Power Distributor Reference

AC-A1016 AC-A2016 AC-A3016

TECHNICAL DETAILS

inakustik

KABEL | LAUTSPRECHER | MUSIK

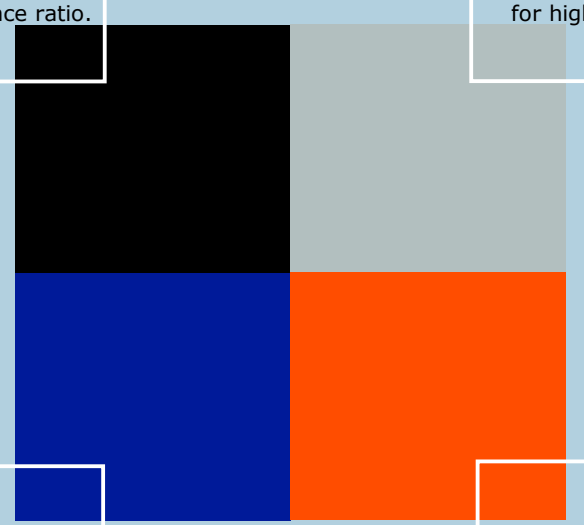
Our quality standards

REFERENZ

black&white reference – the in-akustik class for perfectionists. The benchmark for uncompromising sound experience. World leading value and price/performance ratio. Gets under your skin.

EXZELLENZ

Excellence – the in-akustik class for discerning tastes. The finest materials, outstanding workmanship. With a passion for high end audio enjoyment.



PREMIUM

Premium – Die in-akustik class for state-of-the-art technology. Gets the most from your audio / video system. Built on a love of superior performance.

STAR

Star – the in-akustik class for beginners with ambition. Always the right choice. More performance at lower coast. Striving to be better.

A passionate familiy

in-akustik is a quality brand and respected around the world. For more than 30 years in-akustik has put its heart and soul into the business of audio and video enjoyment. Perfect images and perfect fidelity are our passion. Made in Germany and always leading the way in value and incredible performance. With our brand of CD and DVD labels, Focal Home an car hifi loudspeakers and of course our cables, our family of products make passionate statements.

Even the strongest heart performs badly if it does not have enough oxygen. Power supplies are the lungs for high-end enjoyment. Power supply cables are increasingly used to carry data. High frequency signals are superimposed on the mains voltage. Normal power cables also function as aerials, picking up the radio frequencies broadcast by mobile phones or PCs. These signals then manifest themselves as interference in the hardware. This is compounded by mains voltage variations and transfer resistances, which impair the power of hi-fi equipment during dynamic peaks. in-akustik's mains distribution units filter the power and, at the same time, deliver evenly high power for the hi-fi system. It makes your heart beat faster.

Necessity

- Interference in the mains supply is increasing.
- Wireless solutions are increasing -> leads to more HF interference.
- Cables function as aerials and pick up additional interference.
- Equipment is capable of more but is also more sensitive and prone to faults.
- Standard installation material is getting cheaper (within limits) and creates higher losses as a result.

Perhaps you have already noticed, that your hi-fi or home cinema system sounds far better in the evening than during the day. There are various reasons for that: within the mains supply especially in major cities, apartment buildings or near industrial parks, there can be considerable variations in the mains voltage. When the voltage is low, the power potential of the equipment is reduced. If the voltage is continuously high, it can cause damage. However, it is not only the variations in voltage that affect the quality of playback for pictures and sound. Interference from the mains, such as high frequencies, distortion, DC components, etc. also have an impact. Interference between different equipment is also significant: each piece or set of equipment generates a characteristic spectrum of interference.

in-akustik's new, active power distributor compensates for the usual variations in the mains voltage. During periods of heavy consumption, the mains supply voltage is often well under 230 V and, when consumption is light, it can be significantly over. Using a completely new electrical process with an internal reference, the device checks the output voltage, correcting if need be, via some complex electronics. There are similar devices that exist already, but most of them have a poor efficiency and provide a maximum of 1 kW (1,000 watts) which is extremely low for today's standards.

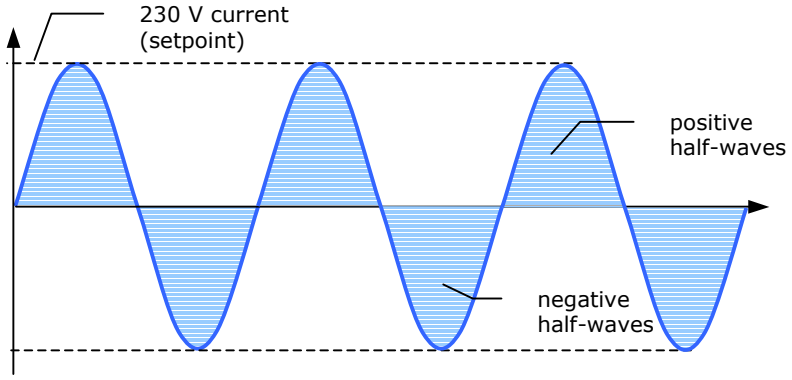
The active power distributor from in-akustik provides a stable voltage, even at full power (3.6 kW/16 amps) and filters out additional interference, such as high frequencies, DC components or distortion of the sine wave (THD). Interference, which can be transmitted from one piece of equipment to the next, is decoupled in the AC-A2016 extended version by using additional filter extensions, which are adjusted to match the hardware concerned. The AC-A3016 version even makes it possible to freely programme this filtering.

The active power distributors from in-akustik work on a completely new principle, namely the Superimposed Modulator. Contrary to the standard procedures, this technology remodulates the output voltage by adding and subtracting. The modulator only needs to balance the difference from actual to target rather than build up the whole amplitude – as other devices on the market do. Therefore, the controller is extremely fast, with low losses and can cope with full power of 3.6 kW.

Power Distributor AC-A3016

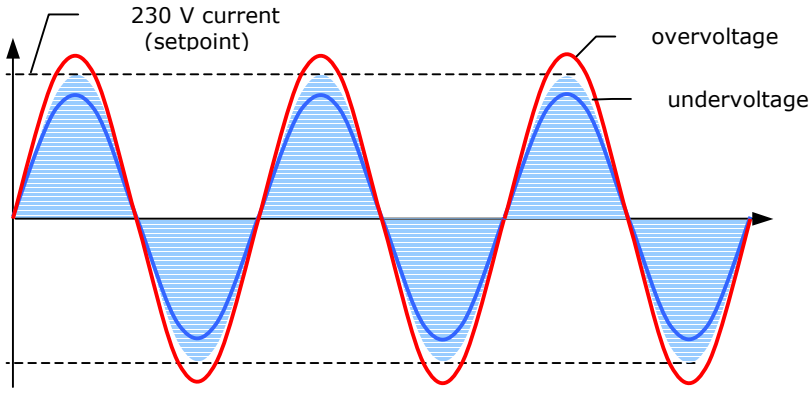
Mains voltage | nominal condition

The mains voltage should be a sinusoidal alternating current of exactly 230 V



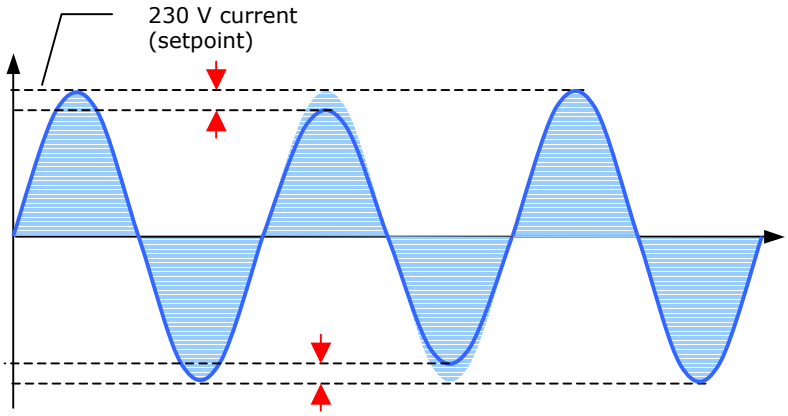
Possible interference caused by voltage variations

Due to the changing loads of the mains voltage, there are continuous deviations from the target voltage of 230 V. The size of these deviations depends on the quality of the electrical installations.



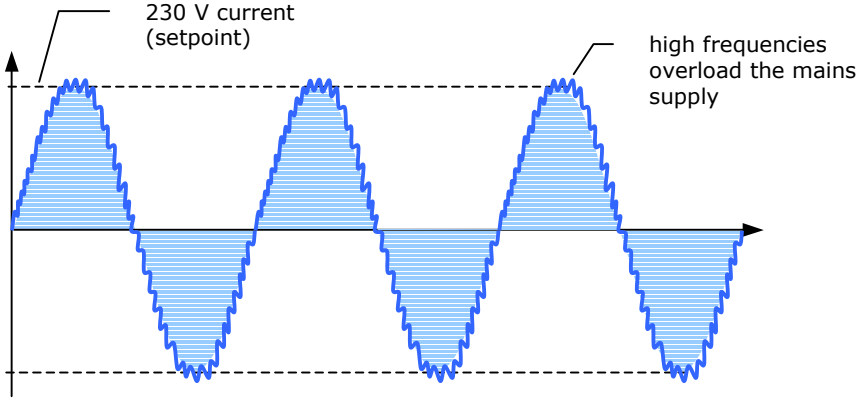
Possible interference caused by a drop in voltage

Erratically high power demand of the connected up components or other devices in the household (refrigerator...) causes brief drops in voltage (also caused by cheap electrical installations, for instance in apartment buildings).



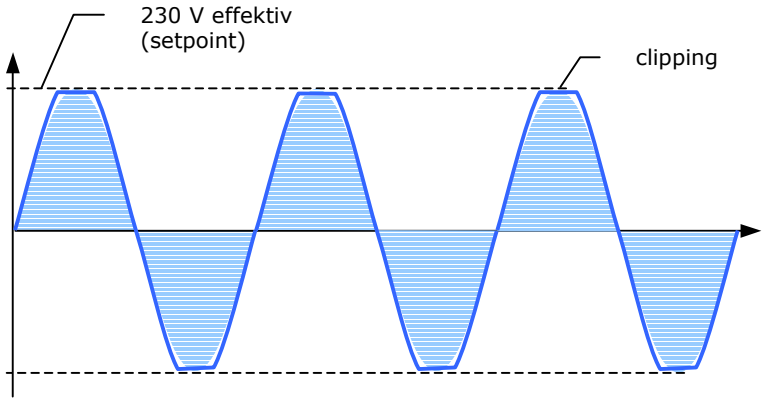
Possible interference caused by overloading

High frequencies join the mains voltage. These frequencies are created for instance by data transfers via the mains supply (Internet) or by using radio waves (mobile phones, etc.).



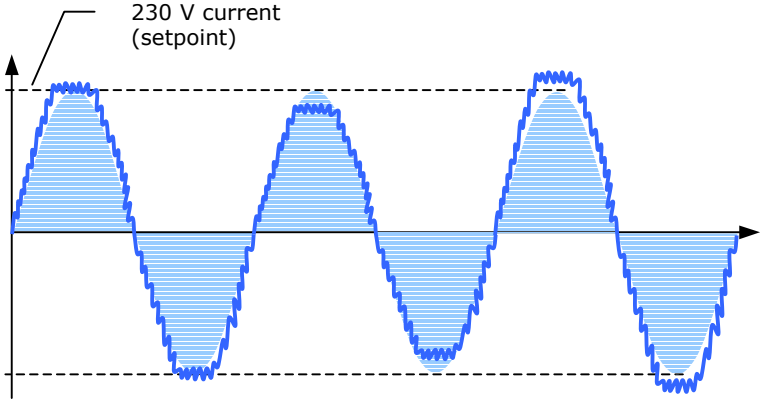
Possible interference caused by clipping

Asymmetrical and complex loads distort the sine wave of the mains voltage. In the top part of the sine wave there is a tapering curve, which is called "clipping". The DC components contained within are responsible for the humming in the toroidal transformer.



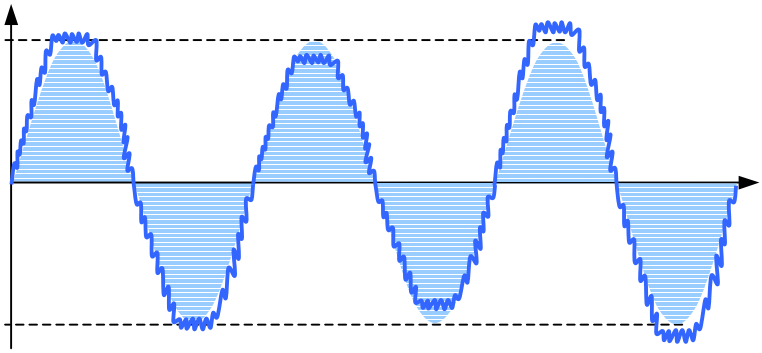
Summary

To summarise, the actual current coming from the socket is as follows:

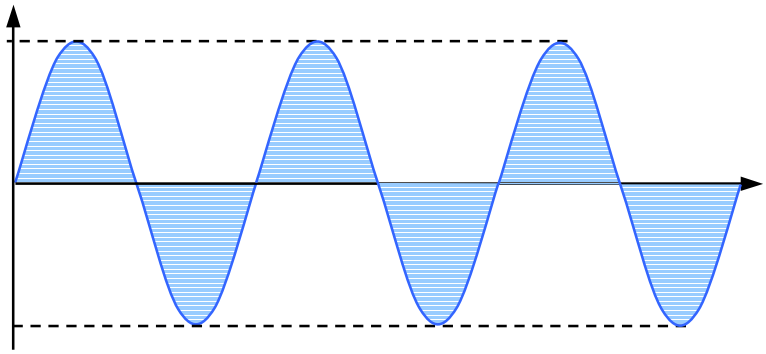


Before -> After

actual condition of mains voltage



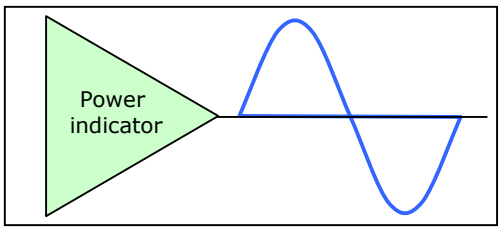
Good, stable voltage with the active power distributor



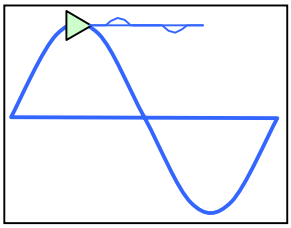
The Heart:
the AC-A controller

The heart and basis of the three active power distributors is the AC-A controller. This component stabilises the mains voltage in a new way. The standard switches generate the whole voltage hub (230 V) and have to cope with the full output power, whereas the AC-A controller only adds or subtracts the difference in voltage. The advantage is the significantly higher power output.

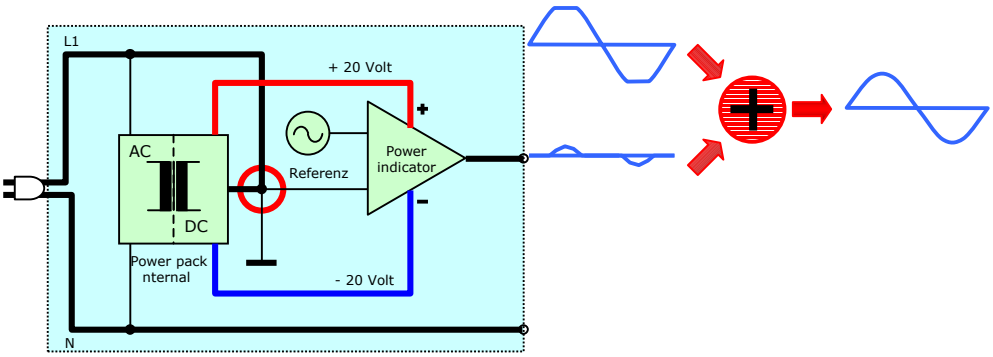
Standard controllers
(must generate 230 V)



AC-A controller
(only balances out the differences)

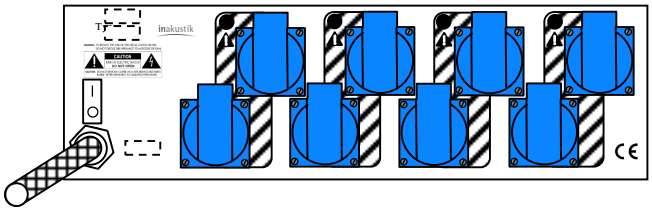


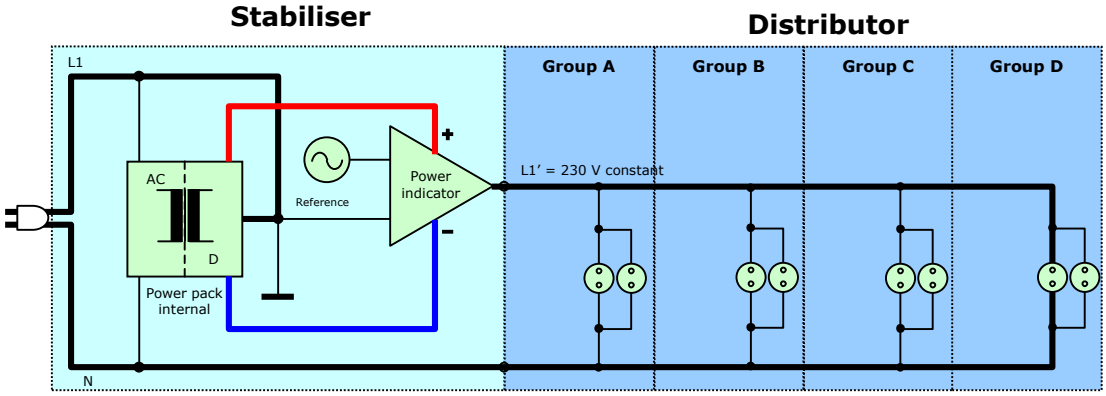
The whole AC-A controller switch "swims" with the mains voltage. It uses the main voltage hub from the mains and only has to cope with the actual/target deviation.



Features

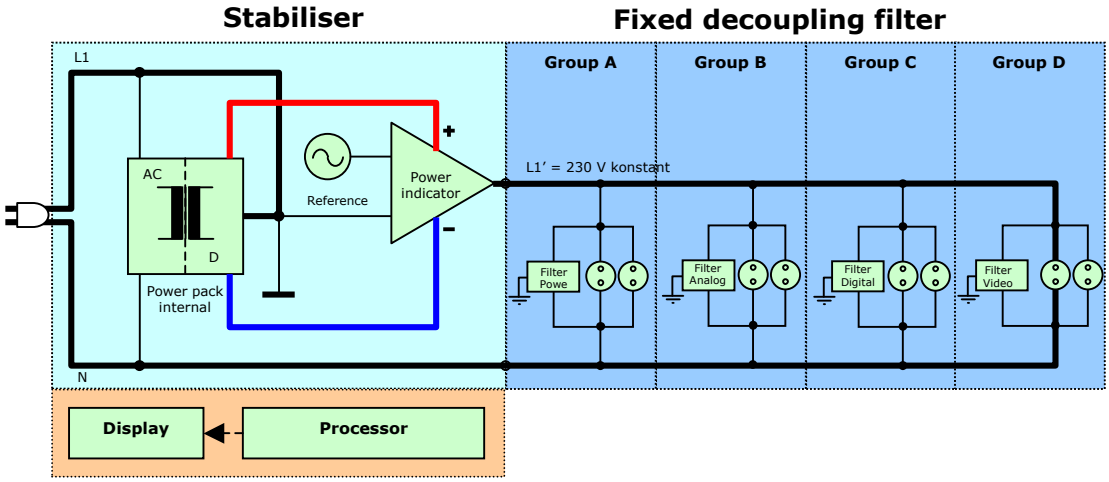
- stabilises the mains voltage
- filters the mains voltage on the input side
- can withstand full 16 amps / 3,600 watts (peak current >100 A)
- eight sockets
- conforms to CE / RoHS / VDE
- Made in Germany





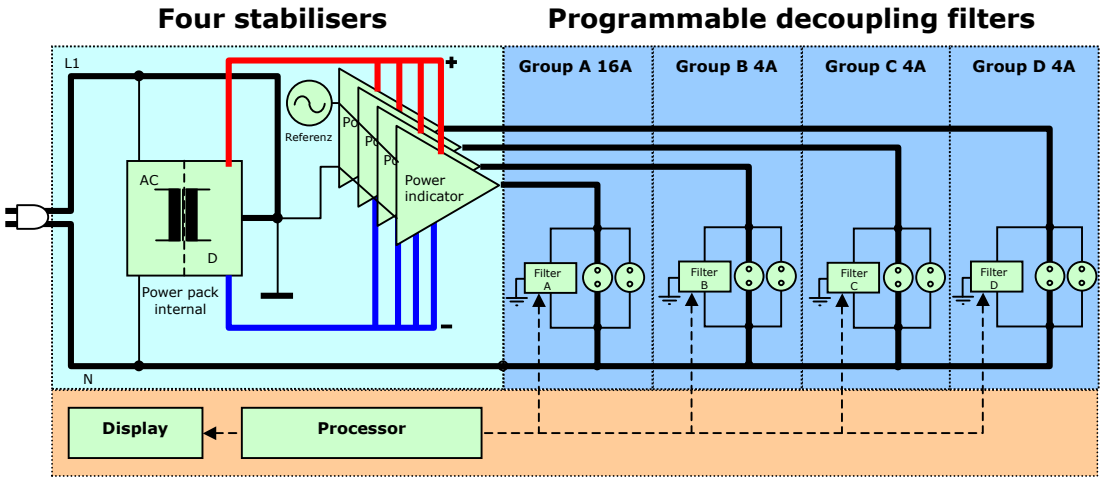
Features

- Stabilises the mains voltage
- Filters the mains voltage on the input side
- Can withstand full 16 amps / 3,600 watts (peak current >100 A)
- Four separate decoupling filters each with two sockets
  2 x High Power - 2 x Audio – 2 x Video – 2 x Digital
- Display for opening various parameters, such as input/output voltage, power etc.
- Conforms to CE / RoHS / VDE
- Made in Germany



Features

- Stabilises the mains voltage
- Filters the mains voltage on the input side
- Can withstand full 16 amps / 3,600 watts (peak current >100 / 25A)
- Four separate AC-A controllers (1x16 amps + 3x4 amps) provide improved decoupling of the components
- Four programmable decoupling filters in groups, each with two sockets (= 8 sockets)
- Maximum of 8 programmings can be saved. Exact adjustments and varied use possible in one chain
- Programming is done directly on the device
- Display for programming and parameters such as input/ output voltage, power, current etc.
- Conforms to CE / RoHS / VDE
- Made in Germany



AC-A3016 application

The freely programmable decoupling filter allows the AC-A3016 to be perfectly adjusted to the other components connected up.

The required filter can be used for each group of sockets. Any unused groups can be switched off.

Eight filter installations can be saved and opened again. Thus, different types of applications in the whole system can be optimised.

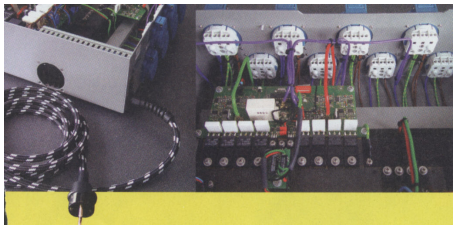
System configuration			Filter settings		
Group	**Sockets**	**Connected devices**	**Filter setting Scenario 1** (pure analog Audio)	**Filter setting Scenario 2** (digital Audio)	**Filter setting Scenario 3** (home cinema)
A	A1	Amplifiers	High Power	High Power	Analog Video
	A2	AV Receiver			
B	B1	Preamplifiers	Analog Audio	Analog Audio	High Power
	B2	Aktiv Subwoofer			
C	C1	Phono preamplifier	Analog Audio	off	Digital Video
	C2	DVD Player			
D	D1	Beamer	off	Digital Audio	Digital Video
	D2	CD Player			

VIDEO

March 2007

It gets really close to the physical ideal of a perfect power source!

Faulty mains supply with fluctuating voltage? The in-akustik AC-A1016 will put it right. Holger Wachsmann, technical pioneer at the in-akustik specialists in Baden, has had so many brilliant ideas for system cabling. And everything he presented in a worldwide exclusive to "video" editors when he visited, has been cleverly implemented. For example, the AC-A1016 new mains current processor: lets in dirty current, releases clean current - that is the motto of the € 3,600 purifying power plant. But it is not just the AC-A1016 passive filters and its ability to clean the mains voltage that is so satisfying; it also provides something completely new with the electronic power controller. Thanks to its clever switching concept it is more powerful than other comparable devices: it provides clean power in all its eight sockets with a peak of 3600 Watts and 1,500 watts for continuous operation.



That is enough to supply a complete home & cinema system with a powerful receiver or a large AV preamplifier or amplifier combination. For reasons of safety, projectors cannot be connected up: Your follow-up control for cooling lamps requires direct mains contact without any intermediate stations. To operate the AC-A1016 plug in all the devices and activate with the mains switch on the front side. The only condition: to ensure optimal control attributes, the AC-A1016 power cable must be properly plugged into the socket to get correct mains supply phases – a mains tester is also supplied. "video" sent the AC-A1016 to be martyred at the test factory and have all its features checked out objectively. First hurdle: Does it keep the output constant when there are variations in the power supply? No problem. If the mains voltage drifts between 215 and 245 volts, the volt meter shows a constant output of 230 volts. Anything outside this operation, undervoltage and overvoltage protection was activated and the AC-A1016 switched off. Second hurdle: How clean is the current after the cleaning process? If the degree of contamination is 2.3 percent in a normal lighting mains (which is a very good value), at the AC-A1016 output it was down to a mere 0.3 percent. Third hurdle: Does the output voltage remain constant and clean for the users connected up? For a continuous load with 800 watts, the ACA1016 supplies a constant 230 V for a low 0.3 percent THD (total harmonic distortion) rate, while the THD rate in the mains increased significantly. Final hurdle: Does this also work if an amplifier is connected with higher peak current intake? Yes. Even if the Onkyo TX-NR 5000 needs loads of up to 1,000 watts, the volt meter shows an amazing 0.34 percent THD for 230 volts. The internal resistance of AC-A1016 has only about 10 Milliohm, compared to 500 Milliohm for the normal socket – that comes pretty close to the physical ideal of a perfect power source. Whether a home&cinema system benefits from using the AC-A1016 ultimately depends on the actual status of the existing mains supply. But thanks to the optimum technical prerequisites – the chances are extremely high.

TECHNICAL DETAILS

in-akustik GmbH & Co. KG
Untermatten 12-14
D-79282 Ballrechten-Dottingen

Tel.: +49 (0) 7634-5610-0
Fax.: +49 (0) 7634-5610-80
E-Mail: mailto@in-akustik.com
Web: www.in-akustik.com