

people in motion



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# COMBILINE



# HARMONIC FILTER SOLUTIONS

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Harmonic Filter 4 ... 250 kW

**KEB**

USA

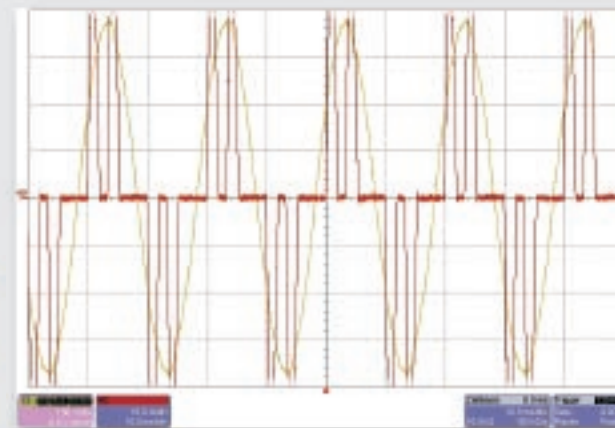


# Sinusoidal Input Current

Achieving sinusoidal low harmonic current from standard 6 pulse rectifier loads has always been a challenge. Historically this could only be accomplished through the use of costly components or more complicated rectification schemes such as 12 or 18 pulse.

The **KEB COMBILINE HARMONIC FILTER** is our new innovative solution to address this demand. This filter can be simply installed in front of an AC motor control, machine or switchgear, like you would a line reactor, to reduce the level of harmonics. Thus making it possible to comply with the evermore noted international standards on power quality.

- IEEE 519 - 1992 (USA)
- G5/4 Engineering Recommendation (GB)
- EN 61000-3-4 and EN 61000-12 (Europe)
- EN 12015 (Elevator norm Europe)
- AS 2279 (Australia)
- COP, supply rules (Hongkong)
- Quality of Electric Energy Supply, Harmonics in Public Supply Network (China).



Line voltage and current without choke or filter

The utility grid friendly, high efficiency solution, is result of a completely new internal design of the primary components. This allows the

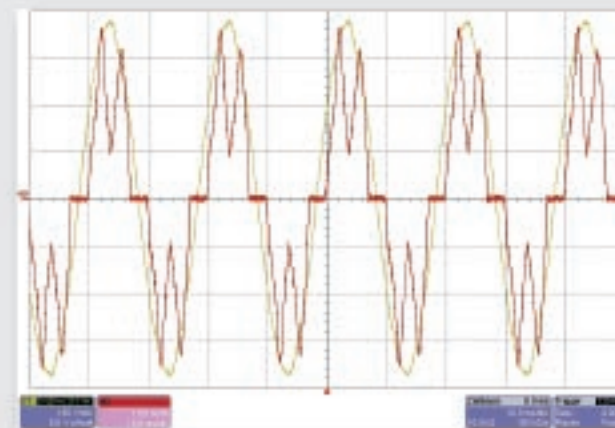
**KEB COMBILINE HARMONIC FILTER** to operate not just with KEB AC motor controls, but with all types of 6 pulse rectifier loads.

The unique characteristics of KEB HARMONIC Filter are:

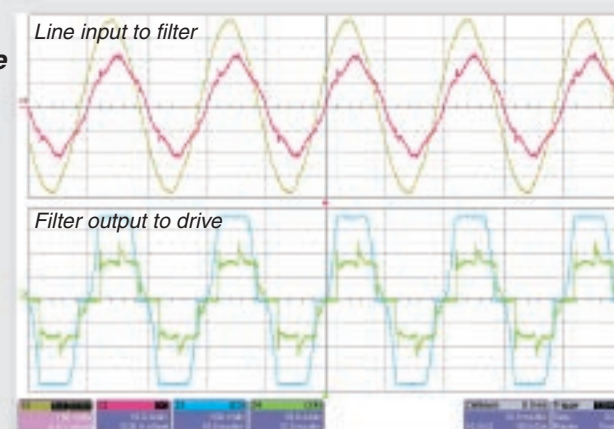
- compliance with the specified standards - sinusoidal current to the line
- simple installation, ready-for-connection, very small design
- no burst harmonics from rapid load changes
- only a minor voltage drop compared to a typical 3% line reactor
- connection of unlimited number of parallel loads per filter is possible
- optimized design for use with backup generators or generator power
- protection AC drives against voltage transients on the line
- increases the life-span of the DC bus capacitors in an AC drive

For plant modernization / expansion:

- no further compensation equipment is necessary



Line voltage and current with 3% line choke



Voltage and current with KEB harmonic filter THD ≤ 8%

## Specification Table

Harmonic Filter- THD ≤ 8% - 480V 60 Hz

Part number	P <sub>rating</sub> [kW / motor hp]	I <sub>rating</sub> [A]	A [inch]	B [inch]	C [inch]	weight [lb]
12.Z1.C04-1000	4 / 5	8.6	8.62	6.654	7.953	26.455
13.Z1.C04-1000	5.5 / 7.5	11	9.57	7.48	9.646	28.66
14.Z1.C04-1000	7.5 / 10	15	11.457	7.559	10.946	37.478
15.Z1.C04-1000	11 / 15	22	11.457	8.346	9.449	55.116
16.Z1.C04-1000	15 / 20	30	13.858	8.465	12.402	79.366
17.Z1.C04-1000	18.5 / 25	38	13.858	9.449	13.504	101.413
18.Z1.C04-1000	22 / 30	45	13.858	10.079	12.756	121.413
19.Z1.C04-1000	30 / 40	54	13.858	10.551	12.795	138.891
20.Z1.C04-1000	37 / 50	68	15.276	9.449	13.268	163.142
21.Z1.C04-1000	45 / 60	82	16.22	12.244	15.157	202.825
22.Z1.C04-1000	55 / 75	104	16.22	14.882	15.905	238.099
23.Z1.C04-1000	75 / 100	136	18.898	13.268	16.063	352.74
24.Z1.C04-1000	90 / 125	163	21.732	18.937	18.583	379.195
25.Z1.C04-1000	110 / 150	190	21.732	20.118	18.425	473.994
26.Z1.C04-1000	132 / 175	226	21.732	20.866	19.331	522.496
27.Z1.C04-1000	160 / 200	271	21.732	21.693	18.622	599.657
28.Z1.C04-1000	200 / 250	335	25.984	19.528	19.921	749.572
29.Z1.C04-1000	250 / 300	417	25.984	22.126	20.157	1040.582

subject to technical changes

## Technical Data

Protection class	IP20, open chassis design
Cooling	convection air
max. leakage current	7 mA (with optional HF/EMI Filter)
Efficiency	> 98 %
Overload capacity	150 %
Temperature	storage -25...70° C -13...158° F operation -10...45° C 14...113° F
Climatic category	3K3 (EN 60721-3-3)
Environment (IEC 664-1)	pollution degree 2
Vibration / shock	Germanic Lloyd, EN 50155
Installation position	vertical / horizontal with arrangement of the capacitor beneath the choke
Design Standards in preparation	EN 61800, EN 61558-2-20, VDE 0160 UL- and cUL approval pending

## Other versions of or options for KEB HARMONIC FILTER

- thermal-contact NC-contact
- HF / EMI - Filter
- THD ≤ 15 % - design according to Elevator norm prEN 12015
- THD ≤ 5 %
- Line connection 3 ph. 230 V AC
- Line connection 3 ph. 575 V AC
- Line connection 3 ph. 690 V AC
- NEMA 1 version, mechanical design IP23

