2011
REV 01

POWER ELECTRONICS CAPACITORS

LNK SERIES

Self healing metallized polypropylene film capacitors for DC link application

Certificato UNI EN ISO 9001:2008

technology looking ahead

1. COMPANY PROFILE

OUR MISSION:
"Develop and supply high-quality capacitors, providing all the customers with full assistance from the design through the delivery.
We will take care to any particular needs that the customer may have."

Established in 1946, ICAR has rapidly reached, and since then maintained, a leadership position in the research and development of new capacitors and components of which capacitors are key parts.
In the early 60's, first in the world, ICAR started the production of metallized polypropylene film capacitors, by developing the film metallization by its own.
ICAR group nowadays controls all the manufacturing phases of the capacitor: from the polypropylene film extrusion through its metallization, to the production of the finished capacitor. The know-how accrued in almost 50 years of metallized film production, has enabled ICAR to bring to the market innovative products.
Today ICAR Group is a leader in the production of capacitors, both for power electronics applications and for low and medium voltage power factor correction.

ICAR Group toady offers a wide range of products, all manufactured at its 6 plants located in Europe, that includes:

- power electronics and special capacitors
- lighting capacitors
- motor run capacitors
- Power Factor Correction capacitors and Systems
- L.V. and M.V. voltage stabilizers
- transformers and chokes

2. ICAR GROUP PRODUCT RANGE

POWER ELECTRONICS AND SPECIAL CAPACITORS

Polypropylene film capacitors for:
- DC link input filter both for industrial and traction inverters (LNK series and BIOENERGY D series)
- AC filter for inverters and UPS (MKV, MKP series)
- snubber capacitors for semiconductors (THY and MKV series)
- all purpose AC and DC capacitors (MKV, MKP and BIOENERGY A series)
- medium frequency furnaces (BIOFURN Series) and medical application
- special capacitors for energy storage

M.V. PFC CAPACITORS AND BANKS

Wide range of M.V. power capacitors, with powers from 50 to 800 kvar, available in single and three phase versions, up to 24 kV rated voltage.
Capacitor banks up to 150 kV both for indoor and outdoor installation can be supplied on customer need.

LIGHTING CAPACITORS

ICAR series of lighting capacitors are suitable for parallel and series power factor correction applications in both fluorescent and discharge light fittings.
Moreover Plastic Case Type A and Metal Case Type B capacitors can be equipped with a wide range of fixing devices and terminals options.
ENEC and UL approvals certify that ICAR lighting capacitors are in compliance with the latest standards and assures customers of an ICAR product with high levels of quality and reliability.

MOTOR RUN CAPACITORS

ICAR motor run capacitor product range is one of the largest on the market.
The polypropylene film capacitors are available for different levels of voltage from 250V up to 500V with long life ratings up to 30.000 hours.
The variety of terminations and fixings shown in our catalogue gives the possibility to use these capacitors in any kind of application. The special design of ICAR capacitors distinguishes these components both for their quality and for their reliability.
IMQ, VDE and UL approvals guarantee the ICAR motor capacitor range meets with international standards.

POWER CAPACITORS AND PFC CONTROLLERS

Aluminium can three phase capacitors of the CRT range are available for voltages from 230V to 800V and reactive powers ranging from 1 to 40 kvar.
Power Factor Correction Controllers of 5 to 12 steps, enjoys features like incorporated temperature sensors and control, alarms and protection functions.

PFC SISTEMS AND HARMONIC FILTERS

Range is complete of fix and automatic LV power factor correction systems, standard and detuned, active and passive harmonic absorption filters.
All of automatic systems have undergone type tests at International Laboratories

VOLTAGE STABILISERS

Electrodynamics and static voltage stabilisers, single-phase and three-phase, LV and MV from 1 up to 4000kVA with microprocessor control system. Electrodynamics line conditioners, single-phase and three-phase, LV and MV from 1 up to 2000kVA with microprocessor control system.

TRANSFORMERS AND CHOKES

Single-phase and three-phase MV and LV Electric Transformers for galvanic insulation, UPS and rectifiers.
Epoxy resin MV Transformers for distribution and rectifiers.
Single-phase and Three-phase MV and LV reactors and chokes for power correction system and AC/DC filters.

3. QUALITY POLICY

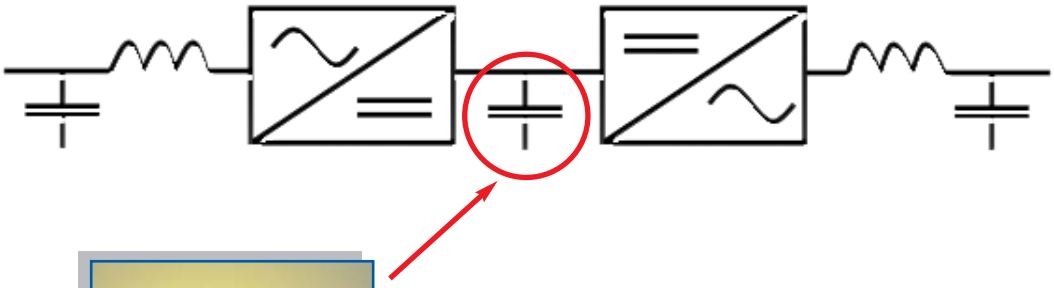
ICAR, a synonym for capacitor since 1946, has always considered the quality and the effectiveness of its internal processes as a key-factor in the company strategy.
The compliance with International Standards have always been kept as a fundamental reference for offering products and processes which completely match customers' requirements and expectations.
ICAR Quality System is certified according to EN ISO 9001:2008 standard.


CSQ
IQNet
CERTIFICATO N. 9170.ICAR
CERTIFICATE N.
ICAR SPA
CORSO MAGENTA 85 - 20123 MILANO (MI)
UNITA' OPERATIVE
OPERATIVE UNITS
VIA ISONZO 10 - 20052 MONZA (MB)
ICAR SPA
VIA NOSEA 1/5 - 24030 VILLA D'ADDA (BG)
S' CONFORME ALLA NORMA
IS IN COMPLIANCE WITH THE STANDARD
ISO 9001:2008
PER LE SEGUENTI ATTIVITA'
FOR THE FOLLOWING ACTIVITIES
Progettazione e costruzione di condensatori, sistemi di rifasamento e filtraggio di armoniche per bassa/media/alta tensione, trasformatori di tensione capacitivi, filtri antidisturbo, apparecchiature speciali, film metallizzato
Design and manufacture of capacitors, equipment for power factor correction and harmonic filter for low/medium/high voltage, transformer coupling capacitors, EMI filters, special equipment, metallized film
PRIMA EMISSIONE / FIRST ISSUE 1994-10-05
EMISSIONE CORRENTE / CURRENT ISSUE 2010-06-04
DATA SCADENZA / EXPIRY DATE 2012-05-29
SINCERT
CISQ

ICAR representatives are members of the most important international standard committees, in charge for issuing the reference standards for the capacitor industry.
In order to comply with the international regulations and with the most severe customers acceptance criteria, products are submitted to tests both in the internal laboratories and in the most important internationally recognized laboratories

4. LNK SERIES

THE EFFECTIVE WAY TO REPLACE ELECTROLYTIC CAPACITORS



LNK Series
DC LINK
CAPACITORS

KEY POINTS

- COMPACT DESIGN
- LOW LOSSES
- HIGH RIPPLE CURRENT
- DRY TECHNOLOGY I.E. NO LEAKAGE PROBLEMS
- SELF EXTINGUISHING RESINS AND PLASTICS ACCORDING TO UL94
- RESINS AND PLASTICS IN ACCORDANCE TO UNI CEI 11170-3 “Guidelines for fire protection of railway vehicles: acceptability limits”

ADVANTAGES OF LNK CAPACITORS AGAINST ELECTROLITYC CAPACITORS

A typical industrial converter basically consists of an AC/DC section (to convert the AC voltage of the grid into a DC voltage) and a DC/AC section either at variable frequency (motor drive) or fixed frequency (generators or UPS). These two parts are connected through a DC bus (link circuit) where capacitors are required in order to filter the high frequency components (DC Link Capacitors).

Most important requirements for these capacitors are :

- capability to withstand high currents at frequencies above 1000 Hz
- high energy density (Joule/dm^3)

Electrolytic Capacitors banks are used up to a voltage of 2000V, but their limits are:

- maximum working voltage across each capacitor limited to about 450÷500V
- maximum current, especially at high frequency, limited by the high ESR (Equivalent Series Resistance) typical of this technology

For these reasons, in general, Electrolytic Capacitors have to be connected in series/parallel to form banks able to withstand the voltages and the currents required by the application.

Polypropylene film capacitors are able to overcome these limits and *in most cases they are able to replace favourably electrolytic capacitors* in applications where the voltage is above 500Vdc.

Main advantages of Metallized Film Capacitor are :

- high current per capacitance (A/μF)
- high voltage per element
- high capability to withstand overvoltages up to 2 times the rated voltage
- more than 10 years estimated lifetime in the temperature range -25/+70°C
- easy connections and low equivalent inductance
- non polar dielectric
- no leakage of dangerous or poisonous electrolytes

5. SELECTION RULES AND DEFINITIONS

SELECTION RULES

VOLTAGE

Select a capacitor with surge peak voltage (U_S), rated voltage (U_N) and max ripple voltage (U_{rms}) higher than the operating ones.

Consider that:

- rated DC voltage of the capacitor (U_N) shall be higher than the sum of operating dc voltage + operating ripple peak voltage
- rms ripple voltage shall be lower than 10% of the rated voltage U_N, and it shall not exceed 150Vrms

It is possible, within certain limits, to work above the rated voltage but this reduces the expected life of the capacitor.

CURRENT

Select a capacitor with maximum current I_{max}, higher then the operating I_{RMS}

Consider that:

- a thermal check shall be performed in order to verify that the chosen capacitor does not exceed the max operating temperature at operating I_{RMS}
- the I_{max} has been calculated for a $\vartheta_h - \vartheta_0$ of about 30°C neglecting the dielectric losses (Q tanδ_0) and considering an harmonic spectrum made of different frequency components ending up at the specified maximum working frequency. I_{max} should not be considered totally concentrated at the maximum working frequency.

THERMAL CHECK

Double check the expected working temperature of the capacitor in your application.

Consider that:

- the hot spot temperature can be estimated as follows: $\vartheta_h = R_{th} * P + \vartheta_0$.
- the total dissipated power can be calculated as follows: $P = Q \tan \delta_0 + R_S I^2_{RMS}$

At rated duty and hot spot temperature of 70°C (65°C for LNK-M3 and LNK-P3 series) the expected lifetime is 100.000 hours with a statistical failure rate of 300FIT (97% survival).

WARNING

The thermal check is based on the hypothesis that the heat generated into the capacitor is transmitted to the environment through the case surface. Possible localised overheating (poor connections, hot components in the nearby as other capacitors, operation with high harmonics frequency etc.) would bring the capacitor to a dramatic failure or to a reduction of the expected life. Special tests by means of thermocouples should be performed to be sure that the maximum hot spot temperature is not exceeded even under the most critical ambient circumstances.
Capacitors with thermocouples can be supplied on request.

DEFINITIONS

C_N	Rated Capacitance measured at 20°C.
U_N	Maximum operating peak voltage of either polarity of a non reversing type waveform for which the capacitor has been designed for continuous operation.
U_{rms}	Rated rms ripple voltage = 0.1 x U_N max (max 150 Vrms)
U_S	Surge (not repetitive) peak voltage
U_I	Rated insulation voltage. Rms value of the AC voltage for which the terminal to case insulation has been designed and tested
I_{MAX}	Maximum rms current value for continuous operation
Clearance	shortest distance in air between terminals conducting parts or between terminal and case
Creepage	shortest distance along an insulated surface between terminals conducting parts or between terminal and case
Q	Reactive power = 2π x f x C x U^2_{rms}
f	Frequency of the ripple voltage
R_S	Series resistance representing the sum of all ohmic resistances in the capacitor
ESR	Equivalent Series Resistance defined as ESR = R_S+ tan δ_0 / (2π x f x C)
tan δ_0	Dielectric dissipation factor. It can be considered constant in the normal working frequency range. Typical value for polypropylene is 2 x 10^{-4}
tan δ	Dissipation factor calculated as follows: tan δ_0 + 2π x f x C x R_S.
dv/dt	Maximum slope of the voltage waveform
I_{PK}	Peak current I_{PK} = C dV/dt.
P	Active power (losses) = Q x tan δ_0 + R_S x I^2_{RMS}
R_{th}	Thermal resistance between the hot-spot in the winding and the environment (natural cooling), so that: $P = (\vartheta_h - \vartheta_0) / R_{th}$ In case of forced air cooling the thermal resistance will be reduced of 20%.
ϑ_h	Hottest point in the capacitor winding = R_{th} x P+ϑ_0
ϑ_0	Operating ambient temperature. It is the air temperature measured under steady conditions at 0,1m from the capacitor case and at two-thirds of the height from its base.
T_C	Temperature coefficient of capacitance. The coefficient is equal to –260 ppm/°C
Ln	Expected life at rated voltage U_N and hot-spot temperature of 70°C (65°C for LNK-M3 and LNK-P3 series)
L	Expected life at the actual working conditions
L_S	Self inductance of the capacitor. It is due to the internal connections, terminals, winding characteristics and physical dimensions.
λ	Failure rate (FIT) = 10^9 x failures/component x hour

6. TECHNICAL INFORMATION

Ratings
Capacitance tolerance: ±10%, ±5% on request
Useful life: 100.000 hrs at 70°C hot-spot (65°C hot-spot for LNK-M3 and LNK-P3 series)
Failure rate: 300FIT (97% survival).

Application
Expressly designed for operation with direct voltage

Environmental conditions
Operating temperature
ϑ_{min} =-25°C, ϑ_{max} =+70°C
ϑ_{max} temperature of the hottest point on the case at which the capacitor may operate.
ϑ_{min} minimum operating ambient temperature at which the capacitor may operate;

Storage temperature
ϑ_{min} =-40°C, ϑ_{max} =+85°C
ϑ_{max} maximum ambient temperature at which the capacitor may be continuously maintained non-operating;
ϑ_{min} minimum ambient temperature at which the capacitor may be continuously maintained non-operating;

Humidity class
Class F Max relative humidity: 75% annual on average, 95% 30 days per year, condensation not permitted

Design
The capacitor consists of metalized polypropylene windings filled with dry resin.
This technology gives many advantages:
- high DC voltage load capability
- high specific ratio capacitance to volume
- high capability to withstand surge currents
- very good self healig characteristics

Case material and resin
Self extinguishing in accordance to UL 94 V0
Low smoke and toxicity emission in accordance to UNI CEI 11170-3 “GUIDELINES FOR FIRE PROTECTION OF RAILWAY VEHICLES: ACCEPTABILITY LIMITS”

Environmental Compatibility
LNK series do not contain PCB and is manufactured in accordance to RoHS restrictions

Protection against accidental contact
All the capacitors are NOT protected against accidental contact

Discharge
All the capacitors are NOT provided with internal/external discharge device

Type of protection
Unprotected: no presence of overpressure disconnector/detector

Assembly/Cooling
The useful life of a capacitor can be dramatically reduced if exposed to excessive heat. In general, an increase in the ambient temperature of 7°C will halve the expected lifetime. Capacitors must be allowed to cool and should be shielded from external heat sources.
Special tests by means of thermocouples should be conducted to be sure that the maximum hot spot temperature is not exceeded even under the most critical ambient circumstances.
Capacitors shall not be placed near to heat source and a minimum clearance of 20mm between the capacitors shall be maintained.

Overvoltages according to IEC 61071

Overvoltage	Maximum duration
1,1 x U_N	30% of on load duration
1,15 x U_N	30 min / day
1,2 x U_N	5 min / day
1,3 x U_N	1 min /day
1,5 x U_N	30 ms, no more than 1000 times in the lifetime

Mounting position

LNK capacitors shown in this catalogue can operate in any position without restrictions.

Failure criteria

Capacitors are considered failed when one of the following conditions happens:
a - short circuit;
b - open circuit;
c - capacitance reduction higher than 3% of the initial value;
d - tan δ increase over 3 times the initial value

Please contact ICAR Tech. Dept. in case of doubt.

Routine dielectric tests

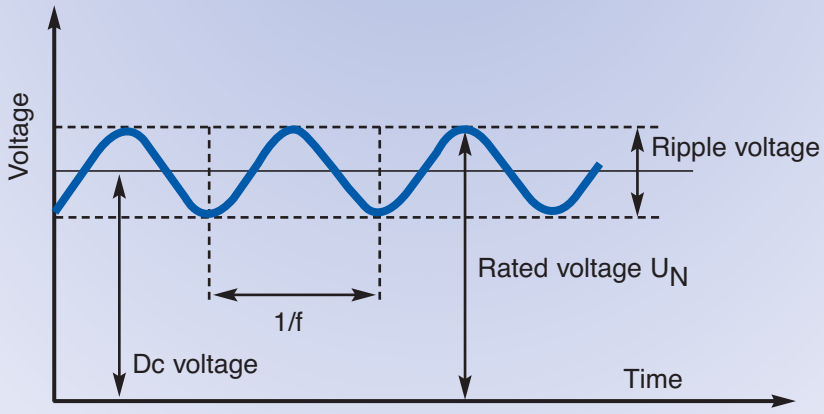
The performed tests before delivery are the following:
a) capacitance and tan δ measurement
b) D.C. voltage test between terminals (1.5 U_N for 10s);
c) A.C. voltage test between terminals and case
1.414 x U_N + 1000V for 10s but not less than 2000 V

Risk of Esplosion and Fire

Capacitors consist mainly of polypropylene film. The film may ignite as a result of internal fault or external overload. Appropriate measures should be ensured to avoid any risk of hazard in the event of failure.
FIRE LOAD: 46MJ/kg, EXTINGUISH WITH: solid extinguish agent, CO2, foam

Reference standard: IEC 61071

GRAPHICAL MEANING OF RATED VOLTAGE U_N AND PEAK TO PEAK RIPPLE VOLTAGE



The maximum allowed rms ripple voltage has to be lower than 10% of the rated voltage U_N (max 150Vrms)

STORAGE AND HANDLING

If properly stored capacitors do not show any shelf life problem. Anyway, we suggest not to keep the capacitors stored for more than 6 years.
After 1 years of storage, we recommend before energizing a preliminary measurement of capacitance and dissipation factor.
After storage polypropylene film capacitors do not need to be energized before using (polypropylene film capacitor do not need reforming process as for electrolytic one).
Storage condition to be respected are the following:

- relative humidity: 75% annual on average;
- maximum relative humidity: 95%, 30 days per year;
- condensation: not permitted;
- minimum storage temperature: -40°C;
- maximum storage temperature: +85°C.

Capacitors shall be stored indoors packed.
Do not store capacitors in corrosive atmosphere (as example it is not allowed the presence of chloride and sulphide gas, acid, alkali, salt or equivalent substances).

Move packed capacitors with care, especially when using a fork lift truck. Do not strain connectors

MAINTENANCE

Before any operation, disconnect the capacitor or the bank, wait 5 minutes, short-circuit and earth the terminals. Do not touch any capacitor terminal if not previously short circuited and earthed.
Periodical checks and inspections are required to ensure reliable operations: disregarding the following basic maintenance rules may result in severe operation, bursting and fire.

- Two weeks after installation
  - o current measurement in the capacitors and comparison with the nominal one. In case of difference from the nominal value, check the capacitors and the application where they are installed;
  - o check the tightness of the connection and terminals. This operation is always required before the start up.

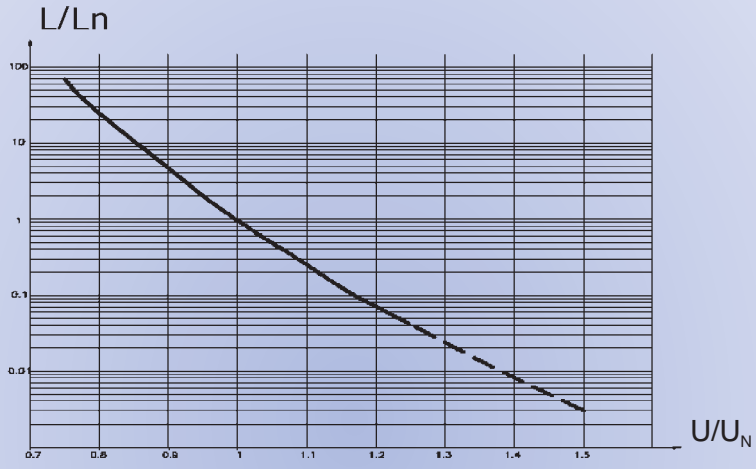
- Periodically* (at least every year)
  - o visual inspection in order to check mechanical deformation;
  - o clean the bushings and terminal boards to avoid short circuit due to dust or contaminants;
  - o check the temperature in the cabinet where the capacitors are installed. An increase of temperature could be an indication of reduced efficiency of the cooling systems due to dust and other contaminants;
  - o current measurement in the capacitors and comparison with the nominal one. In case of difference from the nominal value, check the application where they are installed;
  - o check the surface temperature of energized capacitors. In case of excessive temperature is recommended to replace the capacitor. This could be due to an increase of loss angle which is an indication of reached end of life;
  - o check the tightness of the connection and terminals;
  - o perform a C and tan δ measurement. In case of capacitance reduction higher than 3% of the initial value or in case of tan δ increase over 3 times the initial value, capacitors shall be replaced;

* maintenance schedule has to be established according to the specific operating conditions (for instance, in a polluted environment cleaning should be more frequent) and to the total safety requirement of the whole equipment where they are installed.

7. OPERATING LIFE

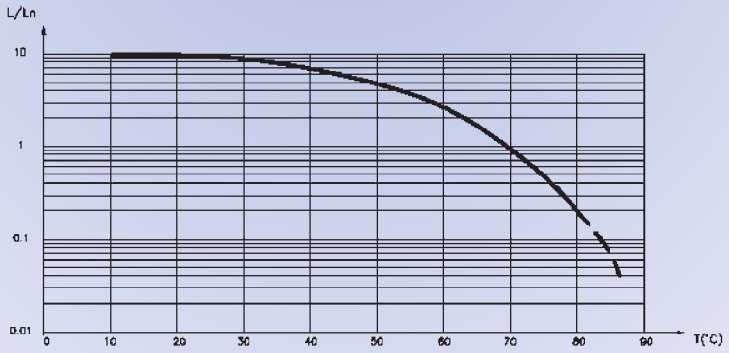
The lifetime of a capacitor depends on the hot spot temperature and on the field strength in its dielectric during operation. The capacitors have been designed for an average probable service life of 100.000hrs at rated duty (voltage, temperature and frequency). During the life of the product the probable failure rate is 300FIT. Failures are considered short circuits, interruptions, capacitance drifts.
Lifetime is a statistical value calculated on the basis of experience and on theoretical evaluations. It does not have an absolute value and it is not possible to transfer automatically data coming from a limited quantity of capacitors to a whole population or even to a single batch of capacitors.
The following diagrams show the correlation between useful life, hot spot temperature and operating voltage. The diagrams should be considered only as a theoretical reference. Please consult our technical department in case of working condition different from the rated ones.

Useful life versus voltage



Ln Expected life at rated voltage U_N
L Expected life at voltage U

Expected life versus hot spot temperature at rated voltage (Not applicable for LNK-M3 series and LNK-P3 series)



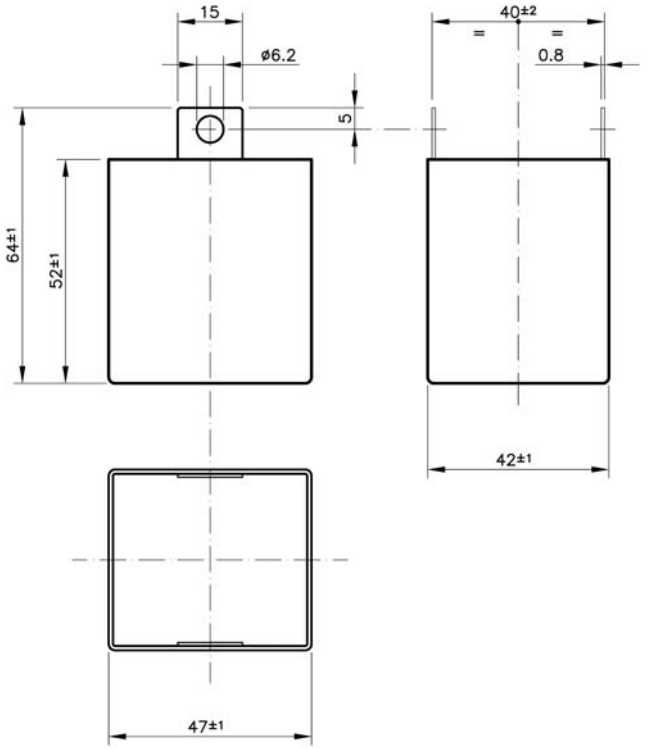
Ln expected life with hot spot temperature of 70°C
L expected life with hot spot temperature T

8. CASE CROSS REFERENCE TABLE

Capacitance C (µF)	Rated DC Voltage Un (V)						
	500 ÷ 1000	1000 ÷ 1500	1500 ÷ 2000	2000 ÷ 2500	2500 ÷ 3000	3000 ÷ 4000	4000 ÷ 5000
0 ÷ 50	LNK-P1X… LNK-P6X…	LNK-P1X… LNK-P2X… LNK-P2Z… LNK-P2L… LNK-P3X… LNK-P6X…	LNK-P1X… LNK-P2X… LNK-P2Z… LNK-P2L… LNK-P3X… LNK-P6X…				LNK-P4X…
50 ÷ 100	LNK-P2X… LNK-P2Z… LNK-P6X…	LNK-P2X… LNK-P2Z… LNK-P2L… LNK-P3X… LNK-P6X…	LNK-M3… LNK-P3X…			LNK-P4X…	LNK-P4X…
100 ÷ 150	LNK-P2X… LNK-P2Z… LNK-P2L… LNK-P3X… LNK-P6X…	LNK-P2L… LNK-P3X…	LNK-M3… LNK-P3X…				
150 ÷ 200	LNK-P2X… LNK-P2Z… LNK-P2L… LNK-P3X… LNK-P6X…	LNK-M3… LNK-P3X…	LNK-M3… LNK-P7X… LNK-P8X…				
200 ÷ 250	LNK-P2L… LNK-P3X…	LNK-M3… LNK-P3X…	LNK-M3… LNK-P7X… LNK-P8X…	LNK-P4X…			
250 ÷ 300	LNK-P3X…	LNK-P3X… LNK-M3… LNK-P7X…	LNK-M3…			LNK-P5X…	
300 ÷ 350		LNK-P3X… LNK-P7X… LNK-P8X… LNK-M3…	LNK-M3… LNK-P4X…			LNK-P5X…	
350 ÷ 400	LNK-M3… LNK-P3X…	LNK-P3X… LNK-M3… LNK-P7X…	LNK-M3… LNK-P4X…			LNK-P5X…	
400 ÷ 450	LNK-P3X… LNK-M3…	LNK-P3X… LNK-M3… LNK-P7X… LNK-P8X…				LNK-P5X…	
450 ÷ 500	LNK-P3X… LNK-M3…	LNK-M3… LNK-P7X…	LNK-M3…		LNK-P5X…		
500 ÷ 600	LNK-P3X… LNK-M3… LNK-P7X…	LNK-M3… LNK-P4X… LNK-P7X… LNK-P8X…	LNK-M3…		LNK-P5X…		
600 ÷ 700	LNK-P3… LNK-M3… LNK-P7X… LNK-P8X…	LNK-M3… LNK-P3X… LNK-P4X… LNK-P7X… LNK-P8X…	LNK-M3…	LNK-P5X…	LNK-P5X…		
700 ÷ 800	LNK-M3… LNK-P3X… LNK-P7X… LNK-P8X…	LNK-M3… LNK-P8X…	LNK-M3…				
800 ÷ 900	LNK-M3… LNK-P3… LNK-P8X…	LNK-M3… LNK-P4X…		LNK-P5X…			
900 ÷ 1000	LNK-M3…	LNK-M3… LNK-P4X…	LNK-P5X…	LNK-P5X…			
1000 ÷ 1500	LNK-M3… LNK-P3X… LNK-P4X… LNK-P7X… LNK-P8X…	LNK-M3…	LNK-P5X…	LNK-P5X…			
1500 ÷ 2000	LNK-M3… LNK-P4X… LNK-P8X…	LNK-M3… LNK-P5X…	LNK-P5X…				
2000 ÷ 4000	LNK-M3… LNK-P4X…	LNK-P5X…					
4000 ÷ 8000	LNK-P5X…	LNK-P5X…					

LNK – P1X - ...

- VERY LOW INDUCTANCE
- SMALL SIZE

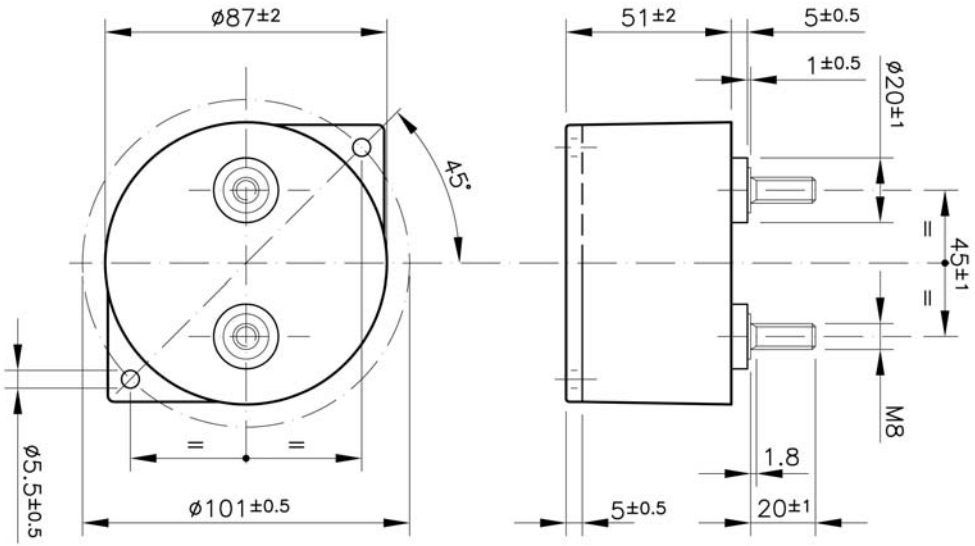


Model	Capacitance	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with natural cooling	Full current Max Working Frequency	Creepage between terminals	Clearance	Weight	Box quantity
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(mm)	(mm)	(kg)	(pcs)
LNK-P1X-45-70	45	700	1400	40	1500	10	1.40	12.8	40	36	36	0.15	49
LNK-P1X-30-90	30	900	1800	35	1300	10	1.70	12.8	40	36	36	0.15	49
LNK-P1X-25-100	25	1000	2000	35	1300	10	1.80	12.8	40	36	36	0.15	49
LNK-P1X-22-110	22	1100	2200	35	1200	10	1.90	12.8	40	36	36	0.15	49
LNK-P1X-16-125	16	1250	2500	25	1000	10	2.28	12.8	40	36	36	0.15	49
LNK-P1X-10-145	10	1450	2900	20	700	10	3.00	12.8	40	36	36	0.15	49
LNK-P1X-7.5-180	7.5	1800	3600	15	700	10	3.25	12.8	40	36	36	0.15	49

- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 3500V x 10 s

LNK – P2X - ...

- HIGH CURRENT
- OPTIMIZED FOR HEATSINK MOUNTING

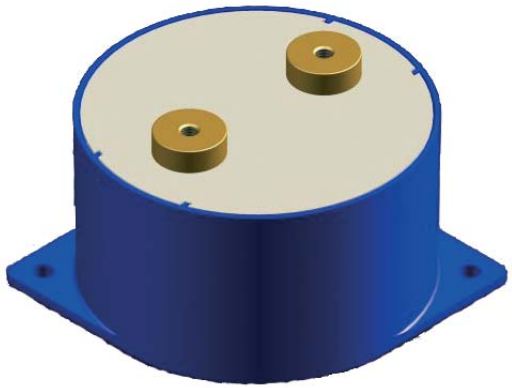


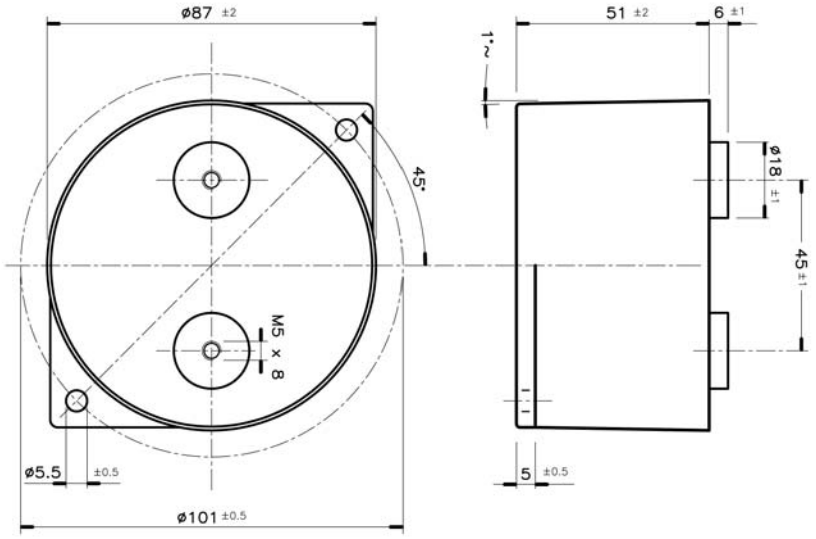
Model	Capacitance	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with natural cooling	Full current Max Working Frequency	Creepage between terminals	Clearance	Tightening Torque	Fixing feet Tightening torque	Weight	Box qty
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(mm)	(mm)	(Nm)	(Nm)	(kg)	(pcs)
LNK-P2X-150-70	150	700	1400	85	5300	<30	0.4	10	10	28	28	10	2	0.45	16
LNK-P2X-100-90	100	900	1800	75	4500	<30	0.55	10	10	28	28	10	2	0.45	16
LNK-P2X-80-100	80	1000	2000	70	4000	<30	0.6	10	10	28	28	10	2	0.45	16
LNK-P2X-70-110	70	1100	2200	70	3800	<30	0.65	10	10	28	28	10	2	0.45	16
LNK-P2X-50-125	50	1250	2500	65	3200	<30	0.75	10	10	28	28	10	2	0.45	16
LNK-P2X-40-145	40	1450	2900	60	2900	<30	0.8	10	10	28	28	10	2	0.45	16
LNK-P2X-25-180	25	1800	3600	55	2300	<30	1	10	10	28	28	10	2	0.45	16

- In order to decrease the thermal resistance, the capacitor should be installed on a heatsink through an heat conductive paste. The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 3500V x 10 s

LNK – P2Z - ...

- HIGH CURRENT
- OPTIMIZED FOR HEATSINK MOUNTING
- FEMALE CONNECTOR



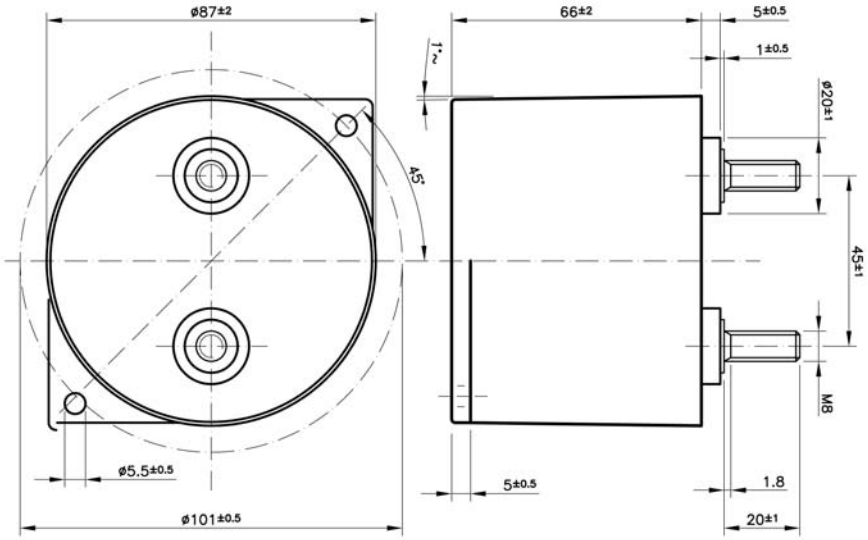


Model	Capacitance	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with natural cooling	Full current Max Working Frequency	Creepage between terminals	Clearance	Tightening Torque	Fixing feet tightening torque	Weight	Box qty
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(mm)	(mm)	(Nm)	(Nm)	(kg)	(pcs)
LNK-P2Z-150-70	150	700	1400	85	5300	<30	0.4	10	10	28	28	10	2	0.45	16
LNK-P2Z-100-90	100	900	1800	75	4500	<30	0.55	10	10	28	28	10	2	0.45	16
LNK-P2Z-80-100	80	1000	2000	70	4000	<30	0.6	10	10	28	28	10	2	0.45	16
LNK-P2Z-70-110	70	1100	2200	70	3800	<30	0.65	10	10	28	28	10	2	0.45	16
LNK-P2Z-50-125	50	1250	2500	65	3200	<30	0.75	10	10	28	28	10	2	0.45	16
LNK-P2Z-40-145	40	1450	2900	60	2900	<30	0.8	10	10	28	28	10	2	0.45	16
LNK-P2Z-25-180	25	1800	3600	55	2300	<30	1	10	10	28	28	10	2	0.45	16

- In order to decrease the thermal resistance, the capacitor should be installed on a heatsink through an heat conductive paste. The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 3500V x 10 s

LNK – P2L - ...

- HIGH CURRENT
- OPTIMIZED FOR HEATSINK MOUNTING

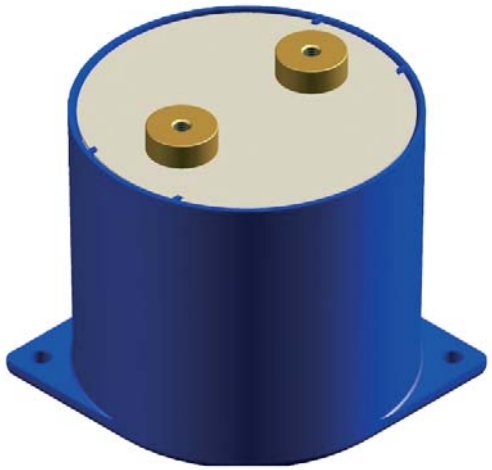


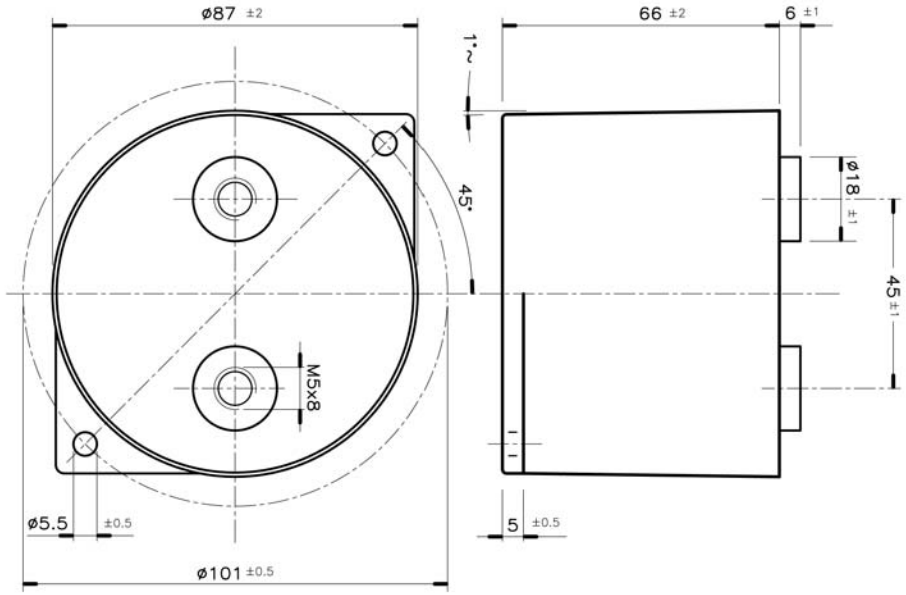
Model	Capacitance	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with natural cooling	Full current Max Working Frequency	Creepage between terminals	Clearance	Tightening Torque	Fixing feet tightening torque	Weight	Box qty
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(mm)	(mm)	(Nm)	(Nm)	(kg)	(pcs)
LNK-P2L-240-70	240	700	1400	60	5600	40	1	8,75	10	28	28	10	2	0,55	16
LNK-P2L-150-90	150	900	1800	55	4400	40	1,1	8,75	10	28	28	10	2	0,55	16
LNK-P2L-100-110	100	1100	2200	50	3600	40	1,3	8,75	10	28	28	10	2	0,55	16
LNK-P2L-75-125	75	1250	2500	45	3100	40	1,5	8,75	10	28	28	10	2	0,55	16
LNK-P2L-50-145	50	1450	2900	45	2400	40	1,6	8,75	10	28	28	10	2	0,55	16
LNK-P2L-35-180	35	1800	3600	40	2100	40	2	8,75	10	28	28	10	2	0,55	16

- In order to decrease the thermal resistance, the capacitor should be installed on a heatsink through an heat conductive paste. The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 3500V x 10 s

LNK – P2T - ...

- HIGH CURRENT
- OPTIMIZED FOR HEATSINK MOUNTING
- FEMALE CONNECTOR



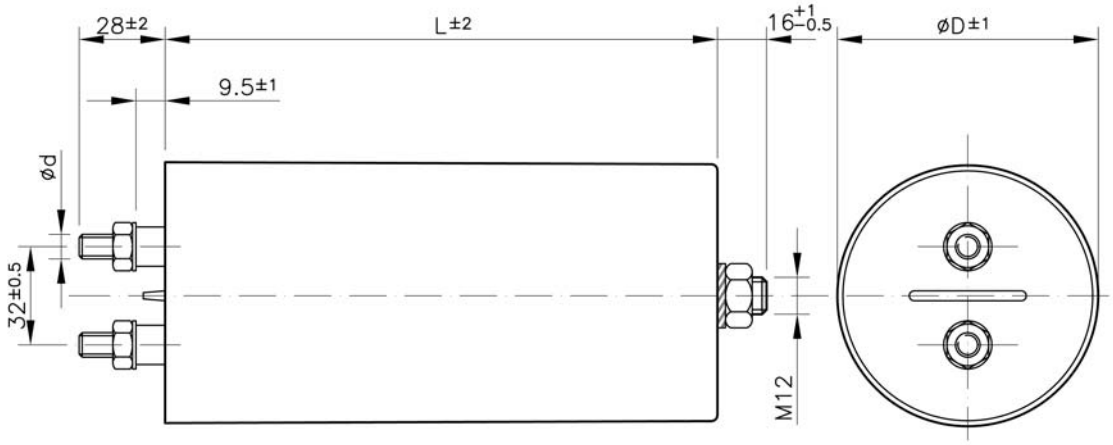


Model	Capacitance	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with natural cooling	Full current Max Working Frequency	Creepage between terminals	Clearance	Tightening Torque	Fixing feet tightening torque	Weight	Box qty
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(mm)	(mm)	(Nm)	(Nm)	(kg)	(pcs)
LNK-P2T-240-70	240	700	1400	60	5600	40	1	8,75	10	28	28	10	2	0,55	16
LNK-P2T-150-90	150	900	1800	55	4400	40	1,1	8,75	10	28	28	10	2	0,55	16
LNK-P2T-100-110	100	1100	2200	50	3600	40	1,3	8,75	10	28	28	10	2	0,55	16
LNK-P2T-75-125	75	1250	2500	45	3100	40	1,5	8,75	10	28	28	10	2	0,55	16
LNK-P2T-50-145	50	1450	2900	45	2400	40	1,6	8,75	10	28	28	10	2	0,55	16
LNK-P2T-35-180	35	1800	3600	40	2100	40	2	8,75	10	28	28	10	2	0,55	16

- In order to decrease the thermal resistance, the capacitor should be installed on a heatsink through an heat conductive paste. The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 3500V x 10 s

LNK – P3X - ...

- MECHANICAL LAYOUT OPTIMIZED TO EASY REPLACE ELECTROLYTIC CAPACITORS
- ALSO AVAILABLE WITH THREADED HOLE TERMINALS, ON REQUEST



* Diameter 60mm available only with screw terminals

PENDING

D (mm)	Creepage (mm)	Clearance (mm)	Screw terminals d	Tightening torque fixing stud (Nm)	Tightening torque terminals (Nm)
60	30	19	**M6**	10	6
75	30	19	**M6**	10	6
85	30	19	**M8**	10	6
100	30	15	**M8**	10	10

LNK – P3X - ...

- MECHANICAL LAYOUT OPTIMIZED TO EASY REPLACE ELECTROLYTIC CAPACITORS
- ALSO AVAILABLE WITH THREADED HOLE TERMINALS, ON REQUEST

Model	Cap.	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with natural cooling	Full current Max Working Frequency	Weight	D	L	Box qty
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(kg)	(mm)	(mm)	(pcs)
LNK-P3X-200-70	200	700	1400	30	1900	65	3.9	6.1	5	0.5	60*	140	36
LNK-P3X-260-70	260	700	1050	25	1200	65	6,0	6,1	5	0.5	60*	140	36
LNK-P3X-400-70	400	700	1400	40	3400	75	2.7	5.8	5	0.8	75	155	16
LNK-P3X-470-70	470	700	1050	35	2200	65	3,5	5,9	5	0.75	75	140	16
LNK-P3X-540-70	540	700	1050	35	2200	75	4,0	5,8	5	0.8	75	155	16
LNK-P3X-640-70	640	700	1050	40	3000	65	2,7	5,7	5	0.9	85	140	16
LNK-P3X-750-70	750	700	1400	55	6400	75	1.6	5.5	5	1.4	100	155	9
LNK-P3X-1050-70	1050	700	1050	45	4200	75	2,1	5,5	5	1.4	100	155	9
LNK-P3X-140-90	140	900	1800	30	1700	65	4.0	6.1	5	0.5	60*	140	36
LNK-P3X-220-90	220	900	1350	25	1100	65	6,5	6,1	5	0.5	60*	140	36
LNK-P3X-250-90	250	900	1800	40	2700	75	2.3	5.8	5	0.8	75	155	16
LNK-P3X-400-90	400	900	1350	30	2000	65	3,8	5,9	5	0.75	75	140	16
LNK-P3X-460-90	460	900	1350	30	2000	75	4,3	5,8	5	0.8	75	155	16
LNK-P3X-500-90	500	900	1800	55	5500	75	1.9	5.5	5	1.4	100	155	9
LNK-P3X-540-90	540	900	1350	40	2800	65	2,9	5,7	5	0.9	85	140	16
LNK-P3X-890-90	890	900	1350	45	4000	75	2,2	5,5	5	1.4	100	155	9
LNK-P3X-120-100	120	1000	2000	30	1700	65	4.2	6.1	5	0.5	60*	140	36
LNK-P3X-200-100	200	1000	2000	40	2500	75	3.3	5.8	5	0.8	75	155	16
LNK-P3X-400-100	400	1000	2000	50	5000	75	2.0	5.5	5	1.4	100	155	9
LNK-P3X-100-110	100	1100	2200	30	1500	65	4.7	6.1	5	0.5	60*	140	36
LNK-P3X-160-110	160	1100	1650	20	1000	65	7,6	6,1	5	0.5	60*	140	36
LNK-P3X-190-110	190	1100	2200	40	2500	75	3.3	5.8	5	0.8	75	155	16
LNK-P3X-285-110	285	1100	1650	30	1800	65	4,4	5,9	5	0.75	75	140	16
LNK-P3X-325-110	325	1100	1650	30	1800	75	5,0	5,8	5	0.8	75	155	16
LNK-P3X-350-110	350	1100	2200	50	4600	75	2.2	5.5	5	1.4	100	155	9
LNK-P3X-385-110	385	1100	1650	35	2300	65	3,3	5,7	5	0.9	85	140	16
LNK-P3X-630-110	630	1100	1650	40	3300	75	2,6	5,5	5	1.4	100	155	9

- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 3500V x 10 s

* Diameter 60mm available only with screw terminals

LNK – P3X - ...

- MECHANICAL LAYOUT OPTIMIZED TO EASY REPLACE ELECTROLYTIC CAPACITORS
- ALSO AVAILABLE WITH THREADED HOLE TERMINALS, ON REQUEST

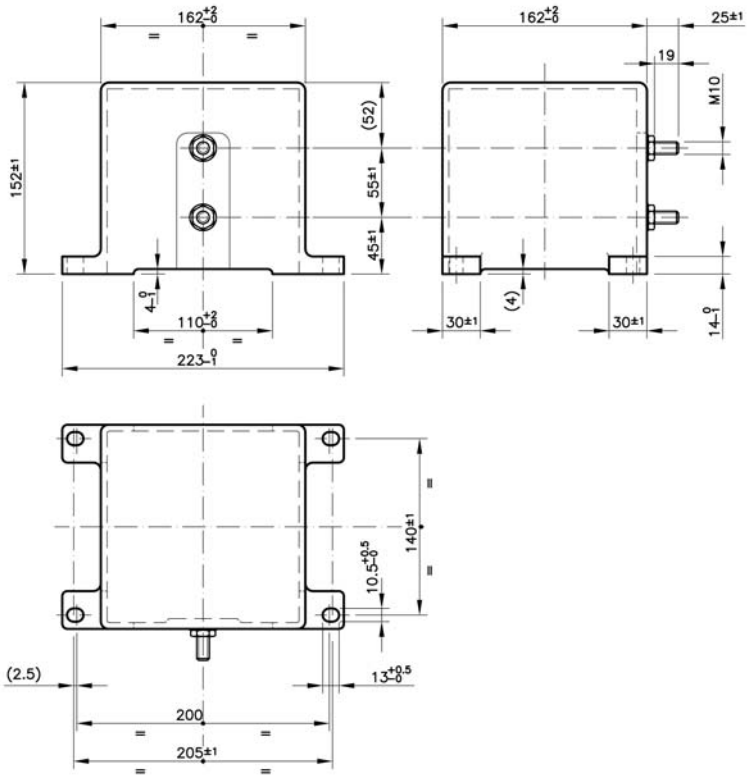
Model	Cap.	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with natural cooling	Full current Max Working Frequency	Weight	D	L	Box qty
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(kg)	(mm)	(mm)	(pcs)
LNK-P3X-75-125	75	1250	2500	30	1300	65	5.4	6.1	5	0.5	60*	140	36
LNK-P3X-140-125	140	1250	2500	35	2100	75	3.8	5.8	5	0.8	75	155	16
LNK-P3X-250-125	250	1250	2500	45	3800	75	2.5	5.5	5	1.4	100	155	9
LNK-P3X-105-130	105	1300	1950	20	800	65	9,2	6,1	5	0.5	60*	140	36
LNK-P3X-190-130	190	1300	1950	28	1400	65	5,3	5,9	5	0.75	75	140	16
LNK-P3X-220-130	220	1300	1950	28	1400	75	6,0	5,8	5	0.8	75	155	16
LNK-P3X-260-130	260	1300	1950	32	1900	65	4,0	5,7	5	0.9	85	140	16
LNK-P3X-420-130	420	1300	1950	38	2700	75	3,1	5,5	5	1.4	100	155	9
LNK-P3X-50-145	50	1450	2900	25	1000	65	7.0	6.1	5	0.5	60*	140	36
LNK-P3X-100-145	100	1450	2900	30	1700	75	4.6	5.8	5	0.8	75	155	16
LNK-P3X-200-145	200	1450	2900	45	3500	75	2.7	5.5	5	1.4	100	155	9
LNK-P3X-33-180	33	1800	3600	20	840	65	8.5	6.1	5	0.5	60*	140	36
LNK-P3X-66-180	66	1800	3600	30	1400	75	5.6	5.8	5	0.8	75	155	16
LNK-P3X-125-180	125	1800	3600	40	2700	75	3.3	5.5	5	1.4	100	155	9

- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 3500V x 10 s

* Diameter 60mm available only with screw terminals

LNK – P4X - ...

• HEAVY DUTY CONSTRUCTION



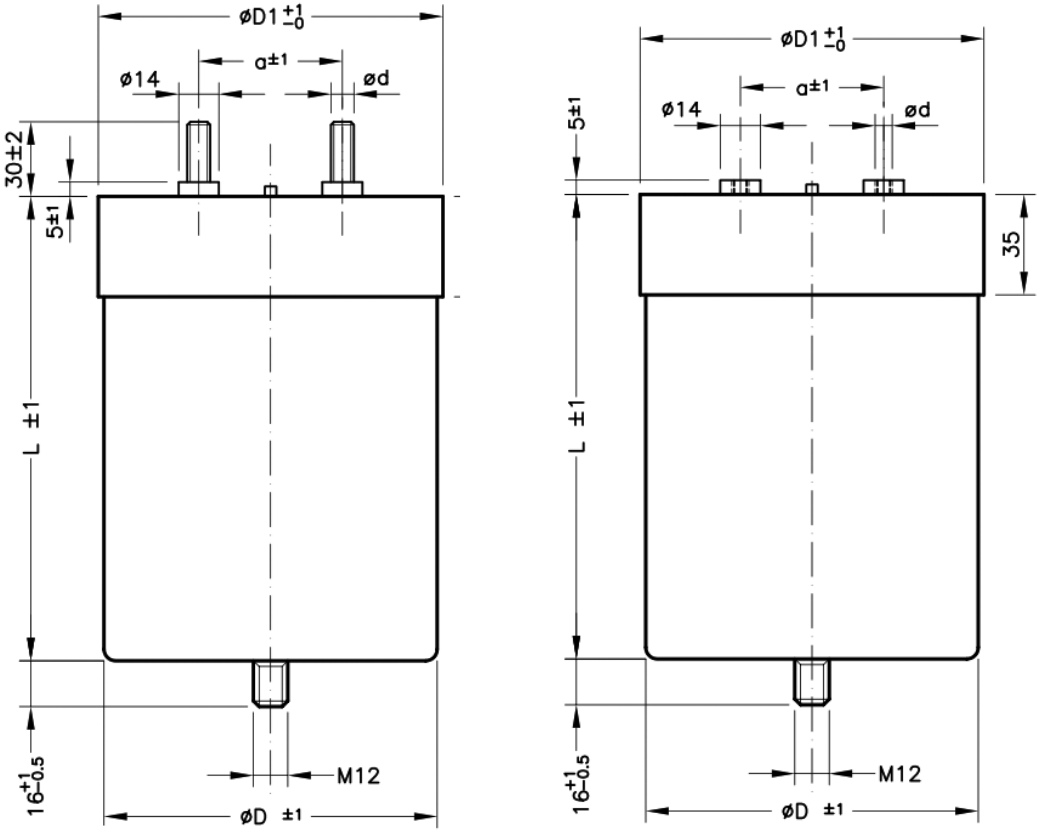
Model	Capacitance	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with natural cooling	Full current Max Working Frequency	Creepage Between Terminals	Clearance	Tightening Torque	Fixing feet tightening torque	Weight	Box qty
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(mm)	(mm)	(Nm)	(Nm)	(kg)	(pcs)
LNK-P4X-2000-70	2000	700	1400	120	8800	<30	0.5	2.75	15	46	34	20	8	5.2	4
LNK-P4X-1300-90	1300	900	1800	120	7200	<30	0.6	2.75	15	46	34	20	8	5.2	4
LNK-P4X-900-110	900	1100	2200	120	6000	<30	0.7	2.75	15	46	34	20	8	5.2	4
LNK-P4X-650-125	650	1250	2500	115	5200	<30	0.8	2.75	15	46	34	20	8	5.2	4
LNK-P4X-500-145	500	1450	2900	100	8800	<30	0.9	2.75	15	46	34	20	8	5.2	4
LNK-P4X-350-180	350	1800	3600	100	7600	<30	1.1	2.75	15	46	34	20	8	5.2	4
LNK-P4X-220-220	220	2200	4400	120	8400	<30	0.7	2.75	15	46	34	20	8	5.2	4
LNK-P4X-55-400	55	4000	8000	60	4200	<30	2.85	2.75	15	46	34	20	8	5.2	4
LNK-P4X-20-500	20	5000	10000	50	2300	<30	4.5	2.75	15	46	34	20	8	5.2	4

- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 8000V x 10s (terminals and fixing bolts)

LNK –M3...- ...

- MECHANICAL LAYOUT OPTIMIZED TO EASY REPLACE ELECTROLYTIC CAPACITORS
- AVAILABLE BOTH WITH SCREW AND THREADED HOLES TERMINALS

PENDING



Terminals selection	
M3**R**	M6 threaded holes
M3**S**	M8 threaded holes
M3**T**	M6 screw terminals
M3**U**	M8 screw terminals

D (mm)	D1 (mm)	a (mm)	Creepage between terminals (mm)	Clearance (mm)	Terminal screw or threaded hole	Tightening torque fixing stud M12 (Nm)	Tightening torque terminals M6/M8 (Nm)	Imax terminals (A)
116	120	50	45	36	M6/M8	10	6/8	100
85	89	32	36	18	M6/M8	10	6/8	70

LNK –M3...1- ... High current

U_N: 700V U_S: 1050V

Model	Cap. C (µF)	Max rms Current Imax (A)	Peak Current I_{PK} (A)	Self inductance L (nH)	Series Resistance Rs (mΩ)	Thermal Resistance with natural cooling Rthn (°C/W)	Full current Max Working Frequency (KHz)	Weight (kg)	D (mm)	L (mm)	Box qty (pcs)
LNK-M3...1-530-70	530	65	6000	50	0,92	6,0	5	0,95	85	140	16
LNK-M3...1-830-70	830	65	6000	60	1,25	4,7	5	1,2	85	186	16
LNK-M3...1-1080-70	1080	100	12000	50	0,55	4,2	5	1,7	116	140	9
LNK-M3...1-1700-70	1700	100	12000	60	0,70	3,3	5	2,2	116	186	9
LNK-M3...1-2300-70	2300	100	12000	70	0,86	2,7	5	2,7	116	236	3
LNK-M3...1-2550-70	2550	100	12000	75	0,92	2,5	5	2,9	116	256	3
LNK-M3...1-2900-70	2900	100	12000	80	1,00	2,2	5	3,2	116	286	3

U_N: 900V U_S: 1350V

Model	Cap. C (µF)	Max rms Current Imax (A)	Peak Current I_{PK} (A)	Self inductance L (nH)	Series Resistance Rs (mΩ)	Thermal Resistance with natural cooling Rthn (°C/W)	Full current Max Working Frequency (KHz)	Weight (kg)	D (mm)	L (mm)	Box qty (pcs)
LNK-M3...1-450-90	450	65	5500	50	0,95	6,0	5	0,95	85	140	16
LNK-M3...1-710-90	710	60	5500	60	1,30	4,7	5	1,2	85	186	16
LNK-M3...1-960-90	960	60	5500	70	1,65	3,8	5	1,5	85	236	4
LNK-M3...1-915-90	915	100	11000	50	0,55	4,2	5	1,7	116	140	9
LNK-M3...1-1430-90	1430	100	11000	60	0,75	3,3	5	2,2	116	186	9
LNK-M3...1-1950-90	1950	100	11000	70	0,90	2,7	5	2,7	116	236	3
LNK-M3...1-2150-90	2150	100	11000	75	0,95	2,5	5	2,9	116	256	3
LNK-M3...1-2450-90	2450	100	11000	80	1,05	2,2	5	3,2	116	286	3

U_N: 1100V U_S: 1650V

Model	Cap. C (µF)	Max rms Current Imax (A)	Peak Current I_{PK} (A)	Self inductance L (nH)	Series Resistance Rs (mΩ)	Thermal Resistance with natural cooling Rthn (°C/W)	Full current Max Working Frequency (KHz)	Weight (kg)	D (mm)	L (mm)	Box qty (pcs)
LNK-M3...1-320-110	320	60	4500	50	1,05	6,0	5	0,95	85	140	16
LNK-M3...1-500-110	500	60	4500	60	1,45	4,7	5	1,2	85	186	16
LNK-M3...1-650-110	650	100	9000	50	0,60	4,2	5	1,7	116	140	9
LNK-M3...1-1020-110	1020	95	9000	60	0,80	3,3	5	2,2	116	186	9
LNK-M3...1-1400-110	1400	95	9000	70	1,00	2,7	5	2,7	116	236	3
LNK-M3...1-1550-110	1550	95	9000	75	1,05	2,5	5	2,9	116	256	3
LNK-M3...1-1750-110	1750	95	9000	80	1,20	2,2	5	3,2	116	286	3

- In case of doubt regading the full current maximun working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 1.414 x U_N +1000 for 10 s

LNK –M3...1- ... High current

U_N: 1300V U_S: 1950V

Model	Cap. C (µF)	Max rms Current Imax (A)	Peak Current I_{PK} (A)	Self inductance L (nH)	Series Resistance Rs (mΩ)	Thermal Resistance with natural cooling Rthn (°C/W)	Full current Max Working Frequency (KHz)	Weight (kg)	D (mm)	L (mm)	Box qty (pcs)
LNK-M3...1-215-130	215	60	3700	50	1,20	6,0	5	0,95	85	140	16
LNK-M3...1-335-130	335	55	3700	60	1,70	4,7	5	1,2	85	186	16
LNK-M3...1-435-130	435	90	7400	50	0,70	4,2	5	1,7	116	140	9
LNK-M3...1-685-130	685	90	7400	60	0,90	3,3	5	2,2	116	186	9
LNK-M3...1-930-130	930	90	7400	70	1,15	2,7	5	2,7	116	236	3
LNK-M3...1-1030-130	1030	90	7400	75	1,25	2,5	5	2,9	116	256	3
LNK-M3...1-1180-130	1180	90	7400	80	1,40	2,2	5	3,2	116	286	3

U_N: 1650V U_S: 2475V

Model	Cap. C (µF)	Max rms Current Imax (A)	Peak Current I_{PK} (A)	Self inductance L (nH)	Series Resistance Rs (mΩ)	Thermal Resistance with natural cooling Rthn (°C/W)	Full current Max Working Frequency (KHz)	Weight (kg)	D (mm)	L (mm)	Box qty (pcs)
LNK-M3...1-140-165	140	55	3000	50	1,40	6,0	5	0,95	85	140	16
LNK-M3...1-220-165	220	50	3000	60	2,00	4,7	5	1,2	85	186	16
LNK-M3...1-285-165	285	85	6000	50	0,75	4,2	5	1,7	116	140	9
LNK-M3...1-450-165	450	85	6000	60	1,05	3,3	5	2,2	116	186	9
LNK-M3...1-610-165	610	85	6000	70	1,35	2,7	5	2,7	116	236	3
LNK-M3...1-675-165	675	85	6000	75	1,45	2,5	5	2,9	116	256	3
LNK-M3...1-770-165	770	80	6000	80	1,65	2,2	5	3,2	116	286	3

U_N: 1850V U_S: 2780V

Model	Cap. C (µF)	Max rms Current Imax (A)	Peak Current I_{PK} (A)	Self inductance L (nH)	Series Resistance Rs (mΩ)	Thermal Resistance with natural cooling Rthn (°C/W)	Full current Max Working Frequency (KHz)	Weight (kg)	D (mm)	L (mm)	Box qty (pcs)
LNK-M3...1-105-185	105	50	2600	50	1,55	6,0	5	0,95	85	140	16
LNK-M3...1-165-185	165	50	2600	60	2,20	4,7	5	1,2	85	186	16
LNK-M3...1-215-185	215	80	5200	50	0,85	4,2	5	1,7	116	140	9
LNK-M3...1-340-185	340	80	5200	60	1,20	3,3	5	2,2	116	186	9
LNK-M3...1-460-185	460	80	5200	70	1,50	2,7	5	2,7	116	236	3
LNK-M3...1-510-185	510	80	5200	75	1,60	2,5	5	2,9	116	256	3
LNK-M3...1-585-185	585	80	5200	80	1,80	2,2	5	3,2	116	286	3

- In case of doubt regading the full current maximun working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 1.414 x U_N +1000 for 10 s

LNK –M3...2- ... High specific capacitance

U_N: 700V U_S: 1050V

Model	Cap. C (µF)	Max rms Current Imax (A)	Peak Current I_{PK} (A)	Self inductance L (nH)	Series Resistance Rs (mΩ)	Thermal Resistance with natural cooling Rthn (°C/W)	Full current Max Working Frequency (KHz)	Weight (kg)	D (mm)	L (mm)	Box qty (pcs)
LNK-M3...2-430-70	430	40	3000	50	1,85	7,7	5	0,7	85	105	16
LNK-M3...2-585-70	585	40	3000	60	2,45	6,4	5	0,9	85	130	16
LNK-M3...2-650-70	650	40	3000	65	2,65	6,0	5	0,95	85	140	16
LNK-M3...2-740-70	740	40	3000	75	2,95	5,5	5	1,0	85	155	16
LNK-M3...2-1170-70	1170	65	6000	60	1,30	4,5	5	1,5	116	130	9
LNK-M3...2-1300-70	1300	65	6000	65	1,40	4,2	5	1,6	116	140	9
LNK-M3...2-1490-70	1490	65	6000	75	1,60	3,8	5	1,8	116	155	9

U_N: 900V U_S: 1350V

Model	Cap. C (µF)	Max rms Current Imax (A)	Peak Current I_{PK} (A)	Self inductance L (nH)	Series Resistance Rs (mΩ)	Thermal Resistance with natural cooling Rthn (°C/W)	Full current Max Working Frequency (KHz)	Weight (kg)	D (mm)	L (mm)	Box qty (pcs)
LNK-M3...2-365-90	365	40	2800	50	2,00	7,7	5	0,7	85	105	16
LNK-M3...2-500-90	500	40	2800	60	2,60	6,4	5	0,9	85	130	16
LNK-M3...2-550-90	550	40	2800	65	2,85	6,0	5	0,95	85	140	16
LNK-M3...2-630-90	630	40	2800	75	3,20	5,5	5	1,0	85	155	16
LNK-M3...2-1000-90	1000	65	5500	60	1,40	4,5	5	1,5	116	130	9
LNK-M3...2-1100-90	1100	65	5500	65	1,50	4,2	5	1,6	116	140	9
LNK-M3...2-1260-90	1260	60	5500	75	1,70	3,8	5	1,8	116	155	9

U_N: 1100V U_S: 1650V

Model	Cap. C (µF)	Max rms Current Imax (A)	Peak Current I_{PK} (A)	Self inductance L (nH)	Series Resistance Rs (mΩ)	Thermal Resistance with natural cooling Rthn (°C/W)	Full current Max Working Frequency (KHz)	Weight (kg)	D (mm)	L (mm)	Box qty (pcs)
LNK-M3...2-260-110	260	40	2300	50	2,30	7,7	5	0,7	85	105	16
LNK-M3...2-355-110	355	35	2300	60	3,00	6,4	5	0,9	85	130	16
LNK-M3...2-390-110	390	35	2300	65	3,30	6,0	5	0,95	85	140	16
LNK-M3...2-450-110	450	35	2300	75	3,70	5,5	5	1,0	85	155	16
LNK-M3...2-710-110	710	60	4600	60	1,60	4,5	5	1,5	116	130	9
LNK-M3...2-790-110	790	60	4600	65	1,75	4,2	5	1,6	116	140	9
LNK-M3...2-900-110	900	55	4600	75	1,95	3,8	5	1,8	116	155	9

- In case of doubt regading the full current maximun working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 1.414 x U_N +1000 for 10 s

LNK –M3...2- ... High specific capacitance

U_N: 1300V U_S: 1950V

Model	Cap. C (µF)	Max rms Current Imax (A)	Peak Current I_{PK} (A)	Self inductance L (nH)	Series Resistance Rs (mΩ)	Thermal Resistance with natural cooling Rthn (°C/W)	Full current Max Working Frequency (KHz)	Weight (kg)	D (mm)	L (mm)	Box qty (pcs)
LNK-M3...2-175-130	175	35	1900	50	2,75	7,7	5	0,7	85	105	16
LNK-M3...2-235-130	235	32	1900	60	3,60	6,4	5	0,9	85	130	16
LNK-M3...2-260-130	260	32	1900	65	3,90	6,0	5	0,95	85	140	16
LNK-M3...2-300-130	300	32	1900	75	4,40	5,5	5	1,0	85	155	16
LNK-M3...2-475-130	475	55	3800	60	1,90	4,5	5	1,5	116	130	9
LNK-M3...2-525-130	525	55	3800	65	2,05	4,2	5	1,6	116	140	9
LNK-M3...2-600-130	600	50	3800	75	2,30	3,8	5	1,8	116	155	9

U_N: 1650V U_S: 2475V

Model	Cap. C (µF)	Max rms Current Imax (A)	Peak Current I_{PK} (A)	Self inductance L (nH)	Series Resistance Rs (mΩ)	Thermal Resistance with natural cooling Rthn (°C/W)	Full current Max Working Frequency (KHz)	Weight (kg)	D (mm)	L (mm)	Box qty (pcs)
LNK-M3...2-115-165	115	30	1600	50	3,30	7,7	5	0,7	85	105	16
LNK-M3...2-155-165	155	30	1600	60	4,35	6,4	5	0,9	85	130	16
LNK-M3...2-170-165	170	30	1600	65	4,75	6,0	5	0,95	85	140	16
LNK-M3...2-195-165	195	30	1600	75	5,35	5,5	5	1,0	85	155	16
LNK-M3...2-310-165	310	50	3100	60	2,25	4,5	5	1,5	116	130	9
LNK-M3...2-345-165	345	50	3100	65	2,50	4,2	5	1,6	116	140	9
LNK-M3...2-395-165	395	48	3100	75	2,80	3,8	5	1,8	116	155	9

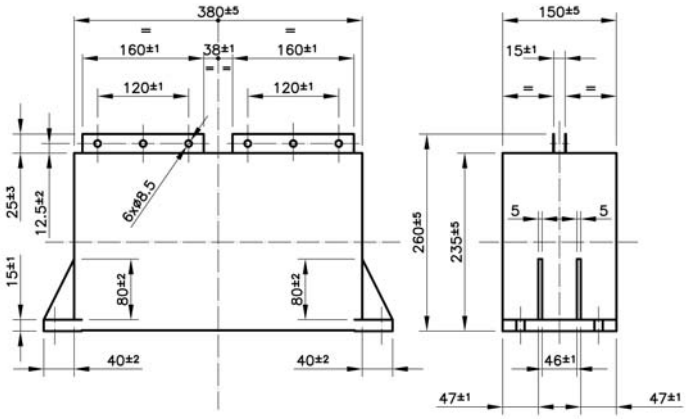
U_N: 1850V U_S: 2780V

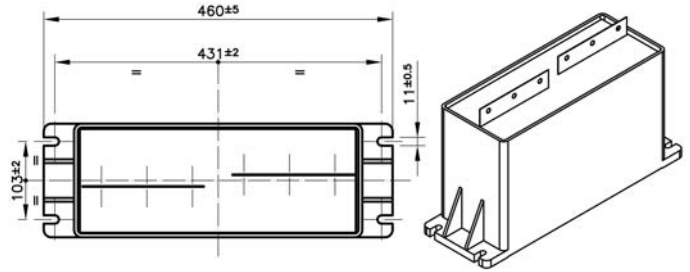
Model	Cap. C (µF)	Max rms Current Imax (A)	Peak Current I_{PK} (A)	Self inductance L (nH)	Series Resistance Rs (mΩ)	Thermal Resistance with natural cooling Rthn (°C/W)	Full current Max Working Frequency (KHz)	Weight (kg)	D (mm)	L (mm)	Box qty (pcs)
LNK-M3...2-85-185	85	30	1400	50	3,75	7,7	5	0,7	85	105	16
LNK-M3...2-115-185	115	30	1400	60	4,95	6,4	5	0,9	85	130	16
LNK-M3...2-130-185	130	30	1400	65	5,40	6,0	5	0,95	85	140	16
LNK-M3...2-150-185	150	25	1400	75	6,10	5,5	5	1,0	85	155	16
LNK-M3...2-235-185	235	50	2700	60	2,55	4,5	5	1,5	116	130	9
LNK-M3...2-260-185	260	45	2700	65	2,80	4,2	5	1,6	116	140	9
LNK-M3...2-300-185	300	45	2700	75	3,15	3,8	5	1,8	116	155	9

- In case of doubt regading the full current maximun working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 1.414 x U_N +1000 for 10 s

LNK – P5X - ...

- HIGH CAPACITANCE
- LOW INDUCTANCE CONNECTIONS



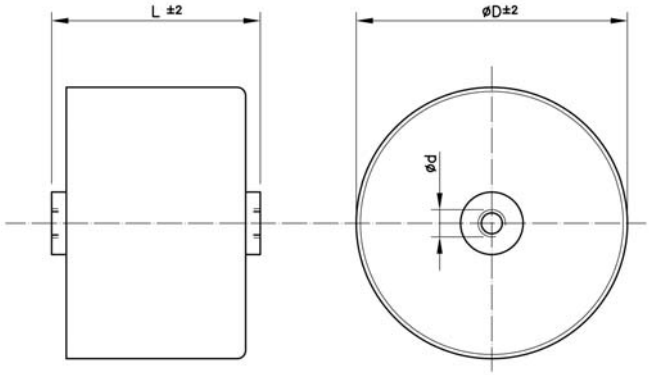


Model	Capacitance	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with natural cooling	Full current Max Working Frequency	Creepage between terminals	Clearance	Fixing feet tightening torque	Weight	Box qty
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(mm)	(mm)	(Nm)	(kg)	(pcs)
LNK-P5X-8000-70	8000	700	1400	300	34000	<30	0.14	1.45	20	40	40	8	18	1
LNK-P5X-5000-90	5000	900	1800	300	27000	<30	0.18	1.45	20	40	40	8	18	1
LNK-P5X-4200-100	4200	1000	2000	250	26000	<30	0.19	1.45	20	40	40	8	18	1
LNK-P5X-3500-110	3500	1100	2200	250	23000	<30	0.21	1.45	20	40	40	8	18	1
LNK-P5X-2600-125	2600	1250	2500	250	20000	<30	0.24	1.45	20	40	40	8	18	1
LNK-P5X-2000-145	2000	1450	2900	200	17000	<30	0.28	1.45	20	40	40	8	18	1
LNK-P5X-1600-160	1600	1600	3200	200	16000	<30	0.31	1.45	20	40	40	8	18	1
LNK-P5X-1300-180	1300	1800	3600	200	14000	<30	0.34	1.45	20	40	40	8	18	1
LNK-P5X-1000-200	1000	2000	4000	250	25000	<30	0.19	1.45	20	40	40	8	18	1
LNK-P5X-850-220	850	2200	4400	250	23000	<30	0.21	1.45	20	40	40	8	18	1
LNK-P5X-650-250	650	2500	5000	250	20000	<30	0.23	1.45	20	40	40	8	18	1
LNK-P5X-500-290	500	2900	5800	200	25000	<30	0.27	1.45	20	40	40	8	18	1
LNK-P5X-400-320	400	3200	6400	200	23000	<30	0.3	1.45	20	40	40	8	18	1
LNK-P5X-300-360	300	3600	7200	200	19000	<30	0.36	1.45	20	40	40	8	18	1

- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 6000V x 10s (terminals and fixing bolts)

LNK – P6X - ...

•VERY LOW INDUCTANCE

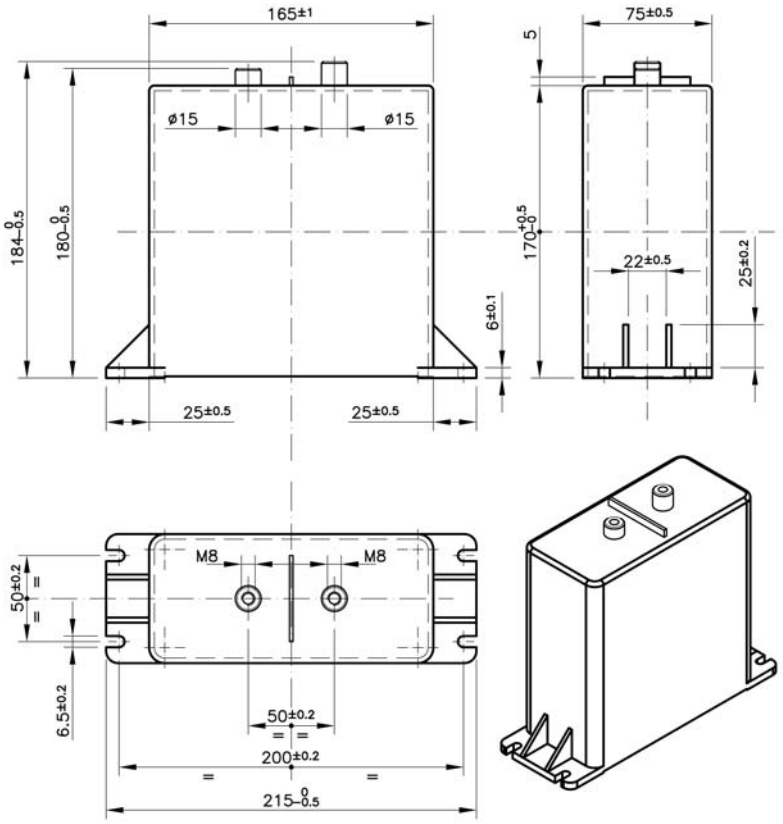


Model	Capacitance	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with natural cooling	Full current Max Working Frequency	Tightening Torque	Weight	d	D	L	Box qty
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(Nm)	(kg)	(mm)	(mm)	(mm)	(pcs)
LNK-P6X-90-70	90	700	1400	80	3100	10	0.7	7.3	20	6	0.27	M6	70	59	25
LNK-P6X-125-70	125	700	1400	80	4400	10	0.5	7.0	20	10	0.41	M8	80	60	16
LNK-P6X-150-70	150	700	1400	80	5300	10	0.4	6.7	20	10	0.47	M8	90	60	16
LNK-P6X-50-90	50	900	1800	50	2200	10	1	7.3	20	6	0.27	M6	70	59	25
LNK-P6X-75-90	75	900	1800	70	3400	10	0.7	7.0	20	10	0.41	M8	80	60	16
LNK-P6X-100-90	100	900	1800	80	4400	10	0.5	6.7	20	10	0.47	M8	90	60	16
LNK-P6X-33-110	33	1100	2200	45	1700	10	1.3	7.3	20	6	0.27	M6	70	59	25
LNK-P6X-50-110	50	1100	2200	55	2700	10	0.9	7.0	20	10	0.41	M8	80	60	16
LNK-P6X-66-110	66	1100	2200	75	3500	10	0.6	6.7	20	10	0.47	M8	90	60	16
LNK-P6X-30-125	30	1250	2500	30	1900	10	1.6	7.3	20	6	0.27	M6	70	59	25
LNK-P6X-40-125	40	1250	2500	40	2500	10	1.1	7.0	20	10	0.41	M8	80	60	16
LNK-P6X-50-125	50	1250	2500	50	3100	10	0.8	6.7	20	10	0.47	M8	90	60	16
LNK-P6X-20-145	20	1450	2900	40	1400	10	1.6	7.3	20	6	0.27	M6	70	59	25
LNK-P6X-30-145	30	1450	2900	50	2100	10	1.1	7.0	20	10	0.41	M8	80	60	16
LNK-P6X-40-145	40	1450	2900	65	2900	10	0.8	6.7	20	10	0.47	M8	90	60	16
LNK-P6X-15-180	15	1800	3600	40	1300	10	1.7	7.3	20	6	0.27	M6	70	59	25
LNK-P6X-20-180	20	1800	3600	50	1800	10	1.3	7.0	20	10	0.41	M8	80	60	16
LNK-P6X-25-180	25	1800	3600	60	2300	10	1	6.7	20	10	0.47	M8	90	60	16

- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 3500V x 10s

LNK – P7X - ...

- HIGH CURRENT
- DESIGNED FOR BUSBARS CONNECTIONS

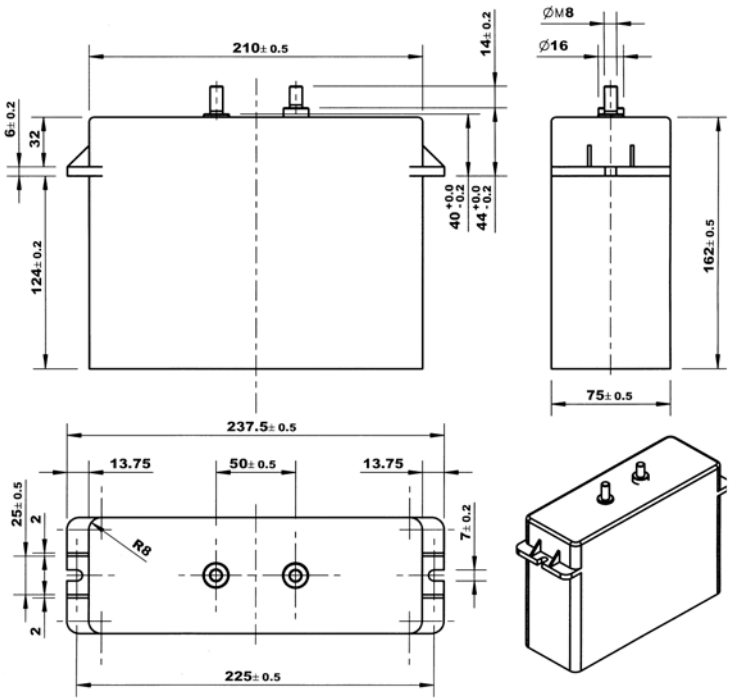


Model	Capacitance	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with Natural cooling	Full current Max Working Frequency	Creepage Between terminals	Clearance	Tightening Torque	Fixing feet tightening torque	Weight	Box qty
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(mm)	(mm)	(Nm)	(Nm)	(kg)	(pcs)
LNK-P7X-1200-70	1200	700	1400	165	10800	30	0.22	4.1	15	45	35	12	6	2.8	8
LNK-P7X-750-90	750	900	1800	155	8800	30	0.28	4.1	15	45	35	12	6	2.8	8
LNK-P7X-600-100	600	1000	2000	150	7800	30	0.32	4.1	15	45	35	12	6	2.8	8
LNK-P7X-500-110	500	1100	2200	145	13500	30	0.35	4.1	15	45	35	12	6	2.8	8
LNK-P7X-400-125	400	1250	2500	140	13000	30	0.38	4.1	15	45	35	12	6	2.8	8
LNK-P7X-300-145	300	1450	2900	130	11000	30	0.44	4.1	15	45	35	12	6	2.8	8
LNK-P7X-200-180	200	1800	3600	120	9300	30	0.53	4.1	15	45	35	12	6	2.8	8

- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 3500V x 10s

LNK – P8X - ...

- HEAVY DUTY CONSTRUCTION
- DESIGNED FOR BUSBARS CONNECTIONS
- LOW INDUCTANCE

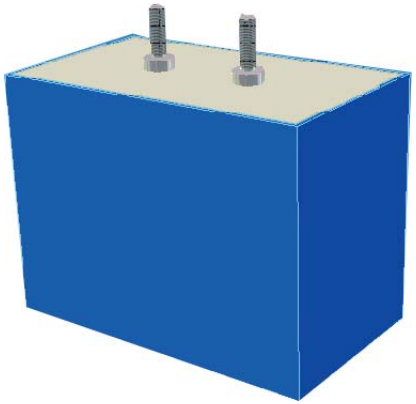


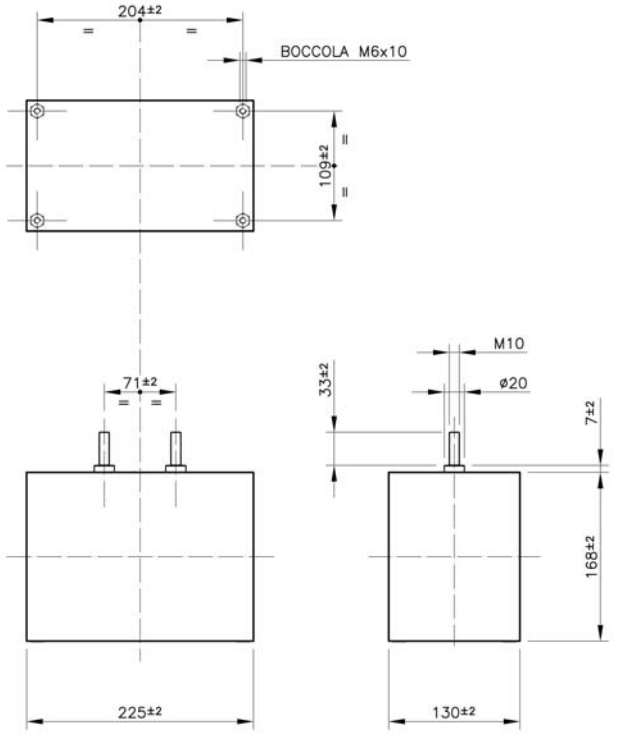
Model	Capacitance	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with Natural cooling	Full current Max Working Frequency	Creepage Between terminals	Clearance	Tightening Torque	Fixing feet tightening torque	Weight	Box qty
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(mm)	(mm)	(Nm)	(Nm)	(kg)	(pcs)
LNK-P8X-1500-70	1500	700	1400	165	13500	30	0.22	3.4	15	34	34	12	6	3.8	6
LNK-P8X-850-90	850	900	1800	155	9700	30	0.27	3.4	15	34	34	12	6	3.8	6
LNK-P8X-700-100	700	1000	2000	150	9200	30	0.30	3.4	15	34	34	12	6	3.8	6
LNK-P8X-600-110	600	1100	2200	145	8300	30	0.31	3.4	15	34	34	12	6	3.8	6
LNK-P8X-430-125	430	1250	2500	140	14000	30	0.36	3.4	15	34	34	12	6	3.8	6
LNK-P8X-330-145	330	1450	2900	130	12000	30	0.40	3.4	15	34	34	12	6	3.8	6
LNK-P8X-200-180	200	1800	3600	120	9600	30	0.51	3.4	15	34	34	12	6	3.8	6

- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 3500V x 10s

LNK – P9X - ...

- HIGH CURRENT
- LOW INDUCTANCE
- DESIGNED FOR BUSBARS CONNECTIONS





Model	Capacitance	Rated DC Voltage	Peak Voltage	Max rms Current	Peak Current	Self inductance	Series Resistance	Thermal Resistance with natural cooling	Full current Max Working Frequency	Creepage Between terminals	Clearance	Fixing feet tightening torque	Weight	Box qty
	C (µF)	U_N (V)	U_S (V)	Imax (A)	I_{PK} (A)	L (nH)	Rs (mΩ)	Rthn (°C/W)	(KHz)	(mm)	(mm)	(Nm)	(kg)	(pcs)
LNK-P9X-3000-80	3000	800	1400	150	14500	<30	0.32	2.75	15	64	64	6	6.5	4
LNK-P9X-1750-100	1750	1000	2000	150	11000	<30	0.41	2.75	15	64	64	6	6.5	4
LNK-P9X-1350-110	1350	1100	2200	150	9500	<30	0.46	2.75	15	64	64	6	6.5	4
LNK-P9X-1250-120	1250	1200	2400	150	9500	<30	0.46	2.75	15	64	64	6	6.5	4
LNK-P9X-850-140	850	1400	2800	140	7500	<30	0.56	2.75	15	64	64	6	6.5	4
LNK-P9X-650-160	650	1600	3200	135	6500	<30	0.63	2.75	15	64	64	6	6.5	4
LNK-P9X-500-180	500	1800	3600	125	11000	<30	0.71	2.75	15	64	64	6	6.5	4
LNK-P9X-400-200	400	2000	4000	120	10000	<30	0.79	2.75	15	64	64	6	6.5	4
LNK-P9X-330-220	330	2200	4400	150	13500	<30	0.27	2.75	15	64	64	6	6.5	4
LNK-P9X-300-240	300	2400	4800	150	13000	<30	0.28	2.75	15	64	64	6	6.5	4
LNK-P9X-220-270	220	2700	5400	150	11000	<30	0.30	2.75	15	64	64	6	6.5	4
LNK-P9X-200-280	200	2800	5600	150	10000	<30	0.38	2.75	15	64	64	6	6.5	4
LNK-P9X-150-320	150	3200	6400	150	8500	<30	0.38	2.75	15	64	64	6	6.5	4
LNK-P9X-120-350	120	3500	7000	150	8000	<30	0.41	2.75	15	64	64	6	6.5	4

- In case of doubt regarding the full current maximum working frequency, please contact ICAR Tech. Dept. for de-rating according to current spectrum
- The thermal resistance is estimated considering the capacitor alone, not fixed and in free air condition (natural convention).
- Routine dielectric test: DC voltage test between terminals = 1.5 U_N x 10 s, AC voltage test between terminals and case = 6000V x 10s

9. CUSTOM DC LINK CAPACITORS

Beside the standard products shown in this catalogue, ICAR produces also a wide range of custom capacitors.
ICAR technical department is ready to support customers in developing capacitors based on their requests and specifications.

Custom capacitors for DC link are grouped as follows:

- **LNK-P** series are the capacitors based on the same technology as standard products: metallised polypropylene film, plastic case, dry type resin filled. Customization is mostly related to connections, capacitance value and other special characteristics; the cases are the same used in the standard series.

- **LNK-M** series are metallised polypropylene film, metal cases (aluminium or steel) capacitors, dry type resin filled. Beside the personalization of the P series, the metal case allows our designers to follow mechanical requirements of the customer without any investment related to the plastic case mould.

- **BIOENERGY-D65** series are metallised polypropylene film, metal case (aluminium or steel) capacitors, oil filled. This solution is generally suggested for higher voltage applications

The range of our customized products is extremely wide and covers most of the possible requirements in the railway and traction equipments, industrial drives, wind and solar inverters, special industrial plants.

For any further information please contact our sales department.

WARNING

DO NOT MISAPPLY CAPACITORS FOR POWER ELECTRONICS

Icar is not responsible for any kind of possible damages to persons or things, derived from the improper installation and application of Power Electronics capacitors

Most common misapplication forms:

- Ripple current and peak current beyond specification or not according with the maximum power that can be dissipated.
- Surge or working voltage beyond specified value.
- Hot spot or storage temperature beyond the specified limits or not according with the maximum power that can be dissipated.
- Incorrect mounting or wrong installation
  – installation nearby hot components or heat sources
  – not suitable connections (not adequate cable or busbars cross section)
  – nuts and washers material, shape or size not suitable for the application
  – tightening torque not according to the specification
- Unusual service conditions as:
  – mechanical shock and vibrations,
  – corrosive or abrasive conductive parts in cooling air,
  – oil or water vapour or corrosive substances,
  – explosive gas or dust,
  – radioactivity,
  – excessive and fast variations of ambient conditions,
  – service areas higher than 2000 m above sea level.

Periodic check of the connection conditions and tightening torque is strongly recommended.

In case of doubt in choice or in performances of the capacitors **Icar technical service MUST be contacted.**

DISCLAIMER

All the information and data shown in this catalogue are not binding and can be modified without notice, contact ICAR sales department to get updated specifications.
Reliability data quoted by ICAR are based on statistical evaluations, and does not guarantee properties or performance of each single component.

All the products described in the catalogue shall be used within the limits stated in the technical specifications, nevertheless it is understood that a failure or an abnormal operation, even when capacitors are working within the specified limits, cannot be completely excluded or foreseen at the current state of the art of technology.

Capacitors may become hazardous.Most common risks are related to combustible gas generation, explosion, fire, electrocution or abnormal operation of the capacitor. Not all the possible risks and safety measures are mentioned in this catalogue, further information are available on request.
It is on customer responsibility to select and take all the necessary safety measures in his applications in order to avoid any possible personal injury or property damage related to the use of capacitors. This is valid in particular for applications in which a failure or an abnormal operation of the capacitors could put at risk human life or health.
ICAR SpA and all the persons acting on its behalf, disclaim any and all liabilities for possible damages resulting from the use of the products described in this catalogue or in any other publication.

ICAR reserves the right to discontinue the production of any item without notice.

All orders are subject to ICAR General Conditions of sales – latest revision.

Blank Data Sheet for DC Link Capacitors

Company _____ Address _____

Name _____ Department _____

Phone _____ Fax _____ E-mail _____

ELECTRICAL CHARACTERISTICS

RATED CAPACITANCE	[μF]	_____
TOLERANCE	[%]	_____
RATED CAPACITOR VOLTAGE [V]		
DC VOLTAGE	[V]	_____
RIPPLE VOLTAGE (Peak to Peak Value)	[V]	_____
RIPPLE VOLTAGE (Rms Value)	[V]	_____
RIPPLE FREQUENCY	[Hz]	_____
RATED RMS CURRENT	[A]	_____
REPETITIVE PEAK CURRENT	[A]	_____
SURGE PEAK CURRENT	[A]	_____
MAX SELF INDUCTANCE	[nH]	_____

DRAWING

THERMAL CHARACTERISTICS

AVERAGE OPERATING AMBIENT TEMPERATURE	θ	[°C] _____
MAX and MIN. OPERATING AMBIENT TEMPERATURE	θ max/ θ min	[°C] ____ / _____
COOLING SYSTEM	NATURAL CONV. ☐ - FORCED AIR ☐	

MECHANICAL CHARACTERISTICS

MAX DIMENSIONS	[mm]	Length _____	x Width _____	x Height _____
NUMBER OF TERMINALS	[Nr] _____			
OPERATING POSITION		Vertical ☐	Horizontal ☐	Other – Specify ☐ _____
INSTALLATION	Indoor ☐	Outdoor ☐		

If possible please add voltage and current wave shapes

REMARKS

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_____

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Catalogue LNK 2011 – Rev. 01 - Issued on April 2011