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## Description

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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.

## Application

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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**).



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## Specifications

### Electrical characteristics

Losses (W)	< 0,5 W/kvar
Discharge resistance	75 V / 3 min
Surge	10 % 8 h over 24 h 15 % up to 15 min over 24 hours 20 % up to 5 min over 24 hours 30 % up to 1 min over 24 hours
Manoeuvre voltage	Contactors: 230 V
Reinforcement voltage	440 V
Tolerance C	-5% / 10 %
Voltage	400 V (50 Hz) (other voltages on request)

### Mechanical characteristics

Size (mm) width x height x depth	800 x 1200 x 500 (mm)
Envelope	Sheet metal RAL 7035 Grey / RAL 3005 Garnet
Fastening	Vertical / Self-supporting
Ventilation	Natural or forced according to options
Weight (kg)	143

### Environmental characteristics

Protection class	IP 21
Relative humidity (without condensation)	80%
Working temperature	T° class D: Daily average: 45 °C, annual average: 35 °C, maximum: 55 °C, minimum: -50 °C

### Current measurement circuit

Permanent overload	1,3 In
Transformation ratio	In / 5A

### Standards

Electrical safety, Maximum height (m)	2000 m
Standards	IEC 60831-1, UNE 60831-1, IEC 61921, IEC 60439, IEC 61439

### Features / performance

Components	CLZ capacitor (460 V) Contactors with pre-insertion block and quick discharge resistor Two-pole protection circuit-breaker for capacitor bank and regulator operations. Power factor regulator of the computer Max 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). Auto-transformer.
Optional	Manual capacitor bank header switch Automatic capacitor bank header switch Automatic switch + Earth leakage protection at the capacitor bank's header Forced ventilation unit + thermostat Polycarbonate plate to protect against direct contacts



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**Protection**

Element	Individual protection of each step with fuses with high rupture power (HRP). NH-00 Series.
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**OPTIM FR P&P**

Automatic capacitor banks with detuned filters (contactors switching), type P=7% (fres=189 Hz), 50 Hz.

CODE	TYPE	kvar (400 V)	kvar (440 V)	Nr steps	Cable section (mm2)
<b>OPTIM FRS-P&amp;P, automatic capacitor banks with computer C Wi-Fi regulator</b>					
R54R64.	OPTIM FRS-P&P-31,25-440	26	31,25	3	10
R54R74.	OPTIM FRS-P&P-43,75-440	36	43,75	3	25
R54R81.	OPTIM FRS-P&P-62,5-440	52	62,5	3	35
R54R88.	OPTIM FRS-P&P-90-440	74	90	4	70
R54R92.	OPTIM FRS-P&P-105-440	87	105	4	70
R54R95.	OPTIM FRS-P&P-120-440	99	120	4	95
<b>OPTIM FR4-P&amp;P, automatic capacitor banks with computer C Wi-Fi regulator</b>					
R54S24.	OPTIM FR4-P&P-150-440	125	150	3	95
R54S25.	OPTIM FR4-P&P-175-440	145	175	3	120
R54S28.	OPTIM FR4-P&P-200-440	165	200	3	150
R54S29.	OPTIM FR4-P&P-250-440	207	250	3	185
R54S30.	OPTIM FR4-P&P-300-440	248	300	4	240
R54S32.	OPTIM FR4-P&P-350-440	289	350	4	2x150
R54S34.	OPTIM FR4-P&P-400-440	331	400	4	2x150
<b>OPTIM FR6-P&amp;P, automatic capacitor banks with computer C Wi-Fi regulator</b>					
R54T25.	OPTIM FR6-P&P-400-440	331	400	5	2x185
R54T30.	OPTIM FR6-P&P-450-440	372	450	5	2x185
R54T35.	OPTIM FR6-P&P-500-440	413	500	5	2x240
R54T40.	OPTIM FR6-P&P-550-440	455	550	6	2x240
R54T45.	OPTIM FR6-P&P-600-440	496	600	6	2x240
<b>OPTIM FR8-P&amp;P, automatic capacitor banks with computer C Wi-Fi regulator</b>					
R54U36.	OPTIM FR8-P&P-600-440	496	600	7	2x240
R54U38.	OPTIM FR8-P&P-650-440	537	650	7	3x150
R54U40.	OPTIM FR8-P&P-700-440	579	700	7	3x150
R54U42.	OPTIM FR8-P&P-750-440	620	750	8	3x185
R54U44.	OPTIM FR8-P&P-800-440	661	800	8	3x185
<b>OPTIM FR10-P&amp;P, automatic capacitor banks with computer C Wi-Fi regulator</b>					
R54V25.	OPTIM FR10-P&P-800-440	661	800	8	2x240/ 240
R54V30.	OPTIM FR10-P&P-850-440	702	850	9	2x240/ 240
R54V35.	OPTIM FR10-P&P-900-440	744	900	9	2x240/ 240
R54V40.	OPTIM FR10-P&P-950-440	785	950	10	2x240/ 2x185
R54V45.	OPTIM FR10-P&P-1000-440	826	1000	10	2x240/ 2x185



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CODE	TYPE	kvar (400 V)	kvar (440 V)	Nr steps	Cable section (mm <sup>2</sup> )
<b>OPTIM FR12-P&amp;P, automatic capacitor banks with computer C Wi-Fi regulator</b>					
R54W50.	OPTIM FR12-P&P-1050-440	868	1050	11	2x240/ 2x240
R54W55.	OPTIM FR12-P&P-1100-440	909	1100	11	2x240/ 2x240
R54W60.	OPTIM FR12-P&P-1150-440	950	1150	12	2x240/ 2x240
R54W65.	OPTIM FR12-P&P-1200-440	992	1200	12	2x240/ 2x240

Cable cross-section for installations with  $U_n = 400$  V. The installation company must ensure compliance with the low voltage directive at all times, in accordance with the characteristics of each installation and type of cable. All batteries with computer C Wi-Fi regulator come with charge VAR system



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## Dimensions



## Connections

