

**RHF-5P XXX-600-60-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.
Performance	5P = <5% THDi, (3% THDi typical performance)
Motor Power [XXX]	15kW - 900kW
Degree of	C = Compact: 15kW - 280kW (IP20)
Protection [YY]	S = Split: 315kW - 630kW panel mount design (IP00).
and design [Z]	E = Enclosed: 315kW - 630kW panel mount (var. IP ratings)
Design	High efficient two-stage filter (no RC damping)
Supply voltage	380-415V (+10% / -15%) 50Hz (+/- 2%)
Power factor	1 at nominal power
Overload	1.5
Efficiency	>98.4% - 99.4% (efficiency depend on rating and load)
Standards and requirements	IEC/EN 61000-2-2 / -4 IEC/EN 61000-3-2 / -4 / -12 IEEE 519-2014 Engineering Recommendation G5-5
Humidity	Humidity class F without condensation 5....85% - Class 3K3 (non-condensing) during operation
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))
Altitude	<1000m derating above 1000m: -5%/1000m (up to 4000m)

**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

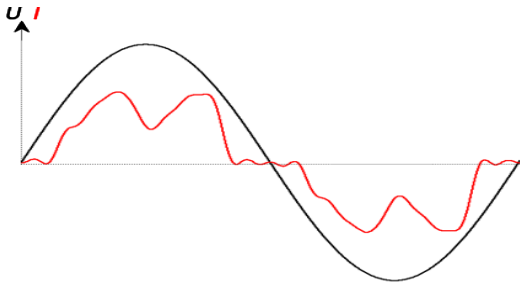


Buildings

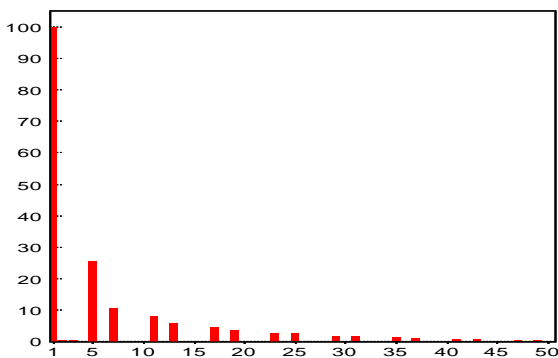
## Harmonic current on standard 6-Pulse VFD

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.

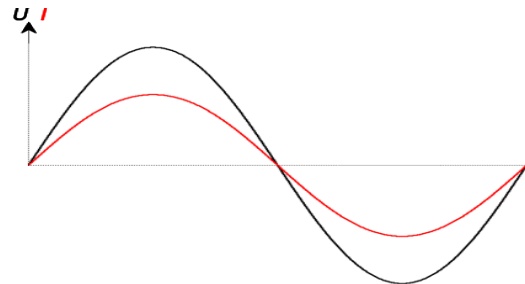
Due to the use of a two-stage filter module, the RHF is able to achieve a significant higher efficiency and a smooth damping across the full harmonic spectrum.



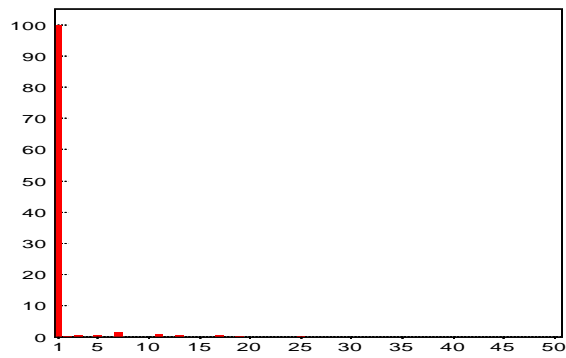
Typical input current shape when using a standard 6-pulse drive



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



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 RHF-5P

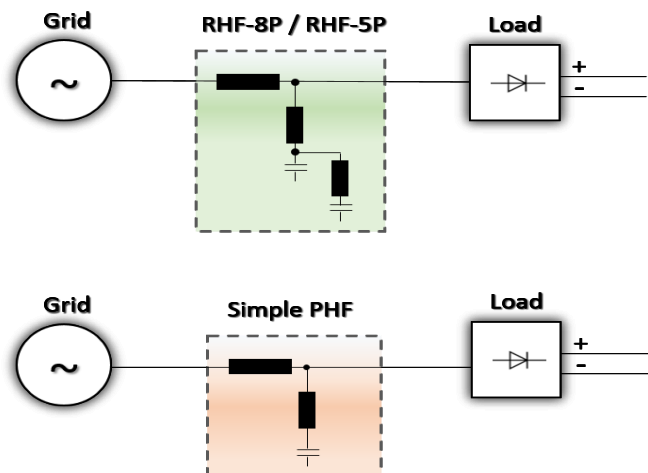
## Working Principle RHF-5P - REVCON Passive Harmonic Filter

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.



Revcon Filter RHF-5P	Order code	Input current [A]	max current [A]	Motor size*	Filter encl.	Weight [kg]	Power- loss [W]
RHF-5P 11-600-60-20-C	25002205	15	23	11kW	X3	42	268
RHF-5P 15-600-60-20-C	25002206	18	27	15kW	X3	50	280
RHF-5P 18.5-600-60-20-C	25002207	20	30	18.5kW	X3	50	305
RHF-5P 22-600-60-20-C	25002208	24	36	22kW	X3	52	366
RHF-5P 30-600-60-20-C	25002209	36	54	30kW	X4	82	544
RHF-5P 37-600-60-20-C	25002210	40	60	37kW	X5	96	600
RHF-5P 45-600-60-20-C	25002211	50	75	45kW	X5	96	658
RHF-5P 55-600-60-20-C	25002212	58	87	55kW	X5	104	717
RHF-5P 75-600-60-20-C	25002213	77	116	75kW	X6	130	812
RHF-5P 90-600-60-20-C	25002214	109	164	90kW	X6	168	1050
RHF-5P 110-600-60-20-C	25002215	128	192	110kW	X6	197	1164
RHF-5P 132-600-60-20-C	25002216	155	233	132kW	X7	220	1228
RHF-5P 160-600-60-20-C	25002217	170	255	160kW	X7	228	1280
RHF-5P 185-600-60-20-C	25002218	197	296	185kW	X7	228	1346
RHF-5P 200-600-60-20-C	25002219	210	315	200kW	X8	261	1400
RHF-5P 220-600-60-20-C	25002220	240	360	220kW	X8	261	1450
RHF-5P 250-600-60-20-C	25002221	260	390	250kW	X8	297	1650
RHF-5P 280-600-60-20-C	25002222	296	444	280kW	X8	297	1792
RHF-5P 315-600-60-00-S	25002223	366	549	315kW	**	***	1885
RHF-5P 355-600-60-00-S	25002224	394	591	355W	**	***	2121
RHF-5P 400-600-60-00-S	25002225	420	630	400kW	**	***	2520
RHF-5P 450-600-60-00-S	25002226	480	720	450kW	**	***	2800
RHF-5P 500-600-60-00-S	25002227	520	780	500kW	**	***	3075
RHF-5P 560-600-60-00-S	25002228	575	863	560kW	**	***	3380
RHF-5P 630-600-60-00-S	25002229	650	975	630kW	**	***	3720
RHF-5P 710-600-60-00-S	25002230	720	1080	710kW	**	***	4242
RHF-5P 800-600-60-00-S	25002231	830	1245	800kW	**	***	4600
RHF-5P 900-600-60-00-S	25002232	960	1440	900kW	**	***	5700

\*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.

\*\* Split range (design for Panel installation) includes separate line choke and filter circuit. Design is to meet 600mm or 800mm wide Panel. Drawings on request.

\*\*\* Split range (design for Panel installation) includes separate line choke and filter circuit. Individual weight depend on required options and setup.

Overview enclosure size

Enclosure Size	Height A [mm]	Width B [mm]	Depth C [mm]	Height MH [mm]	Width MW [mm]	Mount MS [mm]
X0	285	71	265	273	50	5.5
X1	343	190.5	205	277.8	163	6.8
X2	454.5	232	247.5	382	205	6,8
X3	593.5	378	242	523	353	9
X4	621.5	378	338.5	554	353	9
X5	737	418	336	661	392	9
X6	764	418	405	661	392	9
X7	957	468	451	780	443	9
X8	957	468	513.5	780	443	9

