

est. 1991

**GENESIS**  
ADVANCED TECHNOLOGIES

# Phono PREAMPLIFIER

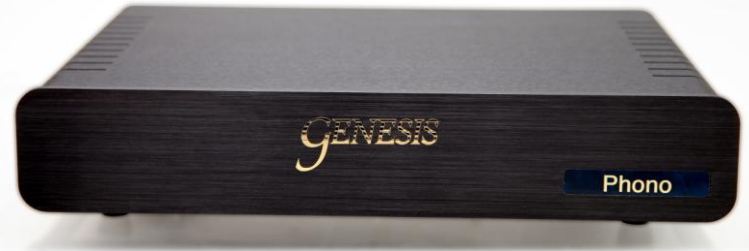
The phono-preamp for a turntable cartridge has a deceptively simple-sounding job to do:

**Objective** – to amplify by 1,000 times the typically 0.003 V signal from a moving coil cartridge to drive a pre-amplifier while being absolutely transparent to the music retrieved from the groove. At the same time reverse the RIAA pre-emphasis that was used when cutting the LP and do all this without adding a sonic signature.

To achieve this, the Genesis Phono was designed to be “as simple as possible but no simpler” with a minimum number of components, but each component had to be the very best available. Because of the delicate nature of the miniscule signal emanating from the phono cartridge, it is also extremely important to “do no harm”. This delivers the huge headroom and low noise necessary to exploit the prodigious dynamics, excellent bass resolution and pristine treble of Genesis loudspeakers.

**Taking the path less travelled.** Instead of designing our own gain stage with discrete components, we relied on the vast engineering investment of Texas Instruments Burr-Brown and used their very best extremely transparent opamp – the legendary (in audiophile circles) OPA637 in the TO-99 metal can. As manufacturing tolerances do not allow some of the components to reach the precision needed, they have to be meticulously hand-selected for the best results.

We saw the RIAA de-emphasis circuit as one of the culprits for a lack of transparency in the usual phono stages. To reverse the RIAA equalization that was introduced during cutting of the lacquer, the phono stage needs a voltage gain factor of over 10,000 @20Hz (80dB of gain) but at 20kHz, it only needs 40dB of gain (100x). It has to take the miniscule signal from the phono cartridge and amplify the voltage by 1,000 times (60dB of gain @1kHz). Typically, this is achieved by amplifying the incoming signal by at least 80dB, and then applying a reverse-RIAA filter to knock down the excess gain.



**Gold model in Black**  
**Platinum and Diamond include an acoustic suspension**

That excess amplification also amplifies any incoming noise as much as the music signal. So, when the filter reduces the gain in the crucial midrange frequencies, it also reduces the transparency of the music.

In the Genesis phono preamplifier, instead of using filters to achieve the RIAA de-emphasis, we designed a variable feedback, variable gain amplifier – with the gain matching the RIAA de-emphasis curve required for accurate playback.

In this way, the signal is only amplified as much as necessary. The Genesis Phono amplifies the phono voltage signal by 80dB at 20Hz, 60dB at 1kHz and 40dB at 20kHz – according to the curve required for RIAA de-emphasis.

**Why no plethora of loading options?** The inductance of the coil of the cartridge interacts with the capacitance of the tonearm cable to create a reactive peak. This peak can be as high as 32dB, and is the usual reason given for all the loading options for a phono stage. However, when the graphs of this reactive peak are shown in the marketing literature of many phono stages, the frequency scale is often omitted.

In computer simulations, we can easily see that this reactive peak is far above 20kHz. However, if this peak is present, it can easily cause problems for a conventionally designed phono-preamp. As the first gain stage needs some 80dB of gain, the 32dB reactive peak easily over-loads the amplifier resulting in high distortion and much reduced sound quality.



***Platinum and Diamond model in Platinum Gold excludes the HMWA Suspension***

Hence, loading is absolutely required with conventional designs to tame this peak, but that loading resistor also needs to be driven by the phono cartridge. The higher the load, the more the cartridge is driving current into the load resistor. This robs the ability of the cartridge to deliver resolution, dynamics and transparency to the music.

Since we use variable-gain amplification with lower gain at higher frequencies, the reactive peak is no longer in play as long as a high quality, low-capacitance low-inductance tonearm cable is used.

With the Genesis Platinum and Diamond Phono, an optimally transparent tonearm cable is supplied with a mini-DIN connector – the standard with most high-end tonearms – and a LEMO connector. It may also be specified with a pair of RCA plugs instead of the mini-DIN. The tonearm cable is optional for the Gold Phono.

Each Genesis Phono-Preamp is individually hand-crafted using the finest hand-selected precision tolerance parts including Vishay and Texas Components custom Z-foil and nude Z-foil 0.01% resistors; mil-spec Dale metal film resistors; Burr-Brown OPA637 opamps in the super-rare TO-99 package; Onetics transformers; Nichicon Fine Gold and Muse electrolytic and organic polymer capacitors; Genesis/RelCaps film-and-foil capacitors; Duelund film-and-foil capacitors (in the Platinum and Diamond); with LEMO, Furutech and Cardas connectors.

With the Platinum Phono, the power supply transformer is placed out-board in a separate chassis. A highly engineered acoustic suspension damping platform significantly reduces all kinds of mechanical vibration leading to more extended natural bass, and detail and resolution.

The Diamond Phono takes this one step further with two external power supplies and dual-mono operation.

A total of three versions are offered:

- *Gold* – using optimally hand-selected components;
- *Platinum* – the very best hand-selected components and adding a HMWA acoustic suspension and an external power supply transformer for further vibration control.
- *Diamond* – dual-mono using the very best hand-selected components with acoustic suspension and dual external power supplies for the very best isolation.

Nevertheless, whichever model you choose, you can be assured that the Genesis Phono will be the most transparent phono preamplifier you have ever owned. You'd better love your turntable, arm and cartridge.

**Specifications**

**The Genesis Phono-Preamplifier**

Voltage Gain:	65 dB
RIAA Accuracy:	Better than +/- 0.1 dB @ 20Hz to 20kHz
Absolute Phase:	Non-inverting
Inputs:	LEMO//RCA
Dimensions ( <i>Platinum</i> )	W 18.5 " x D 14 " x H 5" W 470mm x D 356mm x H 127mm
Weight	28 lbs (13 kg) Gold 50lbs (23kg) Total Platinum 79lbs (36kg) Total Diamond
Finish Options	Black or Platinum

\* Specifications are subject to change without notice

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