Customer :

Date of Issue : 29-Nov-05

SPECIFICATION

(for Approval)

Commodity	Low Voltage Power Capacitor
Rating	220V 3Φ 50Hz 10, 15, 20, 25, 30, 35, 40, 50kvar
	400V 3Φ 50Hz 10, 15, 20, 25, 30, 35, 40, 50, 60, 75kvar
	415V 3Φ 50Hz 10, 15, 20, 25, 30, 35, 40, 50, 60, 75kvar
	440V 3Φ 50Hz 10, 15, 20, 25, 30, 35, 40, 50, 60, 75kvar
Spec No.	PM -
DWG No.	KM - 1293-1

Approved	

SAMWHA CAPACITOR CO., LTD.

Prepared	Checked	Approved
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1. Scope

This specification covers the design, manufacture and test of low voltage power capacitor unit intended to be used particular for powr factor correction AC Power System.

2. Type and Ratings

Type	SMS-Series, SMB-Series, SMF-Series									
Rated voltage [V]	220									
Rated capacity [kvar]	10	15	20	25	30	35	40	50	-	-
Rated current [A]	26.2	39.4	52.5	65.6	78.7	91.9	105.0	131.2	-	-
Rated voltage [V]	400									
Rated capacity [kvar]	10	15	20	25	30	35	40	50	60	75
Rated current [A]	14.4	21.7	28.9	36.1	43.3	50.5	57.7	72.2	86.6	108.3
Rated voltage [V]	415									
Rated capacity [kvar]	10	15	20	25	30	35	40	50	60	75
Rated current [A]	13.9	20.9	27.8	34.8	41.7	48.7	55.6	69.6	83.5	104.3
Rated voltage [V]	440									
Rated capacity [kvar]	10	15	20	25	30	35	40	50	60	75
Rated current [A]	13.1	19.7	26.2	32.8	39.4	45.9	52.5	65.6	78.7	98.4
Phase [Φ]	3									
Frequency [Hz]	50									
Impregnation	CAPACITOR Oil (Non PCB)									
Painting color	Munsell 5Y7/1									

3. Service Conditions

Residual voltage at energization	Not to exceed 10% of rated voltage
Altitude	Not exceeding 1,000m
Location	Indoor
Ambient air temperature	Please see following Table

Ambient air temperature [℃]				
Symbol	Maximum	Minimum	Highest mean over any period of	
			24 h	1 year
B	+45	-25	+35	+25

Attention should be paid to the upper operating temperature of the capacitor, because this has a great influence on its life.

When the capacitor dielectric reaches a temperature below the lower limit of its category, there may be the danger of initiating partial discharges in the dielectric when the capacitor is initially energized.

4. Tests and Electrical performances

4-1. Test conditions

Unless otherwise specified for a particular test or measurement, the temperature of the capacitor dielectiric shall be in the range +5 ℃ to +35 ℃.

4-2. Routine tests

a) Capacitance measurement

The capacitance shall be measured at 0.9 to 1.1 times the rated voltage and rated frequency.

The capacitance tolerance : -5% to +10% for unit up to 100kvar

: -5% to +5% for unit above 100kvar

b) Capacitor loss tangent (ta `

The capacitor loss tangent (tan δ) shall be measured at 0.9 to 1.1 times the rated voltage and 0.8 to 1.2 times the rated frequency.

Dielectric loss	less than 0.35 %
Power loss with discharge device	less than 0.50 %

c) Voltage test between terminals

Voltage test between terminals shall be carried out with a voltage of :

U_T = 2.15 U_N

T_T = 10 seconds

where U_T is testing voltage (AC)

U_N is rated voltage of the capacitor.

T_T is testing time.

During the test, nether puncture nor flashover shall occur.

d) AC voltage test between terminals and container

Voltage test between terminals and container shall be carried out with a substantially sinusoidal voltage of :

U_T = 2 x U_N + 2kV or 3 kV (Which is the higher)

T_T = 10 seconds

where U_T is testing voltage.

U_N is rated voltage of the capacitor.

T_T is testing time.

During the test, nether puncture nor flashover shall occur.

e) Test of internal discharge device

The resistance of the internal discharge device shall be checked by a resistance measurement.

The capacitors shall be provided with a means for reducing the residual voltage to 75 volts or less within three(3) minutes after the capacitor is disconnected from the source of supply.

f) Sealing test

Unenergized capacitor units shall be heated throughout so that all parts reach a temperature of at least equal to the maximum operating internal mean temperature, but less than 75℃.

This internal temperature shall be maintained for 2 h.

No leakage shall occur.

5. Overloads

5-1. Maximum permissible voltage

Capacitor units shall be suitable for operation at voltage levels according to table.

Type	Volt factor × U_N (r.m.s)	Maximum Duration
Power Frequency	1.00	Continuous
	1.10	8 h in every 24h
	1.15	30 min in every 24h
	1.20	5 min
	1.30	1 min

5-2. Maximum permissible current

A capacitor unit shall be suitable for continuous operation at an r.m.s current of 1.3 times the current that occurs at rated sinusoidal voltage and rated frequency, excluding transients.

5-3. Maximum permissible reactive power

A capacitor unit shall be suitable for continuous operation at 1.35 Qn.

6. Markings

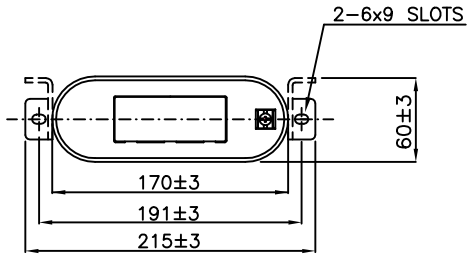
a) Name of manufacturer
b) Identification number and manufacturing year
c) Rated output Q_N in kilovars
d) Rated voltage U_N in volts
e) Rated frequency f_N in hertz
f) Application standard
g) Discharge device
h) Insulation level
i) Chemical or trade name of impregnation

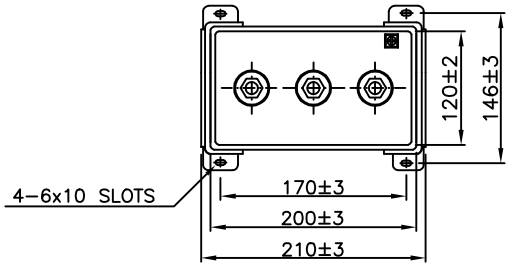
7. Application Standard

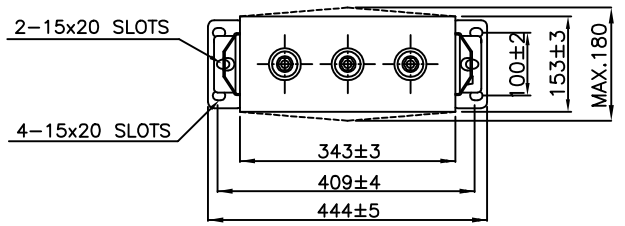
All capacitor furnished under this specification shall meet the design and testing requirement of IEC 60831-1

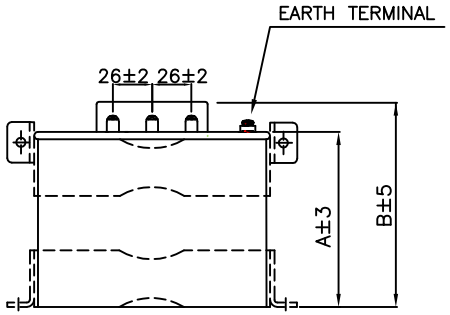
8. Warranty

We, the manufacturers, guarantee the quality and satisfactory operating when operated and maintained properly of the equipment supplied by us under this specification for the period of one year following the date of delivery The guarantee shall be restricted to any damage on the equipment arising out of faulty materials or bad design or poor workmanship under proper use of equipment but not otherwise

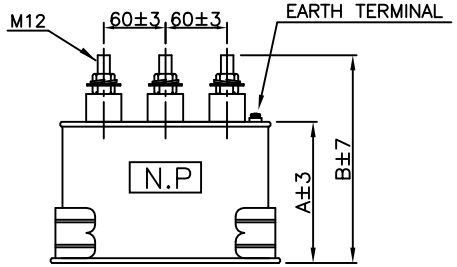




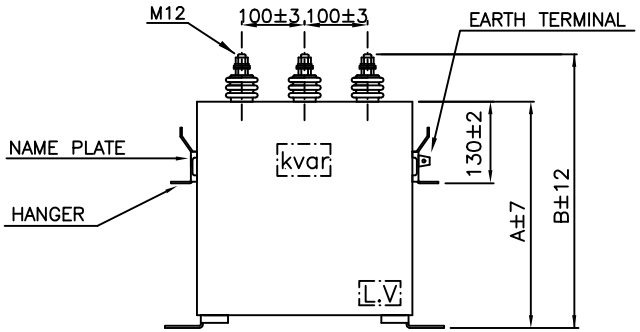




(FIG. 1)

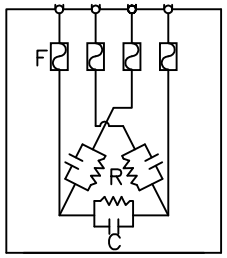


(FIG. 2)

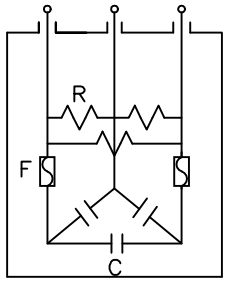


(FIG. 3)

INNER CONNECTION



(FIG. 1)



(FIG. 2, 3)

R : RESISTOR
C : CAPACITOR
F : SAFETY DEVICE

220V (-25°C~+45°C)		[mm]		[kg]	FIG.
Type	kvar	A	B		
SMS-25010KT	10	255	275	2.4	1
SMS-25015KT	15	180	245	5.8	2
SMB-25020KT	20	220	285	6.7	2
SMB-25025KT	25	280	345	8.1	2
SMB-25030KT	30	300	365	8.6	2
SMB-25035KT	35	340	405	9.6	2
SMB-25040KT	40	380	445	10.6	2
SMF-25050KT	50	280	355	22.9	3

400V (-25°C~+45°C)		[mm]		[kg]	FIG.
Type	kvar	A	B		
SMS-45010KT	10	155	175	1.6	1
SMS-45015KT	15	205	225	2.4	1
SMB-45020KT	20	180	245	5.8	2
SMB-45025KT	25	220	285	6.7	2
SMB-45030KT	30	240	305	7.2	2
SMB-45035KT	35	280	345	8.2	2
SMB-45040KT	40	300	365	8.7	2
SMB-45050KT	50	360	425	10.1	2
SMB-45060KT	60	400	465	11.2	2
SMF-45075KT	75	320	415	25.7	3

415V (-25°C~+45°C)		[mm]		[kg]	FIG.
Type	kvar	A	B		
SMS-45010KT	10	205	225	2.1	1
SMS-45015KT	15	255	275	2.5	1
SMB-45020KT	20	180	245	5.8	2
SMB-45025KT	25	220	285	6.7	2
SMB-45030KT	30	240	305	7.2	2
SMB-45035KT	35	260	325	7.7	2
SMB-45040KT	40	280	345	8.2	2
SMB-45050KT	50	340	405	9.6	2
SMB-45060KT	60	400	465	11.2	2
SMF-45075KT	75	320	395	26.0	3

440V (-25°C~+45°C)		[mm]		[kg]	FIG.
Type	kvar	A	B		
SMS-45010KT	10	205	225	2.1	1
SMS-45015KT	15	205	225	2.2	1
SMB-45020KT	20	160	225	5.4	2
SMB-45025KT	25	180	245	5.8	2
SMB-45030KT	30	220	285	6.7	2
SMB-45035KT	35	240	305	7.2	2
SMB-45040KT	40	280	345	8.1	2
SMB-45050KT	50	320	385	9.1	2
SMB-45060KT	60	380	445	10.5	2
SMF-45075KT	75	280	355	23.0	3

NAME OF PART	LOW VOLTAGE POWER CAPACITOR (220V, 400V, 415V, 440V 3ø 50Hz)			SCALE	N/S	DIM	mm
				DATE	NOV. 29. 2005		
DESIGN	CHECKED	APPROVED	PROJECT NO	SPEC No.	PM-		
Y.K.KIM		S.S.CHO	ITEM NO	DRAW No.	KM-1293-1		

SAMWHA CAPACITOR CO.,LTD.

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