User Manual GC Audio *INHERIT SYSTEM*

Thank you for purchasing the GC Audio Inherit system.
We hope you have as much fun using it as we had designing it !

The GC-Audio Inherit system is an innovative audio device that allows to have many types of preamplifiers in a single 19" rack.
Its « Hot Plug » design allows users to test a wide range of assorted sounds.

Unlike other modular formats, it allows the implementation of high-voltage or high-current multiple-voltage preamplification technologies.
In addition, the absence of space constraints and the best EMC environment allows less compromise in electronic designs.
It results in outstanding audio quality.
The Inherit system will therefore give you access to complex preamps (such as true tube preamplifiers or complex discret design) that are impossible to get on a lunchbox.
It is a premium device specialized in sound recording aimed at professional sound engineers looking for uncompromising result.
This new design also allows you to quickly test various preamplification technologies without a patchbay.

The rack's custom power supply has been designed with great care and contains 7 unique voltages which are generated by three toroidal wire transformers.
All functions are analog but digitally controled in a well shielded construction designed to protect the signal path.
This enable each cartridge to keep its unique and unadulterated sound.
During a take, users can quickly and easily compare e.g., the sharpness of a transistor preamp with the warmth of a real tube preamp without a patchbay.
Some cartridges are designed around proven technologies that are part of recording studio standards and others are designed from new exclusive technologies specific to the Inherit system.
As for proven technologies, numerous improvements have been made to achieve a high signal to noise ratio while maintaining the original behavior and tonal color.

Currently these 7 cartridges are available (More cartridges will be released soon!):

- **RE-73 :** Class A preamp, unbalancing & balancing by Original Carnhill Transformer
- **RE-98 :** Class A differential preamp, ultra-low noise discrete components, Balanced by Lundahl Transformer.
- **RE-VR :** unbalanced by an Original TF10015 rebuilt transformer, preamplification and balanced by an Ultra-low noise Operational Amplifier.
- **RE-4K:** unbalanced by an Original Jensen 115 transformer, preamplification and balanced by an Ultra-low noise Operational Amplifier.
- **Tube Heat:** True Tube High voltage preamplifier, unbalanced and balanced by transformer, no discrete component in the signal path.
- **RE-15 :** Class A differential preamp, unbalanced and balancing by an ultra-low noise Operational Amplifier.
- **The Graham Langley signature cartridge:** Designed with Graham Langley to be the best possible preamp with his unique signature. To use the unique capabilities of the Inherit system.

Overview by Graham Langley:

"When I first discovered the GC Audio "Inherit" system I was impressed by the innovative concept of interchangeable microphone amplifier cartridges allowing customers the flexibility and freedom of choice to enhance their creativity.

The thought that had gone into the design and the build quality of the product also appealed to me.

I was therefore honoured when invited to contribute a "Langley" microphone amplifier cartridge design. I designed a custom preamp to completely match the capabilities of the Inherit System.

The circuit is reminiscent of the topology that I used in Amek console microphone amplifier designs in the 1970s and 80s but with significant improvements, particularly in noise performance.

This cartridge is intended to provide a clean, transparent sound over the full audio frequency spectrum.

I hope you enjoy using this addition to your "Inherit" cartridge collection."

Graham Langley
February 2022.

Why the GC Audio Inherit ?

Lunchboxes are able to give you access to several good preamps, but the limited power supply and size requires electronic compromise wich affects the quality of the sound.
In addition, lunchboxes shielding is not always of very good quality.
The Inherit system provides premium multiple power supply and a very good shield environment.
It is intended for demanding sound engineers who want uncompromising sound recording.
The Inherit system is a different and more practical modular format specialized in preamplification.
Although it is primarily dedicated to recording studios, its rugged construction allows for heavy touring use for recording engineers who want to use different sound colors without carrying multiple racks.

In the quest for "big sound", a connoted term we've all used at least once in a mix, we get lost a little too quickly in dynamic and tonal correction. A sound that deserves correction from the start deserves, above all, a new take. From an electronic point of view, a "big sound" is above all a frequency signal rich in harmonics, and above all having very good output current source. The notion of "good sound" has a part of subjectivity: it is above all what we are looking for. It is therefore important to be able to quickly test several technologies to obtain the desired result. Consequently, for a warm sound, rich in harmonics, a tube cartridge with transformer balancing is preferred, and for a very flat and precise sound, a transistor cartridge with OA balancing is preferred ... Many combinations are possible and the GC Audio Inherit will give you easy access to many high-end preamps.
In an audio chain, the preamplifier is placed just before digital conversion. It is therefore by definition analog and not emulable.
It is the main element for a good sound recording.
The GC-Audio Inherit was developed to deliver uncompromising audio quality with the goal of upgrading proven designs while exploiting new technologies.
The function of preamps is to process weak signals, so they are very sensitive to electromagnetic interference.
The proprietary Inherit format keeps the sensitive part of the electronic design in a one-piece machined cartridge that serves as a Faraday cage. The performance of electromagnetic shielding is optimal, and the concept allows great convenience for the user.

Position

This product is designed and screened to minimize internal electromagnetic emissions and provide immunity to external electromagnetic fields. To reduce the risk of performance degradation due to external interference, do not site this unit close to sources of strong magnetic fields such as power supplies, power amplifiers, loudspeakers etc.

Rack Mounting :

This product is designed to be rack mounted using the screws and washers supplied to help preserve the finish of the facia panel. The facia graphic layer is under-surface printed to provide a robust hard-wearing surface designed to last the life of the product in virtually any operating environment. Failure to use the supplied fixings may result in damage to the facia surface which can invalidate the warranty. It is recommended that additional rack-mount side supports are used in conjunction with the facia panel fixings, particularly when the unit is mounted in a flite case or vehicle where vibration and transit shocks can be expected.

Cleaning :

The product should be cleaned with a soft brush around the controls. If the facia becomes dirty, use a damp cloth with a little household soap to remove the dirt. DO NOT use solvent cleaners under any circumstances or the facia may be permanently damaged, and warranty invalidated!

Audio Connections :

Two 3 pin XLR connectors are provided in back side. Inputs are female, outputs are male. All connectors follow the European wiring convention: Pin 1 = Screen Pin 2 = Hot (+) Pin 3 = Cold (-). Jack input for instrument in front side.

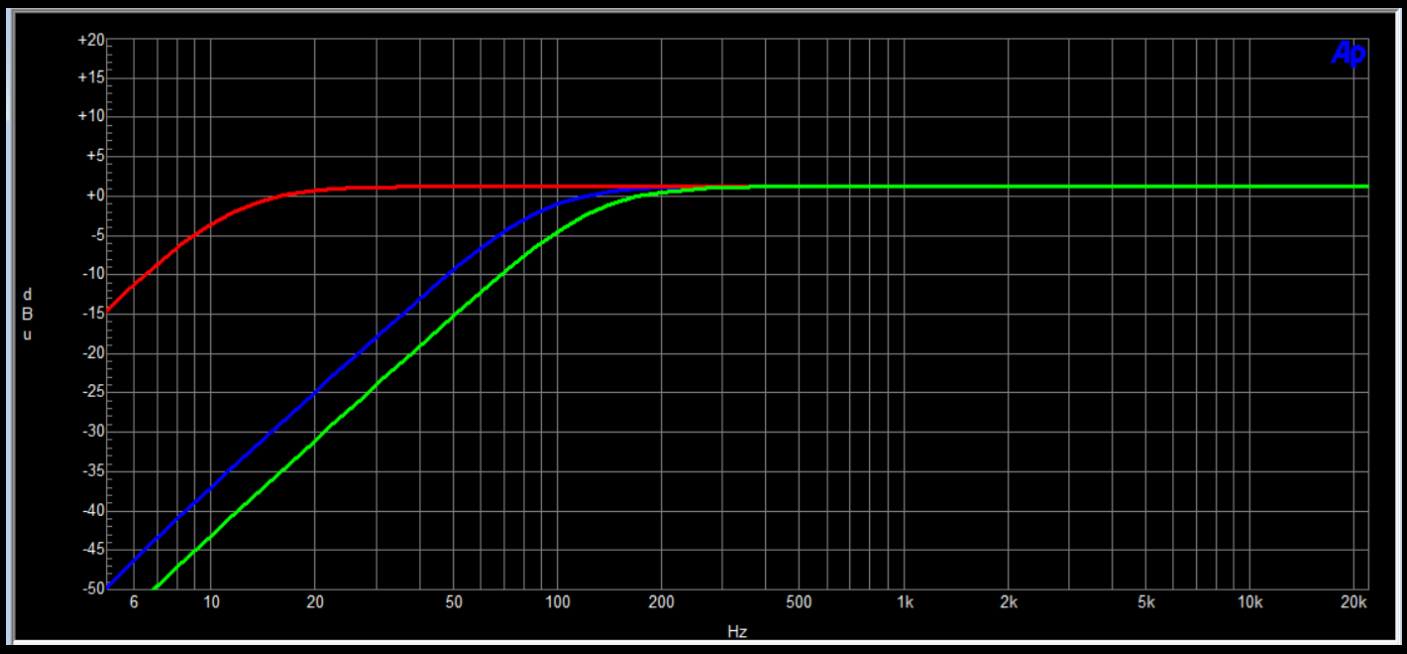
Supply:

The GC Audio Inherit can be supplies by 230V or 115V source with a switch in rear face.
Please refer to safety instructions.

Technical Data:

- Gain command with a 12 Steps Grayhill commutator, gain values depend on the cartridge (see data sheet of each cartridge).
- Digital gain command to keep the analog sensitive signal path in the cartridge.
- Linear pot for Output Level.
- 10 Segments vu meter, factory calibrated 0db Vu = +4dBu.
- Pre / Post Output Level pot vu meter to achieve very high gain without saturation converter.
- 80 Hz and 120 Hz Low cut – 12dB / octave.
- 7 DC ultra-low noise linear power supplies.
- Pad value depend on the cartridge (see data sheet of each cartridge).
- +48V phantom power.
- Phase inverter
- Front DI input – impedance 500K ohms.

- Frequency Response HP Filter (With RE-15 Cartridge):



Red = Without HP filter.
Blue = 80Hz HP filter.
Green = 120Hz HP filter.

Usage Tips :

Although the system allows you to change the cartridge under power, it is preferable to lower the output volume to avoid feedback or unexpected noise.
Never put your fingers inside the rack at the cartridge slot, high voltage is present!