Power factor correction and harmonic filtering

Power factor regulators

Low voltage power capacitors

Low voltage capacitor banks

Harmonic filters

Capacitor and MV accessories

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GUIDE OF SELECTION FOR HARMONIC OR DISTURBANCE FILTERING EQUIPMENT

Types of anomalies

Faults	Causes	Solutions	Equipments
After disconnecting the capacitors: • Overload in capacitors • Problems with electronic controls • Transformer vibrations	Resonance in the capacitor bank with the transformer as a result of existing harmonics	Resonance elimination	Detuned filter banks **OPTIM FR P&P**, OPTIM **FRE, SVGm**
Neutral overload in lines for: • Lighting • Computers	Circulation of third harmonic (homopolar)	Blocking or correcting filter in third harmonic	• **FB3** blocking systems • **AFQm** active filters
Overheating and overload in: • Phase cables • Transformers • Motors • Automatic circuit breakers	Existence of harmonics in different ranges	Harmonic filtering	• **LCL** absorption filters • **AFQm** Active filters
Trips in: • Earth leakage circuit breakers	Existence of high frequency current leakages. Caused by EMI filters	Residual current protection and Filtering	• Immunized residual current relays (2)
Unbalanced lines + harmonics in neutral	Unequal distribution of single phase loads	Phase balancing and harmonic filtering	**AFQm** Active filter

Power factor regulators

computer C Wi-Fi

Power factor regulator with communications

Type	Code	Power supply	Measurement Range (V)	Input current	Switching unit	Nr steps	Alarm relay	Communi-cations	Size (mm) width x height x depth
computer C6 Wi-Fi	[*] R14831.	400 Vac	400	.../ 5A	Contactor	6	●	Wi-Fi	144x144x54.85
computer C6 Wi-Fi	[*] R148310020000	230 Vac	230	.../ 5A	Contactor	6	●	Wi-Fi	144x144x54.85
computer C12 Wi-Fi	[*] R14842.	400 Vac	400	.../ 5A	Contactor	12	●	Wi-Fi	144x144x54.85
computer C12 Wi-Fi	[*] R148420020000	230 Vac	230	.../ 5A	Contactor	12	●	Wi-Fi	144x144x54.85

Compatible con Sistema de vigilancia Anti Reactiva- VAR. Programación a través de la app MyConfig

computer SMART III

Three-phase power factor regulators. Regulation, measurement, leakage control and communications

Type	Code	Power supply	Measurement Range (V)	Input current	Switching unit	IΔn	Nr steps	Alarm relay	Commu-nications	Size (mm) width x height x depth
computer SMART III 6	[*] R13851.	100...520 Vac	20...300	.../5A | .../1A	Contactor	yes	6	●	RS-485	144x144x71
computer SMART III 12	[*] R13862.	100...520 Vac	20...300	.../5A | .../1A	Contactor	yes	12	●	RS-485	144x144x71
computer SMART III 14	[*] R13864.	100...400 Vac	20...300	.../5A | .../1A	Contactor	yes	14	●	RS-485	144x144x71

Fast power factor regulator (static switching)

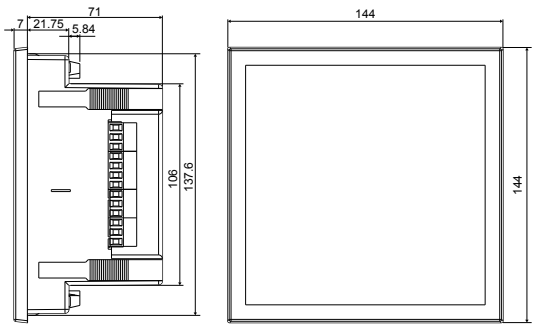
computer SMART III-Fast

Power factor regulators for static switching

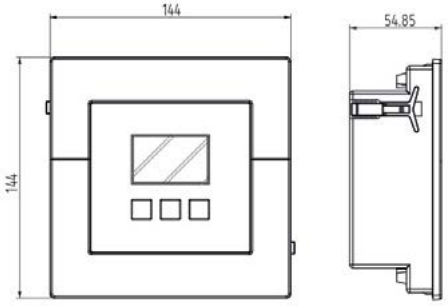
Type	Code	Power supply	Measurement Range (V)	Input current	Switching unit	IΔn	Nr steps	Alarm relay	Commu-nications	Size (mm) width x height x depth
computer SMART III F6-12Vdc	[*] R13953.	100...520 Vac	100...520	.../5A | .../1A	EMB-2PH	yes	6	●	RS-485	144x144x71
computer SMART III F12-12Vdc	[*] R13964.	100...520 Vac	100...520	.../5A | .../1A	EMB-2PH	yes	12	●	RS-485	144x144x71
computer SMART III Fast 6	[*] R13951.	100...520 Vac	100...520	.../5A | .../1A	EMF / EMB	yes	6	●	RS-485	144x144x71
computer SMART III Fast 12	[*] R13962.	100...520 Vac	100...520	.../5A | .../1A	EMF / EMB	yes	12	●	RS-485	144x144x71

Dimensions

computer Smart III / computer SMART III fast



computer C Wi-Fi



Low voltage power capacitors

TCLZ

IP 54 covers for CLZ-FP

Type	Code	Cover (opc.)
TCLZ-FP85	[*] R29911.	1
TCLZ-FP116	[*] R29917.	2
TCLZ-FP100	[*] R29918.	7

CLZ-FP-M

Single-phase tubular power capacitor

230 V, with terminal block

Type	Code	230 V kvar	240 V kvar	Hz	dia.x height (mm)	Cover (opc.)
CLZ-FP-M-23/2,5	[1] R205C4.	2.5	2.7	50	85 x 245	1
CLZ-FP-M-23/5	[1] R205C8.	5	5.4	50	85 x 245	1
CLZ-FP-M-23/7,5	[1] R205CM.	7.5	8.2	50	116 x 245	2
CLZ-FP-M-23/10	[1] R205CN.	10	10.9	50	116 x 245	2

CLZ-FP HD 50Hz

Three-phase tubular power capacitor (Heavy Duty range)

CLZ-FPT - Capacitors with Faston terminal / CLZ-FP - Capacitors with terminal block

Type	Code	220 V kvar	230 V kvar	Hz	dia.x height (mm)	weight (kg)	Cover (opc.)	Terminal
Faston terminal, Un = 3 x 230 V / 50 Hz								
CLZ-FPT-23/1,25-HD	[C] R2H511.	1.15	1.25	50	63,5 x 127	0,44	-	F
CLZ-FPT-23/2,5-HD	[C] R2H812.	2.3	2.5	50	63,5 x 175	0,60	-	F
Terminal block, Un = 3 x 230 V / 50 Hz								
CLZ-FP-23/5-HD	[C] R2H516.	4.6	5	50	85 x 175	0,81	1	A
CLZ-FP-23/6,25-HD	[C] R2H517.	5.7	6.25	50	85 x 245	1,00	1	A
CLZ-FP-23/7,5-HD	[C] R2H518.	6.8	7.5	50	85 x 245	1,07	1	A
CLZ-FP-23/10-HD	[C] R2H51B.	9.15	10	50	100 x 245	1,38	7	A
CLZ-FP-23/12,5-HD	[C] R2H51D.	11.4	12.5	50	100 x 245	1,60	7	A
CLZ-FP-23/15-HD	[C] R2H51E.	13.75	15	50	116 x 245	1,94	2	B
Type	**Code**	**400 V kvar**	**440 V kvar**	**Hz**	**dia.x height (mm)**	**weight (kg)**	**Cover (opc.)**	**Terminal**
Faston terminal, Un = 3 x 440 V / 50 Hz								
CLZ-FPT-44/1,25-HD	[C] R2H541.	1	1.25	50	63,5 x 98	0,36	-	F
CLZ-FPT-44/2,5-HD	[*] R2H542.	2	2.5	50	63,5 x 127	0,44	-	F
CLZ-FPT-44/3-HD	[C] R2H543.	2.5	3	50	63,5 x 127	0,46	-	F
CLZ-FPT-44/3,75-HD	[C] R2H544.	3	3.75	50	63,5 x 127	0,47	-	F
CLZ-FPT-44/5-HD	[*] R2H546.	4	5	50	63,5 x 175	0,62	-	F
CLZ-FPT-44/6,25-HD	[*] R2H547.	5	6.25	50	63,5 x 175	0,62	-	F
CLZ-FPT-44/7,5-HD	[*] R2H848.	6.25	7.5	50	63,5 x 202	0,71	-	F
Terminal block, Un = 3 x 440 V / 50 Hz								
CLZ-FP-44/10-HD	[*] R2H54B.	8	10	50	85 x 245	0,90	1	A
CLZ-FP-44/12,5-HD	[*] R2H54D.	10	12.5	50	85 x 245	1,01	1	A
CLZ-FP-44/15-HD	[*] R2H54E.	12.5	15	50	85 x 245	1,09	1	A
CLZ-FP-44/18,2-HD	[C] R2H54G.	15	18.2	50	100 x 245	1,38	7	A
CLZ-FP-44/20-HD	[*] R2H54J.	16	20	50	100 x 245	1,46	7	A
CLZ-FP-44/25-HD	[*] R2H54L.	20	25	50	100 x 245	1,69	7	B
CLZ-FP-44/28-HD	[C] R2H54M.	23	28	50	116 x 245	1,92	2	B
CLZ-FP-44/30-HD	[*] R2H54N.	25	30	50	116 x 245	1,99	2	B
CLZ-FP-44/40-HD	[C] R2H54R.	32	40	50	136 x 261	5,00	-	B
CLZ-FP-44/50-HD	[*] R2H54S.	40	50	50	136 x 355	5,18	-	C
Type	**Code**	**440 V kvar**	**460 V kvar**	**Hz**	**dia.x height (mm)**	**weight (kg)**	**Cover (opc.)**	**Terminal**
Faston terminal, Un = 3 x 460 V / 50 Hz								
CLZ-FPT-46/6,25-HD	[*] R2H857.	5.7	6.25	50	63,5 x 202	0,70	-	F
Terminal block, Un = 3 x 460 V / 50 Hz								
CLZ-FP-46/12,5-HD	[*] R2H55D.	11.4	12.5	50	85 x 245	1,10	1	A
CLZ-FP-46/15-HD	[*] R2H55E.	13.7	15	50	85 x 245	1,27	1	A
CLZ-FP-46/19-HD	[*] R2H55H.	17.4	19	50	100 x 245	1,53	7	A
CLZ-FP-46/25-HD	[*] R2H55L.	22.9	25	50	116 x 245	2,03	2	B
CLZ-FP-46/30-HD	[*] R2H55N.	27.4	30	50	136 x 220	2,45	-	B
CLZ-FP-46/33.3-HD	[C] R2H55P.	30.5	33.3	50	136 x 261	3,20	-	B

All models are of the inert gas type, except for those with a 63.5 mm diameter and 136x355 mm size The dimensions (dxh) are shown for the tube only. Please consult the dimensions drawing at the end of this section for more information about the actual dimensions Terminal: maximum cross-section of type A cables: 16 mm2, type B: 25 mm2, type C: 35 mm2, F: Faston 6.3x0.8 mm and 12 A maximum current

CLZ-FP HD 50Hz

Three-phase tubular power capacitor (Heavy Duty range)

CLZ-FPT - Capacitors with Faston terminal / CLZ-FP - Capacitors with terminal block

Type	Code	460 V kvar	480 V kvar	Hz	dia.x height (mm)	weight (kg)	Cover (opc.)	Terminal
Faston terminal, Un = 3 x 480 V / 50 Hz								
CLZ-FPT-48/2,5-HD	[C] R2H862.	2.3	2.5	50	63,5 x 127	0,90	-	F
CLZ-FPT-48/5-HD	[C] R2H866.	4.6	5	50	63,5 x 175	1,10	-	F
CLZ-FPT-48/7,5-HD	[C] R2H868.	6.9	7.5	50	63,5 x 202	1,30	-	F
Terminal block, Un = 3 x 480 V / 50 Hz								
CLZ-FP-48/10-HD	[C] R2H56B.	9.2	10	50	85 x 245	0,93	1	A
CLZ-FP-48/12,5-HD	[C] R2H56D.	11.5	12.5	50	85 x 245	1,07	1	A
CLZ-FP-48/15-HD	[C] R2H56E.	13.8	15	50	85 x 245	1,18	1	A
CLZ-FP-48/20-HD	[C] R2H56J.	18.4	20	50	100 x 245	1,53	7	A
CLZ-FP-48/25-HD	[C] R2H56L.	23	25	50	116 x 245	1,90	2	B
CLZ-FP-48/30-HD	[C] R2H56N.	27.6	30	50	116 x 245	2,15	2	B
CLZ-FP-48/40-HD	[C] R2H56R.	36.75	40	50	136 x 261	2,90	-	B

Type	Code	500 V kvar	525 V kvar	Hz	dia.x height (mm)	weight (kg)	Cover (opc.)	Terminal
Faston terminal, Un = 3 x 525 V / 50 Hz								
CLZ-FPT-52/2,5-HD	[C] R2H872.	2.3	2.5	50	63,5 x 127	0,70	-	F
CLZ-FPT-52/3-HD	[C] R2H873.	2.7	3	50	63,5 x 127	0,70	-	F
CLZ-FPT-52/4-HD	[C] R2H875.	3.6	4	50	63,5 x 175	0,70	-	F
CLZ-FPT-52/5-HD	[*] R2H876.	4.5	5	50	63,5 x 175	0,61	-	F
CLZ-FPT-52/6,25-HD	[C] R2H877.	5.7	6.25	50	63,5 x 202	0,72	-	F
CLZ-FPT-52/7,5-HD	[C] R2H878.	6.8	7.5	50	63,5 x 202	0,90	-	F
Terminal block, Un = 3 x 525 V / 50 Hz								
CLZ-FP-52/8-HD	[C] R2H579.	7.25	8	50	85 x 175	0,86	1	A
CLZ-FP-52/10-HD	[*] R2H57B.	9.1	10	50	85 x 245	0,99	1	A
CLZ-FP-52/12,5-HD	[*] R2H57D.	11.3	12.5	50	85 x 245	1,13	1	A
CLZ-FP-52/15-HD	[*] R2H57E.	13.6	15	50	85 x 245	1,20	1	A
CLZ-FP-52/20-HD	[*] R2H57J.	18.15	20	50	100 x 245	1,62	7	A
CLZ-FP-52/25-HD	[*] R2H57L.	22.7	25	50	116 x 245	1,63	2	B
CLZ-FP-52/30-HD	[*] R2H57N.	27.2	30	50	116 x 245	2,18	2	B
CLZ-FP-52/40-HD	[C] R2H57R.	36.3	40	50	136 x 261	2,80	-	B
CLZ-FP-52/50-HD	[C] R2H57S.	45.4	50	50	136 x 355	5,24	-	C

Type	Code	660 V kvar	690 V kvar	Hz	dia.x height (mm)	weight (kg)	Cover (opc.)	Terminal
Faston terminal, Un = 3 x 690 V / 50 Hz								
CLZ-FPT-69/2,5-HD	[C] R2H892.	2.3	2.5	50	63,5 x 127	0,70	-	F
CLZ-FPT-69/5-HD	[C] R2H896.	4.6	5	50	63,5 x 175	0,80	-	F
Terminal block, Un = 3 x 690 V / 50 Hz								
CLZ-FP-69/7,5-HD	[C] R2H598.	6.9	7.5	50	85 x 175	0,95	1	A
CLZ-FP-69/10-HD	[C] R2H59B.	9.15	10	50	85 x 245	1,00	1	A
CLZ-FP-69/12,5-HD	[C] R2H59D.	11.4	12.5	50	85 x 245	1,10	1	A
CLZ-FP-69/15-HD	[C] R2H59E.	13.7	15	50	85 x 245	1,20	1	A
CLZ-FP-69/20-HD	[C] R2H59J.	18.3	20	50	100 x 245	1,70	7	A
CLZ-FP-69/25-HD	[C] R2H59L.	22.9	25	50	116 x 245	1,90	2	B
CLZ-FP-69/30-HD	[C] R2H59N.	27.5	30	50	136 x 220	3,30	-	B
CLZ-FP-69/40-HD	[C] R2H59R.	36.6	40	50	136 x 355	5,00	-	C
CLZ-FP-69/50-HD	[C] R2H59S.	45.75	50	50	136 x 355	5,50	-	C

All models are of the inert gas type, except for those with a 63.5 mm diameter and 136x355 mm size The dimensions (dxh) are shown for the tube only. Please consult the dimensions drawing at the end of this section for more information about the actual dimensions Terminal: maximum cross-section of type A cables: 16 mm2, type B: 25 mm2, type C: 35 mm2, F: Faston 6.3x0.8 mm and 12 A maximum current

CLZ-FP HD 60Hz

Three-phase tubular power capacitor (Heavy Duty range)

CLZ-FPT - Capacitors with Faston terminal / CLZ-FP - Capacitors with with terminal block

Type	Code	230 V kvar	240 V kvar	Hz	dia.x height (mm)	weight (kg)	Cover (opc.)	Terminal
Un = 3 x 240 V / 60 Hz								
CLZ-FPT-24/2,5-60Hz-HD	[C] R2H622.	2.3	2.5	60	63,5 x 127	0,57	-	F
CLZ-FP-24/5-60Hz-HD	[C] R2H626.	4.6	5	60	85 x 175	0,85	1	A
CLZ-FP-24/6,25-60Hz-HD	[C] R2H627.	5.75	6.25	60	85 x 175	0,84	1	A
CLZ-FP-24/7,5-60Hz-HD	[C] R2H628.	6.9	7.5	60	85 x 245	0,96	1	A
CLZ-FP-24/10-60Hz-HD	[C] R2H62B.	9.2	10	60	85 x 245	1,06	1	A
CLZ-FP-24/12,5-60Hz-HD	[C] R2H62D.	11.5	12.5	60	85 x 245	1,25	1	A
CLZ-FP-24/15-60Hz-HD	[C] R2H62E.	13.8	15	60	100 x 245	1,51	7	A
Type	**Code**	**400 V kvar**	**440 V kvar**	**Hz**	**dia.x height (mm)**	**weight (kg)**	**Cover (opc.)**	**Terminal**
Un = 3 x 440 V / 60 Hz								
CLZ-FPT-44/1,25-60Hz-HD	[C] R2H641.	1	1.25	60	63,5 x 98	0,37	-	F
CLZ-FPT-44/2,5-60Hz-HD	[C] R2H642.	2.1	2.5	60	63,5 x 127	0,44	-	F
CLZ-FPT-44/3-60Hz-HD	[C] R2H643.	2.5	3	60	63,5 x 127	0,44	-	F
CLZ-FPT-44/3,75-60Hz-HD	[C] R2H644.	3.1	3.75	60	63,5 x 127	0,44	-	F
CLZ-FPT-44/5-60Hz-HD	[C] R2H646.	4.15	5	60	63,5 x 127	0,44	-	F
CLZ-FP-44/6,25-60Hz-HD	[C] R2H647.	5.2	6.25	60	85 x 175	0,67	1	A
CLZ-FP-44/7,5-60Hz-HD	[C] R2H648.	6.2	7.5	60	85 x 175	0,75	1	A
CLZ-FP-44/10-60Hz-HD	[C] R2H64B.	8.3	10	60	85 x 175	0,87	1	A
CLZ-FP-44/12,5-60Hz-HD	[C] R2H64D.	10.3	12.5	60	85 x 245	0,90	1	A
CLZ-FP-44/15-60Hz-HD	[C] R2H64E.	12.4	15	60	85 x 245	0,98	1	A
CLZ-FP-44/20-60Hz-HD	[C] R2H64J.	16.5	20	60	85 x 245	1,14	1	A
CLZ-FP-44/25-60Hz-HD	[C] R2H64L.	20.7	25	60	100 x 245	1,46	7	A
CLZ-FP-44/30-60Hz-HD	[C] R2H64N.	24.8	30	60	116 x 245	1,78	2	B
CLZ-FP-44/40-60Hz-HD	[C] R2H64R.	33.1	40	60	136 x 220	2,38	2	B
CLZ-FP-44/50-60Hz-HD	[C] R2H64S.	41.3	50	60	136 x 355	5,10	-	C
Type	**Code**	**460 V kvar**	**480 V kvar**	**Hz**	**dia.x height (mm)**	**weight (kg)**	**Cover (opc.)**	**Terminal**
Un = 3 x 480 V / 60 Hz								
CLZ-FPT-48/2,5-60Hz-HD	[C] R2H762.	2.3	2.5	60	63,5 x 127	0,47	-	F
CLZ-FPT-48/5-60Hz-HD	[C] R2H766.	4.6	5	60	63,5 x 175	0,62	-	F
CLZ-FPT-48/6,25-60Hz-HD	[C] R2H767.	5.75	6.25	60	63,5 x 175	0,90	-	F
CLZ-FPT-48/7,5-60Hz-HD	[C] R2H768.	6.9	7.5	60	63,5 x 175	0,61	-	F
CLZ-FP-48/10-60Hz-HD	[C] R2H66B.	9.2	10	60	85 x 175	0,85	1	A
CLZ-FP-48/12,5-60Hz-HD	[C] R2H66D.	11.5	12.5	60	85 x 245	0,97	1	A
CLZ-FP-48/15-60Hz-HD	[C] R2H66E.	13.8	15	60	85 x 245	1,07	1	A
CLZ-FP-48/20-60Hz-HD	[C] R2H66J.	18.4	20	60	100 x 245	1,32	7	A
CLZ-FP-48/25-60Hz-HD	[C] R2H66L.	23	25	60	100 x 245	1,57	2	B
CLZ-FP-48/30-60Hz-HD	[C] R2H66N.	27.6	30	60	116 x 245	1,86	2	B
CLZ-FP-48/40-60Hz-HD	[C] R2H66R.	36.75	40	60	136 x 220	2,43	-	B
CLZ-FP-48/50-60Hz-HD	[C] R2H66S.	46	50	60	136 x 355	5,00	-	C
Type	**Code**	**480 V kvar**	**525 V kvar**	**Hz**	**dia.x height (mm)**	**weight (kg)**	**Cover (opc.)**	**Terminal**
Un = 3 x 525 V / 60 Hz								
CLZ-FPT-52/2,5-60Hz-HD	[C] R2H772.	2.1	2.5	60	63,5 x 127	0,45	-	F
CLZ-FPT-52/5-60Hz-HD	[C] R2H776.	4.2	5	60	63,5 x 175	0,90	-	F
CLZ-FPT-52/6,25-60Hz-HD	[C] R2H777.	5.2	6.25	60	63,5 x 175	1,10	-	F
CLZ-FPT-52/7,5-60Hz-HD	[C] R2H778.	6.25	7.5	60	63,5 x 202	0,33	-	F
CLZ-FP-52/8,5-60Hz-HD	[C] R2H67A.	7.1	8.5	60	85 x 175	0,85	1	A
CLZ-FP-52/10-60Hz-HD	[C] R2H67B.	8.4	10	60	85 x 175	0,91	1	A
CLZ-FP-52/11,5-60Hz-HD	[C] R2H67C.	9.6	11.5	60	85 x 245	0,97	1	A
CLZ-FP-52/12,5-60Hz-HD	[C] R2H67D.	10.5	12.5	60	85 x 245	0,99	1	A
CLZ-FP-52/15-60Hz-HD	[C] R2H67E.	12.5	15	60	85 x 245	1,11	1	A
CLZ-FP-52/17-60Hz-HD	[C] R2H67I.	14.2	17	60	85 x 245	1,17	1	A
CLZ-FP-52/20-60Hz-HD	[C] R2H67J.	16.7	20	60	100 x 245	1,45	7	A
CLZ-FP-52/22,5-60Hz-HD	[C] R2H67K.	18.8	22.5	60	100 x 245	1,50	7	A
CLZ-FP-52/25-60Hz-HD	[C] R2H67L.	20.9	25	60	100 x 245	1,66	7	A
CLZ-FP-52/30-60Hz-HD	[C] R2H67N.	25	30	60	116 x 245	1,95	2	B
CLZ-FP-52/34-60Hz-HD	[C] R2H67P.	28.4	34	60	116 x 245	2,13	2	B
CLZ-FP-52/40-60Hz-HD	[C] R2H67R.	33.4	40	60	136 x 261	5,00	-	B

All models are of the inert gas type, except for those with a 63.5 mm diameter and 136x355 mm size The dimensions (dxh) are shown for the tube only. Please consult the dimensions drawing at the end of this section for more information about the actual dimensions Terminal: maximum cross-section of type A cables: 16 mm2, type B: 25 mm2, type C: 35 mm2, F: Faston 6.3x0.8 mm and 12 A maximum current

CLZ-FP HD 60Hz

Three-phase tubular power capacitor (Heavy Duty range)

CLZ-FPT - Capacitors with Faston terminal / CLZ-FP - Capacitors with with terminal block

Type	Code	600 V kvar	Hz	dia.x height (mm)	weight (kg)	Cover (opc.)	Terminal
Un = 3 x 600 V / 60 Hz							
CLZ-FP-60/2,5-60Hz-HD	[C] R2H782.	2.5	60	63,5 x 127	0,70	-	F
CLZ-FPT-60/5-60Hz-HD	[C] R2H786.	5	60	63,5 x 175	0,80	-	F
CLZ-FPT-60/6,25-60Hz-HD	[C] R2H787.	6.25	60	63,5 x 175	0,90	-	F
CLZ-FPT-60/7,5-60Hz-HD	[C] R2H788.	7.5	60	63,5 x 175	1,00	-	F
CLZ-FP-60/10-60Hz-HD	[C] R2H68A.	10	60	85 x 175	1,10	1	A
CLZ-FP-60/12,5-60Hz-HD	[C] R2H68B.	12.5	60	85 x 245	1,20	1	A
CLZ-FP-60/15-60Hz-HD	[C] R2H68E.	15	60	85 x 245	1,30	1	A
CLZ-FP-60/17,5-60Hz-HD	[C] R2H68I.	17.5	60	85 x 245	1,25	1	A
CLZ-FP-60/20-60Hz-HD	[C] R2H68J.	20	60	100 x 245	1,90	7	A
CLZ-FP-60/21-60Hz-HD	[C] R2H68K.	21	60	100 x 245	1,60	7	A
CLZ-FP-60/25-60Hz-HD	[C] R2H68L.	25	60	100 x 245	2,20	7	A
CLZ-FP-60/30-60Hz-HD	[C] R2H68N.	30	60	116 x 245	2,40	2	B
CLZ-FP-60/34,5-60Hz-HD	[C] R2H68P.	34.5	60	116 x 245	2,60	2	B

Type	Code	660 V kvar	690 V kvar	Hz	dia.x height (mm)	weight (kg)	Cover (opc.)	Terminal
Un = 3 x 690 V / 60 Hz								
CLZ-FPT-69/2,5-60Hz-HD	[C] R2H792.	2.3	2.5	60	63,5 x 127	0,50	-	F
CLZ-FPT-69/5-60Hz-HD	[C] R2H796.	4.6	5	60	63,5 x 175	1,00	-	F
CLZ-FPT-69/7,5-60Hz-HD	[C] R2H798.	6.9	7.5	60	63,5 x 202	1,10	-	F
CLZ-FP-69/10-60Hz-HD	[C] R2H69B.	9.15	10	60	85 x 245	1,10	1	A
CLZ-FP-69/12,5-60Hz-HD	[C] R2H69D.	11.4	12.5	60	85 x 245	1,20	1	A
CLZ-FP-69/15-60Hz-HD	[C] R2H69E.	13.7	15	60	85 x 245	1,40	1	A
CLZ-FP-69/20-60Hz-HD	[C] R2H69J.	18.3	20	60	100 x 245	2,00	7	A
CLZ-FP-69/25-60Hz-HD	[C] R2H69L.	22.9	25	60	116 x 245	1,76	2	B
CLZ-FP-69/30-60Hz-HD	[C] R2H69N.	27.5	30	60	116 x 245	2,50	2	B
CLZ-FP-69/40-60Hz-HD	[C] R2H69R.	36.6	40	60	136 x 220	3,80	-	B
CLZ-FP-69/50-60Hz-HD	[C] R2H69S.	45.75	50	60	136 x 355	5,00	-	C

All models are of the inert gas type, except for those with a 63.5 mm diameter and 136x355 mm size The dimensions (dxh) are shown for the tube only. Please consult the dimensions drawing at the end of this section for more information about the actual dimensions Terminal: maximum cross-section of type A cables: 16 mm2, type B: 25 mm2, type C: 35 mm2, F: Faston 6.3x0.8 mm and 12 A maximum current

CMC B

Contactors

Type	Code	220-240V kvar	400-440-480 V kvar	500-550 V kvar	660-690 V kvar	Hz	weight (kg)
Maximum operating power (Kvar)							
CMC 7.5 B	[C] R281A5.	5	7.5	9	11	50 / 60	0,28
CMC 12 B	[C] R281A6.	6.7	12.5	15	18	50 / 60	0,32
CMC 20 B	[C] R281A4.	11	20	24	30	50 / 60	0,38
CMC 32 B	[C] R281A8.	14	25	30	35	50 / 60	0,47
CMC 40 B	[C] R281A1.	20	30	35	40	50 / 60	0,60
CMC 75 B	[C] R281A9.	29	50	60	70	50 / 60	1,00
CMC 85 B	[C] R281A3.	32	60	70	80	50 / 60	0,85
CMC 150 B	[C] R281AD.	45	80	100	115	50 / 60	2,40

RD

Fast discharging resistors

Type	Code	Impedance (Ω)	Dissipated power (w)
RD-60 2X1000	[*] R3Z220.	2 x 1000	10
RD-100 2X1000	[*] R3Z230.	2 x 1000	15

IR

Current limiting impedances

Type	Code	Cable section (mm2)
IR-6	[*] R3Z310.	6
IR-10	[*] R3Z320.	10
IR-25	[*] R3Z330.	25
IR-35	[*] R3Z340.	35
IR-50	[*] R3Z350.	50

ELEB

CSB coils

Type	Code	Use voltage (V)	µF
ELEB10100PCA	[1] R213A8.	230	100
ELEB10150PCA	[1] R213AE.	230	150
ELEB14055PCA	[1] R2139D.	400/440/690(*)	55
ELEB14069PCA	[1] R2139H.	400/440/690(*)	69
ELEB14082PCA	[1] R2139R.	400/440/690(*)	82

Type	Code	Use voltage (V)	µF
ELEB18027PCA	[1] R2137T.	460	27.4
ELEB18035PCA	[1] R2137A.	460	35
ELEB18050PCA	[1] R2137P.	460	50
ELEB20019PCA	[1] R2138D.	480/525/550	19.2
ELEB20038PCA	[1] R2138G.	480/525/550	38.4

(*) Wye (star) connection

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

CSB

Power capacitors for LV

Type	Code	kvar 50 Hz	kvar 60 Hz	Size (mm) width x height x depth	weight (kg)
230 Vac					
CSB-23/10	[*] R2321C.	10	12.5	359x330x120	6,37
CSB-23/12,5	[2] R2321D.	12.5	15	360x330x120	3,30
CSB-23/15	[*] R2321E.	15	17.5	360x330x120	6,00
CSB-23/20	[*] R2321F.	20	25	360x330x120	6,80
CSB-23/25	[2] R2321G.	25	30	360x330x120	7,90
CSB-23/30	[2] R2321H.	30	35	360x330x120	8,00
CSB-23/40	[*] R2321J.	40	50	360x520x120	12,00
CSB-23/50	[*] R2321K.	50	60	360x520x120	12,00
400 Vac					
CSB-40/15	[*] R2323E.	15	17.5	360x330x120	5,76
CSB-40/20	[*] R2323F.	20	25	360x330x120	6,01
CSB-40/25	[*] R2323G.	25	30	360x330x120	5,68
CSB-40/30	[*] R2323H.	30	35	360x330x120	6,70
CSB-40/40	[*] R2323J.	40	50	360x330x120	7,70
CSB-40/50	[*] R2323K.	50	60	360x330x120	7,60
CSB-40/60	[*] R2323L.	60	70	360x520x120	10,80
CSB-40/80	[*] R2323Q.	80	95	360x520x120	12,85
CSB-40/100	[*] R2323R.	100	120	360x520x120	13,50
440 Vac					
CSB-44/15	[*] R2324E.	15	17.5	360x330x120	4,70
CSB-44/20	[*] R2324F.	20	25	360x330x120	4,90
CSB-44/25	[2] R2324G.	25	30	360x330x120	5,90
CSB-44/30	[*] R2324H.	30	35	360x330x120	5,60
CSB-44/40	[*] R2324J.	40	50	360x330x120	7,00
CSB-44/50	[*] R2324K.	50	60	360x330x120	7,80
CSB-44/60	[*] R2324L.	60	70	360x330x120	7,30
CSB-44/80	[*] R2324Q.	80	95	360x520x120	11,80
CSB-44/100	[*] R2324R.	100	120	360x520x120	12,90
460 Vac					
CSB-46/15	[2] R2325E.	15	17.5	360x330x120	6,00
CSB-46/20	[*] R2325F.	20	25	360x330x120	6,11
CSB-46/25	[2] R2325G.	25	30	360x330x120	6,90
CSB-46/30	[*] R2325H.	30	35	360x330x120	6,95
CSB-46/40	[*] R2325J.	40	50	360x330x120	7,60
CSB-46/50	[*] R2325K.	50	60	360x520x120	8,20
CSB-46/60	[*] R2325L.	60	70	360x520x120	11,40
CSB-46/80	[*] R2325Q.	80	95	360x520x120	13,00
CSB-46/100	[*] R2325R.	100	120	360x610x120	16,00

Type	Code	kvar 50 Hz	kvar 60 Hz	Size (mm) width x height x depth	weight (kg)
480 Vac					
CSB-48/10	[C] R277AC.	8	10	360x330x120	2,80
CSB-48/15	[C] R277AE.	12.5	15	360x330x120	7,10
CSB-48/20	[C] R277AF.	16.7	20	360x330x120	3,50
CSB-48/25	[C] R277AG.	20.8	25	360x330x120	4,20
CSB-48/30	[C] R277AH.	25	30	360x330x120	4,20
CSB-48/40	[C] R277AJ.	33.3	40	360x330x120	5,00
CSB-48/50	[C] R277AK.	41.7	50	360x520x120	6,80
CSB-48/60	[C] R277AL.	50	60	360x520x120	7,50
525 Vac					
CSB-52/10	[C] R2326C.	10	12.5	360x330x120	2,60
CSB-52/15	[C] R2326E.	15	17.5	360x330x120	3,30
CSB-52/20	[C] R2326F.	20	25	360x330x120	3,30
CSB-52/25	[C] R2326G.	25	30	360x330x120	7,10
CSB-52/30	[C] R2326H.	30	35	360x330x120	13,00
CSB-52/40	[C] R2326J.	40	50	360x330x120	8,50
CSB-52/50	[C] R2326K.	50	60	360x520x120	10,80
CSB-52/60	[C] R2326L.	60	70	360x520x120	11,70
CSB-52/70	[C] R2326M.	70	85	360x520x120	12,00
690 Vac					
CSB-69/10	[3] R232BC.	10	12.5	360x330x120	2,60
CSB-69/15	[3] R232BE.	15	17.5	360x330x120	3,30
CSB-69/20	[3] R232BF.	20	25	360x330x120	5,00
CSB-69/25	[3] R232BG.	25	30	360x330x120	3,30
CSB-69/30	[3] R232BH.	30	35	360x330x120	4,20
CSB-69/40	[3] R232BJ.	40	50	360x330x120	5,00
CSB-69/50	[3] R232BK.	50	60	360x330x120	8,10
CSB-69/60	[3] R232BL.	60	70	360x520x120	13,80
CSB-69/80	[3] R232BQ.	80	95	360x520x120	11,00
CSB-69/100	[3] R232BR.	100	0	360x520x120	9,00

1100 VAC for low-voltage networks (≤ 1000 VAC)

1100 VAC for low-voltage networks (≤ 1000 VAC)

CFB

Power capacitors for detuned filters, type P=7% (fres=189 Hz)

Type	Code	400 V kvar	440 V kvar	690 V kvar	For reactor	Size (mm) width x height x depth	weight (kg)
CFB 460							
CFB-46/6	[1] R2415A.	5	6.25	-	RZ-6,25-460	360x330x120	3,30
CFB-46/12,5	[1] R2415D.	10	12.5	-	RZ-10-400	360x330x120	6,00
CFB-46/15	[1] R2415E.	12.5	15	-	RZ-12,5-400	360x330x120	3,90
CFB-46/19	[1] R2415F.	15	18.5	-	RZ-15-400	360x330x120	5,80
CFB-46/25	[1] R2415G.	20	25	-	RBZ-20-400	360x330x120	6,80
CFB-46/30	[1] R2415H.	25	30	-	RBZ-25-400	360x330x120	6,80
CFB-46/37	[1] R2415J.	30	40	-	RBZ-30-400	360x330x120	7,60
CFB-46/50	[*] R2415K.	40	50	-	RBZ-40-400	360x520x120	10,50
CFB-46/62	[*] R2415L.	50	60	-	RBZ-50-400	360x520x120	11,00
CFB-46/74	[*] R2415P.	60	75	-	RBZ-60-400	360x520x120	12,90
CFB-46/100	[*] R2415R.	80	100	-	RBZ-80-400	360x610x120	16,10
CFB 790							
CFB-79/6	[C] R241DA.	-	-	5	REZ-5-400	360x330x120	2,60
CFB-79/12,5	[C] R241DD.	-	-	10	REZ-10-400	360x330x120	2,60
CFB-79/19	[C] R241DF.	-	-	15	REZ-15-400	360x330x120	3,30
CFB-79/25	[C] R241DG.	-	-	20	REZ-20-400	360x330x120	6,10
CFB-79/30	[C] R241DH.	-	-	25	REZ-25-400	360x330x120	7,00
CFB-79/37	[C] R241DI.	-	-	30	REZ-30-400	360x330x120	7,00
CFB-79/50	[C] R241DK.	-	-	40	REZ-40-400	360x520x120	11,00
CFB-79/62	[C] R241DL.	-	-	50	RBEZ-50-400	360x520x120	13,00
CFB-79/74	[C] R241DP.	-	-	60	RBEZ-60-400	360x520x120	14,00
CFB-79/100	[C] R241DR.	-	-	80	RBEZ-80-400	360x610x120	15,00

NOTE: The capacitor has been sized for 460/790 V and a power that is 20% higher than that indicated in all columns to compensate for the overvoltage effect of the reactor.

RZ-RBZ

Reactors III for detuned filters

Type	Code	400 V kvar	Hz	For capacitor	In (A)	L(mH)	Losses (W)	Size (mm) width x height x depth	weight (kg)
400 Vac, 50 Hz, f resonance = 189 Hz / p= 7%									
RZ-5-400	[*] P73110.	5	50	CLZ-FP-46/6,25	7,2	7.66	26	155x165x92	4,00
RZ-6,25-400	[*] P73112.	6.25	50	CLZ-FP-52/10	9	6.1	33	180x190x100	6,00
RZ-10-400	[*] P73115.	10	50	CLZ-FP-46/12,5	15	3.83	52	180x190x100	6,50
RZ-12,5-400	[*] P73117.	12.5	50	CLZ-FP-46/15	18	3.05	57	180x192x110	7,00
RZ-15-400	[*] P73120.	15	50	CLZ-FP-46/19	22	2.55	59	180x190x110	8,00
RBZ-20-400	[*] P73125.	20	50	CLZ-FP-46/25	29	1.91	79	235x165x125	14,00
RBZ-25-400	[*] P73130.	25	50	CLZ-FP-46/30	36	1.53	93	235x165x125	14,00
RBZ-30-400	[*] P73135.	30	50	2 x CLZ-FP-46/19	43	1.27	124	255x200x125	19,00
RBZ-40-400	[*] P73140.	40	50	2 x CLZ-FP-46/25	58	0.95	149	255x200x125	20,00
RBZ-50-400	[*] P73145.	50	50	2 x CLZ-FP-46/30	72	0.76	189	255x220x145	25,00
RBZ-60-400	[*] P73150.	60	50	3 x CLZ-FP-46/25	87	0.63	210	255x240x145	28,00
RBZ-80-400	[*] P73155.	80	50	3 x CLZ-FP-46/33,3	115	0.48	241	305x255x155	31,00
400 Vac, 50 Hz, f resonance = 134 Hz / p= 14%									
RZ-5-400-14%	[C] P731100000300	5	50	CLZ-FP-52/7,5-HD | CFB-52/7,5	7,2	16.31	62	180x195x100	-
RZ-10-400-14%	[C] P731150000300	10	50	CLZ-FP-52/15-HD | CFB-52/15	15	8.15	91	250x245x130	-
RZ-12,5-400-14%	[C] P731170000300	12.5	50	CLZ-FP-52/20-HD | CFB-52/19	18	6.52	130	250x245x130	-
RZ-15-400-14%	[C] P731200000300	15	50	CLZ-FP-52/25-HD | CFB-52/23	22	5.43	130	250x245x145	-
RZ-20-400-14%	[C] P731250000300	20	50	CLZ-FP-52/30-HD | CFB-52/30	29	4.07	150	250x245x145	-
RBZ-25-400-14%	[C] P731300000300	25	50	CLZ-FP-52/12,5-HD + CLZ-FP-52/30-HD | CFB-52/38	36	3.26	168	250x245x145	-
RBZ-30-400-14%	[C] P731350000300	30	50	CLZ-FP-52/25-HD + CLZ-FP-52/20-HD | CFB-52/46	43	2.71	191	300x255x155	-
RBZ-40-400-14%	[C] P731400000300	40	50	2 x CLZ-FP-52/30-HD | CFB-52/60,5	58	2.03	267	345x255x155	-
RBZ-50-400-14%	[C] P731450000300	50	50	3 x CLZ-FP-52/25-HD | CFB-52/76	72	1.63	341	345x275x175	-
RBZ-60-400-14%	[C] P731500000300	60	50	3 x CLZ-FP-52/30-HD | CFB-52/91	87	1.35	421	375x275x185	-

RZ-RBZ-60Hz

Reactors III for detuned filters, 60 Hz

Type	Code	480 V kvar	Hz	For capacitor	L(mH)
480 Vac, 60 Hz, f resonance = 227 Hz / p= 7%					
RZ-7,5-480-60 Hz-7%	[C] P731130017000	7.5	60	CLZ-FP-52/8,5-60Hz-HD	6.12
RZ-10-480-60Hz-7%	[C] P731150017000	10	60	CLZ-FP-52/11,5-60Hz-HD	4.58
RZ-12,5-480-60 Hz-7%	[C] P731170017000	12.5	60	CLZ-FP-52/15-60Hz-HD	3.66
RZ-15-480-60 Hz-7%	[C] P731200017000	15	60	CLZ-FP-52/17-60Hz-HD	3.06
RBZ-20-480-60Hz-7%	[C] P731250017000	20	60	CLZ-FP-52/22,5-60Hz-HD	2.29
RBZ-25-480-60 Hz-7%	[C] P731300017000	25	60	CLZ-FP-52/30-60Hz-HD	1.83
RBZ-30-480-60 Hz-7%	[C] P731350017000	30	60	CLZ-FP-52/34-60Hz-HD	1.53
RBZ-40-480-60Hz-7%	[C] P731400017000	40	60	2 x CLZ-FP-52/22,5-60Hz-HD	1.15
RBZ-50-480-60 Hz-7%	[C] P731450017000	50	60	2 x CLZ-FP-52/30 -60Hz-HD	0.92
RBZ-60-480-60 Hz-7%	[C] P731500017000	60	60	2 x CLZ-FP-52/34-60Hz-HD	0.76
RBZ-80-480-60Hz-7%	[C] P731550017000	80	60	3 x CLZ-FP-52/30-60Hz-HD	0.58
480 Vac, 60 Hz, f resonance = 160 Hz / p= 14%					
RZ-12,5-480-60Hz-14%	[C] P731170017300	12.5	60	CLZ-FP-60/17,5-60Hz-HD	7.81
RZ-15-480-60Hz-14%	[C] P731200017300	15	60	CLZ-FP-60/21-60Hz-HD	6.52
RZ-25-480-60Hz-14%	[C] P731300017300	25	60	CLZ-FP-60/34,5-60Hz-HD	3.91
RBZ-30-480-60Hz-14%	[C] P731350017300	30	60	2 x CLZ-FP-60/21-60Hz-HD	3.26
RBZ-50-480-60Hz-14%	[C] P731450017300	50	60	2 x CLZ-FP-60/34,5-60Hz-HD	1.95

TABLE OF ADDITIONAL FEATURES

RZ, RBZ

P	7	X	X	X	X	0	0	X	X	X
Code							Internal code			Delivery time
Frequency			Standard (50 Hz)				0			=
			60 Hz				1			C
Voltage			Standard (400 $V_{c.a.}$)					0		-
			230 $V_{c.a.}$					1		C
			Other voltages					C		C
Factor P %			Standard (7 %)						0	-
			5,67 %						4	C
			8,7 %						6	C
			14 %						3	C

CFB-6B

Power capacitors for harmonics filters with static switching operation of the FRE series

Capacitors with 6 terminals for CPCb boards. f resonance = 189 Hz

Type	Code	400 V kvar	440 V kvar	For reactor	Size (mm) width x height x depth	weight (kg)
400 Vac						
CFB-46/6-6B	[C] R2425A.	5	6.25	REZ-5-400	360x330x120	3,30
CFB-46/12,5-6B	[C] R2425D.	10	12.5	REZ-10-400	360x330x120	3,90
CFB-46/19-6B	[C] R2425F.	15	18.5	REZ-15-400	360x330x120	3,90
CFB-46/25-6B	[C] R2425G.	20	25	REZ-20-400	360x330x120	7,10
CFB-46/30-6B	[C] R2425H.	25	30	REZ-25-400	360x330x120	4,60
CFB-46/37-6B	[C] R2425J.	30	40	REZ-30-400	360x330x120	7,10
CFB-46/50-6B	[C] R2425K.	40	50	REZ-40-400	360x520x120	10,70
CFB-46/62-6B	[C] R2425L.	50	60	RBEZ-50-400	360x520x120	11,00
CFB-46/74-6B	[C] R2425P.	60	75	RBEZ-60-400	360x520x120	13,00
CFB-46/100-6B	[C] R2425R.	80	100	RBEZ-80-400	360x610x120	16,30

NOTE: The capacitor has been sized for 460/260 V and a power that is 20 % higher than that indicated in kvar columns to compensate for the overvoltage effect of the reactor.

New

REZ-RBEZ

Reactors III for detuned static filters for FRE static switching bank

For capacitors with 6 terminals

Type	Code	400 V kvar	Hz	For capacitor	In (A)	L(mH)	Losses (W)	Size (mm) width x height x depth	weight (kg)
400 V, 50 Hz, f resonance = 189 Hz / p= 7%									
REZ-5-400	[4] P73210.	5	50	CFB-46/6-6B	5 A	23.67	63	90x155x150	4,00
REZ-10-400	[4] P73215.	10	50	CFB-46/12,5-6B	9 A	11.27	69	110x195x180	7,00
REZ-15-400	[4] P73220.	15	50	CFB-46/19-6B	13 A	7.5	70	120x195x180	9,00
REZ-20-400	[4] P73225.	20	50	CFB-46/25-6B	17 A	5.68	91	130x245x250	15,00
REZ-25-400	[4] P73230.	25	50	CFB-46/30-6B	21 A	4.68	110	130x245x250	16,00
REZ-30-400	[4] P73235.	30	50	CFB-46/37-6B	26 A	3.84	109	130x245x250	17,00
RBEZ-40-400	[4] P73240.	40	50	CFB-46/50-6B	35 A	2.84	179	180x235x300	30,00
RBEZ-50-400	[4] P73245.	50	50	CFB-46/62-6B	42 A	2.29	189	180x235x300	30,00
RBEZ-60-400	[4] P73250.	60	50	CFB-46/74-6B	51 A	1.89	252	180x235x300	30,00
RBEZ-80-400	[4] P73255.	80	50	CFB-46/100-6B	68 A	1.42	263	195x255x345	40,00

Supplement selection table to adapt **CSB / CFB** capacitor height to a capacitor bank equipped with **CS / CF** capacitors

CS / CF Capacitor TO REPLACE		**CSB / CFB** capacitor				
Total capacitor height (box + terminals) (mm)	Height box capacitor (mm)	Total heigh of capacitor (box+terminals) (mm)	Capacitor box height (mm)			
390	330	330	270	**SP-60**	[*] **R2ZZZ1**	
610	550	520	460	**SP-90**	[*] **R2ZZZ2**	
760	700	610	550	**SP-150**	[*] **R2ZZZ3**	

TABLE OF ADDITIONAL FEATURES

REZ, RBEZ

P	7	X	X	X	X	0	0	X	X	X	
Code						Internal code					Delivery time
Frequency								0			-
								1			C
Voltage									0		-
									1		C
									C		C
Factor P %										0	-
										4	C
										6	C
										3	C

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

Basic fixed compensation

CLP

Power capacitor with miniature circuit breaker, 50 Hz

Type	Code	440 V kvar	Hz	In (A)	Cut off power	IP	Size (mm) width x height x depth
440 Vac / 50Hz							
CLP-44/2,5	[2] R21574.	2.5	50	3.28	6 kA	20	80x350x85
CLP-44/3	[2] R21575.	3	50	3.94	6 kA	20	80x350x85
CLP-44/5	[2] R21578.	5	50	6.57	6 kA	20	80x350x85
CLP-44/6,25	[2] R21579.	6.25	50	8.21	6 kA	20	80x350x85

CLP-C

CLZ Capacitor with miniature circuit breaker and contactor, 50 Hz

Type	Code	440 V kvar	Hz	In (A)	Cut off power	IP	Size (mm) width x height x depth
440 Vac / 50Hz							
CLP-C-44/2,5	[C] R22574.	2.5	50	3.28	6 kA	20	215x490x147
CLP-C-44/3	[C] R22575.	3	50	3.94	6 kA	20	215x490x147
CLP-C-44/5	[C] R22578.	5	50	6.57	6 kA	20	215x490x147
CLP-C-44/6,25	[C] R22579.	6.25	50	8.21	6 kA	20	215x490x147
CLP-C-44/7,5	[C] R2257A.	7.5	50	9.85	6 kA	20	215x490x147
CLP-C-44/10	[C] R2257C.	10	50	13	6 kA	20	215x490x147
CLP-C-44/12,5	[C] R2257D.	12.5	50	16	6 kA	20	215x490x147
CLP-C-44/15	[C] R2257E.	15	50	20	6 kA	20	215x490x147
CLP-C-44/20	[C] R2257F.	20	50	26	6 kA	20	215x490x147
CLP-C-44/25	[C] R2257G.	25	50	33	6 kA	20	215x490x147

CSB-M

Power capacitors with miniature circuit breaker protection, 50 Hz

Type	Code	400 V kvar	440 V kvar	Cut off power	Aut.Switch (A)	Cable section (mm2)	Size (mm) width x height x depth	weight (kg)
440 Vac, 50 Hz								
CSB-M-5-440	[1] R23948.	4	5	6 kA	10	6	140x381x280	5,50
CSB-M-7,5-440	[1] R2394A.	6	7.5	6 kA	16	6	140x381x280	6,00
CSB-M-10-440	[1] R2394C.	8	10	6 kA	20	6	140x381x280	6,00
CSB-M-12,5-440	[*] R2394D.	10	12.5	6 kA	25	6	140x381x280	6,20
CSB-M-15-440	[1] R2394E.	12.5	15	6 kA	32	6	140x381x280	4,90
CSB-M-20-440	[*] R2394F.	17	20	6 kA	40	10	140x381x280	7,20
CSB-M-25-440	[*] R2394G.	21	25	6 kA	50	10	140x381x280	6,90
CSB-M-30-440	[*] R2394H.	25	30	6 kA	63	16	140x381x280	6,80
CSB-M-37,5-440	[*] R2394J.	31	37.5	10 kA	80	25	140x381x280	8,10
CSB-M-50-440	[*] R2394K.	42	50	10 kA	100	25	140x381x280	9,80
CSB-M-60-440	[*] R2394L.	50	60	10 kA	125	35	140x571x280	9,00
CSB-M-75-440	[*] R2394M.	66	75	10 kA	160	50	140x571x280	13,00

CSB-F

Power capacitors with fuse protection, 50 Hz.

Type	Code	400 V kvar	440 V kvar	Cut off power	Fuses (A)	Cable section (mm2)	Size (mm) width x height x depth	weight (kg)
440 V, 50 Hz								
CSB-F-5-440	[1] R23958.	4	5	120 kA	16	6	140x381x280	7,00
CSB-F-7,5-440	[1] R2395A.	6	7.5	120 kA	20	6	140x381x280	7,50
CSB-F-10-440	[1] R2395C.	8	10	120 kA	25	6	140x381x280	7,80
CSB-F-12,5-440	[1] R2395D.	10	12.5	120 kA	35	6	140x381x280	8,10
CSB-F-15-440	[1] R2395E.	12.5	15	120 kA	50	6	140x381x280	8,30
CSB-F-20-440	[1] R2395F.	17	20	120 kA	50	10	140x381x280	8,00
CSB-F-25-440	[1] R2395G.	21	25	120 kA	50	10	140x381x280	8,00
CSB-F-30-440	[1] R2395H.	25	30	120 kA	80	16	140x381x280	8,00
CSB-F-37,5-440	[1] R2395J.	31	37.5	120 kA	100	25	140x381x280	9,22
CSB-F-50-440	[1] R2395K.	42	50	120 kA	125	25	140x381x280	10,00
CSB-F-60-440	[1] R2395L.	50	60	120 kA	160	35	140x571x280	10,00
CSB-F-75-440	[1] R2395P.	63	75	120 kA	160	50	140x571x280	13,00
CSB-F-100-440	[1] R2395Q.	80	100	120 kA	160	70	140x571x280	15,00

Advanced fixed compensation

New

CCF

CSB capacitor with contactor and fuses, 50 Hz

Type	Code	400 V kvar	440 V kvar	In (A)	Cut off power	Fuses (A)	Cable section (mm2)	Size (mm) width x height x depth	weight (kg)
440 V / 50 Hz									
CCF-12,5-440	[1] R3SA21.	10	12.5	16	120 kA	35	6	360x814x196	12,00
CCF-15-440	[1] R3SA31.	12.5	15	20	120 kA	35	10	360x814x196	13,00
CCF-20-440	[1] R3SA41.	17	20	26	120 kA	50	10	360x814x196	14,00
CCF-25-440	[1] R3SA51.	21	25	33	120 kA	63	10	360x814x196	15,00
CCF-30-440	[1] R3SA61.	25	30	39	120 kA	80	16	360x814x196	15,00
CCF-37,5-440	[1] R3SA81.	31	37.5	49	120 kA	80	25	360x814x196	17,00
CCF-50-440	[1] R3SA91.	42	50	66	120 kA	125	35	360x814x196	21,00
CCF-60-440	[1] R3SAA1.	50	60	79	120 kA	160	50	360x1004x196	22,00
CCF-75-440	[1] R3SAB1.	63	75	99	120 kA	160	50	360x1004x196	24,00
CCF-100-440	[1] R3SAD1.	80	100	131	120 kA	160	70	360x1004x196	29,00

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 particularities of each installation and type of cable

New

CPA

Fixed capacitors with automatic 50-Hz switch protection

Type	Code	400 V kvar	440 V kvar	Cut off power	Aut.Switch (A)	Cable section (mm2)	Size (mm) width x height x depth	weight (kg)
CPA-15-440	[2] R24A3D.	12.5	15	50 kA	63	16	360x814x196	10,00
CPA-25-440	[2] R24A3H.	21	25	50 kA	63	16	360x814x196	16,00
CPA-37,5-440	[2] R24A3G.	31	37.5	50 kA	80	25	360x814x196	13,00
CPA-50-440	[2] R24A3J.	42	50	50 kA	100	25	360x814x196	15,00
CPA-60-440	[2] R24A3K.	50	60	50 kA	125	35	360x814x196	18,00
CPA-75-440	[2] R24A3L.	62	75	50 kA	160	50	360x1004x196	21,00
CPA-100-440	[2] R24A3M.	83	100	50 kA	200	70	360x1004x196	22,00
CPA-120-440	[2] R24A3N.	100	120	50 kA	250	95	360x1004x196	28,00

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 particularities of each installation and type of cable

OPTIM FRF

Fixed capacitors with detuned reactor of P = 7% (fres=189 Hz), 50 Hz

Type	Code	400 V kvar	440 V kvar	Cable section (mm2)	Size (mm) width x height x depth	weight (kg)
OPTIM FRF, fuse protection APR, 440 V, 50 Hz						
OPTIM FRF-25-440	[2] R5X350.	21	25	10	650x1060x420	78,00
OPTIM FRF-37,5-440	[2] R5X370.	31	37.5	16	650x1060x420	82,00
OPTIM FRF-50-440	[2] R5X380.	42	50	25	650x1060x420	85,00
OPTIM FRF-60-440	[2] R5X390.	50	60	35	650x1060x420	90,00
OPTIM FRF-75-440	[2] R5X3A0.	62	75	50	650x1060x420	96,00
OPTIM FRF-100-440	[2] R5X3B0.	83	100	70	650x1060x420	110,00

See CFB capacitor and RZ /RBZ reactor components in the Low Voltage Capacitor and Reactor Section. 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 particularities of each installation and type of cable

OPTIM FRM

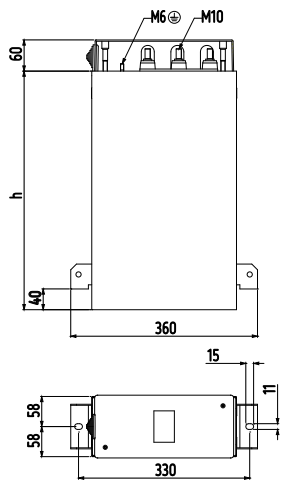
Fixed capacitors with detuned reactor of P = 7% (fres=189 Hz), 50 Hz

Type	Code	400 V kvar	440 V kvar	Cut off power	Cable section (mm2)	Size (mm) width x height x depth	weight (kg)
OPTIM FRM, molded case circuit breaker protection, 440 V, 50 Hz							
OPTIM FRM-25-440	[2] R5Y350.	21	25	50 kA	10	650x1060x420	78,00
OPTIM FRM-37,5-440	[2] R5Y370.	31	37.5	50 kA	16	650x1060x420	82,00
OPTIM FRM-50-440	[2] R5Y380.	42	50	50 kA	25	650x1060x420	85,00
OPTIM FRM-60-440	[2] R5Y390.	50	60	50 kA	35	650x1060x420	90,00
OPTIM FRM-75-440	[2] R5Y3A0.	62	75	50 kA	50	650x1060x420	96,00
OPTIM FRM-100-440	[2] R5Y3B0.	83	100	50 kA	70	650x1060x420	110,00

See CFB capacitor and RZ /RBZ reactor components in the Low Voltage Capacitor and Reactor Section. 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 particularities of each installation and type of cable

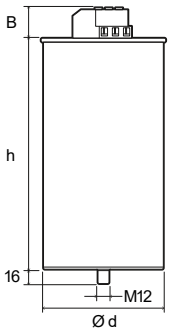
Dimensions

CSB / CFB



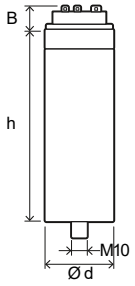
H (mm)
650
550
460
270

CLZ-FP



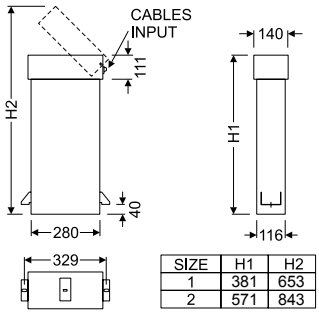
mm	d Ø	h	B	A Ø
85x175	85	175	31	90
85x245	85	245	31	90
100x245	100	245	31	105
116x245	116	245	35	121
136x220	136	220	35	141
136x261	136	261	35	141
136x355	136	355	46	141

CLZ-FPT



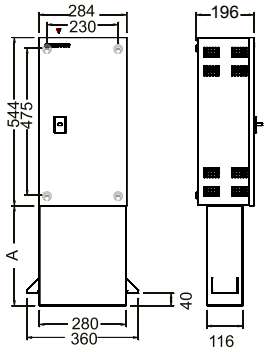
mm	d Ø	h	B	A Ø
63,5x98	63,5	98	13	68,5
63,5x127	63,5	127	13	68,5
63,5x175	63,5	175	13	68,5
63,5x202	63,5	202	13	68,5

CSB-F / CSB-M



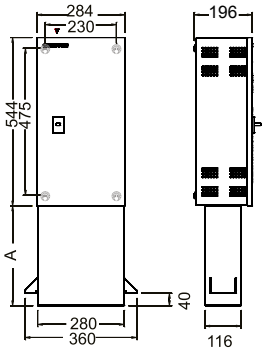
SIZE	H1	H2
1	381	653
2	571	843

CPA



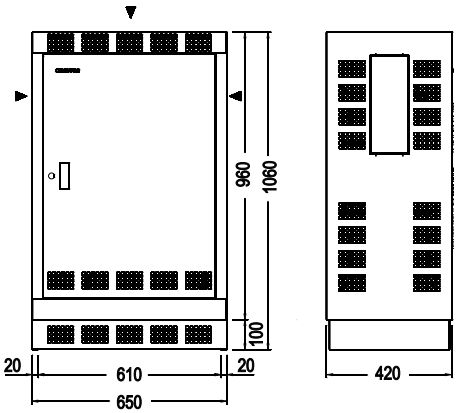
A
270
460

CCF



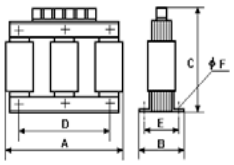
	A
ACF-40	324
ACF-60	549
ACF-80	699

OPTIM FRF / OPTIM FRM

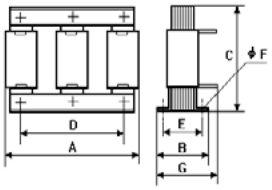


Dimensions

RZ / REZ



RBZ / RBEZ



Type	A mm	B mm	C mm	D* mm	E* mm	F mm	G mm	kg
RZ-5-400	155	76	165	75	55	7	--	4
RZ-6,24-400	180	112	190	90	75	7	--	6
RZ-10-400	180	112	190	90	75	7	--	6,5
RZ-12,5-400	180	112	190	90	85	7	--	7
RZ-15-400	180	110	190	90	85	7	--	8
RBZ-20-400	235	125	165	150	95	7	145	14
RBZ-25-400	235	125	165	150	95	7	145	14
RBZ-30-400	255	125	200	160	95	9	150	19
RBZ-40-400	255	125	200	160	95	9	150	20
RBZ-50-400	255	145	220	160	115	9	175	25
RBZ-60-400	255	145	240	180	115	9	175	28
RBZ-80-400	305	155	255	180	115	11	190	31

Type	A mm	B mm	C mm	D* mm	E* mm	F mm	G mm	kg
REZ-05-400	150	90	155	75	70	7	-	4
REZ-10-400	180	110	195	90	83	7	-	7
REZ-15-400	180	120	195	90	93	7	-	9
REZ-20-400	250	130	245	130	98	7	-	15
REZ-25-400	250	130	245	130	98	7	-	16
REZ-30-400	250	130	245	130	98	7	-	17
RBEZ-40-400	300	145	235	160	113	9	180	30
RBEZ-50-400	300	145	235	160	113	9	180	30
RBEZ-60-400	300	145	235	160	113	9	180	30
RBEZ-80-400	345	155	255	180	121	11	195	40

* Distance between fixings

Low voltage capacitor banks

Table: Selection of the reactive energy compensation unit					Page
Multiple loads	Slow variations	Without harmonics	OPTIM P&P		**130**
		With harmonics	SVGm	Inmunity to harmonics	**134**
			OPTIM FR P&P	Elimination of resonances	**132**
	Fast variations	Without harmonics	OPTIM EMS-C / OPTIM EMK		**135**
		With harmonics	SVGm	Inmunity to harmonics	**134**
			OPTIM FRE	Elimination of resonances	**135**

Table: Selection of the OPTIM

		OPTIM 3 P&P / 5 P&P	**OPTIM 9 P&P / 8 P&P**	**OPTIM 8L / 14L / 16L**
				
Rated voltage		440 V	440 V	440 V
Service voltage		400 V	400 V	400 V
Power range at rated voltage		OPTIM 3: 12,5 ... 62,5 kvar OPTIM 5: 55 ... 150 kvar	OPTIM 9: 165 ... 270 kvar OPTIM 8: 300 ... 480 kvar	OPTIM 8L: 450 a 800 kvar OPTIM 14L: 900 a 1400 kvar OPTIM 16L: 1500 a 1600 kvar
Contactor switching		•	•	•
No. Steps (maximum)		3 / 5	9 / 8	8 / 14 / 16
Enclosure	Thermoplastic IP 21	–	–	–
	Metallic IP 21	•	•	•
Installation (indoor)		•	•	•
Assembly	Wall-mounted	•	–	–
	Floor-mounted	–	•	•
Regulator	computer C Wi-Fi	•	•	•
	computer Smart III	Optional	Optional	Optional
Capacitor	Cylindrical CLZ	•	•	•
Built-in protection	General miniature circuit breaker	OPTIM 3: General OPTIM 5: By step	–	–
	APR NH-00 Fuses	–	•	•
Autotransformer for aux. supply		–	•	•

Table: Recommended capacitor bank power ratings - 7.5 to 105 kvar

kvar	Recommended capacitor bank	Electrical steps (**kvar**)
7,5 ... 17,5 kvar	OPTIM 3-P&P-17,5-440	7 x 2,5
17,5 ... 31,25 kvar	OPTIM 3-P&P-31,25-440	5 x 6,25
31,25 ... 43,75 kvar	OPTIM 3-P&P-43,75-440	7 x 6,25
43,75 ... 55 kvar	OPTIM 5-P&P-55-440	11 x 5
55 ... 70 kvar	OPTIM 5-P&P-70-440	7 x 10
75 ... 105 kvar	OPTIM 5-P&P-105-440	15 + 3 x 30

OPTIM P&P

Automatic capacitor banks, 2.5 to 1600 kvar, 50 Hz.

Type	Code	400 V kvar	440 V kvar	Composition	Aut.Switch (A)	Man. Switch (A)	Cable section (mm2)	Size (mm) width x height x depth	weight (kg)
OPTIM 1, automatic capacitor bank with reactive relay. Requires one measuring transformer - MC series 250 mA (see Measuring current Transformers)									
OPTIM 1-2,5-440	[*] R3Q631EN00000	2	2.5	1 x 2,5	Included	-	6	215x500x166	3,50
OPTIM 1-5-440	[*] R3Q641EN00000	4	5	1 x 5	Included	-	6	215x500x166	3,50
OPTIM 1-6,25-440	[*] R3Q651EN00000	5	6.25	1 x 6,25	Included	-	6	215x500x166	3,40
OPTIM 1-12,5-440	[*] R3Q681EN00000	10	12.5	1 x 12,5	Included	-	6	215x500x166	4,80
OPTIM 1-15-440	[*] R3Q691EN00000	12.5	15	1 x 15	Included	-	6	215x500x166	5,10
OPTIM 1A-18,2-440	[*] R3Q6E1EN00000	15	18.2	1 x 18,2	Included	-	6	270x500x166	9,70
OPTIM 1A-25-440	[*] R3Q6F1EN00000	20	25	1 x 25	Included	-	10	270x500x166	7,00
OPTIM 1A-30-440	[*] R3Q6D1EN00000	25	30	1 x 30	Included	-	10	270x500x166	7,00
OPTIM 2, automatic capacitor banks with regulator without display. Requires one measuring transformer - MC series 250 mA (see Measuring current Transformers)									
OPTIM 2-7,5-440	[*] R3Q761EN00000	6.25	7.5	2,5 + 5	Included	-	6	362x500x166	7,30
OPTIM 2-10,5-440	[1] R3Q771EN00000	8.5	10.5	3 + 7,5	Included	-	6	362x500x166	7,00
OPTIM 2-12,5-440	[*] R3Q781EN00000	10	12.5	5 + 7,5	Included	-	6	362x500x166	7,00
OPTIM 2-17,5-440	[1] R3Q7E1EN00000	14	17.5	5 + 12,5	Included	-	6	362x500x166	7,20
OPTIM 2-20-440	[1] R3Q7F1EN00000	16.5	20	7,5 + 12,5	Included	-	6	362x500x166	8,00
OPTIM 2-22,5-440	[*] R3Q7G1EN00000	18.5	22.5	7,5 + 15	Included	-	6	362x500x166	8,00
OPTIM 2-25-440	[1] R3Q7H1EN00000	21	25	10 + 15	Included	-	10	362x500x166	8,00
OPTIM 2-30-440	[1] R3Q7J1EN00000	25	30	15 + 15	Included	-	10	362x500x166	8,70
OPTIM 3 P&P, automatic capacitor banks with computer C Wi-Fi regulator									
OPTIM 3 P&P-12,5-440	[*] R3L110.	10	12.5	2,5+5+5	Included	-	6	400x600x260	18,00
OPTIM 3 P&P-17,5-440	[*] R3L120.	14	17.5	2,5+5+10	Included	-	6	400x600x260	18,00
OPTIM 3 P&P-25-440	[*] R3L130.	20	25	5+10+10	Included	-	10	400x600x260	18,00
OPTIM 3 P&P-31,25-440	[*] R3L140.	26	31.25	6,25+12,5+12,5	Included	-	10	400x600x260	18,00
OPTIM 3 P&P-37,5-440	[*] R3L150.	31.25	37.5	7,5+15+15	Included	-	16	400x600x260	18,00
OPTIM 3 P&P-43,75-440	[*] R3L160.	36	43.75	6,25+12,5+25	Included	-	25	400x600x260	18,00
OPTIM 3 P&P-52,5-440	[1] R3L170.	43	52.5	7,5+15+30	Included	-	25	400x600x260	20,00
OPTIM 3 P&P-62,5-440	[1] R3L180.	51	62.5	12,5+25+25	Included	-	35	400x600x260	40,00
OPTIM 5 P&P, automatic capacitor banks with computer C Wi-Fi regulator									
OPTIM 5 P&P-55-440	[*] R3L210.	45	55	5+10+20+20	125	200	35	600x740x260	31,00
OPTIM 5 P&P-70-440	[*] R3L220.	58	70	10+3x20	125	200	50	600x740x260	31,00
OPTIM 5 P&P-90-440	[1] R3L230.	74	90	15+15+30+30	200	200	70	600x740x260	31,00
OPTIM 5 P&P-105-440	[*] R3L240.	87	105	15+30+30+30	200	200	70	600x740x260	31,00
OPTIM 5 P&P-135-440	[1] R3L250.	112	135	15+30+30+30+30	250	250	95	600x740x260	37,00
OPTIM 5 P&P-150-440	[1] R3L260.	124	150	30+30+30+30+30	250	250	120	600x740x260	39,00
OPTIM 9 P&P, automatic capacitor banks with computer C Wi-Fi regulator. Built-in power supply autotransformer									
OPTIM 9 P&P-165-440	[*] R3L310.	136	165	15+5x30	400	400	120	700x1350x440	80,00
OPTIM 9 P&P-195-440	[1] R3L320.	161	195	15+6x30	400	400	150	700x1350x440	85,00
OPTIM 9 P&P-225-440	[*] R3L330.	186	225	15+7x30	400	400	185	700x1350x440	86,00
OPTIM 9 P&P-255-440	[1] R3L340.	211	255	15+8x30	630	630	240	700x1350x440	98,00
OPTIM 9 P&P-270-440	[1] R3L350.	223	270	9x30	630	630	240	700x1350x440	100,00
OPTIM 8 P&P, automatic capacitor banks with computer C Wi-Fi regulator. Built-in power supply autotransformer									
OPTIM 8 P&P-300-440	[1] R3L410.	248	300	2x30+4x60	630	630	2x150	1000x1750x440	126,00
OPTIM 8 P&P-330-440	[1] R3L420.	273	330	30+5x60	630	630	2x150	1000x1750x440	128,00
OPTIM 8 P&P-390-440	[1] R3L430.	322	390	30+6x60	800	800	2x185	1000x1750x440	135,00
OPTIM 8 P&P-450-440	[1] R3L440.	372	450	30+7x60	800	800	2x240	1000x1750x440	142,00
OPTIM 8 P&P-480-440	[1] R3L450.	396	480	8x60	1000	1000	2x240	1000x1750x440	163,00
OPTIM 8L P&P, automatic capacitor banks with computer C Wi-Fi regulator. Built-in power supply autotransformer									
OPTIM 8L P&P-550-440	[1] R35L10.	454	550	50+5x100	1000	1000	2x240	1200x1900x650	234,00
OPTIM 8L P&P-650-440	[1] R35L20.	537	650	50+6x100	1250	1600	3x150	1200x1900x650	255,00
OPTIM 8L P&P-750-440	[1] R35L30.	620	750	50+7x100	1600	1600	3x185	1200x1900x650	280,00
OPTIM 8L P&P-800-440	[1] R35L40.	661	800	8x100	1600	1600	3x185	1200x1900x650	290,00
OPTIM 14L P&P, automatic capacitor banks with computer C Wi-Fi regulator. Built-in power supply autotransformer									
OPTIM 14L P&P-900-440	[2] R36L10.	743	900	2X50+8x100	1250+400	1600+400	3x150/185	2100x1900x650	435,00
OPTIM 14L P&P-950-440	[2] R36L20.	785	950	50+9x100	1600+400	1600+400	3x185/185	2100x1900x650	445,00
OPTIM 14L P&P-1050-440	[2] R36L30.	867	1050	50+10x100	1600+630	1600+630	3x185/240	2100x1900x650	470,00
OPTIM 14L P&P-1150-440	[2] R36L40.	950	1150	50+11x100	1600+1000	1600+1000	3x185/2x150	2100x1900x650	495,00
OPTIM 14L P&P-1200-440	[2] R36L50.	991	1200	12x100	1600+800	1600+800	3x185/2x185	2100x1900x650	505,00
OPTIM 14L P&P-1300-440	[2] R36L60.	1074	1300	100+6x200	1600+1250	1600+1600	3x185/2x240	2100x1900x650	535,00
OPTIM 14L P&P-1400-440	[2] R36L70.	1156	1400	100+100+6x200	1600+1250	1600+1600	3x185/3x120	2100x1900x650	560,00
OPTIM 16L P&P, automatic capacitor banks with computer C Wi-Fi regulator. Built-in power supply autotransformer									
OPTIM 16L P&P-1500-440	[2] R37L30.	1239	1500	100+7x200	1600+1600	1600+1600	3x185/3x150	2400x1900x650	583,00
OPTIM 16L P&P-1600-440	[2] R37L40.	1322	1600	100+100+7x200	1600+1600	1600+1600	3x185/3x185	2400x1900x650	580,00

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 1 year free of charge VAR system

Table: selection capacitor banks with rejection filters, Type P=7% (f_{res}=189 Hz), 50 Hz

		OPTIM FRS P&P	OPTIM FR P&P
			
Rated voltage		440 V	440 V
Service voltage		400 V	400 V
Power range at rated voltage (50 Hz)		de 31,25 a 120 kvar	OPTIM FR4 P&P: 150 a 400 kvar OPTIM FR6 P&P: 400 a 600 kvar OPTIM FR8 P&P: 600 a 800 kvar OPTIM FR10 P&P: 800 a 1000 kvar OPTIM FR12 P&P: 1050 a 1200 kvar
Contactor switching		•	•
No. Steps (maximum)		4	4 / 6 / 8 / 10 / 12
Enclosure	Metallic IP 21	•	•
Installation (indoor)		•	•
Assembly (floor-mounted)		•	•
Regulator	Computer C Wi-Fi	•	•
	Computer Smart III	Optional	Optional
Capacitor	Cylindrical CLZ	•	•
Reactors tuned to 189 Hz (ask if you require other tuning values)		•	•
Built-in protection	Miniature ircuit breaker per step	•	–
	APR NH-00 Fuses	–	•
Autotransformer for aux. supply		•	•

OPTIM FR P&P

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

Type	Code	400 V kvar	440 V kvar	Composition	Aut.Switch (A)	Man. Switch (A)	Cable section (mm2)	Size (mm) width x height x depth	weight (kg)
OPTIM FRS-P&P, automatic capacitor banks with computer C Wi-Fi regulator									
OPTIM FRS-P&P-31,25-440	[2] R54R64.	26	31.25	6,25 + 2 x 12,5	-	Included	10	800x1200x500	82,00
OPTIM FRS-P&P-43,75-440	[2] R54R74.	36	43.75	6,25 + 12,5 + 25	-	Included	25	800x1200x500	108,00
OPTIM FRS-P&P-62,5-440	[2] R54R81.	52	62.5	12,5 + 2 x 25	-	Included	35	800x1200x500	100,00
OPTIM FRS-P&P-90-440	[2] R54R88.	74	90	2 x 15 + 2 x 30	-	Included	70	800x1200x500	133,00
OPTIM FRS-P&P-105-440	[2] R54R92.	87	105	15 + 3 x 30	-	Included	70	800x1200x500	122,00
OPTIM FRS-P&P-120-440	[2] R54R95.	99	120	4 x 30	-	Included	95	800x1200x500	129,00
OPTIM FR4-P&P, automatic capacitor banks with computer C Wi-Fi regulator									
OPTIM FR4-P&P-150-440	[2] R54S24.	125	150	30 + 2 x 60	400	400	95	900x1900x650	220,00
OPTIM FR4-P&P-175-440	[2] R54S25.	145	175	25 + 50 + 100	400	400	120	900x1900x650	225,00
OPTIM FR4-P&P-200-440	[2] R54S28.	165	200	50 + 50 + 100	400	400	150	900x1900x650	209,00
OPTIM FR4-P&P-250-440	[2] R54S29.	207	250	50 + 2 x 100	630	630	185	900x1900x650	242,00
OPTIM FR4-P&P-300-440	[2] R54S30.	248	300	50 + 50 + 2 x 100	630	630	240	900x1900x650	270,00
OPTIM FR4-P&P-350-440	[2] R54S32.	289	350	50 + 3 x 100	630	630	2x150	900x1900x650	299,00
OPTIM FR4-P&P-400-440	[2] R54S34.	331	400	4 x 100	800	800	2x150	900x1900x650	335,00
OPTIM FR6-P&P, automatic capacitor banks with computer C Wi-Fi regulator									
OPTIM FR6-P&P-400-440	[2] R54T25.	331	400	50 + 50 + 3 x 100	800	800	2x185	1200x1900x650	370,00
OPTIM FR6-P&P-450-440	[2] R54T30.	372	450	50 + 4 x 100	800	800	2x185	1200x1900x650	376,00
OPTIM FR6-P&P-500-440	[2] R54T35.	413	500	5 x 100	1000	1000	2x240	1200x1900x650	397,00
OPTIM FR6-P&P-550-440	[2] R54T40.	455	550	50 + 5 x 100	1000	1000	2x240	1200x1900x650	465,00
OPTIM FR6-P&P-600-440	[2] R54T45.	496	600	6 x 100	1000	1000	2x240	1200x1900x650	685,00
OPTIM FR8-P&P, automatic capacitor banks with computer C Wi-Fi regulator									
OPTIM FR8-P&P-600-440	[2] R54U36.	496	600	50 + 50 + 5 x 100	1250	1600	2x240	1500x1900x650	525,00
OPTIM FR8-P&P-650-440	[2] R54U38.	537	650	50 + 6 x 100	1250	1600	3x150	1500x1900x650	504,00
OPTIM FR8-P&P-700-440	[2] R54U40.	579	700	7 x 100	1250	1600	3x150	1500x1900x650	555,00
OPTIM FR8-P&P-750-440	[2] R54U42.	620	750	50 + 7 x 100	1600	1600	3x185	1500x1900x650	580,00
OPTIM FR8-P&P-800-440	[2] R54U44.	661	800	8 x 100	1600	1600	3x185	1500x1900x650	582,00
OPTIM FR10-P&P, automatic capacitor banks with computer C Wi-Fi regulator									
OPTIM FR10-P&P-800-440	[2] R54V25.	661	800	8 x 100	1000+400	1000+400	2x240/ 240	2100x1900x650	695,00
OPTIM FR10-P&P-850-440	[2] R54V30.	702	850	50 + 8 x 100	1000+630	1000+630	2x240/ 240	2100x1900x650	735,00
OPTIM FR10-P&P-900-440	[2] R54V35.	744	900	9 x 100	1000+630	1000+630	2x240/ 240	2100x1900x650	775,00
OPTIM FR10-P&P-950-440	[2] R54V40.	785	950	50 + 9 x 100	1000+800	1000+800	2x240/ 2x185	2100x1900x650	800,00
OPTIM FR10-P&P-1000-440	[2] R54V45.	826	1000	10 x 100	1000+800	1000+800	2x240/ 2x185	2100x1900x650	825,00
OPTIM FR12-P&P, automatic capacitor banks with computer C Wi-Fi regulator									
OPTIM FR12-P&P-1050-440	[2] R54W50.	868	1050	50 + 10 x 100	1000+1000	1000+1000	2x240/ 2x240	2400x1900x650	890,00
OPTIM FR12-P&P-1100-440	[2] R54W55.	909	1100	11 x 100	1000+1000	1000+1000	2x240/ 2x240	2400x1900x650	930,00
OPTIM FR12-P&P-1150-440	[2] R54W60.	950	1150	50 + 11 x 100	2x1000	2x1000	2x240/ 2x240	2400x1900x650	947,00
OPTIM FR12-P&P-1200-440	[2] R54W65.	992	1200	12 x 100	2x1000	2x1000	2x240/ 2x240	2400x1900x650	980,00

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 1 year free of charge VAR system

TABLE OF ADDITIONAL FEATURES

OPTIM P&P

R 3 X X X X 0 0 X X X				
Code		Internal code		Delivery time
Options	Standard	0		-
	Autotransformer for aux. supply	1		-
	Fan	2		-
	Policarbonate	3		-
	Autotransf. + Fan	4		- OPTIM 3 & 5 P&P
	Autotransf. + Policarbonate	5		- OPTIM 3 & 5 P&P
	Policarbonate + Fan	6		-
	Autotransf. +Policarbonate + Fan	7		- OPTIM 3 & 5 P&P
Regulator	Standard		0	-
	computer SMART III 6		S	-
	computer SMART III 12		T	-
Switch	without switch			0 -
	Manual switch 200 A			3 -
	Manual switch 250A			4 -
	Manual switch 400 A			5 -
	Manual switch 630 A			6 -
	Manual switch 800 A			7 -
	Manual switch 1000 A			8 -
	Manual switch 1600 A			9 -
	Circuit breaker 63 A			A -
	Circuit breaker 125 A			B -
	Circuit breaker 160 A / 200 A			C -
	Circuit breaker 250A			D -
	Circuit breaker 400 A			E -
	Circuit breaker 630 A			F -
	Circuit breaker 800 A			G -
	Circuit breaker 1000 A			H -
	Circuit breaker 1250 A			I -
	Circuit breaker 1600 A			J -
	Circuit breaker 63 A + Residual current			K -
	Circuit breaker 125 A + Residual current			L -
	Circuit breaker160 A + Residual current			M -
	Circuit breaker 250 A + Residual current			N -
	Circuit breaker 400 A + Residual current			O -
	Circuit breaker 630 A + Residual current			P -
	Circuit breaker 800 A + Residual current			Q -
	Circuit breaker 1000 A + Residual current			R -
	Circuit breaker 1250 A + Residual current			S -
	Circuit breaker 1600 A + Residual current			T -

OPTIM FRS P&P / OPTIM FR P&P

R 5 X X X X 0 0 X X X				
Code		Internal code		Delivery time
Options	Standard	0		-
	Fan	2		-
	Policarbonate	3		-
	Policarbonate + Fan	6		-
Regulator	Standard		0	-
	computer SMART III 6		S	-
	computer SMART III 12		T	-
Switch	without switch			0 -
	Manual switch 200 A			3 -
	Manual switch 250A			4 -
	Manual switch 400 A			5 -
	Manual switch 630 A			6 -
	Manual switch 800 A			7 -
	Manual switch 1000 A			8 -
	Manual switch 1600 A			9 -
	Circuit breaker 63 A			A -
	Circuit breaker 125 A			B -
	Circuit breaker 160 A / 200 A			C -
	Circuit breaker 250A			D -
	Circuit breaker 400 A			E -
	Circuit breaker 630 A			F -
	Circuit breaker 800 A			G -
	Circuit breaker 1000 A			H -
	Circuit breaker 1250 A			I -
	Circuit breaker 1600 A			J -
	Circuit breaker 63 A + Residual current			K -
	Circuit breaker 125 A + Residual current			L -
	Circuit breaker160 A + Residual current			M -
	Circuit breaker 250 A + Residual current			N -
	Circuit breaker 400 A + Residual current			O -
	Circuit breaker 630 A + Residual current			P -
	Circuit breaker 800 A + Residual current			Q -
	Circuit breaker 1000 A + Residual current			R -
	Circuit breaker 1250 A + Residual current			S -
	Circuit breaker 1600 A + Residual current			T -

SVGm

Static Var Generator with multilevel technology, 50 / 60 Hz.

50 / 60 Hz, reactive power compensation

Type	Code	System	230 V kvar	400 V kvar	440 V kvar	480 V kvar	500 V kvar	690 V kvar	Phase current	Size (mm) width x height x depth	weight (kg)
3 wires 480 V, Wall-mounted cabinet											
SVGm-3WF-30M-480	[2] R4P3M0.	3 wires, 230...480 V	17.4	30	30	30	-	-	44	430x530x178	21,00
SVGm-3WF-60M-480	[2] R4P3M1.	3 wires, 230...480 V	34.5	60	60	60	-	-	88	430x530x348	39,00
SVGm-3WF-100M-480	[2] R4P3M2.	3 wires, 230...480 V	57.5	100	100	100	-	-	145	439x745x288	56,00
3 wires 480 V, Floor-mounted cabinet											
SVGm-3WF-100C-480	[2] R4P3F2.	3 wires, 230...480 V	57.5	100	100	100	-	-	145	608x1890x812	190,00
SVGm-3WF-200C-480	[2] R4P3F3.	3 wires, 230...480 V	115	200	200	200	-	-	290	608x1890x812	245,00
SVGm-3WF-300C-480	[2] R4P3F4.	3 wires, 230...480 V	172.5	300	300	300	-	-	435	608x1890x812	300,00
SVGm-3WF-400C-480	[2] R4P3F5.	3 wires, 230...480 V	230	400	400	400	-	-	580	608x1890x812	355,00
3 wires 690 V, Floor-mounted cabinet											
SVGm-3WF-100C-690	[3] R4P5F2.	3 wires, 500 ... 690 V	-	-	-	-	72	100	84	608x1890x812	192,00
SVGm-3WF-200C-690	[3] R4P5F3.	3 wires, 500 ... 690 V	-	-	-	-	144	200	168	608x1890x812	248,00
SVGm-3WF-300C-690	[3] R4P5F4.	3 wires, 500 ... 690 V	-	-	-	-	216	300	210	608x1890x812	306,00
SVGm-3WF-400C-690	[3] R4P5F5.	3 wires, 500 ... 690 V	-	-	-	-	288	400	280	608x1890x812	363,00
4 wires 400 V, Wall-mounted cabinet											
SVGm-4WF-020M-400	[2] R4P4MA.	4 wires, 230...400 V	12	20.7	-	-	-	-	30	430x530x178	21,00
SVGm-4WF-040M-400	[2] R4P4MB.	4 wires, 230...400 V	24	41.4	-	-	-	-	60	430x530x348	39,00
SVGm-4WF-069M-400	[2] R4P4MC.	4 wires, 230...400 V	40	69	-	-	-	-	100	439x745x288	56,00
4 wires 400 V, Floor-mounted cabinet											
SVGm-4WF-069C-400	[2] R4P4FC.	4 wires, 230...400 V	40	69	-	-	-	-	100	608x1890x812	190,00
SVGm-4WF-138C-400	[2] R4P4FD.	4 wires, 230...400 V	80	138	-	-	-	-	200	608x1890x812	245,00
SVGm-4WF-207C-400	[2] R4P4FE.	4 wires, 230...400 V	119.1	207	-	-	-	-	300	608x1890x812	300,00
SVGm-4WF-276C-400	[2] R4P4FF.	4 wires, 230...400 V	159	276	-	-	-	-	400	608x1890x812	355,00
4 wires 550 V, Floor-mounted cabinet											
SVGm-4WF-067C-550	[3] R4P6FG.	4 wires, 440 ... 550 V	-	-	53	58	-	-	70	608x1890x812	192,00
SVGm-4WF-134C-550	[3] R4P6FH.	4 wires, 440 ... 550 V	-	-	106	116	-	-	140	608x1890x812	248,00
SVGm-4WF-201C-550	[3] R4P6FJ.	4 wires, 440 ... 550 V	-	-	159	174	-	-	210	608x1890x812	306,00
SVGm-4WF-268C-550	[3] R4P6FK.	4 wires, 440 ... 550 V	-	-	212	232	-	-	280	608x1890x812	363,00
Rack module											
SVGm-3WF-100R-480	[2] R4P3R2.	3 wires, 230...480 V	57.5	100	100	100	-	-	145	482.5x263x714.5	55,00
SVGm-4WF-069R-400	[2] R4P4RC.	4 wires, 230...400 V	40	69	-	-	-	-	100	482.5x263x714.5	55,00

All equipment has built-in EMI filters

TABLE OF ADDITIONAL FEATURES

SVGm											
R	4	P	X	X	X	0	0	X	X	0	
Code						Internal code			↑		Delivery time
Protection degree				Standard IP-20					0		-
New				IP-41					5		consult
				IP-54					7		consult

Table: Selection of automatic capacitor banks with a static contactor

		OPTIM EMS-C	OPTIM EMK
			
Rated voltage		440 V	440 V
Power range at rated voltage (50 Hz)		18,75...120 kvar	OPTIM EMK4: 175...400 kvar OPTIM EMK6: 400...600 kvar OPTIM EMK8: 600...800 kvar OPTIM EMk10: 850...1000 kvar OPTIM EMK12: 1050...1200 kvar
Thyristor operation		●	●
No. Steps (maximum)		8	4 / 6 / 8 / 10/ 12
Enclosure	Metallic IP 21	●	●
Installation (indoor)		●	●
Assembly	Wall-mounted	●	–
	Floor-mounted	–	●
Regulator	computer Max Fast	●	–
	computer Smart III Fast	Not available	Included
Capacitor	Cilindric CLZ	●	●
Built-in protection	Miniature circuit breaker per step	●	–
	APR NH-00 Fuse	–	●

OPTIM EMS

Automatic capacitor banks with static contactor, wall-mounted , 50 Hz.

No additional features are allowed

Type	Code	400 V kvar	440 V kvar	Composition	Man.Switch (A)	Cable section (mm2)	Size (mm) width x height x depth	weight (kg)
OPTIM EMS-C-18,75-440	[C] R4A300.	15.5	18.75	(6,25 + 12,5)	Included	1 x 6	545x710x220	42,00
OPTIM EMS-C-31,25-440	[C] R4A304.	26	31.25	(6,25 + 2 x 12,5)	Included	1 x 16	545x710x220	42,00
OPTIM EMS-C-43,75-440	[C] R4A309.	36	43.75	(6,25 + 12,5 + 25)	Included	1 x 25	545x710x220	34,00
OPTIM EMS-C-68,75-440	[C] R4A318.	57	68.75	(6,25 + 12,5 + 2 x 25)	Included	1 x 50	545x710x220	42,00
OPTIM EMS-C-82,50-440	[C] R4A321.	68	82.5	(7,5 + 15 + 2 x 30)	Included	1 x 70	545x710x220	42,00
OPTIM EMS-C-105-440	[C] R4A330.	87	105	(15 + 3 x 30)	Included	1 x 70	545x710x220	42,00
OPTIM EMS-C-120-440	[C] R4A336.	99	120	(4 x 30)	Included	1 x 95	545x710x220	42,00

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.

OPTIM EMK

Automatic capacitor banks with static contactor, 50 Hz.

Type	Code	400 V kvar	440 V kvar	Composition	Aut.Switch (A)	Man. Switch (A)	Cable section (mm2)	Size (mm) width x height x depth	weight (kg)
OPTIM EMk4									
OPTIM EMK4-175-440	[2] R46420.	147	175	25 + 50 + 100	400	400	120	900x1900x650	170,00
OPTIM EMK4-250-440	[2] R46422.	207	250	50 + 2x100	630	630	185	900x1900x650	183,00
OPTIM EMK4-300-440	[2] R46424.	248	300	50 + 50 + 2x100	630	630	240	900x1900x650	208,00
OPTIM EMK4-350-440	[2] R46425.	289	350	50 + 3x100	630	630	240	900x1900x650	217,00
OPTIM EMK4-400-440	[2] R46426.	331	400	4x100	800	800	240	900x1900x650	231,00
OPTIM EMk6									
OPTIM EMK6-400-440	[2] R46431.	331	400	50 + 50 + 3x100	800	800	2x185	1200x1900x650	262,00
OPTIM EMK6-450-440	[2] R46435.	372	450	50 + 4x100	800	800	2x185	1200x1900x650	281,00
OPTIM EMK6-550-440	[2] R46437.	455	550	50 + 5x100	1000	1000	2x240	1200x1900x650	320,00
OPTIM EMK6-600-440	[2] R46438.	496	600	6x100	1000	1000	2x240	1200x1900x650	334,00
OPTIM EMk8									
OPTIM EMK8-600-440	[2] R46442.	496	600	50 + 50 + 5x100	1250	1600	2x240	1500x1900x650	365,00
OPTIM EMK8-650-440	[2] R46444.	537	650	50 + 6x100	1250	1600	3x150	1500x1900x650	384,00
OPTIM EMK8-750-440	[2] R46450.	620	750	50 + 7x100	1600	1600	3x185	1500x1900x650	359,00
OPTIM EMK8-800-440	[2] R46455.	661	800	8x100	1600	1600	2x240 / 240	1500x1900x650	373,00
OPTIM EMk10									
OPTIM EMK10-850-440	[2] R46505.	702	850	50 + 8x100	1000+630	1000+630	2x240 / 240	2100x1900x650	512,00
OPTIM EMK10-950-440	[2] R46604.	785	950	50 + 9x100	1000+800	1000+800	2x240 / 2x185	2100x1900x650	551,00
OPTIM EMK10-1000-440	[2] R46605.	826	1000	10x100	1000+800	1000+800	2x240 / 2x185	2100x1900x650	565,00
OPTIM EMk12									
OPTIM EMK12-1050-440	[2] R46606.	868	1050	50 + 10x100	1000+800	1000+800	2x240 / 2x240	2400x1900x650	615,00
OPTIM EMK12-1150-440	[2] R46608.	950	1150	50 + 11x100	2x1000	2x1000	2x240 / 2x240	2400x1900x650	654,00
OPTIM EMK12-1200-440	[2] R46609.	992	1200	12x100	2x1000	2x1000	2x240 / 2x240	2400x1900x650	668,00

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.

EMF / EMB

Three-phase static switching units for 6-terminal capacitors

Type	Code	400 V kvar	Size (mm) width x height x depth	weight (kg)
With fuses, serie EMF				
EMF-40/400	[2] R41133.	40	177x485x268	10,50
EMF 60/400	[2] R41136.	60	177x485x268	10,50
EMF-80/400	[2] R41137.	80	177x485x268	10,50

Type	Code	400 V kvar	Size (mm) width x height x depth	weight (kg)
With terminal, serie EMB				
EMB-40/400	[1] R41233.	40	177x485x268	10,00
EMB-60/400	[1] R41236.	60	177x485x268	10,00
EMB-80/400	[1] R41237.	80	177x485x268	10,00

CPC3

Zero-crossing control board (for EMF / EMB modules)

Type	Code	Vac	Control	Size (mm) width x height x depth	weight (kg)
CPCb-230/400	[1] R4Z111.	230 / 400	Three-phase	230x110x40	0,62

EMB-2PH

Three-phase static switching units for 3-terminal capacitors

Type	Code	230 V kvar	400 V kvar	Size (mm) width x height x depth	weight (kg)
External 12VDC activation signal required. With terminals					
EMB-2PH-25-400	[1] R41321.	12.5	25	200x220x200	5,10
EMB-2PH-50-400	[1] R41323.	27.5	50	200x220x200	5,90
EMB-2PH-80-400	[1] R41325.	45	80	200x220x200	4,00

Maximum operating voltage: 3 x 440 Vac (415 Vac with detuned reactors) Polycarbonate cover for EMB-2PH

Type	Code	Description
cover-EMB-2PH	[1] R41329.	Polycarbonate cover for EMB-2PH

Table: Selection of Static automatic capacitor banks with rejection filters

		OPTIM FRES	OPTIM FRE
			
Rated voltage		440 V	440 V
Service voltage		400 V	400 V
Power range at rated voltage (50 Hz)		31,25 a 120 kvar	OPTIM FRE4: 150 ... 400 kvar OPTIM FRE6: 400 ... 600 kvar OPTIM FRE8: 600 ... 800 kvar OPTIM FRE10: 800 ... 1000 kvar OPTIM FRE12: 1050 ... 1200 kvar
Thyristor operation		●	●
No. Steps (maximum)		4	4 / 6 / 8 / 10 / 12
Enclosure	Metallic IP 21	●	●
Installation (indoor)		●	●
Assembly (floor-mounted)		●	●
Regulator	Computer Max F-12DC	●	–
	Computer Smart Fast III-12DC	Optional	Included
Capacitor		Cylindrical CLZ	Cylindrical CLZ
Reactors tuned to 189 Hz (please ask about other tuning values)		●	●
Built-in protection	circuit breaker per step	·	–
	APR NH-00 Fuses	-	●

OPTIM FRE

Automatic capacitor banks with rejection filters (static contactor), 50 Hz.

Optional installation of a mains switch, f resonance =189 Hz

Type	Code	400 V kvar	440 V kvar	Composition	Aut.Switch (A)	Man. Switch (A)	Cable section (mm2)	Size (mm) width x height x depth	weight (kg)
FRES									
OPTIM FRES-31,25-440	[2] R64R64.	26	31.25	6,25 + 2 x 12,5	-	Included	10	800x1200x500	102,00
OPTIM FRES-43,75-440	[2] R64R74.	36	43.75	6,25 + 12,5 + 25	-	Included	25	800x1200x500	108,00
OPTIM FRES-62,5-440	[2] R64R81.	52	62.5	12,5 + 2 x 25	-	Included	35	800x1200x500	115,00
OPTIM FRES-90-440	[2] R64R88.	74	90	2 x 15 + 2 x 30	-	Included	70	800x1200x500	120,00
OPTIM FRES-105-440	[2] R64R92.	87	105	15 + 3 x 30	-	Included	70	800x1200x500	128,00
OPTIM FRES-120-440	[2] R64R95.	99	120	4 x 30	-	Included	95	800x1200x500	200,00
FRE4									
OPTIM FRE4-150-440	[2] R64E24.	125	150	30 + 2 x 60	400	400	95	900x1900x650	220,00
OPTIM FRE4-175-440	[2] R64E25.	145	175	25 + 50 + 100	400	400	120	900x1900x650	225,00
OPTIM FRE4-200-440	[2] R64E28.	165	200	50 + 50 + 100	400	400	150	900x1900x650	235,00
OPTIM FRE4-250-440	[2] R64E29.	207	250	50 + 2 x 100	630	630	185	900x1900x650	250,00
OPTIM FRE4-300-440	[2] R64E30.	248	300	50 + 50 + 2 x 100	630	630	240	900x1900x650	290,00
OPTIM FRE4-350-440	[2] R64E32.	289	350	50 + 3 x 100	630	630	240	900x1900x650	310,00
OPTIM FRE4-400-440	[2] R64E34.	331	400	4 x 100	800	800	240	900x1900x650	318,00
FRE6									
OPTIM FRE6-400-440	[2] R64J25.	331	400	50 + 50 + 3 x 100	800	800	2x185	1200x1900x650	370,00
OPTIM FRE6-450-440	[2] R64J30.	372	450	50 + 4 x 100	800	800	2x185	1200x1900x650	376,00
OPTIM FRE6-500-440	[2] R64J35.	413	500	5 x 100	1000	1000	2x240	1200x1900x650	440,00
OPTIM FRE6-550-440	[2] R64J40.	455	550	50 + 5 x 100	1000	1000	2x240	1200x1900x650	465,00
OPTIM FRE6-600-440	[2] R64J45.	496	600	6 x 100	1000	1000	2x240	1200x1900x650	490,00
FRE8									
OPTIM FRE8-600-440	[2] R64K36.	496	600	50 + 50 + 5 x 100	1250	1600	2x240	1500x1900x650	525,00
OPTIM FRE8-650-440	[2] R64K38.	537	650	50 + 6 x 100	1250	1600	3x150	1500x1900x650	540,00
OPTIM FRE8-700-440	[2] R64K40.	579	700	7 x 100	1250	1600	3x150	1500x1900x650	555,00
OPTIM FRE8-750-440	[2] R64K42.	620	750	50 + 7 x 100	1600	1600	3x185	1500x1900x650	580,00
OPTIM FRE8-800-440	[2] R64K44.	661	800	8 x 100	1600	1600	3x185	1500x1900x650	605,00
FRE10									
OPTIM FRE10-800-440	[2] R64C25.	661	800	8 x 100	1000+400	1000+400	2x240 / 240	2100x1900x650	695,00
OPTIM FRE10-850-440	[2] R64C30.	702	850	50 + 8 x 100	1000+630	1000+630	2x240 / 240	2100x1900x650	735,00
OPTIM FRE10-900-440	[2] R64C35.	744	900	9 x 100	1000+630	1000+630	2x240 / 240	2100x1900x650	775,00
OPTIM FRE10-950-440	[2] R64C40.	785	950	50 + 9 x 100	1000+800	1000+800	2x240 / 2x185	2100x1900x650	800,00
OPTIM FRE10-1000-440	[2] R64C45.	826	1000	10 x 100	1000+800	1000+800	2x240 / 2x185	2100x1900x650	825,00
FRE12									
OPTIM FRE12-1050-440	[2] R64L50.	868	1050	50 + 10 x 100	1000+1000	1000+1000	2x240 / 2x240	2400x1900x650	890,00
OPTIM FRE12-1100-440	[2] R64L55.	909	1100	11 x 100	1000+1000	1000+1000	2x240 / 2x240	2400x1900x650	930,00
OPTIM FRE12-1150-440	[2] R64L60.	950	1150	50 + 11 x 100	2x1000	2x1000	2x240 / 2x240	2400x1900x650	955,00
OPTIM FRE12-1200-440	[2] R64L65.	992	1200	12 x 100	2x1000	2x1000	2x240 / 2x240	2400x1900x650	980,00

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.

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

TABLE OF ADDITIONAL FEATURES

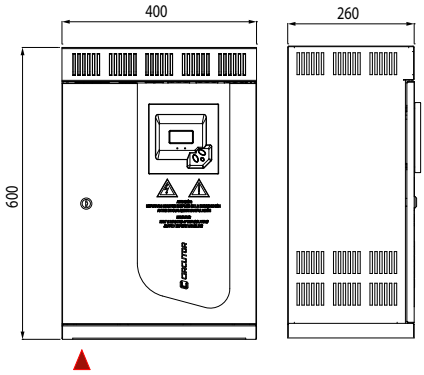
OPTIM EMK, OPTIM FRE

R X X X X X 0 0 X X X		
Code	Internal Code	Delivery time
Options	Standard 0	-
	Fan 2	-
	Policarbonate 3	-
	Policarbonate + Fan 6	-
Choose the most suitable regulator for your needs	Standard 0	-
	computer Smart III 6f / f-12Vdc 9	-
Switch	Without switch 0	-
	Manual switch 200 A 3	-
	Manual switch 250A 4	-
	Manual switch 400 A 5	-
	Manual switch 630 A 6	-
	Manual switch 800 A 7	-
	Manual switch 1000 A 8	-
	Manual switch 1600 A 9	-
	Circuit breaker 63 A A	-
	Circuit breaker 125 A B	-
	Circuit breaker 160 / 200 A C	-
	Circuit breaker 250A D	-
	Circuit breaker 400 A E	-
	Circuit breaker 630 A F	-
	Circuit breaker 800 A G	-
	Circuit breaker 1000 A H	-
	Circuit breaker 1250 A I	-
	Circuit breaker 1600 A J	-
	Circuit breaker 63 A + Residual current K	-
	Circuit breaker 125 A + Residual current L	-
	Circuit breaker 160 / 200 A + Residual current M	-
	Circuit breaker 250 A + Residual current N	-
	Circuit breaker 400 A + Residual current O	-
	Circuit breaker 630 A + Residual current P	-
	Circuit breaker 800 A + Residual current Q	-
	Circuit breaker 1000 A + Residual current R	-
	Circuit breaker 1250 A + Residual current S	-
	Circuit breaker 1600 A + Residual current T	-

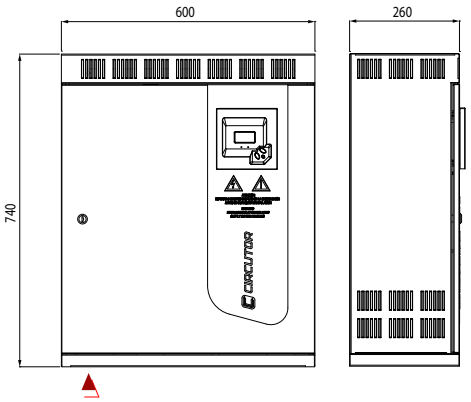
Accessories not available for EMS-C series

Dimensions

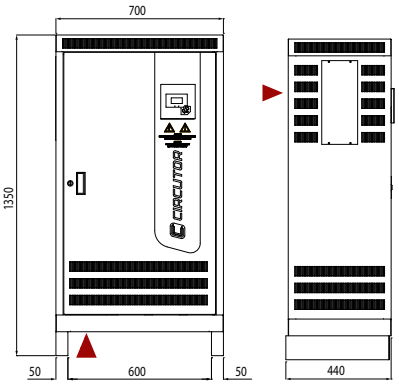
OPTIM 3 P&P



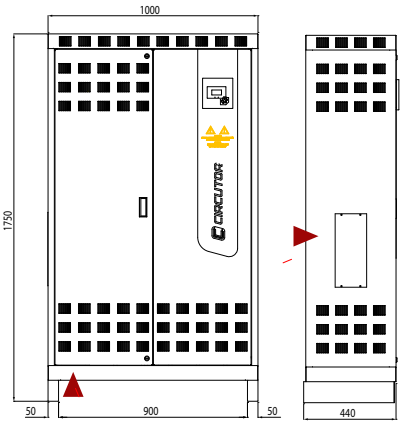
OPTIM 5 P&P



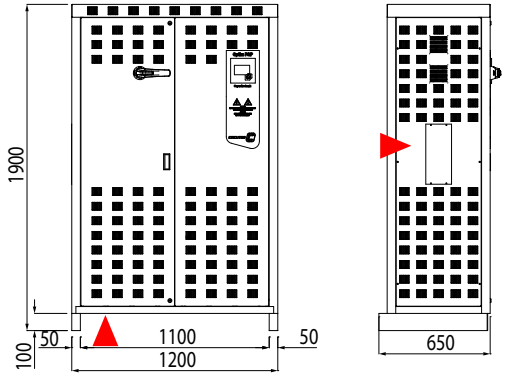
OTPIM 9 P&P



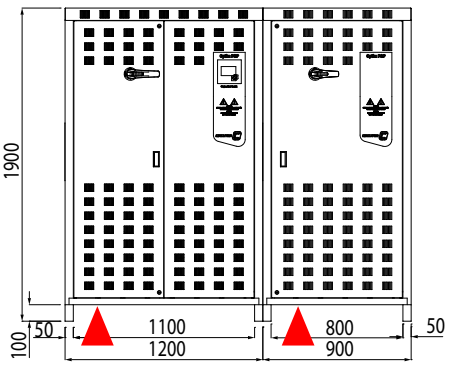
OPTIM 8



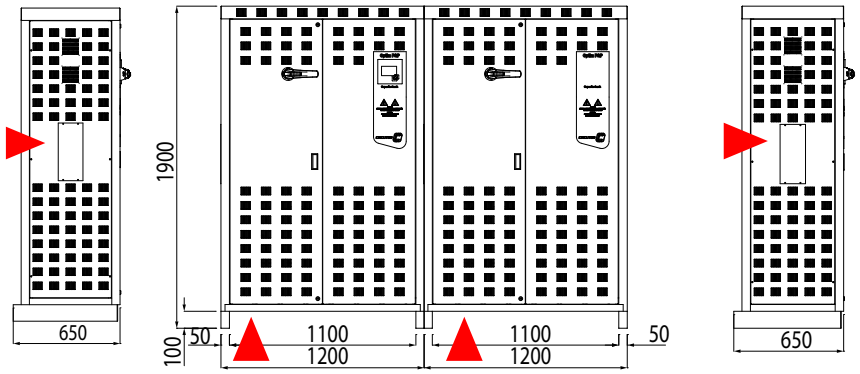
OPTIM 8L



OPTIM 14L



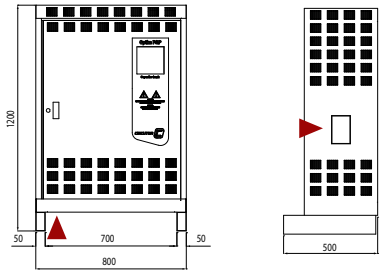
OPTIM 16L



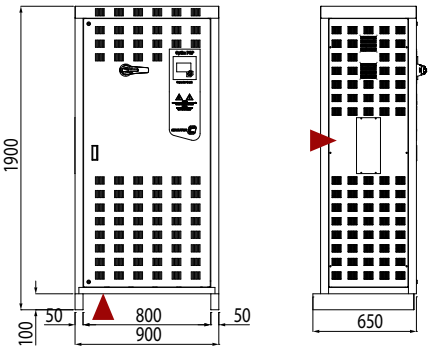
Delivery time: [*] Immediate, [x] working weeks, [c] Consult

Dimensions

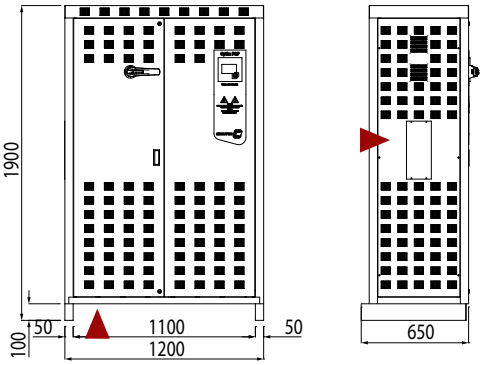
OPTIM FRS



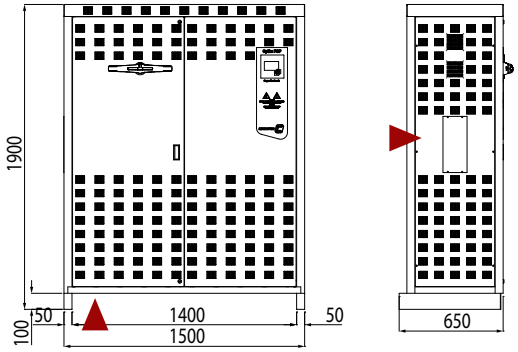
OPTIM EMK4 / OPTIM FR4 / OPTIM FRE4



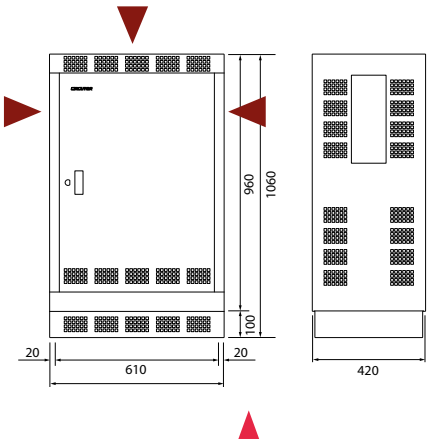
OPTIM EMK6 / OPTIM FR6 / OPTIM FRE6



OPTIM EMK8 / OPTIM FR8 / OPTIM FRE8



OPTIM FRF / OPTIM FRM



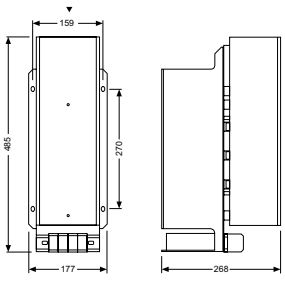
OPTIM EMk10 / OPTIM FR10 / OPTIM FRE10

OPTIM FR10 = OPTIM FR4 + OPTIM FR6. / Width: OPTIM FR4+ OPTIM FR6+100 mm

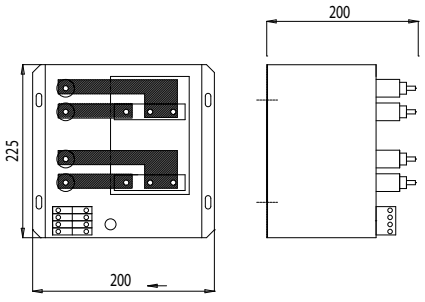
OPTIM EMk12 / OPTIM FR12 / OPTIM FRE12

OPTIM FR12 = 2 x OPTIM FR6. / Width= 2 x OPTIM FR6+100 mm

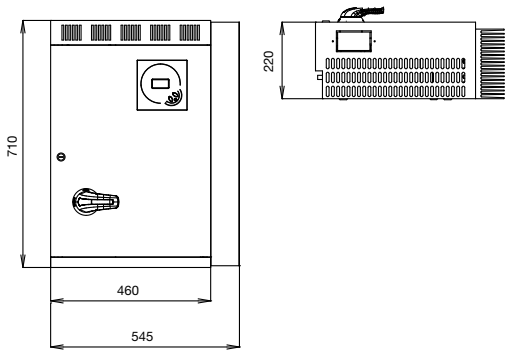
EMB / EMF



EMB-2PH



Optim EMS-C



Harmonic filters

AFQm

Active multifunction filter, 50 / 60 Hz

50/60 Hz - Harmonic filtering, phase balancing and power factor correction

Type	Code	System	Phase current	Peak current	Max.neutral current	Size (mm) width x height x depth	weight (kg)
3 wires 480 V, Wall-mounted cabinet							
AFQm-3WF-030M-480	[C] R7MM0F.	3 wires, 230...480 V	30	60	-	430x530x178	21,00
AFQm-3WF-060M-480	[C] R7MM1F.	3 wires, 230...480 V	60	120	-	430x530x348	39,00
AFQm-3WF-100M-480	[C] R7MM2F.	3 wires, 230...480 V	100	200	-	437x670x300	56,00
3 wires 480 V, Floor-mounted cabinet							
AFQm-3WF-100C-480	[C] R7MF2F.	3 wires, 230...480 V	100	200	-	608x1890x812	190,00
AFQm-3WF-200C-480	[C] R7MF3F.	3 wires, 230...480 V	200	400	-	608x1890x812	245,00
AFQm-3WF-300C-480	[C] R7MF4F.	3 wires, 230...480 V	300	600	-	608x1890x812	300,00
AFQm-3WF-400C-480	[C] R7MF5F.	3 wires, 230...480 V	400	800	-	608x1890x812	355,00
3 wires 690 V, Floor-mounted cabinet							
AFQm-3WF-070C-690	[C] R7JF6F.	3 wires, 400...690 V	70	140	-	608x1890x812	192,00
AFQm-3WF-140C-690	[C] R7JF7F.	3 wires, 400...690 V	140	280	-	608x1890x812	249,00
AFQm-3WF-210C-690	[C] R7JF8F.	3 wires, 400...690 V	210	420	-	608x1890x812	306,00
AFQm-3WF-280C-690	[C] R7JF9F.	3 wires, 400...690 V	280	560	-	608x1890x812	363,00
4 wires 400 V, Wall-mounted cabinet							
AFQm -4WF-030M-400	[C] R7RM0F.	4 wires, 230...400 V	30	60	90	430x530x178	21,00
AFQm -4WF-060M-400	[C] R7RM1F.	4 wires, 230...400 V	60	120	180	430x530x348	39,00
AFQm-4WF-100M-400	[C] R7RM2F.	4 wires, 230...400 V	100	200	300	437x670x300	56,00
4 wires 400 V, Floor-mounted cabinet							
AFQm-4WF-100C-400	[C] R7RF2F.	4 wires, 230...400 V	100	200	300	608x1890x812	190,00
AFQm-4WF-200C-400	[C] R7RF3F.	4 wires, 230...400 V	200	400	600	608x1890x812	245,00
AFQm-4WF-300C-400	[C] R7RF4F.	4 wires, 230...400 V	300	600	900	608x1890x812	300,00
AFQm-4WF-400C-400	[C] R7RF5F.	4 wires, 230...400 V	400	800	1200	608x1890x812	355,00
4 wires 550 V, Floor-mounted cabinet							
AFQm-4WF-070C-550	[C] R7NF6F.	4 wires, 400...550 V	70	140	210	608x1890x812	192,00
AFQm-4WF-140C-550	[C] R7NF7F.	4 wires, 400...550 V	140	280	420	608x1890x812	249,00
AFQm-4WF-210C-550	[C] R7NF8F.	4 wires, 400...550 V	210	420	630	608x1890x812	306,00
AFQm-4WF-280C-550	[C] R7NF9F.	4 wires, 400...550 V	280	560	840	608x1890x812	363,00
Rack module							
AFQm-3WF-070R-690	[C] R7JR6F.	3 wires, 400...690 V	70	140	-	482.5x266x714.5	55,00
AFQm-4WF-070R-550	[C] R7NR6F.	4 wires, 400...550 V	70	140	210	482.5x266x714.5	55,00
AFQm-3WF-100R-480	[C] R7MR2F.	3 wires, 230...480 V	100	200	-	482.5x266x714.5	55,00
AFQm-4WF-100R-400	[C] R7RR2F.	4 wires, 230...400 V	100	200	300	482.5x266x714.5	55,00

Please contact our technical department for networks with high THD(V) levels.

All equipment has built-in EMI filters

TABLE OF ADDITIONAL FEATURES

AFQm

R	7	P	X	X	X	0	0	X	X	0
Code						Internal code			↑	Delivery time
Protection degree			Standard IP-20						0	-
			IP-41						5	consult
New			IP-54						7	consult

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

LRZ / LRBZ

Filter reactors for power converters (network side), 50 Hz

Type	Code	In (A)	Motor P. (kW)	Motor P. (CV)	L(mH)	Losses (W)	Size (mm) width x height x depth	weight (kg)
LRZ 04-003	[2] P73301.	2,5	0.75	1	14.8	6	120x125x60	1,20
LRZ 04-004	[2] P73302.	4	1.5	2	7.9	8	120x125x60	1,54
LRZ 04-006	[2] P73303.	5,5	2.2	3	5.9	10	120x125x60	1,60
LRZ 04-008	[2] P73304.	7,5	3	4	4.3	12	120x125x60	2,10
LRZ 04-010	[2] P73305.	10	4	5	3.2	15	120x125x70	2,20
LRZ 04-013	[2] P73306.	13	5.5	7	2.5	18	120x125x70	2,00
LRZ 04-017	[2] P73307.	17	7.5	10	1.85	25	150x150x75	2,60
LRZ 04-022	[2] P73308.	22	11	15	1.47	30	150x152x90	3,80
LRZ 04-033	[2] P73309.	32	15	20	0.98	45	150x152x90	4,30
LRZ 04-050	[2] P7330B.	47	22	30	0.67	64	180x197x110	9,10
LRZ 04-066	[2] P7330D.	64	30	41	0.49	88	180x197x120	11,00
LRBZ 04-080	[2] P7330E.	76	37	50	0.4	110	180x160x135	12,50
LRBZ 04-115	[2] P7330G.	110	55	75	0.28	145	237x195x131	21,00
LRBZ 04-185	[C] P7330J.	180	90	122	0.17	230	242x256x154	32,00
LRBZ 04-200	[C] P7330K.	200	110	150	0.15	245	245x256x154	27,00
LRBZ 04-300	[C] P7330M.	300	160	220	0.1	355	280x300x164	48,00

SINUS

Filter for PWM, 400 V / 50 Hz

Type	Code	In (A)	Switching Frequency (kHz)	Size (mm) width x height x depth
SINUS-10A-400-IP00	[4] R7S002.	10	10	191x180x120
SINUS-25-40-00	[4] R7S004.	25	10	244x301x248
SINUS-80-40-00	[4] R7S006.	80	10	290x422x360
SINUS-155-40-00	[4] R7S008.	155	10	390x503x360
SINUS-270-40-00	[4] R7S00A.	270	2	415x557x360

FB3

Third harmonic blocking filter for 50 Hz network

Type	Code	System	Max.neutral current	Frequency (Hz)	Size (mm) width x height x depth	weight (kg)
With box (IP 21)						
FB3T-5-6-21	[C] R78121.	Three-phase + Neutral	6	50	300x200x200	12,00
FB3T-5-16-21	[C] R78123.	Three-phase + Neutral	16	50	300x200x200	16,00
FB3T-5-25-21	[C] R78124.	Three-phase + Neutral	25	50	300x200x200	-
FB3T-5-32-21	[C] R78125.	Three-phase + Neutral	32	50	370x280x300	17,00
FB3T-5-63-21	[C] R78127.	Three-phase + Neutral	63	50	370x420x370	25,00
FB3T-5-100-21	[C] R78128.	Three-phase + Neutral	100	50	650x1060x420	83,00

LRZ / LRBZ

P	7	X	X	X	X	0	0	X	X	X	
Code						Internal code					Delivery time
Voltage drop											
						Standard (4 %)		0			-
						3 %		1			consult
						2 %		2			consult
Frequency											
						Estandard (50 Hz)			0		-
						60 Hz			1		consult
System											
						Standard (three-phase)				0	-
						Single-phase				1	consult

Delivery time: [*] Immediate, [x] working weeks, [c] Consult

LCL

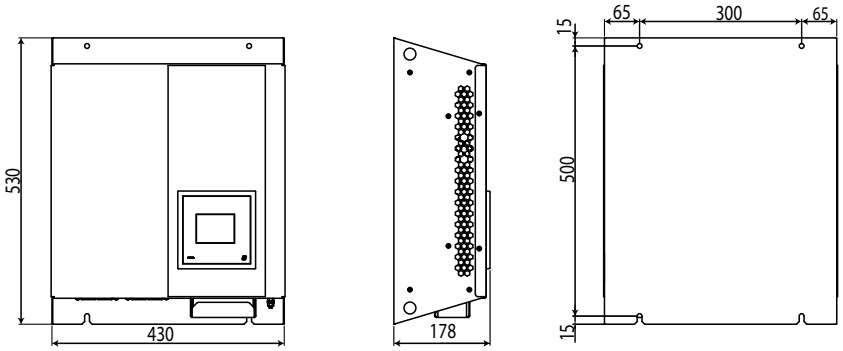
Harmonic filters for power converters

Type	Code	Q (kvar)	Load current (A)	Frequency (Hz)	Size (mm) width x height x depth
400 V					
LC L35-9A-400	[4] R73105.	1,76	9	50	365x570x217
LC L35-12A-400	[4] R73106.	2,51	12	50	365x570x217
LC L35-16A-400	[4] R73107.	3,27	16	50	365x570x217
LC L35-22A-400	[4] R73108.	4,42	22	50	460x930x230
LC L35-32A-400	[4] R73109.	6,63	32	50	460x930x230
LC L35-40A400	[4] R73110.	8,29	40	50	460x930x230
LC L35-47A-400	[4] R73111.	9,14	47	50	650x1060x420
LC L35-54A-400	[4] R73112.	10,8	54	50	650x1060x420
LC L35-64A-400	[4] R73113.	13,26	64	50	650x1060x420
LC L35-76A-400	[4] R73114.	14,92	76	50	650x1060x420
LC L35-90A-400	[4] R73115.	18,24	90	50	800x1900x650
LC L35-110A-400	[4] R73116.	23,21	110	50	800x1900x650
LC L35-150A-400	[4] R73117.	29,84	150	50	800x1900x650
LC L35-180A-400	[4] R73118.	36,48	180	50	800x1900x650
LC L35-220A-400	[4] R73119.	46,42	220	50	800x1900x650
LC L35-260A-400	[4] R73120.	53,06	260	50	800x1900x650
LC L35-320A-400	[4] R73121.	66,32	320	50	1100x1900x650
LC L35-400A-400	[4] R73122.	79,58	400	50	1100x1900x650
460 - 480 V					
LC L36-9A-480	[4] R732050070000	2,73	9	60	365x570x217
LC L36-16A-480	[4] R732070070000	4,55	16	60	365x570x217
LC L36-22A-480	[4] R732080070000	6,21	22	60	460x930x230
LC L36-32A-480	[4] R732090070000	7,59	32	60	460x930x230
LC L36-40A-480	[4] R732100070000	11,38	40	60	460x930x230
LC L36-47A-480	[4] R732110070000	15,18	47	60	650x1060x420
LC L36-54A-480	[4] R732120070000	15,18	54	60	650x1060x420
LC L36-64A-480	[4] R732130070000	18,97	64	60	650x1060x420
LC L36-76A-480	[4] R732140070000	22,77	76	60	650x1060x420
LC L36-90A-480	[4] R732150070000	26,56	90	60	800x1900x650
LC L36-110A-480	[4] R732160070000	30,36	110	60	800x1900x650
LC L36-150A-480	[4] R732170070000	45,53	150	60	800x1900x650
LC L36-180A-480	[4] R732180070000	53,12	180	60	800x1900x650
LC L36-220A-480	[4] R732190070000	60,71	220	60	800x1900x650
LC L36-260A-480	[4] R732200070000	68,3	260	60	800x1900x650
LC L36-320A-480	[4] R732210070000	91,07	320	60	1100x1900x650
LC L36-400A-480	[4] R732220070000	121,42	400	60	1100x1900x650

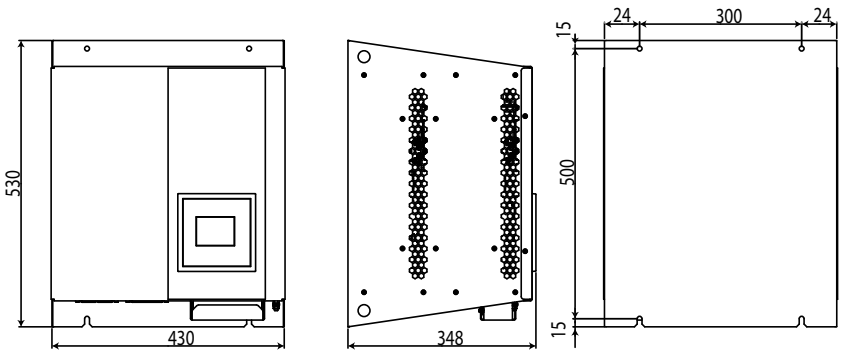
Please contact us for other current, frequency and/or voltage values Optional: Overcompensation kit

Dimensions

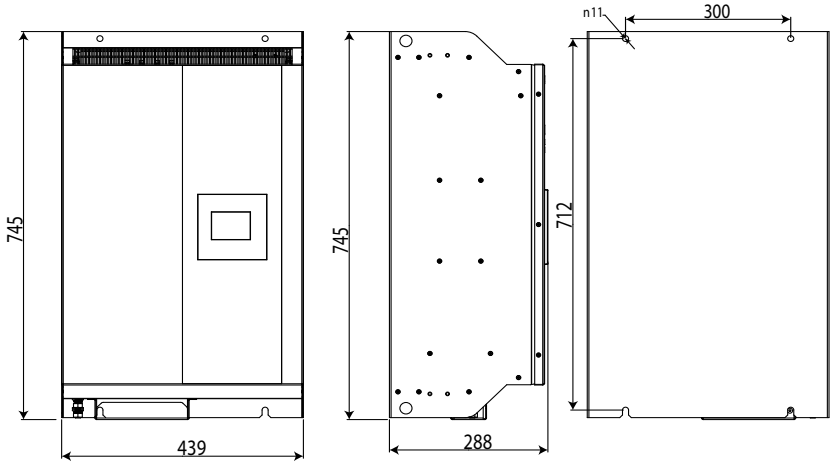
AFQm-30



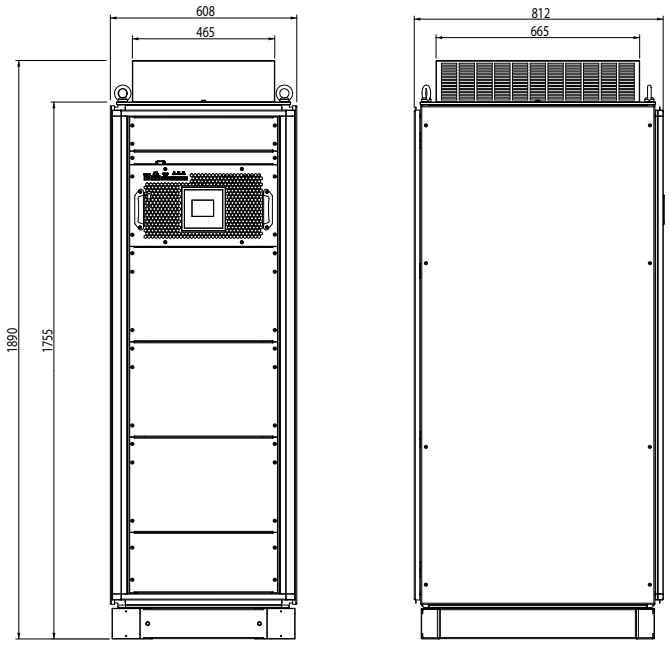
AFQm-60



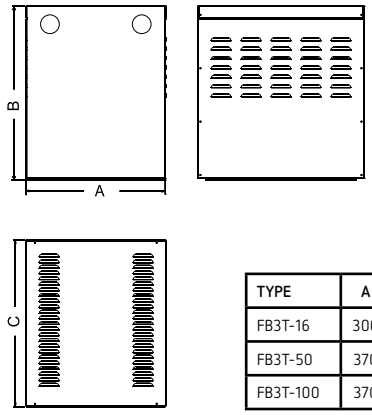
AFQm-100M



AFQm-100C
AFQm-200C
AFQm-300C
AFQm-400C

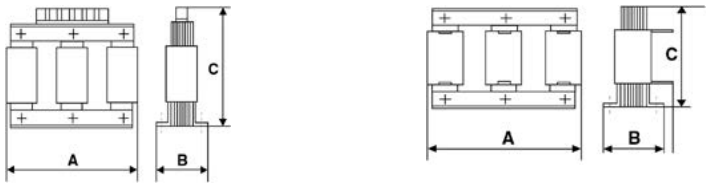


FB3T



TYPE	A	B	C
FB3T-16	300	200	200
FB3T-50	370	280	300
FB3T-100	370	480	370

LRZ / LRBZ



Type	A mm	B mm	C mm	kg
LRZ 04-003	120	60	125	1,8
LRZ 04-004	120	60	125	1,8
LRZ 04-006	120	60	125	2
LRZ 04-008	120	60	125	2
LRZ 04-010	120	70	125	2,3
LRZ 04-013	120	70	125	2,3
LRZ 04-017	150	75	150	3,5
LRZ 04-022	150	90	152	4,6
LRZ 04-033	150	90	152	5
LRZ 04-041	180	100	193	7,5
LRZ 04-050	180	110	197	9
LRZ 04-058	180	110	197	9,5
LRZ 04-066	180	120	197	11

Type	A mm	B mm	C mm	kg
LRBZ 04-080	180	135	160	13
LRBZ 04-095	237	120	195	18
LRBZ 04-115	237	131	195	21
LRBZ 04-150	237	131	215	26
LRBZ 04-185	242	154	256	32
LRBZ 04-200	245	154	256	36
LRBZ 04-250	285	154	300	44
LRBZ 04-300	280	164	300	48

Capacitor and MV accessories

10% surcharge for orders less than or equal to 3 units (per type)

The prices shown in the price list refer to capacitors for indoor/outdoor installation, with internal fuses (depending on type), 50 Hz, class C temperature and without pressure switch.

According to IEC 60871-1 and IEC 60871-4 standards

CHV-T

Three-phase MV power capacitors

Type	Code	Q (kvar)	Frequency (Hz)	Size (mm) width x height x depth	weight (kg)
BIL 20/60 kV (50 Hz) - 3,3 kV					
CHV-T 50/3,3	[C] R8K0500003305	50	50	350x422x160	18,80
CHV-T 75/3,3	[C] R8K0750003305	75	50	350x472x160	22,40
CHV-T 100/3,3	[C] R8K100000330E	100	50	350x472x160	22,80
CHV-T 150/3,3	[C] R8K150000330E	150	50	350x572x160	30,00
CHV-T 200/3,3	[C] R8K200000330E	200	50	350x632x160	34,40
CHV-T 250/3,3	[C] R8K250000330E	250	50	350x802x160	45,70
CHV-T 300/3,3	[C] R8K300000330E	300	50	350x802x160	46,70
CHV-T 333/3,3	[C] R8K333000330E	333	50	350x862x175	55,60
CHV-T 400/3,3	[C] R8K400000330E	400	50	350x892x175	58,30
CHV-T 500/3,3	[C] R8K500000330E	500	50	350x1032x175	69,40
CHV-T 600/3,3	[C] R8K600000330E	600	50	350x1182x175	81,20
CHV-T 750/3,3	[C] R8K750000330E	750	50	350x1252x200	97,30
BIL 20/60 kV (50 Hz) - 6,6 kV					
CHV-T 50/6,6	[C] R8K0500006605	50	50	350x422x160	19,20
CHV-T 75/6,6	[C] R8K0750006605	75	50	350x472x160	22,60
CHV-T 100/6,6	[C] R8K1000006605	100	50	350x472x160	23,00
CHV-T 150/6,6	[C] R8K1500006605	150	50	350x572x160	30,20
CHV-T 200/6,6	[C] R8K200000660E	200	50	350x632x160	38,30
CHV-T 250/6,6	[C] R8K250000660E	250	50	350x802x160	45,90
CHV-T 300/6,6	[C] R8K300000660E	300	50	350x802x160	46,90
CHV-T 333/6,6	[C] R8K333000660E	333	50	350x862x175	55,90
CHV-T 400/6,6	[C] R8K400000660E	400	50	350x892x175	58,60
CHV-T 500/6,6	[C] R8K500000660E	500	50	350x1032x175	69,70
CHV-T 600/6,6	[C] R8K600000660E	600	50	350x1182x175	81,20
CHV-T 750/6,6	[C] R8K750000660E	750	50	350x1252x200	97,60
BIL 28/75 kV (50 Hz) - 11 kV					
CHV-T 50/11	[C] R8L0500011005	50	50	350x422x160	19,30
CHV-T 75/11	[C] R8L0750011005	75	50	350x472x160	22,70
CHV-T 100/11	[C] R8L1000011005	100	50	350x472x160	23,00
CHV-T 150/11	[C] R8L1500011005	150	50	350x572x160	30,10
CHV-T 200/11	[C] R8L2000011005	200	50	350x632x160	34,40
CHV-T 250/11	[C] R8L2500011005	250	50	350x802x160	45,70
CHV-T 300/11	[C] R8L3000011005	300	50	350x802x160	46,50
CHV-T 333/11	[C] R8L3330011005	333	50	350x862x175	53,00
CHV-T 400/11	[C] R8L400001100E	400	50	350x892x175	56,10
CHV-T 500/11	[C] R8L500001100E	500	50	350x1032x175	67,00
CHV-T 600/11	[C] R8L600001100E	600	50	350x1182x175	80,70
CHV-T 750/11	[C] R8L750001100E	750	50	350x1252x200	92,10

Codes R8xxxxxxxxxxx5 cannot have an internal fuse.

10% surcharge for orders less than or equal to 3 units (per type)
The prices shown in the price list refer to capacitors for indoor/outdoor installation, with internal fuses (depending on type), 50 Hz, class C temperature and without pressure switch.
According to IEC 60871-1 and IEC 60871-4 standards

CHV-M

Single-phase MV power capacitors (indoor and outdoor use)

Type	Code	Q (kvar)	Frequency (Hz)	Size (mm) width x height x depth	weight (kg)
BIL 20/60 kV (50 Hz) - 3,81 kV					
CHV-M 50/3,81	[C] R8A0500003815	50	50	350x487x160	18,20
CHV-M 75/3,81	[C] R8A075000381E	75	50	350x487x160	18,50
CHV-M 100/3,81	[C] R8A100000381E	100	50	350x537x160	21,90
CHV-M 150/3,81	[C] R8A150000381E	150	50	350x637x160	29,10
CHV-M 167/3,81	[C] R8A167000381E	167	50	350x637x160	29,30
CHV-M 200/3,81	[C] R8A200000381E	200	50	350x697x160	33,50
CHV-M 250/3,81	[C] R8A250000381E	250	50	350x867x160	44,80
CHV-M 300/3,81	[C] R8A300000381E	300	50	350x867x160	45,80
CHV-M 333/3,81	[C] R8A333000381E	333	50	350x957x160	52,30
CHV-M 400/3,81	[C] R8A400000381E	400	50	350x927x175	55,30
CHV-M 500/3,81	[C] R8A500000381E	500	50	350x1097x175	68,30
CHV-M 600/3,81	[C] R8A600000381E	600	50	350x1247x175	80,20
BIL 28/75 kV (50 Hz) - 6,35 kV					
CHV-M 50/6,35	[C] R8B0500006355	50	50	350x487x160	17,90
CHV-M 75/6,35	[C] R8B0750006355	75	50	350x537x160	21,80
CHV-M 100/6,35	[C] R8B1000006355	100	50	350x537x160	21,80
CHV-M 150/6,35	[C] R8B150000635E	150	50	350x637x160	28,60
CHV-M 167/6,35	[C] R8B167000635E	167	50	350x637x160	29,10
CHV-M 200/6,35	[C] R8B200000635E	200	50	350x697x160	33,20
CHV-M 250/6,35	[C] R8B250000635E	250	50	350x757x160	37,80
CHV-M 300/6,35	[C] R8B300000635E	300	50	350x867x160	45,30
CHV-M 333/6,35	[C] R8B333000635E	333	50	350x857x175	49,40
CHV-M 400/6,35	[C] R8B400000635E	400	50	350x927x175	54,50
CHV-M 500/6,35	[C] R8B500000635E	500	50	350x1067x175	65,60
CHV-M 600/6,35	[C] R8B600000635E	600	50	350x1247x175	79,20
CHV-M 750/6,35	[C] R8B750000635E	750	50	350x1217x200	90,40
BIL 38/95 kV (50 Hz) - 9,53 kV					
CHV-M 50/9,53	[C] R8C0500009535	50	50	350x530x160	19,50
CHV-M 75/9,53	[C] R8C0750009535	75	50	350x530x160	20,20
CHV-M 100/9,53	[C] R8C1000009535	100	50	350x580x160	23,60
CHV-M 150/9,53	[C] R8C1500009535	150	50	350x680x160	31,00
CHV-M 167/9,53	[C] R8C1670009535	167	50	350x740x160	34,90
CHV-M 200/9,53	[C] R8C2000009535	200	50	350x740x160	35,40
CHV-M 250/9,53	[C] R8C2500009535	250	50	350x910x160	46,90
CHV-M 300/9,53	[C] R8C300000953E	300	50	350x910x160	48,00
CHV-M 333/9,53	[C] R8C333000953E	333	50	350x1000x160	54,70
CHV-M 400/9,53	[C] R8C400000953E	400	50	350x1000x175	59,70
CHV-M 500/9,53	[C] R8C500000953E	500	50	350x1140x175	71,00
CHV-M 600/9,53	[C] R8C600000953E	600	50	350x1290x175	83,10
CHV-M 750/9,53	[C] R8C750000953E	750	50	350x1257x200	90,40
BIL 50/125 kV (50 Hz) - 12,7 kV					
CHV-M 50/12,7	[C] R8D0500012705	50	50	350x615x160	19,70
CHV-M 75/12,7	[C] R8D0750012705	75	50	350x665x160	23,40
CHV-M 100/12,7	[C] R8D1000012705	100	50	350x715x160	26,80
CHV-M 150/12,7	[C] R8D1500012705	150	50	350x765x160	31,20
CHV-M 167/12,7	[C] R8D1670012705	167	50	350x825x160	35,10
CHV-M 200/12,7	[C] R8D2000012705	200	50	350x885x160	39,20
CHV-M 250/12,7	[C] R8D2500012705	250	50	350x995x160	47,00
CHV-M 300/12,7	[C] R8D3000012705	300	50	350x995x160	48,10
CHV-M 333/12,7	[C] R8D3330012705	333	50	350x1055x175	56,90
CHV-M 400/12,7	[C] R8D4000012705	400	50	350x1085x175	59,60
CHV-M 500/12,7	[C] R8D500001270E	500	50	350x1225x175	70,90
CHV-M 600/12,7	[C] R8D600001270E	600	50	350x1375x175	83,00
CHV-M 750/12,7	[C] R8D750001270E	750	50	350x1405x200	98,80
BIL 70/170 kV (50 Hz) - 19,05 kV					
CHV-M 50/19,05	[C] R8E0500019055	50	50	350x644x160	23,30
CHV-M 75/19,05	[C] R8E0750019055	75	50	350x644x160	23,60
CHV-M 100/19,05	[C] R8E1000019055	100	50	350x694x160	27,00
CHV-M 150/19,05	[C] R8E1500019055	150	50	350x804x160	35,00
CHV-M 167/19,05	[C] R8E1670019055	167	50	350x804x160	35,30
CHV-M 200/19,05	[C] R8E2000019055	200	50	350x864x160	39,40
CHV-M 250/19,05	[C] R8E2500019055	250	50	350x964x175	50,80
CHV-M 300/19,05	[C] R8E3000019055	300	50	350x1034x175	56,50
CHV-M 333/19,05	[C] R8E3330019055	333	50	350x1034x175	57,10
CHV-M 400/19,05	[C] R8E4000019055	400	50	350x1134x175	64,40
CHV-M 500/19,05	[C] R8E5000019055	500	50	350x1244x175	73,70
CHV-M 600/19,05	[C] R8E6000019055	600	50	350x1264x200	84,10
CHV-M 750/19,05	[C] R8E7500019055	750	50	350x1454x200	104,20

Codes R8xxxxxxxxxxx5 cannot have an internal fuse.

VC

Three-phase contactor for MV capacitors

Type	Code	Max. voltage	Max. Current (A)	auxiliary voltage	Size (mm) width x height x depth	weight (kg)
VC-6Z44ED 6,6kV 220V	[*] R80921.	6,6 kVca	3 x 400	220 Vac	353x398.6x247	24,00
VC-6Z44ED 6,6kV 110V	[*] R809210010000	6,6 kVca	3 x 400	110 Vdc	353x398.6x247	24,00

RMV

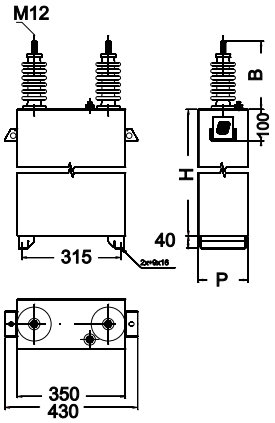
Choke reactors for MV capacitor banks

Type	Code	In (A)	L (µH)	Size (mm) width x height x depth	weight (kg)
RMV-260					
RMV-260-50-350	[2] R80628.	50	350	370x290x110	12,00
RMV-260-60-250	[2] R80637.	60	250	370x290x110	13,00
RMV-260-100-100	[*] R80664.	100	100	370x290x110	13,00
RMV-260-125-50	[2] R80672.	125	50	370x290x110	14,00
RMV-260-175-30	[2] R80691.	175	30	370x290x110	14,00
RMV-330					
RMV-330-60-450	[2] R80739.	60	450	470x355x110	20,00
RMV-330-75-350	[2] R80748.	75	350	470x355x110	21,00
RMV-330-90-250	[2] R80757.	90	250	470x355x110	26,00
RMV-330-125-100	[2] R80774.	125	100	470x355x110	22,00
RMV-330-200-50	[2] R807A2.	200	50	470x355x110	22,00
RMV-330-250-30	[2] R807B1.	250	30	470x355x110	23,00

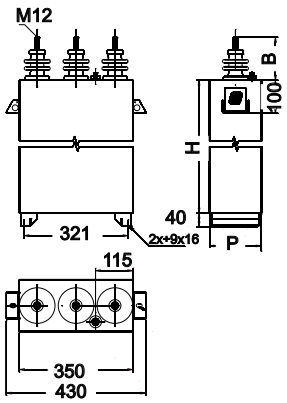
Selection parameters for RMV reactances are: * Maximum operating current (1,43 In) * Required inductance in µH * Isolating voltage kV The isolating voltage is 12 kV (28/75). Other voltages on request Thermal current is 43 In / 1 s. Other values on request Other currents and µH please request Price.

Dimensions

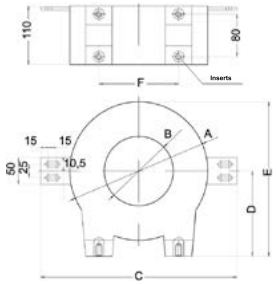
CHV-M



CHV-T



RMV



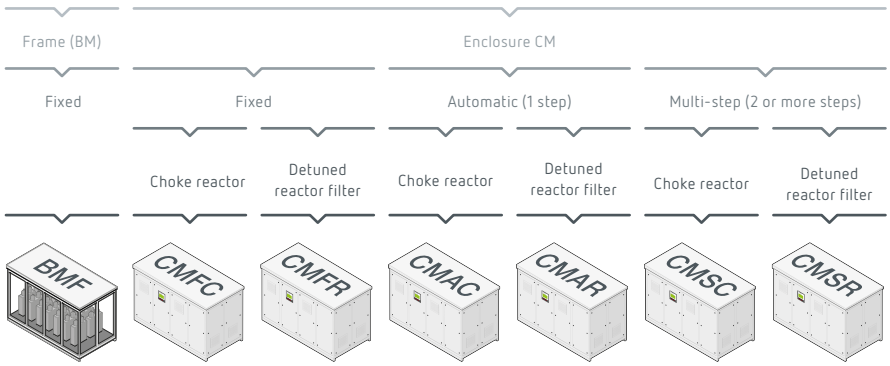
Type	A Ø mm	B Ø mm	C mm	D mm	E mm	F mm	Inserts
RMV-260	260	130	370	160	370	290	M12
RMV-330	330	150	470	190	355	210	M12/M16

MV Automatic capacitor banks

CIRKAP. Easy to choose complete products

Selection of capacitor banks

CIRKAP capacitor banks are divided in two main groups: Capacitor banks in a CM frame and capacitor banks in open BM frames.



References for CIRKAP BM

Code						
B	M	X	X	X	X X X	X X X X X
Fixed (step 1)		F				
Without choke reactor			-			
With choke reactor			C			
Number of steps (1)				n°		
Rated voltage (3 figures) 3.3 kV					033	
Rated voltage (3 figures) 4.2 kV					042	
Rated voltage (3 figures) 5.5 kV					055	
Rated voltage (3 figures) 6.0 kV					060	
Rated voltage (3 figures) 6.3 kV					063	
Rated voltage (3 figures) 6.6 kV					066	
Rated voltage (3 figures) 11 kV					110	
Rated voltage (3 figures) 13.2 kV					132	
Rated voltage (3 figures) 15 kV					150	
Rated voltage (3 figures) 16.5 kV					165	
Rated voltage (3 figures) 22 kV					220	
Rated voltage (3 figures) 33 kV					330	
Nominal capacitor bank power in kvar (5 figures)						n°

References for CIRKAP CM

Code						
C	M	X	X	X	X X X	X X X X X
Fixed (step 1)		F				
Automatic (1 step)		A				
Multistep		S				
Without choke reactor			-			
With choke reactor			C			
With detuned filter			R			
Number of steps (1...9)				n°		
Rated voltage (3 figures) 3.3 kV					033	
Rated voltage (3 figures) 4.2 kV					042	
Rated voltage (3 figures) 5.5 kV					055	
Rated voltage (3 figures) 6.0 kV					060	
Rated voltage (3 figures) 6.3 kV					063	
Rated voltage (3 figures) 6.6 kV					066	
Rated voltage (3 figures) 11 kV					110	
Rated voltage (3 figures) 13.2 kV					132	
Rated voltage (3 figures) 15 kV					150	
Rated voltage (3 figures) 16.5 kV					165	
Rated voltage (3 figures) 22 kV					220	
Rated voltage (3 figures) 33 kV					330	
Nominal capacitor bank power in kvar (5 figures)						n°

Application examples

Water treatment installation

Automatic multi-step capacitor bank with detuned filter, model CMSR, 2250 kvar at 6,6 kV, 50 Hz, 5x650 kvar composition, tuned to 189 Hz (p:7%), outdoor installation and IP44 protection degree. Details of the step with fuse protection, vacuum contactor, filtering reactor and three-phase capacitor.

Paper industry

Automatic multi-step capacitor bank with detuned filter, model CMSR, 6750 kvar at 22 kV, 50 Hz, 750+4x1500 kvar composition, tuned to 189 Hz (p:7%), outdoor installation and IP54 protection degree. Voltage presence indicator, ON/OFF step, manual or automatic step selection, reactive energy regulator with three-phase measurement and overcurrent, short-circuit and step offset protection relays.

Road infrastructures

Automatic multi-step capacitor banks with detuned filter, model CMAR,100 kvar at 3.3 kV, 50 Hz, 1x100 kvar composition, indoor installation and IP23 protection degree, tuned to 189 Hz. Details of the structure adapted to the space available in the tunnel and corporate colour requested by the client.

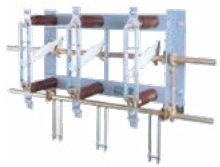
Additional components of MV capacitor banks

Pressure switch
Disconnects the step/capacitor bank with the pressure generated after a serious fault inside a capacitor, in order to prevent greater damage. It enables the power circuit to be disconnected and signals the fault when the pressure reaches the maximum value.

Voltage presence indicator
A unit that lights up permanently when the power circuit is powered to provide greater safety during operations carried out on the unit.

Smoke detector
Smoke detectors are devices that warn about the possibility of internal combustion in the capacitor bank and that send a signal to activate an alarm (in the unit or at the discretion of the user), disconnecting the of the battery if necessary.

Electric circuit with opening delay for doors
For units that are ordered with doors in the power modules, Circutor offers the possibility of including a solenoid electrical interlock system in order to prevent access to the capacitor bank's interior if the necessary time has not elapsed.



SVacuum off-load and/or earthing switch
The cut-off and/or earthing switch enables the unit to be visually disconnected and isolated at the capacitor bank input.

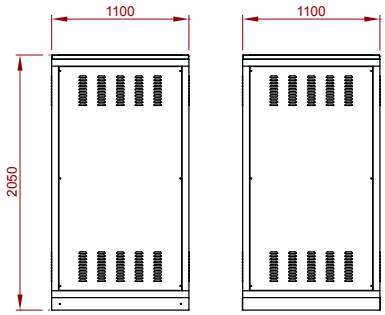
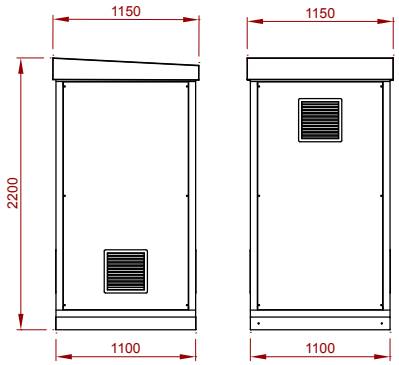
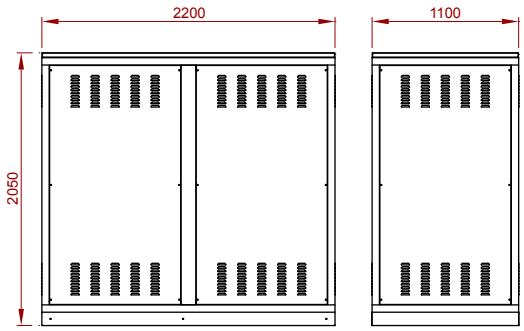
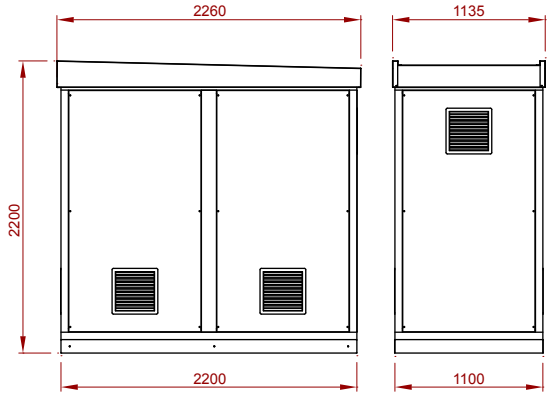
Ventilation
In the case of capacitor banks installed in environmental conditions where natural convention cooling is insufficient, an auxiliary thermostat-controlled forced air system is essential for evacuating the internal heat of the capacitor bank.

Anti-condensation heating resistors
These are used to avoid condensation due to temperature gradients during the day, under saline environmental conditions, high relative humidity and low temperatures. Heating resistors controlled by thermostat and/or hygrometer.

Step dimensions

Power	7,2 kV	12 kV	24 kV	36 kV
≤250 kvar	A	A	B	C
21-500 kvar	A	A	B	C
501-750 kvar	A	B	B	C
751-1000 kvar	A, B	B	B	C
1001-1500 kvar	B	B	C	C
1501-2000 kvar	B	B	C	C
201-2500 kvar	B	B	C	C
2501-3000 kvar	B	C	C	C
3001-4000 kvar	C	C	C	C
4001-5000 kvar	C	C	C	
5001-6000 kvar	C	C	C	
6001-7000 kvar	C	C	C	

Dimensions are approximate and may differ depending on the specifications for each team.

	INDOOR	OUTDOOR
A		
B		
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