

EXPORT 2023



Leaders in Power Factor Correction

Almost 40 years of experience in Power Factor Correction, one of leading PFC manufacturing facility in the world, focused in innovations and developments of new products range in the sector of electrical energy efficiency, certified by many organizations which guarantee high quality products.

International Presence

RTR group has a strong presence in international market. Our manufacturing facility and head office is located in Spain and have sales offices in different part of world such as Russia, South Korea, China, Thailand, Mexico and Turkey with distribution network over 70 countries worldwide.



Quality and certifications

The quality department of **RTR Energía** ensures that the manufacturing of its products following strictest quality requirements according to international standards.

RTR professional and dedicated team of **R&D (i+D+i)** and **QC**, allowing us for continuous developments, innovations, safety improvements and various certification for its products and equipment, as recently **V0 self-extinguishing Polyurethane Resin certified under UL94**, certification of Three-phase reactors for harmonic filters by **AENOR**, type tested of three-phase capacitor series DWCAP by L.C.O.E. which gives security and satisfaction disposal to customers.



- Lighting and motor run capacitors, certification by AENOR
- Self-extinguishing resin V0, under standard UL94
- Reactors for Harmonic filters certification, by AENOR
- Capacitor for Power Factor Correction DWCAP, by AENOR
- MV Capacitor type tested and certified by ASTA



Engineering and technology



RTR Energía has the most modern technology for the manufacturing capacitors, harmonic filters, transformers, capacitor banks and polyurethane resin.



Assistance and customized manufacturing

The extensive technical equipment of RTR Energía is specialized in designing, manufacturing and installation of solutions adapted to every needs and provides technical assistance to its customers for any phase of the project.



Innovation and design



Highly qualified specialized technical team, latest technology, new materials with the highest performance and designs allowing RTR Energía for innovation and development the best products to improve electrical energy efficiency. Thanks to this commitments for innovation, RTR Energía has patented its new three phase capacitor model DWCAP and has Quality Certificate ISO 9001 and Enviromental Certificate ISO 14001. Also RTR provides certificates for products as its, V0 self-extinguishing resin under UL94, Lighting capacitor AENOR and three phase capacitor DWCAP by AENOR, ERDA and three phase Detuned reactors certified by AENOR and DEKRA.

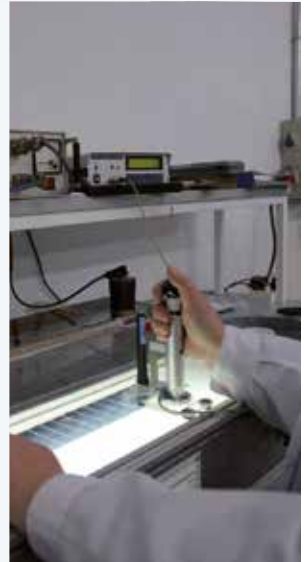


Verification and control laboratories

RTR Energía is well equipped with testing labs.

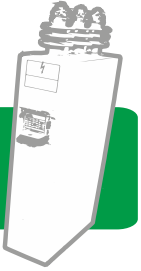
- Low Voltage Laboratory
- High Voltage Laboratory
- Chemical Laboratory

The laboratories allowing us for controlling of raw materials, finished product verification and development of new technologies to deliver high performance product.



MV Capacitors

MV Capacitors are constituted by elementary units, consisting of aluminum foil windings of high purity and polypropylene film of the highest quality.



3PH BO/R MT TP



1PH BO/R MT SP

LV Capacitors

LV Power capacitors are manufactured with low loss metallized self-healing polypropylene film. Dry type capacitors encapsulated with polyurethane self-extinguishing resin V0, developed under standard UL94 with certification number 20141031-E470994.



Super DWCAP & DWCAP Series

3Phase MA/C/CE and
1Phase EA Series



3Phase MA/C/CE/TER Series



3Phase BO/R Series



LV Fixed Capacitors Banks

Three-phase protected power capacitors are specially designed for reactive power factor correction for installations where inductive automatic load is constant and regulation is not required.



PRE Series

PRBA Series

PRBD Series

Compact-1

Compact-2



LV Automatic Capacitor Banks

These capacitor banks are used in power factor correction for installations where is variable load.



Compact-4

Compact-7



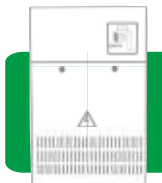
Compact-9



ST Series with static contactors
(Thyristor switching)



- ARM Series with detuned reactors
- Rack units



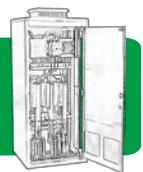
MV Capacitor Banks

These capacitor banks are designed for medium or high voltage distribution networks are for installation with Transformer, Power Sub-Station, Distribution Feeders and the users of MV network facilities, to provide reactive power compensation, system voltage regulation and avoiding penalties for low power factor in electrical bills.



Active Harmonic Filter and SVG

RTR active filter help to remove harmonic distortion from power network and avoid problems arising due to low power quality.



SVG

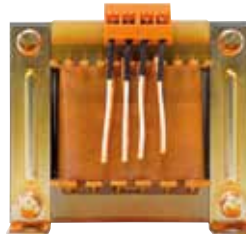


Active Harmonic Filter



Detuned Reactors and Transformers

Three phase detuned reactors are made of low losses magnetic, copper or aluminum conductor with 90, 120, 140 and 160°C thermal protection relay. Standard detuning factor is 5,67 %, 7% and 14% with 210, 189 and 134 Hz for 50 Hz networks. Single phase transformers are made of low losses magnetic plates, copper conductor.



Accessories

The equipment for the protection and control of our capacitor Banks.



Electronic static contactor



Thyristor switch



MCB



Capacitor duty contactor



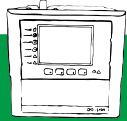
On-load break switch



MCCB



Automatic Power Factor Controllers



PR-14D



PR-14D8/96



PR-15D



Split Core Current Transformer



PR-12D
Remote Management

Lighting and Motor Capacitors



Lighting capacitor



Motor Run Capacitor

Capacitors for power factor correction



DWCAP Series

Three phase capacitors

230/400/415/440/480/525/690 V, 50 Hz

Characteristics and utility

- Three phase capacitor DUAL WINDING internally delta connected
- Discharge resistors Incorporated
- Reactive power factor correction
- Dry type
- Connector type terminal
- Indoor mounting

Triple safety

- Overpressure disconnection system
- Protection by internal fuses
- DWCAP system (patented) internal windings displacement

Construction and materials

- Low losses metallized self-healing polypropylene film, high density, high temperature and greater dielectric resistance Volt/ μ
- Polyurethane self-extinguishing resin V0 (Flame retardant), developed under standard UL94 by RTR Energía with certification number 20141031-E470994
- Aluminium case with bottom fixing M12x16

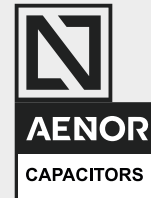
Discharge time

- 50V/ 60s

Standards

- IEC 60831-1/2:2014
- UNE-EN 60831-1/2:2014

Certifications



*Certified product up to 525V and 35kVAr

Technical Characteristics

Capacitance tolerance	-5 % +10%
Frequency	50 Hz (60 Hz upon request)
Temperature range	-25°C +55°C (Class D)
Dielectric losses	≤ 0.2 W/KVAr
Total losses	≤ 0.40 W/KVAr*
Over voltage	1.10 x Un (8 h/day) 1.15 x Un (30 min/day) 1.20 x Un (5 min/day) 1.30 x Un (1 min/day)
Over current	1.60xIn
Max. THD in voltage	2 %
Max. THD in current	25 %
Discharge resistance	Incorporated
Connection	Delta
Voltage test between terminals	2.15xUn 10s
Voltage test between terminals and case	5kV AC for 1min
Inrush current	Upto 250 x In
Protection	IP-20
Humidity	Max. 95%
Life Expectancy	130.000h
Altitude	Max. 4000m.a.s.l.
Mounting position	Universal
Min. mounting distance between capacitors	10mm

* Without resistors



Code	Power	Voltage	Frequency	Current	Capacitance	Dimensions
	KVAr	V	Hz	A	µF	mm
D2300255TER0000	2,5	230	50	6,28	3x 50,14	70x260
D2300505TER0000	5	230	50	12,5	3x100,29	85x260
D2300755TER0000	7,5	230	50	18,83	3x150,43	100x260
D2301005TER0000	10	230	50	25,10	3x200,57	120x265
D2301255TER0000	12,5	230	50	31,38	3x250,72	136x265
D2301505TER0000	15	230	50	37,65	3x300,86	136x265

Code	Power	Voltage	Frequency	Current	Capacitance	Dimensions
	KVAr	V	Hz	A	µF	mm
D4000755TER0000	7,5	400	50	10,83	3x49,74	70 x 260
D4001005TER0000	10	400	50	14,43	3x66,31	85 x 260
D4001255TER0000	12,5	400	50	18,04	3x82,89	85 x 260
D4001505TER0000	15	400	50	21,65	3x99,47	100 x 260
D4002005TER0000	20	400	50	28,87	3x132,63	120 x 265
D4002505TER0000	25	400	50	36,08	3x165,79	120 x 265
D4003005TER0000	30	400	50	43,30	3x198,94	136 x 265

Code	Power	Voltage	Frequency	Current	Capacitance	Dimensions
	KVAr	V	Hz	A	µF	mm
D4150755TER0000	7,5	415	50	10,43	3x46,21	70 x 260
D4151005TER0000	10	415	50	13,91	3x61,61	85 x 260
D4151255TER0000	12,5	415	50	17,39	3x77,01	85 x 260
D4151505TER0000	15	415	50	20,87	3x92,41	100 x 260
D4152005TER0000	20	415	50	27,82	3x123,21	120 x 265
D4152505TER0000	25	415	50	34,78	3x154,02	120 x 265
D4153005TER0000	30	415	50	41,74	3x184,82	136 x 265
D4153505TER0000	35	415	50	48,69	3x215,63	136 x 265

Code	Power	Voltage	Frequency	Current	Capacitance	Dimensions
	KVAr	V	Hz	A	µF	mm
D4400755TER0000	7,5	440	50	9,84	3x 41,10	70x260
D4401005TER0000	10	440	50	13,12	3x 54,81	70x260
D4401255TER0000	12,5	440	50	16,40	3x 68,51	85x260
D4401505TER0000	15	440	50	19,68	3x 82,21	85x260
D4402005TER0000	20	440	50	26,24	3x109,61	100x260
D4402505TER0000	25	440	50	32,80	3x137,01	120x265
D4403005TER0000	30	440	50	39,36	3x164,42	120x265
D4403505TER0000	35	440	50	45,93	3x191,82	136x265
D4404005TER0000	40	440	50	52,49	3x219,22	136x265

Code	Power	Voltage	Frequency	Current	Capacitance	Dimensions
	KVAr	V	Hz	A	µF	mm
D4800755TER0000	7,5	480	50	9,02	3x 34,54	70x260
D4801005TER0000	10	480	50	12,03	3x 46,05	85x260
D4801255TER0000	12,5	480	50	15,04	3x 57,56	100x260
D4801505TER0000	15	480	50	18,04	3x 69,08	100x260
D4802005TER0000	20	480	50	24,06	3x 92,10	120x265
D4802505TER0000	25	480	50	30,07	3x115,13	120x265
D4803005TER0000	30	480	50	36,08	3x138,16	136x265
D4803505TER0000	35	480	50	42,10	3x161,18	136x265

Code	Power	Voltage	Frequency	Current	Capacitance	Dimensions
	KVAr	V	Hz	A	µF	mm
D5250755TER0000	7,5	525	50	8,25	3x 28,87	70x260
D5251005TER0000	10	525	50	11,00	3x 38,50	85x260
D5251255TER0000	12,5	525	50	13,75	3x 48,12	85x260
D5251505TER0000	15	525	50	16,50	3x 57,74	100x260
D5252005TER0000	20	525	50	21,99	3x 76,99	120x265
D5252505TER0000	25	525	50	27,49	3x 96,24	120x265
D5253005TER0000	30	525	50	32,99	3x115,49	136x265
D5253505TER0000	35	525	50	38,49	3x134,73	136x265

Code	Power	Voltage	Frequency	Current	Capacitance	Dimensions
	KVAr	V	Hz	A	µF	mm
D6900755TER0000	7,5	690	50	6,28	3x16,71	70x260
D6901005TER0000	10	690	50	8,37	3x22,29	85x260
D6901255TER0000	12,5	690	50	10,46	3x27,86	100x260
D6901505TER0000	15	690	50	12,55	3x33,43	100x260
D6902005TER0000	20	690	50	16,73	3x44,57	120x260
D6902505TER0000	25	690	50	20,92	3x55,71	120x265
D6903005TER0000	30	690	50	25,10	3x66,86	136x265

Reinforced three phase capacitors

230/400/415/440/480 V, 50 Hz

Characteristics and utility

- Three phase capacitor DUAL WINDING internally delta connected
- Discharge resistors Incorporated
- Reactive power factor correction
- Reinforced design to support over voltage
- Dry type
- Connector type terminal
- Indoor mounting

Triple safety

- Overpressure disconnection system.
- Protection by internal fuses
- DWCAP system (patented) internal windings displacement.

Construction and materials

- Low losses metallized self-healing polypropylene film, high density, high temperature and greater dielectric resistance Volt/ μ
- Polyurethane self-extinguishing resin V0 (Flame retardant), developed under standard UL94 by RTR Energia with certification number 20141031-E470994
- Aluminium case with bottom fixing M12x16

Discharge time

- 50V/ 60s

Standards

- IEC 60831-1/2:2014
- UNE-EN 60831-1/2:2014

Certifications



*Certified product up to 525V and 35kVAr

Technical Characteristics	
Capacitance tolerance	-5 % +10%
Frequency	50 Hz (60 Hz upon request)
Temperature range	-25°C +55°C (Class D)
Dielectric losses	≤ 0.2 W/KVAr
Total losses	≤ 0.40 W/KVAr*
Over voltage	1.15 x Un
Over current	1.8xIn
Max. THD in voltage	3 %
Max. THD in current	30 %
Discharge resistance	Incorporated
Connection	Delta
Voltage test between terminals	2.15xUn 10s
Voltage test between terminals and case	5kV AC for 1min
Inrush current	Upto 350 x In
Protection	IP-20
Humidity	Max. 95%
Life Expectancy	150.000h
Altitude	Max. 4000m.a.s.l.
Mounting position	Universal
Min. mounting distance between capacitors	10mm



* Without resistors

Code	Power	Voltage	Frequency	Current	Capacitance	Dimensions
	KVAr	V	Hz	A	µF	mm
D2300255TER0RTF	2,5	230	50	6,28	3x 50,14	70x260
D2300505TER0RTF	5	230	50	12,55	3x100,29	85x260
D2300755TER0RTF	7,5	230	50	18,83	3x150,43	100x260
D2301005TER0RTF	10	230	50	25,10	3x200,57	120x265
D2301255TER0RTF	12,5	230	50	31,38	3x250,72	136x265
D2301505TER0RTF	15	230	50	37,65	3x300,86	136x265

Code	Power	Voltage	Frequency	Current	Capacitance	Dimensions
	KVAr	V	Hz	A	µF	mm
D4000755TER0RTF	7	400	50	10,83	3X 49,74	70X260
D4001005TER0RTF	10	400	50	14,45	3x 66,30	85x260
D4001255TER0RTF	12,5	400	50	18,06	3x 82,90	100x260
D4001505TER0RTF	15	400	50	21,68	3x 99,50	100x260
D4002005TER0RTF	20	400	50	28,90	3x132,60	120x265
D4002505TER0RTF	25	400	50	36,13	3x165,80	120x265
D4003005TER0RTF	30	400	50	43,35	3x198,90	136x265

Code	Power	Voltage	Frequency	Current	Capacitance	Dimensions
	KVAr	V	Hz	A	µF	mm
D4150755TER0RTF	7,5	415	50	10,43	3x 46,21	70x260
D4151005TER0RTF	10	415	50	13,93	3x 61,60	85x260
D4151255TER0RTF	12,5	415	50	17,41	3x 77,00	100x260
D4151505TER0RTF	15	415	50	20,89	3x 92,40	100x260
D4152005TER0RTF	20	415	50	27,86	3x123,20	120x265
D4152505TER0RTF	25	415	50	34,82	3x154,00	120x265
D4153005TER0RTF	30	415	50	41,79	3x184,80	136x265
D4153505TER0000	35	415	50	48,69	3x215,63	136x265

Code	Power	Voltage	Frequency	Current	Capacitance	Dimensions
	KVAr	V	Hz	A	µF	mm
D4400755TER0RTF	7,5	440	50	9,84	3x 41,10	70x260
D4401005TER0RTF	10	440	50	13,12	3x 54,81	85x260
D4401255TER0RTF	12,5	440	50	16,40	3x 68,51	85x260
D4401505TER0RTF	15	440	50	19,68	3x 82,21	100x260
D4402005TER0RTF	20	440	50	26,24	3x109,61	100x260
D4402505TER0RTF	25	440	50	32,80	3x137,01	120x265
D4403005TER0RTF	3	440	50	39,36	3x164,42	120x265
D4403505TER0RTF	35	440	50	45,93	3x191,82	136x265
D4404005TER0RTF	40	440	50	52,49	3x219,22	136x265

Code	Power	Voltage	Frequency	Current	Capacitance	Dimensions
	KVAr	V	Hz	A	µF	mm
D4800755TER0RTF	7,5	480	50	9,02	3x 34,54	70x260
D4801005TER0RTF	10	480	50	12,03	3x 46,05	85x260
D4801255TER0RTF	12,5	480	50	15,04	3x 57,56	100x260
D4801505TER0RTF	15	480	50	18,04	3x 69,08	100x260
D4802005TER0RTF	20	480	50	24,06	3x 92,10	120x265
D4802505TER0RTF	25	480	50	30,07	3x115,13	120x265
D4803005TER0RTF	30	480	50	36,08	3x138,16	136x265
D4803505TER0RTF	35	480	50	42,10	3x161,18	136x265

* Other powers, voltages and frequencies upon request.

Three phase capacitors for harmonics filter application

230/400/440 V, 50 Hz

Characteristics and utility

- Three phase capacitor DUAL WINDING internally delta connected
- Discharge resistors Incorporated
- Reactive power factor correction
- Special design to install with 210, 189 or 134 Hz three phase harmonic filters
- Dry type
- Connector type terminal
- Indoor mounting

Triple safety

- Overpressure disconnection system
- Protection by internal fuses
- DWCAP system (patented) internal windings displacement

Construction and materials

- Low losses metallized self-healing polypropylene film, high density, high temperature and greater dielectric resistance Volt/ μ
- Polyurethane self-extinguishing resin V0 (Flame retardant), developed under standard UL94 by RTR Energía with certification number 20141031-E470994
- Aluminium case with bottom fixing M12x16

Discharge time

- 50V/ 60s

Standard

- IEC 60831-1/2:2014
- UNE-EN 60831-1/2:2014

Certifications



* Certified product up to 525V and 35kVAR

Technical Characteristics

Capacitance tolerance	-5 % +10%
Frequency	50 Hz (60 Hz upon request)
Temperature range	-25°C +55°C (Class D)
Dielectric losses	≤ 0.2 W/KVAr
Total losses	≤ 0.40 W/KVAr*
Over voltage	1.15 x Un
Over current	1.8xIn
Discharge resistance	Incorporated
Connection	Delta
Voltage test between terminals	2.15xUn 10s
Voltage test between terminals and case	5kV AC for 1min
Inrush current	Upto 350xIn
Protection	IP-20
Humidity	Max. 95%
Altitude	Max. 4000m.a.s.l.
Mounting position	Universal
Min. mounting distance between capacitors	10mm

* Without resistors



Code	Power	Voltage	Frequency	Detuning	Current	Capacitance	Dimensions
	KVAr	V	Hz	Factor	A	µF	mm
D2300255TER7RCT	2,5	230	50	7%	6,28	3x 46,63	70x260
D2300505TER7RCT	5	230	50	7%	12,55	3x 93,27	85x260
D2300755TER7RCT	7,5	230	50	7%	18,83	3x139,90	100x260
D2301005TER7RCT	10	230	50	7%	25,10	3x186,53	120x265
D2301255TER7RCT	12,5	230	50	7%	31,38	3x233,17	136x265
D2301505TER7RCT	15	230	50	7%	37,65	3x279,80	136x265

Code	Power	Voltage	Frequency	Detuning	Current	Capacitance	Dimensions
	KVAr	V	Hz	Factor	A	µF	mm
D2300255TER1RCT	2,5	230	50	14%	6,28	3x 43,12	70x260
D2300505TER1RCT	5	230	50	14%	12,55	3x 86,25	85x260
D2300755TER1RCT	7,5	230	50	14%	18,83	3x129,37	100x260
D2301005TER1RCT	10	230	50	14%	25,10	3x172,49	120x265
D2301255TER1RCT	12,5	230	50	14%	31,38	3x215,62	120x265
D2301505TER1RCT	15	230	50	14%	37,65	3x258,74	136x265

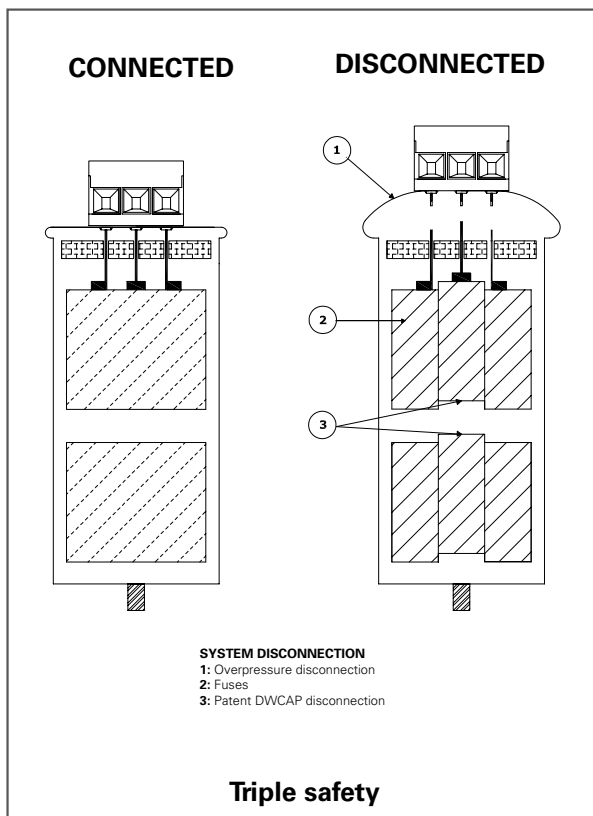
Code	Power	Voltage	Frequency	Detuning	Current	Capacitance	Dimensions
	KVAr	V	Hz	Factor	A	µF	mm
D4000755TER7RCT	7,5	400	50	7%	10,83	3x 46,25	85x260
D4001005TER7RCT	10	400	50	7%	14,43	3x 61,67	85x260
D4001255TER7RCT	12,5	400	50	7%	18,04	3x 77,09	100x260
D4001505TER7RCT	15	400	50	7%	21,65	3x 92,51	100x260
D4002005TER7RCT	20	400	50	7%	28,87	3x123,35	120x265
D4002505TER7RCT	25	400	50	7%	36,08	3x154,18	136x265
D4003005TER7RCT	30	400	50	7%	43,30	3x185,02	136x265

Code	Power	Voltage	Frequency	Detuning	Current	Capacitance	Dimensions
	KVAr	V	Hz	Factor	A	µF	mm
D4000755TER1RCT	7,5	400	50	14%	10,83	3x 42,77	85x260
D4001005TER1RCT	10	400	50	14%	14,43	3x 57,03	100x260
D4001255TER1RCT	12,5	400	50	14%	18,04	3x 71,29	100x260
D4001505TER1RCT	15	400	50	14%	21,65	3x 85,55	120x265
D4002005TER1RCT	20	400	50	14%	28,87	3x114,06	120x265
D4002505TER1RCT	25	400	50	14%	36,08	3x142,58	136x265

Code	Power	Voltage	Frequency	Detuning	Current	Capacitance	Dimensions
	KVAr	V	Hz	Factor	A	µF	mm
D4400755TER7RCT	7,5	440	50	7%	9,84	3x 38,23	85x260
D4401005TER7RCT	10	440	50	7%	13,12	3x 50,97	85x260
D4401255TER7RCT	12,5	440	50	7%	16,40	3x 63,71	100x260
D4401505TER7RCT	15	440	50	7%	19,68	3x 76,45	100x260
D4402005TER7RCT	20	440	50	7%	26,24	3x101,94	120x265
D4402505TER7RCT	25	440	50	7%	32,80	3x127,42	136x265
D4403005TER7RCT	30	440	50	7%	39,36	3x152,91	136x265

Code	Power	Voltage	Frequency	Detuning	Current	Capacitance	Dimensions
	KVAr	V	Hz	Factor	A	µF	mm
D4400755TER1RCT	7,5	440	50	14%	9,84	3x 35,35	85x260
D4401005TER1RCT	10	440	50	14%	13,12	3x 47,13	100x260
D4401255TER1RCT	12,5	440	50	14%	16,40	3x 58,92	100x260
D4401505TER1RCT	15	440	50	14%	19,68	3x 70,70	120x265
D4402005TER1RCT	20	440	50	14%	26,24	3x 94,27	120x265
D4402505TER1RCT	25	440	50	14%	32,80	3x117,83	136x265

* Other powers, voltages and frequencies upon request.



Temperature (IEC 60831-1/2)

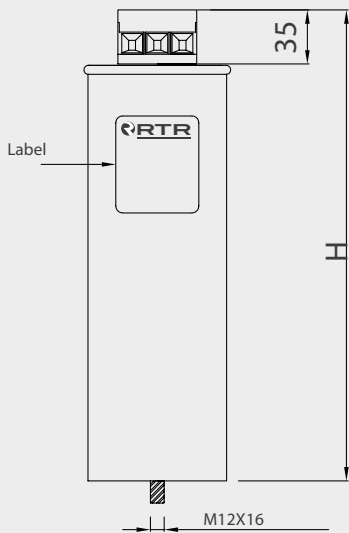
Symbol	Ambient temperature °C		
	Maximum	Highest mean over any period of	
		24h	1 year
A	40	30	20
B	45	35	25
C	50	40	30
D	55	45	35

Dimensions

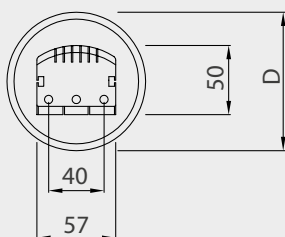
Dimensions DxH (mm)	Connection terminal Max. cable section 1 kV-RV (mm ²)	DRAWING
		70x260
85x260	10	
100x260	10	
120x265	35	DRAWING B
136x265	35	

Dimensions

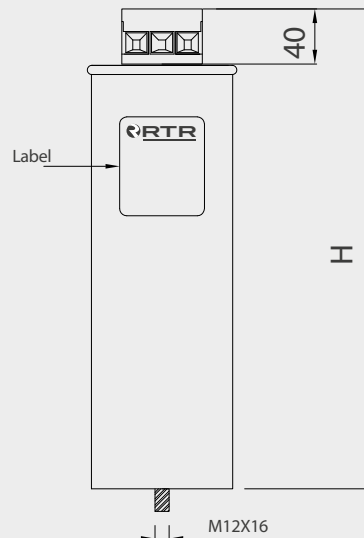
DRAWING A



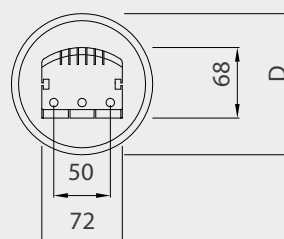
- Washer DIN 6798 A M12
- Nut DIN 936 M12 ZNC



DRAWING B



- Washer DIN 6798 A M12
- Nut DIN 936 M12 ZNC



Tolerance ±2%

Capacitor for power factor correction



SUPER DWCAP Series

Three phase capacitors

230/400/440/480/525V, 50Hz

Characteristics and utility

- Three phase capacitor DUAL WINDING internally delta connected.
- Discharge resistors incorporated.
- Reactive power factor correction.
- Dry type.
- Connector type terminal.
- Indoor mounting.

Triple safety

- Overpressure disconnection system.
- Protection by internal fuses.
- DWCAP system (patented) internal displacement.

Construction and materials

- Low losses metallized self-healing polypropylene film, high density, high temperature and greater dielectric resistance V/μ.
- Polyurethane self-extinguishing resin V0 (Flame retardant), developed under standard UL94 by RTR Energia with certification number 20141031-E470994.
- Aluminium case with bottom fixing M12x16.

Discharge time

- 50V/ 60s

Standards

- IEC 60831-1/2:2014
- UNE-EN 60831-1/2:2014



Technical Characteristics	
Capacitance tolerance	-5% +10%
Frequency	50Hz (60Hz Upon request)
Temperature range	-25°C +55°C (Class D)
Dielectric losses	≤0.2W/kVAr
Total losses	≤0.40W/kVAr*
Over voltage	1.10xUn (24h) 1.15xUn (30min/day) 1.20xUn (5min/day) 1.30xUn (1min/day)
Over current	2.05xIn
Max. THD in voltage	4%
Max. THD in current	60%
Discharge resistance	Incorporated
Connection	Delta
Voltage test between terminals	2.15xUn 10s
Voltage test between terminals and case	5kV AC for 1min
Inrush current	Up to 350xIn
Protection	IP-20
Humidity	Máx. 95%
Life expectancy	200.000h
Altitude	4000m.a.s.l.
Mounting position	Universal
Min. mounting distance between capacitors	10mm

*Without resistors



Code	Power kVAr	Voltage V	Frequency Hz	Current A	Capacitance µF	Dimensions mm
S2300255TER0000	2,5	230	50	12,55	3x50,14	85X395
S2300505TER0000	5	230	50	12,55	3x100,29	120X400
S2300755TER0000	7,5	230	50	18,83	3x150,43	136X400

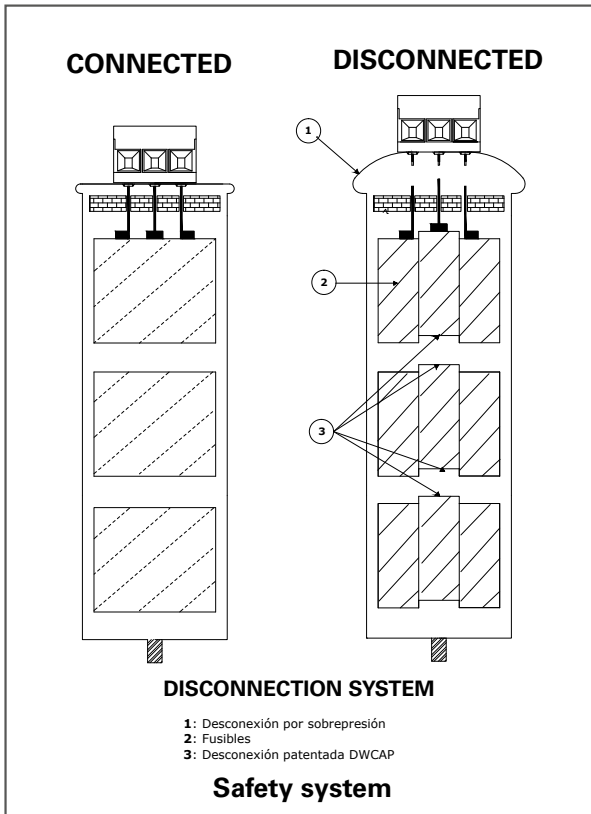
Code	Power kVAr	Voltage V	Frequency Hz	Current A	Capacitance µF	Dimensions mm
S4000505TER0000	5	400	50	7,22	3x33,16	70x395
S4000755TER0000	7,5	400	50	10,83	3x49,74	85x395
S4001005TER0000	10	400	50	14,43	3x66,31	100x395
S4001255TER0000	12,5	400	50	18,04	3x82,89	120X400
S4001505TER0000	15	400	50	21,65	3x99,47	120x400
S4002005TER0000	20	400	50	28,87	3x132,63	136x400
S4002505TER0000	25	400	50	36,08	3x165,79	136x400

Code	Power kVAr	Voltage V	Frequency Hz	Current A	Capacitance µF	Dimensions mm
S4400505TER0000	5	440	50	6,56	3x27,40	70x395
S4400755TER0000	7,5	440	50	9,84	3x41,10	85x395
S4401005TER0000	10	440	50	13,12	3x54,81	100x395
S4401255TER0000	12,5	440	50	16,40	3x68,51	100x395
S4401505TER0000	15	440	50	19,68	3x82,21	120x400
S4402005TER0000	20	440	50	26,24	3x109,61	120x400
S4402505TER0000	25	440	50	32,80	3x137,01	136x400
S4403005TER0000	30	440	50	39,36	3x164,42	136x400

Code	Power kVAr	Voltage V	Frequency Hz	Current A	Capacitance µF	Dimensions mm
S4800505TER0000	5	480	50	6,01	3x23,03	70X395
S4800755TER0000	7,5	480	50	9,02	3x34,54	85X395
S4801005TER0000	10	480	50	12,03	3x46,05	100X395
S4801255TER0000	12,5	480	50	15,04	3x57,56	120X400
S4801505TER0000	15	480	50	18,04	3x69,08	120X400
S4802005TER0000	20	480	50	24,06	3x92,10	136X400
S4802505TER0000	25	480	50	30,07	3x115,13	136X400

Code	Power kVAr	Voltage V	Frequency Hz	Current A	Capacitance µF	Dimensions mm
S5250505TER0000	5	525	50	5,50	3x19,25	85x395
S5250755TER0000	7,5	525	50	8,25	3x28,87	100x395
S5251005TER0000	10	525	50	11,00	3x38,50	100x395
S5251255TER0000	12,5	525	50	13,75	3x48,12	120x400
S5251505TER0000	15	525	50	16,50	3x57,74	120x400
S5252005TER0000	20	525	50	21,99	3x76,99	136x400

* Other powers, voltages and frequencies upon request.



Temperature (IEC 60831-1/2)

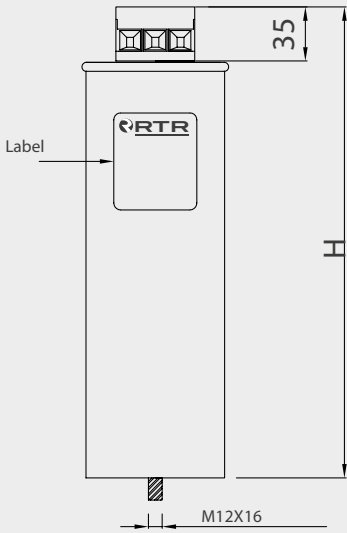
Symbol	Ambient temperature °C		
	Maximum	Highest mean over any period of	
		24h	1 year
A	40	30	20
B	45	35	25
C	50	40	30
D	55	45	35

Dimensions

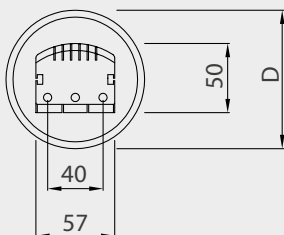
Dimensions DxH (mm)	Connection terminal	DRAWING
	Max. cable section 1 kV-RV (mm ²)	
70x395	10	DRAWING A
85x395	10	
100x395	10	
120x400	35	DRAWING B
136x400	35	

Dimensions

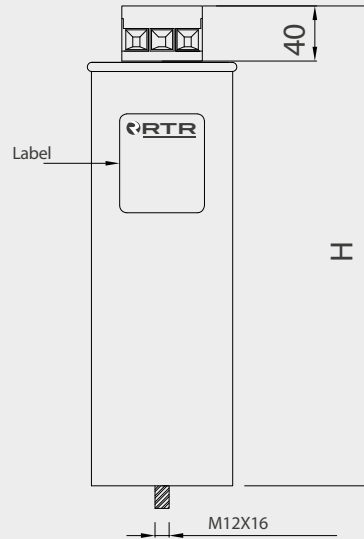
DRAWING A



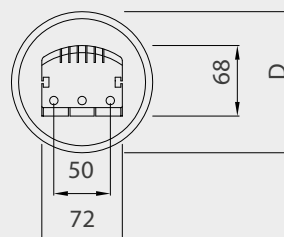
- Washer DIN 6798 A M12
- Nut DIN 936 M12 ZNC



DRAWING B



- Washer DIN 6798 A M12
- Nut DIN 936 M12 ZNC



Tolerance ±2%

Capacitors for power factor correction



MA/C/CE & EA Series

Single phase capacitor with faston terminal

230/400/440/525/690 V, 50Hz

Characteristics and utility

- Single phase capacitor
- Discharge resistors incorporated
- Reactive power factor correction
- Dry type
- Connector type terminal
- Indoor terminal

Safety

- Overpressure disconnection system
- Protection by internal fuses.

Construction and materials

- Low losses metallized self-healing polypropylene film, high density, high temperature and greater dielectric resistance Volt/ μ
- Polyurethane self-extinguishing resin V0 (Flame retardant), developed under standard UL94 by RTR Energia and with certification number 20141031-E470994
- Aluminium case with bottom fixing M12x16

Discharge time

- 50V/ 60s

Standards

- IEC 60831-1/2:2014
- UNE-EN 30831-1/2:2014



Technical Characteristics	
Capacitance tolerance	-5 % +10 %
Frequency	50 Hz (60 Hz upon request)
Temperature range	-25°C +55 °C
Dielectric losses	≤ 0.2 W/KVAr
Total losses	≤ 0.45 W/KVAr*
Over voltage	1.10 x Un (8 h/day) 1.15 x Un (30 min/day) 1.20 x Un (5 min/day) 1.30 x Un (1 min/day)
Over current	1.5 x In
Max. THD in voltage	2 %
Max. THD in current	25 %
Discharge resistance	Incorporated
Connection	Single-phase
Voltage test between terminals	2,15 x Un 10 sec.
Voltage test between terminals and case	3kV AC for 1min
Inrush current	Up to 200 x In
Protection	IP-20
Humidity	Max. 95%
Life Expectancy	130 000 h
Altitude	4000m.a.s.l.
Mounting position	Universal
Min. mounting distance between capacitors	10mm



* Without resistors

Code	Power	Voltage	Frequency	Current	Capacitance
	KVAr	V	Hz	A	μF
EA0230083500000	0,83	230	50	3,61	49,94
EA0230167500000	1,67	230	50	7,26	100,49
EA0230250500000	2,5	230	50	10,87	150,43

Code	Power	Voltage	Frequency	Current	Capacitance
	KVAr	V	Hz	A	μF
EA0400083500000	0,83	400	50	2,08	16,51
EA0400167500000	1,67	400	50	4,18	33,22
EA0400250500000	2,5	400	50	6,25	49,74
EA0400333500000	3,33	400	50	8,33	66,25
EA0400417500000	4,17	400	50	10,43	82,96
EA0400500500000	5,00	400	50	12,5	99,47
EA0400660500000	6,60	400	50	16,5	131,30

Code	Power	Voltage	Frequency	Current	Capacitance
	KVAr	V	Hz	A	μF
EA0440083500000	0,83	440	50	1,89	13,65
EA0440167500000	1,67	440	50	3,80	27,46
EA0440250500000	2,50	440	50	5,68	41,10
EA0440333500000	3,33	440	50	7,57	54,75
EA0440417500000	4,17	440	50	9,48	68,56
EA0440500500000	5	440	50	11,36	82,21
EA0440660500000	6,6	440	50	15	108,51

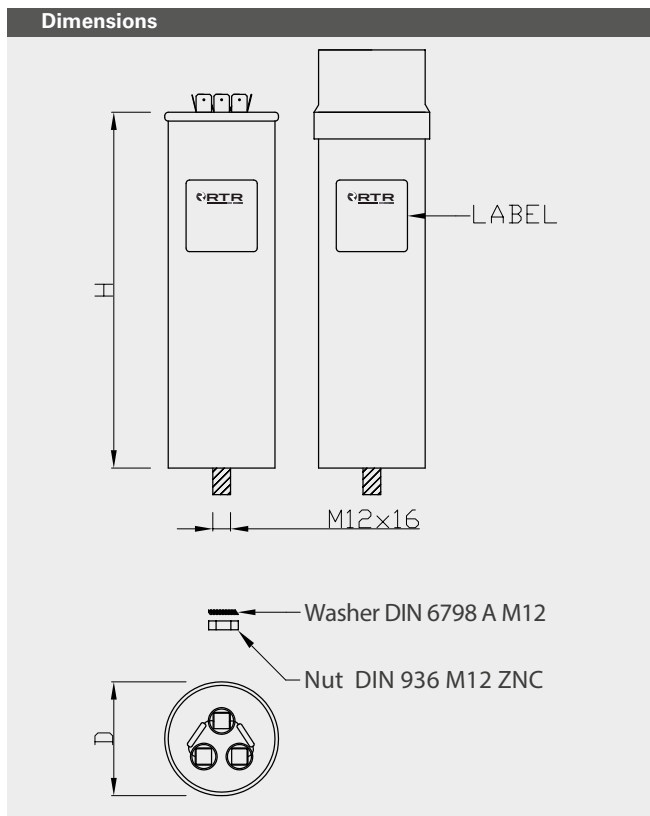
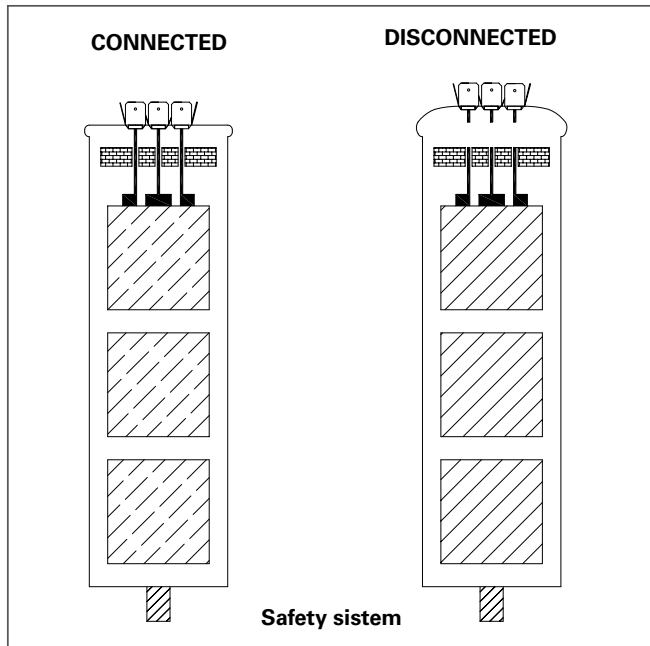
Code	Power	Voltage	Frequency	Current	Capacitance
	KVAr	V	Hz	A	μF
EA0525083500000	0,83	525	50	1,58	9,59
EA0525167500000	1,67	525	50	3,18	19,29
EA0525250500000	2,50	525	50	4,76	28,87
EA0525333500000	3,33	525	50	6,34	38,46
EA0525417500000	4,17	525	50	7,94	48,16
EA0525500500000	5	525	50	9,52	57,74
EA0525660500000	6,6	525	50	12,57	76,22

Code	Power	Voltage	Frequency	Current	Capacitance
	KVAr	V	Hz	A	μF
EA0690083500000	0,83	690	50	1,20	5,55
EA0690167500000	1,67	690	50	2,42	11,17
EA0690250500000	2,50	690	50	3,62	16,71
EA0690333500000	3,33	690	50	4,83	22,26
EA0690417500000	4,17	690	50	6,04	27,88
EA0690500500000	5	690	50	7,25	33,43
EA0690660500000	6,6	690	50	9,57	44,13

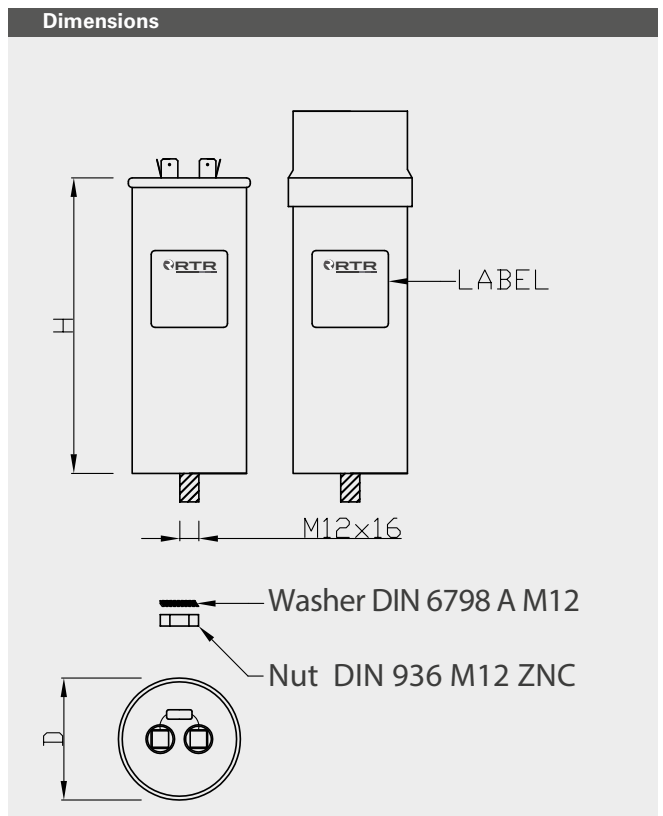
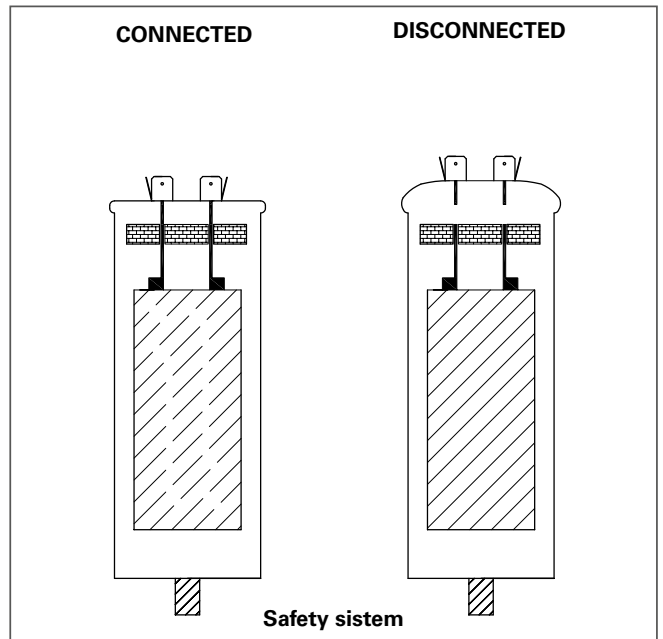
* Other powers, voltages and frequencies upon request.

MAC/C/CE & EA SERIES

MAC/C/CE SERIES



EA SERIES



Dimensions

Dimensions	Connection terminal
DxH(mm)	
60x150	Faston 6,3mm
60x200	Faston 6,3mm

Temperature (IEC 60831-1/2)

Symbol	Ambient temperature °C		
	Maximun	Highest mean over any period of	
		24h	1 year
A	40	30	20
B	45	35	25
C	50	40	30
D	55	45	35

Medium Voltage

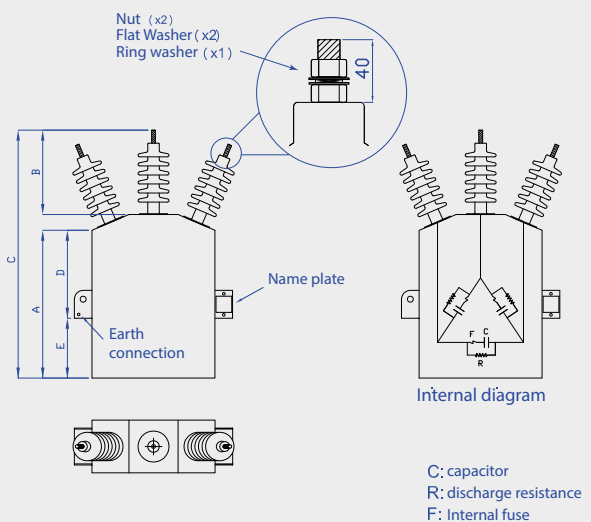
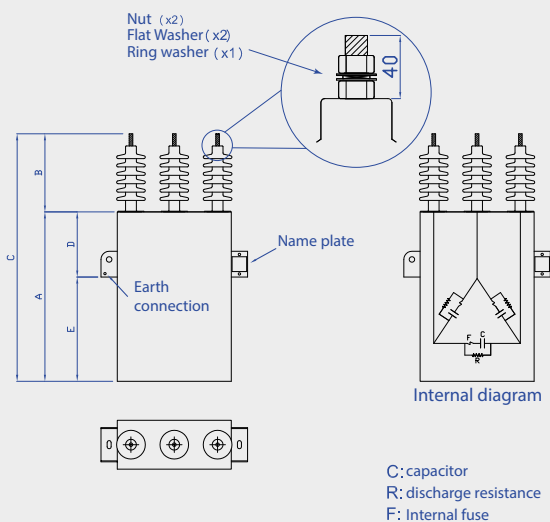


1. 3PH BO/R MT Series. Medium Voltage Three Phase Capacitors

Technical Characteristics	
Standard	IEC 60871-1/2
Voltage	1-12kV
Power	upto 1000kVAr
Frequency	50-60 Hz
Losses	<0.15W/kVAr
Temperature	-40 +55°C
Dielectric Liquid	PXE oil, non PCB, non toxic and biodegradable
Residual Voltage	10% Un after 5min
Dielectric	Hazy polypropylene film
Fuses	Optional. Recommendation: Internal up to 13.8kV External from 13.8kV
Use	Indoor-Outdoor
Altitude	1000m.a.s.l.
Maximum over voltage	1.1xUn
Maximum over current	1.3xIn
Tolerance	-5 +10%
Test voltage between terminals	4.3xUn (10sec)

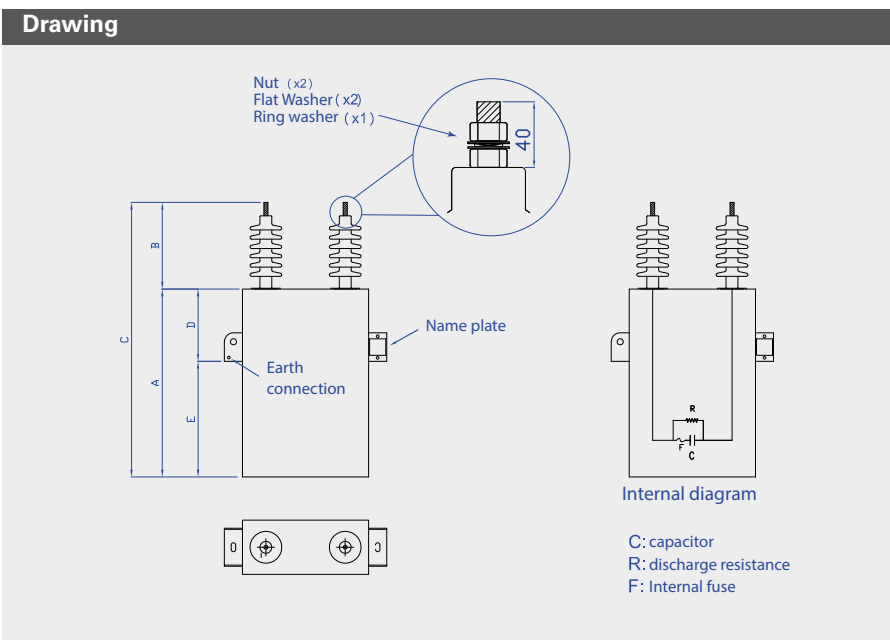


Drawing



2. 1PH BO/R MT Series. Medium Voltage Single Phase Capacitors

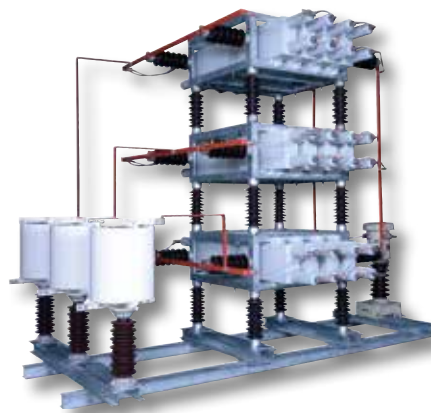
Technical Characteristics	
Standard	IEC 60871-1/2
Voltage	1-24kV
Power	Hasta 1000kVAr
Frequency	50-60Hz
Losses	<0.15W/kVAr
Temperature	-40 +55°C
Dielectric Liquid	PXE oil, non PCB, non toxic and biodegradable
Residual Voltage	10% Un after 5min
Dielectric	Hazy polypropylene film
Fuses	Optional. Recommendation:
Internal up to 13.8kV	
External from 13.8kV	
Use	Indoor-Outdoor
Altitude	1000m.a.s.l.
Maximum over voltage	1.1xUn
Maximum over current	1.3xIn
Tolerance	-5 +10%
Test voltage between terminals	4.3xUn (10sec)



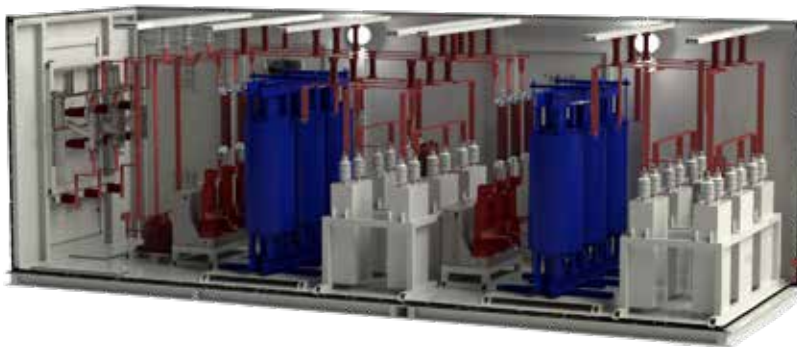
MV Capacitor Banks

MV Capacitor banks			
Metal enclosed design		Open Rack design-	Other options
Indoor / Outdoor		Indoor / Outdoor	
Fixed Capacitor Banks	Automatic Capacitor banks	Fixed Capacitor Banks	Other designs voltage, frequency upon request

Open rack



Metal enclosed



Inner view



Metal enclosed indoor design



Metal enclosed outdoor design

Harmonic Filters



Active Harmonic Filter

Main Characteristics

RTR active filter help to remove harmonic distortion from the power network and avoid problems arising due to low power quality. High harmonic distortion reduces equipment lifetime and causes productivity loss. Unbalanced loads such as computers cause excessive neutral currents and 3rd harmonic currents to flow on the neutral wire.

This results in unacceptable voltage levels between neutral and earth, and may lead to equipment malfunction and physical danger. RTR Active harmonic filters provide a complete solution for facilities with dynamic variations in the load harmonic distortion, load imbalances and single-phase loads with high level of current harmonics on the neutral wire. RTR Active harmonic filters are connected in parallel with the load or facility.

They measure and analyze the harmonic content of the load or line currents and inject a compensating current into the grid to cancel the harmonics. As a result, the harmonics on the line currents are eliminated and the neutral wire is off-loaded.

RTR active harmonic filters guarantee less than 5% current total harmonic distortion (THD-i) even in facilities with highly dynamic and harmonic loads. Active harmonic filters also help dynamic power factor correction with %100 inductive and capacitive support. System reacts to load changes withing 25 μ s.



Grid Connection		3P3W; 3P4W						
Current Rating	A	50	75	100	140	210	280	350
Neutral Current Rating	A	150	210	300	420	630	840	1050
Line Voltage		3P3W: 200V-480V (\pm 10%) 3P4W: 200V-415V (\pm 10%)						
Inverter Tipology		IGBT three-level NPC inverter						
Frequency	Hz	50/60 \pm 3Hz						
Switching Frequency	kHz	20						
Reaction Time	μ s	25						
Harmonic Filtering Capability		Individually selectable up to 51st harmonic						
Power Factor Correction Capability		0-100% inductive 0-100% capacitive						
Mounting Type		Wall mounting			Floor mounting			
Mechanical Dimensions (W x D x H)	mm	450x625x267			600x800x2100			
Current transformer		Line side or Load side. Class 1 or better Primary: 100-2500A Secondary: 1-5A						
Losses	%	<4%						
Ambient Temperature	$^{\circ}$ C	-10, +40						
IP Class		IP20						
Relative Humidity	%	95						
Noise	dB	<56						

Static Var Generator - SVG

RTR has extended its production range by including SVG. This device is not only improving power factor but also can reduce harmonics to THDi <5% and load balancing.

RTR advanced SVG is capable for generate a compensating current (of the same magnitude, but with phase opposite) in real time to get the desired power factor and can monitor harmonics up to 15th order thus improving the quality of energy.

Operating principle of SVG

- When the load generates inductive or capacitive current, it makes the current lags or advances to the strain.
- The SVG detects the phase angle difference and generate a leading or lagging current into the net, making the phase angle of the current is almost the same as the voltage on the source side, which corrects the fundamental power factor to unity.

- The SVG extracts the harmonic current of the network in such a way that the magnitude of the current will be same as the harmonic current on the load side. While its phase is opposite with respect to the current harmonic on the load side, which ensuring that the effective value of the current harmonics on the source side is reduced to an insignificant level.



Technical specifications

Rating	50kVAr	100kVAr
Rated voltage	308V to 480V	
Frequency	50/60Hz (±2.5Hz)	
Parallel operation	Up to 8 units	
Energy efficiency	>97%	
Network type	3P3W / 3P4W	
CT Range	Configurable by screen up to 10000/5A	
CT placement	Grid side / load side	
Circuit type	3-level inverters	
Performance		
Compensation capacity of a single module	50kVAr	100kVAr
Response time	50µs and full response in less than 1 cycle	
Target power factor	Adjustable from -1 to +1	
Cooling mode	Forced air cooling	
Noise level	<65dB	
Normal compensation spectrum	Up to 15th order harmonic	
Protection functions	Overcurrent, overvoltage, overtemperature, IGBT saturation protection, mains failure	
Communication and monitoring capacity		
Communications port	RS485 (MODBUS-RTU), possible via LAN, WIFI (payable)	
Communication protocol	RS485 (MODBUS-RTU), possible via LAN, WIFI (payable)	
Communication interface	Basic monochrome display / display 4.3" touch screen (7" on request)	Basic monochrome display / HMI of 7" and 10" (4.3" on request)
Software updates	Possible via WIFI or via laptop	
Mechanical properties		
Mounting type	Floor (rack type)	Wall mounted
Dimensions (length x width x height) mm	470 x 653 x 270	470 x 700 x 240
Weight	50kg	75kg
Color	RAL 7035	
Environmental conditions		
Altitude	<2000m (higher altitude, on request)	
Operating temperature	-10°C to 45°C	
Relative humidity	95%, non-condensing	
Protection class	IP 21	
Standard and regulations		
	CE, EN 50178 :1197 / IEC 50178:1997, EN 61000_6_2 (2005) / EN55011, IEC 61000_6_2 (1999)	

Passive Harmonic Filter



Main Characteristics

RTR Passive Harmonic Filters to power converters allows to reduce current harmonic distortion on the net. These filters are designed to protect your system against harmful effects of harmonics. This unit is installed at the input of harmonic generating load and eliminates harmonic at the sources. This equipment is made by two blocks: Line impedance and LC filter. Line impedance provides a high impedance through the net and LC filter provides a low impedance through the load which ensures a maximum harmonic filtering. In this way we get the harmful effects inside the filter. Passive filter works very good even under very strong harmonic conditions.

RTR technical team can assist to design the equipment which suit to the customer needs for different powers, voltage, frequency, auxiliary equipments.

Standard

- EN 61000-2-2
- EN 61558-2-20
- EN 60831-3

Technical characteristics

Rated Voltage	3x400V
Motor Power	4-200kW
Rated Current	8-400A
Frequency	50Hz (60Hz upon request)
IP protection	IP21
Overtemperature protection	Included
Mounting	Indoor (wall or panel type)
Class	F / 40°C
Color	RAL 5022
Cooling	Forced

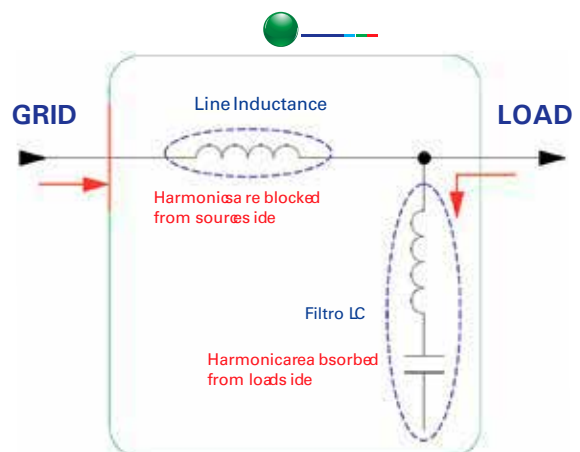


*Others characteristics, under request

Benefits

- Dampens the harmonics up to 90%.
- Provides constant capacitive power.
- Minimized resonance risk design.
- Available as panel mounted and wall type.
- Thermic protection.

HARMONIC PASSIVE FILTER FPA



Detuned Reactors



Three Phase Harmonic Filters with wire winding

Characteristics and utility

- Three phase harmonic filter.
- Avoid resonance between inductive impedance and three phase capacitors for power factor correction.
- Detuning with MA/C/CE TER RCT and DWCAP RCT, with resonance frequency 134,189 or 210Hz if nominal frequency is 50Hz and 252, 227 and 160Hz if nominal frequency is 60Hz (other resonance frequency under request).

Upon request

RTR's technical department offers the possibility of manufacturing equipment according to customer application need, different power, voltage, detuning frequency....

Construction and Materials

- Low losses magnetic plates.
- Conductor insulation thermal class H (180°) with permanent regime.
- Thermal protection relay.
- Specially designed to increasing ventilation and improving thermal dissipation.
- Vacuum-varnished dry type to ensure quiet and moisture-resistant operation.

Standards

- UNE-EN 60076-6
- IEC 60076-6

Certifications



Technical Characteristics

Tolerance "L"	±5%
Nominal frequency	50Hz (60Hz upon request)
Linearity Inductance	1,8 X In
Detuning factor	5,67%, 7% y 14%
Proof stress	4kV
Thermal protection	95°C, 120°C, 140°C
Permissible Overload	1,07 x In
Protection degree	IP00



Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF023000501895	5	230	50	189	7	279,80	12,55	2,53
RTF023001001895	10	230	50	189	7	559,60	25,10	1,27
RTF023001251895	12,5	230	50	189	7	699,50	31,38	1,01
RTF023001501895	15	230	50	189	7	839,40	37,65	0,84
RTF023002001895	20	230	50	189	7	1119,20	50,20	0,63
RTF023002501895	25	230	50	189	7	1399,00	62,76	0,51
RTF023003001895	30	230	50	189	7	1678,80	75,31	0,42
RTF023004001895	40	230	50	189	7	2238,40	100,41	0,32
Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF040001002105	10	400	50	210	5,67	187,66	14,43	3,06
RTF040001252105	12,5	400	50	210	5,67	234,58	18,04	2,45
RTF040001502105	15	400	50	210	5,67	281,50	21,65	2,04
RTF040002002105	20	400	50	210	5,67	375,33	28,87	1,53
RTF040002502105	25	400	50	210	5,67	469,16	36,08	1,22
RTF040005002105	50	400	50	210	5,67	938,32	72,17	0,61
RTF040007502105	75	400	50	210	5,67	1407,48	108,25	0,41
RTF040010002105	100	400	50	210	5,67	1876,64	144,34	0,31
Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF040001001895	10	400	50	189	7	185,02	14,43	3,83
RTF040001251895	12,5	400	50	189	7	231,27	18,04	3,07
RTF040001501895	15	400	50	189	7	277,53	21,65	2,56
RTF040002001895	20	400	50	189	7	370,04	28,87	1,92
RTF040002501895	25	400	50	189	7	462,54	36,08	1,53
RTF040005001895	50	400	50	189	7	925,09	72,17	0,77
RTF040007501895	75	400	50	189	7	1387,63	108,25	0,51
RTF040010001895	100	400	50	189	7	1850,18	144,34	0,38
Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF040001001345	10	400	50	134	14	171,09	14,43	8,29
RTF040001251345	12,5	400	50	134	14	213,86	18,04	6,63
RTF040001501345	15	400	50	134	14	256,64	21,65	5,53
RTF040002001345	20	400	50	134	14	342,18	28,87	4,15
RTF040002501345	25	400	50	134	14	427,73	36,08	3,32
RTF040005001345	50	400	50	134	14	855,46	72,17	1,66
RTF040007501345	75	400	50	134	14	1283,19	108,25	1,11
RTF040010001345	100	400	50	134	14	1710,92	144,34	0,83
Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF044001001895	10	440	50	189	7	152,91	13,12	4,64
RTF044001251895	12,5	440	50	189	7	191,13	16,40	3,71
RTF044001501895	15	440	50	189	7	229,36	19,68	3,09
RTF044002001895	20	440	50	189	7	305,81	26,24	2,32
RTF044002501895	25	440	50	189	7	382,27	32,80	1,86
RTF044005001895	50	440	50	189	7	764,54	65,61	0,93
RTF044007501895	75	440	50	189	7	1146,80	98,41	0,62
RTF044010001895	100	440	50	189	7	1529,07	131,22	0,46
Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF044001001345	10	440	50	134	14	141,40	13,12	10,03
RTF044001251345	12,5	440	50	134	14	176,75	16,40	8,03
RTF044001501345	15	440	50	134	14	212,10	19,68	6,69
RTF044002001345	20	440	50	134	14	282,80	26,24	5,02
RTF044002501345	25	440	50	134	14	353,49	32,80	4,01
RTF044005001345	50	440	50	134	14	706,99	65,61	2,01
RTF044007501345	75	440	50	134	14	1060,48	98,41	1,34
RTF044010001345	100	440	50	134	14	1413,98	131,22	1,00

*Other voltages and power upon request

** consult for dimensions

Three phase Harmonic Filters with foil

Characteristics and utility

- Three phase harmonic filter.
- Avoid resonance between inductive impedance and three phase capacitors for power factor correction.
- Detuning with MA/C/CETER RCT and DWCAP RCT, with resonance frequency 134,189 or 210Hz if nominal frequency is 50Hz and 252, 227 and 160Hz if nominal frequency is 60Hz (other resonance frequency under request).

Construction and materials

- Low losses magnetic plates.
- Foil
- Conductor insulation thermal class H (180°) with permanent regime.
- Thermal protection relay.
- Specially designed to increasing ventilation and improving thermal dissipation.
- Vacuum impregnated varnish to ensure silent and moisture-immune operation.

Upon request

RTR's technical department offers the possibility of manufacturing equipment according to customer application need, different power, voltage, detuning frequency....

Standards

- UNE-EN 60076-6
- IEC 60076-6

Technical Characteristics

Tolerance "L"	±5%
Nominal frequency	50Hz (60Hz upon request)
Linearity Inductance	<ul style="list-style-type: none"> • 7% linearity= 1,9 x In • 14% linearity= 1,7 x In
Detuning factor	5,67%, 7% y 14%
Proof stress	4kV
Thermal protection	F (155°C)
Permissible Overload	1,1 x In
Protection degree	IP00



Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF12300050189A	5	230	50	189	7	279,80	12,55	2,53
RTF12300100189A	10	230	50	189	7	559,60	25,10	1,27
RTF12300125189A	12,5	230	50	189	7	699,50	31,38	1,01
RTF12300150189A	15	230	50	189	7	839,40	37,65	0,84
RTF12300200189A	20	230	50	189	7	1119,20	50,20	0,63
RTF12300250189A	25	230	50	189	7	1399,00	62,76	0,51
RTF12300300189A	30	230	50	189	7	1678,80	75,31	0,42
RTF12300400189A	40	230	50	189	7	2238,40	100,41	0,32
Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF14000100210A	10	400	50	210	5,67	187,66	14,43	3,06
RTF14000125210A	12,5	400	50	210	5,67	234,58	18,04	2,45
RTF14000150210A	15	400	50	210	5,67	281,50	21,65	2,04
RTF14000200210A	20	400	50	210	5,67	375,33	28,87	1,53
RTF14000250210A	25	400	50	210	5,67	469,16	36,08	1,22
RTF14000500210A	50	400	50	210	5,67	938,32	72,17	0,61
RTF14000750210A	75	400	50	210	5,67	1407,48	108,25	0,41
RTF14001000210A	100	400	50	210	5,67	1876,64	144,34	0,31
Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF14000100189A	10	400	50	189	7	185,02	14,43	3,83
RTF14000125189A	12,5	400	50	189	7	231,27	18,04	3,07
RTF14000150189A	15	400	50	189	7	277,53	21,65	2,56
RTF14000200189A	20	400	50	189	7	370,04	28,87	1,92
RTF14000250189A	25	400	50	189	7	462,54	36,08	1,53
RTF14000500189A	50	400	50	189	7	925,09	72,17	0,77
RTF14000750189A	75	400	50	189	7	1387,63	108,25	0,51
RTF14001000189A	100	400	50	189	7	1850,18	144,34	0,38
Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF14000100134A	10	400	50	134	14	171,09	14,43	8,29
RTF14000125134A	12,5	400	50	134	14	213,86	18,04	6,63
RTF14000150134A	15	400	50	134	14	256,64	21,65	5,53
RTF14000200134A	20	400	50	134	14	342,18	28,87	4,15
RTF14000250134A	25	400	50	134	14	427,73	36,08	3,32
RTF14000500134A	50	400	50	134	14	855,46	72,17	1,66
RTF14000750134A	75	400	50	134	14	1283,19	108,25	1,11
RTF14001000134A	100	400	50	134	14	1710,92	144,34	0,83
Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF14400100189A	10	440	50	189	7	152,91	13,12	4,64
RTF14400125189A	12,5	440	50	189	7	191,13	16,40	3,71
RTF14400150189A	15	440	50	189	7	229,36	19,68	3,09
RTF14400200189A	20	440	50	189	7	305,81	26,24	2,32
RTF14400250189A	25	440	50	189	7	382,27	32,80	1,86
RTF14400500189A	50	440	50	189	7	764,54	65,61	0,93
RTF14400750189A	75	440	50	189	7	1146,80	98,41	0,62
RTF14401000189A	100	440	50	189	7	1529,07	131,22	0,46
Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF14400100134A	10	440	50	134	14	141,40	13,12	10,03
RTF14400125134A	12,5	440	50	134	14	176,75	16,40	8,03
RTF14400150134A	15	440	50	134	14	212,10	19,68	6,69
RTF14400200134A	20	440	50	134	14	282,80	26,24	5,02
RTF14400250134A	25	440	50	134	14	353,49	32,80	4,01
RTF14400500134A	50	440	50	134	14	706,99	65,61	2,01
RTF14400750134A	75	440	50	134	14	1060,48	98,41	1,34
RTF14401000134A	100	440	50	134	14	1413,98	131,22	1,00

*Other voltages and power upon request

** consult for dimensions

DETUNED REACTORS

Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF14000100245A	10	400	60	245	6	155,80	14,43	2.77
RTF14000125245A	12,5	400	60	245	6	194,80	18,04	2.16
RTF14000150245A	15	400	60	245	6	233,80	21,65	1.80
RTF14000200245A	20	400	60	245	6	311,70	28,87	1.35
RTF14000250245A	25	400	60	245	6	389,70	36,09	1.08
RTF14000500245A	50	400	60	245	6	779,20	72,17	0.54
RTF14000800245A	80	400	60	245	6	1246,70	115,47	0.34
RTF14001000245A	100	400	60	245	6	1558,40	144,34	0.27

Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF14000100227A	10	400	60	227	7	154,18	14,43	3,19
RTF14000125227A	12,5	400	60	227	7	192,73	18,04	2,56
RTF14000150227A	15	400	60	227	7	231,27	21,65	2,13
RTF14000200227A	20	400	60	227	7	308,36	28,87	1,60
RTF14000250227A	25	400	60	227	7	385,45	36,09	1,28
RTF14000500227A	50	400	60	227	7	770,91	72,17	0,64
RTF14000800227A	80	400	60	227	7	1233,45	115,47	0,40
RTF14001000227A	100	400	60	227	7	1541,81	144,34	0,32

Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF14000100160A	10	400	60	160	14	142,58	14,43	6,91
RTF14000125160A	12,5	400	60	160	14	178,22	18,04	5,53
RTF14000150160A	15	400	60	160	14	213,86	21,65	4,61
RTF14000200160A	20	400	60	160	14	285,15	28,87	3,45
RTF14000250160A	25	400	60	160	14	356,44	36,09	2,76
RTF14000500160A	50	400	60	160	14	712,88	72,17	1,38
RTF14000800160A	80	400	60	160	14	1140,61	115,47	0,86
RTF14001000160A	100	400	60	160	14	1425,76	144,34	0,69

Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF14400100252A	10	440	60	252	5,67	129,24	13,12	3,09
RTF14400125252A	12,5	440	60	252	5,67	161,56	16,40	2,47
RTF14400150252A	15	440	60	252	5,67	193,87	19,68	2,06
RTF14400200252A	20	440	60	252	5,67	258,49	26,24	1,54
RTF14400250252A	25	440	60	252	5,67	323,11	32,80	1,23
RTF14400500252A	50	440	60	252	5,67	646,22	65,61	0,62
RTF14400800252A	80	440	60	252	5,67	1033,96	104,97	0,39
RTF14401000252A	100	440	60	252	5,67	1292,45	131,22	0,31

Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF14400100227A	10	440	60	227	7	127,42	13,12	3,87
RTF14400125227A	12,5	440	60	227	7	159,28	16,40	3,09
RTF14400150227A	15	440	60	227	7	191,13	19,68	2,58
RTF14400200227A	20	440	60	227	7	254,85	26,24	1,93
RTF14400250227A	25	440	60	227	7	318,56	32,80	1,55
RTF14400500227A	50	440	60	227	7	637,11	65,61	0,77
RTF14400800227A	80	440	60	227	7	1019,38	104,97	0,48
RTF14401000227A	100	440	60	227	7	1274,23	131,22	0,39

Code	Power	Voltage	Nominal	Resonance	Detuning	Capacitance	Current	Inductance
	KVAr	V	Frequency Hz	Frequency Hz	Factor %	µF	A	mH
RTF14400100160A	10	440	60	160	14	117,83	13,12	8,36
RTF14400125160A	12,5	440	60	160	14	147,29	16,40	6,69
RTF14400150160A	15	440	60	160	14	176,75	19,68	5,57
RTF14400200160A	20	440	60	160	14	235,66	26,24	4,18
RTF14400250160A	25	440	60	160	14	294,58	32,80	3,34
RTF14400500160A	50	440	60	160	14	589,16	65,61	1,67
RTF14400800160A	80	440	60	160	14	942,65	104,97	1,04
RTF14401000160A	100	440	60	160	14	1178,32	131,22	0,84

*Other power and voltage upon request

Controllers and Measurement Equipment



Automatic power factor controller

PR-14D Series



Technical Characteristics	
Display	Liquid cristal display with backlight (4digits)
Auxiliar supply	90-550V AC
Necessary CT	1
Wiring input	2 phases, 2wires (L2L3)
Rated input voltage	50-520V AC (Phase - Phase)
Rated input current	5A AC (min 50mA, max 6A)
Frequency range	45-65Hz
Power consumption	Max. 15VA
Controlling range	0.800 (ind) to -0.800 (cap)
Alarm	<ul style="list-style-type: none"> • Overtemperature error: horn symbol on the screen • E01: phase current error
Physical Characteristics	
Protection class	IP54
Connector protection class	IP20
Operating temperature	0°C +60°C
Storage temperature	-20°C +60°C
Humidity	0-95%
Overtemperature indication	Horn symbol on the display
Mounting	Front panel mounting
Outline dimensions	144x144x50 mm
Panel cutout	138x138 mm

Code	Steps
REG12DPR1400000	12

Automatic power factor controller

PR-14D8/96



Technical Characteristics

Display	Liquid cristal display with backlight (4digits)
Auxiliar supply	85-300V AC
Necessary CT	1
Wiring input	2 phases, 2wires (L2L3)
Rated input voltage	50-520V AC (Phase - Phase)
Rated input current	5A AC (min 50mA, max 6A)
Frequency range	45-65Hz
Power consumption	Max. 7 VA
Controlling range	0.800 (ind) to -0.800 (cap)
Alarm	E01: phase current error

Physical Characteristics

Protection class	IP54
Connector protection class	IP20
Operating temperature	0°C +60°C
Storage temperature	-20°C +60°C
Humidity	0-95%
Mounting	Front panel mounting
Outline dimensions	99x99x55 mm
Panel cutout	91.5x91.5 mm

Code	Steps
REG08DPR1496000	8

Automatic power factor controller

PR-15D Series



Technical Characteristics	
Display	Liquid cristal display with backlight (4digits)
Auxiliar supply	90-550V AC
Necessary CT	1 or 3
Wiring input	1P2W, 2P2W, 3P3W, 3P4W
Rated input voltage	11-300V AC (L-N), 50-520V AC (L-L)
Rated input current	5A AC (min 11mA, max 6A)
Frequency range	45-65Hz
Output relays	12 (or 14 without alarm and fan relay)
Power consumption	Max. 15VA
Controlling range	0.800 (ind) to -0.800 (cap)
Alarm	Over voltage, under voltage, over compensate, under compensate, THDI error, THDV error, no voltage, over temperature, over current, CT error, error connection, current absent.
CT secondary	1A or 5A
Communications	RS485
Physical Characteristics	
Protection class	IP54
Connector protection class	IP20
Operating temperature	0°C +60°C
Storage temperature	-20°C +60°C
Humidity	0-95%
Alarm indication	Red led (off, blinking or fixed)
Mounting	Front panel mounting
Outline dimensions	144x144x63 mm
Panel cutout	138x138 mm

Code	Steps	Voltage
REG12DPR1500000	12 (or 14)	V 90 to 550V





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