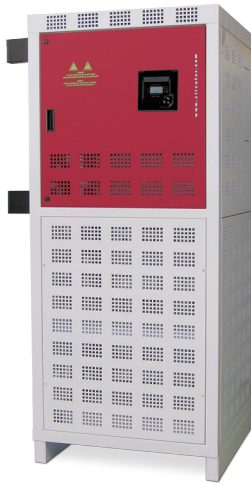


FRE

Automatic capacitor banks with detuned filters and thyristors



Description

The capacitor banks with detuned filters of the **FRE** series have been designed for reactive energy correction in networks with fluctuating load levels, high harmonic presence and a risk of resonance.

The power variations are relatively quick (measured in milliseconds), and the operation is thus carried out by thyristors, which are connected to a voltage controller board, so that the connection and disconnection of the capacitor is carried out with zero voltage difference. Transients are prevented between the connection and disconnection of the steps, obtaining an immediate response to the load fluctuations.

Applications

The most common application is with individual loads or in installations where a quick compensation response is needed (e.g. welding units, motors for lifting units, lifts, etc.) and where the network has high harmonic content.

Technical features

Electrical features	Operating voltage	230, 400 V (for other voltages, please ask)
	Support voltage	440 V (400 V)
	Capacity tolerance	± 10%
	Tr connection delay	40 ms...2 s
Unit made up of	CFB capacitor	
	Static switching unit on each stage, made up of static contactors (thyristors)	
	Protection by stage by fuses with high cut-off power (APR). NH-00 series.	
	Two-pole circuit breaker protection for capacitor bank and regulator operations.	
	Reactive energy regulator of the Computer MAX-f	
	Heatsinks	
	Built-in thermostat on the heatsink for disconnecting the stage in the case of excessive temperatures (90 °C)	
	Detuned filters tuned to 189 Hz for protection against harmonics present in the network and for preventing resonance with harmonics of the 5th order or higher.	
Add-ons	Manual switch on capacitor bank header	
	Circuit breaker on capacitor bank header	
	Circuit breaker + earth leakage protection on capacitor bank header	
	Forced ventilation unit + thermostat	
	Polycarbonate sheet for protection against direct contacts	
	400/230 V autotransformer	
Insulation level	3 / 15 kV	
Discharge resistance	75 V / 3 minutes	
Overload	1.3 times the nominal hold current	
Overvoltage	10%, 8 over 24 hours 15%, up to 15 minutes over 24 hours 20%, up to 5 minutes over 24 hours 30%, up to 1 minute over 24 hours	
Environmental features	Temperature class D	Daily mean: 45 °C Annual mean: 35 °C Maximum: 50 °C Minimum: -25 °C
	Humidity	80% RH
	Altitude	2,000 m
Mechanical features	Protection degree	IP 21
	Colour	RAL 7035 grey RAL 3005 maroon
Assembly conditions	Type of assembly	Vertical
	Ventilation	Natural or forced, in accordance with the options
	Distance between capacitors	At least 2 cm
Standards	IEC 60831-1, IEC 70/7, UNE 20827, UNE 20010, BS 1650, VDE 560	

FRE

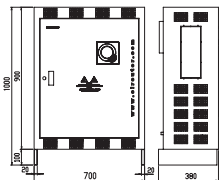
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detuned filters and thyristors

References

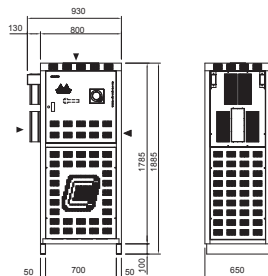
440 V	400 V	Composition	Switch (A)	Cable section (mm ²)	Weight (kg)	Dimensions (mm)		Type	Code
						width x height x depth			
17,5	14	(2,5 + 5 + 10)	63 - Included	6	105	700 x 1000 x 380		FRES-17,5-440	R6H450
25	21	(5 + (2 X 10))	63 - Included	10	120	700 x 1000 x 380		FRES-25-440	R6H455
27,5	23	(2,5 + 5 + (2 x 10))	125 - Included	16	130	700 x 1000 x 380		FRES-27,5-440	R6H460
35	29	(5 + (3 X 10))	125 - Included	16	140	700 x 1000 x 380		FRES-35-440	R6H465
37,5	31	(7,5 + (2 X 15))	125 - Included	25	150	700 x 1000 x 380		FRES-37,5-440	R6H470
45	37	(3 x 15)	125 - Included	25	175	700 x 1000 x 380		FRES-45-440	R6H475
60	50	(4 x 15)	200 - Included	35	200	700 x 1000 x 380		FRES-60-440	R6H480
75	62	(4 x 18,75)	200 - Included	50	215	700 x 1000 x 380		FRES-75-440	R6H485
87,5	72	(12,5 + 25 + 50)	200	50	300	930 x 1900 x 650		FRE4-87,5-440	R6E416
100	83	(25 + 25 + 50)	250	95	325	930 x 1900 x 650		FRE4-100-440	R6E420
125	103	(25 + 50 + 50)	400	95	345	930 x 1900 x 650		FRE4-125-440	R6E422
150	125	(25 + 25 + 50 + 50)	400	95	355	930 x 1900 x 650		FRE4-150-440	R6E423
175	145	(25 + 50 + 100)	400	120	365	930 x 1900 x 650		FRE4-175-440	R6E425
200	165	(50 + 50 + 100)	400	150	380	930 x 1900 x 650		FRE4-200-440	R6E428
250	207	(50 + (2 x 100))	630	185	390	930 x 1900 x 650		FRE4-250-440	R6E429
300	248	(50 + 50 + (2 x 100))	630	240	410	930 x 1900 x 650		FRE4-300-440	R6E430
350	289	(50 + (3 x 100))	800	2x150	430	930 x 1900 x 650		FRE4-350-440	R6E432
400	331	(4 x 100)	800	2x150	460	930 x 1900 x 650		FRE4-400-440	R6E434
400	331	(50 + 50 + (3 x 100))	800	2x185	550	1360 x 1900 x 650		FRE6-400-440	R6J425
450	372	(50 + (4 x 100))	1000	2x185	587	1360 x 1900 x 650		FRE6-450-440	R6J430
500	413	(5 x 100)	1000	2x240	621	1360 x 1900 x 650		FRE6-500-440	R6J435
550	455	(50 + (5 x 100))	1250	2x240	658	1360 x 1900 x 650		FRE6-550-440	R6J440
600	496	(6 x 100)	1250	2x240	685	1360 x 1900 x 650		FRE6-600-440	R6J445
600	496	(50 + 50 + (5 x 100))	1250	2x240	820	1760 x 1900 x 650		FRE8-600-440	R6K436
650	537	(50 + (6 x 100))	1250	3x150	865	1760 x 1900 x 650		FRE8-650-440	R6K438
700	579	(7 x 100)	1250	3x150	910	1760 x 1900 x 650		FRE8-700-440	R6K440
750	620	(50 + (7 x 100))	1600	3x185	955	1760 x 1900 x 650		FRE8-750-440	R6K442
800	661	(8 x 100)	1600	3x185	1000	1760 x 1900 x 650		FRE8-800-440	R6K444
800	661	(50 + 50 + (7 x 100))	1250 / 400	2x240/ 240	1100	2720 x 1900 x 650		FRE10-800-440	R6L425
850	702	(50 + (8 x 100))	1000 / 630	2x240/ 240	1137	2720 x 1900 x 650		FRE10-850-440	R6L430
900	744	(9 x 100)	1250 / 630	2x240/ 240	1174	2720 x 1900 x 650		FRE10-900-440	R6L435
950	785	(50 + (9 x 100))	1000 / 800	2x240/ 2x185	1211	2720 x 1900 x 650		FRE10-950-440	R6L440
1000	826	(10 x 100)	1250 / 800	2x240/ 2x185	1248	2720 x 1900 x 650		FRE10-1000-440	R6L445
1050	868	(50 + (10 x 100))	1250 / 800	2x240/ 2x240	1285	2720 x 1900 x 650		FRE12-1050-440	R6L450
1100	909	(11 x 100)	1250 / 1000	2x240/ 2x240	1322	2720 x 1900 x 650		FRE12-1100-440	R6L455
1150	950	(50 + (11 x 100))	2 x 1250	2x240/ 2x240	1359	2720 x 1900 x 650		FRE12-1150-440	R6L460
1200	992	(12 x 100)	2 x 1250	2x240 / 2x240	1389	2720 x 1900 x 650		FRE12-1200-440	R6L465

Dimensions

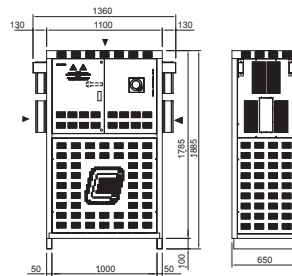
FRES



FRE4



FRE6



FRE8

