



Optimizing your drive!

RHF-5P XXX-380-60-YY-Z



Main

Product type	The REVCON Harmonic Filter - RHF-5P - reduces the THDi of nonlinear loads from typically 35% to significantly below 5% even under realistic ambient conditions. Due to the use of a two-stage filter module, the RHF is able to achieve a significant higher efficiency and a smooth damping across the full harmonic spectrum.
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Performance	5P = <5% THDi, (3% THDi typical performance)
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Motor Power [XXX]	4kW - 630kW
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Degree of	C = Compact: 4kW - 280kW (IP20)
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Protection [YY]	S = Split: 315kW - 630kW panel mount design (IP00).
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and design [Z]	E = Enclosed: 315kW - 630kW panel mount (var. IP ratings)
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Design	High efficient two-stage filter (no RC damping)
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Supply voltage	380-415V (+10% / -15%) 60Hz (+/- 2%)
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Power factor	1 at nominal power
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Overload	1.5
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Efficiency	>98.4% - 99.4% (efficiency depend on rating and load)
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Standards and requirements	IEC/EN 61000-2-2 / -4 IEC/EN 61000-3-2 / -4 / -12 IEEE 519-2014 Engineering Recommendation G5-5
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Humidity	Humidity class F without condensation 5.....85% - Class 3K3 (non-condensing) during operation
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Ambient temp.	min. 5°C (41°F) max. 45 °C (113°F) derating above 45°C (113°F) = -1.5%/K (up to 60°C (140°F))
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Altitude	<1000m derating above 1000m: -5%/1000m (up to 4000m)
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Applications

Water and wastewater treatment

HVAC / Pumps and Fans (VFD)

Industrial/ Factory Process (VFD)

DC charger

Buildings / IEEE 519-2014 requirement

Marine

Symetrical load multiple VFD



General Industry



Marine



Oil & Gas



Water Treatment



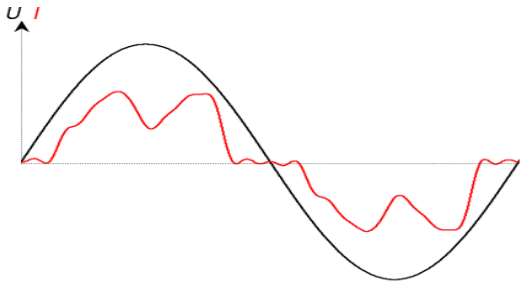
Data Center



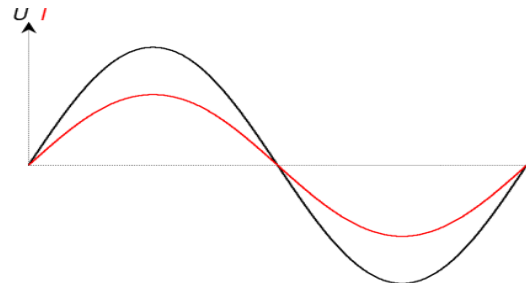
Buildings

Systems with significant part of non linear loads will cause harmonic distortion on the voltage supply, which may damage equipment and supply transformer. REVCON Harmonic Filter – RHF - reduces the THDi of nonlinear loads from typically 35% to significantly below 5% (RHF-5P) or below 8% (RHF-8P) even under realistic ambient conditions.

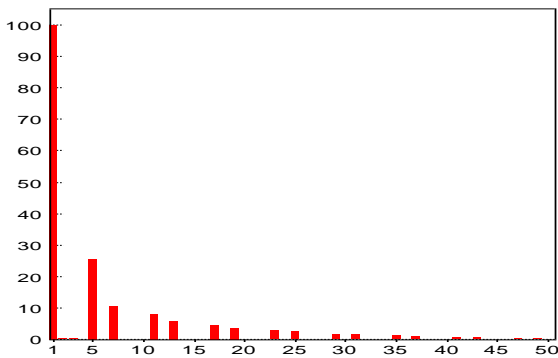
Due to the use of a two-stage filter module, the RHF is able to achieve a significant higher efficiency and a smooth damping across the full harmonic spectrum.



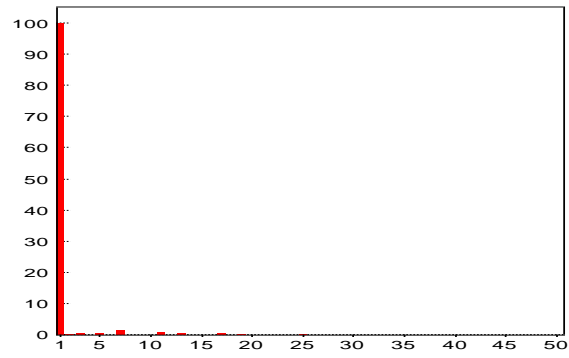
Typical input current shape when using a standard 6-pulse drive



Typical input current shape when using a standard 6-pulse drive with RHF harmonic filter



Typical harmonic current spectrum when using a standard 6-pulse drive with DC-Choke



Typical harmonic current shape when using a standard 6-pulse drive with RHF-5P

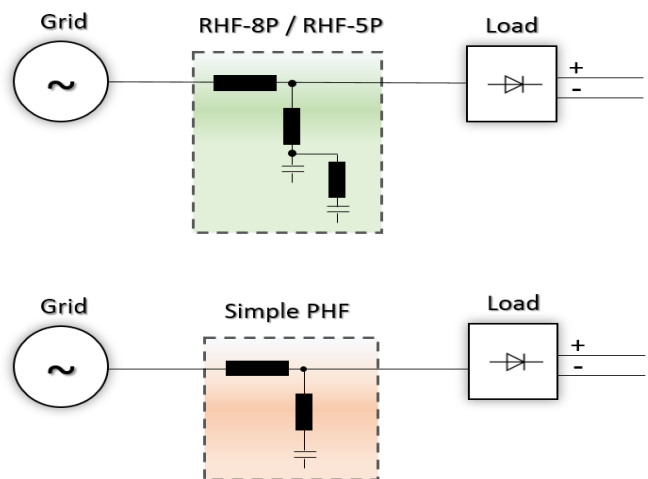
Working Principle RHF-5P - REVCON Passive Harmonic Filter

The following pictures describe the RHF-5P hardware configuration. Instead of using a simple drain circuit (Simple PHF) for the 5th Harmonic, the RHF-5P use a two-stage filter which enables the following advantages:

1. Performance: The RHF is designed to reach its stated performance in the field and not defined for unique simulated conditions. The double stage filter offers a smooth damping of all Harmonics, instead of focusing on the 5th Harmonic.

2. Full Drive Power: The RHF allows for 100% DC Bus voltage at 100% drive load. This avoid further calculations and de-rating of the drive. (Drives connected to Simple Harmonic Filter may have up to 7% lower power ratings)!

3. Efficiency: Simple Harmonic Filter may add RC circuits in order to reach specified performance which leads to a significant lower efficiency. The RHF-5P double stage harmonic filter cause up to 70% less power loss than comparable <5% THDi solutions.



Available size for 3 Phase supply / 400V / 50Hz / 5% THDi

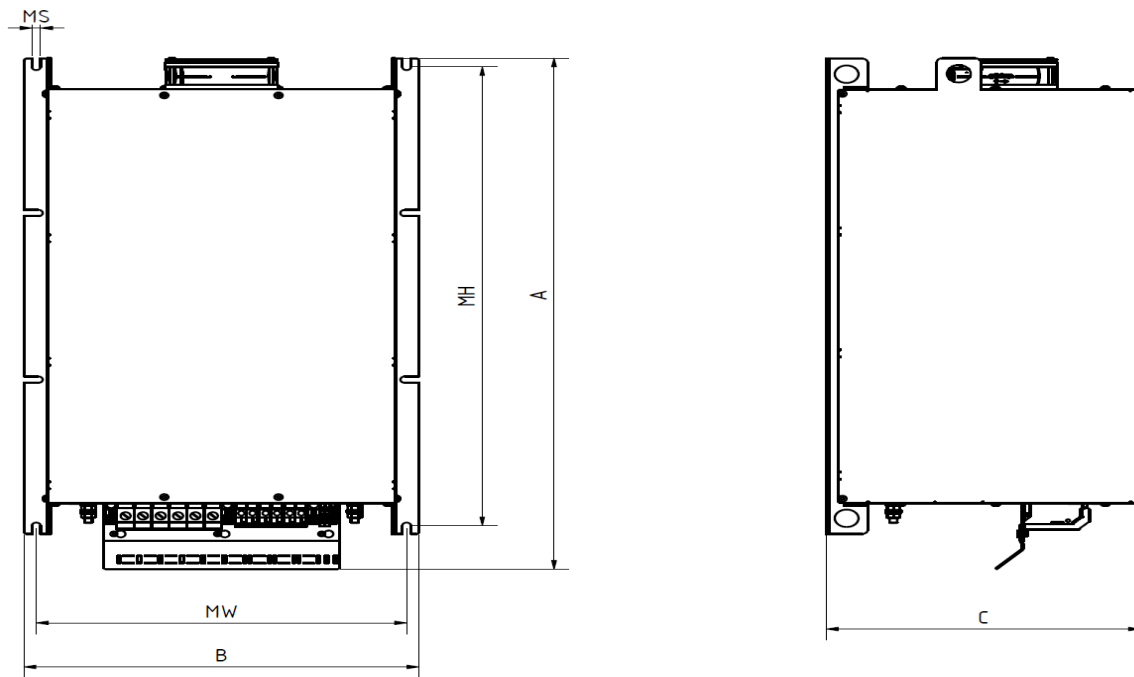
Compact range - All filter components combined in one enclosure							
Revcon Filter RHF-5P	Order code	Input current [A]	max current [A]	Motor size*	Filter encl.	Weight [kg]	Power- loss [W]
RHF-5P 4.0-380-60-20-C	25002102	7.3	11	4.0kW	X1	18	102
RHF-5P 5.5-380-60-20-C	25002103	10	15	5.5kW	X1	18	131
RHF-5P 7.5-380-60-20-C	25002104	14	21	7.5kW	X1	19	169
RHF-5P 11-380-60-20-C	25002105	22	33	11kW	X2	29	243
RHF-5P 15-380-60-20-C	25002106	27	41	15kW	X2	33	283
RHF-5P 18.5-380-60-20-C	25002107	32	48	18.5kW	X3	52	305
RHF-5P 22-380-60-20-C	25002108	38	57	22kW	X3	53	366
RHF-5P 30-380-60-20-C	25002109	52	78	30kW	X3	58	452
RHF-5P 37-380-60-20-C	25002110	63	95	37kW	X4	76	542
RHF-5P 45-380-60-20-C	25002111	76	114	45kW	X4	98	658
RHF-5P 55-380-60-20-C	25002112	92	138	55kW	X5	104	717
RHF-5P 75-380-60-20-C	25002113	125	188	75kW	X5	106	812
RHF-5P 90-380-60-20-C	25002114	150	225	90kW	X6	126	932
RHF-5P 110-380-60-20-C	25002115	182	273	110kW	X6	135	1020
RHF-5P 132-380-60-20-C	25002116	217	326	132kW	X7	172	1134
RHF-5P 160-380-60-20-C	25002117	262	393	160kW	X7	206	1196
RHF-5P 185-380-60-20-C	25002118	304	456	185kW	X8	221	1228
RHF-5P 200-380-60-20-C	25002119	328	492	200kW	X8	230	1346
RHF-5P 220-380-60-20-C	25002120	360	540	220kW	X8	265	1456
RHF-5P 250-380-60-20-C	25002121	410	615	250kW	X8	272	1530
RHF-5P 280-380-60-20-C	25002122	460	690	280kW	X8	273	1717

Split range - Filter consisting of line choke and filter enclosure X9-X11								
Revcon Filter RHF-5P	Order code	Input current [A]	max current [A]	Motor size*	Filter encl.	Weight		Power- loss [W]
						Filter Modul [Kg]	line inductor [Kg]	
RHF-5P 315-380-60-00-S	25002123	520	780	315kW	X9	170	200	1980
RHF-5P 355-380-60-00-S	25002124	600	900	355W	X10	240	225	2150
RHF-5P 400-380-60-00-S	25002125	650	975	400kW	X10	240	240	2302
RHF-5P 450-380-60-00-S	25002126	720	1080	450kW	X10	270	260	2498
RHF-5P 500-380-60-00-S	25002127	830	1245	500kW	X10	270	285	2613
RHF-5P 560-380-60-00-S	25002128	920	1380	560kW	X10	315	310	2838
RHF-5P 630-380-60-00-S	25002129	1030	1545	630kW	X10	315	330	3160

*The corresponding motor size listed in this file is based on the following technical specification:
 Motor is IE3 6-Pol or lower. VFD efficiency is 97% or higher and have internal DC-Choke of 3% or higher.

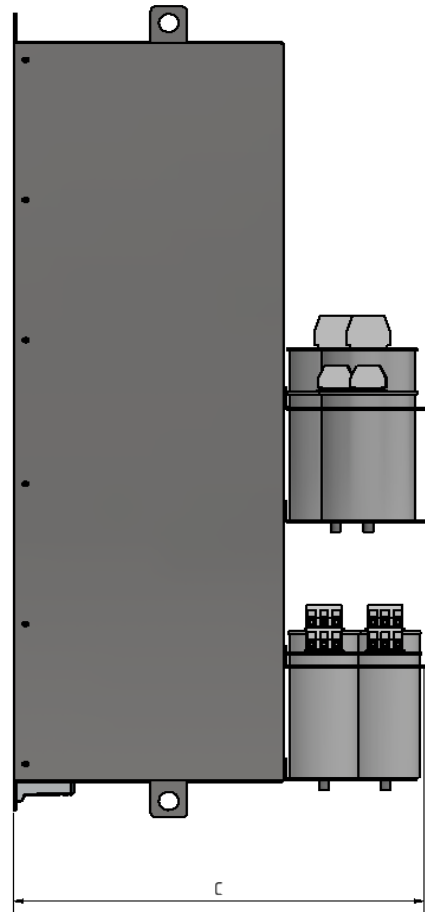
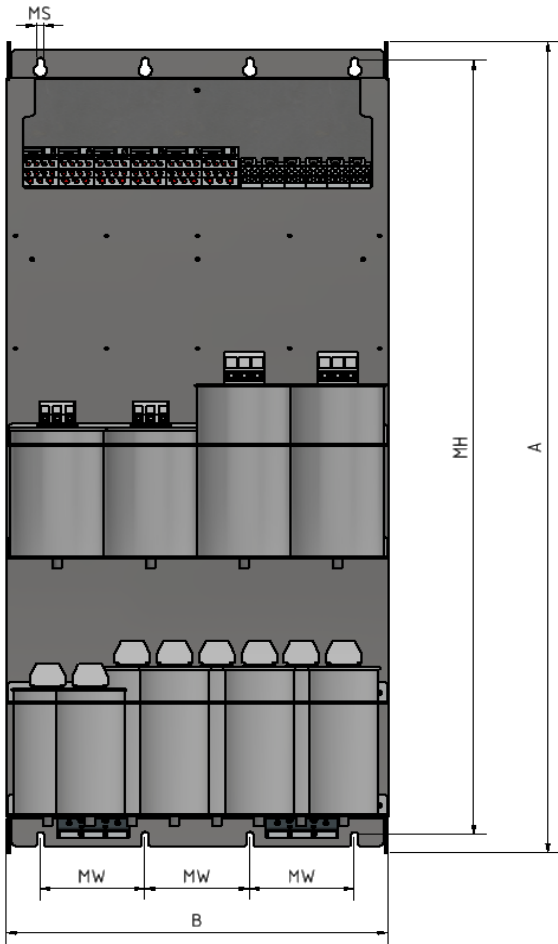
Overview enclosure size compact execution

Enclosure Size	Height A [mm]	Width B [mm]	Depth C [mm]	Height MH [mm]	Width MW [mm]	Mount MS [mm]
X1	322	196	205	278	163	6.8
X2	454	232	248	382	205	6,8
X3	592	378	245	523	353	9
X4	621	378	338	554	353	9
X5	736	418	333	661	392	9
X6	764	418	405	661	392	9
X7	957	468	451	780	443	9
X8	957	468	515	780	443	9



Overview enclosure size separate execution

Enclosure Size	Height A [mm]	Width B [mm]	Depth C [mm]	Height MH [mm]	Width MW [mm]	Mount MS [mm]
X9	1100	274	510	1052	211	9
X10	1100	474	510	1050	130	9
X11	1100	674	510	1050	200	9



Overview line inductor size separate execution

line inductor type	Width A [mm]	Height B [mm]	Depth 1 C [mm]	Depth 2 D [mm]	bus bars MH E [mm]	Width MW F [mm]	depth MW G [mm]	bus bars MW H [mm]	Mount MS I/J [mm]
RHF-5P 315-380-60-00-S	510	540	280	400	380	430	240	170	14
RHF-5P 355-380-60-00-S	570	620	230	360	420	520	165	200	14
RHF-5P 400-380-60-00-S	600	620	240	370	420	520	175	200	14
RHF-5P 450-380-60-00-S	600	620	255	385	420	520	190	200	14
RHF-5P 500-380-60-00-S	600	620	270	400	420	520	205	200	14
RHF-5P 560-380-60-00-S	600	620	290	420	420	520	225	200	14
RHF-5P 630-380-60-00-S	600	640	300	440	420	520	235	200	14

