

LINEATOR™ Advanced Universal Harmonic Filter



The LINEATOR Advanced Universal Harmonic Filter (AUHF) is a revolutionary advancement in the area of passive harmonic mitigation. No other device on the market can meet the stringent limits of IEEE Std 519 at an equivalent efficiency, size and cost.

When your application calls for a truly cost effective harmonic solution, the LINEATOR AUHF is the logical choice. It provides Engineers with a standard off-the-shelf solution for what used to be a very challenging engineering problem.

As industry evolves, so does the Lineator. Mirus has expanded its product line to include two new Lineator models to meet your needs for those demanding applications.

Revolutionary Reactor Design

Better than 18-Pulse performance from standard 6-Pulse Variable Speed Drives

Up to 3% more energy efficient than 18-Pulse or Active Front-end solutions and every bit as effective in treating harmonics

Will meet IEEE 519 Std for both current and voltage distortion

ABS Type Approved for marine applications

'Wide Spectrum Harmonic Filter' that treats all harmonics generated by 3-phase diode or thyristor bridge rectifiers

Lineator-HP™ High Performance model used where the highest power quality demands must be met

Once again MIRUS leads the way in innovative passive harmonic mitigation solutions with the introduction of its new LINEATOR-HP™ model which is designed to offer <5% THD(I). 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. With the addition of a new reactor design that allows for onsite reactor impedance optimization, current distortion levels of <5% THD(I) are achieved without introducing excessive voltage drop or VSD instability. An HP2 version of the Lineator is available for application with low DC bus capacitance rectifier/inverter loads, such as EC fans.

Lineator-ED™ Extreme Duty model used when the operating conditions and environments can be harsh

For extreme environments, such as excessive background voltage distortion (5% to 12% VTHD), high ambient (up to 55° C) or high elevation (above 3000 ft), Mirus now offers an extreme duty model for its Lineator AUHF. Our standard Lineator AUHF already outperforms any other competitive filter by guaranteeing performance when background voltage distortion is as high as 5%. In some applications however, such as marine vessels, drilling rigs and oil fields equipped with electrical submersible pumps (ESP's), existing voltage distortion levels will often exceed 5%. Also, when ambient temperature levels exceed 40° C or at higher elevations where the air is thinner, a more robust filter is required. The Lineator-ED model will meet this challenge.



Design Considerations for Meeting Harmonic Limits in Variable Speed Drive Applications

Features

- The most energy efficient harmonic solution for VSD's
- Meets harmonic limits for both land and marine VSD applications
- Guaranteed to meet IEEE Std 519 for both current and voltage distortion at the input terminals of the LINEATOR and PCC
- Wide Spectrum Harmonic Filter treats all major harmonics generated by VSD's and other 3-phase rectifier loads
- Total Demand Distortion (TDD) of the current at the LINEATOR input terminals will not exceed the limits as defined in Table 10.3 of IEEE Std 519
- Compatible with engine driven generators thanks to the extremely low capacitive reactance, even at no load
- Suppresses overvoltages caused by commutation notching, capacitor switching and other fast changing loads
- Suitable for application on multiple VSD's provided only VSD's are connected
- Models available for AC Drives and DC Drives or other controlled rectifiers

Benefits

- Saves energy by reducing upstream harmonic losses while operating at >99% efficiency
- Will not resonate with other power system components or attract line side harmonics
- Frees up system capacity by restoring VSD to near unity power factor
- Removal of harmonics improves overall system power factor
- True Power factor > 0.95 from 30% to 100% load
- Low capacitive reactance ensures generator compatibility
- Low capacitive reactance also eliminates the need for capacitor switching contactors (contactors are available upon request)

The LINEATOR is a purely passive device consisting of a unique inductor combined with a relatively small capacitor bank. Its innovative design achieves reduction of all the major harmonic currents generated by VSD's and other similar 3-phase, 6-pulse rectifier loads. The resulting ITHD is reduced to <8% and is now available in a model that achieves <5%. Although referred to as a filter, the LINEATOR exhibits none of the problems that plague conventional filters.

Harmonic Distortion Reduction

The filtering effectiveness of a trap filter is dependent upon the amount of harmonics present at untuned frequencies as well as the residual at the tuned frequency. To obtain performance better than 15% ITHD, multiple tuned branches are often required. Other broadband filters require relatively large capacitor banks (*2 to 3 times more than Lineator*) to achieve reasonable performance.

Harmonics from other sources

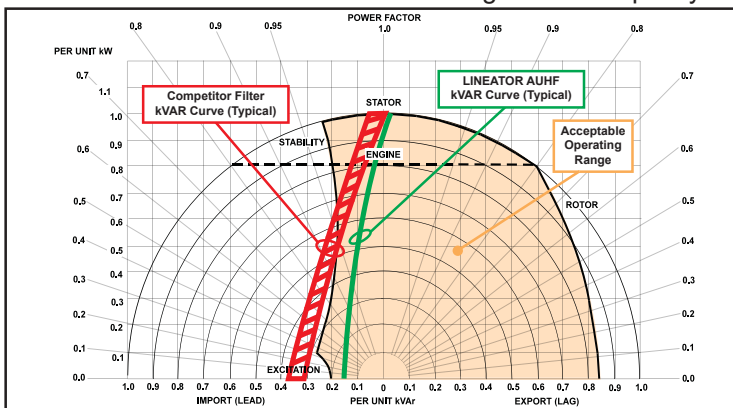
As a parallel connected device, the conventional trap filter has no directional properties. It therefore, can easily be overloaded by attracting harmonics from upstream non-linear loads. The LINEATOR, on the other hand, will present a high impedance to line side harmonics eliminating the possibility of inadvertent importation and overloading.

System Resonance

At frequencies below its tuned frequency, a conventional filter will appear capacitive. This capacitance has the potential of resonating with the power systems natural inductance. When a filter is tuned to a higher order harmonic, such as the 11th, it could easily resonate at a lower harmonic frequency, such as the 5th or 7th. Even the LCL passive filters required for low harmonic AFE Drives or parallel Active Harmonic Filters are susceptible to this problem. The natural resonance frequency of the LINEATOR is below that of any predominant harmonic, therefore inadvertent resonance is avoided.

Capacitive Reactance and Leading Power Factor

The large capacitor banks in trap filters and competing broadband filters present a high capacitive reactance to the system, especially under light loads. On weak power systems, this can raise voltages or cause excitation control problems in generator applications. To address this, some filter manufacturers recommend switching out the capacitors under light loads, increasing cost and complexity. Switching out the capacitors is typically not required with the LINEATOR because even under no load conditions, its capacitive reactance (kVAR) remains below 15% of its kW rating. This ensures compatibility with engine generators, without the need to switch out capacitors in most applications with the exception of generator applications where the total filtered kVA exceeds the generator capacity.



Generator Reactive Power Capability Curve

Compare Performance!

The LINEATOR outperforms all other forms of VSD harmonic solutions. By choosing the LINEATOR you have selected a filter that:

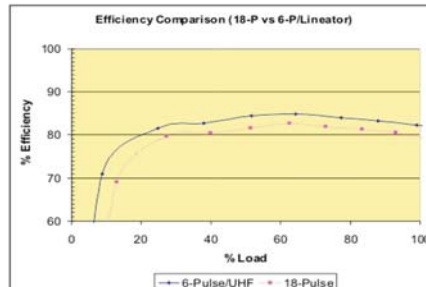
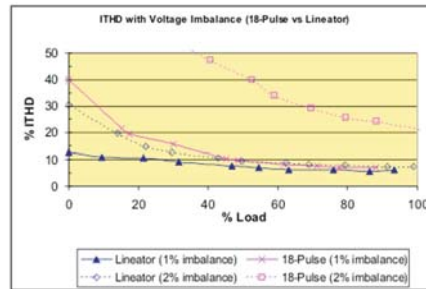
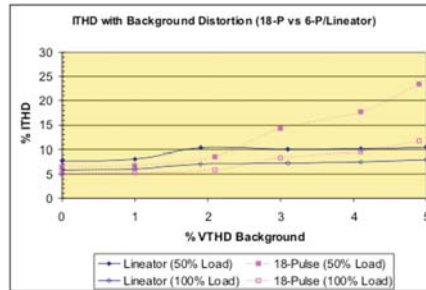
- performs in Real World environments even with background voltage distortion and voltage imbalance
- lowers operating costs by being highly efficient
- is compatible with engine generators and incorporates a low capacitive reactance design
- has a simple and compact design to reduce footprint and ensure reliability
- can be computer modeled to provide up front assurance of meeting harmonic limit standards such as IEEE Std 519, ABS and other marine certifying bodies
- is factory performance tested under actual VSD loading

Outperforms 18-P Solutions

As background voltage distortion increases, the harmonic mitigating performance of the 18-Pulse VSD degrades much quicker than the 6-Pulse / LINEATOR combination. This demonstrates that the LINEATOR AUHF will not attract harmonic currents as other non-linear loads distort the applied voltage waveform. LINEATOR is the only harmonic solution that guarantees performance even in heavily distorted environments.

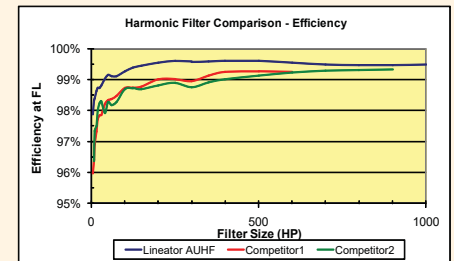
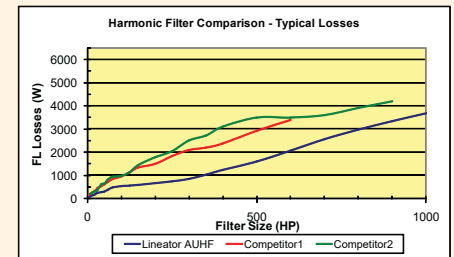
There is little degradation in harmonic mitigating performance of the 6-Pulse / LINEATOR combination as voltage imbalance increases. The 18-Pulse solution, on the other hand, degrades dramatically because harmonic cancellation due to phase shifting becomes much less effective with 3-phase voltage imbalance.

The 6-Pulse VSD / LINEATOR combination has 2% to 3% higher efficiency than the 18-Pulse solution over the entire operating range. (Efficiency shown is for a system that includes motor/gen set load, VSD, and harmonic mitigation equipment). When compared to an 18-Pulse VSD, a 400HP AUHF/VSD will save more than \$3,000 in annual operating costs when averaging 75% loading at \$0.07/kWhr.



Efficiency Comparison

The unique design of the AUHF produces extremely low losses. Its operating efficiency therefore is much higher than competitive filters. The graphs below show typical losses and efficiencies for AUHF and two competitors. (AUHF is available in sizes up to 3500HP. Since competitor maximum sizes are only 600HP and 900HP, the chart range has been set at 1000HP)



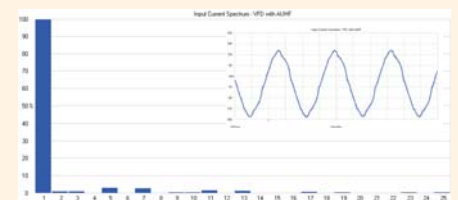
Improves VSD Performance



VSD Input Current Waveform and Spectrum with no reactor.



VSD Input Current Waveform and Spectrum with AC reactor.



VSD Input Current Waveform and Spectrum with LINEATOR AUHF.

'Performance Guarantee'

MIRUS guarantees that the LINEATOR™ AUHF will perform as advertised to reduce harmonic distortion caused by AC Variable Speed Drives, DC Drives and other non-linear loads equipped with 3-phase, 6-pulse, diode or SCR bridge rectifiers (half-wave rectifiers excluded). A properly selected and installed LINEATOR™ will:

- (i) Reduce Current Total Harmonic Distortion (ITHD), measured at the LINEATOR™ input terminals at full load, without the need of additional AC or DC reactors, to:
 - (1.) < 8% when background voltage distortion is < 5% and voltage imbalance is < 3%
 - (2.) < 5% when High Performance (HP) model is purchased and background voltage distortion is < 2% and voltage imbalance is < 2% (not available for SCR bridges)
- (ii) Reduce Current Total Demand Distortion (ITDD), measured at the LINEATOR™ input terminals over its entire operating range, to levels defined in Item 1 above. ITDD is defined as the ratio of ITHD divided by the full load current (peak demand current) of the Lineator™.
- (iii) Minimize the contribution to Voltage Harmonic Distortion of all VSD's equipped with the LINEATOR™ to < 5% total and < 3% for individual harmonics, to meet or exceed IEEE Std 519-1992 and 2014.
- (iv) NOT become overloaded by other upstream harmonic sources.
- (v) NOT resonate with other power system components.
- (vi) NOT have compatibility problems with engine generator sets properly sized for the load.
- (vii) If equipped with Coordinated Surge Protection (CSP) option, full LINEATOR™ product warranty is extended to five (5) years under the same terms and conditions stated herein.

The Harmonics & Energy (H&E™) Lab

The Harmonics & Energy (H&E) Lab at MIRUS International Inc. provides the unique ability to test our products under 'real world' non-linear load conditions. We also conduct compatibility testing with all major VSD manufacturers' products to ensure a trouble-free installation.

Every LINEATOR is factory tested under VSD load to ensure our performance guarantee is met. No other manufacturer provides this level of testing whether they offer a passive filter, multi-pulse or active solution.

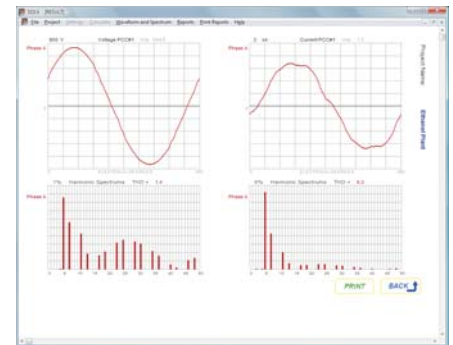
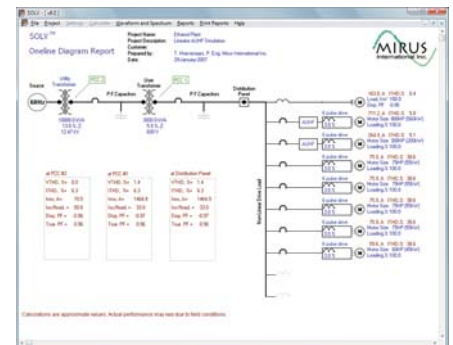


SOLV™ Harmonic Analysis Software

MIRUS offers proprietary software called Simulation of LINEATOR / VFD (SOLV). SOLV is a powerful and unique computer simulation program that will calculate current and voltage distortion levels based on your load requirements.

By simply entering some basic information about your source and VSD system, you can generate very useful reports such as, an IEEE 519 Compliance Report. In addition to the accurate reports, you can print a single line representation of your system along with voltage and current waveforms and spectrums.

MIRUS' SOLV will help you find the right solution for your VSD application without the need of a costly harmonic study. It can be downloaded at mirusinternational.com



Lineator Applications

Oil & Gas Industry

Application of ASD's in the Oil and Gas Industry continues to grow at a rapid pace. This includes Electrical Submersible Pumps (ESP's), Top Drives and Mud Pumps on Drilling packages, Compressors, etc. Without harmonic mitigation, very serious consequences can result. Although not conclusively proven, high levels of harmonic distortion has been considered as a possible cause of off-shore drilling rig disasters in the Gulf of Mexico and the North Sea.

Water & Waste Water

Although 18-Pulse ASD's are commonly used in the Water and Waste Water applications, there is a much better solution available. Lineator paired with a 6-Pulse ASD provides better harmonic mitigation performance especially if the supply has even low levels of voltage imbalance. And the Lineators much lower losses can result in thousands of dollars in energy savings annually.

HVAC Systems

In many commercial buildings, the chillers, pumps and fan systems required for cooling represent a very large component of the building's electrical load. For today's Green Building designs, ASD's and EC fans are being used on all of this equipment leading to harmonic distortion issues. To address this concern, Lineators are being used to eliminate harmonics without sacrificing any of the energy savings advantages of the ASD. A model of the filter, AUHF-HP2, is the only compatible harmonic solution for the highly efficient EC fans.

Marine Vessels

Due to the serious consequences of high harmonic distortion, the American Bureau of Shipping (ABS), Det Norske Veritas (DnV) and all other Marine Certifying bodies have mandatory harmonic limits that must be met in order to attain certification. Since ASD's are now common-place on thrusters and main propulsion systems, these limits cannot be met without effective harmonic mitigation. The Lineator will meet these limits without introducing the troublesome high frequency harmonics associated with active solutions such as Active Front-end Drives and Active Harmonic Filters.

Condition Based Maintenance Tool

When InSight™ is integrated into your system it provides essential health and performance information to the operator to let them know whether the equipment is operating within safe limits. For instance, should power quality or environmental conditions affect the normal operation of an Adjustable Speed Drive equipped with a Lineator Harmonic Filter and InSight™ monitor, operators can be notified of the filter's condition so that proactive action can be taken, if necessary.

Apply LINEATOR anywhere
Variable Speed Drives and
6-Pulse Rectifiers are used



- Oil and Gas industry
- Water and Waste Water
- Irrigation systems
- HVAC systems including those with EC fans
- Mining operations
- Marine vessels
- Printing presses
- Elevators and escalators
- Pulp and paper processing
- Induction furnaces
- Industrial rectifiers
- Welding operations

Stay in touch with your
equipment, locally or
remotely



Mirus designed InSight™ as a web-based monitoring system allowing easy access via any web browser or by adding a touchscreen display at the equipment.



Rating Tables: (type 'D' Lineator)

Motor Size		Lineator Rating (3-Phase)								208, 240V (60Hz)				400, 440V (50Hz)					
HP	KW	Current Rating (Amps)								Output		Standard Enclosure		Enhanced Enclosure		Standard Enclosure		Enhanced Enclosure	
		208V 60Hz		220/240V 50/60Hz		380/400V 50Hz		415/440V 50Hz		KVA	KW	Case	Weight	Case	Weight	Case	Weight	Case	Weight
		I/P A	O/P A	I/P A	O/P A	I/P A	O/P A	I/P A	O/P A			Style	lbs [kg] ^[1]	Style	lbs [kg] ^[1]	Style	lbs [kg] ^[1]	Style	lbs [kg] ^[1]
5	4	14	15	13	14	8	8	7	7	6	4.5								
7.5	5.5	20	21	18	19	11	12	10	11	8	6.3	SU1	65 [30]	SU1-E	75 [34]	SU1	58 [26]	SU1-E	68 [31]
10	7.5	27	29	24	25	14	15	13	14	10	8.5								
15	11	40	42	36	38	21	22	19	20	14	13	SU2	80 [36]	SU2-E	80 [36]	SU2	78 [35]	SU2-E	88 [40]
20	15	53	56	48	51	28	30	25	27	19	17								
25	18.5	66	70	60	64	35	37	32	34	25	21								
30	22	79	84	72	76	42	45	38	40	29	25								
40	30	105	111	95	101	55	58	51	54	39	34	SU3	117 [53]	SU3-E	117 [53]	SU3	118 [54]	SU3-E	128 [58]
50	37.5	131	139	119	126	69	73	63	67	48	42								
60	45	158	167	143	152	83	88	76	81	58	51								
75	55	196	208	178	189	103	109	95	101	72	63	SU4	138 [63]	SU4-E	138 [63]	SU4	130 [59]	SU4-E	140 [64]
100	75	260	276	236	250	137	145	125	133	96	84								
125	90	323	342	294	312	170	180	156	165	119	104								
150	110	388	411	353	374	204	216	187	198	143	125								
175	132	453	480	412	436	241	255	221	234	166	148	MT3	154 [70]	MT3-E	154 [70]	MT3	142 [65]	MT3-E	152 [69]
200	150	517	548	470	499	274	290	250	265	191	168								
250	185	647	686	588	623	340	360	312	331	237	209	MT4	189 [86]	MT4-E	189 [86]	MT4	175 [79]	MT4-E	186 [84]
300	220	776	823	706	748	410	435	374	396	284	251								
350	250	906	960	823	873	475	504	436	462	334	292	LT1	253 [115]	LT1-E	253 [115]	LT1	227 [103]	LT1-E	235 [107]
400	315	1035	1097	941	997	565	599	520	551	397	349								
450	355					641	679	587	622	448	394								
500	400					720	763	660	700	503	443								
600	450					810	859	740	784	566	499								
700	500					940	996	865	917	659	579								
800	560					1075	1140	985	1044	751	662								
900	630					1200	1272	1100	1166	836	736								
1000	710					1335	1415	1220	1293	929	818								
1100	800					1470	1558	1340	1420	1022	900								
1200	900					1610	1707	1470	1558	1123	987								
1300	970					1735	1839	1585	1680	1208	1064								
1400	1000					1870	1982	1710	1813	1300	1145								
1500	1120					2000	2120	1835	1945	1394	1228								
1600	1200					2145	2274	1965	2083	1495	1316								
1800	1350					2410	2555	2210	2343	1680	1481								
2000	1450					2670	2830	2440	2586	1858	1636								
2300	1700					3065	3249	2810	2979	2137	1882								
2500	1850					3335	3535	3050	3233	2326	2045								
2800	2100					3750	3975	3435	3641	2618	2303								
3000	2250					4020	4261	3680	3901	2804	2468								
3500	2600					4265	4521	3905	4139	3255	2825								

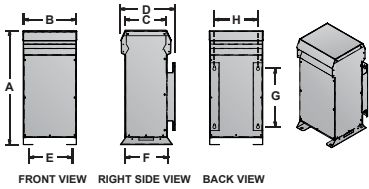
Motor Size		Lineator Rating (3-Phase)								480V (60Hz)				600V (60Hz), 690V (50-60Hz)					
HP	KW	Current Rating (Amps)								Output		Standard Enclosure		Enhanced Enclosure		Standard Enclosure		Enhanced Enclosure	
		460/480V 60Hz		575/600V 50/60Hz		660/690V 50/60Hz		KVA	KW	Case	Weight	Case	Weight	Case	Weight	Case	Weight	Case	Weight
		Input	Output	Input	Output	Input	Output			Style	lbs [kg] ^[1]	Style	lbs [kg] ^[1]	Style	lbs [kg] ^[1]	Style	lbs [kg] ^[1]	Style	lbs [kg] ^[1]
5	4	7	7	5	5	5	5	6	4.5										
7.5	5.5	9	10	7	7	6	6	8	6.3	SU1	58 [26]	SU1-E	68 [31]	SU1	57 [26]	SU1-E	67 [30]	SU1	67 [30]
10	7.5	12	13	10	11	8	8	10	8.5										
15	11	17	18	14	15	12	13	14	13										
20	15	23	24	18	19	16	17	19	17										
25	18.5	29	31	23	24	20	21	25	21										
30	22	34	36	28	30	24	25	29	25										
40	30	46	49	37	39	32	34	39	34										
50	37.5	57	60	45	48	40	42	48	42										
60	45	69	73	55	58	48	51	58	51										
75	55	85	90	68	72	59	63	72	63										
100	75	113	120	90	95	79	84	96	84										
125	90	141	149	112	119	98	104	119	104										
150	110	169	179	135	143	118	125	143	125										
175	132	200	212	159	169	139	147	166	148										
200	150	226	240	180	191	158	167	191	168										
250	185	281	298	225	239	196	208	237	209										
300	220	337	357	270	286	235	249	284	251										
350	250	395	419	315	334	275	292	334	292										
400	315	470	498	375	398	325	345	397	349										
450	355	530	562	424	449	369	391	448	394										
500	400	595	631	475	504	415	440	503	443										
600	450	670	710	535	567	470	498	566	499										
700	500	780	827	625	663	545	578	659	579										
800	560	890	943	715	758	620	657	751	662										
900	630	990	1049	795	843	690	731	836	736										
1000	710	1100	1166	880	933	770	816	929	818										
1100	800	1210	1283	970	1028	845	896	1022	900										
1200	900	1330	1410	1060	1124	925	981	1123	987										
1300	970	1430	1516	1145	1214	1000	1060	1208	1064										
1400	1000	1540	1632	1235	1309	1075	1140	1300	1145										
1500	1120	1650	1749	1325	1405	1155	1224	1394	1228										
1600	1200	1770	1876	1415	1500	1235	1309	1495	1316										
1800	1350	1990	2109	1595	1691	1390	1473	1680	1481										
2000	1450	2200	2332	1765	1871	1535	1627	1858	1636										
2300	1700	2530	2682	2030	2152	1765	1871	2137	1882										
2500	1850	2755	2920	2205	2337	1920	2035	2326	2045										
2800	2100	3100	3286	2480	2629	2160	2290	2618	2303										
3000	2250	3320	3519	2660	2820	2315	2454	2804	2468										
3500	2600	3855	4086	3085	3270	2685	2846	3255	2825										

1. Enclosure dimensions and weights in the above table are approximate values and apply to standard AUHF model numbers for diode bridge rectifiers without options. For dimensions and weights of AUHF's on thyristor bridge rectifiers or AUHF's with options, refer to the product specific drawing for that model number.

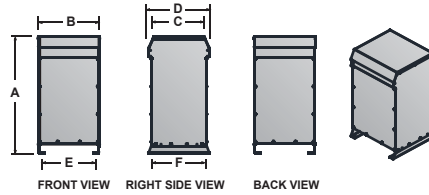
Specifying the LINEATOR HP for applications with standard 6-Pulse VFD's provides end-users with low harmonic drive systems that results in 20% to 30% less capital costs than other solutions



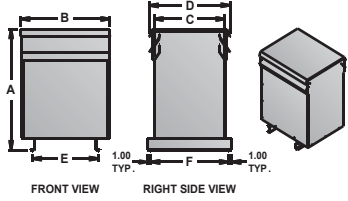
Dimensions



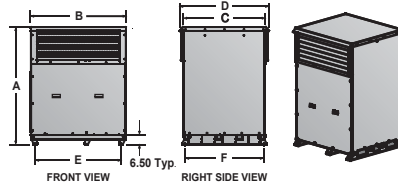
'SU1', 'SU2', 'SU3' ENCLOSURE



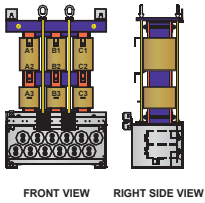
'SU4' ENCLOSURE



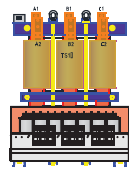
'MT3', 'MT4', 'LT' ENCLOSURE



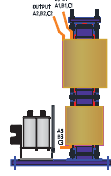
'HT' ENCLOSURE



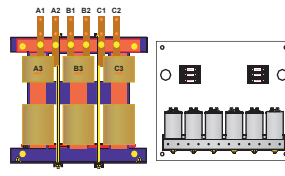
FRONT VIEW RIGHT SIDE VIEW



FRONT VIEW RIGHT SIDE VIEW



FRONT VIEW RIGHT SIDE VIEW



FRONT VIEW CAPACITOR BOARD (Supplied loose)

'E0P' PANEL/BASE MOUNT

'E0' OPEN STYLE

'E0M' MODULAR

CASE STYLE		DIMENSIONS - inches [mm]							
Standard	Enhanced	A	B	C	D	E	F	G	H
SU1	SU1-E	23.50 [597]	11.25 [286]	8.75 [222]	11.25 [286]	9.00 [229]	9.50 [242]	12.00 [305]	9.00 [229]
SU2	SU2-E	30.00 [762]	13.25 [336]	10.25 [260]	12.75 [324]	11.00 [279]	11.25 [286]	16.00 [406]	11.00 [279]
SU3	SU3-E	34.00 [864]	20.25 [514]	13.25 [336]	16.00 [406]	18.00 [458]	14.25 [362]	20.00 [508]	18.00 [457]
SU4	SU4-E	40.00 [1016]	22.00 [559]	19.75 [502]	22.00 [559]	20.00 [508]	20.00 [508]		
MT3	MT3-E	45.00 [1143]	26.00 [661]	21.00 [534]	25.00 [635]	21.50 [546]	19.00 [483]		
MT4	MT4-E	51.50 [1308]	32.00 [813]	25.50 [648]	29.50 [749]	23.50 [597]	23.50 [597]		
LT1	LT1-E	59.00 [1499]	39.50 [1003]	30.00 [762]	34.00 [864]	24.00 [610]	32.00 [813]		
LT2	LT2-E	66.00 [1677]	44.00 [1118]	34.00 [864]	38.00 [965]	26.00 [660]	36.00 [915]		
LT3	LT3-E	75.00 [1905]	48.50 [1232]	39.00 [991]	43.00 [1092]	27.50 [699]	41.00 [1041]		
LT4	LT4-E	78.00 [1981]	59.00 [1499]	50.50 [1283]	54.25 [1378]	32.00 [813]	52.00 [1321]		
HT2	HT2-E	78.00 [1981]	59.00 [1499]	52.00 [1321]	56.25 [1442]	54.00 [1372]	52.00 [1321]		
HT3	HT3-E	84.00 [2134]	69.00 [1753]	59.50 [1511]	64.50 [1638]	64.00 [1626]	60.00 [1524]		

Ordering Information

Model	Motor Horsepower	Line Voltage	Frequency	Load Type	Enclosure Type	Optional
AUHF	HP	VVV	Hz	L	En	O
Advanced	5	208	50	D ^[1]	E0	HP
Universal	to	240	60	Diode Bridge Rectifier	No Enclosure Base Mount Only (5 to 1400HP)	High Performance
Harmonic Filter	3500	400		T ^[2]	E0P	HP2
		480		Thyristor Bridge Rectifier	No Enclosure Panel / Wall Mountable (5 to 125HP)	For low DC Bus Capacitance
		600			E0M	ED
		690 (VAC)			No Enclosure Modular (Cap. Assembly shipped Loose)	Extreme Duty
					E1	M*
					Std. Indoor Nema 3R [IP23] Ventilated Enclosure	Marine Duty
					E1E	(see MOS Lineator)
					Enhance Outdoor Nema 3R [IP23] Ventilated Enclosure	
					M1	
					E1 + Marine Grade Coating / Galvanneal	
					M1E	
					E1E + Marine Grade Coating / Galvanneal	

- 'D' type AUHF is suitable for standard diode bridge and diode/SCR precharged front-end VSD's.
- 'T' type AUHF is suitable for DC drives, Current Source Inverters and other controlled rectifier loads.
- For other IP ratings, consult factory.

General Specifications:

HP / kW RATING:

Available for motor/drive system sizes up to 3500HP / 2600kW

VOLTAGE:

Standard voltages up to 690V, 3-phase

FREQUENCY:

50 or 60Hz

OVERLOAD CAPABILITY:

Suitable for overload of 150% for 60 seconds every 10 minutes

HARMONICS TREATED:

5th, 7th, 11th, 13th, ...

K-FACTOR SUITABILITY:

Up to 20

INPUT K-FACTOR:

Reduced to <1.5

INPUT CURRENT DISTORTION:

<8% at full load [<5% available]

SHORT CIRCUIT RATING:

100kAIC

NO LOAD CAPACITIVE

REACTANCE (kVAR) LEVELS:

5 to 75HP 15 to 20%
100 to 3500HP 10 to 15%

EFFICIENCY:

>99%

ELEVATION:

3300ft [1000m] above sea level

VENTILATION:

Convection air cooled

ENCLOSURE:

NEMA 3R [IP23] Indoor

Paint: Polyester powder coated

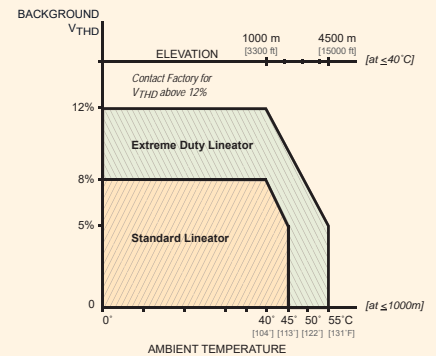
Color: ANSI 61 Grey

Optional: Enhanced Outdoor Nema3R[IP23] Marine Coating/Galvanneal

OPTIONS:

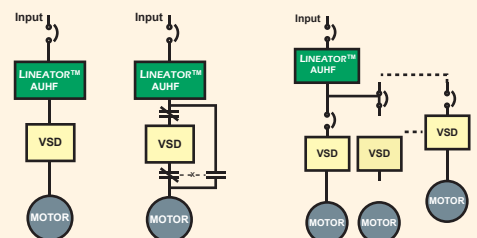
DNV or Lloyds Certification, Contactor, Temp Switches, InSight Meter, Tin Plating, Coordinated Surge Protection (CSP)

Lineator Selection Curve



Typical Lineator Configurations

Standalone VSD System | VSD System with Bypass* | Multiple VSD System



* For additional information when using AUHF with ASD equipped with bypass refer to Application Note L-AN001-x.





Expect better. Call us.

To discuss how MIRUS can help you meet your power quality challenges, contact us at our head office:

MIRUS International Inc.
31 Sun Pac Blvd.
Brampton, Ontario
Canada L6S 5P6

Tel: (905) 494-1120
Fax: (905) 494-1140
Toll-Free: 1-888-TO MIRUS (888-866-4787)

www.mirusinternational.com

MIRUS Electromagnetic Equipment Co., Ltd.
Suzhou, Jiangsu China

Tel: : (86) 0512-62696858
Fax : (86) 0512-62696266
www.cn.mirusinternational.com



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