

Power factor solutions for electric switchboards

DO IT YOURSELF



Your global partner



With a successful trajectory of over 35 years in the field of power factor compensation and harmonics filtering, **CIRCUTOR offers its most complete range** of elements for the assembly, on behalf of the panelbuilder, of any power factor compensation equipment, from the most simple types to those requiring maximum complexity.

Being a firm principle since the beginning of **CIRCUTOR's** trajectory, absolutely all the elements that may be supplied for the assembly of capacitor banks are regulated by the most demanding quality standards so to assure the total satisfaction on behalf of the end customer, and its complete assurance of obtaining an end product adjusted to the desired quality requirements.

You can count with our help and support in solving any query or doubt that you may have at the moment of assembling the power factor compensation equipment. Proximity to our customers is one of the main values in our organization and we have always proven it so.



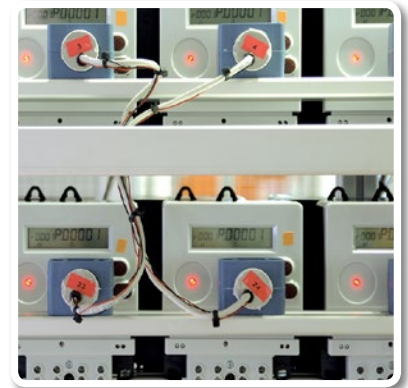
Testing Laboratory and Type Test Certification

Official metrological verification laboratory

CIRCUTOR has its own laboratories to perform electromagnetic compatibility test (EMC/EMI), calibration test and an official metrological verification laboratory to guarantee the quality of all its products and make sure they comply with the highest quality standards.

Our product range have type test certification in agreement IEC standards. Available under request:

- LV Cylindrical Capacitors
- LV Prismatic Capacitors
- LV Capacitor Banks
- MV Capacitors
- MV Reactors



Innovation with new products

Innovating with new electrical energy efficiency solutions

CIRCUTOR has a commitment to innovation, in order to bring out products with the latest technology and the best added value.

Certifications

CIRCUTOR manufactures its products in compliance with the highest quality standards, respecting the environment and protecting the health of its employees. To this end, is has been certified with the following:

EN ISO 9001, Quality

EN ISO 14001, Environment

OHSAS 18001, Occupational Health and Safety

(RoHS) QC 080000, Management of dangerous substance processes

ISO 50001, Energy management system





Patented
Design

Innovation within your reach

The application of new technologies and the use of printed circuit boards to manufacture prismatic capacitors have allowed **CIRCUTOR** to reinvent the classic **CS** capacitor, manufactured for over 35 years. The spirit of innovation and proprietary technology used during the design of the new **CSB** capacitor have increased the lifespan of traditional prismatic capacitors by over 60%. This new series has improved all aspects of the previous models, offering our customers a longer-lasting, safer and more profitable capacitor.

CIRCUTOR Guarantees

Durability guarantee

- Top quality polypropylene with a European origin guarantee.
- Dielectric thickness designed to offer a greater capacitor durability.

Continuity of the service guarantee

- Self-regeneration technology that guarantees the minimum loss of the capacity.
- Internal individual fuse that guarantees the disconnection exclusively of the damaged element

Safety guarantees

- Over-pressure disconnection, isolating the damaged element.
- Anti-deflagration system, by means of compacting coils with inert and fireproof materials.

+60%
lifespan

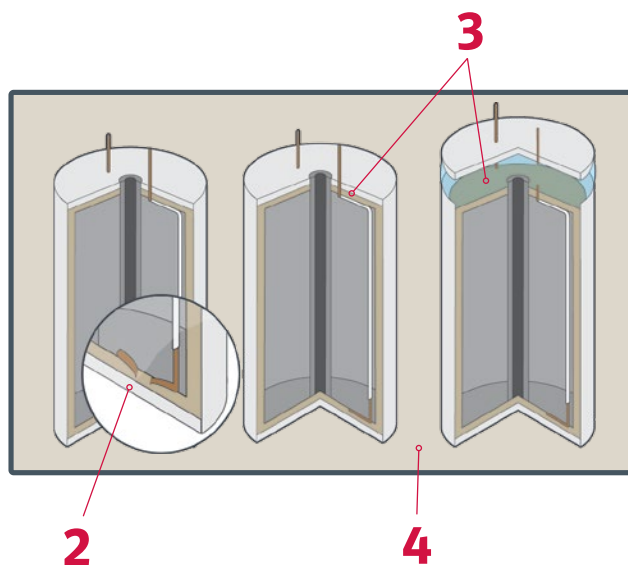
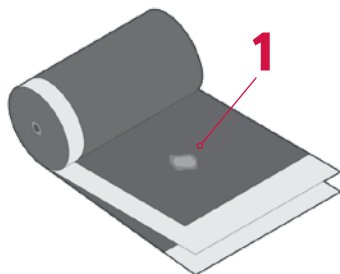
“Through constant innovation we are able to continue improving our products, making them safer, more durable and more cost-effective for our customers.”



The use of the PCB collector plate guarantees the minimum losses.

4 levels of protection

- 1 Self-regeneration**
Minimum capacity losses (exclusive use of European polypropylene)
- 2 Individual internal fuse**
Disconnection, exclusively of the damaged elements
- 3 Over-pressure system**
Evacuation of gases
- 4 Inert and fireproof material**
Anti-deflagration system



Technical features

Overload	1.3 times the rated current
Overvoltage	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 minute over 24 hours
Insulation level	3 / 15 kV
Power ratings	5 kvar to 120 kvar
Voltage	230 V to 1100 V
Power tolerance	-5 ... +15%
Discharge resistance	75 V/3 min
Frequency	50 ... 60 Hz
Losses:	
Dielectric	< 0.2 W / kvar
Total	< 0.5 W / kvar
Protections	Dielectric regeneration, Internal fuse, Over-pressure system, Vermiculite
Construction features	
Enclosure	Treated and painted steel, colour RAL 3005
Terminals:	
Power	M10
Earth	M6
Torque value	15 Nm
Protection degree	IP 42 with terminal cover
Environmental conditions	
Class D temperature:	
Daily average	45 °C
Annual average	35 °C
Maximum	55 °C
Minimum	-40 °C
Relative humidity	80%
Maximum altitude	2000 m
Assembly conditions	
Type of assembly	Vertical / Horizontal
Ventilation	Natural or forced, depending on the design of the cabinet
Distance between capacitors	Minimum: 4 cm
Standards	IEC 60831-1, UNE - EN 60831-1



CSB references

Huge stock for immediate delivery.

Three-phase power capacitors for LV,
CSB Series - 50 Hz / 60 Hz

230 V

Type	Code	kvar (50 Hz)	kvar (60 Hz)	Weight (kg)	Dim. (mm) (w x h x d)	Elements/Composition (C _n (uF) + C _n (uF)) Delta connection
CSB-23/10	R2321C	10	12,5	3,3	360 x 330 x 120	6 ELEB10100PCA
CSB-23/12,5	R2321D	12,5	15	3,3	360 x 330 x 120	3 ELEB10150PCA + 3 ELEB10100PCA
CSB-23/15	R2321E	15	17,5	3,3	360 x 330 x 120	6 ELEB10150PCA
CSB-23/20	R2321F	20	25	4,2	360 x 330 x 120	6 ELEB10150PCA + 3 ELEB10100PCA
CSB-23/25	R2321G	25	30	5,0	360 x 330 x 120	6 ELEB10150PCA + 6 ELEB10100PCA
CSB-23/30	R2321H	30	35	5,0	360 x 330 x 120	12 ELEB10150PCA
CSB-23/40	R2321J	40	50	7,3	360 x 520 x 120	12 ELEB10150PCA + 6 ELEB10100PCA
CSB-23/50	R2321K	50	60	8,2	360 x 520 x 120	18 ELEB10150PCA + 3 ELEB10100PCA

400 V

Type	Code	kvar (50 Hz)	kvar (60 Hz)	Weight (kg)	Dim. (mm) (w x h x d)	Elements/Composition (C _n (uF) + C _n (uF)) Delta connection
CSB-40/15	R2323E	15	17,5	3,3	360 x 330 x 120	6 ELEB14050PCA
CSB-40/20	R2323F	20	25	3,3	360 x 330 x 120	6 ELEB14066PCA
CSB-40/25	R2323G	25	30	3,3	360 x 330 x 120	6 ELEB14082PCA
CSB-40/30	R2323H	30	35	4,2	360 x 330 x 120	6 ELEB14082PCA + 3 ELEB14035PCA
CSB-40/40	R2323J	40	50	5,0	360 x 330 x 120	9 ELEB14082PCA + 3 ELEB14027PCA
CSB-40/50	R2323K	50	60	5,0	360 x 330 x 120	12 ELEB14082PCA
CSB-40/60	R2323L	60	70	6,6	360 x 520 x 120	12 ELEB14082PCA + 3 ELEB14069PCA
CSB-40/80	R2323Q	80	95	8,2	360 x 520 x 120	18 ELEB14082PCA + 3 ELEB14035PCA
CSB-40/100	R2323R	100	120	9,0	360 x 520 x 120	24 ELEB14082PCA

440 V

Type	Code	kvar (50 Hz)	kvar (60 Hz)	Weight (kg)	Dim. (mm) (w x h x d)	Elements/Composition (C _n (uF) + C _n (uF)) Delta connection
CSB-44/15	R2324E	15	17,5	2,6	360 x 330 x 120	3 ELEB14082PAC
CSB-44/20	R2324F	20	25	3,3	360 x 330 x 120	3 ELEB14082PAC + 3 ELEB14027PAC
CSB-44/25	R2324G	25	30	3,3	360 x 330 x 120	6 ELEB14069PAC
CSB-44/30	R2324H	30	35	3,5	360 x 330 x 120	6 ELEB14082PAC
CSB-44/40	R2324J	40	50	4,2	360 x 330 x 120	3 ELEB14082PAC + 6 ELEB14069PAC
CSB-44/50	R2324K	50	60	5,0	360 x 330 x 120	12 ELEB14069PAC
CSB-44/60	R2324L	60	70	5,0	360 x 330 x 120	12 ELEB14082PAC
CSB-44/80	R2324Q	80	95	7,3	360 x 520 x 120	15 ELEB14082PAC + 3 ELEB14035PAC
CSB-44/100	R2324R	100	120	8,2	360 x 520 x 120	18 ELEB14082PAC + 3 ELEB14055PAC

480 V

Type	Code	kvar (50 Hz)	kvar (60 Hz)	Weight (kg)	Dim. (mm) (w x h x d)	Elements/Composition (C _n (uF) + C _n (uF)) Delta connection
CSB-48/10	R277AC	8	10	2,8	360 x 330 x 120	3 ELEB20038PCA
CSB-48/15	R277AE	12,5	15	3,5	360 x 330 x 120	3 ELEB20038PCA + 3 ELEB20019PCA
CSB-48/20	R277AF	16,7	20	3,5	360 x 330 x 120	6 ELEB20038PCA
CSB-48/25	R277AG	20,8	25	4,2	360 x 330 x 120	6 ELEB20038PCA + 3 ELEB20019PCA
CSB-48/30	R277AH	25	30	4,2	360 x 330 x 120	9 ELEB20038PCA
CSB-48/40	R277AJ	33,3	40	5,0	360 x 330 x 120	12 ELEB20038PCA
CSB-48/50	R277AK	41,7	50	6,8	360 x 520 x 120	15 ELEB20038PCA
CSB-48/60	R277AL	50	60	7,5	360 x 520 x 120	18 ELEB20038PCA

CSB/CFB references

Huge stock for immediate delivery.

Three-phase power capacitors for LV,
CSB SerieS - 50 Hz / 60 Hz



460 V

Type	Code	kvar (50 Hz)	kvar (60 Hz)	Weight (kg)	Dim. (mm) (w x h x d)	Elements/Composition (C _n (uF) + C _n (uF)) Delta connection
CFB-46/6	R2415A	6	7,2	3,3	360 x 330 x 120	3 ELEB20031PCA
CFB-46/7,75	R2415B	7,75	9,3	3,3	360 x 330 x 120	3 ELEB20038PCA
CFB-46/12,5	R2415D	12,5	15	3,9	360 x 330 x 120	3 ELEB20038PCA + 3 ELEB18025PCA
CFB-46/15	R2415E	15	18	3,9	360 x 330 x 120	3 ELEB18050PCA + 3 ELEB18025PCA
CFB-46/19	R2415F	15	18	3,9	360 x 330 x 120	6 ELEB20038PCA
CFB-46/25	R2415G	25	30	4,6	360 x 330 x 120	6 ELEB20038PCA + 3 ELEB18025PCA
CFB-46/30	R2415H	30	36	4,6	360 x 330 x 120	9 ELEB18050PCA
CFB-46/37	R2415J	37	44,4	6,2	360 x 330 x 120	9 ELEB18050PCA + 3 ELEB20038PCA
CFB-46/50	R2415K	50	60	7	360 x 520 x 120	15 ELEB18050PCA
CFB-46/62	R2415L	62	74,4	9,2	360 x 520 x 120	18 ELEB18050PCA + 3 ELEB20019PCA
CFB-46/74	R2415P	74	88,8	9,9	360 x 520 x 120	21 ELEB18050PCA + 3 ELEB18025PCA
CFB-46/100	R2415R	100	120	11,3	360 x 610 x 120	30 ELEB18050PCA

525 V

Type	Code	kvar (50 Hz)	kvar (60 Hz)	Weight (kg)	Dim. (mm) (w x h x d)	Elements/Composition (C _n (uF) + C _n (uF)) Delta connection
CSB-52/10	R2326C	9,11	10,93	2,6	360 x 330 x 120	3 ELEB20038PCA
CSB-52/15	R2326E	13,67	16,4	3,3	360 x 330 x 120	3 ELEB20038PCA + 3 ELEB20019PCA
CSB-52/20	R2326F	18,22	21,87	3,3	360 x 330 x 120	6 ELEB20038PCA
CSB-52/25	R2326G	22,78	27,33	4,2	360 x 330 x 120	6 ELEB20038PCA + 3 ELEB20019PCA
CSB-52/30	R2326H	27,33	32,8	4,2	360 x 330 x 120	9 ELEB20038PCA
CSB-52/40	R2326J	36,45	43,74	5,0	360 x 330 x 120	12 ELEB20038PCA
CSB-52/50	R2326K	45,56	54,67	6,6	360 x 520 x 120	15 ELEB20038PCA
CSB-52/60	R2326L	54,67	65,6	7,3	360 x 520 x 120	18 ELEB20038PCA
CSB-52/70	R2326M	63,78	76,54	8,2	360 x 520 x 120	21 ELEB20038PCA

690 V

Type	Code	kvar (50 Hz)	kvar (60 Hz)	Weight (kg)	Dim. (mm) (w x h x d)	Elements/Composition (C _n (uF) + C _n (uF)) Star connection
CSB-69/10	R232BC	10	12,5	2,6	360 x 330 x 120	3 ELEB14066PCA
CSB-69/15	R232BE	15	17,5	3,3	360 x 330 x 120	6 ELEB14050PCA
CSB-69/20	R232BF	20	25	3,3	360 x 330 x 120	6 ELEB14066PCA
CSB-69/25	R232BG	25	30	3,3	360 x 330 x 120	6 ELEB14082PCA
CSB-69/30	R232BH	30	35	4,2	360 x 330 x 120	6 ELEB14082PCA + 3 ELEB14035PCA
CSB-69/40	R232BJ	40	50	5,0	360 x 330 x 120	9 ELEB14082PCA + 3 ELEB14027PCA
CSB-69/50	R232BK	50	60	5,0	360 x 330 x 120	12 ELEB14082PCA
CSB-69/60	R232BL	60	70	6,6	360 x 520 x 120	12 ELEB14082PCA + 3 ELEB14069PCA
CSB-69/80	R232BQ	80	95	8,2	360 x 520 x 120	18 ELEB14082PCA + 3 ELEB14035PCA
CSB-69/100	R232BR	100	-	9,0	360 x 520 x 120	24 ELEB14082PCA

CSB elements references



Coils

Type	Code	uF	Use voltage
ELEB10100PCA	R213A8	100	230
ELEB10150PCA	R213AE	150	230
ELEB14027PCA	R21396	27,4	400/440/690*
ELEB14035PCA	R2139A	34,5	400/440/690*
ELEB14055PCA	R2139D	55	400/440/690*
ELEB14066PCA	R2139L	66,6	400/440/690*

Coils

Type	Code	uF	Use voltage
ELEB14069PCA	R2139H	69	400/440/690*
ELEB14082PCA	R2139R	82	400/440/690*
ELEB18025PCA	R2137S	25	460
ELEB18050PCA	R2137P	50	460
ELEB20019PCA	R2138D	19,2	480/525/550
ELEB20038PCA	R2138G	38,4	480/525/550

*Star connection



Type Test

CERTIFICATION



The **CLZ** tubular capacitor range is composed of capacitors with a tubular casing, of the dry-type, covering a wide range of power and voltage ratings, at 50 and 60 Hz. The design, manufacturing and testing processes of **CLZ** tubular capacitors guarantee the production of top quality and long lasting capacitors.

Type Test Certification

Refrigeration technology

The **CLZ** capacitors up to 25 kvar offer a new refrigeration technology by means of nitrogen gas, being a refrigerating system of high benefits, inert and nonflammable.

Low size and high refrigeration

85, 110 and 136 mm diameters. Capacitors low height aluminium enclosure.

Faston type terminals

For **CLZ-FPT** capacitors with rated power up to 6,25 kvar.

Multi-marking labels

Use of characteristic plate with powers equivalence at 220/230/240 V, 380/400/415 V, 400/440 V, 460 V, 480/525/550 V (50 or 60 Hz).

IP20 Protection degree

The use of a covered connection terminal makes the plastic cover unnecessary for **CLZ-FP** types.

IP54 Optional protection

Use of the new plastic terminal cover **TCLZ-FP**.

Technical features

Overcurrent	1.3 times the rated current permanently
Overvoltage	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 minute over 24 hours
Insulation level	3 / 15 kV
Tolerance	-5...+15 %
Discharge resistance	75 V / 3 minutes
Frequency	50 or 60 Hz
Losses:	CLZ system levels:
Dielectric	< 0.2 W / kvar
Total	< 0.5 W / kvar
Protections	Dielectric regeneration Expansion system
Assembly conditions	
Type of assembly	Vertical / Horizontal
Ventilation	Natural or forced, depending on the cabinet design
Distance between capacitors	Minimum, 2 cm

Ambient conditions		
Class D temperature:	Daily mean	45 °C
	Annual mean	35 °C
	Maximum	55 °C
	Minimum	-40 °C
Humidity	95 % RH	
Altitude	4,000 m	
Construction features		
Enclosure	Aluminium	
Power terminals	M10	
Fixing screws	M12	
Degree of protection	IP 00 for CLZ-FPT and CLZ-FP >30 kvar IP 20 for CLZ-FP ≤ 30 kvar IP 54 for CLZ-FP with terminal cover	
Standards		
IEC 60831-1, UNE 20827, UNE 20010, BS 1650, VDE 560		

CLZ references

Huge stock for immediate delivery.

Three-Phase Power Capacitor,
CLZ-FP Series (Tubular).



CLZ-FP 400 V, 50 Hz / 60 Hz

Type	Code	400 V kvar (50 Hz)	440 V kvar (50 Hz)	400V kvar (60 Hz)	Dimensions mm (d x h)	Weight (kg)	No. Cover
Three-phase power capacitor, faston terminal, clz-fpt series (tubular). 50 Hz / 60 Hz							
CLZ-FPT-44/2,5	R20574	2	2,5	2,5	50 x 175	0,3	6
CLZ-FPT-44/3	R20575	2,5	3	3	50 x 175	0,3	6
CLZ-FPT-44/5	R20578	4	5	5	65 x 175	0,5	5
CLZ-FPT-44/6,25	R20579	5	6,25	6	75 x 175	0,7	4

Three-phase power capacitor, terminal connection, clz-fp series (tubular). 50 Hz / 60 Hz

Type	Code	400 V kvar (50 Hz)	440 V kvar (50 Hz)	400V kvar (60 Hz)	Dimensions mm (d x h)	Weight (kg)	No. Cover
CLZ-FP-44/7,5	R2057P	6,25	7,5	7,5	85 x 175	1,0	1
CLZ-FP-44/10	R2057C	8	10	10	85 x 245	1,0	1
CLZ-FP-44/12,5	R2057D	10	12,5	12	85 x 245	1,2	1
CLZ-FP-44/15	R2057E	12,5	15	15	85 x 245	1,3	1
CLZ-FP-44/18,2	R2057M	15	18,2	18	110 x 245	1,6	2
CLZ-FP-44/20	R2057F	16	20	20	110 x 245	1,9	2
CLZ-FP-44/25	R2057G	20	25	-	110 x 245	2,0	2
CLZ-FP-44/30	R2057H	25	30	-	110 x 245	2,1	3
CLZ-FP-44/40	R2057J	33	40	-	136 x 261	4,2	-
CLZ-FP-44/50	R2057K	41,3	50	-	136 x 261	4,2	-

CLZ-FP - 230 V, 50 Hz / 60 Hz

Type	Code	kvar (50 Hz) 220 V	kvar (50 Hz) 230 V	kvar (50 Hz) 240 V	kvar (60 Hz) 220 V	kvar (60 Hz) 230 V	Dimensions mm (d x h)	Weight (kg)	No. Cover
CLZ-FP-23/2,5	R20514	2,3	2,5	2,7	2,7	3	85 x 175	1,2	1
CLZ-FP-23/4	R20517	3,7	4	4,4	4,4	4,8	85 x 245	1,6	1
CLZ-FP-23/5	R20518	4,6	5	5,4	5,5	6	85 x 245	1,6	1
CLZ-FP-23/7,5	R2051A	6,8	7,5	8,2	8,2	9	110 x 245	2,6	2
CLZ-FP-23/10	R2051C	9,1	10	10,9	11	12	110 x 245	2,6	2
CLZ-FP-23/12,5	R2051D	11,4	12,5	13,6	-	-	136 x 220	3,3	-
CLZ-FP-23/15	R2051E	13,7	23,8	-	-	-	136 x 220	3,3	-

CLZ-FP - 460 V, 50 Hz / 60 Hz

Type	Code	kvar (50 Hz) 460 V	kvar (60 Hz) 440 V	kvar (60 Hz) 460 V	For reactor	Dimensions mm (d x h)	Weight (kg)	No. Cover
CLZ-FP-46/6,25	R20589	6	6,6	7,2	RX-5-400-7%	85 x 175	0,9	1
CLZ-FP-46/12,5	R2058D	12,5	13,7	15	RX-10-400-7%	85 x 245	1,2	1
CLZ-FP-46/15	R2058E	15	16,5	18	RX-12,5-400-7%	85 x 245	1,4	1
CLZ-FP-46/19	R2058L	19	20,9	22,8	RX-15-400-7%	110 x 245	1,9	2
CLZ-FP-46/25	R2058G	25	27,4	30	RBX-20-400-7%	110 x 245	2,1	2
CLZ-FP-46/30	R2058H	30	32,9	36,6	RBX-25-400-7%	136 x 220	3,0	-

CLZ-FP - 480 V, 50 Hz

Type	Code	kvar (50 Hz) 480 V	For reactor	Dimensions mm (d x h)	Weight (kg)	No. Cover
CLZ-FP-48/14,1	R2052K	14,1	RX-12,5-440-5,6%	85 x 245	0,9	1
CLZ-FP-48/28,2	R2055M	28,2	RX-25-440-5,6%	110 x 245	2,1	2

CLZ-FP - 525 V, 50 Hz / 60 Hz

Type	Code	kvar (50 Hz) 480 V	kvar (50 Hz) 525 V	kvar (50 Hz) 550 V	kvar (60 Hz) 480 V	kvar (60 Hz) 525 V	Dimensions mm (d x h)	Weight (kg)	No. Cover
CLZ-FP-52/2	R20553	1,7	2	2,2	2	2,4	85 x 175	0,6	1
CLZ-FP-52/2,5	R20554	2,1	2,5	2,7	2,5	3	85 x 175	0,6	1
CLZ-FP-52/3	R20555	2,5	3	3,3	3	3,6	85 x 175	0,7	1
CLZ-FP-52/4	R20557	3,3	4	4,4	4	4,8	85 x 175	0,7	1
CLZ-FP-52/5	R20558	4,2	5	5,5	5	6	85 x 175	0,8	1
CLZ-FP-52/6,25	R20559	5,2	6,25	6,8	6,2	7,5	85 x 175	0,8	1
CLZ-FP-52/7,5	R2055A	6,3	7,5	8,2	7,5	9	85 x 245	0,9	1
CLZ-FP-52/8	R2055B	6,7	8	8,7	8	9,6	85 x 245	0,9	1
CLZ-FP-52/10	R2055C	8,4	10	11	10	12	85 x 245	1,0	1
CLZ-FP-52/12,5	R2055D	10,4	12,5	13,7	12,5	15	85 x 245	1,1	1
CLZ-FP-52/15	R2055E	12,5	15	16,5	15	18	85 x 245	1,3	1
CLZ-FP-52/20	R2055F	16,7	20	22	20,1	24	110 x 245	1,9	2
CLZ-FP-52/25	R2055G	21,2	25	27,5	25	30	110 x 245	2,1	2
CLZ-FP-52/30	R2055H	25,4	30	33	30	36	136 x 220	3,3	-
CLZ-FP-52/40	R2055J	33,9	40	44	40	48	136 x 261	4,0	-
CLZ-FP-52/50	R2055K	42,4	50	55	50	60	136 x 355	5,5	-

CLZ-FP - 690 V, 50 Hz / 60 Hz

Type	Code	kvar (50 Hz)	kvar (60 Hz)	Dimensions mm (d x h)	Weight (kg)	No. Cover
CLZ-FP-69/5	R20598	5	6	85 x 245	0,8	1
CLZ-FP-69/10	R2059C	10	12	85 x 245	1,0	1
CLZ-FP-69/12,5	R2059D	12,5	15	85 x 245	1,2	1
CLZ-FP-69/15	R2059E	15	-	85 x 245	1,3	1
CLZ-FP-69/20	R2059F	20	-	110 x 245	1,9	2
CLZ-FP-69/25	R2059G	25	-	110 x 245	2,1	2
CLZ-FP-69/50	R2059K	50	-	136 x 355	5,5	-

computer

max



Top features, accuracy and technology at the best price

User-friendly and fully intuitive installation

computer max provides the “phase selection” function, that allows the user choosing the power line phase where the measuring current transformer (C.T.) has been placed in. This option eliminates the difficulty in placing the C.T. in a specific phase of the power line.



computer

smart



PF correction, measuring and protection at your reach

Built-in power analyzer

computer smart has a built in power analyzer allowing the measurement of main electrical parameters (voltage, current, harmonics, active and reactive power, apparent power, etc.). The device gives a detailed information on both, voltage and current harmonic components. **computer smart** measures also ambient temperature and keeps a record of maximum and minimum values of all measured parameters. All these values can be read on the device display or can be sent and displayed in a master PC, equipped with **PowerStudio Scada** software by RS-485 communications channel.



computer

plus



Full control and maximum innovation

Measurement

computer plus regulators include a three-phase network analyzer, enabling instantaneous display of all the network electrical parameters (voltage, current, active power, reactive power, energies, harmonics, etc.). The three-phase network analyzer shows the instantaneous values, of electrical parameters and the recording of maximum values.

Leakage control

computer plus measures the leakage current in real time and step by step, and disconnects only the damaged capacitor.

Measurement of basic electrical parameters

computer max shows by display: $\cos \phi$, voltage, current, THD(I) and, besides, records in memory maximum values for voltage and current.



Voltage measurement



Current measurement



THD(I) measurement



Current maximum value



Voltage maximum value



Built-in alarms

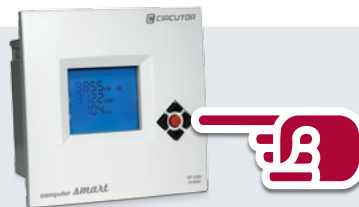
computer max automatically assigns the alarm conditions to the last output relay (relay 6 or 12), provided that this is not used for switching a capacitor step.

Indication by display or through relay output of following alarm conditions:

- Compensation failure
- Over-compensation
- Over-voltage
- Over-current
- C.T. not connected or open
- Line current below measurable value

Plug&Play function

computer smart is a friendly programmable device. The setup, adapting the PF regulator to the installation site, is fully automatic by simply selecting the plug&play menu option and pushing a key.



Built-in leakage control

The **smart** regulators have a built in circuit to measure the earth leakage current through a **WGC** transformer. The regulator is able to measure the individual leakage of each capacitor. This allows to disable a damaged capacitor if an excess of leakage current is detected without interrupting the supply service.

AUTO-ON-OFF function

This function allows to define the operating mode of each individual capacitor step:

- Automatic mode (auto)
- Fixed mode (on): capacitor is always ON
- Disconnected mode (off). capacitor is always OFF

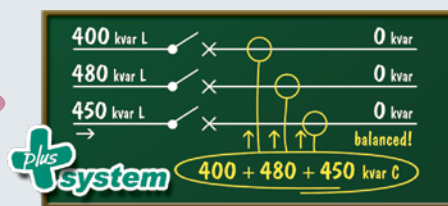
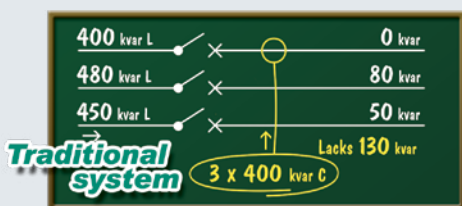
Intelligent regulators

computer plus regulators are a new concept in Power Factor Correction:

- They measure on the three phases and accurately compensate the total reactive energy
- They compensate reactive energy using individual phase control in real time and in addition to correcting the total reactive to zero; they also achieve a balance of active power between phases
- Plug and Play, start up at the touch of a key.

Easy

computer plus regulators are equipped with intelligent controllers designed to make adjustment and navigation through the different menus and display of all the registered parameters easy. They begin working just pushing a key.



computer *max*

Power factor correction and measurement of the main electrical parameters.

computer *smart*

Offers in a single device, power factor correction functions, network analyzer and leakage control.

computer *plus*

Power factor correction measuring in all three phases, functions of a powerful network analyzer and leakage control.



Technical features

computer *max*

computer *smart*

computer *plus*

	computer <i>max</i>	computer <i>smart</i>	computer <i>plus</i>
Dimensions	144 x 144 mm	144 x 144 mm	144 x 144 mm
Protection degree	IP 40 frontal, IP 30 rear	IP 40 frontal, IP 30 rear	IP 40 frontal, IP 30 rear
Maximum operating temperature	60 °C	60 °C	50 °C
Maximum switching current	10 A	4 A	6 A
Maximum switching voltage	250 V	250 V	250 V
Power Accuracy Class	2	2	2
Current Accuracy Class	1	1	1
Voltage Accuracy Class	1	1	1
Current measurement range	5 A	5 A	1...5 A
Voltage measurement range (acc. model)	110...480 V	110...480 V	32...520 V
Frequency	45...65 Hz	45...65 Hz	45...65 Hz
Consumption	6 ÷ 9,5 VA	9,3 ÷ 11 VA	10,2 ÷ 43 VA
Power supply voltage (acc. model)	110...480 V	110...480 V	110...480 V
RS-485 communications	-	●	C-CDI Models
Earth leakage protection (with external transformer)	-	●	C-CDI Models
TEST function	-	●	●
Alarms	6	12	14
Power analyzer	-	●	●
Plug and Play system	-	●	●
Phase selection function	●	●	●
Type of measurement	Single phase	Single phase	Three phase
Outputs	6 or 12	6 or 12	8 or 14

computer references

Huge stock for immediate delivery.

Power Factor Regulators
max, plus and smart series



Power factor REGULATORS. Regulation, measurement and protection all in one in the computer SMART series

Type	Code	Power supply	Nr. relays	Alarm	Dimensions (mm)
computer Smart 6	R13831	400 V ac	6	yes	144 x 144
computer Smart 12	R13842	400 V ac	12	yes	144 x 144
computer Smart 6	R13831001	110 V ac	6	yes	144 x 144
computer Smart 12	R13842001	110 V ac	12	yes	144 x 144
computer Smart 6	R13831002	230 V ac	6	yes	144 x 144
computer Smart 12	R13842002	230 V ac	12	yes	144 x 144
computer Smart 6	R13831004	480 V ac	6	yes	144 x 144
computer Smart 12	R13842004	480 V ac	12	yes	144 x 144



intelligent REGULATORS. computer plus-t series

New generation smart regulator, able to measure the 3 stages of the installation and compensate the total reactive energy consumed in a precise way.

Type	Code	Power supply	Nr. relays	Alarm	Dimensions (mm)
computer Plus T8	R12011	230 / 400 V ac	8	yes	144 x 144
computer Plus T14	R12211	230 / 400 V ac	14	yes	144 x 144
computer Plus T8 C	R12012	230 / 400 V ac	8	yes	144 x 144
computer Plus T14 C	R12213	230 / 400 V ac	14	yes	144 x 144
computer Plus T8 CDI	R12111	230 / 400 V ac	8	yes	144 x 144
computer Plus T14 CDI	R12212	230 / 400 V ac	14	yes	144 x 144



Power factor REGULATORS. MAX computer 6 / 12 series

Type	Code	Power supply	Nr. relays	Alarm	Dimensions (mm)
computer Max 6	R10831	400 V ac	6	--	144 x 144
computer Max 12	R10842	400 V ac	12	--	144 x 144
computer Max 6	R10831001	110 V ac	6	--	144 x 144
computer Max 12	R10842001	110 V ac	12	--	144 x 144
computer Max 6	R10831002	230 V ac	6	--	144 x 144
computer Max 12	R10842002	230 V ac	12	--	144 x 144
computer Max 6	R10831004	480 V ac	6	--	144 x 144
computer Max 12	R10842004	480 V ac	12	--	144 x 144

computer plus-TF Series

Type	Code	Power supply	Nr. relays	Alarm	Dimensions (mm)	Earth Leakage
computer plus-TF	R12511	230 / 400 V ac	16	yes	144 x 144	--
computer plus-TF CDI	R12611	230 / 400 V ac	16	yes	144 x 144	yes

computer Max-f Series

Type	Code	Power supply	Nr. relays	Alarm	Dimensions (mm)	Earth Leakage
computer Max 6f	R10851	400 V ac	6	--	144 x 144	--
computer Max 12f	R10862	400 V ac	12	--	144 x 144	--

Fast-Comp 12 rt-144 Series

Type	Code	Power supply	Nr. relays	Alarm	Dimensions (mm)	Earth Leakage
computer Smart 6f	R13931	400 V ac	6	--	144 x 144	--
computer Smart 12f	R13942	400 V ac	12	--	144 x 144	--

Contactors

Capacitor Contactors. CMC Series



CMC series, a contactor or special use, is adjusted for switching single-step or multiple-step capacitor bank. It is standardized by **IEC-60947-4941**.

Operation condition

Operating Times

CMC 12, CMC 18, CMC 32, CMC 40: 240 times/h
CMC 65, CMC 85, CMC 150: 100 times/h

Electrical Endurance

CMC 12, CMC 18, CMC 32, CMC 40: 200,000 times
CMC 65, CMC 85, MC 150: 100,000 times

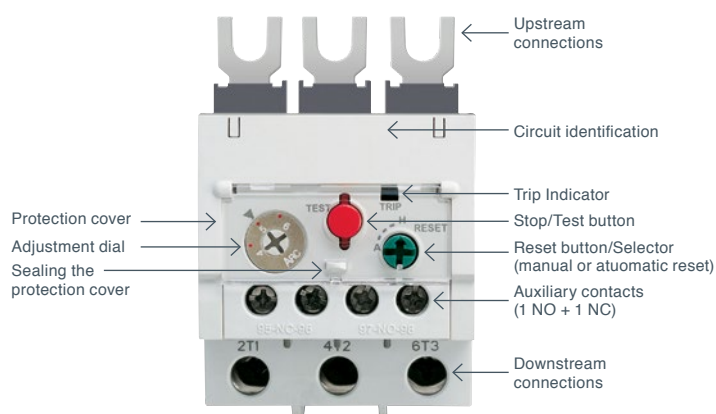
1. When the switch is closed capacitor must be discharged before recharged. (Maximum residual voltage at terminals ≤ 50 V)
2. In working voltage 500 V ($U_e = 500$ V), 100,000 times for **CMC 12~40** and 80,000 times for **CMC ~65 ~ 85**
3. To prevent short current, gG type Fuse must be 1.5~2 times than rated current
4. It must be separated from resistant wire

Overload relays

Type **MT**, bimetal-style, overload relays are designed to protect AC circuits and motors against overloads, phase failure, long starting times and prolonged staling of the motor

Protection function and trip class:

Non-differential: 3 pole - 3 bimetal (heater) and trip class 10 A.



Contactors references

Huge stock for immediate delivery.

Type	Code	Maximum operating power (kvar)			Coil voltage	Damping resistors	Overload Relay	Dimensions (W x H x D)
		200-240 V	400-440 V	500-550 V				
CMC 12	R28186ZH00000	6,7	12,5	18	230	AC9	MT-32	45 x 73,5 x 86 mm
CMC 18	R28187ZH00000	8,5	16,7	24	230	AC9	MT-32	45 x 73,5 x 86 mm
CMC 32	R28188ZH00000	15	25	36	230	AC9	MT-32	45 x 83 x 90 mm
CMC 40	R28181ZH00000	20	33,3	48	230	AC9	MT-32	45 x 83 x 90 mm
CMC 65	R28182ZH00000	25	45,7	66	230	AC50	MT-63	55 x 106 x 119 mm
CMC 85	R28183ZH00000	35	60	92	230	AC50	MT-95	75 x 140 x 136 mm
CMC 150	R2818DZH00000	45	80	100	230	--	MT-150	95 x 158 x 132 mm

CIRCUTOR supply damping resistors blocks (**AC-9** and **AC-50**) separately from magnetic contactor. So, customer needs to issue an order for magnetic contactor (**CMC** series) and dumping resistors unit (**AC-9** or **AC-50**) separately.

Type	Code	Damping resistors
AC9	R29984ZH00000	CMC 12, CMC 18, CMC 32, CMC 40
AC50	R29985ZH00000	CMC 65, CMC 85,



CIRCUTOR has a complete range of rejection reactors, $p = 7\%$, with a resonance frequency of 189 Hz for 50 Hz networks (or 227 Hz for 60 Hz networks). Is the most frequent tuning value to avoid any resonance of the 5th harmonic and above. The set of capacitors-reactors absorbs part of the current of the 5th harmonic and acts as a rejection filter for higher frequencies. In some installations, other values of $P\%$ are required, for example 5.6% (210 Hz), 14% (134 Hz), etc.

RX/RBX type reactors are built with plates with low losses and are coiled with an aluminum winding or copper wire, according to the model. The connection is achieved with the adequate terminals. **RX/RBX** reactors are used, with a magnetic plate nucleus and multiple steel cores, which offer excellent characteristics and a low loss ratio.

RX/RBX type reactors have a vacuum varnish sealing to increase the insulation, providing a greater mechanical resistance and reduce the level of noise.

Application

The rejection reactors of the **RX/RBX** series have been specially designed for their use in capacitor banks in installations with a high harmonic content. The reactors must be connected in series to each capacitor for the adequate protection of capacitors and to avoid the resonance effects in the installation.

Technical features

Features	
Voltage	400 V / 480 V. On demand: up to 1000 V
Network frequency	50 / 60 Hz
Power rating	In accordance with the table. Other values on demand
Value of p %	7 % (189 / 227 Hz) 5,67 % (210 / 252 Hz) 14 % (134 / 160Hz)
Type of conductor	Aluminum band / copper wire
Tolerance L	± 5 %
Linearity (5% L)	$1.8 I_n$ On demand: $2.0 I_n$
Isolation voltage	4 kV
Maximum room temperature	-10 ... +45 °C
Internal isolation	Class F (155 °C). On demand: class H (180 °C)
Maximum overload	
Permanent	$1.17 I_n$
Temporary (1 min)	$2 I_n$
Safety	
Protection thermostat	Opening at 90 °C
Degree of protection	IP 00
Installation	Indoor
Standards	
UNE-EN-60289, IEC 60076	

Reactors references

Reactors
400 V - 50 Hz

Huge stock for immediate delivery.

Reactors 400 V - 50 Hz

Overvoltage factor/ Detuned frequency	Network voltage & frequency / Rated Power	Reactor model	Reactor code	Reactor Inductance
7 % / 189 Hz	400 V ac - 50 Hz / 5 kvar	RX-5-400-7%	P72110	7,66 mH
7 % / 189 Hz	400 V ac - 50 Hz / 6.25 kvar	RX-6.25-400-7%	P72112	6.12 mH
7 % / 189 Hz	400 V ac - 50 Hz / 10 kvar	RX-10-400-7%	P72115	3.83 mH
7 % / 189 Hz	400 V ac - 50 Hz / 12.5 kvar	RX-12.5-400-7%	P72117	3.06 mH
7 % / 189 Hz	400 V ac - 50 Hz / 15 kvar	RX-15-400-7%	P72120	2.55 mH
7 % / 189 Hz	400 V ac - 50 Hz / 20 kvar	RBX-20-400-7%	P72125	1.92 mH
7 % / 189 Hz	400 V ac - 50 Hz / 25 kvar	RBX-25-400-7%	P72130	1.53 mH
7 % / 189 Hz	400 V ac - 50 Hz / 30 kvar	RBX-30-400-7%	P72135	1.27 mH
7 % / 189 Hz	400 V ac - 50 Hz / 40 kvar	RBX-40-400-7%	P72140	0.95 mH
7 % / 189 Hz	400 V ac - 50 Hz / 50 kvar	RBX-50-400-7%	P72145	0.76 mH
7 % / 189 Hz	400 V ac - 50 Hz / 60 kvar	RBX-60-400-7%	P72150	0.63 mH
7 % / 189 Hz	400 V ac - 50 Hz / 80 kvar	RBX-80-400-7%	P72155	0.47 mH

Reactors 400 V - 50 Hz

Overvoltage factor/ Detuned frequency	Network voltage & frequency / Rated Power	Reactor model	Reactor code	Reactor Inductance
14 % / 134 Hz	400 V ac - 50 Hz / 5 kvar	RX-5-400-14%	P71021	16.31 mH
14 % / 134 Hz	400 V ac - 50 Hz / 10 kvar	RX-10-400-14%	P71022	8.15 mH
14 % / 134 Hz	400 V ac - 50 Hz / 12.5 kvar	RX-12.5-400-14%	P71023	6.52 mH
14 % / 134 Hz	400 V ac - 50 Hz / 15 kvar	RX-15-400-14%	P71024	5.43 mH
14 % / 134 Hz	400 V ac - 50 Hz / 20 kvar	RX-20-400-14%	P71025	4.07 mH
14 % / 134 Hz	400 V ac - 50 Hz / 25 kvar	RBX-25-400-14%	P72330	3.26 mH
14 % / 134 Hz	400 V ac - 50 Hz / 30 kvar	RBX-30-400-14%	P72335	2.71 mH
14 % / 134 Hz	400 V ac - 50 Hz / 40 kvar	RBX-40-400-14%	P72340	2.03 mH
14 % / 134 Hz	400 V ac - 50 Hz / 50 kvar	RBX-50-400-14%	P72345	1.63 mH
14 % / 134 Hz	400 V ac - 50 Hz / 60 kvar	RBX-60-400-14%	P72350	1.35 mH

Reactors 440 V / 50 Hz

Overvoltage factor/ Detuned frequency	Network voltage & frequency / Rated Power	Reactor model	Reactor code	Reactor Inductance
5,67 % / 210 Hz	440 V ac - 50 Hz / 5 kvar	RX-5-440-5,67%	P7211000054C2	7.39 mH
5,67 % / 210 Hz	440 V ac - 50 Hz / 6,25 kvar	RX-6.25-440-5,67%	P7211200054C2	5.91 mH
5,67 % / 210 Hz	440 V ac - 50 Hz / 10 kvar	RX-10-440-5,67%	P7211500054C2	3.69 mH
5,67 % / 210 Hz	440 V ac - 50 Hz / 12,5 kvar	RX-12.5-440-5,67%	P7211700054C2	2.96 mH
5,67 % / 210 Hz	440 V ac - 50 Hz / 15 kvar	RX-15-440-5,67%	P7212000054C2	2.46 mH
5,67 % / 210 Hz	440 V ac - 50 Hz / 20 kvar	RBX-20-440-5,67%	P7212500054C2	1.85 mH
5,67 % / 210 Hz	440 V ac - 50 Hz / 25 kvar	RBX-25-440-5,67%	P7213000054C2	1.48 mH
5,67 % / 210 Hz	440 V ac - 50 Hz / 30 kvar	RBX-30-440-5,67%	P7213300054C2	1.23 mH
5,67 % / 210 Hz	440 V ac - 50 Hz / 40 kvar	RBX-40-440-5,67%	P7214000054C2	0.92 mH
5,67 % / 210 Hz	440 V ac - 50 Hz / 50 kvar	RBX-50-440-5,67%	P7214500054C2	0.74 mH
5,67 % / 210 Hz	440 V ac - 50 Hz / 60 kvar	RBX-60-440-5,67%	P7215000054C2	0.62 mH
5,67 % / 210 Hz	440 V ac - 50 Hz / 75 kvar	RBX-75-440-5,67%	P7215300054C2	0.49 mH
5,67 % / 210 Hz	440 V ac - 50 Hz / 80 kvar	RBX-80-440-5,67%	P7215500054C2	0.46 mH

Voltage over capacitor at rated network voltage	CLZ Model	CFB Model	Calculated Capacity (3 x uF)	Contactor Model
430.1 V ac	CLZ-FP-46/6,25	CFB-46/6	3 x 31	CMC-12
430.1 V ac	CLZ-FP-52/10	CFB-46/7,75	3 x 38.8	CMC-12
430.1 V ac	CLZ-FP-46/12,5	CFB-46/12,5	3 x 62	CMC-12
430.1 V ac	CLZ-FP-46/15	CFB-46/15	3 x 77.5	CMC-32
430.1 V ac	CLZ-FP-46/19	CFB-46/19	3 x 93	CMC-32
430.1 V ac	CLZ-FP-46/25	CFB-46/25	3 x 124	CMC-32
430.1 V ac	CLZ-FP-46/30	CFB-46/30	3 x 155	CMC-32
430.1 V ac	2 x CLZ-FP-46/19	CFB-46/37	3 x 186	CMC-40
430.1 V ac	2 x CLZ-FP-46/25	CFB-46/50	3 x 248	CMC-65
430.1 V ac	2 x CLZ-FP-46/30	CFB-46/62	3 x 310	CMC-75
430.1 V ac	3 x CLZ-FP-46/25	CFB-46/74	3 x 372	CMC-85
430.1 V ac	4 x CLZ-FP-46/25	CFB-46/100	3 x 496	CMC-150

Voltage over capacitor at rated network voltage	CLZ Model	CFB Model	Calculated Capacity (3 x uF)	Contactor Model
460.1 V ac	CLZ-FP-52/7,5	CFB-52/7,5	3 x 29	CMC-12
460.1 V ac	CLZ-FP-52/15	CFB-52/15	3 x 58	CMC-12
460.1 V ac	CLZ-FP-52/20	CFB-52/19	3 x 73	CMC-32
460.1 V ac	CLZ-FP-52/25	CFB-52/23	3 x 87	CMC-32
460.1 V ac	CLZ-FP-52/30	CFB-52/30	3 x 116.5	CMC-32
460.1 V ac	CLZ-FP-52/37,5	CFB-52/38	3 x 145,5	CMC-32
460.1 V ac	CLZ-FP-52/25 + CLZ-FP-52/20	CFB-52/46	3 x 175	CMC-40
460.1 V ac	2 x CLZ-FP-52/30	CFB-52/60,5	3 x 233	CMC-65
460.1 V ac	2 x CLZ-FP-52/37,5	CFB-52/76	3 x 291	CMC-75
460.1 V ac	3 x CLZ-FP-52/30	CFB-52/91	3 x 350	CMC-85

Voltage over capacitor at rated network voltage	CLZ Model	CFB Model	Calculated Capacity (3 x uF)	Contactor Model
467 V ac	CLZ-FP-48/5,7	CFB-48/5,7	3 x 26	MC-12
467 V ac	CLZ-FP-48/7,1	CFB-48/7,1	3 x 32.5	MC-12
467 V ac	CLZ-FP-48/11,3	CFB-48/11,3	3 x 52	MC-12
467 V ac	CLZ-FP-48/14,1	CFB-48/14,1	3 x 65	MC-32
467 V ac	CLZ-FP-48/17	CFB-48/17	3 x 78	MC-32
467 V ac	CLZ-FP-48/22,6	CFB-48/22,6	3 x 104	MC-32
467 V ac	CLZ-FP-48/28,2	CFB-48/28,2	3 x 130	MC-32
467 V ac	2 x CLZ-FP-48/33,9	CFB-48/33,9	3 x 156	MC-40
467 V ac	2 x CLZ-FP-48/22,6	CFB-48/45,2	3 x 208	MC-65
467 V ac	2 x CLZ-FP-48/28,2	CFB-48/56,4	3 x 259.5	MC-75
467 V ac	2 x CLZ-FP-48/33,9	CFB-48/67,8	3 x 311.5	MC-85
467 V ac	3 x CLZ-FP-48/28,2	CFB-48/84,4	3 x 389	MC-150
467 V ac	4 x CLZ-FP-48/22,6	CFB-48/90,2	3 x 415	MC-150

Reactors references

Reactors
480 V - 60 Hz

Huge stock for immediate delivery.

Reactors 480 V / 60 Hz

Overvoltage factor/ Detuned frequency	Network voltage & frequency / Rated Power	Reactor model	Reactor code	Reactor Inductance
7 % / 227 Hz	480 V ac - 60 Hz / 6 kvar	RX-6-480-60Hz-7%	P72110	7,66 mH
7 % / 227 Hz	480 V ac - 60 Hz / 7.5 kvar	RX-7.5-480-60Hz-7%	P72112	6.12 mH
7 % / 227 Hz	480 V ac - 60 Hz / 12 kvar	RX-12-480-60Hz-7%	P72115	3.83 mH
7 % / 227 Hz	480 V ac - 60 Hz / 15 kvar	RX-15-480-60Hz-7%	P72117	3.06 mH
7 % / 227 Hz	480 V ac - 60 Hz / 18 kvar	RX-18-480-60Hz-7%	P72120	2.55 mH
7 % / 227 Hz	480 V ac - 60 Hz / 24 kvar	RBX-24-480-60Hz-7%	P72125	1.92 mH
7 % / 227 Hz	480 V ac - 60 Hz / 30 kvar	RBX-30-480-60Hz-7%	P72130	1.53 mH
7 % / 227 Hz	480 V ac - 60 Hz / 36 kvar	RBX-36-480-60Hz-7%	P72135	1.27 mH
7 % / 227 Hz	480 V ac - 60 Hz / 48 kvar	RBX-48-480-60Hz-7%	P72140	0.95 mH
7 % / 227 Hz	480 V ac - 60 Hz / 60 kvar	RBX-60-480-60Hz-7%	P72145	0.76 mH
7 % / 227 Hz	480 V ac - 60 Hz / 72 kvar	RBX-72-480-60Hz-7%	P72150	0.63 mH
7 % / 227 Hz	480 V ac - 60 Hz / 96 kvar	RBX-96-480-60Hz-7%	P72155	0.47 mH

Reactors 480 V / 60 Hz

Overvoltage factor/ Detuned frequency	Network voltage & frequency / Rated Power	Reactor model	Reactor code	Reactor Inductance
14 % / 160 Hz	480 V ac - 60 Hz / 6 kvar	RX-6-480-60Hz-14%	P71021	16.31 mH
14 % / 160 Hz	480 V ac - 60 Hz / 12 kvar	RX-12-480-60Hz-14%	P71022	8.15 mH
14 % / 160 Hz	480 V ac - 60 Hz / 15 kvar	RX-15-480-60Hz-14%	P71023	6.52 mH
14 % / 160 Hz	480 V ac - 60 Hz / 18 kvar	RX-18-480-60Hz-14%	P71024	5.43 mH
14 % / 160 Hz	480 V ac - 60 Hz / 24 kvar	RX-24-480-60Hz-14%	P71025	4.07 mH
14 % / 160 Hz	480 V ac - 60 Hz / 30 kvar	RBX-30-480-60Hz-14%	P72330	3.26 mH
14 % / 160 Hz	480 V ac - 60 Hz / 36 kvar	RBX-36-480-60Hz-14%	P72335	2.71 mH
14 % / 160 Hz	480 V ac - 60 Hz / 48 kvar	RBX-48-480-60Hz-14%	P72340	2.03 mH
14 % / 160 Hz	480 V ac - 60 Hz / 60 kvar	RBX-60-480-60Hz-14%	P72345	1.63 mH
14 % / 160 Hz	480 V ac - 60 Hz / 72 kvar	RBX-72-480-60Hz-14%	P72350	1.35 mH

Reactors 480 V / 60 Hz

Overvoltage factor/ Detuned frequency	Network voltage & frequency / Rated Power	Reactor model	Reactor code	Reactor Inductance
5,67 % / 252 Hz	480 V AC - 60 Hz / 5 kvar	RX-6-480-60Hz-5.67%	P72210	6.11 mH
5,67 % / 252 Hz	480 V AC - 60 Hz / 6.25 kvar	RX-7.5-480-60Hz-5.67%	P72212	4.88 mH
5,67 % / 252 Hz	480 V AC - 60 Hz / 10 kvar	RX-12-480-60Hz-5.67%	P72215	3.05 mH
5,67 % / 252 Hz	480 V AC - 60 Hz / 12.5 kvar	RX-15-480-60Hz-5.67%	P72217	2.44 mH
5,67 % / 252 Hz	480 V AC - 60 Hz / 15 kvar	RX-18-480-60Hz-5.67%	P72220	2.04 mH
5,67 % / 252 Hz	480 V AC - 60 Hz / 20 kvar	RBX-24-480-60Hz-5.67%	P72225	1.53 mH
5,67 % / 252 Hz	480 V AC - 60 Hz / 25 kvar	RBX-30-480-60Hz-5.67%	P72230	1.22 mH
5,67 % / 252 Hz	480 V AC - 60 Hz / 30 kvar	RBX-36-480-60Hz-5.67%	P72235	1.02 mH
5,67 % / 252 Hz	480 V AC - 60 Hz / 40 kvar	RBX-48-480-60Hz-5.67%	P72240	0.76 mH
5,67 % / 252 Hz	480 V AC - 60 Hz / 50 kvar	RBX-60-480-60Hz-5.67%	P72245	0.61 mH
5,67 % / 252 Hz	480 V AC - 60 Hz / 60 kvar	RBX-72-480-60Hz-5.67%	P72250	0.51 mH
5,67 % / 252 Hz	480 V AC - 60 Hz / 96 kvar	RBX-96-480-60Hz-5.67%	P72255	0.38 mH

Voltage over capacitor at rated network voltage	CLZ Model	CFB Model	Calculated Capacity (3 x uF)	Contactor Model	
516.1 V ac	CLZ-FP-52/6,25	CFB-55/7,5-60Hz	3 x 21.5	CMC-12	
516.1 V ac	CLZ-FP-52/7,5	CFB-55/9-60Hz	3 x 27	CMC-12	
516.1 V ac	CLZ-FP-52/12,5	CFB-55/15-60Hz	3 x 43	CMC-12	
516.1 V ac	CLZ-FP-52/15	CFB-55/18,5-60Hz	3 x 54	CMC-32	
516.1 V ac	CLZ-FP-52/7,5 + CLZ-FP-52/10	CFB-55/22-60Hz	3 x 64.5	CMC-32	
516.1 V ac	CLZ-FP-52/7,5 + CLZ-FP-52/15	CFB-55/30-60Hz	3 x 86	CMC-32	
516.1 V ac	CLZ-FP-52/30	CFB-55/37-60Hz	3 x 108	CMC-40	
516.1 V ac	CLZ-FP-52/8 + CLZ-FP-52/25	CFB-55/44-60Hz	3 x 129	CMC-65	
516.1 V ac	CLZ-FP-52/20 + CLZ-FP-52/25	CFB-55/60-60Hz	3 x 172	CMC-75	
516.1 V ac	CLZ-FP-52/25 + CLZ-FP-52/30	CFB-55/74-60Hz	3 x 215	CMC-85	
516.1 V ac	CLZ-FP-52/30 + CLZ-FP-52/40	CFB-55/89-60Hz	3 x 258.5	CMC-150	
516.1 V ac	3 x CLZ-FP-52/30	CFB-55/118-60Hz	3 x 344	CMC-150	

Voltage over capacitor at rated network voltage	CLZ Model	CFB Model	Calculated Capacity (3 x uF)	Contactor Model	
558.1 V ac	CLZ-FP-60/7,5	CFB-60/8-60Hz	3 x 20	CMC-12	
558.1 V ac	CLZ-FP-60/15	CFB-60/16,5-60Hz	3 x 40.5	CMC-12	
558.1 V ac	CLZ-FP-60/17,5	CFB-60/20,5-60Hz	3 x 50.5	CMC-32	
558.1 V ac	CLZ-FP-60/20	CFB-60/25-60Hz	3 x 61	CMC-32	
558.1 V ac	CLZ-FP-60/27,5	CFB-60/33-60Hz	3 x 81	CMC-32	
558.1 V ac	CLZ-FP-60/35	CFB-60/41-60Hz	3 x 101	CMC-40	
558.1 V ac	2 x CLZ-FP-60/20	CFB-60/50-60Hz	3 x 121	CMC-65	
558.1 V ac	2 x CLZ-FP-60/27,5	CFB-60/66-60Hz	3 x 162	CMC-75	
558.1 V ac	2 x CLZ-FP-60/35	CFB-60/82-60Hz	3 x 202	CMC-85	
558.1 V ac	3 x CLZ-FP-60/27,5	CFB-60/100-60Hz	3 x 242.5	CMC-150	

Voltage over capacitor at rated network voltage	CLZ Model	CFB Model	Calculated Capacity (3 x uF)	Contactor Model	
509 V ac	CLZ-FP-52/7,5	CFB-55/7,5-60Hz	3 x 22	CMC-12	186,39 €
509 V ac	CLZ-FP-52/8	CFB-55/9-60Hz	3 x 27	CMC-12	190,94 €
509 V ac	CLZ-FP-52/15	CFB-55/15-60Hz	3 x 44	CMC-12	192,63 €
509 V ac	CLZ-FP-52/8 + CLZ-FP-52/10	CFB-55/18,5-60Hz	3 x 54.5	CMC-32	193,21 €
509 V ac	CLZ-FP-52/20	CFB-55/22-60Hz	3 x 65.5	CMC-32	199,50 €
509 V ac	CLZ-FP-52/7,5 + CLZ-FP-52/20	CFB-55/30-60Hz	3 x 87	CMC-32	202,27 €
509 V ac	CLZ-FP-52/15 + CLZ-FP-52/20	CFB-55/37-60Hz	3 x 109	CMC-40	207,81 €
509 V ac	CLZ-FP-52/40	CFB-55/45-60Hz	3 x 131	CMC-65	241,06 €
509 V ac	CLZ-FP-52/25 + CLZ-FP-52/30	CFB-55/60-60Hz	3 x 174.5	CMC-75	254,92 €
509 V ac	CLZ-FP-52/40 + CLZ-FP-52/30	CFB-55/74-60Hz	3 x 218	CMC-85	283,59 €
509 V ac	2 x CLZ-FP-52/40	CFB-55/89-60Hz	3 x 262	CMC-150	335,91 €
509 V ac	3 x CLZ-FP-52/30	CFB-55/118-60Hz	3 x 349	CMC-150	365,75 €

Power factor solutions for electric switchboards

+ information: info@circutor.es

www.circutor.com



CIRCUTOR, SA - Vial Sant Jordi, s/n
08232 Viladecavalls (Barcelona) Spain
Tel. (+34) 93 745 29 00 - Fax: (+34) 93 745 29 14
central@circutor.es

Code: C2R223 -02



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