

Customer : MIKROCAP SDN.BHD (MALAYSIA)

Date of Issue :

9 Jan 14

L-09-10-160(Rev.11)

# SPECIFICATION

## *(for Approval)*

Commodity	Low Voltage Power Capacitor (DRY-TYPE)
Rating	440VAC 3P 50Hz
Ambient air temperature	55 °C (Symbol : D)
Part NO.	MKC-SERIES

Approved	

Prepared	Checked	Approved

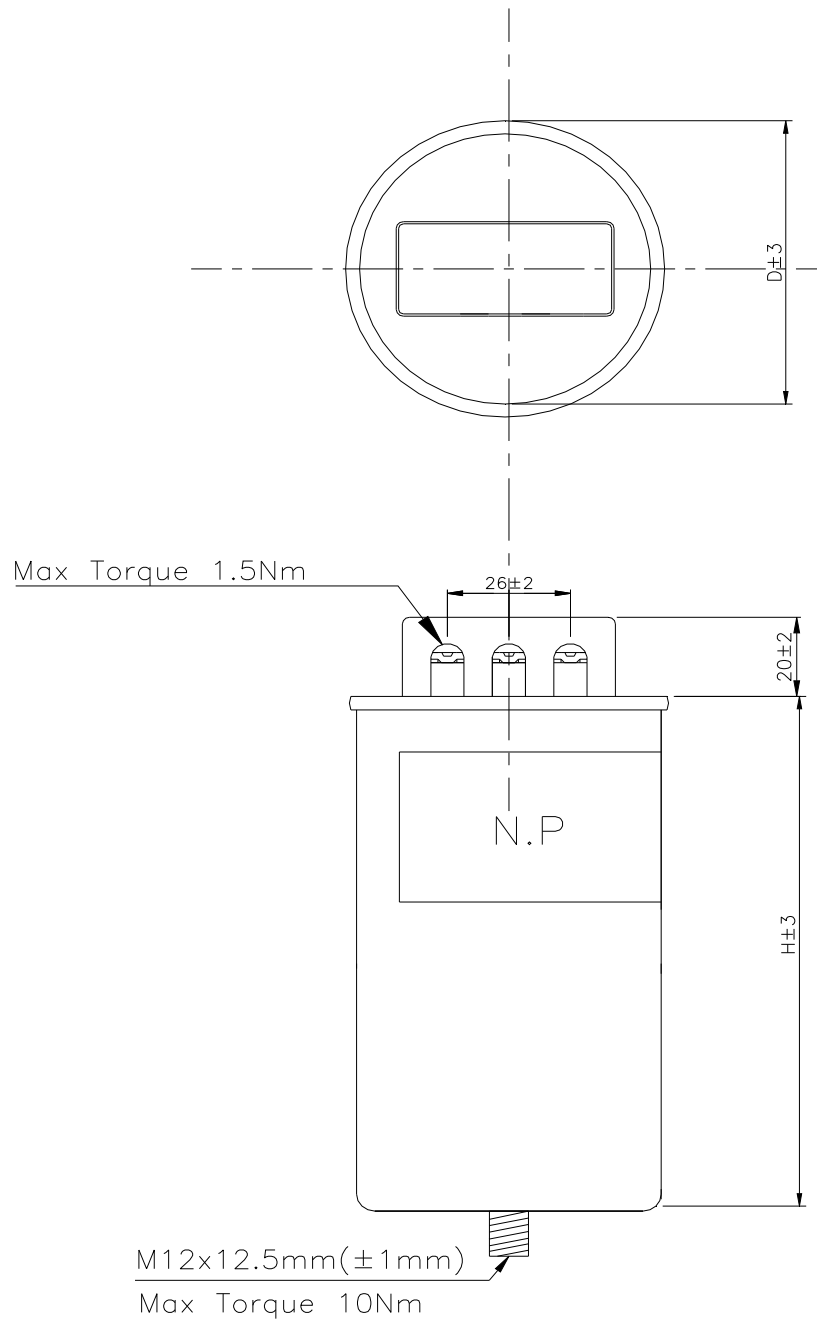
SPECIFICATION	CAPACITOR UNIT	1 / 10																																															
<div>1. Scope</div> <p>This specification covers the design, manufacture and test of low voltage power capacitor unit intended to be used particular for power factor correction AC Power System.</p> <div>2. Type and Ratings</div> <table><tr><td>Type</td><td>MKC-SERIES</td></tr><tr><td>Rated voltage [V]</td><td>440</td></tr><tr><td>Rated capacity [kvar]</td><td>SEE DRAWING</td></tr><tr><td>Phase [Φ]</td><td>3</td></tr><tr><td>Frequency [Hz]</td><td>50</td></tr><tr><td>Installation</td><td>INDOOR</td></tr><tr><td>Impregnation</td><td>EPOXY</td></tr></table> <div>3. Service Conditions</div> <table><tr><td>Residual voltage at energization</td><td colspan="3">Not to exceed 10% of rated voltage</td></tr><tr><td>Altitude</td><td colspan="3">Not exceeding 1,000m</td></tr><tr><td>Location</td><td colspan="3">Indoor</td></tr><tr><td>Ambient air temperature</td><td colspan="3">Please see following Table</td></tr></table> <table><tr><th rowspan="3">Symbol</th><th colspan="4">Ambient air temperature [°C]</th></tr><tr><th rowspan="2">Maximum</th><th rowspan="2">Minimum</th><th colspan="2">Highest mean over any period of</th></tr><tr><th>24 h</th><th>1 year</th></tr><tr><td>D</td><td>+55</td><td>-25</td><td>+45</td><td>+35</td></tr></table> <p>Attention should be paid to the upper operating temperature of the capacitor, because this has a great influence on its life.</p> <p>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.</p>				Type	MKC-SERIES	Rated voltage [V]	440	Rated capacity [kvar]	SEE DRAWING	Phase [Φ]	3	Frequency [Hz]	50	Installation	INDOOR	Impregnation	EPOXY	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			Symbol	Ambient air temperature [°C]				Maximum	Minimum	Highest mean over any period of		24 h	1 year	D	+55	-25	+45	+35
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<b>4. Tests and Electrical performances</b>		
4-1. Test conditions		
Unless otherwise specified for a particular test or measurement, the temperature of the capacitor dielectric shall be in the range +5 °C to +35 °C.		
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% of rated capacity.		
b) Capacitor loss tangent (tan δ) measurement		
The capacitor loss tangent (tan δ) shall be measured at 0.9 to 1.1 times the rated voltage and rated frequency.		
Dielectric loss	less than 0.35 W/kvar	
Power loss with discharge device	less than 1.0 W/kvar	
c) Voltage test between terminals		
Voltage test between terminals shall be carried out with a voltage of :		
$U_T = 2.15 U_N$		
$T_T = 10 \text{ seconds}$		
where		
$U_T$ is testing voltage (AC)		
$U_N$ is rated voltage of the capacitor.		
$T_T$ is testing time.		
During the test, neither 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 :		
$U_T = 3 \text{ kV}$		
$T_T = 10 \text{ seconds}$		
where		
$U_T$ is testing voltage.		
$T_T$ is testing time.		
During the test, neither puncture nor flashover shall occur.		

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<p>e) Test of internal discharge device</p> <p>The resistance of the internal discharge device shall be checked by a resistance measurement.</p> <p>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.</p> <p>f) Sealing test</p> <p>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 65°C. This internal temperature shall be maintained for 3 h.</p> <p>No leakage shall occur.</p> <p><b>5. Overloads</b></p> <p>5-1. Maximum permissible voltage</p> <p>Capacitor units shall be suitable for operation at voltage levels according to table.</p> <table border="1"> <tr> <th>Type</th><th>Volt factor ×Un(r.m.s)</th><th>Maximum Duration</th></tr> <tr> <td rowspan="5">Power Frequency</td><td>1.00</td><td>Continuous</td></tr> <tr> <td>1.10</td><td>8 h in every 24h</td></tr> <tr> <td>1.15</td><td>30 min in every 24h</td></tr> <tr> <td>1.20</td><td>5 min</td></tr> <tr> <td>1.30</td><td>1 min</td></tr> </table> <p>5-2. Maximum permissible current</p> <p>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.</p> <p>5-3. Maximum permissible reactive power</p> <p>A capacitor unit shall be suitable for continuous operation at 1.35 Qn.</p>			Type	Volt factor ×Un(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
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<p><b>6. Markings</b></p> <ul style="list-style-type: none"> <li>a) Name of manufacturer</li> <li>b) Identification number and manufacturing year</li> <li>c) Rated output <math>Q_N</math> in kilovars</li> <li>d) Rated voltage <math>U_N</math> in volts</li> <li>e) Rated frequency <math>f_N</math> in hertz</li> <li>f) Application standard</li> <li>g) Discharge device</li> <li>h) Insulation level</li> <li>i) Chemical or trade name of impregnation</li> </ul> <p><b>7. Application Standard</b></p> <p>All capacitor furnished under this specification shall meet the design and testing requirement of IEC 60831-1</p> <p><b>8. Warranty</b></p> <p>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 two years following the delivery date</p> <p>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</p>		

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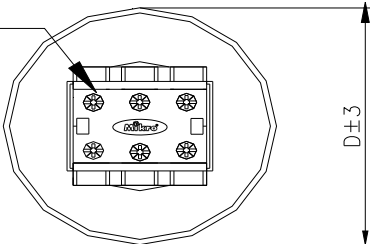
NO	MIKROP/N	MODEL	D (mm)	H (mm)	STUD SIZE	REMARK
1	MKC-445025KT	440VAC 3P 50Hz 2.5kvar	63	135	M12	
2	MKC-445050KT	440VAC 3P 50Hz 5.0kvar	63	165	M12	

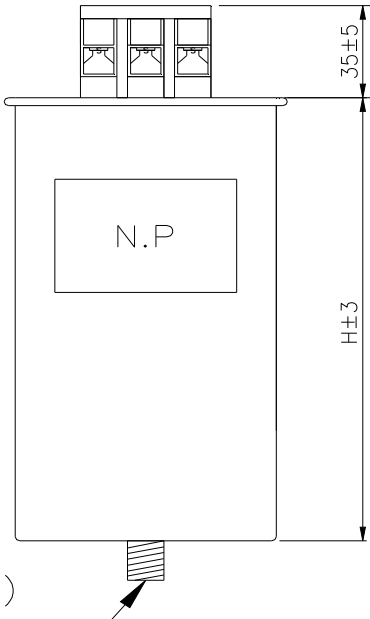
SPECIFICATION

CAPACITOR UNIT

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Max Torque 2.5Nm

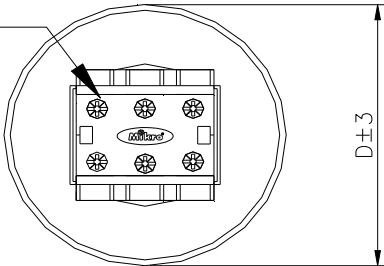
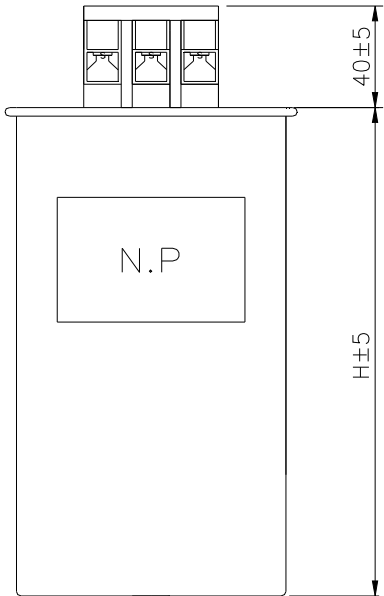




M12X16mm(±1mm)

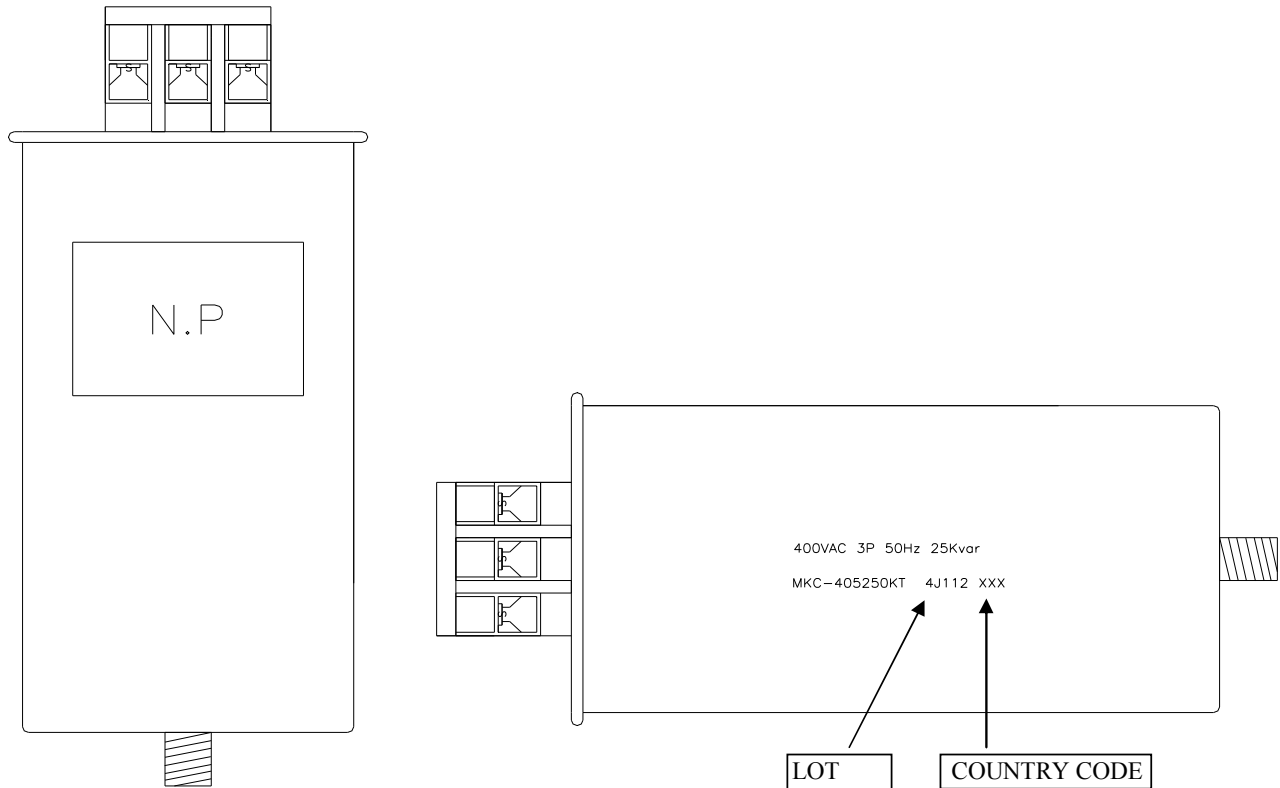
MAX Torque 10Nm

NO	MIKROP/N	MODEL	D (mm)	H (mm)	STUD SIZE	REMARK
1	MKC-445075KT	440VAC 3P 50Hz 7.5kvar	86	170	M12	
2	MKC-445100KT	440VAC 3P 50Hz 10.0kvar	86	170	M12	
3	MKC-445125KT	440VAC 3P 50Hz 12.5kvar	86	230	M12	
4	MKC-445150KT	440VAC 3P 50Hz 15.0kvar	86	230	M12	
5	MKC-445200KT	440VAC 3P 50Hz 20.0kvar	86	275	M12	
7	MKC-445250KT(A)	440VAC 3P 50Hz 25.0kvar	96	275	M12	
8	MKC-445250KT(B)	440VAC 3P 50Hz 25.0kvar	86	350	M12	
9	MKC-445300KT(A)	440VAC 3P 50Hz 30.0kvar	116	275	M12	
10	MKC-445300KT(B)	440VAC 3P 50Hz 30.0kvar	96	350	M16	M16x25mm(±1mm)

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<div><div>Max Torque 2.5Nm</div><div></div></div> <div><div></div><div>M12X16mm(±1mm) MAX Torque 10Nm</div></div>						
NO	MIKROP/N	MODEL	D (mm)	H (mm)	STUD SIZE	REMARK
1	MKC-445400KT	440VAC 3P 50Hz 40.0kvar	136	305	M12	
2	MKC-445500KT	440VAC 3P 50Hz 50.0kvar	136	305	M12	



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## POWER CAPACITOR


SH IEC-60831:1996 NO PCB'S



Mikrocap Sdn.Bhd.Malaysia  
Tel : 603-5192 7155 Fax: 603-5192 7166  
[www.itmikro.com](http://www.itmikro.com)

### WARNING

1. A well-ventilated and dry place for installation.
  2. Surrounding temperature maintains less than the average 35 degree for 24hours (the average 25 degree for a year).
  3. Must be provided ventilator for forced air cooling when installing in the cubicle.
  4. Please keep the distance more than 60mm when multiple unit capacitor installs at a certain place.
  5. Must be used the permissible wire which endures more than 1.5times of rated current.
  6. Please check a complete electric discharge before reswitching. (don't reswitch within 3 minutes).
  7. Please check out a line connection to prevent from a loose.
  8. When capacitors are connected by parallel, please make a room of cable length to protect a bushing from heat expansion and contraction. (don't connect with a copper bus bar).
  9. Please fix a screw carefully.
  10. Please install a exclusive breaker for capacitor.
- We don't have any responsibility for problems casued by your ignorance of above rules.

SPECIFICATION	CAPACITOR UNIT	10 / 10
<div style="border: 1px solid black; width: 180px; height: 315px; margin: 0 auto; position: relative;"><div style="border: 1px solid black; width: 100px; height: 85px; position: absolute; top: 50px; left: 50px; text-align: center;">STICKER ON BOX</div></div>		
 <b>Mikro<sup>®</sup></b> <b>POWER CAPACITOR</b>		
<u>Voltage</u>		<u>VAC</u>
<u>Cap.</u>		<u>kvar</u>
		<u>uF</u>
<u>Phase</u>		<u>Ø</u>
<u>Freq.</u>		<u>Hz</u>
<b>Mikrocap Sdn. Bhd. Malaysia</b> Tel : 603-5192 7155 Fax: 603-5192 7166 <a href="http://www.itmikro.com">www.itmikro.com</a>		