

# OPTIM FR P&P

## Automatic capacitor banks with detuned filters



### Description

The **OPTIM FR P&P** Series capacitor banks with detuned filters have been designed for power compensation purposes in networks with fluctuating load levels, a high content of harmonics and where there is a risk of resonance. Power variations are relatively slow (in seconds) so that the switching operations are carried out with contactors.

### Applications

Its application is mainly focused on the compensation of installations with different loads, which require a regulated compensation, as a result of the power factor variations and where there is a high content of harmonics in the network.

- Fixed detuned filters. For the compensation of transformers and motors (**OPTIM FRF / FRM**)
- Automatic detuned filters, For the monitoring of variable loads (**OPTIM FR P&P**).

### Technical features

<b>Electrical features</b>	Operating voltage	400 V (50 Hz), 230/480 V (60 Hz) (for other voltages, please ask)
	Support voltage	440 V (400 V)
	Capacity tolerance	± 10%
<b>Unit composed of</b>	<b>CLZ</b> capacitor (460 V)	
	Contactors with pre-insertion block and quick discharge resistor	
	Individual protection of each step with fuses with high rupture power ( <b>HRP</b> ). <b>NH-00</b> Series.	
	Two-pole protection circuit-breaker for capacitor bank and regulator operations.	
	Power factor regulator of the <b>computer Max</b> series.	
	Detuned filters tuned at 189 Hz (50 Hz) /227 Hz (60 Hz) for the protection against harmonics present in the network and to avoid the problems of resonance with fifth or higher order harmonics. Built-in thermostat for the disconnection of the step in case of excessive temperatures (90 °C).	
<b>Add-ons</b>	Auto-transformer	
	Manual capacitor bank header switch	
	Automatic capacitor bank header switch	
	Automatic switch + Earth leakage protection at the capacitor bank's header	
<b>Insulation level</b>	Forced ventilation unit + thermostat	
	Polycarbonate plate to protect against direct contacts	
<b>Discharge resistance</b>	3 / 15 kV	
<b>Overload</b>	75 V / 3 minutes	
<b>Overvoltage</b>	1.3 times the rated current permanently	
	10 % 8 over 24 hours	
	15 % up to 15 minutes over 24 hours 20 % up to 5 minutes over 24 hours 30 % up to 1 minutes over 24 hours	
<b>Auxiliary Voltage</b>	230 V	
<b>Ambient conditions</b>	Class D temperature	Daily mean: +45 °C Annual mean: +35 °C Maximum: +50 °C Minimum: -25 °C
	Humidity	80% HR
	Altitude	2 000 m
<b>Construction features</b>	Protection Degree	IP 21
	Colour	RAL 7035 Grey
<b>Assembly conditions</b>	Type of assembly	Vertical
	Ventilation	Natural or forced, depending on the option
	Distance between capacitors	Minimum, 2 cm
<b>Standards</b>	IEC 60831-1, UNE 60831-1, IEC 61921, IEC 60439, IEC 61439	

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### References

kvar		Composition	Switch (A)	Cable section (mm <sup>2</sup> )	Weight (kg)	Dimensions (mm)	Type	Code
440 V	400 V							
			Included					
31,25	26	6,25 + 2 x 12,5	Included	10	82	800 x 1200 x 500	OPTIM FRS-P&P-31,25-440	R54R64
43,75	36	6,25 + 12,5 + 25	Included	25	84	800 x 1200 x 500	OPTIM FRS-P&P-43,75-440	R54R74
62,5	52	12,5 + 2 x 25	Included	35	86	800 x 1200 x 500	OPTIM FRS-P&P-62,5-440	R54R81
90	74	2 x 15 + 2 x 30	Included	70	104	800 x 1200 x 500	OPTIM FRS-P&P-90-440	R54R88
105	87	15 + 3 x 30	Included	70	121	800 x 1200 x 500	OPTIM FRS-P&P-105-440	R54R92
120	99	4 x 30		95	128	800 x 1200 x 500	OPTIM FRS-P&P-120-440	R54R95
150	125	30 + 2 x 60	400	95	355	900 x 1900 x 650	OPTIM FR4-P&P-150-440	R54S24
175	145	25 + 50 + 100	400	120	365	900 x 1900 x 650	OPTIM FR4-P&P-175-440	R54S25
200	165	50 + 50 + 100	400	150	380	900 x 1900 x 650	OPTIM FR4-P&P-200-440	R54S28
250	207	50 + 2 x 100	630	185	390	900 x 1900 x 650	OPTIM FR4-P&P-250-440	R54S29
300	248	50 + 50 + 2 x 100	630	240	410	900 x 1900 x 650	OPTIM FR4-P&P-300-440	R54S30
350	289	50 + 3 x 100	630	2x150	430	900 x 1900 x 650	OPTIM FR4-P&P-350-440	R54S32
400	331	4 x 100	800	2x150	460	900 x 1900 x 650	OPTIM FR4-P&P-400-440	R54S34
400	331	50 + 50 + 3 x 100	800	2x185	550	1200 x 1900 x 650	OPTIM FR6-P&P-400-440	R54T25
450	372	50 + 4 x 100	800	2x185	587	1200 x 1900 x 650	OPTIM FR6-P&P-450-440	R54T30
500	413	5 x 100	1000	2x240	621	1200 x 1900 x 650	OPTIM FR6-P&P-500-440	R54T35
550	455	50 + 5 x 100	1000	2x240	658	1200 x 1900 x 650	OPTIM FR6-P&P-550-440	R54T40
600	496	6 x 100	1250	2x240	685	1200 x 1900 x 650	OPTIM FR6-P&P-600-440	R54T45
600	496	50 + 50 + 5 x 100	1250	2x240	820	1500 x 1900 x 650	OPTIM FR8-P&P-600-440	R54U36
650	537	50 + 6 x 100	1250	3x150	865	1500 x 1900 x 650	OPTIM FR8-P&P-650-440	R54U38
700	579	7 x 100	1250	3x150	910	1500 x 1900 x 650	OPTIM FR8-P&P-700-440	R54U40
750	620	50 + 7 x 100	1600	3x185	955	1500 x 1900 x 650	OPTIM FR8-P&P-750-440	R54U42
800	661	8 x 100	1600	3x185	1000	1500 x 1900 x 650	OPTIM FR8-P&P-800-440	R54U44
800	661	8 x 100	1250 / 400	2x240/ 240	950	2100 x 1900 x 650	OPTIM FR10-P&P-800-440	R54V25
850	702	50 + 8 x 100	1000 / 630	2x240/ 240	987	2100 x 1900 x 650	OPTIM FR10-P&P-850-440	R54V30
900	744	9 x 100	1250 / 630	2x240/ 240	1024	2100 x 1900 x 650	OPTIM FR10-P&P-900-440	R54V35
950	785	50 + 9 x 100	1000 / 800	2x240/ 2x185	1061	2100 x 1900 x 650	OPTIM FR10-P&P-950-440	R54V40
1000	826	10 x 100	1250 / 800	2x240/ 2x185	1098	2100 x 1900 x 650	OPTIM FR10-P&P-1000-440	R54V45
1050	868	50 + 10 x 100	1250 / 800	2x240/ 2x240	1285	2400 x 1900 x 650	OPTIM FR12-P&P-1050-440	R54W50
1100	909	11 x 100	1250 / 1000	2x240/ 2x240	1322	2400 x 1900 x 650	OPTIM FR12-P&P-1100-440	R54W55
1150	950	50 + 11 x 100	2 X 1250	2x240/ 2x240	1359	2400 x 1900 x 650	OPTIM FR12-P&P-1150-440	R54W60
1200	992	12 x 100	2 X 1250	2x240/ 2x240	1389	2400 x 1900 x 650	OPTIM FR12-P&P-1200-440	R54W65

60 Hz

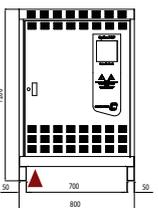
kvar(60 Hz) 230 V	Composition	Switch (A)	Autotransformer aux. power supply	Weight (kg)	Dimensions (mm)	Type	Code
25	2x5+10	3 x 125 A	Not necessary	200	700 x 1000 x 380	OPTIM FRS-25-230-60Hz	R5B500
30	3x10	3 x 125 A	Not necessary	315	800 x 1885 x 650	OPTIM FR4-P&P-30-230-60Hz	R5B501
50	10+2x20	3 x160 A	Not necessary	340	800 x 1885 x 650	OPTIM FR4-P&P-50-230-60Hz	R5B502
70	10+3x20	3 x 250 A	Not necessary	360	800 x 1885 x 650	OPTIM FR4-P&P-70-230-60Hz	R5B503
80	4x20	3 x 400 A	Not necessary	375	800 x 1885 x 650	OPTIM FR4-P&P-80-230-60Hz	R5B504
100	20+2x40	3 x 400 A	Not necessary	407	800 x 1885 x 650	OPTIM FR4-P&P-100-230-60Hz	R5B505
140	20+3x40	3 x 630 A	Not necessary	430	800 x 1885 x 650	OPTIM FR4-P&P-140-230-60Hz	R5B506
160	4x40	3 x 630 A	Not necessary	450	800 x 1885 x 650	OPTIM FR4-P&P-160-230-60Hz	R5B507
180	20+4x40	3 x 630 A	Not necessary	603	1100 x 1885 x 650	OPTIM FR6-P&P-180-230-60Hz	R5B508
200	5x40	3 x 800 A	Not necessary	625	1100 x 1885 x 650	OPTIM FR6-P&P-200-230-60Hz	R5B509
220	20+5x40	3 x800 A	Not necessary	660	1100 x 1885 x 650	OPTIM FR6-P&P-220-230-60Hz	R5B510
240	6x40	3 x 800 A	Not necessary	690	1100 x 1885 x 650	OPTIM FR6-P&P-240-230-60Hz	R5B511
280	7x40	3 x 1000 A	Not necessary	915	1500 x 1885 x 650	OPTIM FR8-P&P-280-230-60Hz	R5B512
320	8x40	3 x 1600 A	Not necessary	1005	1500 x 1885 x 650	OPTIM FR8-P&P-320-230-60Hz	R5B513
360	9x40	3 x 1600 A	Not necessary	1025	1900 x 1885 x 650	OPTIM FR10-P&P-360-230-60Hz	R5B514
400	10x40	3 x 1600 A	Not necessary	1095	1900 x 1885 x 650	OPTIM FR10-P&P-400-230-60Hz	R5B515
440	11x40	3 x 1600 A	Not necessary	1315	2200 x 1885 x 650	OPTIM FR12-P&P-440-230-60Hz	R5B516
480	12x40	3 x 1600 A	Not necessary	1375	2200 x 1885 x 650	OPTIM FR12-P&P-480-230-60Hz	R5B517

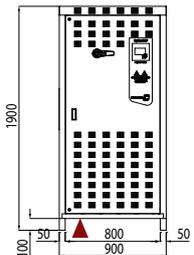
kvar (60 Hz) 480 V	Composition	Switch (A)	Autotransformer aux. power supply	Weight (kg)	Dimensions (mm)	Type	Code
50	2x12,5+25	3 x 125 A	Included	195	700 x 1000 x 380	OPTIM FRS-50-480-60Hz	R5B520
75	3x25	3 x 160 A	Included	300	800 x 1885 x 650	OPTIM FR4-P&P-75-480-60Hz	R5B521
100	2x25+50	3 x200 A	Included	345	800 x 1885 x 650	OPTIM FR4-P&P-100-480-60Hz	R5B522
125	25+2x50	3 x250 A	Included	355	800 x 1885 x 650	OPTIM FR4-P&P-125-480-60Hz	R5B523
150	3x50	3 x 400 A	Included	375	800 x 1885 x 650	OPTIM FR4-P&P-150-480-60Hz	R5B524
175	25+3x50	3 x 400 A	Included	385	800 x 1885 x 650	OPTIM FR4-P&P-175-480-60Hz	R5B525
200	4x50	3 x 400 A	Included	390	800 x 1885 x 650	OPTIM FR4-P&P-200-480-60Hz	R5B526
262,5	37,5+3x75	3 x 630 A	Included	420	800 x 1885 x 650	OPTIM FR4-P&P-262,5-480-60Hz	R5B527
300	4x75	3 x 630 A	Included	445	800 x 1885 x 650	OPTIM FR4-P&P-300-480-60Hz	R5B528
337,5	37,5+4x75	3 x 630 A	Included	590	1100 x 1885 x 650	OPTIM FR6-P&P-337,5-480-60Hz	R5B529
375	5x75	3 x 800 A	Included	625	1100 x 1885 x 650	OPTIM FR6-P&P-375-480-60Hz	R5B530
412,5	37,5+5x75	3 x800 A	Included	660	1100 x 1885 x 650	OPTIM FR6-P&P-412,5-480-60Hz	R5B531
450	6x75	3 x 800 A	Included	690	1100 x 1885 x 650	OPTIM FR6-P&P-450-480-60Hz	R5B532
525	7x75	3 x 1000 A	Included	920	1500 x 1885 x 650	OPTIM FR8-P&P-525-480-60Hz	R5B533
600	8x75	3 x 1600 A	Included	1010	1500 x 1885 x 650	OPTIM FR8-P&P-600-480-60Hz	R5B534
675	9x75	3 x 1600 A	Included	1025	1900 x 1885 x 650	OPTIM FR10-P&P-675-480-60Hz	R5B535
750	10x75	3 x 1600 A	Included	1095	1900 x 1885 x 650	OPTIM FR10-P&P-750-480-60Hz	R5B536
825	11x75	3 x 1600 A	Included	1325	2200 x 1885 x 650	OPTIM FR12-P&P-825-480-60Hz	R5B537
900	12x75	3 x 1600 A	Included	1385	2200 x 1885 x 650	OPTIM FR12-P&P-900-480-60Hz	R5B538

Dimensions

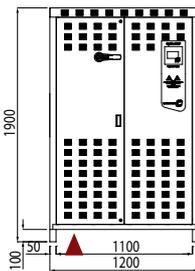
OPTIM FRS P&P



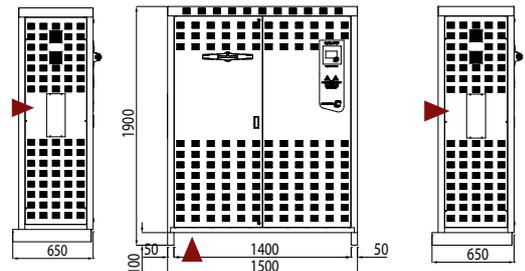
OPTIM FR4 P&P



OPTIM FR6 P&P



OPTIM FR8 P&P



OPTIM FR10 P&P = OPTIM FR6 P&P + OPTIM FR4 P&P    OPTIM FR12 P&P = 2 x OPTIM FR6 P&P



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