AccuSine SWP

Active harmonic conditioner

20/30/45/60/90/120 A

Harmonic mitigation and correction of Displacement Power Factor (DPF) for installations up to 1000 kVA, with or without distributed neutral circuit

- **Reduction in rms current value, saving on electrical distribution equipment sizing**
- **Reduces losses in distribution equipment, providing longer life and more effective utilization of capacity**
- **Reduces utility demand and costs**

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Improved electricity availability and business performance

- Increased reliability and service life
- Reduced risk of outages
- Increased productivity by eliminating downtime due to poor load characteristics
- Increased quality due to better process performance
- Extended equipment life
- Increased generator performance and life

Complies with current technical standards

AccuSine conforms to the set of three technical standards currently in force

- Harmonics: IEC 61000-3-2 and IEC 61000-3-4
- Power quality: EN 50160 and IEEE 519
- Compatibility between electrical systems and products: IEC 61000-2-2 and IEC 61000-2-4

Energy savings

AccuSine also corrects the Cos ø either lagging or leading, up to 1.0
Less current and a Cos ø close to unity signify a lower factor in terms of apparent and reactive power

A right-sized installation

Fewer harmonics and greater Cos ø signify less current, with the following benefits

- Smaller cable cross-sections and a reduction in the size of switchgear
- Less overloads on transformers and capacitors
- Secured operation of generator sets

Ultra-simple integration

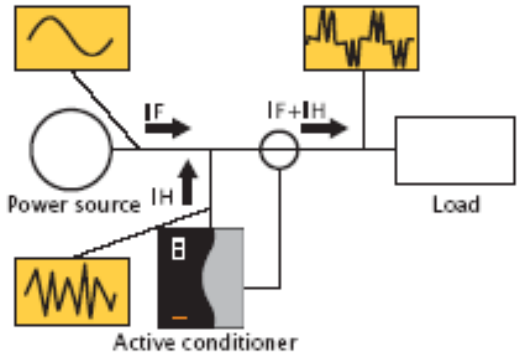
- AccuSine is extremely compact and can be mounted on a wall or installed in a switchgear cubicle
- AccuSine can be connected in parallel, allowing units to be added as power demands increase, without disconnecting the supply
- AccuSine adapts automatically to any single-phase or three-phase load and is compatible with any type of neutral system

How does an active conditioner work?

The conditioner analyses the load harmonics and compensates according to the selected configuration

- Neutralization of harmonics with choice of filter setting according to the application
- Plus correction of Cos ø, either lagging or leading

AccuSine instantaneously adapt the compensation level as required



Schematic diagram of the conditioner.
IF: fundamental current;
IH: sum of the harmonic currents.

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Where should an active conditioner be installed?

The neutralization of harmonics and the correction of Cos ø require precise knowledge of the installation concerned.
In new installations, it is recommended that the distortion factors at different key locations be calculated at the design stage. In existing installations, an expert should visit the site to carry out a full audit with measurements of Harmonic currents and Cos ø. In each case, it is important to specify the objective as either compliance with technical standards or to minimize the level of harmonic pollution in the installation. To address harmonic pollution, the product should be installed as close as possible, upstream from the principal source of non-linear loads and downstream from the secondary or terminal distribution system.

Main features

>Global compensation or individual harmonic compensation, selectable from H2 to H50
>Correction of the displacement power factor, Cos ø also adjustable
>Configurable for different types of load; computer loads, motors, etc.,
>IGBT technology, control by DSP
>3 LEDs to indicate operating condition
>Digital, 7-language display unit
>Configuration and parameter assignment menu
>Remote control
>Redundant parallel connections
>Wide range of current transformers

Associated communication

JBus/ModBus
To connect the AccuSine SWP to the building management system.

Status information card
To relay the status of the AccuSine SWP via 3 volt free contacts.

Available Services

1-year warranty.
Associated services *
> Commissioning the AccuSine SWP to conform with the installation specifications
> Teleservice; remote monitoring via the telephone system
> Maintenance contracts a selection of suitable maintenance packages
> Site audit for analysis and recommendations based on the technical environment

* Depending on the country, visit www.APC.com.

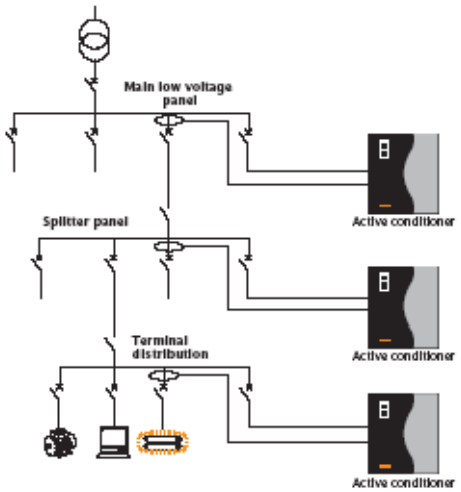

Diagram of the low voltage distribution circuit, showing the various installation points for an active conditioner depending on the required level of neutralisation.

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Technical characteristics

*Product Number (SKU)	PCS020Y4IP20U PCS020Y4IP20P	PCS030Y4IP30U PCS030Y4IP20P	PCS045Y4IP20U PCS0454YIP20P	PCS060Y4IP20U PCS060Y4IP20P	PCS090Y4IP20U PCS090Y4IP20P	PCS120Y4IP20U PCS120Y4IP20P
Compensation capacity per phase	20 A rms	30 A rms	45 A rms	60 A rms	90 A rms	120 A rms
Maximum compensation capacity in the neutral	60 A rms	90 A rms	135 A rms	180 A rms	270 A rms	360 A rms
System input						
** Nominal voltage	380 to 415 VAC -15%, +10%					
Nominal frequency	50 Hz , 60 Hz, +/- 8%					
Number of phases	3 phases with or without neutral Operation is possible with single-phase or unbalanced loads					
Current transformers	Range from 300/1 to 4000/1, split or solid					
Technical characteristics						
Compensated harmonic currents	H2 to 50, harmonic compensation if configurable					
Harmonic attenuation rate	THDI load /THDI system less than 10, at the nominal rating of the equalizer					
Correction of Cos ø	Lagging or Leading, up to 1.0					
Response time	< 40 ms					
Overload	Limitation of the nominal current, possibility of continuous operation with current limitation					
Inrush current	< 2 x the nominal peak current					
Heat losses	1000 W	1300 W	2100 W	2600 W	4200 W	5200 W
Number of units in configuration	1	1	1	1	2	2
Acoustic noise (ISO 3746)	<55 dBA		<60 dBA		<65 dBA	
Color	RAL 9002 (Grey White)					
Environmental conditions						
Operating temperature	0 to 40°C continuous, <25°C recommended					
Storage Temperature	-20 to 45°C					
Relative humidity	0 to 95 % without condensation					
Operating altitude	< 1000 m					
Reference technical standards						
Safety	EN 60950-1					
Protection	IP 20 conforming to EN 60529					
EMC						
Conducted and radiated emission	EN 61000-6-4 CISPR 11 Level A					
Immunity to electrostatic discharge	IEC 61000-4-2					
Immunity to electromagnetic fields	IEC 61000-4-3					
Immunity to impulse waves Fast transient Surge	 EN 61000-4-4 EN 61000-4-5					

NOTES:

* Product numbers ending in “U” are Unitary and require the option expansion kit to be connected in parallel to other AccuSine SWP products. Product numbers ending in “P” are shipped in a parallel enabled configuration and can be connected to other AccuSine SWP products for higher rated solutions. Up to four products, of the same rating, can be connected in parallel for up to 480 A compensation capacity per phase.

**208 VAC voltage is supported with the field installation of an autotransformer

See the document “AccuSine SWP 20-480A Autotransformer for 208V Mains Installation Manual“ for more information

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