

# Accuphase

CLEAN POWER SUPPLY

## PS-530

- AC voltage stabilizer based on waveform shaping technology
- Acts as a source of extremely clean energy
- Low-distortion reference waveform generator
- Highly effective waveform compensation
- Outstanding current capability
- Superb interference rejection
- Built-in meter for monitoring vital parameters including output power, input/output voltage, and input/output distortion
- Advanced protection features
- Large high-efficiency toroidal transformer



The photograph shows the 230 V version.



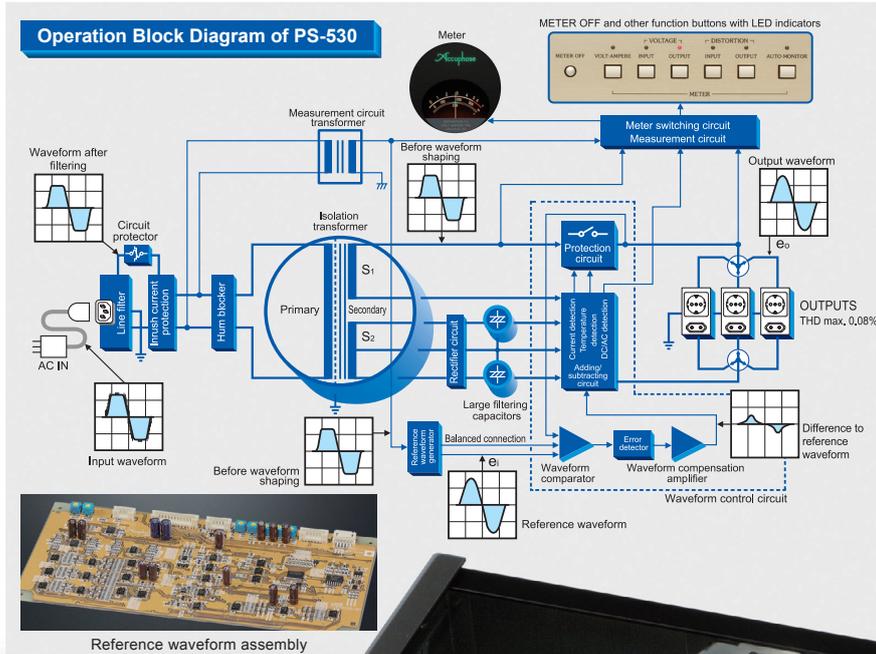
# Amazingly pure energy source with momentary 40 A (80 A) current capability — Clean AC power supply with revolutionary waveform shaping technology delivers up to 510 VA

Every audio component draws all of its energy from the power supply which in turn is connected to the AC power grid. The Clean Power Supply components from Accuphase are products that remove noise and impurities from the AC power line through a groundbreaking new approach, resulting in a drastic improvement of the sound and picture quality of connected audio and video equipment. Without relying on an oscillator, the reference waveform is created with further improved accuracy and is linked to the power section by a balanced connection to ensure incredibly low distortion in the output waveform. The PS-530 can deliver as much as 510 VA, covering the requirements of most standard audio components.

## Innovative Technology

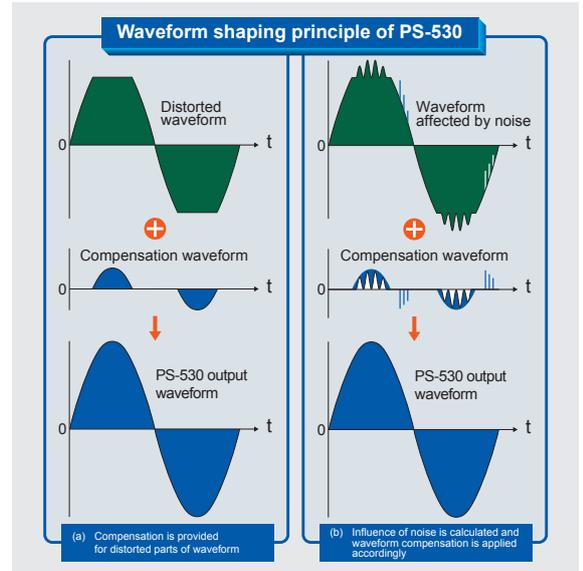
### Low-distortion reference waveform generator

To generate the 230 V (120 V) sine wave reference signal, the zero-cross point at the secondary winding of a measurement circuit transformer is detected by a comparator and used by the high-precision power supply to generate a square waveform. The square wave then is routed through a newly developed 50/60 Hz band pass filter and a six-stage band elimination filter (BEF). The filter frequency is switched in sync with the input frequency, for automatic 50 Hz and 60 Hz support. By routing the signal through another band pass filter, a low-distortion sine wave (reference signal) is created that is not dependent on the input voltage.



### Outstanding waveform compensation power

Figure (a) shows a severely distorted waveform such as commonly encountered in ordinary AC outlets at home. Simple filtering will never be able to bring this waveform back to the intended shape. Figure (b) shows the condition where noise is affecting the AC power. Filtering will be able to remove some of the higher frequency noise components but low frequency components are very difficult to remove. The PS-530 incorporates power waveform shaping technology that uses a clean reference waveform and works in real time to provide exactly the required compensation and remove any unwanted components. Distortion is reliably eliminated and the result is a perfectly clean source of energy.



\* The figures in brackets apply to the 120 V version.



The photograph shows the 230 V version.

**Power supply waveform and clean PS-530 output waveform**

Almost all electrical devices used in a household convert the AC supplied by the outlet into a DC current for powering internal circuits. This task is performed by a rectifier. As shown in photograph (a), the rectifier load current has a pulse waveform with a large current flowing momentarily in the vicinity of the voltage peak.



Photo (a) Current waveform of rectified load

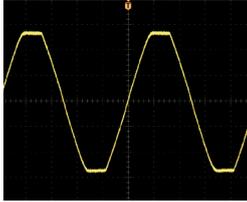


Photo (b) Voltage waveform of AC line (distortion approx. 3%)

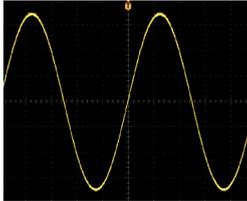
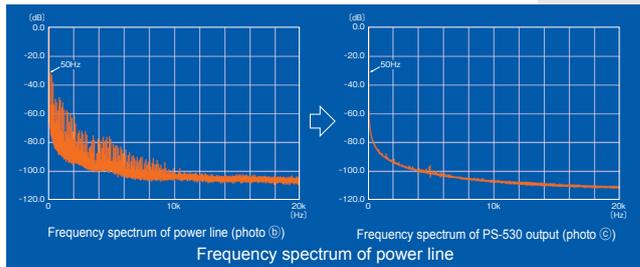


Photo (c) PS-530 output waveform (distortion approx. 0.06%)

This causes a voltage drop, resulting in clipping of the voltage waveform, as shown in photograph (b). A clipped waveform with a high amount of distortion contains many unwanted frequency components, or harmonics, as shown in the left-side graph below. When entering the audio circuitry of an amplifier through the power supply, such harmonic components can interfere with the audio signal and cause intermodulation distortion which greatly affects sound quality.

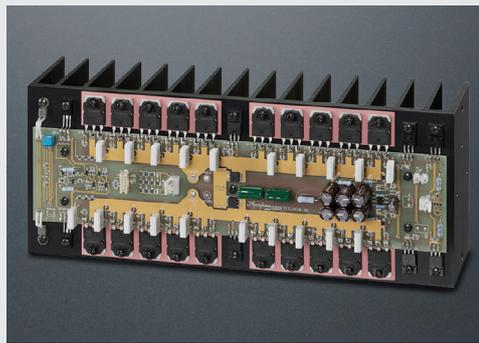
When passing through the PS-530, harmonics within the audible range are largely removed (frequency spectrum in the right-side graph below), and the result is a clean sine waveform as shown in photograph (c).



Frequency spectrum of power line (photo (b))      Frequency spectrum of PS-530 output (photo (c))

**Optimized heat sink construction for ideal thermal dissipation**

The power amplifier section (with heat sink) is designed to ensure maximum thermal dissipation efficiency while maintaining a suitable weight balance.



**Exceptional current capability**

The power amplifier which performs the waveform adding/subtraction action is designed for ample waveform compensation performance and complete operation stability. The final stage employs bipolar power transistors rated for a maximum current of 15 amperes. These devices are connected in a 10-parallel complementary push-pull arrangement which boasts a rated output current of 2.22 A (4.25 A) and an instantaneous peak current (inrush current) rating of 40 A (80 A). This demonstrates the excellent current capability of the PS-530.

**Advanced Features**

**Three-step interference rejection**

The input side of the PS-530 is equipped with a line filter for removing any high-frequency noise components present in the power line, such as generated for example by digital equipment. The primary and secondary windings of the power transformer are kept totally separate, and the fully shielded design shuts out any externally induced noise. Since the amplifier uses the feedback principle, output impedance is extremely low. This prevents any possibility of mutual interference between components connected to the outputs of the PS-530. The graph above shows the frequency spectrum of the power line and of the PS-530 output. It can be clearly seen that harmonic components in the audible frequency range are almost completely removed when power passes through the PS-530.



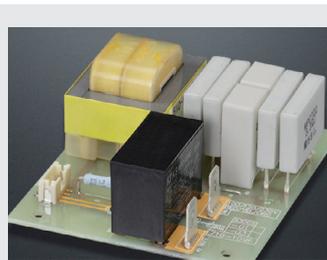
**Built-in meter allows easy monitoring of output power (VA), input/output voltage (V), and input/output distortion (%)**

**Overload indicated by flashing LEDs**

The power consumption of audio components such as integrated amplifiers or power amplifiers differs considerably depending on the volume. Being able to check while actually playing music is therefore highly useful. The meter of the PS-530 lets the user see at a glance how much power the connected equipment is consuming at any given time. If the maximum rated output power of 510 VA is exceeded, the meter function selector LEDs flash as a warning indication.

**Reliable protection functions**

If any kind of problem should occur during operation, the circuit protector immediately is triggered to protect the unit and any connected components from possible damage.



Assembly with input voltage/distortion monitoring circuitry



Meter of 230 V AC version

- **Meter**  
Depending on the setting selected with the function buttons, the following information is shown.
- **DISTORTION scale (%)**  
Used for 4 or 5
- **VOLT-AMPERE scale (VA)**  
Used for 1
- **VOLTAGE scale (V)**  
Used for 2 or 3

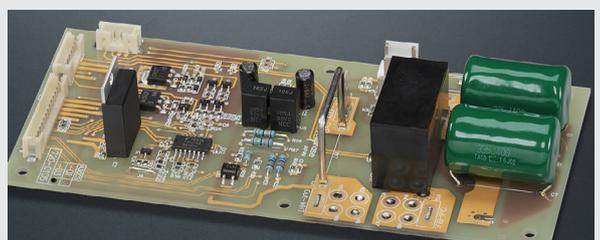


■ **Meter operation OFF button**

Turns meter operation and meter illumination on or off.

■ **Meter function selection pushbuttons**

- 1 Combined power consumption (VA)
- 2 AC input voltage (V)
- 3 AC output voltage (V)
- 4 AC input distortion (%)
- 5 AC output distortion (%)
- 6 Auto-monitor



Assembly with protection circuitry

## Advanced Features

### Strong power supply with high-efficiency toroidal transformer and large filtering capacitors

The PS-530 uses a massive toroidal type power transformer with high output capability. Rectification and smoothing is performed by two large aluminum electrolytic capacitors rated for 22,000  $\mu$ F and built for high sound quality applications. This provides ample leeway.

### AC voltage stabilizer based on waveform shaping technology

The control circuitry of the PS-530 is performs addition/subtraction on the alternating current from the input and then passes it on. Most of the AC energy from the input is therefore carried over to the output. The introduced loss consists only of the power required for waveform compensation, resulting in much higher efficiency and lower heat generation than with conventional AC voltage stabilizers. The frequency follows the AC input, which means that no oscillator is needed as internal signal source, and therefore no high frequency noise is emitted by the unit.

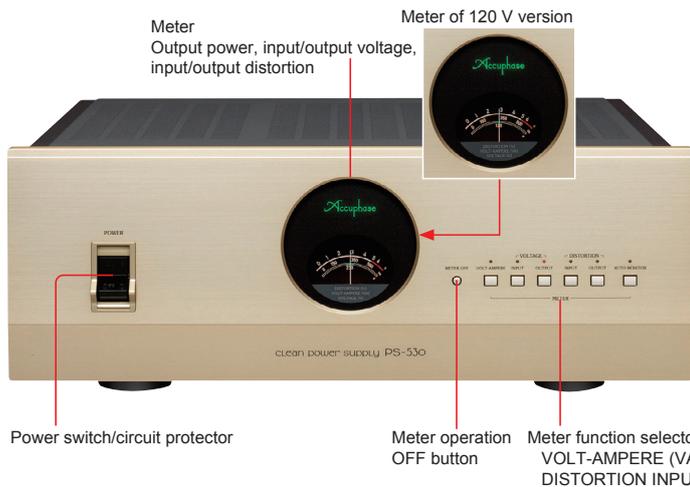


### PS-530 Meter (Power) Indication and Load

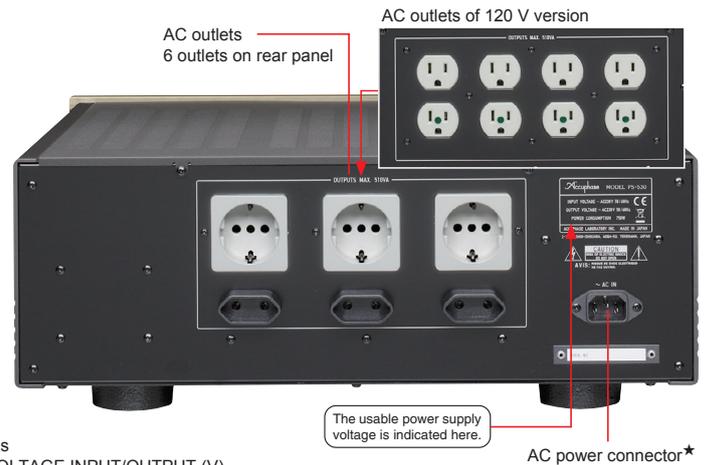
The power consumption of electrical equipment, as indicated on the equipment itself and in catalogs and other documentation according to **legal requirements**, is usually given in watts (W). This figure represents the so-called effective power. However, the actual power drawn by the equipment is larger than the effective power. This is called the **apparent power** which is calculated by multiplying the applied voltage (230 V or 120 V) with the actual current. The unit for **apparent power is VA (Volt-Ampere)**. Since the **value shown by the meter of the PS-530 is the apparent power**, the reading will be higher than the power consumption (W) given in catalogs and specification sheets.

- The rated power limit of the PS-530 is 510 VA. When deciding on equipment to be connected, select components so that the total remains within these limits, and check actual power consumption using the meter.
- In case of overload, the meter function selector LEDs flash. Reduce the load by reducing the number of connected components until the LEDs stop flashing and stay constantly lit.
- The power consumption of integrated amplifiers and power amplifiers varies considerably depending on the actual audio output. After connecting such equipment, perform playback and verify that power consumption does not exceed the maximum rating when peaks in the music are reproduced at high volume levels.

### Front Panel (The photograph shows the 230 V version.)



### Rear Panel (The photograph shows the 230 V version.)



## PS-530 GUARANTEED SPECIFICATIONS

	120 V version	230 V version
Rated output capacity	510 VA (continuous)	
Rated output voltage	120 V AC $\pm 1.5$ V	230 V AC $\pm 3.0$ V
Rated output current	4.25 A	2.22 A
Output frequency	50 Hz or 60 Hz (identical to input frequency)	
Instantaneous peak current capacity	80 A	40 A
Output waveform THD	0.08% or less	
AC power outlets	8 outlets, on rear panel	6 outlets, on rear panel
Rated input voltage	120 V AC $\pm 10\%$	230 V AC $\pm 10\%$
Input frequency	50 Hz or 60 Hz	
No-load power consumption	28 W	37 W
Cooling principle	Natural air cooling	

	120 V version	230 V version
Meter	0-510 VA Meter function selector LEDs flash when overload occurs	
VOLT-AMPERE	120 V AC $\pm 5\%$	
VOLTAGE INPUT/OUTPUT (green zone of scale)	120 V AC $\pm 5\%$	230 V AC $\pm 5\%$
DISTORTION INPUT/OUTPUT	0-6%	
AUTO-MONITOR	Display cycles automatically from VOLT-AMPERE to DISTORTION OUTPUT, showing each mode for 5 seconds	
Maximum Dimensions	Width 465 mm (18.31")	Height 181 mm (7.13") Depth 386 mm (15.2")
Mass	24.0 kg (52.9 lbs.) net 30.0 kg (66.1 lbs.) in shipping carton	

#### Note

\* The 230 V AC and 120 V AC versions of the PS-530 differ regarding meter voltage indication, AC output connector shape, supplied power cord, etc. Make sure that you have the correct version.



Caution

- \* The PS-530 is available in 230 V AC and 120 V AC versions. The actual allowable voltage is indicated next to the AC power connectors on the rear panel. Be sure to check this indication before using the PS-530.
- \* This product can be used only on a regular household AC circuit rated for 230 V or 120 V AC, 50/60 Hz. Using the product with portable AC generators, airplane or ship power generators or other types of power sources is not possible.
- \* This product is designed to improve the quality of AC power supplied to audio or video components. Do not use it to power industrial type equipment or common household electrical appliances.
- \* Do not use this unit for powering equipment where failure incurs a risk of injury or fatal accidents (medical equipment, aviation equipment, traffic control equipment, furnace and heating control equipment, safety devices, etc.). Accuphase will not be liable for any problem occurring due to use of the PS-530 with the above type of equipment.

- Supplied accessory
- AC power cord



ACCUPHASE LABORATORY, INC.