

Competitive Analysis of Passive Harmonic Filters: Review of Their Published Performance Limitation Factors

The Difference is in the Detail of the Performance Warranty!

	Mirus Std Lineator: AUHF	Mirus High Performance Lineator: AUHF-HP	[Competitor 1]	[Competitor 2 - Product A]	[Competitor 2 - Product B]
Performance Guarantee	Reduce Current Total Demand Distortion (Itdd) measured at the Lineator input terminals to <8%	Reduce Current Total Demand Distortion (Itdd) measured at the Lineator input terminals to <5%	Input current distortion will be less than or equal to 5% THID for [Competitor 1] filters at full load, and less than 8% at 30% load.	[Product A] will deliver typical results of 5 - 6% TDD (Total Demand Distortion), but not more than 8%, at the filter input terminals at full load	"The input VFD current waveform shall be consistent with that of a VFD with 3% line reactance at full load". Then the "input current harmonic will be less than or equal to 5% THID for Standard Series filters at full load, and less than 8% at 30% load.
Line Voltage Imbalance and Source Impedance Restrictions	Less than 3% Imbalance. No Source Impedance Restrictions	Less than 2% Imbalance. No Source Impedance Restrictions. Less than 3% for similar performance as standard Lineator.	Within 1%. System Impedance must be greater than 1.5% and less than 6%. Also it is required to consult the factory for Gen-Set applications.	Line Voltage must be balanced to within +/- 1% at the filter input terminals, and is 100% (+/- 5%) of filter rating.	Nominal System Voltage (Line to line) +/- 10%, with no more than 1.5% Source impedance. Balanced Line Voltage within 0.5%.
Background Voltage Distortion Restrictions	Less than 5% for standard model. ED model allows for up to 14% Vthd	Less than 2%. Less than 5% for similar performance as standard Lineator	0% Vthd Background	[Competitor 2] cannot guarantee individual results when harmonic distortion exists on the system prior to [Product A] installation	< 0.5% Vthd Background Distortion. Note: The presence of background voltage distortion will cause motors and other linear loads to draw harmonic current. Additional harmonic currents may flow into the [Product B] filter if there is any harmonic voltage distortion already on the system.
Comments	Most Flexible System Parameters for IEEE 519 Compliance. Real World Compliant	This level of harmonic mitigation matches Active Front end Drives (AFE'S) and Active Filter (AF) performance without the high frequency harmonics introduced by these more expensive and complex solutions.	0% THVD Background Distortion does not exist within real world applications. Line imbalances within 1% is very tight, and can be found on only very few installations.	The background voltage distortion note for the [Product A] means 0% Vd background within the system which does not exist within real world applications.	The limits on upstream source impedance coupled with the very tight 0.5% Background Voltage Distortion and requirement of an already harmonically mitigated VFD topology, i.e. 3% line reactor current harmonic output renders the [Product B] 5% filter ineffectual for Real World applications.

The performance warranty notes and limitation on background voltage distortion, source impedance, and voltage imbalance are taken from the website of each manufacturer and their published data sheets and literature.