

i-Sine AHF Specifications

INPUT CONDITIONS	System voltage (RMS)	350-450V
	System frequency (Hz)	50 ± 5%
	Operating temperature range	0 to 50° C and Non-condensing (No derating required in harsh weathers)
PRODUCT SPECIFICATIONS	Semiconductor devices	IGBTs
	Output current rating (RMS)	25A/ 50A/ 100A/ 150A/ 200A/ 300A
	<i>i-Sine</i> AHF configuration	3P3W and 3P4W
	Continuous Peak compensating current	2.2 times RMS Value (Engineered for high peak harmonic conditions)
	Harmonic compensation range	Up to 71st order all odd harmonics (No limit on number of harmonics selection)
	Selective harmonic compensation	0 to 100% for all 71st odd harmonics
	Harmonic attenuation factor	More than 97% at rated load
Reactive power compensation	Yes	
Load Current Balancing	Yes	
AHF CONTROL	Controller type	Digital control
	Control method	Adaptive Artificial Neural Networks
	Dynamic Response Time	100 micro seconds
INTERFACE	Display	7" TFT Touch-Screen Display
	Software for PC Interface	InstaView
ADDITIONAL DETAILS	Internal Thermal Loss	Less than 3% (Powered with on-the-fly loss minimization)
	Short-circuit protection	Yes
	Parallel operation	Yes
	Noise level	<65dB

Key Clients

Godrej & Boyce Mfg. Co. Ltd.



InstaSine
Power Technologies

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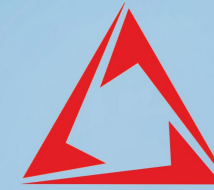
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For A Clean Future

i-Sine Active Harmonic Filters

PRODUCT BROCHURE
2019 - 2020

Introduction:

InstaSine® proudly introduced first of its product line-up, *i-Sine* Active Harmonic Filters (AHF) in the year 2016. The *i-Sine* AHFs are equipped with newest generation IGBTs that are intelligently controlled using Artificial Neural Network (ANN) based architecture. They are most advanced and effective power quality improvement solution to mitigate harmonic, unbalance, and reactive currents.

i-Sine AHFs are capable to perform:

- 1) Harmonic currents mitigation in phase currents
- 2) Reactive Current mitigation in phase currents (i.e. power factor correction)
- 3) Negative Sequence Currents Mitigation (balancing three-phase load currents)
- 4) Zero sequence current mitigation (Neutral current mitigation, using 3P4W AHFs)
- 5) Transformer HT side power factor correction while connected at LT side.

Note: Selection and sizing of the *i-Sine* AHFs has to be carried out as per targeted functionalities

Potential Benefits to Customers:

- Close to pure sinusoidal plant current (enhanced power quality).
- Compliance to power quality standards, such as, *IEEE 519-1992* & *IEEE 519-2014*, and *CEA* harmonic limits.
- Stay protected from upcoming harmonic penalties by electricity distribution companies.
- Reduced energy losses with improved plant efficiency.
- Reduced plant down times from the nuisance tripping of plant equipment due to harmonics.
- Restored ability of existing electrical infrastructure to operate at full-load capacity.
- Improved plant equipment life with reduced maintenance cost.

Reasons to Choose *i-Sine* AHFs:

- **Long-lasting:** To prevent *i-Sine* AHFs from most common DC link capacitor failure problem, the DC link is realized using film capacitors with an operational life greater than or equal to 1,00,000 hours.
- **Designed for harsh weather conditions:** Designed to operate at 50°C ambient temperature without any deration. PCBs are applied with conformal coating for improved reliability.
- **No oversizing:** *i-Sine* AHFs are designed to compensate the harmonic current with peak magnitude of 2.2 times the RMS current (continuous rating). Therefore, our units do not require oversizing for the high peak current loads.
- **Wide Range of Harmonics Selection:** *i-Sine* AHFs cancel all the odd harmonics up to 71st order. Further, these harmonics are individually selectable without any limit on the number of harmonics selections at a time.
- **Best-in-Class Energy Efficiency:** *i-Sine* AHF consists of an intelligent *On-The-Fly* real-time internal switching loss minimization technique to enhance the converter energy efficiency. Additionally, the state-of-the-art LCL based third order filters reduce the filtering losses as well.
- **Integrated Best-in-Class HMI:** *i-Sine* AHFs have integrated 7-inch TFT touch-screen display to visualize/set the AHF and plant parameters. Moreover, the user can observe the real-time three-phase voltages and currents (load /AHF/source side) waveforms just like an oscilloscope.
- **Optimum Design:** Light in weight, compact in size, quieter in operation while delivering best-in-class performance.
- **In-house R&D and manufacturing with better service:** The research, development, and the manufacturing activities are fully carried out by InstaSine. This certainly ease our team in providing the guaranteed service even after the end of warranty period.

Performance of *i-Sine* AHF: A Case Study

