

Harmonic filters

Type THF third harmonic filters

Third harmonic filters by PSS™ solve harmonic problems caused by single-phase switch mode power supplies such as those used in personal computers. The third harmonic filter attenuates third harmonic currents by as much as 80 percent (Triplen harmonics, mainly) while reducing higher order harmonics by as much as 50 percent.

The third harmonic solution

Our third harmonic filter is ideally suited for plug-in type electronic equipment such as personal computers, laptops and other office equipment. Not only does it reduce the third harmonic by as much as 80 percent, it also reduces the fifth, seventh, ninth and eleventh harmonics. Third harmonic filters typically reduce the total harmonic currents flowing on the neutral to a fraction of the phase current.

Typical (1-phase) applications include personal computers, laptop computers, online UPS, copiers, fax machines, electronic power converters, variable speed motor drives, other electronic equipment and HVAC systems.

Transient Protection Included

Plug-In type third harmonic filters include transient voltage surge suppression devices to provide protection against dangerous voltage spikes. Plug-in type filters are also fuse protected for added convenience. There are three options to choose from: enclosure style, open panel and loose components.

PSS™ third harmonic filters typically reduce total harmonic distortion by more than 50 percent and are capable of reducing the third harmonic by as much as 80 to 90 percent. Third harmonic filters reduce neutral current and neutral to ground voltage. They can reduce the energy consumption of single phase loads by as much as 33 percent.



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The problem

Harmonic currents generated by single phase switch mode power supplies often exceed the actual fundamental (50hz or 60hz) current used by the equipment. Not only do the harmonics waste energy, they also increase heating of upstream conductors and equipment. In a single phase system, the most common harmonic is the third harmonic. In many cases the third harmonic alone will be nearly as large as the fundamental currents (50hz or 60hz).

Triplens may overload the neutral

In single phase (4- wire wye or 3- wire 240/120) systems, triplen harmonics are the most dangerous, as they add together in the neutral and can exceed the current rating of the neutral conductor. Excessive neutral current, especially at harmonic frequencies, may cause equipment interference, reduced equipment life cycle, and/or insulation failure and fire.

Suitable for multiple loads

PSS's third harmonic filters are supplied with several receptacles so multiple devices (like PCs) can be supplied through an economical single filter. PSS's third harmonic filter allows the fundamental (50hz or 60hz) current to flow easily from the supply to the load, but acts to block the third harmonic. The third harmonic filter introduces an extremely high impedance to the third harmonic, while being permissive for normal 50hz/60hz currents.

Rather than absorb the unwanted harmonics at the distribution panel, switchboard or upstream supply transformer, PSS third harmonic filters are applied right at the loads. While the harmonics continue to flow between the filter and the equipment that is plugged into the filter, the total harmonics present on the input side of the filter are significantly reduced. The facility electrical system is cleaner, more efficient, reliable, and safer.

Product Selection

System Voltage	Amperes (RMS)	# of Outlets	Catalog Number
120 Volts 60 hz	3	2	THF-60-003-120-2N1
	5	4	THF-60-005-120-4N1
	10	6	THF-60-010-120-6N1
	15	8	THF-60-015-120-8N1
240 Volts 60 hz	3	1	THF-60-003-240-1N1
	5	1	THF-60-005-240-1N1
	10	2	THF-60-010-240-2N1
	15	4	THF-60-015-240-4N1
240 Volts 50 hz	3	1	THF-50-003-240-1N1
	5	1	THF-50-005-240-1N1
	10	2	THF-50-010-240-2N1
	15	4	THF-50-015-240-4N1

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Dimensions (inches / mm)

Amps	Width	Height	Depth
3	7.5 / 190	6 / 150	8.5 / 216
5	7.5 / 190	6 / 150	8.5 / 216
10	10.25	6 / 150	8.5 / 216
15	10.25	6 / 150	8.5 / 216

PSS™ Expertise

PSS is a leading provider of power quality solutions. We provide expertise serving all facets of power system analysis. Our vast engineering and production capabilities enable us to offer either standard solutions for the typical application, or as custom designed, built to order filters based upon client specific requirements. PSS helps the customer increase system energy efficiency, reliability and productivity, and minimize electrical operating costs.

**Contact us for all
your power quality needs!**