



**EMC SOLUTIONS**  
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## **APPLICATIONS NOTES**

# **KVA RATINGS OF POWER LINE FILTERS**

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**Approved to ISO9001**

# APPLICATIONS NOTES

## kVA RATINGS OF POWER LINE FILTERS

### SINGLE PHASE AC FILTERS

For single phase filters, the VA rating is the product of the voltage V in volts times the current, I in amps.

i.e. 
$$VA = V I \quad \text{and} \quad kVA = V I / 1000$$

Hence for a defined kVA load, the rated filter current needs to be at least the following:

$$I \text{ (amps)} = 1000 \text{ kVA} / V$$

Therefore for 240V supplies

$$I \text{ (amps)} = 4.16 \text{ kVA}$$

N.B. For d.c. power filters, max power rating of load = V I watts.

### THREE PHASE AC FILTERS

(Both for 50/60Hz and 400Hz supplies)

In this case, for a supply with a voltage rating of  $V_{L-L}$  between phases and  $V_{L-N}$  from phase to neutral, the VA load rating for a filter of current rating, I amps is given by

$$\begin{aligned} VA &= \sqrt{3} V_{L-L} I \\ &= 3 V_{L-N} I \end{aligned}$$

And for a defined kVA load, the rated filter current becomes

$$\begin{aligned} I &= 1000 \text{ kVA} / \sqrt{3} V_{L-L} \\ &= 1000 \text{ kVA} / 3 V_{L-N} \end{aligned}$$

E.g. For a normal UK 415V supply

$$\begin{aligned} V_{L-L} &= 415V \\ V_{L-N} &= 240V \end{aligned}$$

$$I = 1.39 \text{ kVA}$$

and for a normal 200V 400Hz supply

$$\begin{aligned} V_{L-L} &= 200V \\ V_{L-N} &= 115V \end{aligned}$$

$$I = 2.9 \text{ kVA}$$

