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Code:

## 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**).



Code:

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 | 1200 x 1900 x 650 (mm)                      |
| Envelope                         | Sheet metal RAL 7035 Grey / RAL 3005 Garnet |
| Fastening                        | Vertical / Self-supporting                  |
| Ventilation                      | Natural or forced according to options      |
| Weight (kg)                      | 440   |

Environmental characteristics

|  |  |
|--|--|
| Protection class                         | IP 21  |
| Relative humidity (without condensation) | 80%  |
| Working temperature                      | Tª 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 C Wi-Fi 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   |



Code:

Protection

|         |  |
|---------|--|
| Element | Individual protection of each step with fuses with high rupture power (HRP). NH-00 Series. |
|---------|--|

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) |
|---|-------------------------|--------------|--------------|----------|---------------------|
| OPTIM FRS-P&P, automatic capacitor banks with computer C Wi-Fi regulator  |                         |              |              |          |                     |
| 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                  |
| OPTIM FR4-P&P, automatic capacitor banks with computer C Wi-Fi regulator  |                         |              |              |          |                     |
| 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               |
| OPTIM FR6-P&P, automatic capacitor banks with computer C Wi-Fi regulator  |                         |              |              |          |                     |
| 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               |
| OPTIM FR8-P&P, automatic capacitor banks with computer C Wi-Fi regulator  |                         |              |              |          |                     |
| 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               |
| OPTIM FR10-P&P, automatic capacitor banks with computer C Wi-Fi regulator |                         |              |              |          |                     |
| 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       |



Code:

| CODE  | TYPE                    | kvar (400 V) | kvar (440 V) | Nr steps | Cable section (mm2) |
|---|-------------------------|--------------|--------------|----------|---------------------|
| OPTIM FR12-P&P, automatic capacitor banks with computer C Wi-Fi regulator |                         |              |              |          |                     |
| 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 Un= 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



Code:

## Dimensions



## Connections

