



## 1. Capacitor

### > Application

The capacitors are designed for power factor correction and harmonics filtration in power network. They are all-film dielectric and impregnated with an environmentally friendly, Non-PCB biodegradable insulating oil.

In addition each capacitor is provided with an internal discharge resistor.

All SAMWHA capacitors comply with most national and international capacitor standards.

Capacitor benefits to

- Improve Power Factor
- Reduce Line Losses
- Decrease Voltage Drop

Through that it helps greater **Energy Efficiency**

### > Product Scope

- **Power Range**      Single Phase 25kvar to 1000kvar  
                              Three Phase 50kvar to 500kvar
- **Voltage Range**    Single Phase 1000V to 22000V  
                              Three Phase 1000V to 11000V
- **Frequency**         50Hz / 60Hz
- **Applicable Standards**    IEC, ANSI / IEEE, NEMA



### > Technical Data

Capacitor Loss [Under Stabilized Condition]	0.2W/kvar or Less with Internal fuse 0.15W/kvar or Less without Internal fuse	
Ambient Temperature	-40°C / A [+40°C], B [+45°C], C [+50°C], D [+55°C]	
Max overvoltage	U <sub>max</sub>	U <sub>N</sub> + 10% [up to 8 hours daily]
		U <sub>N</sub> + 15% [up to 30 minutes daily]
		U <sub>N</sub> + 20% [up to 5 minutes]
		U <sub>N</sub> + 30% [up to 1 minute]
Max overcurrent	I <sub>s</sub>	1.3 × I <sub>N</sub>
Painting Color	Munsell No. 5Y 7/1	
Reference Standard	IEC 60871	

### > Bushings Characteristics

BIL [kV]	Creepage Distance [mm]	Strike Distance [mm]	Total Height [mm]	60Hz Withstand		Weight [kg]
				Dry Test [kV]	Wet Test [kV]	
60	191	109.2	188.1	60	45	0.87
75	191	109.2	188.1	60	45	0.87
95	318	162.6	235.6	70	55	1.23
150	438	193.0	266.8	80	60	1.75
175	635	223.5	287.9	90	70	2.14
200	720	302.4	388.9	100	80	2.79

\* The standard terminal size is M12, but M16 could be applied according to rated voltage.

\* Same Bushing is used on 60 and 75kV BIL of capacitor units.

\* Bird Cap and Parallel-groove connector with all bushings is supplied, and it is applicable to Copper or Aluminum conductor [14~100mm<sup>2</sup> 2line]

\* Applied bushing could be changed by special requirements



## 1-2 Low Voltage Power Capacitor

### ① Oil Type

#### > Application

Capacitors are intended for the improvement of Power Factor in low voltage power networks. Used advanced technology consists of metallized PP film with extremely low loss factor and dielectric system is self-healing.

The dielectric system is self-healing and biodegradable and environmentally friendly.

The capacitors have overpressure protection to disconnect it from the supply in the event of internal failure and at the end of its operational life.

The construction described above and the use of high quality materials ensure reliability and longevity.

Capacitor benefits to

- Improve Power Factor
- Reduce Line Losses
- Decrease Voltage Drop

Through that it helps greater **Energy Efficiency**

#### > Product Scope

- **Power Range**                    0.2kvar to 150kvar
- **Voltage Range**                220V to 1000V
- **Frequency**                     50Hz / 60Hz
- **Applicable Standards**    IEC, AISI / IEEE, NEMA



#### > Technical Data

Location	Indoor	
Capacitor Loss [Under stabilized Condition]	0,5W/kvar	
Ambient Temperature	-25°C / A [+40°C], B [+45°C], C [+50°C], D [+55°C]	
Max overvoltage	$U_{max}$	$U_N + 10%$ [up to 8 hours daily]
		$U_N + 15%$ [up to 30 minutes daily]
		$U_N + 20%$ [up to 5 minutes]
		$U_N + 30%$ [up to 1 minute]
Max overcurrent	$I_s$	$1.3 \times I_N$
Painting Color	Munsell No. 5Y 7/1	
Reference Standard	IEC 60831-1	



## 1-2 Low Voltage Power Capacitor

### > 220V 50Hz Single Phase, Three Phase Capacitor

#### • Ratings and Dimensions

Type		Capacity		Current [A]		Dimension [mm]						Figure	
Single Phase	Three Phase	[μF]	[kvar]	Single Phase	Three Phase	A		B		W	F		D
						Single Phase	Three Phase	Single Phase	Three Phase				
QMM-2010S	QMM-2010T	10	0.2	0.7	0.4	(65)	65	(85)	85	63	77	63	1
QMM-2015S	QMM-2015T	15	0.2	1.0	0.6	(65)	65	(85)	85	63	77	63	
QMM-2020S	QMM-2020T	20	0.3	1.4	0.8	(65)	65	(85)	85	63	77	63	
QMM-2030S	QMM-2030T	30	0.5	2.1	1.2	(65)	110	(85)	130	63	77	63	
QMM-2040S	QMM-2040T	40	0.6	2.8	1.6	(65)	110	(85)	130	63	77	63	
QMM-2050S	QMM-2050T	50	0.8	3.5	2.0	(110)	110	(130)	130	63	77	63	
QMM-2075S	QMM-2075T	75	1.1	5.2	3.0	(110)	110	(130)	130	63	77	63	
QMM-2100S	QMM-2100T	100	1.5	6.9	4.0	(110)	135	(155)	135	63	77	63	
SMS-2150ST		150	2.3	10.4	6.0	105		125		170	190	60	2
SMS-2175ST		175	2.7	12.1	7.0	105		125		170	190	60	
SMS-2200ST		200	3.0	13.8	8.0	105		125		170	190	60	
SMS-2250ST		250	3.8	17.3	10.0	115		135		170	190	60	
SMS-2300ST		300	4.6	20.7	12.0	130		150		170	190	60	
SMS-2400ST		400	6.1	27.6	16.0	155		175		170	190	60	
SMS-2500ST		500	7.6	34.6	20.0	175		195		170	190	60	
SMS-2600ST		600	9.1	41.5	23.9	205		225		170	190	60	
SMS-2700ST		700	10.6	48.4	27.9	255		275		170	190	60	
SMS-2750ST		750	11.4	51.8	29.9	255		275		170	190	60	
SMB-2800S	SMB-2800T	800	12.2	55.3	31.9	170		235		200	170	120	3
SMB-2900S	SMB-2900T	900	13.7	62.2	35.9	170		235		200	170	120	
SMB-21000S	SMB-21000T	1000	15.2	69.1	39.9	180		245		200	170	120	2
SMB-25010KST		657.7	10	45.5	26.2	255		275		170	190	60	
SMB-25015KS	SMB-25015KT	986.5	15	68.2	39.4	180		245		200	170	120	3
SMB-25020KS	SMB-25020KT	1315.3	20	90.9	52.5	220		285		200	170	120	
SMB-25025KS	SMB-25025KT	1644.2	25	113.6	65.6	280		345		200	170	120	
SMB-25030KS	SMB-25030KT	1973.0	30	136.4	78.7	300		365		200	170	120	
SMB-25040KS	SMB-25040KT	2630.7	40	181.8	105.0	380		445		200	170	120	
SMB-25050KS	SMB-25050KT	3288.3	50	227.3	131.2	280		355		343	409	153	4(M12)

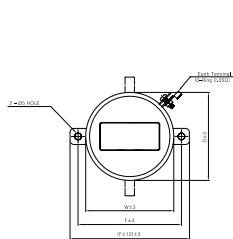


Figure 1

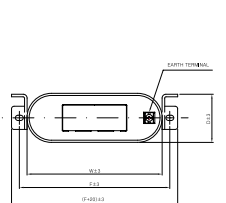


Figure 2

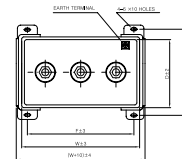


Figure 3

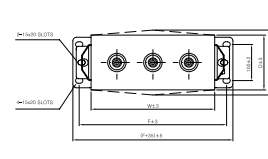


Figure 4

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



## 1-2 Low Voltage Power Capacitor

### > 380V 50Hz Single Phase, Three Phase Capacitor

#### • Ratings and Dimensions

Type		Capacity		Current [A]		Dimension [mm]						Figure		
Single Phase	Three Phase	[μF]	[kvar]	Single Phase	Three Phase	A		B		W	F		D	
						Single Phase	Three Phase	Single Phase	Three Phase					
QMM-3010S	QMM-3010T	10	0.5	1.2	0.7	(65)	65	(85)	85	63	77	63	1	
QMM-3015S	QMM-3015T	15	0.7	1.8	1.0	(65)	110	(85)	130	63	77	63		
QMM-3020S	QMM-3020T	20	0.9	2.4	1.4	(65)	110	(85)	130	63	77	63		
QMM-3025S	QMM-3025T	25	1.1	3.0	1.7	(110)	110	(130)	130	63	77	63		
QMM-3030S	QMM-3030T	30	1.4	3.6	2.1	(110)	110	(130)	130	63	77	63		
QMM-3040S	QMM-3040T	40	1.8	4.8	2.8	(110)	110	(130)	130	63	77	63		
QMM-3050S	QMM-3050T	50	2.3	6.0	3.4	(110)	135	(130)	155	63	77	63		
SMS-3075ST		75	3.4	9.0	5.2	105		125		170	190	60		2
SMS-3100ST		100	4.5	11.9	6.9	105		125		170	190	60		
SMS-3150ST		150	6.8	17.9	10.3	130		150		170	190	60		
SMS-3200ST		200	9.1	23.9	13.8	155		175		170	190	60		
SMS-3250ST		250	11.3	29.8	17.2	175		195		170	190	60		
SMS-3300ST		300	13.6	35.8	20.7	205		225		170	190	60		
SMS-3400ST		400	18.1	47.8	27.6	255		275		170	190	60		
SMB-3500S	SMB-3500T	500	22.7	59.7	34.5	180		245		200	170	120	3(M12)	
SMS-35010KST		220.4	10	26.3	15.2	155		175		170	190	60	2	
SMS-35015KST		330.7	15	39.5	22.8	205		225		170	190	60		
SMB-35020KS	SMB-35020KT	440.9	20	52.6	30.4	170		235		200	170	120	3(M12)	
SMB-35025KS	SMB-35025KT	551.1	25	65.8	38.0	180		245		200	170	120		
SMB-35030KS	SMB-35030KT	661.3	30	78.9	45.6	220		285		200	170	120		
SMB-35040KS	SMB-35040KT	881.7	40	105.3	60.8	280		345		200	170	120		
SMB-35050KS	SMB-35050KT	1102.2	50	131.6	76.0	340		405		200	170	120		
SMB-35075KS	SMB-35075KT	1653.3	75	197.4	114.0	300		375		343	409	153		
SMF-35100KS	SMF-35100KT	2204.4	100	263.2	151.9	320		395		343	409	153	4(M12)	
SMF-35150KS	SMF-35150KT	3306.5	150	394.7	227.9	440		515		343	409	153		

### > 400V 50Hz Single Phase, Three Phase Capacitor

#### • Ratings and Dimensions

Type		Capacity		Current [A]		Dimension [mm]						Figure		
Single Phase	Three Phase	[μF]	[kvar]	Single Phase	Three Phase	A		B		W	F		D	
						Single Phase	Three Phase	Single Phase	Three Phase					
QMM-4010S	QMM-4010T	10	0.5	1.3	0.7	(65)	110	(85)	130	63	77	63	1	
QMM-4015S	QMM-4015T	15	0.8	1.9	1.1	(65)	110	(85)	130	63	77	63		
QMM-4020S	QMM-4020T	20	1.0	2.5	1.5	(110)	110	(130)	130	63	77	63		
QMM-4025S	QMM-4025T	25	1.3	3.1	1.8	(110)	135	(130)	155	63	77	63		
QMM-4030S	QMM-4030T	30	1.5	3.8	2.2	(110)	135	(130)	155	63	77	63		
QMM-4040S	QMM-4040T	40	2.0	5.0	2.9	(110)	135	(130)	155	63	77	63		
SMS-4050ST		50	2.5	6.3	3.6	105		125		63	77	63		2
SMS-4075ST		75	3.8	9.4	5.4	105		125		170	190	60		
SMS-4100ST		100	5.0	12.6	7.3	130		150		170	190	60		
SMS-4150ST		150	7.5	18.8	10.9	155		175		170	190	60		
SMS-4200ST		200	10.1	25.1	14.5	175		195		170	190	60		
SMS-4250ST		250	12.6	31.4	18.1	205		225		170	190	60		
SMS-4300ST		300	15.1	37.7	21.8	255		275		170	190	60		
SMB-4400S	SMB-4400T	400	20.1	50.3	29.0	180		245		200	170	120	3(M12)	
SMB-4500S	SMB-4500T	500	25.1	62.8	36.3	220		285		200	170	120		
SMS-45010KST		198.9	10	25.0	14.4	155		175		170	190	60	2	
SMS-45015KST		298.4	15	37.5	21.7	205		225		170	190	60		
SMB-45020KS	SMB-45020KT	397.9	20	50.0	28.9	180		245		200	170	120	3(M12)	
SMB-45025KS	SMB-45025KT	497.4	25	62.5	36.1	220		285		200	170	120		
SMB-45030KS	SMB-45030KT	596.8	30	75.0	43.3	240		305		200	170	120		
SMB-45040KS	SMB-45040KT	795.8	40	100.0	57.7	300		365		200	170	120		
SMB-45050KS	SMB-45050KT	994.7	50	125.0	72.2	360		425		200	170	120		
SMB-45075KS	SMB-45075KT	1492.1	75	187.5	108.3	320		395		343	409	153		
SMF-45100KS	SMF-45100KT	1989.4	100	250.0	144.3	340		415		343	409	153	4(M12)	
SMF-45150KS	SMF-45150KT	2984.2	150	375.0	216.5	480		555		343	409	153		

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



## 1-2 Low Voltage Power Capacitor

### > 415V 50Hz Single Phase, Three Phase Capacitor

#### • Ratings and Dimensions

Type		Capacity		Current [A]		Dimension [mm]						Figure		
Single Phase	Three Phase	[μF]	[kvar]	Single Phase	Three Phase	A		B		W	F		D	
						Single Phase	Three Phase	Single Phase	Three Phase					
QMM-4010S	QMM-4010T	10	0.5	1.3	0.8	(65)	110	(85)	130	63	77	63	1	
QMM-4015S	QMM-4015T	15	0.8	2.0	1.1	(65)	110	(85)	130	63	77	63		
QMM-4020S	QMM-4020T	20	1.1	2.6	1.5	(110)	110	(130)	130	63	77	63		
QMM-4025S	QMM-4025T	25	1.4	3.3	1.9	(110)	135	(130)	155	63	77	63		
QMM-4030S	QMM-4030T	30	1.6	3.9	2.3	(110)	135	(130)	155	63	77	63		
QMM-4040S	QMM-4040T	40	2.2	5.2	3.0	(110)	135	(130)	155	63	77	63		
SMS-4050ST		50	2.7	6.5	3.8		105		125	170	190	60	2	
SMS-4075ST		75	4.1	9.8	5.6		105		125	170	190	60		
SMS-4100ST		100	5.4	13.0	7.5		130		150	170	190	60		
SMS-4150ST		150	8.1	19.6	11.3		155		175	170	190	60		
SMS-4200ST		200	10.8	26.1	15.1		175		195	170	190	60		
SMS-4250ST		250	13.5	32.6	18.8		205		225	170	190	60		
SMS-4300ST		300	16.2	39.1	22.6		255		275	170	190	60	3(M12)	
SMB-4400S	SMB-4400T	400	21.6	52.2	30.1		180		245	200	170	120		
SMB-4500S	SMB-4500T	500	27.1	65.2	37.6		220		285	200	170	120		
SMS-45010KST		184.8	10	24.1	13.9		205		225	170	190	60		2
SMS-45015KST		277.2	15	36.1	20.9		255		275	170	190	60		
SMB-45020KS	SMB-45020KT	369.6	20	48.2	27.8		180		245	200	170	120		3(M12)
SMB-45025KS	SMB-45025KT	462.1	25	60.2	34.8		220		285	200	170	120		
SMB-45030KS	SMB-45030KT	554.5	30	72.3	41.7		240		305	200	170	120		
SMB-45040KS	SMB-45040KT	739.3	40	96.4	55.6		280		345	200	170	120		
SMB-45050KS	SMB-45050KT	924.1	50	120.5	69.6		340		405	200	170	120		
SMB-45075KS	SMB-45075KT	1386.2	75	180.7	104.3		320		295	343	409	153		
SMF-45100KS	SMF-45100KT	1848.2	100	241.0	139.1		360		435	343	409	153	4(M12)	
SMF-45150KS	SMF-45150KT	2772.3	150	361.4	208.7		480		555	343	496	153		

### > 440V 50Hz Single Phase, Three Phase Capacitor

#### • Ratings and Dimensions

Type		Capacity		Current [A]		Dimension [mm]						Figure		
Single Phase	Three Phase	[μF]	[kvar]	Single Phase	Three Phase	A		B		W	F		D	
						Single Phase	Three Phase	Single Phase	Three Phase					
QMM-4010S	QMM-4010T	10	0.6	1.4	0.8	(65)	110	(85)	130	63	77	63	1	
QMM-4015S	QMM-4015T	15	0.9	2.1	1.2	(65)	110	(85)	130	63	77	63		
QMM-4020S	QMM-4020T	20	1.2	2.8	1.6	(110)	110	(130)	130	63	77	63		
QMM-4025S	QMM-4025T	25	1.5	3.5	2.0	(110)	135	(130)	155	63	77	63		
QMM-4030S	QMM-4030T	30	1.8	4.1	2.4	(110)	135	(130)	155	63	77	63		
QMM-4040S	QMM-4040T	40	2.4	5.5	3.2	(110)	135	(130)	155	63	77	63		
SMS-4050ST		50	3.0	6.9	4.0		105		125	170	190	60	2	
SMS-4075ST		75	4.6	10.4	6.0		105		125	170	190	60		
SMS-4100ST		100	6.1	13.8	8.0		130		150	170	190	60		
SMS-4150ST		150	9.1	20.7	12.0		155		175	170	190	60		
SMS-4200ST		200	12.2	27.6	16.0		175		195	170	190	60		
SMS-4250ST		250	15.2	34.6	20.0		205		225	170	190	60		
SMS-4300ST		300	18.2	41.5	23.9		255		275	170	170	60	3(M12)	
SMB-4400S	SMB-4400T	400	24.3	55.3	31.9		180		245	200	170	120		
SMB-4500S	SMB-4500T	500	30.4	69.1	39.9		220		285	200	170	120		
SMS-45010KST		164.4	10	22.7	13.1		205		225	170	190	60		2
SMS-45015KST		246.6	15	34.1	19.7		205		225	170	190	60		
SMB-45020KS	SMB-45020KT	328.8	20	45.5	26.2		160		225	200	190	120		
SMB-45025KS	SMB-45025KT	411.0	25	56.8	32.8		180		245	200	170	120		
SMB-45030KS	SMB-45030KT	493.2	30	68.2	39.4		220		285	200	170	120		
SMB-45040KS	SMB-45040KT	657.7	40	90.9	52.5		280		345	200	170	120		
SMB-45050KS	SMB-45050KT	822.1	50	113.6	65.6		320		385	200	170	120		
SMB-45075KS	SMB-45075KT	1233.1	75	170.5	98.4		280		355	343	409	153		
SMF-45100KS	SMF-45100KT	1644.2	100	227.3	131.2		320		395	343	409	153	4(M12)	
SMF-45150KS	SMF-45150KT	2466.2	150	340.9	196.8		430		505	343	409	153		

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