

## PASSIVE HARMONIC FILTER BANKS – HF



The Passive Harmonic Filter Banks are used when the main objective is not the reactive Power compensation at the fundamental frequency, but to reduce the Harmonic distortion in the supply system. The Passive Harmonic filter Banks is a combination of Passive devices of Resistor, Inductor & Capacitor ( R, L, C ).

It should be pointed out that the impedance of all the filters is capacitive below its tuning frequency, whereby they also contribute, even if in a small scale, to the reactive power compensation at the fundamental frequency.

**Installation of Passive Filters produces a modification on the topology of the electrical supply system. For the reason, the design of filters must be done with regard to an accurate analysis and study of the whole system.**

**According to the application, these are different types of Passive filters :**

### Advantages

- Reduction in Total Harmonic Distortion
- Power Factor Improvement
- Reduction in losses.
- Reduction in Electrical Breakdown
- Reduction in Heating of Equipment's
- Improve Life & Performance of equipment
- Less Interferences in Telecommunications
- Comply with Utility Regulation on Harmonics Control

- Passive Detuned Harmonic Filters
- Passive Tuned Harmonic Filters
- 3rd Harmonic filters
- High Pass filters
- Isolation filters

### Technical Data

Power Supply Voltage	400 V -1000 V
Frequency	50Hz / 60 Hz
Function	Power Factor improvement and harmonic control

### The Ideal Customer

- All industries having Poor Power Quality Issues
- Industries Paying Penalty to Utility companies for High Harmonic distortion

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## PASSIVE TUNED HARMONIC FILTER

Passive Tuned Harmonic filters are used when it is necessary to reduce the harmonic voltage and current distortion in the supply system. Tuned filters are formed by capacitor connected in series with reactors, tuned to the frequency of the harmonic to be suppressed. Filters are assembled in metal cabinet and include contactors and high rupture capacity fuses for short circuit protection. Thermal protection of the filter is achieved by means of thermal sensors located in the core of the reactors.

### Rating and Specification

Rated Voltage	230 V to 1000 V
Network Frequency	50 Hz
Filter tuning	5th, 7th, 11th, 13th (Standard Ratings)
Regulation	by current or by harmonics
Degree of protection	IP 20
Construction	Metal cabinet
Cabinet colour	1600 V to 3600 V
Operating mode	Grey
Installation	Indoor (floor mounting)
Standards	IEC 60831, IEC 60439, IEC 61642

## HIGH PASS FILTER

High pass filters are specially designed to remove harmonics from the current absorbed by 6 pulse power converters, such as frequency converters for motors, UPS, Welding equipment's etc. They are essentially passive filter based on a series-parallel combination of inductance and capacitances. Main functions is to filters the 5th and 7th current harmonic and to decrease the level of the 11th and 13th current harmonics. With these HPF we will be able to get a reduction of the THD (I) level higher than a simple input reactor reduction, decreasing THD (I) to values below 8%. At full load conditions the THD (I) becomes lower than 5%.

These High Pass Filters are designed to provide for individual Nonlinear loads and normally provided to Original Equipment Manufacturers to provide along with their products to comply with requirement of IEEE 519-1992 on Harmonics generation.

### Rating and Specification

Rated Voltage	400 V - 480 V	<div></div>	Protection Degree	IP 20
Network Frequency	50 Hz / 60 Hz		Construction	Metal Cabinet
RMS Load Current (Ic)	4 - 1000 A		Colour	Grey
Max Overload	1.5 Ic for 1 min		Installation	Indoor
Filtered RMS current (If)	1.6...72 A		Assembly	Wall mounting (For smaller rating) & Floor mounting
THD residual current	Approx. 8%			
Voltage drop at In	< 2%			
Standards	EN 60439,EN 60831, UNE-EN 61000-6-3, UNE-EN 61000-6-4			