## What is Syncro?

In simple terms, Syncro is IsoTek's most advanced mains cable – but it's also so much more. The cable incorporates innovative electronics, housed in an anti-resonant aluminium case positioned part way down its length. This unique circuitry is designed to synchronise the mains supply in order to promote a perfectly symmetrical sine wave, delivering significant sonic improvements when used with any hi-fi separates system.

Syncro is not a mains conditioner or filter in the accepted sense. It can be used on its own to power a single hi-fi component, and will bring significant improvements if used in this way. However, it is primarily designed as a 'pre-filter' device – for best results, plug the Syncro into a wall socket and use it to power an IsoTek mains conditioning unit. Thus, Syncro takes the mains electricity supply and realigns its waveform, prior to filtration of contaminants (RFI/EMI etc.) by the conditioning unit, which then feeds each hi-fi component – thus improving the performance of every link in the audio chain.

The cable itself is identical to IsoTek's top-of-the-line Extreme power cable. It features heavy-gauge, triple-screened, 20Amp oxygen-free copper conductors suitable for high-current demands, coupled to top-quality connectors at either end. Both the mains plug and the IEC connector are precision machined from high-purity copper, heavily plated in 24ct gold, deep cryogenically treated and then demagnetised. The main bodies are made of injection-moulded polycarbonate, for ease of handling, durability and long-term reliability, while the IEC plug's precision injection-moulded front assembly ensures precise mating with power sockets.

## How Does Syncro Improve Audio Performance?

As we fill our homes with an ever-increasing number of electrical devices, we further degrade the mains supply, interfering with its quality and consistency. Audio equipment uses electricity to generate signals, amplified by more electricity to drive a pair of loudspeakers; the quality of the electricity that feeds an audio system has a direct impact on the resulting quality of sound.

IsoTek's extensive range of mains conditioning components improves the quality of the mains supply significantly, filtering out contaminants like RFI and EMI, and ensuring each component in the audio chain receives pure and consistent power in

line with its specific requirements. However, there is a further issue with the electricity supply in our homes that has existed for years, without a truly effective commercial solution. The problem in question is sometimes referred to as 'DC on the mains'. In terms of audio equipment, it is often signified by a buzzing sound emitted by a transformer in a power amplifier. Of course, this buzz is extremely distracting to the listener, and hardly in keeping with the concept of high-resolution audio. In addition, the mechanical vibration within the power transformer, created by core saturation, results in microphony in the internal components, leading to further degradation of sound quality.

These issues have nothing to do with the quality of the audio equipment used. In fact, some of the best amps available are the most seriously affected. The problem is a symptom of the poor state of mains electricity available in most homes, affecting not only amplifiers but source components, too.

Most of the DC-related issues suffered by audio systems are brought into being by the electrical devices we own, directly 'rectifying' the mains from AC to DC (where a diode is used in series to allow either the positive or negative cycle of the mains sine wave to pass). The use of switch-mode power supplies exacerbates the problem, introducing measurable mains distortion. These devices create a lack of symmetry in the mains sine wave where it is displaced from the zero voltage line, leading to the aforementioned hum that's often noticeable from power amplifiers, as the DC voltage saturates the core of the transformers with DC current. This, in turn, generates unwanted mechanical vibration, resulting in audible noise and microphony, and increased power consumption and heat.

To give an example, if a sine wave reaches a peak of 326 Volts in the positive direction, it should also reach 326 volts in the negative direction to have perfect symmetry. This actually describes the reality of a 230 Volt AC wave form; the 230 Volts describes the heating effect of a sign wave whose peak is 326 Volts. If one peak reaches 327 Volts and the other 325 Volts, there is lack of symmetry. Although common sense suggests that such small variations should have no effect, in reality they create serious problems for audio systems; even tiny changes registering no more than a few millivolts create significant operational difficulties for amplifiers.

## Inadequate remedies of the past…

Historically, IsoTek advocated the use of huge isolating transformers to improve the cleanliness of the electricity supply (the company has since developed more advanced components for use in its power conditioners). A by-product of this technology helped to compensate for DC elements on the mains. However, this merely shifted the problem away from the audio equipment to the isolating transformer itself; audible mechanical hum may have been removed from the transformer in the power amp, but the isolating transformer would hum instead.

Ironically, in order to try to reduce dynamic loss in the amplifier created by the insertion of the isolation transformer, larger and larger devices were needed. However, the bigger the transformer, the louder the mechanical noise; the problem was never truly solved, merely shifted and often made worse.

## A new solution: IsoTek Syncro…

IsoTek's research has led to the conclusion that mains electricity should be a pure sine wave of either 50Hz or 60Hz of correct voltage and good symmetry about the zero volt line, in order to power audio equipment with maximum effectiveness. The Syncro is solely concerned with creating zero-volt symmetry, but also forms a vital part of IsoTek's product range in working towards the ideal state of a pure sine wave. In designing the Synchro, the challenge for IsoTek was to offer a universal solution to remove the unwanted and damaging DC component from the mains supply, whilst allowing the maximum possible current to pass. IsoTek's latest engineering solution and DC-blocking technology developed for the Syncro is in many ways superior in performance to a massive 12,000VA isolating transformer, delivering greater dynamic ability. (Incidentally, a 12,000VA isolating transformer is twice the size of IsoTek's largest historic product.)

## Syncro's sonic effect…

As well as removing any audible hum from a power amp, Syncro's synchronising effect results in greater bass depth, improved timing, a reduction in the noise floor and a more palpable sound overall. Furthermore, these improvements don't come at the expense of dynamic ability; in fact, in some cases dynamics are considerably improved. This can be explained by the fact that at zero volume, many power amplifiers consume less power in idle. The Syncro helps the amplifier to consume less electricity, freeing up power for dynamic transients. A simple analogy is a car that is free running, as opposed to having the brakes slightly engaged.

## Specifications

- Cable: 20Amps, OFC copper with active shield
- Connectors: Audiophile-grade, 24ct gold-plated, cryogenically treated
- Peak current: 300A / 10msec
- Permanent current: 16A

The IsoTek Syncro is available from February, with either 'standard' C13 or horizontal-pinned C20 IEC plug configuration.

Price TBC.


IsoTek
IsoTek
syncro
EVO3