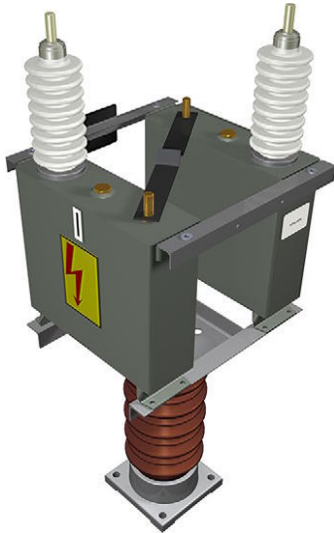


## Surge Suppressor Capacitors, Single Phase Units, All-Film Technology up to 36 kV



### FEATURES

- Latest technology
- Dielectric liquid biodegradable
- High quality materials
- Damping resistor from 10  $\Omega$  to 50  $\Omega$

### APPLICATIONS

- Protect the windings of electrical machines and transformers
- To reduce power-frequency voltages
- Surge suppression

### LINKS TO ADDITIONAL RESOURCES



QUICK REFERENCE DATA	
Series	Pha... surge suppressor capacitors
Description	Surge suppressor capacitors, indoor / outdoor
Type	1-phase or 3-phase units, capacitor banks 36 kV
Technology	All-film polypropylene / aluminum foil
Voltage min. (V)	1000
Voltage max. (V)	36 000
Frequency min. (Hz)	50
Frequency max. (Hz)	60
Capacitance min. ( $\mu$ F)	0.1
Capacitance max. ( $\mu$ F)	0.5

TECHNICAL DATA	
Rated frequency	50 Hz or 60 Hz (other frequencies on request)
Insulation class	7.2 kV to 36 kV
Internal connection	Live case, star, or delta
Damping resistor	10 $\Omega$ to 50 $\Omega$
Temperature category	-25 $^{\circ}$ C to +50 $^{\circ}$ C
Capacitance tolerance	-5 % / +10 %
Dielectric	All-film polypropylene / aluminum foil
Impregnating agent	Synthetic oil (non-PCB)
Standards	VDE 0560, part 3, capacitors in accordance with other standards available upon request
Bushings	Porcelain, welded type, M12 / M16
Casing	Stainless steel
Standard color	RAL 7033 / other colors available upon request

## FORMS OF CONSTRUCTION

The RC surge suppressors can have either indoor or outdoor bushings. Their active parts are flat-type winding elements with two electrodes which are insulated from each other. The winding elements are incorporated into the capacitor casing. Both air and moisture are extracted under vacuum and at high temperature and all cavities are filled with an impregnant.



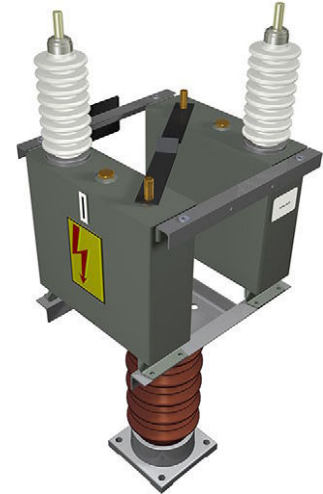
Form 1



Form 2



Form 3



Form 4

## CORROSION PROTECTION

Case material: stainless steel case AISI 409 (AISI 304 as option)

Thickness of material 1.5 mm, top cover and bottom 2.0 mm

Standard case dimensions 345 mm / 450 mm x 110 mm / 135 mm / 175 mm x H mm

## DIMENSION AND WEIGHT

THREE-PHASE SURGE SUPPRESSOR CAPACITORS 7.2 kV, 50 Hz / 60 Hz, IP00, INDOOR												
RATED VOLTAGE $U_N$ (kV)	$C_N$ ( $\mu$ F)	$U_e$ kV/1 min	IMPULSE (kVp)	CASING DIMENSIONS L x W x H (mm)	WEIGHT (kg)	DAMPING RESISTOR ( $\Omega$ )						FORM
						NO	10	20	30	40	50	
7.2	3 x 0.25	20	60	345 x 110 x 415	16	x						1
7.2	3 x 0.3	20	60	345 x 110 x 415	16	x						1
7.2	3 x 0.4	20	60	345 x 110 x 415	16	x						1
7.2	3 x 0.5	20	60	345 x 110 x 450	19	x						1

THREE-PHASE SURGE SUPPRESSOR CAPACITORS 12 kV, 50 Hz / 60 Hz, IP00, INDOOR												
RATED VOLTAGE $U_N$ (kV)	$C_N$ ( $\mu$ F)	$U_e$ kV/1 min	IMPULSE (kVp)	CASING DIMENSIONS L x W x H (mm)	WEIGHT (kg)	DAMPING RESISTOR ( $\Omega$ )						FORM
						NO	10	20	30	40	50	
12	3 x 0.1	28	75	450 x 110 x 415	15	x						2
12	3 x 0.15	28	75	450 x 110 x 415	15	x						2
12	3 x 0.2	28	75	450 x 110 x 415	17	x						2
12	3 x 0.25	28	75	450 x 110 x 415	19	x						2
12	3 x 0.3	28	75	450 x 110 x 415	20	x						2
12	3 x 0.4	28	75	450 x 110 x 540	22	x						2
12	3 x 0.5	28	75	450 x 110 x 540	25	x						2



<b>THREE-PHASE SURGE SUPPRESSOR CAPACITORS 7.2 kV, 50 Hz / 60 Hz, IP00, INDOOR, DAMPING RESISTORS: 10 Ω TO 50 Ω</b>												
RATED VOLTAGE $U_N$ (kV)	$C_N$ (μF)	$U_e$ kV/1 min	IMPULSE (kVp)	CASING DIMENSIONS L x W x H (mm)	WEIGHT (kg)	DAMPING RESISTOR (Ω)						FORM
						NO	10	20	30	40	50	
7.2	3 x 0.25	20	60	345 x 110 x 465	20		x	x	x	x	x	1
7.2	3 x 0.3	20	60	345 x 110 x 465	20		x	x	x	x	x	1
7.2	3 x 0.4	20	60	345 x 110 x 500	23		x	x	x	x	x	1
7.2	3 x 0.5	20	60	345 x 110 x 500	23		x	x	x	x		1
7.2	3 x 0.5	20	60	345 x 110 x 580	27						x	1

<b>THREE-PHASE SURGE SUPPRESSOR CAPACITORS 12 kV, 50 Hz / 60 Hz, IP00, INDOOR, DAMPING RESISTORS: 10 Ω TO 50 Ω</b>												
RATED VOLTAGE $U_N$ (kV)	$C_N$ (μF)	$U_e$ kV/1 min	IMPULSE (kVp)	CASING DIMENSIONS L x W x H (mm)	WEIGHT (kg)	DAMPING RESISTOR (Ω)						FORM
						NO	10	20	30	40	50	
12	3 x 0.1	28	75	450 x 110 x 465	24		x	x	x	x	x	2
12	3 x 0.15	28	75	450 x 110 x 465	25		x	x	x	x	x	2
12	3 x 0.2	28	75	450 x 110 x 465	25		x	x	x	x	x	2
12	3 x 0.25	28	75	450 x 110 x 465	25		x	x	x	x	x	2
12	3 x 0.3	28	75	450 x 110 x 465	25		x	x	x	x	x	2
12	3 x 0.3	28	75	450 x 110 x 480	26						x	2
12	3 x 0.4	28	75	450 x 110 x 590	34		x	x	x	x	x	2
12	3 x 0.4	28	75	450 x 110 x 640	37		x	x	x	x		2
12	3 x 0.4	28	75	450 x 110 x 760	45						x	2
12	3 x 0.5	28	75	450 x 110 x 590	34		x	x				2
12	3 x 0.5	28	75	450 x 110 x 720	41				x			2
12	3 x 0.5	28	75	450 x 110 x 920	54					x		2
12	3 x 0.5	28	75	450 x 110 x 1120	67						x	2

<b>SINGLE-PHASE SURGE SUPPRESSOR CAPACITORS 12 kV, 50 Hz / 60 Hz, IP00, INDOOR AND OUTDOOR</b>												
RATED VOLTAGE $U_N$ (kV)	$C_N$ (μF)	$U_e$ kV/1 min	IMPULSE (kVp)	CASING DIMENSIONS L x W x H (mm)	WEIGHT (kg)	DAMPING RESISTOR (Ω)						FORM
						NO	10	20	30	40	50	
12	0.1	28	75	345 x 110 x 480	14	x						3
12	0.15	28	75	345 x 110 x 480	14	x						3
12	0.2	28	75	345 x 110 x 480	14	x						3
12	0.25	28	75	345 x 110 x 460	14	x						3
12	0.3	28	75	345 x 110 x 465	14	x						3
12	0.4	28	75	345 x 110 x 465	14	x						3
12	0.5	28	75	345 x 110 x 475	14	x						3



**SINGLE-PHASE SURGE SUPPRESSOR CAPACITORS 17.5 kV, 50 Hz / 60 Hz, IP00, INDOOR AND OUTDOOR**

RATED VOLTAGE U <sub>N</sub> (kV)	C <sub>N</sub> (µF)	U <sub>e</sub> kV/1 min	IMPULSE (kVp)	CASING DIMENSIONS L x W x H (mm)	WEIGHT (kg)	DAMPING RESISTOR (Ω)						FORM
						NO	10	20	30	40	50	
17.5	0.1	50	125	345 x 110 x 510	15	x						3
17.5	0.15	50	125	345 x 110 x 510	15	x						3
17.5	0.2	50	125	345 x 110 x 510	17	x						3
17.5	0.25	50	125	345 x 110 x 490	19	x						3
17.5	0.3	50	125	345 x 110 x 495	20	x						3
17.5	0.4	50	125	345 x 110 x 495	22	x						3
17.5	0.5	50	125	345 x 110 x 505	25	x						3

**SINGLE-PHASE SURGE SUPPRESSOR CAPACITORS 24 kV, 50 Hz / 60 Hz, IP00, INDOOR AND OUTDOOR**

RATED VOLTAGE U <sub>N</sub> (kV)	C <sub>N</sub> (µF)	U <sub>e</sub> kV/1 min	IMPULSE (kVp)	CASING DIMENSIONS L x W x H (mm)	WEIGHT (kg)	DAMPING RESISTOR (Ω)						FORM
						NO	10	20	30	40	50	
24	0.1	50	125	345 x 110 x 510	16	x						3
24	0.15	50	125	345 x 110 x 510	17	x						3
24	0.2	50	125	345 x 110 x 510	19	x						3
24	0.25	50	125	345 x 110 x 490	19	x						3
24	0.3	50	125	345 x 110 x 495	20	x						3
24	0.4	50	125	345 x 110 x 495	24	x						3
24	0.5	50	125	345 x 110 x 505	29	x						3

**SINGLE-PHASE SURGE SUPPRESSOR CAPACITORS 12 kV, 50 Hz / 60 Hz, IP00, INDOOR AND OUTDOOR, DAMPING RESISTORS: 10 Ω TO 50 Ω**

RATED VOLTAGE U <sub>N</sub> (kV)	C <sub>N</sub> (µF)	U <sub>e</sub> kV/1 min	IMPULSE (kVp)	CASING DIMENSIONS L x W x H (mm)	WEIGHT (kg)	DAMPING RESISTOR (Ω)						FORM
						NO	10	20	30	40	50	
12	0.1	28	75	345 x 110 x 530	17		x	x	x	x	x	3
12	0.15	28	75	345 x 110 x 530	17		x	x	x	x	x	3
12	0.2	28	75	345 x 110 x 530	17		x	x	x	x	x	3
12	0.25	28	75	345 x 110 x 510	17		x	x	x	x	x	3
12	0.3	28	75	345 x 110 x 515	17		x	x	x	x	x	3
12	0.3	28	75	345 x 110 x 575	20		x	x	x			3
12	0.3	28	75	345 x 110 x 645	17					x	x	3
12	0.4	28	75	345 x 110 x 510	17		x					3
12	0.4	28	75	345 x 110 x 525	18			x				3
12	0.4	28	75	345 x 110 x 675	25				x			3
12	0.4	28	75	345 x 135 x 800	36					x		3
12	0.4	28	75	345 x 135 x 935	45						x	3
12	0.5	28	75	345 x 110 x 525	17		x					3
12	0.5	28	75	345 x 135 x 675	29			x				3
12	0.5	28	75	345 x 135 x 895	42				x			3
12	0.5	28	75	345 x 135 x 1125	65					x		3
12	0.5	28	75	345 x 135 x 1375	81						x	3



SINGLE-PHASE SURGE SUPPRESSOR CAPACITORS 17.5 kV, 50 Hz / 60 Hz, IP00, INDOOR AND OUTDOOR, DAMPING RESISTORS: 10 Ω TO 50 Ω												
RATED VOLTAGE U <sub>N</sub> (kV)	C <sub>N</sub> (μF)	U <sub>e</sub> kV/1 min	IMPULSE (kVp)	CASING DIMENSIONS L x W x H (mm)	WEIGHT (kg)	DAMPING RESISTOR (Ω)						FORM
						NO	10	20	30	40	50	
17.5	0.1	50	125	345 x 110 x 560	18		x	x	x	x	x	3
17.5	0.15	50	125	345 x 110 x 560	18		x	x	x	x	x	3
17.5	0.2	50	125	345 x 135 x 540	19		x	x	x	x		3
17.5	0.2	50	125	345 x 135 x 645	26						x	3
17.5	0.25	50	125	345 x 135 x 540	20		x	x				3
17.5	0.25	50	125	345 x 135 x 625	24				x			3
17.5	0.25	50	125	345 x 135 x 745	32					x		3
17.5	0.25	50	125	345 x 135 x 885	40						x	3
17.5	0.3	50	125	345 x 110 x 615	22		x					3
17.5	0.3	50	125	345 x 110 x 635	23			x				3
17.5	0.3	50	125	345 x 135 x 805	36				x			3
17.5	0.3	50	125	345 x 135 x 955	52					x		3
17.5	0.3	50	125	345 x 135 x 1125	66						x	3
17.5	0.4	50	125	345 x 110 x 610	21		x	x	x			3
17.5	0.4	50	125	345 x 110 x 725	27					x		3
17.5	0.4	50	125	345 x 110 x 835	33						x	3
17.5	0.5	50	125	345 x 135 x 590	23		x	x				3
17.5	0.5	50	125	345 x 135 x 755	33				x			3
17.5	0.5	50	125	345 x 135 x 935	44					x		3
17.5	0.5	50	125	345 x 135 x 1105	55						x	3

SINGLE-PHASE SURGE SUPPRESSOR CAPACITORS 24 kV, 50 Hz / 60 Hz, IP00, INDOOR AND OUTDOOR, DAMPING RESISTORS: 10 Ω TO 50 Ω (1)												
RATED VOLTAGE U <sub>N</sub> (kV)	C <sub>N</sub> (μF)	U <sub>e</sub> kV/1 min	IMPULSE (kVp)	CASING DIMENSIONS L x W x H (mm)	WEIGHT (kg)	DAMPING RESISTOR (Ω)						FORM
						NO	10	20	30	40	50	
24	0.1	50	125	345 x 110 x 582	18		x	x	x	x	x	3
24	0.15	50	125	345 x 135 x 562	19		x	x	x	x	x	3
24	0.2	50	125	345 x 110 x 632	22		x	x	x	x	x	3
24	0.25	50	125	345 x 110 x 652	22		x	x	x	x		3
24	0.25	50	125	345 x 110 x 672	23						x	3
24	0.3	50	125	345 x 110 x 667	23		x	x	x			3
24	0.3	50	125	345 x 110 x 737	27					x		3
24	0.3	50	125	345 x 110 x 857	33						x	3
24	0.4	50	125	345 x 135 x 662	26		x	x				3
24	0.4	50	125	345 x 135 x 857	38				x			3
24	0.4	50	125	345 x 135 x 1057	50					x		3
24	0.4	50	125	345 x 135 x 1257	63						x	3
24	0.5	50	125	345 x 135 x 677	27		x					3
24	0.5	50	125	345 x 135 x 907	41			x				3
24	0.5	50	125	345 x 135 x 1197	58				x			3

**Note**

(1) Earth fault protection (T < 1 min)



SINGLE-PHASE SURGE SUPPRESSOR CAPACITOR BANKS 36 kV, 50 Hz / 60 Hz, IP00, INDOOR AND OUTDOOR, WITHOUT AND WITH DAMPING RESISTORS: 10 Ω TO 50 Ω												
RATED VOLTAGE U <sub>N</sub> (kV)	C <sub>N</sub> (μF)	U <sub>e</sub> kV/1 min	IMPULSE (kVp)	CASING DIMENSIONS L x W x H (mm)	WEIGHT (kg)	DAMPING RESISTOR (Ω)						FORM
						NO	10	20	30	40	50	
36	0.1	70	170	418 x 440 x 985	41	x						4
36	0.1	70	170	418 x 440 x 1015	46		x	x	x	x		4
36	0.1	70	170	418 x 440 x 1120	62						x	4
36	0.15	70	170	418 x 440 x 970	46	x						4
36	0.15	70	170	418 x 440 x 1090	53		x					4
36	0.15	70	170	418 x 440 x 1110	55			x				4
36	0.15	70	170	418 x 440 x 1280	87				x			4
36	0.15	70	170	418 x 440 x 1430	125					x		4
36	0.15	70	170	418 x 440 x 1600	160						x	4
36	0.2	70	170	418 x 440 x 970	51	x						4
36	0.2	70	170	418 x 440 x 1085	51		x	x	x			4
36	0.2	70	170	418 x 440 x 1200	65					x		4
36	0.2	70	170	418 x 440 x 1310	80						x	4
36	0.25	70	170	418 x 440 x 980	55	x						4
36	0.25	70	170	418 x 440 x 1065	55		x	x				4
36	0.25	70	170	418 x 440 x 1230	80				x			4
36	0.25	70	170	418 x 440 x 1410	106					x		4
36	0.25	70	170	418 x 440 x 1580	132						x	4

TYPE NOMENCLATURE										
P	h	a	f	s	o	12	/	0.1	/	10
1	2	3	4	5	6	7	8			
1	2	3	4	5	6	7	8			
Ph: power capacitor	a = all film dielectric	f: outdoor n. E.: indoor	s: live casing n. E.: dead casing	o: non PCB impregnating agent	Rated voltage (kV)	Rated capacitance (μF)	Damping resistor			

**Note**

- n. E. = no entry



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