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## KLEI™ Harmony RCA Socket BROCHURE

**Advancing the art and science of the  
Eichmann Phono Pod**

**Keith Louis Eichmann (KL) proudly introduces the next  
generation Harmony RCA Socket design**

The KLEI Harmony RCA socket takes the highly acclaimed Eichmann Phono Pod to a new level of performance and sophistication. In 2008, the Eichmann Phono Pod set the industry on fire by offering radical improvements to the venerable RCA socket both in design and performance, and as a result the Eichmann Phono Pod received worldwide acclaim.



The Harmony RCA socket offers new materials and design enhancements, ie. new and superior technology and architecture, which can be considered the true and next generation Eichmann Phono Pod design, extends and builds on its superiority over the Eichmann Phono Pod (introduced in 2008), variations and enhancements of the Eichmann Phono Pod, and traditional RCA socket designs. It represents a wholesale rethinking of the RCA socket introduced over eighty years ago by The Radio Corporation of America (RCA).

**MATERIALS:** From the very outset, KL has had an understanding of and a sensitivity to electron/energy flow. His designs focus on signal integrity, the elimination or mitigation of causes of electron turbulence, most notably eddy currents, capacitive reactance, and micro-arcing. A central theme in his designs has been his choice of materials.

He made a conscious decision to eliminate metal housings as standard on his connectors, as well as the universally used metal collars. Whether magnetic or not, metals surrounding the conductor contribute to electron chaos, and inhibit smooth signal flow. KL uses highly heat resistant and electrically inert polymers both as housings and for the collar. Not as a cost savings, but for better performance. In fact, the tooling required for these glass impregnated polymer housings arguably results in costs that are *higher* than those for metal housings. These materials serve to improve signal integrity and reduce or eliminate known compromises for smooth electron flow.

**OPTIMUM MASS:** Bigger, thicker, and more massive doesn't add up to better sound. In fact, quite to the contrary. A studied, optimised, and in most cases a minimalist approach to mass actually results in better sound – and better electron/energy flow. KL's proprietary signal to ground mathematical formulae, ensure an optimal architectural relationship between all metal complements and dielectrics that have been utilised. The result is control, and the avoidance of sonic compromises caused by skin effect. Also, the reduction of EF and EMF interference. Controlling these parameters ensures a complete, full, and extended frequency range, where harmonics are conveyed from component to component intact.

**METALLURGY:** This is of paramount importance; and something that's been central to KL's designs from the very beginning. KL is committed to implementing and using, in his current Harmony socket designs, only conductors that are *more* conductive than pure copper, and even pure silver.

KL is in fact responsible for bringing IACS (International Annealed Copper Standard) into the audio conversation. Using pure copper (100% IACS) as a reference, the IACS percentage defines a metal's electrical conductivity relative to pure copper. For example, brass (25%~37% IACS), bronze (15 ~ 48% IACS), and rhodium (35%~38% IACS) are poor to average electrical conductors when compared to pure copper. Pure silver is better at 105% IACS. Gold is about 70% IACS. These numbers — 100, 28, 105 and 70 are known as percentages of IACS.

KL's Harmony sockets are all at an IACS rating of 101% or greater, and are breaking the conceptual boundaries that have been previously thought to be absolute. A lot has happened since the days of the original Phono Pod; and the metallurgy utilised in the Harmony sockets represents new understandings that have grown out of research into the processes of forming and finishing—also, metallurgical affinities and intrinsic crystalline structures.

KL also rejects the use of passivation for preserving and protecting conducting metals – something touted by some connector manufacturers as being a feature. We are opposed to zinc, zinc oxide or these kinds of coatings, and simply will not knowingly compromise our IACS ratings for unnecessary protection.

It is important to note that the Harmony sockets signal and ground pins are harmoniously formed in a way that the metallurgical processes work together and not in opposition to each other – both electrically and mechanically.

Extrapolation indicates, electrically, that the utilised metal complements are at least as conductive as pure copper (100% IACS) and/or pure silver (105% IACS). In pure annealed form, pure copper and pure silver are too soft to machine and easily bend. As such, the machinable forms of copper and silver, as used in audio applications, have noticeably lower IACS values than their pure copper and pure silver forms. The bottom line is that conductivity (IACS percentage) is defined by a metal's formation, ie. its completed form. No

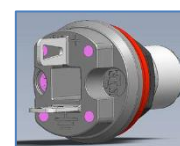
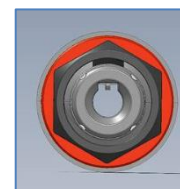
matter how you get there and to quote Keith Louis, *the proof's in the pudding/listening*. The Harmony sockets excel in this area, and better any RCA connectors we have seen to date.

**ARCHITECTURE:** The RCA Socket ground collar/body, which in traditional designs encircles the Signal pin, acts as a conductor that transfers electrons/energy from multiple directions along its surfaces and surrounding the Signal Pin. It is prone to small out-of-control turbulences called eddy currents. These turbulences are nothing less than chaos, exacerbated by the non specific point of ground in the RCA sockets design, especially since an entire surface encircling the centre pin forms the electrical ground. Capacitive reactance and micro-arcing are additional artifacts of this architecture.



The Harmony RCA socket design addresses these issues and offers an elegant – and arguably major – redesign of the RCA socket, and in itself is fundamental but extensive. Rather than encircle the Signal pin with a Ground metal collar/body, we have opted for...

- The Signal pin that utilises a single point contact/connection, similar to star earthing/grounding as utilised in high-end electronics. Further, after Signal connection the Signal pin acts like, or is similar to, the Ground electron/energy channel as utilised in the Eichmann Phono Pod.
- Although the Ground pin utilises a traditional collar, which ensures compatibility with all RCA plugs, it is split formed to act like, or is similar to, the Ground electron/energy channel as utilised in the Eichmann Phono Pod. Further, after Ground connection the Ground pin acts like, or is similar to, the electron/energy channel as utilised in the Eichmann Phono Pod.
- The Signal pin is positioned perpendicular to the Ground pin to ensure that EMF and Inductive effects are minimal, ultra-low, and even be regarded as negligible. Further, the Signal and Ground pins are arranged and positioned to maintain and ensure a consistent maximum distance from each other which further improves capacitive and inductive reactance effects, and minimizes cross-talk EMF effects that occur in all other RCA sockets. This allows for significantly higher characteristic impedance, than conventional RCA sockets, and makes the Harmony RCA socket ideal for digital Interconnection requiring RCA connectivity in 50, 75, or 110 ohm impedances and for ultra-low jitter.
- A closer inspection shows that the Harmony RCA socket design is the compliment, or mirror image, of the Harmony (Bullet) plug design. Further, the Harmony RCA socket and Harmony (Bullet) plug connection is designed to make ground before signal but it is always recommended that you turn off all components before plugging or unplugging any electrical connection.



Our Harmony RCA socket design, features single point Signal connection, optimised ground connection, optimised Ground/Signal pin arrangement/positioning, optimised pin shape, optimised mass and thickness of the conductive elements, and eliminates and controls eddy current turbulence, micro-arcing, and capacitive/inductive reactances.

We believe this approach solves a series of problems that collectively degrade audio/video performance and does so in an additive manner. The importance of this innovation and redesign cannot be overstated. Its ramifications extend to every RCA interface in which high quality signal transfer is an issue. Extensive listening and critical comparisons played a major role in the evolution of the design, confirming at every juncture the audibility of properly applied science, even in the area of RCA connection.

**MATHEMATICAL MODELING:** The relationships between ground and signal pin, i.e. metal complement, mass, and other critical parameters, are derived via KL's signal to ground mathematical formulae, and differs from Harmony socket to Harmony socket.

**SUMMARY:** Each Harmony socket in the product range, from Classic to Perfect Harmony, offers progressively enhanced conductivity from >101% to even >105% IACS, which results in an improved response to those exceptionally fast transient signals in the audio signal, improvement in the transmission and resolution of fine details, and achieves a more realistic reconstruction and presentation of the recorded image.

In summary, KLEI's Harmony RCA Socket represents a further innovation and a totally refined approach to RCA connection and a closer inspection shows that is the compliment, or mirror image, of the Harmony (Bullet) plug design.

The KLEI™Harmony RCA Socket's innovations and refinements include:

1. The Ground/Signal pins incorporate highly conductive materials, such as ultra-high purity copper and silver.
2. KL's proprietary mathematical modelling optimises mass, thickness, and composition of the Ground/Signal pins, resulting in enhanced electron/energy flow.
3. A closer inspection shows that the Harmony RCA socket design is complimentary to, or mirror image of, the Harmony (Bullet) plug design.
4. The Harmony RCA Socket and Harmony (Bullet) plug connection is designed to make ground before signal but it is always recommended that you turn off all components before plugging or unplugging any electrical connection.
5. The Signal pin utilises a single point contact/connection to control and eliminate eddy current distortions, capacitive and inductive reactance effects, and micro-arcing.
6. The Signal pin structure/architecture has been redesigned and improved to allow an easy snap-like connection with and RCA plug, while still ensuring an ultimate connection.
7. Further rejection of the idea of using a metal Ground body to encircle the Signal pin which eliminates co-axial inductive reactances.
8. The Ground/Signal pins are arranged to maintain a consistent maximum distance from each other and positioned perpendicular to each other, which further improves capacitive and inductive reactance effects and minimizes cross-talk EMF effects that occur in all other RCA sockets. This allows for significantly higher characteristic impedance, than conventional RCA sockets, and makes the Harmony socket ideal for digital Interconnection requiring RCA connectivity in 50, 75, or 110 ohm impedances and low jitter.
9. The Ground/Signal pins are strong and allow for small and large conductor wires to be soldered to them.
10. The Harmony RCA Socket utilises a standard M10 Panel hole, M10 Nut (Slim), and M10 Washer, and an extremely high temperature melting point polymer, with excellent electrical and mechanical characteristics where the Socket Body and Nut thread/washer insulate the Ground and Signal pins from the Panel hole.

11. The Mounting Panel maximum width/thickness can be upto 4.5 (w/- Washer) or upto 6.0mm (w/o Washer).
12. The Harmony RCA Socket can be produced to comply with IP65 and/or IP67.



### 1/CLASSIC HARMONY RCA SOCKET

- Proprietary mathematical modeling is utilised to produce the Classic Harmony's ground to signal pin relationship, parameters, and determines the proprietary metallurgical processes that are used. Extrapolated: >101% IACS
- The Harmony RCA socket design is complimentary to, or mirror image of, the Harmony (Bullet) plug design
- Excellent for digital, such as SPDIF, etc
- Utilises a standard M10 Panel hole, M10 Nut (Slim), M10 Washer, and an extremely high temperature melting point polymer which tolerates the high temperature soldering required for high silver content solder
- *Higher conductivity. Calculations indicate a progression in IACS percentage, in the series. Greater than that of the Eichmann Cable Pod*

Recommendations: depending on the audio system...

- Burn-in Time: >125hrs and even >250hrs

PRB, a customer, has the following to say about the Classic Harmony RCA Socket:

*'Wow KL, you have done it again!*

*The KLEI™ Classic Harmony RCA socket had me glued to my listening chair. I kept on listening for hours.*

*The system now has sophistication, involvement.*

*The vocals were the first thing that jumped out. So real, so beautiful, so organic, and this is occurring in and with all registers of the human voice.*

*I was now hearing the deep, ie gut, chest tone in the voices. The piano had lost its harshness and became natural and wonderful. When the sustain pedal was used, the timbre/harmonic decay could be heard for each note struck/hit.*

*Overall high performer, Amazing achievement!*



### 2/COPPER HARMONY RCA SOCKET

- Proprietary mathematical modeling is utilised to produce the Copper Harmony's ground to signal pin relationship, parameters, and determines the proprietary metallurgical processes that are used. Extrapolated: >101% IACS, even >102% IACS
- The Harmony RCA socket design is complimentary to, or mirror image of, the Harmony (Bullet) plug design
- Excellent for digital, such as SPDIF, etc
- Utilises a standard M10 Panel hole, M10 Nut (Slim), M10 Washer, and an extremely high temperature melting point polymer which tolerates the high temperature soldering required for high silver content solder
- *Higher conductivity. Calculations indicate a progression in IACS percentage, in the series. Greater than that of the Classic Harmony socket*

Recommendations: depending on the audio system...

- Burn-in Time: >150hrs and even >300hrs

Coming soon:

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## 5/PERFECT HARMONY RCA SOCKET

- The ultimate Keith Louis Eichmann Harmony RCA Socket design
- Proprietary mathematical modeling is utilised to produce the Absolute Harmony's ground to signal pin relationship, parameters, and determines the proprietary metallurgical processes that are used. Extrapolated: >101% IACS, even >105% IACS
- The Harmony RCA socket design is complimentary to, or mirror image of, the Harmony (Bullet) plug design
- Excellent for digital, such as SPDIF, etc
- Utilises a standard M10 Panel hole, M10 Nut (Slim), M10 Washer, and an extremely high temperature melting point polymer which tolerates the high temperature soldering required for high silver content solder
- *Higher conductivity. Calculations indicate a progression in IACS percentage, in the series. Greater than that of Classic or Copper Harmony sockets, arguably an industry best.*

Recommendations: depending on the audio system...

- Burn-in Time: >250hrs and even >500hrs

Coming soon:

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