



Optimizing your drive!

### RHF-8P XXX-690-50-YY-Z



#### Main

Product type	The REVCON Harmonic Filter - RHF-8P - reduces the THDi of nonlinear loads from typically 35% to 8% 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	8P = <8% THDi
Motor Power [XXX]	15kW - 1 000kW
Degree of Protection [YY] and design [Z]	C = Compact: 15kW - 450kW (IP20) S = Split: 500kW - 1 000kW panel mount design (IP00). E = Enclosed: 500kW - 1 000kW panel mount (var. IP ratings)
Design	High efficient two-stage filter (no RC damping)
Supply voltage	3 • 600-690V (+10% / -15%) 50Hz (+/- 2%)
Power factor	1 at nominal power
Overload	1.5
Efficiency	>98.5% - 99.5% (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

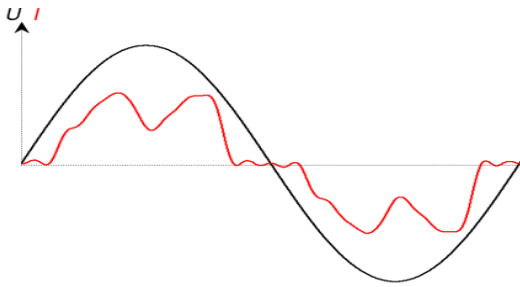


Buildings

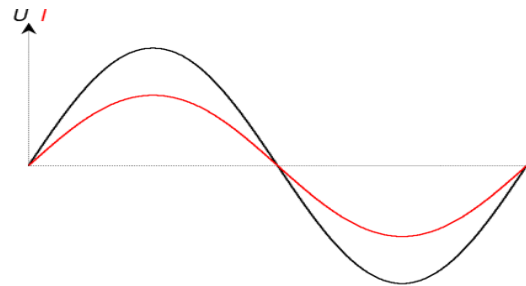
## Harmonic current on standard 6-Pulse VFD

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.

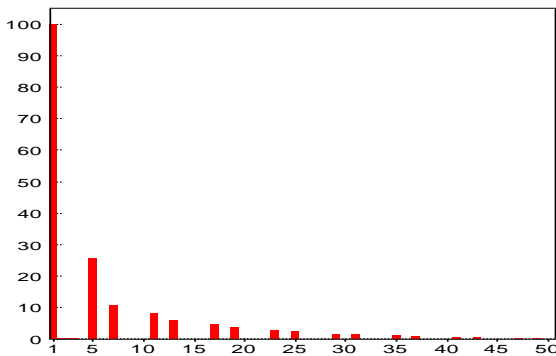
Due to the use of a two-stage filter module, the RHF is able to achieve a significant higher efficiency and a smooth damping across the full harmonic spectrum.



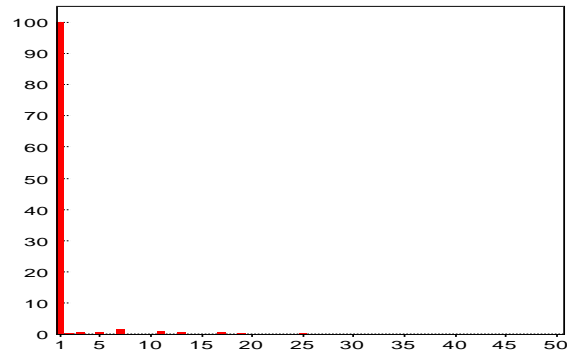
Typical input current shape when using a standard 6-pulse drive



Typical 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

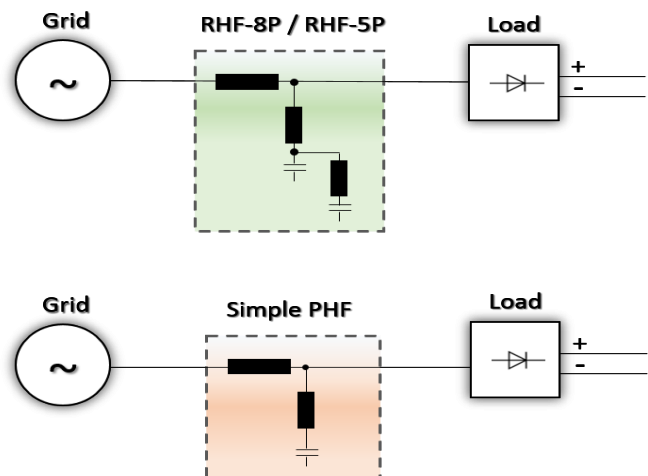
## Working Principle RHF-5P - REVCON Passive Harmonic Filter

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 / 690V / 50Hz / 8% THDi

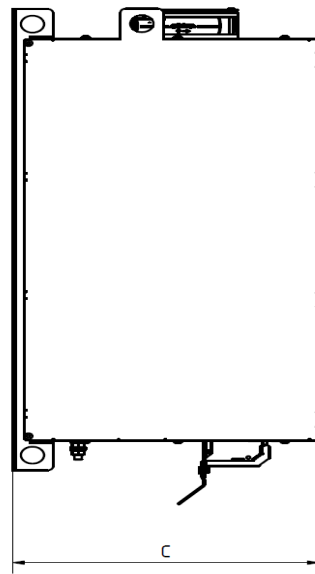
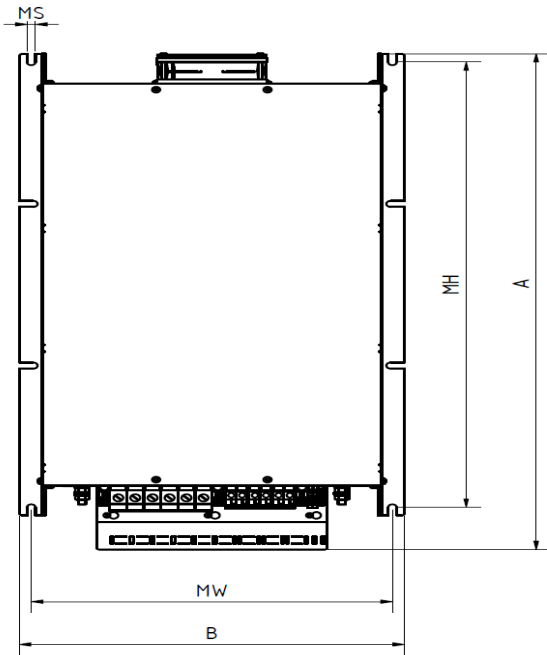
Compact range - All filter components combined in one enclosure							
Revcon Filter RHF-5P	Order code	Input current [A]	max current [A]	Motor size*	Filter encl.	Weight [kg]	Power- loss [W]
RHF-8P 15-690-50-20-C	25001156	15	22,5	15kW	X3	25	194
RHF-8P 18.5-690-50-20-C	25001157	19	28,5	18.5kW	X3	36	203
RHF-8P 22-690-50-20-C	25001158	24	36	22kW	X3	40	212
RHF-8P 30-690-50-20-C	25001159	29	43,5	30kW	X4	42	244
RHF-8P 37-690-50-20-C	25001160	35	52,5	37kW	X4	52	322
RHF-8P 45-690-50-20-C	25001161	46	69	45kW	X5	56	344
RHF-8P 55-690-50-20-C	25001162	58	87	55kW	X5	62	398
RHF-8P 75-690-50-20-C	25001163	70	105	75kW	X6	74	458
RHF-8P 90-690-50-20-C	25001164	84	126	90kW	X6	85	662
RHF-8P 110-690-50-20-C	25001165	101	151,5	110kW	X6	105	713
RHF-8P 132-690-50-20-C	25001166	128	192	132kW	X6	123	834
RHF-8P 200-690-50-20-C	25001169	180	270	200kW	X7	142	880
RHF-8P 220-690-50-20-C	25001170	198	297	220kW	X7	142	892
RHF-8P 250-690-50-20-C	25001171	240	360	250kW	X7	163	1115
RHF-8P 280-690-50-20-C	25001172	260	390	280kW	X8	205	1180
RHF-8P 315-690-50-20-C	25001173	290	435	315kW	X8	205	1370
RHF-8P 355-690-50-20-C	25001174	320	480	355kW	X8	228	1420
RHF-8P 400-690-50-20-C	25001175	362	543	400kW	X8	228	1482
RHF-8P 450-690-50-20-C	25001176	405	607,5	450kW	X8	261	1792

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-8P 500-690-50-00-S	25001177	450	675	500kW	X10	230	135	2010
RHF-8P 560-690-50-00-S	25001178	510	765	560kW	X10	234	155	2135
RHF-8P 630-690-50-00-S	25001179	575	862,5	630kW	X10	289	170	2305
RHF-8P 710-690-50-00-S	25001180	650	975	710kW	X11	337	200	2470
RHF-8P 800-690-50-00-S	25001181	740	1110	800kW	X11	372	210	2922
RHF-8P 900-690-50-00-S	25001182	830	1245	900kW	X11	372	225	3050
RHF-8P 1000-690-50-00-S	25001183	960	1440	1000kW	X11	397	245	3720

\*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.

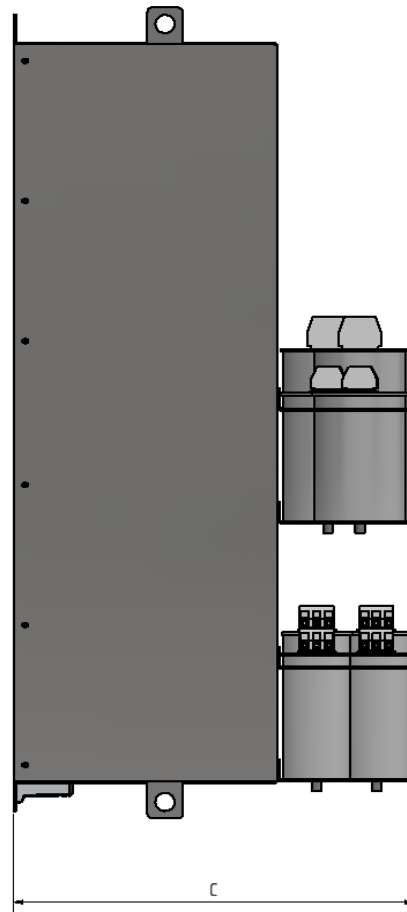
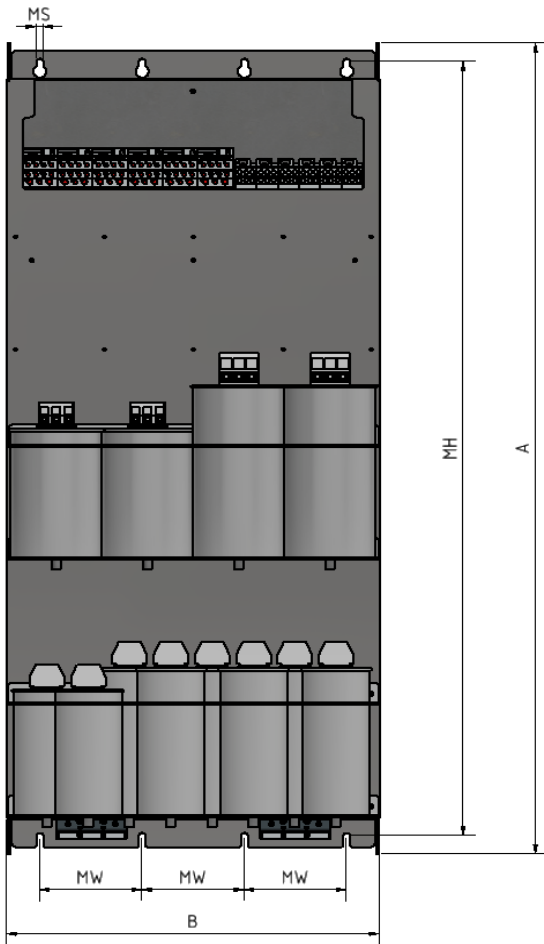
Overview enclosure size compact execution

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-8P 500-690-50-00-S	480	440	250	440	260	430	210	160	14
RHF-8P 560-690-50-00-S	480	440	265	440	260	430	225	160	14
RHF-8P 630-690-50-00-S	480	520	250	44	340	430	210	160	14
RHF-8P 710-690-50-00-S	480	520	280	440	340	430	240	160	14
RHF-8P 800-690-50-00-S	480	520	300	440	340	430	260	160	14
RHF-8P 900-690-50-00-S	600	640	220	350	420	520	155	200	14
RHF-8P 1000-690-50-00-S	600	640	240	370	420	520	175	200	14

