

# High Current Line Filters for 3-phase systems



**FMBC Series, Book style in steel case, 2-stage all-purpose filters to Protection Class I, with high insertion loss, conform to EN 133200, UL 1283 and IEC 60950**

**Nominal current:** 10 - 115 A @  $\vartheta_a$  40°C  
**Rated voltage  $U_R$  ( $U_{max}$ ):** 480 VAC 50/60 Hz  
**Attenuation:** Excellent  
**Leakage current:** for Industrial applications  
**Test voltages:** L → E 3 kVDC, 2 sec \*  
 L → L 2.25 kVDC, 2 sec \*  
**Climatic category:** 25/100/21 acc. to IEC 60068-1  
**50% saturation typ.:** 2 to 3 x  $I_N$  @ 20°C  
**Inrush current:** 1.5 x  $I_N$  1 min. per hour  
**MTBF @ 40°C /  $U_R$  ( $U_{max}$ ):** > 200'000 h acc. to MIL-HB-217 F

\*without resistors

Approvals obtained or pending:



**The TIMONTA high-current filter family FMBC was developed for the following industrial applications:**

- Frequency Converters
- Stepper Motor Drives
- UPS-Systems
- Inverters



Specially developed for use in frequency converters and similar applications. Reduced case size encourages universal usage up to 480 VAC. The two stage configuration ensure that this line of filters meets the requirements of EN 55011 / 55014, UL 1283 and EN 133200. This new TIMONTA line offers end users a cost effective EMC solution for ensure compliance with the CE requirements.

## Drive Rating Converter Recommended Filter Type

Motor Rating [PS / HP]	Motor Rating [kW]	Converter Rating [kVA]	Recommended Filter $I_N$ [A]
2	1.5	to 2.9	10
8	6	to 9.7	20
15	11	to 20	36
25	18.5	to 30	66
38	28	to 50	115

- Special characteristics of this high-current filter series are:
  - slim case in book style
  - high symmetrical and asymmetrical mode attenuation (from 10 kHz to 300 MHz)
  - rated voltage 480 VAC for world wide acceptance

## Technical data for the version with terminal blocks on both sides

Type	$I_N$ (1) @ $\vartheta_a$ 40°C (50°C) [A]	$U_R$ ( $U_{max}$ ) [V]	$L_N$ (2) -30% / +50%		Resistance L-L' ±15% [mΩ]	Power dissipation total ±15% [W]	Max. leakage current @ 440 V/50 Hz		C1 ±20% [μF]	C2 ±20% [μF]	C3 ±20% [μF]	C4 ±20% [nF]	C5 ±20% [μF]	R1 [MΩ]	R2 [MΩ]	Case	Terminal blocks S [mm <sup>2</sup> ]
			L1 [mH]	L2 [mH]			In 3-phase Systeme (3) [mA]	Worst case (4) [mA]									
FMBC-0967-1010	3 x 10 (09)		3 x 3	3 x 1.5	31.5	9.45		108	1.5	1.0	1.5	–	1.5	–	1	67	4
FMBC-0958-2010	3 x 20 (18)	480 V	3 x 1.8	3 x 1.2	14.6	17.5		118	2.2	1.5	2.2	–	1.5	–	1	58	4
FMBC-0960-3610	3 x 36 (33)	50/60	3 x 1.5	3 x 0.5	6.6	25.7	≤ 5	140	2.2	2.2	2.2	–	2.2	–	1	60	10
FMBC-0962-6610	3 x 66 (60)	Hz	3 x 0.65	3 x 0.45	3.3	43.0		143	2.2	2.2	2.2	100	2.2	1	1	62	25
FMBC-0964-H110	3 x 115 (105)		3 x 0.7	3 x 0.2	1.33	48.0		143	2.2	2.2	2.2	100	2.2	1	1	64	50

## Technical data for the version with terminal blocks on the power line side and wire leads on the load side

Type	$I_N$ (1) @ $\vartheta_a$ 40°C (50°C) [A]	$U_R$ ( $U_{max}$ ) [V]	$L_N$ (2) -30% / +50%		Resistance L-L' ±15% [mΩ]	Power dissipation total ±15% [W]	Max. leakage current @ 440 V/50 Hz		C1 ±20% [μF]	C2 ±20% [μF]	C3 ±20% [μF]	C4 ±20% [nF]	C5 ±20% [μF]	R1 [MΩ]	R2 [MΩ]	Case	Terminal blocks S [mm <sup>2</sup> ]
			L1 [mH]	L2 [mH]			In 3-phase Systeme (3) [mA]	Worst case (4) [mA]									
FMBC-0967-1060	3 x 10 (09)		3 x 3	3 x 1.5	31.5	9.45		108	1.5	1.0	1.5	–	1.5	–	1	67C	4
FMBC-0958-2060	3 x 20 (18)	480 V	3 x 1.8	3 x 1.2	14.6	17.5		118	2.2	1.5	2.2	–	1.5	–	1	58C	4
FMBC-0960-3660	3 x 36 (33)	50/60	3 x 1.5	3 x 0.5	6.6	25.7	≤ 5	140	2.2	2.2	2.2	–	2.2	–	1	60C	10
FMBC-0962-6660	3 x 66 (60)	Hz	3 x 0.65	3 x 0.45	3.3	43.0		143	2.2	2.2	2.2	100	2.2	1	1	62C	25

(1) Current derating over 40°C :  $I = I_N \times \sqrt{(100-\vartheta_a)/60}$

(2) Nominal inductance measured according to EN 138100, see introduction of this catalog, paragraph 3.4

(3) Measured according to IEC 60950 - 5.2.4 - 5.2.5, valid for TT and TN mains and with regular Sinus. See introduction of this catalog, paragraph 3.5

(4) Measured according to IEC 60950 - Annex G.4, valid for IT mains. See introduction of this catalog, paragraph 3.5

## Circuit diagram

