impedance for professional gear. Left position lowers the gain by 6 dB; this attenuation only works when true floating source is used (transformer output source).

Lower toggle switch allows for various ground path schemes regarding the XLR chassis jack. Default position is right. Center position is floating, useful in certain circumstances for cancelling ground loops. Left position is with XLR chassis connected to ground via a 100-ohm resistor, for same purpose as described for center position.

Outputs:

Nothing particular to notice here, save the following:

REC output (**Chapter 3.2. pos. 8**) is a fixed, buffered output. Loading it with a matching component like a recorder or a CD burner will therefore not affect the sound quality. Due to non use of any global negative feedback, the output gain is slightly lower than 0 dB.

BNC darT outputs (**Chapter 3.2. pos. 7**): All these 3 output are separately buffered, and are dedicated for feeding the darTZeel NHB-108 model one power amplifier. Optional, built-in filters can be activated for bi-amping or tri-amping purpose. This special feature will be explained in details in the final manual release.

3.4. Using the NHB-18NS

Once everything has been properly connected, you can power the preamplifier ON by pressing the Power Nose (**Chapter 3.1. pos. 1**).

After about 10 seconds, the NHB-18NS is ready to play music.

When "enjoying" from a line source to another one, about half a second dead-time is allowed for blocking bumps and clicks.

When "enjoying" from line to phono, a very small click can be heard (independent of pleasure control position), then the phono stage is activated after around 8 seconds.

When going back from phono to line, only half a second is required.

Balance control (**Chapter 3.1. pos. 4**):

This is not a standard balance control (of course, it is a darTZeel machine)!

When using the Balance, the change only begins after about plus and minus 5 degrees of rotation, ensuring that when you are close to middle position, balance channel is kept dead center.

At full right position, R channel is increased by 3.5 dB, L channel lowered by 3.5 dB.

At full Left position, L channel is increased by 3.5 dB, R channel lowered by 3.5 dB.

This feature allows for very fine adjustment, and keeps global loudness at same level even while altering the balance.

3.5. LED Status

The 3 LEDs inform you about almost everything you would need to know. In order to better understand their behaviour, hereunder is a summary:

Central power LED:

NHB-18NS powered ON → YELLOW = battery mode RED = charging GREEN = remote receiving
NHB-18NS Powered OFF → NO LIGHT = charged GREEN = charging

Mute LED:

NHB-18NS powered ON → YELLOW = normal mode RED = Mute GREEN = HT bypass
NHB-18NS Powered OFF → NO LIGHT

Mono/Stereo LED:

NHB-18NS powered ON → YELLOW = stereo mode RED = mono mode
NHB-18NS Powered OFF → NO LIGHT

Remote control operation:

Every time you hit the plus or minus loudness key, all three LEDs are going GREEN until you release the pressure. So you perfectly know when the NHB-18NS receives an order. This feature is very useful when you want to adjust the loudness in very small increments.

3.6. Special features

Home Theater Bypass:

If you hold the mute toggle switch (**Chapter 3.1. pos. 5**) for about 7 seconds, the Mute led will go green, indicating that the corresponding input is now in HT bypass mode. The pleasure control is now defeated, and the global In-to-Out gain is set at 0 dB. The setting will be kept in memory until the Mute toggle will be hold again for 7 seconds.

Every input can be HT bypassed if needed.

Front panel Illumination

You can switch off all light illumination (leds and knobs surrounding) by either doing the followings:

Holding down the Mono/Stereo toggle switch (**Chapter 3.1. pos. 6**) for 5 seconds.

OR

Pressing, on the remote control, both plus and minus loudness keys for about 1 second.

4. Technical data (preliminary)

darTZeel NHB-18NS preamplifier

Gain	:	Line 11 dB Phono 30 to 66 dB (up to 77dB gain at output)
Frequency response	:	1 Hz to 1 MHz, +0, -6 dB (depends on measurement method). 10 Hz to 100 kHz, +0, -0.5 dB (depends on measurement method). 20 Hz to 50 kHz, ±0.5 dB (XLR inputs and outputs).
Rise time	:	< 0.8 µs. (depends on measurement method).
Slew rate	:	> 88 V/µs, peak-peak.
Total Harmonic Distortion (THD)	:	< 1 % from 7 Hz to 77 kHz
Temporal Distortion	:	None, at any level and load equal or above 50 ohms.
Crosstalk	:	< -90 dB from 20Hz to 20kHz.
Signal to noise ratio	:	> 100 dB (A), line; > 70 dB (A), phono w/factory settings.
Consumption	:	7-70 watts, depending on working mode.
Size in mm	:	440 x 335 x 170 (WxDxH). Total deep with handles: 415 mm.
Net weight	:	23 kg, power supply 3 kg, total 26 kg

The darTZeel NHB-18NS is made to last forever by
darTZeel Audio SA in Geneva, Switzerland.

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