



## 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 swap » design allows users to quickly 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 enables 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 9 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 discrete components preamp with his unique signature.
- **The Gyraf Audio signature cartridge** : Designed with Jakob Erland to be the best Tube preamp with his unique signature.
- **RE-11** : Monolithic differential preamp, unbalanced and balancing by an ultra-low noise Operational Amplifier.

## 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."*

A handwritten signature in white ink that reads "Langley". The script is fluid and cursive, with the 'L' being particularly large and stylized.

Graham Langley

## Overview By Jakob Erland (Gyraf Audio):

*"The preamp-as-a-cartridge is simply a great idea : In this day and age where you can have clean and neutral preamps virtually for free with your converters, you don't want a big stack of the same type preamp - you want variety, something that matches the individual microphones and sources you are working with. The inherit cartridge system gives you exactly this - the ease of trying out a variety of flavors - the possibility of finding that sonic imprint that's just right for what you have at hand*

*The G9, which the GY 4.5 cartridge is based on, is an adaptation of the input circuit of the G36 tape recorder, that I have used and loved since I was a kid.. Update includes transformer balancing in and outputs, phantom power, switchable high-pass filter and switched gain settings"*

Jakob Erland, Gyraf Audio

## 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
- High End low gain passive DI input with Lundahl 1935 transformer – impedance > 100K ohms.

### **About the DI:**

This special DI allows to have a full no discrete component and full class A signal path.

The low gain feature allows to use high gain on preamp cartridge and then have all the full sound color.

The spirit of the Inherit system is to say : The right sound is the sound your are looking for.

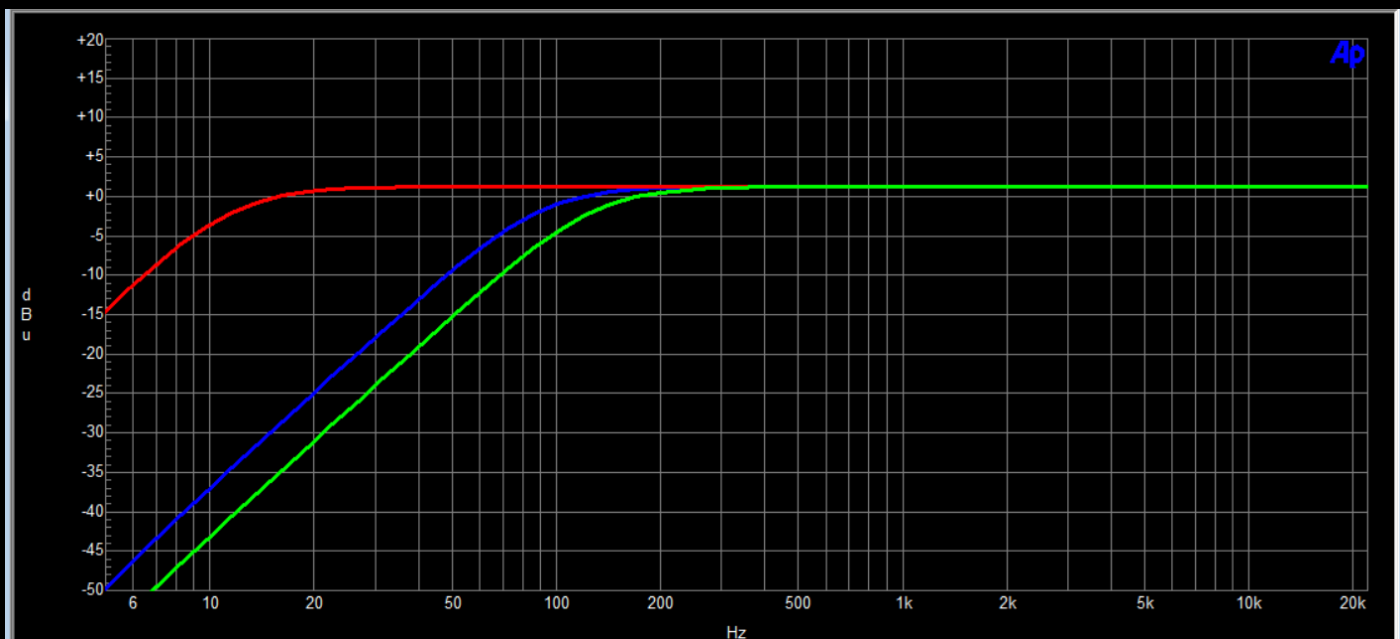
In order to obtain a full range of colors possible, depending on their input technology, the cartridges will not all react in the same way.

On the DI input, all cartridges with solid state input technologie will sound clean & sharp and all cartridges with transformer input technologie will sound dirty & dark.

Cartridge with clean sound DI input : RE-11, RE-15, RE-98, Langley

Cartridge with dirty sound DI input : RE-73, Gyraf, RE-4K, RE-VR, Tube Heat.

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



Red = Without HP filter.

Blue = 80Hz HP filter.

Green = 120Hz HP filter.

## **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 which 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.

## 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!

## 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 supplied by 230V or 115V source with a switch in rear face. Please refer to safety instructions.

## **SAFETY INSTRUCTIONS GC Audio Inherit System**

- A) **Caution - Earthing:** This apparatus **MUST** be earthed. Under no circumstances should the mains earth be disconnected from the mains lead.
- B) **Caution - Changing the Fuse To avoid the risk of fire:** Replace only with same value and type of fuse as marked on the unit, 500mA T (230V) or 1000mA T (115V). Before changing the fuse, always switch off the unit and remove the AC power cable.
- C) **WARNING - For your own safety and to avoid warranty invalidation, please read this section carefully.**
- Do not place the apparatus on an unstable surface.
  - Do not insert objects through any apertures.
  - Do not use this apparatus near water. Unplug the unit before cleaning.
  - Clean only with a damp cloth. Do not block any of the ventilation openings.
  - Install in accordance with the manufacturer's instructions.
  - Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus including amplifiers or power supplies that produce heat.
  - Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wider blade or the third prong are provided for your safety. When the plug provided does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
  - Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
  - Avoid using mains outlets on the same circuits as air control systems or other equipment that regularly switches on and off.
  - Only use attachments /accessories specified by the manufacturer.
  - Unplug this apparatus during lightning storms or when unused for long periods of time.
  - Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way such as the power supply cord or plug is damaged liquid has been spilled or objects have fallen into the apparatus the apparatus has been exposed to rain or moisture the apparatus does not operate normally the apparatus has been dropped.
  - Unplug the unit under these circumstances.
  - Adjust only those controls that are covered by the operating instructions.
  - Use only the mains lead provided with the equipment. Other leads may not have sufficient current rating.
  - Do not operate this unit with the cover removed.
- D) **Mains Cable** The supplied IEC mains cable must be terminated correctly to the AC mains supply before use. Use only an approved AC plug or power distribution device. The three cores are colour coded as follows: The Green/Yellow core in the mains cable is a safety ground and must be connected at all times!
- E) **115V/230V Operation** Before adjusting the operating voltage, always switch off the unit and remove the AC power cable! To adjust the operating voltage, use a flat blade screwdriver to click the voltage selector across to the required position until the legend 115V or 230V appears in the window and fit the appropriate fuse supplied in the fixings pack.