

The Genesis Premium Platinum Phono

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A Message from Genesis' Chief Designer Gary L. Koh

While designing and building the finest loudspeakers in the world, I find that I am at the mercy of every single component up the chain. In addition to measurements, in order to completely evaluate the design I have to find the best recordings and the most transparent electronics.

Thus, when I found that the phono-stage was a bottleneck in my design system, I set out to redesign it from first principles. This necessitated going back to the basics and striving forward again.

The moving-coil phonostage arguably has one of the toughest jobs of any of the electronic components of a hifi-system. It has to take a miniscule signal from the phono cartridge and amplify the voltage by 1,000 times (60dB of gain @1kHz). What's worse is that because of RIAA equalization, it needs to amplify the bass frequencies even more. The same phono stage needs also a gain factor of over 10,000 @20Hz (80dB of gain)! At 20kHz, gain is just 40dB – a difference of 40dB between 20Hz to 20kHz. Hence, huge headroom is necessary if you are going to want to exploit *both* the prodigious bass capabilities and pristine treble of Genesis loudspeakers.

Despite amplifying the cartridge signal by over 60dB, the phonostage has also to be broad-spectrum low-noise. Otherwise, any noise will be amplified together with the music. You can't filter incoming noise either, as the filter is unable to distinguish between the music and the noise and only throw out noise. Due to the delicate nature of the signal emanating from the phono cartridge, it has to be handled with kid gloves. Hence, it is also extremely important to do no harm to the signal.

The Genesis Phono incorporates only a single high-gain amplification stage, implements RIAA de-emphasis as a variable-gain circuit, and completely isolates the signal ground of the phono stage from the rest of the audio system with balanced transformer output de-coupling and a balanced power supply.

An absolute minimum of components is used. But because there are so few components, each part has to have quality beyond reproach. Every component used on left and right is measured and tightly hand-toleranced far beyond available manufacturing tolerance and broad-spectrum matched.

This is the **hidden cost** of the Genesis Phono as a huge inventory of very expensive components need to be kept in order to match within our exacting requirements. It also takes a lot of time to hand-select and hand-match components.

Please read this Owners Manual thoroughly to get the maximum enjoyment out of your purchase.

Check out our website at www.genesisloudspeakers.com. We will put the latest updates, tips and tricks, and support for our owners on our website and in our newsletters. As a Genesis owner, you are also invited to the secret Facebook Genesis Owner's Group.

Please write the purchase details of your Genesis Phono here for future reference. Remember; send in your registration card to extend the limited warranty.

Bought from: _____

Date: _____

Serial Number: _____

**Warranty Statement and Extended Registration Card
should be placed here.**

Please check with Genesis should they be missing.

**Remember – the warranty on your Genesis product is
only for 90 days unless the Extended Registration Card
is sent directly to Genesis.**

Operating Principles

The Genesis Phono embodies “do no wrong” and is designed and built to be ***as simple as possible and no simpler.***

The Genesis Premium Platinum Phono comprises two units – a Power Supply Module and the Platinum Phono Module.

The Genesis Phono has one high quality LEMO **input** for a tonearm cable and a pair of parallel RCA sockets. A tonearm cable is supplied as standard with a LEMO connector, and customized with either a 5-pin mini-DIN, RCA, or XLR connectors depending on your tonearm. A 5-pin mini-DIN would be most common as that would fit into the base of many high-quality tonearms¹.

The Genesis Phono has one pair of XLR **outputs** that is transformer de-coupled. It is designed to be used in a differential balanced system with pin 2 +ve and pin 3 –ve. Pin 1 on the XLR output is switched to optionally connect to signal ground (please thoroughly read the System Grounding section of this manual).

If it is used in a single-ended system, pin 2 of the XLR output should be tied to the center pin of the RCA, and pin 3 to the ground ring of the RCA.

The Premium Platinum Phono comes with an external power supply and a 1.5m long power umbilical. Place the power supply away from any sensitive pick-ups. It can be placed directly on the floor behind the audio rack.

¹ Note that some tonearms including SME has a pin-out for the mini-DIN that is out of phase of standard. In that case, just reverse the phase at the cartridge (swop the red and green; and the blue and white cartridge leads). The same should be done with some systems that utilize “pin 3 hot” on the XLRs.

Alternative Inputs and Damping

The two RCA sockets are connected in parallel to the LEMO input. Hence, they can be used as an input if your turntable has a captive tonearm cable with RCA plugs. (Do NOT use shorting plugs on these jacks as that will short out the input to the phono stage.) They can also be used as sockets for damping/loading plugs but we have yet not found a cartridge where that is necessary when using the supplied tonearm cable.

If these RCA sockets are used as an input with any other than the Genesis-supplied tonearm cables, please be sure that the tonearm cable has low capacitance. If a very high-capacitance tonearm cable is used (such a tonearm cables with a coaxial design), loading may be required.

System Grounding

Electrical engineers generally understand that "ground" could mean different things. In electrical circuits, there are even different symbols used for signal ground, and earth ground or safety ground or chassis ground. It is this confusion and designers handling the different grounds differently that cause noise and "ground loops" in systems.

This is further complicated with static electricity being generated by the moving systems of the turntable and the need to dissipate this cleanly.

The design of the Genesis Premium Platinum Phono offers various switches and options for grounding in order to accommodate various systems that may have a variety of grounding schemes.

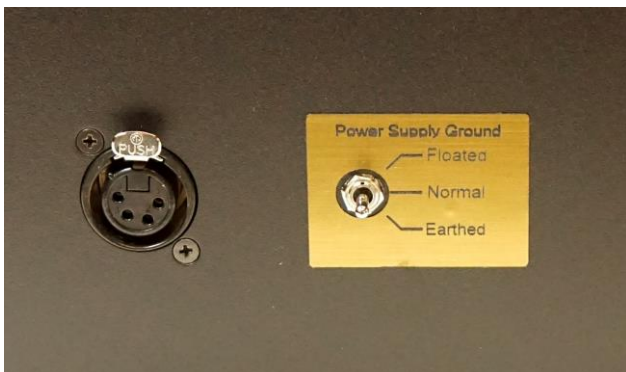
There are two ground switches, plus a safety/chassis ground post. Various grounding cables are also included in the package.



The Chassis Ground post is a convenient point on which to ground the chassis of the turntable to dissipate static electricity safely. This point is attached to Earth Ground or Safety Ground that is the Earth/Ground pin of the power cable attached to the wall outlet.

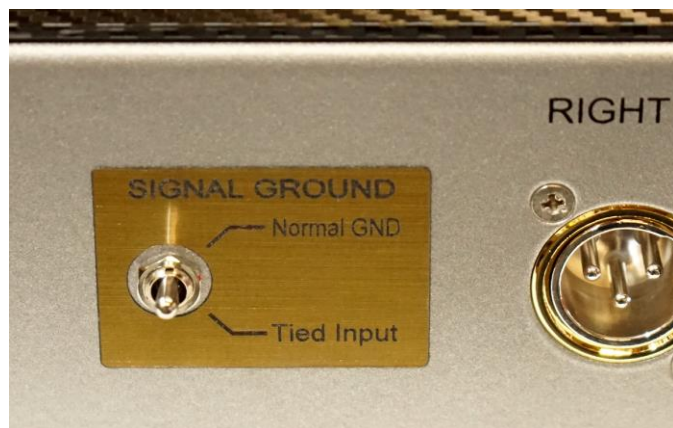
This Chassis Ground post can be used with the included ground cable with a Y-attachment on one end. The alligator clip on the other end can be used to connect to a chassis screw or a convenient ground point on the turntable.

Sometimes the tonearm ground cable may be the best point to ground this. Other times, it is a convenient screw or point closest to the platter bearing that is the better point.



The Power Supply Ground switch that is on the power supply unit determined how the ground on the power supply going to the Platinum Phono is handled.

1. Earthed – if you have a very low-impedance quiet earth ground, this would give you the best dynamics, resolution and clarity. In this case, the power supply ground is directly tied to Earth ground.
2. Normal – the best low-noise compromise. The Earth ground is filtered using a high-quality RC network. This is sometimes called “Floated”. It is also a good compromise if there is ground hum and buzz.
3. Floated – no ground would be the best ground on a fully balanced system, you’d think. Unfortunately, as mains is 50Hz/60Hz depending on where you are, this can bleed into your turntable/tonearm/cartridge through capacitive coupling.



Finally, there is the option to tie the Signal Ground of the Platinum Phono to the signal ground of your preamplifier and the rest of your system.

In normal use, pin 1 of the XLR outputs of the Premium Platinum are fully floating and pin 2 and pin 3 form a differentially balanced output. This is often the best with a completely balanced system.

However, many preamplifiers with balanced inputs are internally single-ended. In this case, it may be necessary to tie the signal ground of the Platinum Phono to the signal ground of the preamplifier. Then, the Power Supply ground may have to be fully floated.

Try all six options to determine which is best for your system. Try the three options of power supply ground with signal ground at Normal. Then again the three options with signal ground tied to pin 1 from the incoming XLR cable.

Power

We recommend that the Genesis Phono be plugged in once, and then left on permanently unless there is a lightning storm or you are going away on a long vacation and will not be listening to music for a long time. The power supply in the Platinum Phono incorporates over 40,000uF of storage capacitance, and will take a few hours to stabilize after you plug it in for the first time. It will also stay on for quite some time after you unplug it from the mains.

Power conditioning may be used, but we would recommend that you audition with and without, plugged straight into the wall. Because of the design of the power supply, power conditioning is unnecessary and may be detrimental.

The Technology

The Genesis Phono is designed to be as simple as possible but no simpler. It comprises a single gain-stage with RIAA de-emphasis implemented as variable-gain in the amplification. It is designed for moving-coil phono cartridges only as no consideration has been made for moving-magnet or moving-iron cartridges – the electrical characteristics being totally different (no, it is not just the gain). Nevertheless, we have customers using moving-iron cartridges who have reported very good results.

The gain and overload characteristics dictate that it should **only** be used with moving coil phono cartridges with output ranging from 0.2mV to 1.2mV. A cartridge with output much above 1.5mV will clip due to the high gain of the Genesis Phono. Cartridges with output much below 0.2mV will exhibit increased noise.

Hand-selected components for precision and tolerance

Extremely high quality components are used - Vishay 0.01% nude Z-foil resistors; Texas Components custom metal-foil resistors; military-grade Dale 0.01% metal-film resistors; Shinkoh and Riken non-magnetic tantalum resistors; Burr-Brown TO-99 military-grade metal-can opamps; Onetics hand-wound output transformers; Nichicon Fine Gold, Muse and Super-Through electrolytic and Panasonic organic polymer capacitors; Genesis/RelCaps film-and-foil capacitors; Duelund "Alexander" capacitors; Wima polypropylene and styrene film capacitors; Vishay film-and-foil capacitors; and LEMO and Furutech connectors.

Starting with these extreme-quality components, we further hand-select and matched them in every single unit we build.

In the RIAA equalization circuit, capacitors are precision matched to 0.1% of the target. Non-inductive metal-film 0.01% resistors are measured to verify that they meet specifications (and we have discovered that many do not!).

In the Platinum power supply, pairs of electrolytic capacitors are matched to within 0.5% of each other for the +ve and –ve rail. With 17 capacitors in parallel (11 in the Gold), statistically speaking this results in close to zero variance between the +ve and –ve rails.

As manufacturing tolerance of electrolytic capacitors are rated at best 20%, the power supply takes a tremendous amount of time to build as it can take 3 minutes or more to measure each capacitor.

The Myth of “Cartridge Loading”

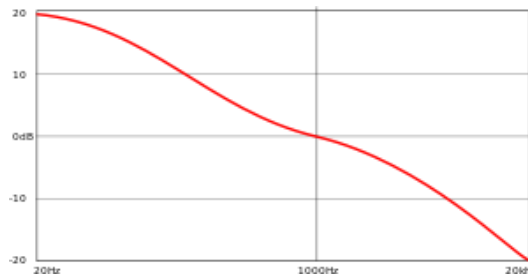
Instead of providing a myriad of loading options, the Genesis Phono is designed from the tonearm-base onwards to eliminate the need for additional loading in the vast majority of applications. Where additional loading is required to damp stylus tip resonance or coil-former resonance or if the Genesis-supplied tonearm cable is not used, a pair of loading plugs can be ordered from your dealer.

There is extensive talk about cartridge loading being necessary to reduce up to a 32dB spike in the high frequencies. Unfortunately, many of those graphs shown in the marketing literature of phono stages don't give you the frequency scale to show you where this spike occurs. This is because that spike is far above the audible frequencies.

What happens then is that this ultrasonic resonance overloads the input to the phono stage and results in audible changes. When loading is introduced to reduce this ultrasonic spike, you will in addition hear the sonic characteristics of the load (and likely the switches used) which may reduce transparency and introduce distortions (including euphonic distortion). Remember, the music signal at this point is in the range of 0.2mV to 0.8mV – that's millivolts.

Since this ultrasonic resonance is in the MHz range, it will be effectively filtered out by the RIAA de-emphasis curve

anyway and will not be seen at the output anyway. At 20kHz, the RIAA curve already filters the input signal down by 20dB. Hence, “high-frequency noise swamping the preamp” is a red-herring used by marketers. The high-frequency noise actually swamps the input of the phono stage and would not be represented at the output if the RIAA is correctly implemented.



RIAA de-emphasis curve on playback

Implementing a “Correct” input

A moving-coil cartridge is an electrical generator – albeit a very tiny one. A load needs to be driven by the cartridge, hence if it is too high (a low impedance), the load sucks the detail, resolution and dynamics out of the music. The load is simply a resistor (and sometimes a capacitor) shunted across the cartridge pins).

Taking things back to first principles – first thing to do is to provide enough ultrasonic headroom so that the input of the phono stage does not overload. Then, make sure that RFI and EMI are well controlled internally, and then we can amplify the signal with RIAA de-emphasis.

One of the biggest problems is too-high capacitance and/or inductance in the tonearm cable. The coils of the cartridge together with the impedance of the tonearm cable acts as a tank circuit with a resonance frequency. (Think about how an empty oil can or water tank echoes.)

Hence, the Genesis Phono is designed all the way to the bottom of the tonearm. We provide a correctly-specified tonearm cable with a standard 5-pin mini-DIN connector that is typical with many high-end tonearms. Optionally, for many turntables with RCA output jacks, this end can also be a pair of WBT NextGen™ plugs.

If your tonearm has fixed non-removable tonearm cable, your dealer may be able to replace the connectors on your cable with a LEMO connector to plug into the Genesis Phono-preamp. If you are to do this, make sure that the capacitance of the tonearm cable does not exceed 100pF and the inductance does not exceed 80μH. If it is terminated with RCA plugs, you may also use the parallel RCA plugs on the Genesis Phono as the input.

Additional Loading Options

After all you say above, why do you still allow RCA plugs with loading options?

Loading is sometimes necessary to load and damp the coils of the cartridge. This can be useful to reduce tip resonance, or under-damped coils. Two RCA plugs with loading resistors may be ordered as options. This is exceedingly **RARE**. We have not encountered any high-end cartridges that are so badly designed that they require loading into the Genesis phonostage.

Phono Power Supply

The power supply of the Genesis Phono is hugely over-specified and has to achieve two seemingly contradictory goals – to be strong and beefy, and yet also fast and nimble. A phono amplifier has to have huge headroom – as there is a 40dB difference in the gain required from 20Hz to 20kHz due to the RIAA de-emphasis curve. That is 1,000 times power gain difference.

In the lower frequencies, the power supply needs to be hugely more powerful than in the higher frequencies. There is very little current output from the phono stage, but it needs to be extremely low-impedance and extremely low noise – since any noise is going to be amplified by 60dB or more.

With the Platinum Power Supply, the transformer and part of the power supply is external to even further reduce noise incursion.

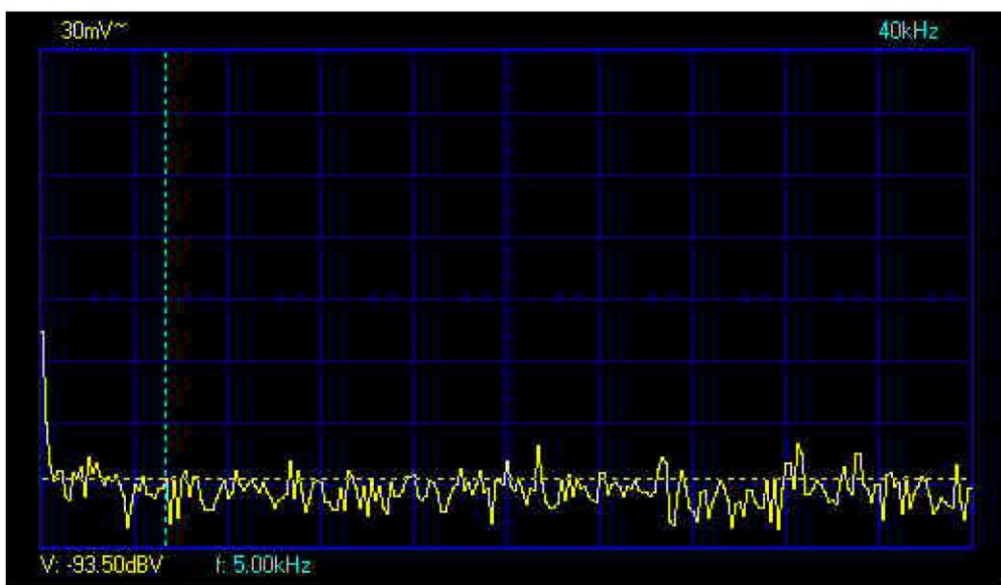
The power supply for the Genesis Platinum Phono uses 19 capacitors in parallel to achieve this low impedance. Unlike other power supplies designed with parallel small capacitors,

we use a ladder of time constants to achieve speed and power and eliminate the sonic characteristics of any single capacitor in use.

This results in a superb noise floor of over -90dB across the spectrum (compare this to standard regulated power supplies which

have a rising noise with frequency). This works best with the standard PSRR of amplifiers which better reject noise at low frequencies.

You will notice something extremely strange with the Genesis Phono – especially if you are an experienced audiophile. With most phono stages in the market, if you unplug your



Audio Band Noise Rejection (over -90dB flat all the way up to 40kHz)

tonearm cables accidentally while the system is powered up and switched to the phono input, you will get tremendous hum and noise from your loudspeakers. Doing the same with the Genesis Phono results in..... nothing.

The Acoustic Suspension

The suspension for the Genesis Platinum Phono comprises three elements:

The neoprene vibration absorbers are tuned to isolate and decouple the chassis. As the phono stage is likely to be placed on the same rack as the turntable, we do not want any vibration from the turntable being fed into the phono stage. At the same time, if there is any vibration in the phono stage chassis, we also do not want this fed into the turntable. Any hollow box will resonate, and while we damp it well, it may still pick up the vibrations of music in the air.

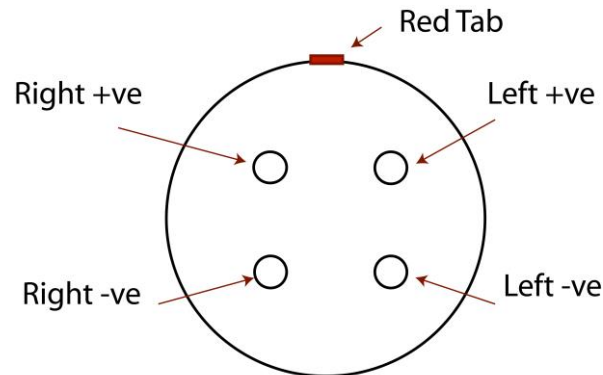
The external power supply of the Platinum version should be placed on the floor.

The asymmetric skeletal frame acts as a tuned absorber. Made of an inch of solid HMWA (high molecular weight cast acrylic), no two parts of the frame will resonate at the same frequencies. This ensures that vibration at all frequencies are absorbed by the HMWA frame.

Spikes are supplied to rigidly couple the suspension system to the equipment rack and to level the chassis.

LEMO Input Pin Configuration

Just in case you need to use a different tonearm cable, the LEMO pin-out is as follows (looking towards the jack on the back of the Genesis Phono):



LEMO Connector
Part# FGG.2B.304.CLAD62

Specifications

- Dimensions: W 18.5" x H5"x D 22" (module)
W 9" x H4.5" x D9" (power supply)
- Weight: 22 lbs (10kg) (module)
10 lbs (4.5kg) (power supply)
- Input Impedance: 6.8k ohms
- Gain: 66 dB @ 1kHz
- Inputs: LEMO connector
- Finish: Carbon fiber wrap chassis with Rosegold or Black face