

KLEI AC Power Cables

Technical Paper

The KLEI gPOWER and zPURITY AC power cables take the highly acclaimed original Eichmann Fractal Resonance AC Enhancing power cable to a new level of performance and sophistication. They offer a new approach and significant design enhancements.

So, what happens inside the amplifier when the dynamic voltage and current peaks cannot be accommodated, and the power supply cannot supply the required voltage and current to amplify the signal to the required level? The answer inevitably is that the voltage and current within the circuit will fluctuate and pulse ever so slightly.

These fluctuations and pulses can result in circuit oscillations and ringing which introduce distortions and noise to the amplified signal. Because there are separate amplifier circuits operating in a two-channel system, the fluctuations and pulses per channel will not be exactly the same. This can further result in subtle changes to the phase of the two (LR) channel signals. Changes in phase tend to alter the stereo image such that the image becomes "smeared" or "unfocused".

In esoteric amplifiers, the power supplies tend to be designed to be very efficient and provide extra headroom. Often, that's why they sound better. Headroom provides extra power supply capacity to meet amplified voltage and current signal peaks. Connecting a power cable that affects the efficiency of the *effective supply* to a power supply will cause an amplifier to not perform to its potential, and the resulting fluctuations and pulses will cause amplified signal distortions and noise to be introduced, and as such, affect stereo image and various aspects of sonic reproduction.,

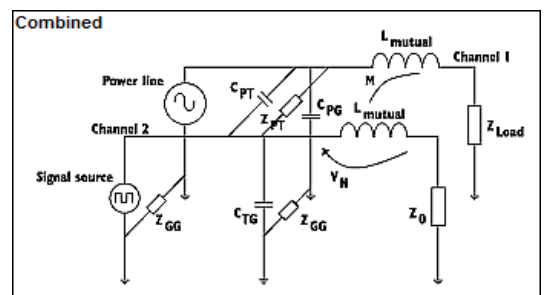
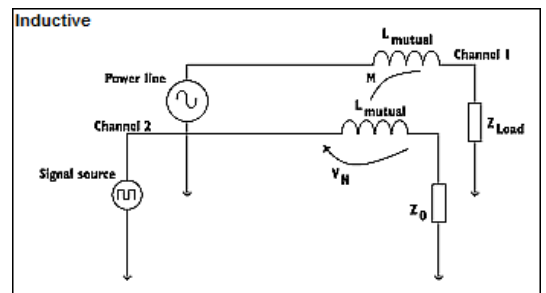
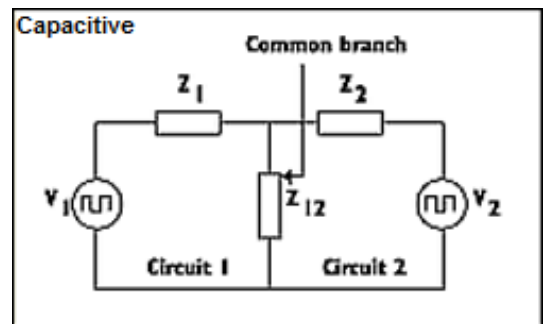
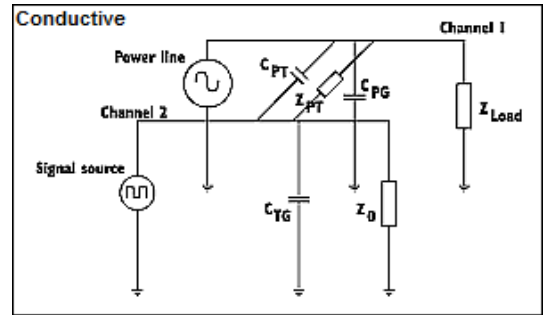
While power supplies may be designed with sufficient headroom, a power cable can impede *effective supply* to a power supply and in so doing interfere with a power supply's ability to provide *effective supply* to the circuitry. This can cause voltage and current fluctuations and pulses as described above, which cause circuit oscillations and ringing, and introduce distortions and noise to the amplified signal.

A power cable that provides *effective supply* will allow all audio components to perform to a significantly higher level--that is, to their designed potential, and perhaps to even exceed their designed potential.

A mistake often made is equating the flow of electricity to the flow of water through a hose, which is not the case. AC stands for alternating current, but it is also alternating voltage. The voltage is a sine wave that cycles to +120v/240v and -120/240v either side of a zero voltage point at 50/60 cycles a second.

When a circuit is completed by turning on a switch electrical energy is transferred; and then loosely coupled valence electrons in the power cable shift in one direction for one half of the cycle and as the voltage enters the other half of the cycle, the valence electrons shift in the other direction. There is no steady flow of electrons, as such, as they simply shuffle back and forth; but there is a transfer of electrical energy which flows in one direction to the power supply. This directional electrical energy, or *effective supply* of electrical energy through the power cable to the power supply, is critical to an audio component's performance.

That is why your 1.0m or 1.5m power cable is important.



Power cable design needs to consider that there are two conductive wires, i.e., the live and neutral conductors. As the electrical energy flows through the live conductor, noise is induced into neutral and ground conductors, and vice versa. The ground conductor is not usually an issue since it goes directly to ground, and is usually only connected to the component's chassis as a safety consideration. If coupling feedback effects, i.e., induction processes, occur between the live and neutral conductors due to electrical noise, fluctuations, and pulsing, then an impeded *effective supply* to a power supply will result.

How the KLEI AC power cables support *effective supply*...

1. The live and neutral conductors have been designed, in accordance with the Eichmann Ratio architecture, which acts to control and reduce the effectiveness of the induction processes.
2. The neutral is constructed and placed with the live conductor(s), in accordance with the gPOWER™ and zPURITY™ architectures, which acts to further control and reduce the effectiveness of the induction processes.
3. The earth is constructed and placed with the live and neutral conductor(s), in accordance with the gPOWER™ and zPURITY™ architecture, which acts to even further control and reduce the effectiveness of the induction processes.
4. Re: Induction processes – capacitive, inductive, conductive/reactive coupling effects, refer to the following white paper... [Electromagnetic Interference - Considerations in Structured Cabling Systems](#)

The KLEI gPOWER™ and zPURITY™ AC architectures are exceptionally noiseless technologies, and we have applied this technology to all KLEI AC power cables. This results in a level of fidelity that many thought could only be attained by having components costing considerably more. We believe that the most noticeable improvements are the exceptionally revealing harmonics associated with venue acoustics—that is, the echoes and reverberations that surround each artist and instrument. Other clearly audible attributes include clarity, neutrality, dynamic performance, bass depth and control, and phasing.

When speakers are connected out of phase, the image becomes muddled, and the bass performance drops off. Varying the phase by small amounts can move the position of instruments and artists within the image. Inductive noise impacts the signal phase of both channels differently, which results in an inaccurate image. Phase appears to control the placement of instruments and artists in two ways:

1. Their location within the depth of the image
2. Their location outside the width of the speakers

Since the KLEI technology controls, and even eliminates, the noise within the power cable, an incredibly precise placement of instrument and artist within the image will be noticed, and an incredibly large image that melts and fills the boundaries of the listening room.

Please note that a listener's audio system will probably not achieve its full potential by installing just one set of KLEI cables, so it is best that the KLEI technology cables are installed throughout an audio system.