

# LINEATOR™

## Single Phase Universal Harmonic Filter (SUHF) (Patented)

Standard 3-phase Variable Frequency Drives are often used as phase converters to supply 3-phase motors when only 1-phase power is available on remote locations such as farms, golf courses, oil and gas fields and residential areas for water and waste water systems.

The Lineator-1Q3™ has been designed to address this application by accepting 1-phase input and supplying a quasi 3-phase supply to the VFD. This will significantly lower both input harmonic current distortion (by up to 10x) and DC ripple current within the VFD. Reducing the ripple current may allow for less derating of the VFD.

**Treats all major harmonics generated by 3-phase Variable Frequency Drives when fed by 1-phase power (3rd, 5th, 7th, 9th, 11th, 13th ...)**

**Easily applied at the VFD input**

**Helps meet IEEE 519 standard for both current and voltage distortion**

**Input current demand distortion < 12% over entire operating range (10x reduction)**

**Compatible with engine generators since capacitive reactance is < 20% of rated kVA even under light loads**

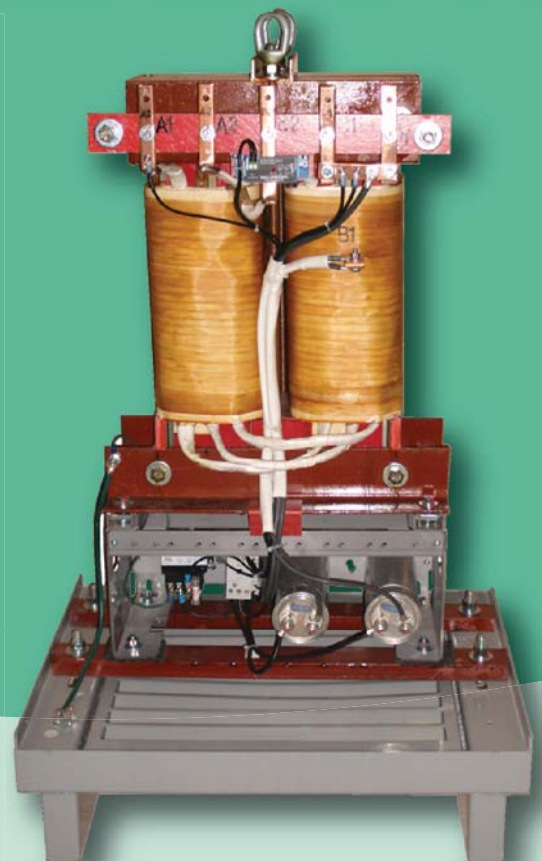
**Will not resonate with other power system components or attract line side harmonics**

**Suppresses overvoltages caused by capacitor switching and other fast changing loads**

**Built-in capacitor bank switching contactor to prevent VFD overvoltages at light loads**

# 1 Q 3™

**The only passive harmonic filter for 3-phase VFD's operating on 1-phase supply**



# General Specifications:

## HP / kW RATING

Available for motor/drive system sizes up to 150HP / 110kW

## VOLTAGE

Standard voltages up to 600V

## FREQUENCY

60Hz (50Hz available)

## HARMONICS TREATED

3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup>, 11<sup>th</sup>, 13<sup>th</sup>,...

## K-FACTOR SUITABILITY

Up to 20

## INPUT K-FACTOR

Reduced to < 1.5

## INPUT CURRENT DISTORTION

< 12% @ Full Load

## EFFICIENCY

> 99%

## ELEVATION

≤ 3300ft [1000m] above sea level

## AMBIENT TEMPERATURE

≤ 104 Deg F [40 Deg C]

## VENTILATION

Convection air cooled

## WINDING MATERIAL

Copper

## ENCLOSURE

NEMA 3R Grey  
(SU1, 2 & 3 suitable for Wall Mount)

## OPTIONS

Nema 3R Enhanced

\* All LINEATOR 1Q3 units are shipped complete with a capacitor bank switching contactor and control system that automatically switches the filter capacitors off whenever the VFD is in the idle-no load ready-to-run mode.

# LINEATOR - 1Q3™

### Typical Application

• Excess ripple current requires drive derating of 2x

V<sub>rhd</sub> = 5.8%

I<sub>rhd</sub> = 109%

at input of VFD

### Application with Lineator-1Q3™

• 1Q3 reduces ripple current which may allow for less derating when approved by VFD manufacturer

V<sub>rhd</sub> = 2.0%

I<sub>rhd</sub> = 9.8%

at input of 1Q3

## ORDERING INFORMATION

Model	Motor Horsepower	Line Voltage	Frequency	Load Type	Enclosure Type	Optional
<b>SUHF - HP - VVV - Hz - L - En - O</b>						
Single Phase	5	240	60	D	E0P	E
Universal	to	480		Diode Bridge Rectifier	No Enclosure	Nema 3R Enhanced
Harmonic Filter	150	600 (VAC)		T	Nema 3R Ventilated	
				Thyristor Bridge Rectifier		

## DIMENSIONS

Case Style	H in.[mm]	W in.[mm]	D in.[mm]	Mtg. Hole Center W	Mtg. Hole Center D
SU2	29.50 [749]	10.25 [260]	12.75 [324]	11.00 [279]	10.00 [254]
SU3	34.00 [864]	13.25 [336]	16.00 [406]	18.00 [457]	13.00 [330]
SU4	40.00 [1016]	18.50 [470]	23.00 [584]	20.00 [508]	20.00 [508]
MT3	45.00 [1143]	26.00 [661]	25.00 [635]	21.50 [546]	19.00 [483]
MT4	51.50 [1308]	32.00 [813]	29.50 [749]	23.50 [597]	23.50 [597]

Motor Size		Lineator Rating					240V (60Hz)				480V (60Hz)				600V (60Hz)			
HP	kW	Input Amps (1ph/60Hz)			Output KVA	Standard Enclosure		Enhanced Enclosure		Standard Enclosure		Enhanced Enclosure		Standard Enclosure		Enhanced Enclosure		
		240VAC	480VAC	600VAC		Case Style	Weight <sup>(1)</sup> lbs [kg]	Case Style	Weight <sup>(1)</sup> lbs [kg]	Case Style	Weight <sup>(1)</sup> lbs [kg]	Case Style	Weight <sup>(1)</sup> lbs [kg]	Case Style	Weight <sup>(1)</sup> lbs [kg]	Case Style	Weight <sup>(1)</sup> lbs [kg]	
5	4	23	12	9	7.5	SU2	81 [37]	SU2-E	84 [38]	SU2	74 [34]	SU2-E	77 [35]	SU2	71 [32]	SU2-E	74 [33]	
7.5	5.5	33	17	13	11		93 [42]		96 [44]		84 [38]		87 [39]		80 [36]		83 [38]	
10	7.5	45	23	18	14		111 [50]		114 [52]		99 [45]		102 [46]		94 [42]		97 [44]	
15	11	68	34	26	20	159 [72]	165 [75]	119 [54]	122 [55]	112 [51]	115 [52]							
20	15	90	45	35	27	189 [86]	195 [88]	168 [76]	174 [79]	158 [72]	164 [75]							
25	18.5	111	56	44	34	213 [97]	219 [99]	188 [85]	194 [88]	177 [80]	183 [83]							
30	22	137	68	52	40	273 [124]	279 [127]	238 [108]	244 [111]	222 [101]	228 [103]							
40	30	180	90	70	51	333 [151]	339 [154]	288 [131]	294 [133]	268 [121]	274 [124]							
50	37.5	202	110	87	63	389 [176]	397 [180]	318 [144]	324 [147]	295 [134]	301 [136]							
60	45	255	130	105	75	413 [187]	421 [191]	358 [162]	366 [166]	333 [151]	341 [155]							
75	55	300	152	130	93	461 [209]	469 [213]	398 [180]	406 [184]	369 [168]	377 [171]							
100	75	420	210	175	118	563 [255]	593 [269]	458 [208]	466 [211]	424 [192]	432 [196]							
125	90	520	260	220	145	659 [299]	689 [312]	568 [258]	598 [271]	527 [239]	557 [252]							
150	110	590	295	260	175	847 [384]	884 [401]	688 [312]	718 [326]	636 [288]	666 [302]							

1. Approximate Values



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