



Optimizing your drive!

### RHF-5P XXX-460-60-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]	4kW - 710kW
Degree of Protection [YY] and design [Z]	C = Compact: 4kW - 315kW (IP20) S = Split: 355kW - 710kW panel mount design (IP00). E = Enclosed: 355kW - 710kW panel mount (var. IP ratings)
Design	High efficient two-stage filter (no RC damping)
Supply voltage	440-480V (+10% / -15%) 60Hz (+/- 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

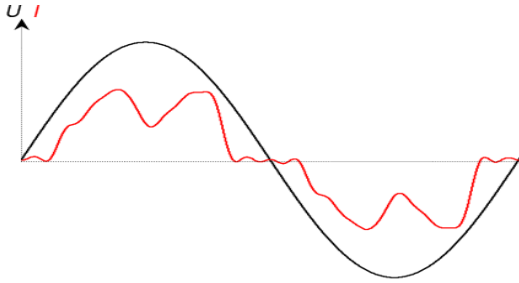


Buildings

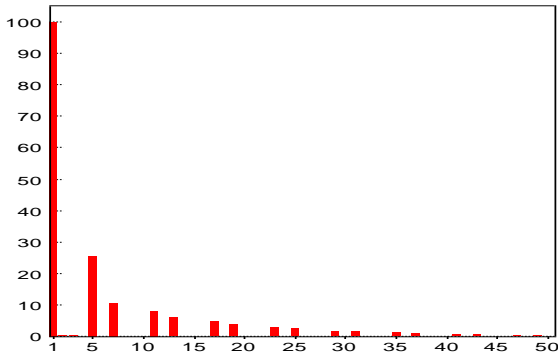
## Harmonic current on standard 6-Pulse VFD

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.

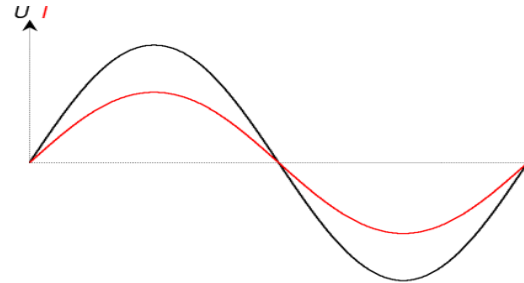
Due to the use of a two-stage filter module, the RHF is able to achieve a significant higher efficiency and a smooth damping across the full harmonic spectrum.



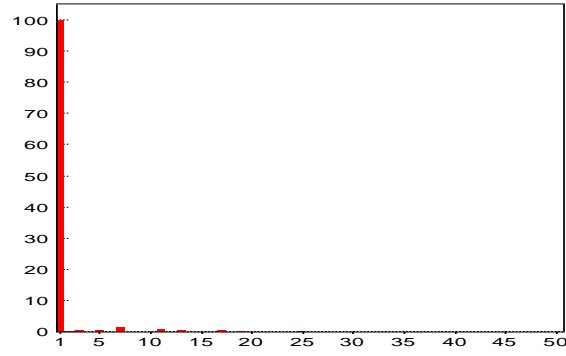
Typical input current shape when using a standard 6-pulse drive



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

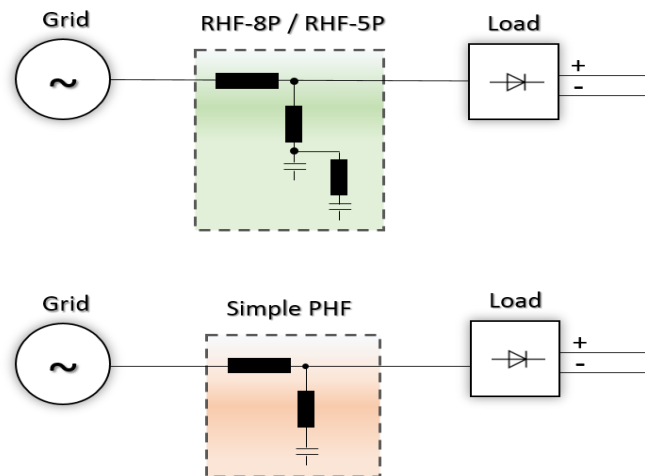


Typical harmonic current shape when using a standard 6-pulse drive with RHF-5P

## 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 / 460V / 60Hz / 5% THDi

Revcon Filter RHF-5P	Order code	Input current [A]	max current [A]	Motor size*	Filter encl.	Weight [kg]	Power- loss [W]
RHF-5P 4-460-60-20-C	25002052	6	9	4kW	X1	18	102
RHF-5P 5.5-460-60-20-C	25002053	10	15	5.5kW	X1	18	131
RHF-5P 7.5-460-60-20-C	25002054	14	21	7.5kW	X1	19	169
RHF-5P 11-460-60-20-C	25002055	19	29	11kW	X2	29	243
RHF-5P 15-460-60-20-C	25002056	25	38	15kW	X2	33	283
RHF-5P 18.5-460-60-20-C	25002057	31	47	18.5kW	X3	52	305
RHF-5P 22-460-60-20-C	25002058	36	54	22kW	X3	53	366
RHF-5P 30-460-60-20-C	25002059	48	72	30kW	X3	58	452
RHF-5P 37-460-60-20-C	25002060	55	90	37kW	X4	76	497
RHF-5P 45-460-60-20-C	25002061	66	110	45kW	X4	98	595
RHF-5P 55-460-60-20-C	25002062	77	143	55kW	X5	104	581
RHF-5P 75-460-60-20-C	25002063	105	177	75kW	X5	106	722
RHF-5P 90-460-60-20-C	25002064	125	231	90kW	X6	126	757
RHF-5P 110-460-60-20-C	25002065	150	231	110kW	X6	126	764
RHF-5P 132-460-60-20-C	25002066	180	275	132kW	X6	135	795
RHF-5P 160-460-60-20-C	25002067	217	347	160kW	X7	172	1066
RHF-5P 185-460-60-20-C	25002068	252	437	185kW	X8	221	1064
RHF-5P 200-460-60-20-C	25002069	280	437	200kW	X8	221	1182
RHF-5P 220-460-60-20-C	25002070	300	533	220kW	X8	230	1225
RHF-5P 250-460-60-20-C	25002071	340	533	250kW	X8	230	1388
RHF-5P 280-460-60-20-C	25002072	380	570	280kW	X8	265	1450
RHF-5P 315-460-60-20-C	25002073	436	654	315kW	X8	272	1792
RHF-5P 355-460-60-00-S	25002074	480	720	355W	**	***	2065
RHF-5P 400-460-60-00-S	25002075	550	825	400kW	**	***	2242
RHF-5P 450-460-60-00-S	25002076	650	975	450kW	**	***	2401
RHF-5P 500-460-60-00-S	25002077	740	1110	500kW	**	***	2605
RHF-5P 560-460-60-00-S	25002078	830	1245	560kW	**	***	2725
RHF-5P 630-460-60-00-S	25002079	920	1380	630kW	**	***	2960
RHF-5P 710-460-60-00-S	25002080	1030	1545	710kW	**	***	3596

\*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	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

