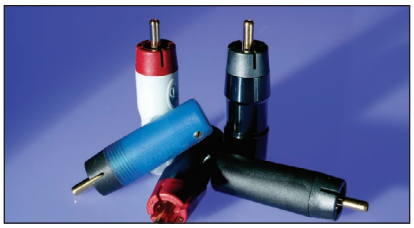

BULLETPLUG® RCA CONNECTOR

The ETI BulletPlug® is a totally new approach to RCA connection. It represents a wholesale rethinking of something as basic as the venerable RCA jack; a connector designed over fifty years ago by The Radio Corporation of America. It is our contention that the RCA plug in its current configuration is the standard connector in the audio/video industry not because it is the best possible choice for its intended use, but more by reason of default than any other.

Realising this to be the case we decided to undertake a project of major significance—the wholesale redesign of this critically important, but very compromised connector, with the objective being improved conductivity, enhanced signal integrity, and higher resolution. Since the RCA jack is so widely used—connecting virtually every component in an audio/video chain, linking a multitude of components through a network of interfaces—any improvement in its performance in the critical areas of electron flow and signal integrity would be significant; and particularly important in high resolution applications.

A first evaluation of the RCA jack pointed up obvious metallurgical shortcomings. Most connectors, even those marketed as “deluxe” upmarket RCA jacks, are made from nickel and gold plated brass or phosphor bronze with a conductivity rating typically less than 28% IACS (International Annealed Copper Standard). As a comparison, the high purity copper used in the vast majority of interconnect cables has a conductivity rating of 100% IACS. Because of this low conductivity and the use of three disparate metals, it is our contention that standard RCA jacks—even expensive, flashy ones—compromise electron flow and diminish the performance of the components they connect.

Nickel is added solely to provide the jewel-like appearance that makes expensive connectors look expensive. While achieving the desired appearance, it comes at a cost–degraded sound or poorer picture quality, as electrons flow through three dissimilar metals with differing electrical and conductive properties.

The conductive surfaces of the ETI BulletPlug® in contrast are machined from high-purity tellurium copper (over 90% IACS) or pure silver (106% IACS) to ensure maximum conductivity. This provides up to 320% greater conductivity than the gold plated brass connectors used in the vast majority of deluxe RCA jacks. Proven metallurgical choices result in better signal transfer, and electron flow that is consistent with the highest quality interconnect cables.

24k gold is direct plated to the conducting surfaces of the tellurium copper BulletPlug®, eliminating the nickel plating typically used as the third metal in a confusing composite on standard RCA jacks. Gold is applied to prevent oxidation, and contrary to popular opinion, is not a factor in sound quality. Our Silver BulletPlug® utilizes 4-nines pure silver (106% IACS) and is treated with a Caig PreservIT antioxide solution, with no additional plating, to preserve signal quality.

While the metallurgical understandings were significant—and rather straightforward—the second observation regarding the RCA jack turned out to be ground-breaking. It related to a problem, overlooked for decades, that is intrinsic to the RCA jack’s design—something as fundamental as the architecture of the jack itself.

This RCA ground collar, acting as a conductor that transfers electrons from multiple directions between the centre pin and its surface—is prone to the small out-of-control turbulences called eddy currents. These turbulences are nothing less than electron chaos, exacerbated by the non specific point of ground in the RCA jack’s design, as an entire surface encircling the centre pin forms the electrical ground. Capacitive reactance and micro-arcing are additional artifacts of this architecture.

The BulletPlug® addresses these issues and offers an elegant—and arguably major—redesign to the RCA jack that is so fundamental and so extensive that we have been granted a US patent; we have a European patent application in process, and other international patents pending.

Rather than encircle the centre conductor pin with a formed metal collar as ground, we opted for a single point ground contact similar to star earthing (grounding) in high-end electronics. Our new design, featuring single point ground connection and optimised shape, mass and thickness of the conductive elements, eliminates every vestige of eddy current turbulence, capacitive reactance, and micro-arcing.

We believe we have, with this new RCA blueprint, solved a series of problems that collectively degrade audio/video performance and that do so in an additive manner. The importance of this innovation 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 in even the area of RCA connection.

In summary the BulletPlug® is a totally new approach to RCA connection. Its innovations and refinements include:

- incorporating high conductive materials such as tellurium copper or pure silver exclusively in the construction
- optimising mass and thickness of the conductive element to enhance electron flow
- rejecting the idea of using a formed metal collar to encircle the centre pin and serve as the reference to ground
- using single point star earthing (grounding) instead to eliminate eddy current distortions, capacitive reactance, and micro-arcing
- attention to the mechanical aspects of the design to ensure the ultimate connection while eliminating damage to input connectors

(Internationally patented product)
(Registered, European community)
(Registered, US Patent and Trademark Office)

BULLETPLUG® RCA CONNECTOR

Features comparison vs. typical rca jacks

Standard RCA jacks	BulletPlug® (tellurium copper)	BulletPlug® (4-nines pure silver)
Gold plated brass or phosphor bronze with a conductivity rating of often less than 28% IACS (International Annealed Copper Standard).	A contact element machined from high-purity tellurium copper (over 90% IACS) for excellent conductivity. Provides up to 320% greater conductivity than gold plated brass binding posts.	A contact element machined from 4-nines pure silver (106% IACS) to provide ultimate conductivity.
Solid signal pin. Metal collar completely encircling pin as electrical ground. Total thickness and mass not optimised for signal integrity. Sound quality and electron flow compromised.	Hollow signal pin of ideal thickness and mass – to support current flow and to minimise skin effect problems. The result is a clean, open sound with improved detail.	Hollow signal pin of ideal thickness and mass – to support current flow and to minimise skin effect problems. The result is a clean, open sound with improved detail.
Heavy plating of gold over a nickel substrate. This is often a cause of poor sound quality as electrons flow through 3 dissimilar metals with differing electrical and conductive properties.	Direct 24k gold plating (no nickel sub-strate) to prevent oxidation – and not to influence sound quality.	Unplated. Treated with Caig PreservIT antioxide solution.
Ground collar surrounding centre pin has a detrimental effect on electron flow. Eddy- current turbulences created as a result of non specific ground contact. Loss of signal integrity. Increase in capacitive reactance and micro-arcing. Reduced resolution.	Patented single point ground pin. Eliminates eddy-current turbulences, capacitive reactance, and micro-arcing. Improved sound/video quality. Better signal integrity. Better electron flow; and higher resolution.	Patented single point ground pin. Eliminates eddy-current turbulences, capacitive reactance, and micro-arcing. Improved sound/video quality. Better signal integrity. Better electron flow; and higher resolution.

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