

SAMWHA

CAPACITOR

High Performance Capacitors Since 1956
Inside All The E-devices





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Samwha (Thailand) Co.,Ltd was founded in 1997 as Samwha's manufacturing base in Southeast Asia. It is a part of the global network strategy of Samwha Group. It began by producing ferrite cores, high voltage capacitor and low voltage power capacitor. Furthermore, Samwha (Thailand) Co.,Ltd. is playing a major role in its development in Thailand, publicizing the image of Samwha Group, to ultimately become a leading company.



COMPANY HISTORY

SAMWHA THAILAND

- 1997.11 Establish Samwha (Thailand) Co.,Ltd.
- 2002.03 Factory Extend Construction Motor Running Capacitor
- 2003.05 Began mass Production of Motor Running Capacitor
- 2004.06 ISO 9001: 2000 Certification
- 2006.09 Began mass Production of Low Voltage Power Capacitor
- 2009.05 ISO 14001: 2004 Certification
- 2010.08 ISO 14001: 2004 Certification
- 2010.10 TISI Certificate of Low Voltage Power Capacitor.

AFFILIATED COMPANY

- | | |
|--------------------|-----------------------------|
| Samwha Thailand | PT. SAMCON |
| Samwha Electronics | Qingdao Samwha Electronics |
| Korea JCC | Samwha Enterprise |
| Samwha Europe GmbH | Samwha Hongkong |
| Samwha India | Tianjin Samwha Electric |
| Samwha U.S.A. | Samwha Poland |
| Samwha Electric | Samwha Tecom |
| Samwha Trading | Tianjin Samwha Hi-Tech Intl |
| PT. SI | |



LOW VOLTAGE POWER CAPACITOR

PRODUCT SCOPE

The power range from 2.5 to 75Kvar compatible with the electrical system, 1-phase and 3-phase, depending on the needs of corporate clients. Samwha dry type capacitor is especially intended for Power factor correction in industry and semi-industry. The capacitors are manufactured using Metalized Polypropylene film as the dielectric and housed in cylindrical aluminum case.

The three-phase capacitor is composed of the single-phase delta element stacks. The electrodes are connected by metal spraying the face ends of the winding elements. The winding elements are encapsulated in cylindrical aluminum case hermetically sealed either by a press-rolled metal lid or plastic disk with fast-on terminal.



PRODUCT SCOPE		PRODUCT SCOPE	
Type	: Dry type (Cylinder type / Unit type)	Type	: Oil type
Voltage Range	: 220V to 1,000V	Voltage Range	: 220V to 1,000V
Frequency	: 50Hz, 60Hz	Frequency	: 50Hz, 60Hz
Power Range	: 2.5Kvar to 75Kvar	Power Range	: 5Kvar to 50Kvar
Capacitor Loss	: Total 0.35W / Kvar	Capacitor Loss	: Total 0.35W / Kvar
Capacity Tolerance	: -5% ~ 10% (at 20°C)	Capacity Tolerance	: -5% ~ 10% (at 20°C)
Max Overvoltage	: Un + 10% [up to 8 hours daily] Un + 15% [up to 30 mins daily] Un + 20% [up to 5 mins monthly] Un + 30% [up to 1 mins monthly]	Max Overvoltage	: Un + 10% [up to 8 hours daily] Un + 15% [up to 30 mins daily] Un + 20% [up to 5 mins monthly] Un + 30% [up to 1 mins monthly]
MOvercurrentax	: 1.3 x In	Max Overcurrent	: 1.3 x In
Withstand Voltage	: 2.15 x Un (10 seconds)	Withstand Voltage	: 2.15 x Un (10 seconds)
Connection	: 3 Phase (Single phase on request)	Connection	: 3 Phase (Single phase on request)
Insulation level	: 3 / 15Kv	Insula[on level	: 3 / 15Kv
Dielectric	: Polypropylene	Dielectric	: Polypropylene
Ambient Temp	: -25°C ~ 55°C	Ambient Temp	: -25°C ~ 55°C
Discharge	: Internal / External discharge module	Discharge	: Internal / External discharge module
Cooling	: Natural forced	Cooling	: Natural forced
Impregnation	: Epoxy resin	Impregna[on	: Capacitor oil (non PCB)
Safety	: Self - healing technology Overpressure disconnecter	Safety	: Self - healing technology Overpressure disconnecter
Installation Place	: Indoor / Outdoor	Installation Place	: Indoor
Applicable Standards	: IEC60831 - 1,2	Applicable Standards	: IEC60831 - 1,2

LOW VOLTAGE POWER CAPACITOR

DRY TYPE (CYLINDER) / (UNIT)



LOW VOLTAGE POWER CAPACITOR DRY TYPE (CYLINDER)						LOW VOLTAGE POWER CAPACITOR DRY TYPE (UNIT)					
Part No.	Rated (Kvar)	Cn (uF)	Current In (Amp)	Dimensions D*H (mm.)	Stud Screw	Part No.	Rated (Kvar)	Cn (uF)	Current In (Amp)	Dimensions W*L*H (mm.)	Stud Screw
Dry type capacitor_Cylinder (3 Phase, 50Hz) 400 VAC						Dry type capacitor_Unit (3 Phase, 50Hz) 400 VAC					
RMC--405050KT	5	99.5	7.2	86*140	M12	IMB--405050KT	5	99.5	7.2	155*185*320	M6
RMC--405075KT	7.5	149.2	10.8	86*170	M12	IMB--405075KT	7.5	149.2	10.8	155*185*320	M6
RMC--405100KT	10	198.9	14.4	86*230	M12	IMB--405100KT	10	198.9	14.4	155*185*320	M6
RMC--405125KT	12.5	248.7	18	86*230	M12	IMB--405125KT	12.5	248.7	18	155*185*320	M6
RMC--405150KT	15	298.4	21.7	96*275	M12	IMB--405150KT	15	298.4	21.7	155*185*320	M6
RMC--405200KT	20	397.9	28.9	96*275	M12	IMB--405200KT	20	397.9	28.9	155*185*320	M6
RMC--405250KT	25	497.4	36.1	116*275	M16	IMB--405250KT	25	497.4	36.1	155*185*320	M6
RMC--405300KT	30	596.8	43.3	136*305	M12	IMB--405300KT	30	596.8	43.3	155*355*400	M8
RMC--405400KT	40	795.8	57.7	136*305	M12	IMB--405400KT	40	795.8	57.7	155*355*400	M8
RMC--405500KT	50	994.7	72.2	136*380	M12	IMB--405450KT	45	895.2	65	155*355*400	M8
Dry type capacitor_Cylinder (3 Phase, 50Hz) 415 VAC						IMB--405500KT	50	994.7	72.2	155*355*400	M8
RMC--415050KT	5	92.4	7.0	63*165	M12	IMB--405600KT	60	1193.7	86.6	230*355*400	M10
RMC--415075KT	7.5	138.6	10.4	86*170	M12	IMB--405750KT	75	1492.1	108.3	230*355*400	M10
RMC--415100KT	10	184.8	13.9	86*230	M12	Dry type capacitor_Unit (3 Phase, 50Hz) 440 VAC					
RMC--415125KT	12.5	231.0	17.4	86*230	M12	IMB--445050KT	5	82.2	6.6	155*185*320	M6
RMC--415150KT	15	277.2	20.9	86*275	M12	IMB--445075KT	7.5	123.3	9.8	155*185*320	M6
RMC--415200KT	20	396.6	27.8	96*275	M12	IMB--445100KT	10	164.4	13.1	155*185*320	M6
RMC--415250KT	25	462.1	34.8	116*275	M12	IMB--445125KT	12.5	205.5	16.4	155*185*320	M6
RMC--415300KT	30	554.5	41.7	116*305	M12	IMB--445150KT	15	246.6	19.7	155*185*320	M6
RMC--415400KT	40	739.3	55.6	136*305	M12	IMB--445200KT	20	328.8	26.2	155*185*320	M6
RMC--415500KT	50	924.1	69.6	136*380	M12	IMB--445250KT	25	411	32.8	155*185*320	M6
Dry type capacitor_Cylinder (3 Phase, 50Hz) 440 VAC						IMB--445300KT	30	493.2	39.4	155*355*400	M8
RMC--445050KT	5	82.2	6.6	86*140	M12	IMB--445400KT	40	657.7	52.5	155*355*400	M8
RMC--445075KT	7.5	123.3	9.8	86*170	M12	IMB--445450KT	45	739.9	59	155*355*400	M8
RMC--445100KT	10	164.4	13.1	86*170	M12	IMB--445500KT	50	822.1	65.6	155*355*400	M8
RMC--445125KT	12.5	205.5	16.4	86*230	M12	IMB--445600KT	60	986.5	78.7	230*355*400	M10
RMC--445150KT	15	246.6	19.7	86*230	M12	IMB--445750KT	75	1233.1	98.4	230*355*400	M10
RMC--445200KT	20	328.8	26.2	86*275	M12	Dry type capacitor_Unit (3 Phase, 50Hz) 525 VAC					
RMC--445250KT	25	411	32.8	86*350	M12	IMB--525050KT	5	57.7	5.5	155*185*320	M6
RMC--445300KT	30	493.2	39.4	96*350	M16	IMB--525075KT	7.5	86.6	8.2	155*185*320	M6
RMC--445400KT	40	657.7	52.5	136*280	M12	IMB--525100KT	10	115.5	11	155*185*320	M6
RMC--445500KT	50	822.1	65.6	136*280	M12	IMB--525125KT	12.5	144.4	13.7	155*185*320	M6
Dry type capacitor_Cylinder (3 Phase, 50Hz) 525 VAC						IMB--525150KT	15	173.2	16.5	155*185*320	M6
RMC--525025KT	2.5	28.9	2.7	63*135	M12	IMB--525200KT	20	231	22	155*185*320	M6
RMC--525050KT	5	57.7	5.5	86*140	M12	IMB--525250KT	25	288.7	27.5	155*185*320	M6
RMC--525075KT	7.5	86.6	8.2	86*170	M12	IMB--525300KT	30	346.5	33	155*355*400	M8
RMC--525100KT	10	115.5	11	86*230	M12	IMB--525400KT	40	461.9	44	155*355*400	M8
RMC--525125KT	12.5	144.4	13.7	86*230	M12	IMB--525450KT	45	519.7	49.5	155*355*400	M8
RMC--525150KT	15	173.2	16.5	86*275	M12	IMB--525500KT	50	577.4	55	155*355*400	M8
RMC--525200KT	20	231	22	86*350	M12	IMB--525600KT	60	692.9	66	230*355*400	M10
RMC--525250KT	25	288.7	27.5	96*350	M16	IMB--525750KT	75	866.1	82.5	230*355*400	M10
RMC--525300KT	30	346.5	33	116*275	M12						
RMC--525400KT	40	461.9	44	136*280	M12						
RMC--525500KT	50	577.4	55	136*355	M12						

LOW VOLTAGE POWER CAPACITOR

DRY TYPE OUTDOOR



LOW VOLTAGE POWER CAPACITOR DRY TYPE (OUTDOOR)

Part No.	Rated (Kvar)	Cn (uF)	Current In (Amp)	Dimensions W*L*H (mm.)	Supporting (mm.)
Dry type capacitor_Outdoor (1 Phase, 50Hz) 230 VAC					
EMB--235050KS	5	300.9	21.7	100*220*370	200
EMB--235075KS	7.5	451.3	32.6	100*220*370	200
EMB--235100KS	10	601.7	43.5	100*220*370	200
EMB--235125KS	12.5	752.2	54.3	100*220*370	200
EMB--235150KS	15	902.6	65.2	100*220*370	200
Dry type capacitor_Outdoor (3 Phase, 50Hz) 400 VAC					
EMB--405050KT	5	99.5	7.2	100*220*370	200
EMB--405100KT	10	198.9	14.4	100*220*370	200
EMB--405150KT	15	298.4	21.7	100*220*370	200
EMB--405200KT	20	397.9	28.9	150*220*370	200
EMB--405250KT	25	497.4	36.1	150*220*370	200
EMB--405300KT	30	596.8	43.3	150*220*370	200
EMB--405450KT	45	895.2	65	110*210*570	200
EMB--405500KT	50	994.7	72.2	110*210*570	200
EMB--405600KT	60	1193.7	86.6	110*310*570	200
EMB--405750KT	75	1492.1	108.3	110*310*570	200
Dry type capacitor_Outdoor (3 Phase, 50Hz) 415 VAC					
EMB--415050KT	5	92.4	7	100*220*370	200
EMB--415100KT	10	184.8	13.9	100*220*370	200
EMB--415150KT	15	277.2	20.9	100*220*370	200
EMB--415200KT	20	369.6	27.8	150*220*370	200
EMB--415250KT	25	462.1	34.8	150*220*370	200
EMB--415300KT	30	554.5	41.7	150*220*370	200
EMB--415450KT	45	831.7	62.6	110*210*570	200
EMB--415500KT	50	924.1	69.6	110*210*570	200
EMB--415600KT	60	1108.9	83.5	110*310*570	200
EMB--415750KT	75	1386.2	104.3	110*310*570	200

LOW VOLTAGE POWER CAPACITOR

OIL TYPE

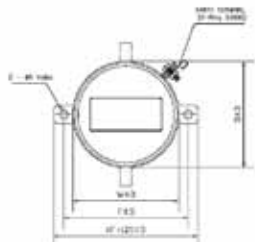


Figure 1- QMM Type

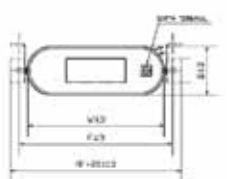


Figure 2- SMS Type

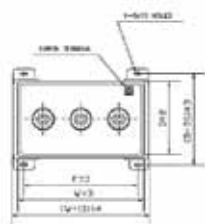


Figure 3- SMB Type

Rating and Dimension - 400V 50Hz 3 Phase

Type	Capacity		Current	Dimension [mm]					Drawing
	[μF]	[kvar]		A	B	W	F	D	
QMM-4010T	10	0.5	0.7	110	130	63	77	63	Figure 1
QMM-4015T	15	0.8	1.1	110	130	63	77	63	
QMM-4020T	20	1.0	1.5	110	130	63	77	63	
QMM-4025T	25	1.3	1.8	135	155	63	77	63	
QMM-4030T	30	1.5	2.2	135	155	63	77	63	
QMM-4040T	40	2.0	2.9	135	155	63	77	63	Figure 2
SMS-4050KT	50	2.5	3.6	105	125	170	190	60	
SMS-4075KT	75	3.8	5.4	105	125	170	190	60	
SMS-4100KT	100	5.0	7.3	130	150	170	190	60	
SMS-4150KT	150	7.5	10.9	155	175	170	190	60	
SMS-4200KT	200	10.1	14.5	175	195	170	190	60	
SMS-4250KT	250	12.6	18.1	205	225	170	190	60	
SMS-4300KT	300	15.1	21.8	255	275	170	190	60	
SMS-45010KT	198.9	10	14.4	155	175	170	190	60	
SMS-45015KT	298.4	15	21.7	205	225	170	190	60	
SMB-45020KT	397.9	20	28.9	180	245	200	170	120	Figure 3
SMG-45025KT	497.4	25	36.1	220	285	200	170	120	
SMB-45030KT	596.8	30	43.3	240	305	200	170	120	
SMB-45040KT	795.8	40	57.7	300	365	200	170	120	
SMB-45050KT	994.7	50	72.2	360	425	200	170	120	

Rating and Dimension - 440V 50Hz 3 Phase

Type	Capacity		Current	Dimension [mm]					Drawing
	[μF]	[kvar]		A	B	W	F	D	
QMM-4010T	10	0.6	1.4	110	130	63	77	63	Figure 1
QMM-4015T	15	0.9	1.2	110	130	63	77	63	
QMM-4020T	20	1.2	1.6	110	130	63	77	63	
QMM-4025T	25	1.5	2.0	135	155	63	77	63	
QMM-4030T	30	1.8	2.4	135	155	63	77	63	
QMM-4040T	40	2.4	3.2	135	155	63	77	63	Figure 2
SMS-4050T	50	3.0	4.0	105	125	170	190	60	
SMS-4075T	75	4.6	6.0	105	125	170	190	60	
SMS-4100T	100	6.1	8.0	130	150	170	190	60	
SMS-4150T	150	9.1	12.0	155	175	170	190	60	
SMS-4200T	200	12.2	16.0	175	195	170	190	60	
SMS-4250T	250	15.2	20.0	205	225	170	190	60	
SMS-4300T	300	18.2	23.9	255	275	170	190	60	
SMS-45010KT	164.4	10	13.1	205	225	170	190	60	
SMS-45015KT	246.6	15	19.7	205	225	170	190	60	
SMB-45020KT	327.8	20	26.2	180	245	200	170	120	Figure 3
SMG-45025KT	411.0	25	32.8	220	285	200	170	120	
SMB-45030KT	493.2	30	39.4	240	305	200	170	120	
SMB-45040KT	657.7	40	52.5	300	365	200	170	120	
SMB-45050KT	822.1	50	65.6	360	425	200	170	120	

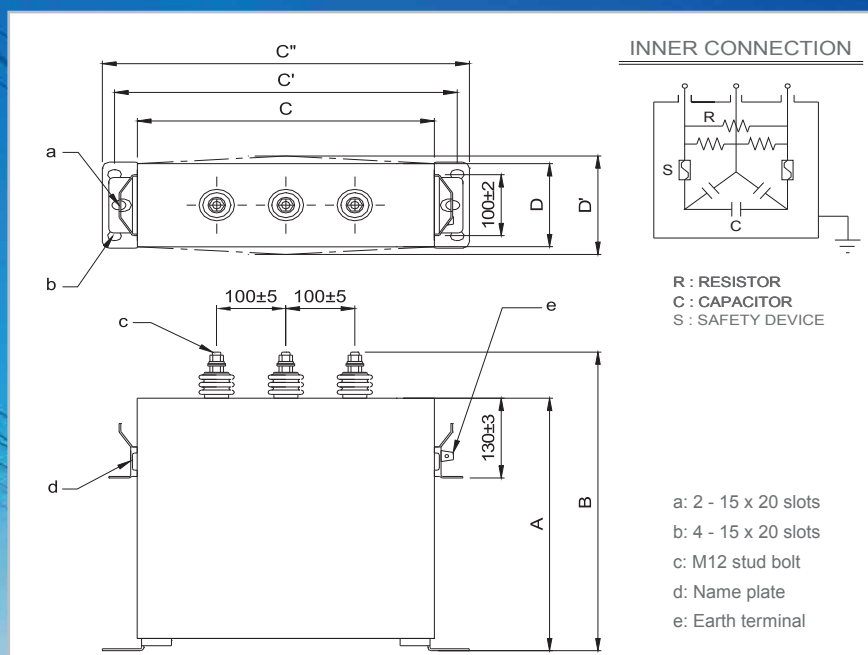
OIL TYPE

** Approximate dimension and weight are given above. Please contact to factory for exact dimensions of a particular unit before order



LOW VOLTAGE POWER CAPACITOR

OIL TYPE (STEEL CASE)



RATING and DIMENSION 415V 50Hz 3Phase

Part No.	Rated	Cn	Current	Dimension (mm) **			
	(Kvar)	(uF)	In (Amp)	A	B	C	D
SMF-415050KT	50	924	69.6	280	365	343	153
SMF-415075KT	75	1386	104.3	320	395	343	153
SMF-415100KT	100	1848	139.1	360	435	343	153
SMF-415150KT	150	2772	208.7	480	555	343	153

RATING and DIMENSION 440V 50Hz 3Phase

Part No.	Rated	Cn	Current	Dimension (mm) **			
	(Kvar)	(uF)	In (Amp)	A	B	C	D
SMF-445050KT	50	822	65.6	280	365	343	153
SMF-445075KT	75	1233	98.4	340	415	343	153
SMF-445100KT	100	1644	131.2	400	485	343	153
SMF-445150KT	150	2466	196.8	520	605	430	135

OIL TYPE (STEEL CASE)

** Approximate dimension and weight are given above.
Please contact to factory for exact dimensions of a particular unit before order.

DETUNED REACTOR



*Used for capacitor banks
(P.F. improvement)*

SPECIFICATION

1 Reference Standards : IEC 60289 and IEC 60076

2 Service condition and installation

- Ambient Temperature : $-20 \sim +40\text{ }^{\circ}\text{C}$
- Humidity : $\leq 85\%$
- Altitude (above sea level) : ≤ 1000 metre
- Type of reactor : Dry type with multi gapped iron core
- Installing application : Indoor
- Type of cooling : AN (natural air cooled)
- Degree of protection : IP00
- Insulation class : H ($180\text{ }^{\circ}\text{C}$)

3 Ratings

- Number of phases : Three phase
- Rated power frequency : 50Hz
- Rated power voltage : $\leq 416\text{V}$ (widely range power voltage)
- Percentage of reactance (XL / XC) : 7%
- Rated tuning frequency : 189Hz
- Rated reactor voltage : $\leq 18.1\text{V}$
- Inductance tolerance : $\pm 3\%$
- Harmonic current limits : 3rd $\leq 5\%$, 5th $\leq 35\%$ and 7th $\leq 15\%$
- Rated short-time current : 25 Times of rated current 2 Sec.
- Max. Temperature rise of winding : $\leq 85\text{ K}$ (at 125% of rated current)

4 Routine test

- Measurement of winding resistance
- Measurement of insulation resistance
- Measurement of inductance
- Measurement of total loss
- Measurement of Q-factor
- Separate-source voltage withstand test
- Induce overvoltage withstand tes

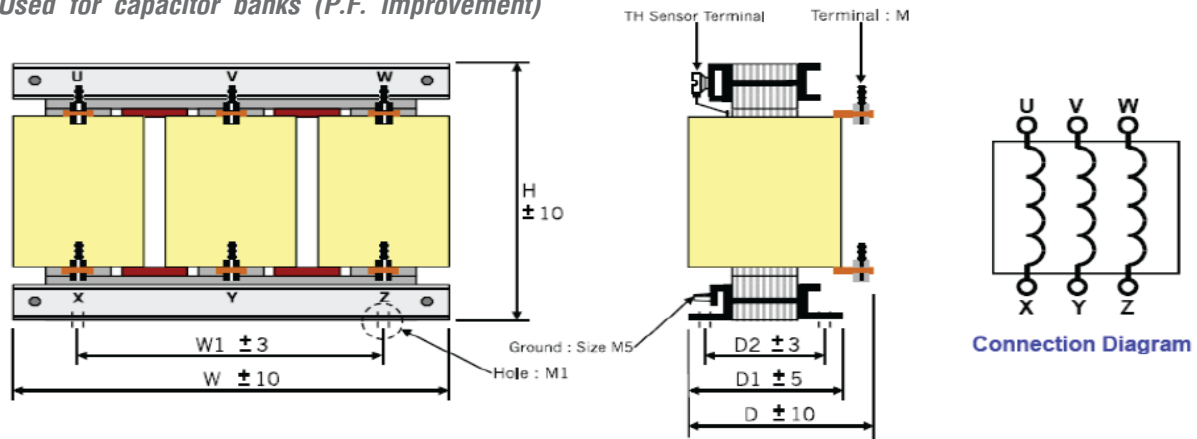
5 Impregnation and banking method

The reactors will be impregnated with insulating varnish under VPI technology (Vacuum Pressure Impregnation) and baked at $140\text{ }^{\circ}\text{C}$. 4 hours.

6 Thermal sensor

Operating temp. $135\text{ }^{\circ}\text{C}$, AC 250V 7.2A, NC Terminal M3

Used for capacitor banks (P.F. improvement)



SPECIFICATION (Designed to use with Capacitor 440V 50Hz)

Rated of Capacitor 440V (kvar)	Generated output Power (kvar)			Rated of Reactor (at 416V)			Total Loss (Watt)	Efficiency h (%)	Sound Level (dB(A))	Dimensions (mm) (+/- 15-20%)								Approx. Weight (kg)
	Rated power Voltage			Inductance/Phase (mH)	Current (Amp.)	Power (kvar)				W	W1	H	D	D1	D2	M	M1	
	380V	400V	416V															
10	8.02	8.89	9.61	4.314	13.34	0.72	45	91.9	< 50	240	160	200	155	120	90	8	Φ8	17
15	12.03	13.33	14.42	2.876	20.01	1.09	55	93.3	< 50	240	160	200	170	140	110	8	Φ8	21
20	16.04	17.77	19.22	2.157	26.68	1.45	70	93.6	< 50	240	160	260	175	145	115	8	Φ8	28
25	20.05	22.22	24.03	1.725	33.35	1.81	80	94.1	< 50	240	160	245	145	145	115	8	Φ8	27
30	24.06	26.66	28.83	1.438	40.02	2.17	90	94.4	< 50	240	160	245	145	145	115	8	Φ8	29
40	32.08	35.6	38.5	1.078	53.36	2.89	105	95.1	< 50	240	160	265	185	155	125	8	Φ8	31
50	40.1	44.43	48.06	0.863	66.70	3.62	120	95.5	< 50	300	200	270	200	165	125	8	Φ8	39
60	48.12	53.32	57.67	0.719	80.04	4.34	130	95.9	< 50	300	200	270	185	155	115	8	Φ8	34
70	56.14	62.21	67.28	0.616	93.38	5.06	160	95.7	< 50	300	200	325	210	175	135	10	Φ8	49
75	60.15	66.65	72.09	0.575	100.05	5.43	170	95.7	< 50	300	200	325	225	190	150	10	Φ8	58
80	64.16	91.09	76.9	0.539	106.70	5.79	180	95.8	< 50	300	200	325	225	190	150	10	Φ8	58
90	72.18	79.98	86.5	0.479	120.06	6.51	200	95.8	< 50	300	200	325	230	200	160	10	Φ8	60
100	80.2	88.87	96.12	0.431	133.40	7.23	210	96.0	< 50	300	200	330	235	195	155	10	Φ8	63
120	96.24	106.64	115.3	0.359	160.08	8.68	215	96.6	< 50	300	200	330	235	195	155	10	Φ8	63
160	128.32	142.18	153.79	0.270	213.43	11.58	290	96.6	< 50	320	210	350	245	200	165	10	Φ8	75
200	160.4	177.73	192.23	0.216	266.79	14.47	350	96.6	< 50	320	210	360	260	215	175	10	Φ8	81

SPECIFICATION (Designed to use with Capacitor 525V 50Hz)

Rated of Capacitor 525V (kvar)	Generated output Power (kvar)			Rated of Reactor (at 416V)			Total Loss (Watt)	Efficiency h (%)	Sound Level (dB(A))	Dimensions (mm) (+/- 15-20%)								Approx. Weight (kg)
	Rated power Voltage			Inductance/Phase (mH)	Current (Amp.)	Power (kvar)				W	W1	H	D	D1	D2	M	M1	
	380V	400V	416V															
10	5.6	6.2	6.8	6.141	9.40	0.51	45	91.9	< 50	180	120	170	155	120	95	8	Φ8	12
15	8.5	9.4	10.1	4.094	14.10	0.76	55	93.3	< 50	240	160	200	155	120	90	8	Φ8	17
20	11.3	12.5	13.5	3.071	18.70	1.02	70	93.6	< 50	240	160	200	170	140	110	8	Φ8	21
25	14.1	15.6	16.9	2.457	23.40	1.27	80	94.1	< 50	240	160	220	175	145	115	8	Φ8	24
30	16.9	18.7	20.3	2.047	28.10	1.52	90	94.4	< 50	240	160	260	175	145	115	8	Φ8	28
40	22.5	25.0	27.2	1.535	37.50	2.03	105	95.1	< 50	240	160	245	145	145	115	8	Φ8	27
50	28.2	31.2	33.8	1.228	46.80	2.54	120	95.5	< 50	300	160	265	185	155	125	8	Φ8	31
60	33.8	37.5	40.5	1.024	56.20	3.05	130	95.9	< 50	300	200	270	185	155	115	8	Φ8	34
70	39.4	43.7	47.3	0.877	65.60	3.56	160	95.7	< 50	300	200	270	200	165	125	8	Φ8	39
75	42.3	46.8	50.6	0.819	70.30	3.81	170	95.7	< 50	300	200	270	205	175	135	8	Φ8	42
80	45.1	49.9	54.0	0.768	45.00	4.07	180	95.8	< 50	300	200	270	210	180	140	8	Φ8	45
90	50.7	56.2	60.8	0.682	84.30	4.57	200	95.8	< 50	300	200	325	205	165	125	10	Φ8	46
100	56.3	62.4	67.5	0.614	93.70	5.08	210	96.0	< 50	300	200	325	210	175	135	10	Φ8	49
120	67.6	74.9	81.0	0.512	112.40	6.10	215	96.6	< 50	300	200	325	225	190	150	10	Φ8	58
160	90.1	99.9	108.0	0.384	149.90	8.13	290	96.6	< 50	300	200	330	235	195	155	10	Φ8	63
200	112.7	124.8	135.0	0.307	187.40	10.16	350	96.6	< 50	320	210	350	245	200	165	10	Φ8	75

POWER FACTOR CONTROLLER



FEATURES

- Microprocessor based intelligent auto switching control
- Automatic C/K and rated step adjustment
- Automatic CT polarity correction
- Display of power factor, current & total harmonic distortion of current
- Programmable sensitivity
- Last step can be used as alarm/fan output
- Under/over voltage alarm, under/over compensate alarm & high harmonic distortion alarm
- User-friendly setting
- Complies with IEC 61000-6-2 standard

TECHNICAL DATA

RATINGS AUXILIARY POWER SUPPLY

Current Supply voltage	: 220-240 V AC / 380-415 V AC
Operating Limits	: -15% + 10%
Consumption	: 10 VA max
Rated frequency	: 50 Hz or 60 Hz

ENVIRONMENTAL CONDITIONS

Temperature	: -5 °C to +55 °C
Humidity	: 56 days at 93% RH and 40 °C non-condensing

OUTPUT CONTACTS

Numbers of outputs	: 6 / 8 / 12 / 14 (PFR60/ PFR80 / PFR120 / PFR140)
Rated voltage	: 250 V AC
Contact rating	: 5 A.
Expected electrical life	: 100,000 operations at rated current
Expected mechanical life	: 5 x 10 ⁶ operations
Max current for the common terminals	: 12 A continuous

CONTROL RANGE

Power factor setting	: 0.8 Ind - 0.8 Cap
C/K setting	: 0.03 - 1.20 / Automatic
Switching sensitivity	: 5 - 600 s/step
Reconnection time for same step	: 5 - 240 s
THD threshold	: 0.20 - 3.00 (20% - 300%) / OFF
Switching Program	: Automatic / Automatic Rotate / 4-quadrant / Manual
Rated step coefficient	: 0 / 1 / 2 / 3 / 4 / 5 / 6 / 8 / 12 / 16 (Automatic if C/K set to Auto)

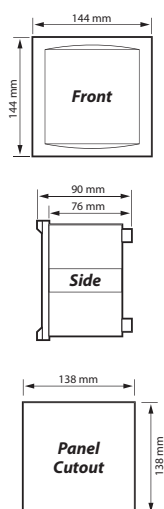
CURRENT INPUT

Rated current (I _n)	: 5 A.
Operating Limits	: 0.05 A to 6.5 A
Rated Frequency	: 50 Hz or 60 Hz

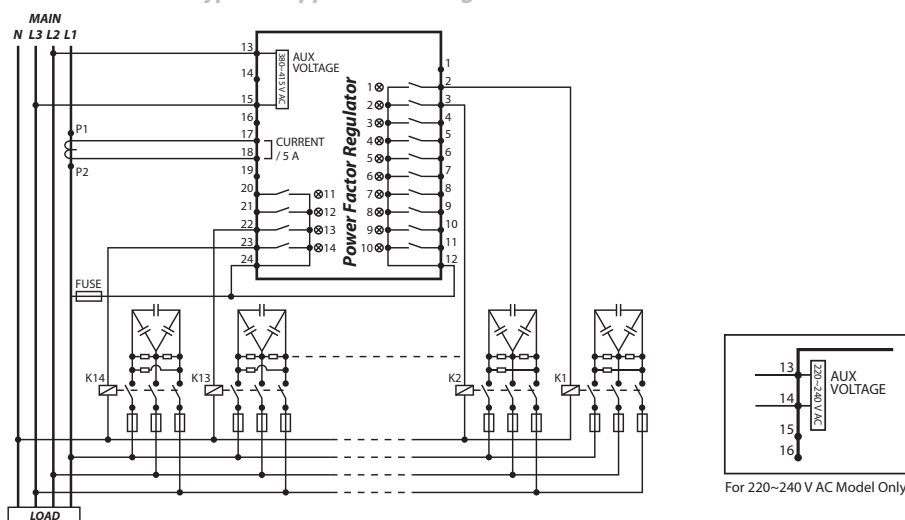
MECHANICAL

Mounting	: Panel mounting
Dimension (mm)	: 144(w) x 144(h) x 90(d)
Enclosure protection	: IP54 at the panel
Approximate weight	: 1.2 kg

Case Dimensions



Typical Application Diagram



ORDERING INFORMATION

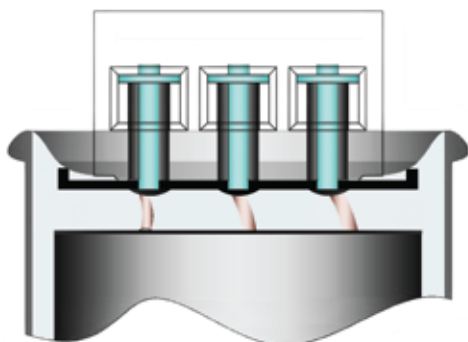
MODEL

PFR60-415-50
PFR80-415-50
PFR120-415-50
PFR140-415-50

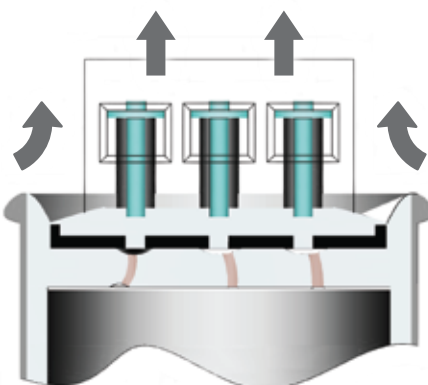
DESCRIPTION

6 Steps, 50Hz system auxiliary voltage 380-415 VAC
8 Steps, 50Hz system auxiliary voltage 380-415 VAC
12 Steps, 50Hz system auxiliary voltage 380-415 VAC
14 Steps, 50Hz system auxiliary voltage 380-415 VAC

OPERATING CONDITION



TORN-OFF CONDITION



PROTECTION OF THE CAPACITOR

In order to prevent damage. Caused by defective electrical systems or as the capacitor itself, if the failure of the capacitor, will cause the gas inside the capacitor. This pressure will cause the top of capacitor cover swelling. (Because they were designed to be the thinnest point) when the lid was swollen, will draw the connection of electricity sent to capacitor deficiency resulting from the circuit cut off.

Operating temperature

Capacitor has been classified by the temperature used as an indicator. Each category is assigned a letter and the with the numbers below A[+40°C], B[+4°C], C[+50°C], D[+55°C] The letter refers to a class that displays the temperature of use and the number refers to the temperature used of the capacitor. Which is the temperature, use the tag to the product details (Name plate) on all products.

Installation place

1. Ambient temperature shall not exceed -25°C to +55°C (average temperature per day shall be less than 45°C)
2. Installation place shall be dry and well ventilated. Avoid the places such as where corrosive gases or dust are much or agitation occurs. Capacitor rack shall be installed on the base of concrete and tightened with bolt.
3. Use twisted wire for connecting to capacitor. The square of wire shall be more than 1.35 times of rated current of capacitors.
4. Capacitor has been produced with built in discharge resistance so that when it is opened from the circuit, the residual voltage can be reduced to less than 75V within 3 mins. if the switch is turn on again when the residual voltage is not discharge enough, DC voltage becomes double and can be the cause of damage to capacitor. When it is turn on/off within short time (within 5 seconds), employment of discharging coil is desirable.

Check point

1. Allowable over voltage is within 110% of rated voltage.
Confirm of the equilibrium on each phase. Phase be careful of circuit voltage rise in slight load at night. If over voltage is applied to capacitor continuously, Kvar quantity is increased relative to 2 square voltage rise which results in the increase of loss and rise of temperature leading to shortening of lifetime.
2. Confirm that current of capacitor is within 130% of rated current.
3. When more than 120% of rated current flows on capacitor, phase check the current wave form with oscilloscope to know which harmonics current is the cause and install series reactor to contain harmonics.
4. The temperature of capacitor case is designed to be less than 55°C in mid summer (ambient temperature 45°C)
5. Always check the current and voltage of capacitor circuit (3phase equilibrium) Cleaning of other bushing : more than once per 6 months (according to the state of contamination). Capacity and insulation resistance : measure once a year. for measurement of insulation resistance, confirm that DC mega measurement shall be more than 1000MΩ.
6. Check the connection part of electronic switch used in capacitor circuit once a year to a minimum. If the connection is not perfect, single phase operation or harmonics agitation voltage may be applied to the capacitor and it can lead to shortening of lifetime.
7. Open the capacitor from the circuit when leading power factor in slight load at night.



SAMWHA CAPACITOR

Low Voltage Power Capacitor

DRY TYPE (CYLINDER)

DRY TYPE (UNIT)

DRY TYPE (OUTDOOR)

OIL TYPE (INDOOR)

OIL TYPE (STEEL CASE)



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