

Passive harmonic filter systems

Filter Matrix MAP - FMM

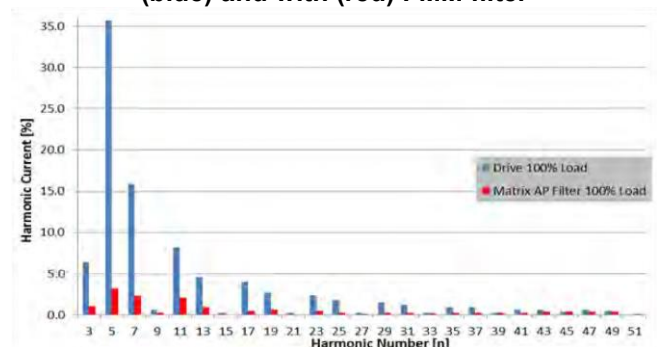
Patented harmonic filter for the efficient and economical reduction of harmonic currents in 6-pulse inverters, converters and UPS systems.

- ✓ THID at full load typically $\leq 5\%$
- ✓ THID at 10-20% load typically $\leq 8\%$
- ✓ Increases the life of electrical equipment
- ✓ Generator compatible



FMM on mounting plate

Comparison of the harmonic currents without (blue) and with (red) FMM filter



Performance at different loads

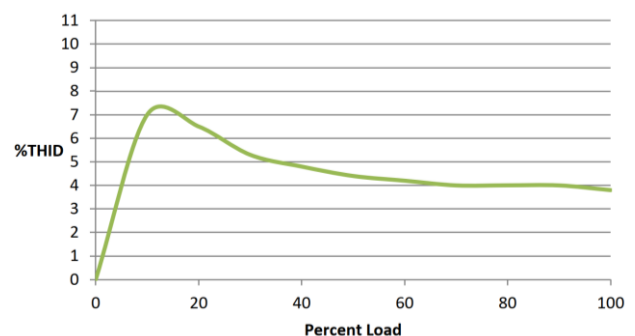
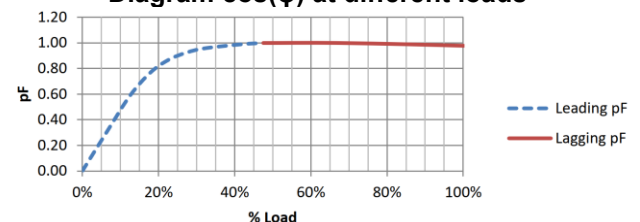


Diagram $\cos(\varphi)$ at different loads



Solution to the following grid disturbances:

Flicker & voltage change



Unbalance



Harmonics



Supra-harmonics



Transients



Reactive energy costs



Resonances



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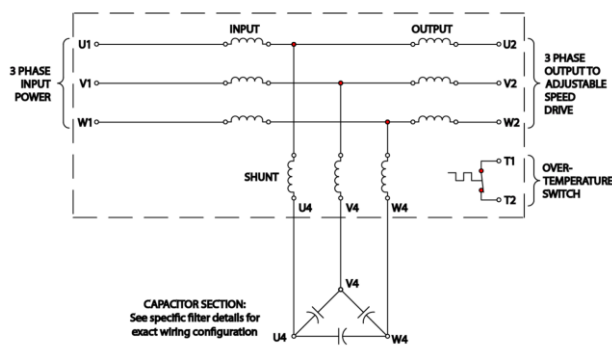
| info@widap.ch

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| Power Quality

| Vers. 1.0 - E

| FMM

Filter performance designed for loads with	6-pulse spectrum			
Supply voltage <i>Mains unbalance ≤ 1% conditional to maintain specified performance!</i>	208-240V	+/- 10%	60Hz	3-phase
	380-415V	+/- 10%	50Hz	3-phase
	480V	+/- 10%	60Hz	3-phase
	600V	+/- 10%	60Hz	3-phase
	690V	+/- 10%	50Hz	3-phase
Rated current <i>150% nominal current possible for 1 minute</i>	208-240V	6 – 403A		3 – 150hp
	380-415V	6 – 1200A		1.1 – 600kW
	480V	6 – 2300A		3 – 1850hp
	600V	6 – 786A		5 – 800hp
	690V	52 – 636A		37 – 450kW
Filter performance according to load <i>Exact values according to illustration on page 1</i>	THID ≤ 8% at 30%			
	THID ≤ 5% at 100% (= nominal load)			
Maximum ambient temperature <i>Temperature monitoring available, NC switch, opens at 180°C (+/- 5°C)</i>	-40 up to +50°C		Freestanding	
	-40 up to +40°C		Cabinet installation	
	-40 up to +90°C		Storage	
Ventilation	Natural convection, no fan required			
cos(φ)	1.00 between 50 and 100% load			
Losses	< 4% at 100% (= nominal load)			
Efficiency	97 – 99%			
Source impedance	Min. 1.5%			
	Max. 6.0%			
Installation height and mounting	Up to 1000 meters above sea level (= 3300 feet), Vertical or horizontal installation possible			
Relative humidity	0 – 95%, non-condensing			
Ingress protection	IP00			
Design	With bypass and capacitor circuit All components are UL/CSA certified			
Options <i>Depending on the dimensions and weight of the filter block, installation in a cabinet is recommended instead of a mounting plate</i> <i>Suitable cabinets for version A6: A1 / A2: Hager standard cabinet (weber mes M), 400mm wide A3 / A4: Hager standard cabinet (weber mes M), 600mm wide</i>	A1	MP1: 900x334x25 mm [HxWxD]		
	A2	MP2:1000x334x25 mm [HxWxD]		
	A3	MP3: 900x534x25 mm [HxWxD]		
	A4	MP4:1350x534x25 mm [HxWxD]		
	A5	Material delivery of the filter block and the matching capacitors		
	A6	Installation in cabinet		
Installation and scheme	Installation of the filter in series with the load			
				
Standards	EN 61439-2 / EN 50160 / IEC 61000-2-4 / IEEE 519			

For the cabinet option (A6), a cabinet can be provided by the customer.

All data according to the TECHNICAL REFERENCE MANUAL from MTE (MAP-TRM-E June 2020 Rev 024).

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	Im Wechsel 2	CH-5042 Hirschthal	Tel. +41 62 724 12 48	Vers. 1.0 - E	

Passive harmonic filter systems

Filter Matrix MAP - FMM

Versions 380-415V / 50Hz

Type	Nominal current [A]	Options	Weight filter block [kg]	Connection thread	Cross-section max. [mm ²]	*Fuse [A]	Power loss [W] at 100%
FMM 0006 4 5	6	A1 / A5 / A6	9	M6 ($\leq 6Nm$)	35	10	114
FMM 0008 4 5	8	A1 / A5 / A6	10	M6 ($\leq 6Nm$)	35	10	149
FMM 0011 4 5	11	A1 / A5 / A6	13	M6 ($\leq 6Nm$)	35	16	180
FMM 0014 4 5	14	A1 / A5 / A6	16	M6 ($\leq 6Nm$)	35	20	206
FMM 0021 4 5	21	A1 / A5 / A6	23	M6 ($\leq 6Nm$)	35	25	235
FMM 0027 4 5	27	A1 / A5 / A6	26	M6 ($\leq 6Nm$)	35	32	266
FMM 0034 4 5	34	A1 / A5 / A6	31	M6 ($\leq 6Nm$)	35	40	298
FMM 0044 4 5	44	A1 / A5 / A6	37	M6 ($\leq 6Nm$)	35	50	356
FMM 0052 4 5	52	A2 / A5 / A6	47	M6 ($\leq 6Nm$)	35	63	388
FMM 0066 4 5	66	A2 / A5 / A6	53	M6 ($\leq 6Nm$)	35	80	459
FMM 0083 4 5	83	A2 / A5 / A6	63	M6 ($\leq 6Nm$)	35	100	565
FMM 0103 4 5	103	A2 / A5 / A6	69	M6 ($\leq 6Nm$)	35	125	660
FMM 0128 4 5	128	A3 / A5 / A6	99	M8 ($\leq 12Nm$)	70	160	973
FMM 0165 4 5	165	A4 / A5 / A6	124	M8 ($\leq 12Nm$)	70	200	1030
FMM 0208 4 5	208	A4 / A5 / A6	132	M10 ($\leq 20Nm$)	120	224	1263
FMM 0240 4 5	240	A4 / A5 / A6	147	M10 ($\leq 20Nm$)	120	250	1423
FMM 0320 4 5	320	A4 / A5 / A6	191	M12 ($\leq 31Nm$)	185	355	1450
FMM 0403 4 5	403	A5 / A6	196	M16 ($\leq 60Nm$)	300	500	1816
FMM 0482 4 5	482	A5 / A6	245	M16 ($\leq 60Nm$)	300	500	2008
FMM 0636 4 5	636	A5 / A6	310	2xM16 ($\leq 60Nm$)	2x300	2x400	2359
FMM 0786 4 5	786	A5 / A6	354	2xM16 ($\leq 60Nm$)	2x300	2x400	2604
FMM 0850 4 5	850	A5 / A6	440	2xM16 ($\leq 60Nm$)	2x300	2x500	2974
FMM 1000 4 5	1000	A5 / A6	444	3xM16 ($\leq 60Nm$)	3x300	2x500	3954
FMM 1200 4 5	1200	A5 / A6	453	3xM16 ($\leq 60Nm$)	3x300	2x630	4136

Versions 480V / 60Hz

Type	Nominal current [A]	Options	Weight filter block [kg]	Connection thread	Cross-section max. [mm ²]	*Fuse [A]	Power loss [W] at 100%
FMM 0006 5 6	6	A1 / A5 / A6	9	M6 ($\leq 6Nm$)	35	10	122
FMM 0008 5 6	8	A1 / A5 / A6	10	M6 ($\leq 6Nm$)	35	10	158
FMM 0011 5 6	11	A1 / A5 / A6	13	M6 ($\leq 6Nm$)	35	16	192
FMM 0014 5 6	14	A1 / A5 / A6	15	M6 ($\leq 6Nm$)	35	20	220
FMM 0021 5 6	21	A1 / A5 / A6	23	M6 ($\leq 6Nm$)	35	25	251
FMM 0027 5 6	27	A1 / A5 / A6	25	M6 ($\leq 6Nm$)	35	32	283
FMM 0034 5 6	34	A1 / A5 / A6	30	M6 ($\leq 6Nm$)	35	40	318
FMM 0044 5 6	44	A1 / A5 / A6	36	M6 ($\leq 6Nm$)	35	50	379
FMM 0052 5 6	52	A2 / A5 / A6	47	M6 ($\leq 6Nm$)	35	63	413
FMM 0066 5 6	66	A2 / A5 / A6	53	M6 ($\leq 6Nm$)	35	80	488
FMM 0083 5 6	83	A2 / A5 / A6	63	M6 ($\leq 6Nm$)	35	100	600
FMM 0103 5 6	103	A2 / A5 / A6	69	M6 ($\leq 6Nm$)	35	125	702
FMM 0128 5 6	128	A3 / A5 / A6	93	M8 ($\leq 12Nm$)	70	160	1035
FMM 0165 5 6	165	A4 / A5 / A6	106	M8 ($\leq 12Nm$)	70	200	1096
FMM 0208 5 6	208	A4 / A5 / A6	130	M10 ($\leq 20Nm$)	120	224	1343
FMM 0240 5 6	240	A4 / A5 / A6	147	M10 ($\leq 20Nm$)	120	250	1514
FMM 0320 5 6	320	A4 / A5 / A6	190	M12 ($\leq 31Nm$)	185	355	1543
FMM 0403 5 6	403	A5 / A6	190	M16 ($\leq 60Nm$)	300	500	1932
FMM 0482 5 6	482	A5 / A6	242	M16 ($\leq 60Nm$)	300	500	2137
FMM 0636 5 6	636	A5 / A6	303	2xM16 ($\leq 60Nm$)	2x300	2x400	2509
FMM 0786 5 6	786	A5 / A6	351	2xM16 ($\leq 60Nm$)	2x300	2x400	2771
FMM 0850 5 6	850	A5 / A6	428	2xM16 ($\leq 60Nm$)	2x300	2x500	3163
FMM 1000 5 6	1000	A5 / A6	439	3xM16 ($\leq 60Nm$)	3x300	2x500	4206
FMM 1200 5 6	1200	A5 / A6	445	3xM16 ($\leq 60Nm$)	3x300	2x630	4400
FMM 1600 5 6	1600	A5 / A6	1031	on request	on request	3x630	4500
FMM 2000 5 6	2000	A5 / A6	1215	on request	on request	4x500	5050
FMM 2300 5 6	2300	A5 / A6	1312	on request	on request	4x630	6100

**The fuse protection is specified by the manufacturer of the connected load (e.g. variable frequency drive).
Versions are also available at other voltage levels on request.*

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