



POWER ELECTRONIC CAPACITORS

- **DC LINK CAPACITORS & SNUBBER CAPACITORS** -
RELEVANT FOR WIND PLANTS, SOLAR POWER PLANTS,
MEDICAL AND INDUSTRIAL EQUIPMENT, CAR ELECTRONICS
- **AC/DC GENERAL PURPOSE CAPACITORS** -
RELEVANT FOR POWER ELECTRONIC APPLICATIONS WITH
HIGH CURRENT AND HARMONICS DISTORTION WITH
LONG LIFE EXPECTANCY

CAPACITOR SELECTION GUIDE

ISKRA MANUFACTURES AND SUPPLIES A WIDE RANGE OF POWER ELECTRONIC CAPACITORS WHICH CAN BE USED FOR VARIOUS FUNCTIONS IN ELECTRIC CIRCUITS. THEY ARE MOST COMMONLY USED IN FREQUENCY OR VOLTAGE INVERTERS, UNINTERRUPTIBLE POWER SUPPLIES, MOTOR DRIVES, WELDING EQUIPMENT, WIND AND SOLAR POWER SYSTEMS.

A TYPICAL SWITCHING-MODE POWER SUPPLY IS SHOWN IN THE FIGURE BELOW. DC LINK CAPACITORS AT POSITION C1 ARE USED FOR DC VOLTAGE SMOOTHING. CAPACITORS AT POSITION C2 ARE SNUBBER CAPACITORS. WHEN A SWITCH OPENS, THEY ELIMINATE VOLTAGE SPIKES CAUSED BY CIRCUIT INDUCTANCE. AC FILTERING CAPACITORS AT POSITION C3 ARE USED IN INPUT/OUTPUT LOW-PASS LC FILTERS.

THE AC/DC GENERAL PURPOSE CAPACITORS MAY BE USED IN AC OR DC APPLICATIONS.

BLOCK DIAGRAM

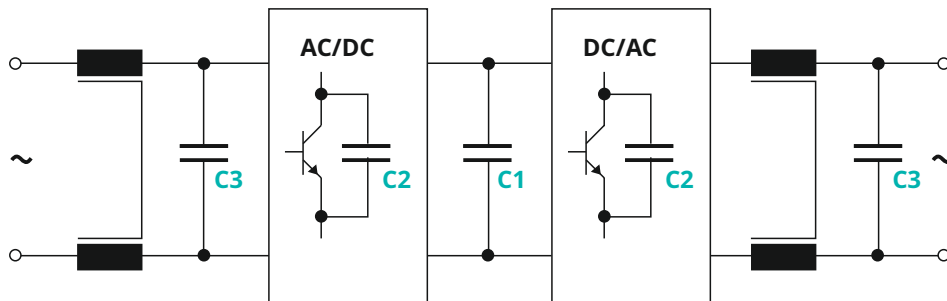


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TERMS AND DEFINITIONS

- **C_N – RATED CAPACITANCE**

NOMINAL VALUE OF CAPACITANCE MEASURED AT 20 °C.

- **U_{NDC} – RATED DC VOLTAGE**

MAXIMUM OPERATING PEAK VOLTAGE OF EITHER POLARITY BUT OF A NON-REVERSING TYPE WAVEFORM FOR WHICH THE CAPACITOR HAS BEEN DESIGNED.

- **U_{rms} – RATED RMS VOLTAGE**

ROOT MEAN SQUARE OF MAX. PERMISSIBLE VALUE OF SINUSOIDAL AC VOLTAGE IN CONTINUOUS OPERATION.

- **U_N – RATED AC VOLTAGE**

MAXIMUM OPERATING PEAK RECURRENT VOLTAGE OF EITHER POLARITY OF A REVERSING TYPE WAVEFORM FOR WHICH THE CAPACITOR HAS BEEN DESIGNED.

- **U_r – RIPPLE VOLTAGE**

PEAK-TO-PEAK ALTERNATING COMPONENT OF THE UNIDIRECTIONAL VOLTAGE.

- **I_{max} – MAXIMUM CURRENT**

MAXIMUM RMS CURRENT FOR CONTINUOUS OPERATION.

- **(dU/dt)_{max} – MAXIMUM RATE OF VOLTAGE RISE**

MAXIMUM PERMISSIBLE REPETITIVE RATE OF VOLTAGE RISE OF THE OPERATIONAL VOLTAGE.

- **I_h – MAXIMUM PEAK CURRENT**

MAXIMUM REPETITIVE PEAK CURRENT THAT CAN OCCUR DURING CONTINUOUS OPERATION.

$$\hat{I} = C \times (dU/dt)_{\max}$$

- **I_s – MAXIMUM SURGE CURRENT**

PEAK NON-REPETITIVE CURRENT INDUCED BY SWITCHING OR ANY OTHER DISTURBANCE OF THE SYSTEM WHICH IS ALLOWED FOR A LIMITED NUMBER OF TIMES, FOR DURATIONS SHORTER THAN THE BASIC PERIOD.

$$\hat{I}_s = C \times (dU/dt)_s$$

- **tan(δ) – TANGENT OF THE LOSS ANGLE OF A CAPACITOR**

RATIO BETWEEN EQUIVALENT SERIES RESISTANCE AND THE CAPACITIVE REACTANCE OF A CAPACITOR AT A SPECIFIED SINUSOIDAL ALTERNATING VOLTAGE, FREQUENCY AND TEMPERATURE.

$$\tan(\delta) = ESR \times \omega \times C = \tan(\delta_0) + R_s \times \omega \times C$$

tan(δ₀) = DIELECTRIC LOSS FACTOR

- **R_s – SERIES RESISTANCE**

EFFECTIVE OHMIC RESISTANCE OF THE CONDUCTOR OF A CAPACITOR UNDER SPECIFIED OPERATING CONDITIONS.

- **ESR – EQUIVALENT SERIES RESISTANCE OF A CAPACITOR**

EFFECTIVE RESISTANCE WHICH, IF CONNECTED IN SERIES WITH AN IDEAL CAPACITOR OF CAPACITANCE VALUE EQUAL TO THAT OF THE CAPACITOR IN QUESTION, WOULD HAVE A POWER LOSS EQUAL TO ACTIVE POWER DISSIPATED IN THAT CAPACITOR UNDER SPECIFIED OPERATING CONDITIONS.

$$ESR = \tan(\delta_0) / (\omega \times C) + R_s$$

- **P_{diss} – DISSIPATED POWER**

ACTIVE POWER DISSIPATED IN THE CAPACITOR.

$$P_{\text{diss}} = I_{\max}^2 \times ESR$$

- **L_s – SELF-INDUCTANCE**

THE SUM OF ALL INDUCTIVE ELEMENTS WHICH ARE CONTAINED IN A CAPACITOR.

- **θ_{amb} – AMBIENT TEMPERATURE**

TEMPERATURE MEASURED FROM THE DISTANCE OF APPROXIMATELY 0.1 m AND AT TWO-THIRDS OF THE HEIGHT OF THE CAPACITOR.

- **θ_{min} – LOWEST OPERATING TEMPERATURE**

LOWEST TEMPERATURE OF THE DIELECTRIC AT WHICH THE CAPACITOR MAY BE ENERGIZED.

- **θ_{max} – MAXIMUM OPERATING TEMPERATURE**

HIGHEST TEMPERATURE OF THE CASE AT WHICH THE CAPACITOR MAY BE OPERATED.

- **Δθ_{case} – CONTAINER TEMPERATURE RISE**

DIFFERENCE BETWEEN THE TEMPERATURE OF THE HOTTEST POINT OF THE CONTAINER AND THE TEMPERATURE OF THE COOLING AIR.

- **R_{th} – THERMAL RESISTANCE**

THERMAL RESISTANCE INDICATES HOW MANY DEGREES THE TEMPERATURE OF THE CAPACITOR RISES AT THE HOT SPOT IN RELATION TO THE DISSIPATION LOSSES.

- **θ_{hs} – HOT-SPOT TEMPERATURE**

TEMPERATURE AT THE HOTTEST SPOT INSIDE THE CAPACITOR.

$$\theta_{\text{hs}} = \theta_{\text{amb}} + P_{\text{diss}} \times R_{\text{th}}$$

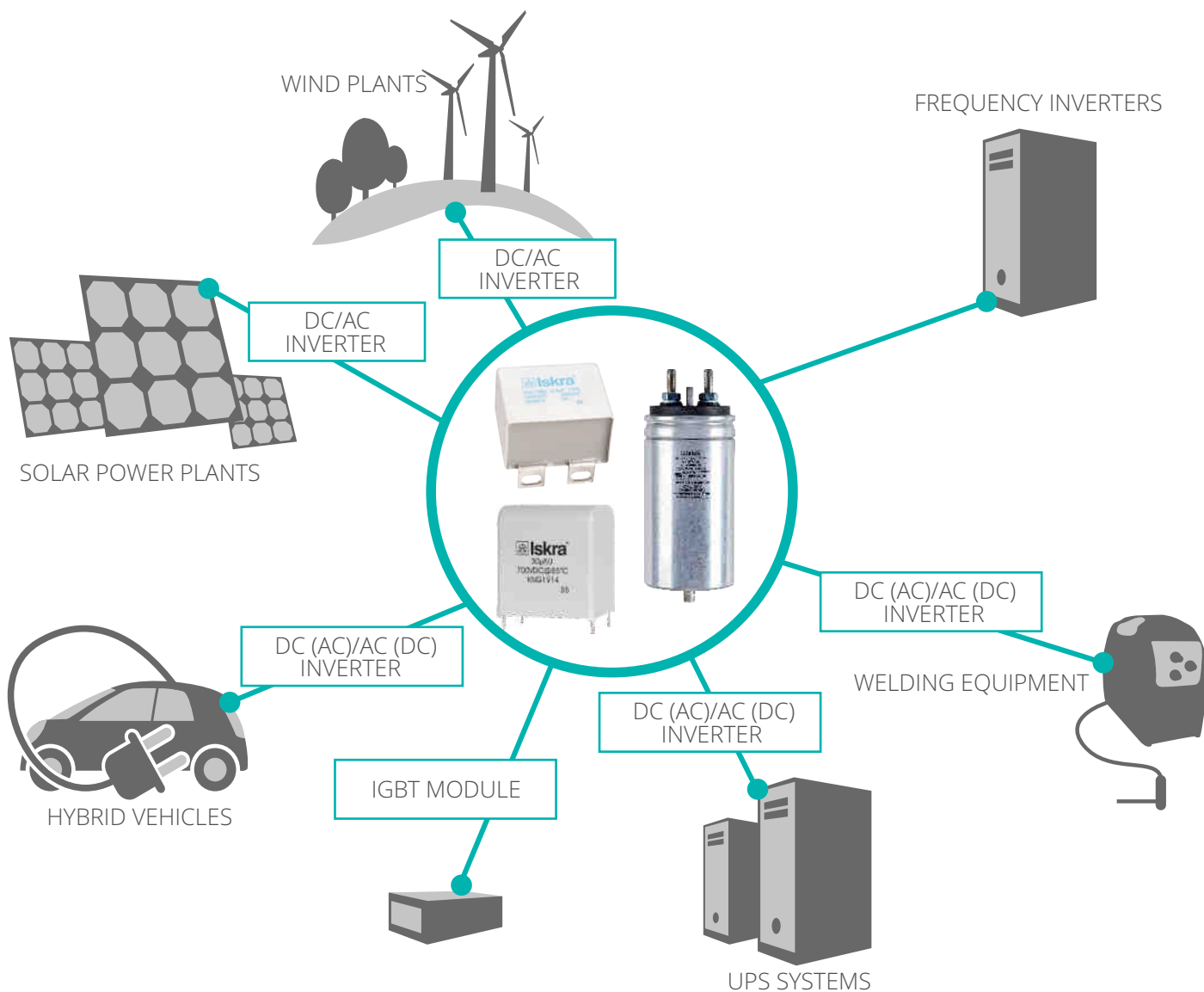
- **P_{max} – MAXIMUM POWER LOSS**

MAXIMUM PERMISSIBLE POWER DISSIPATION FOR CONTINUOUS OPERATION.

$$P_{\max} = (\theta_{\text{hs}} - \theta_{\text{amb}}) / R_{\text{th}}$$

POWER ELECTRONIC CAPACITORS

APPLICATIONS



DC LINK CAPACITORS

TYPE KNG2047 - KNG3047, KNG2048 - KNG3048



APPLICATIONS

- HYBRID VEHICLES
- WIND PLANTS
- ELECTRIC ENERGY GENERATION FROM SEA WAVES
- MEDICAL EQUIPMENT
- INDUSTRIAL EQUIPMENT
- CAR ELECTRONICS
- RAILWAYS AND TURBINES (GENERATOR)
- FREQUENCY INVERTERS
- ELEVATORS
- WELDERS

REFERENCE STANDARDS

- IEC 61071
- UL 810 (CONSTRUCTION ONLY) FILE No.: E196169



FEATURES

- USED IN DC-LINK CIRCUITS, CAN REPLACE ELECTROLYTIC CAPACITOR
- LOW ESR, HIGH RIPPLE CURRENT HANDLING CAPABILITIES
- LOW ESL
- SELF-HEALING PROPERTIES
- LONG LIFETIME

SPECIFICATIONS

- | | |
|---|--|
| • CAPACITANCE RANGE | 75 μ F UP TO 1740 μ F |
| • CAPACITANCE TOLERANCE | $\pm 10\%$, ON REQUEST $\pm 5\%$ |
| • RATED VOLTAGE U_{NDC} | 600 VDC UP TO 2200 VDC |
| • DIELECTRIC LOSS FACTOR $\tan(\delta_0)$ | $< 2 \times 10^{-4}$ AT 1kHz |
| • TEST VOLTAGE (BETWEEN TERMINALS) | $1.5 \times U_{NDC}$, 10s |
| • TEST VOLTAGE (TERMINALS TO CASE) | 3600 V, 50 Hz, 2 s |
| • TEMPERATURE COEFFICIENT | -2.3% FROM -20 °C TO +70 °C |
| • OPERATING TEMPERATURE | -40 °C TO 85 °C |
| • INDUCTANCE | < 70 nH |
| • MAX. ALTITUDE | 4000 m |
| • MAX. HOT SPOT TEMPERATURE | 85 °C |
| • CLIMATIC CATEGORY | 40/85/56 ACCORDING TO IEC 68/1 |
| • LIFETIME EXPECTANCY | 100 000 HOURS AT U_{NDC} , $\theta_{hs} = 70$ °C |
| • FAILURE RATE | 100 FIT |



DC LINK CAPACITORS

TYPE KNG2047 - KNG3047, KNG2048 - KNG3048

GENERAL CHARACTERISTICS

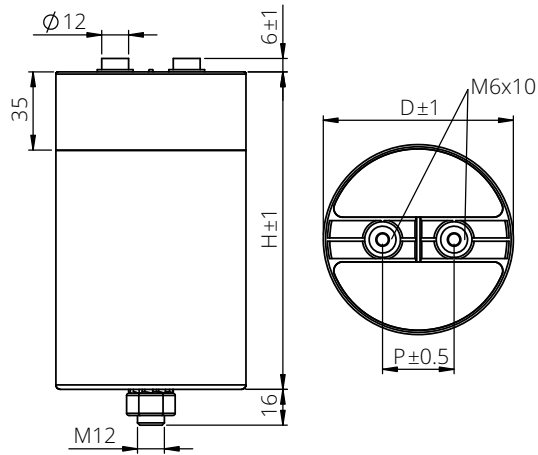
CAPACITANCE RANGE										
TYPE	U _{NDc} (V DC)	C _n (μF)	I _{max} (A)	I ₁ (kA)	I ₂ (kA)	R _s (mΩ)	L _s (nH)	R _{th} (K/W)	D x H (mm)	P (mm)
KNG204x	600	600	40	3.3	9.9	1.4	40	5.1	85x95	32
KNG204x		650	40	3.6	10.9	1.3	40	5.1	85x95	32
KNG204x		900	35	3.7	11.1	1.9	60	4.5	85x125	32
KNG304x		900	60	7.1	21.2	1.2	60	4.2	85x142	32
KNG304x		1050	60	7.2	21.5	1.3	70	3.9	85x155	32
KNG304x		1280	60	7.1	21.4	1.5	70	2.6	85x185	32
KNG304x		1740	60	7.1	21.4	1.6	80	2.4	85x235	32
KNG204x	700	460	40	2.3	6.9	1.4	40	5.1	85x95	32
KNG204x		620	35	3.1	9.3	1.9	60	4.5	85x125	32
KNG304x		640	60	4.4	13.4	1.5	60	4.2	85x142	32
KNG304x		750	60	4.5	13.5	1.6	70	3.9	85x155	32
KNG304x		920	60	4.6	13.8	1.7	80	2.6	85x185	32
KNG304x		1240	60	4.7	18.8	1.6	80	2.4	85x235	32
KNG304x		1700	80	8.8	26.5	1.3	70	2.1	116x185	50
KNG204x	900	370	35	2.2	6.6	1.8	40	5.5	85x95	32
KNG304x		480	60	4.0	12.0	1.2	60	4.9	85x142	32
KNG304x		500	60	4.1	12.3	1.2	40	4.9	85x142	32
KNG304x		560	60	4.2	12.6	1.3	60	4.0	85x155	32
KNG304x		650	70	3.3	10.0	1.1	50	4.2	85x185	32
KNG304x		680	60	4.3	12.9	1.3	70	3.2	85x185	32
KNG304x		750	70	4.0	12.0	1.0	55	3.3	85x173	32
KNG304x		950	60	5.7	17.1	1.4	70	2.7	85x235	32
KNG304x		1100	80	8.1	24.3	1.3	60	2.5	116x155	50
KNG304x		2050	60	10.1	30.3	1.5	75	1.5	116x285	50
KNG204x	1100	230	40	2.1	6.3	2.1	40	4.5	85x95	32
KNG304x		320	60	3.3	10.0	1.2	60	2.8	85x142	32
KNG304x		360	60	3.2	10.0	1.2	60	2.6	85x155	32
KNG304x		410	65	3.7	11.0	1.1	45	2.5	85x155	32
KNG304x		420	65	2.5	12.5	1.0	40	4.9	85x136.5	32
KNG304x		420	65	3.7	11.0	1.1	45	2.5	85x155	32
KNG304x		450	60	4.0	12.0	1.1	70	2.4	85x185	32
KNG304x		500	70	4.0	12.0	1.2	60	2.1	85x185	50
KNG304x		610	60	5.3	15.9	1.2	70	2.3	85x235	32
KNG304x		760	80	7.4	22.2	1.1	60	1.8	116x155	50
KNG304x		1100	100	9.9	29.7	1.3	80	1.8	116x230	50
KNG204x	1350	160	40	3.1	9.3	2.1	40	4.1	85x95	32
KNG304x		220	60	3.2	9.6	1.4	60	3.7	85x142	32
KNG304x		250	60	3.5	10.5	1.3	60	3.5	85x155	32
KNG304x		310	60	3.4	10.0	1.3	70	3.2	85x185	32
KNG304x		420	60	3.5	10.5	1.4	70	2.7	85x235	32
KNG304x		530	80	7.2	21.6	1.4	60	2.0	116x155	50
KNG304x		1090	100	11.0	33.0	1.7	75	1.5	116x290	50
KNG204x	1500	130	40	1.5	4.5	2.3	40	4.2	85x95	32
KNG304x		180	60	3.5	10.5	1.3	50	3.7	85x142	32
KNG304x		220	60	4.0	12.0	1.3	60	3.5	85x155	32
KNG304x		260	60	4.1	12.3	1.4	60	3.2	85x185	32
KNG304x		360	60	3.6	10.8	1.6	70	2.7	85x235	32
KNG304x		460	80	3.1	9.3	1.7	60	2.0	116x155	50
KNG204x	1800	90	35	1.6	4.8	2.5	60	4.6	85x95	32
KNG304x		140	55	2.0	6.0	2.4	70	3.5	85x155	32
KNG304x		240	60	2.9	8.7	1.7	70	2.7	85x235	32
KNG304x		350	80	3.0	9.0	2.0	70	2.0	116x185	50
KNG204x	2200	75	30	0.5	1.5	5.0	60	5.8	85x125	32
KNG304x		90	55	0.5	1.5	2.5	60	4.5	85x185	32
KNG304x		150	60	0.5	1.5	2.5	70	3.3	85x235	32
KNG304x		220	80	0.6	1.8	2.3	70	2.7	116x185	50

DC LINK CAPACITORS

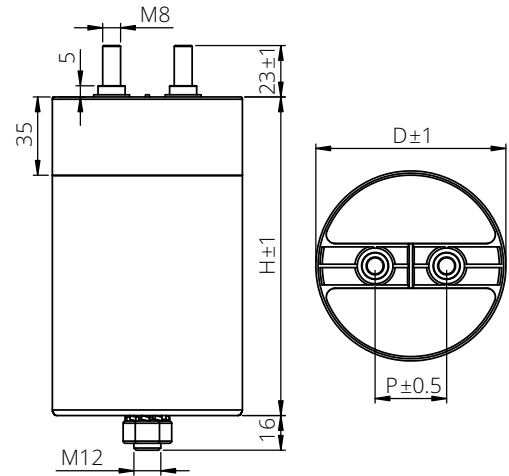
TYPE KNG2047 - KNG3047, KNG2048 - KNG3048

DIMENSIONS

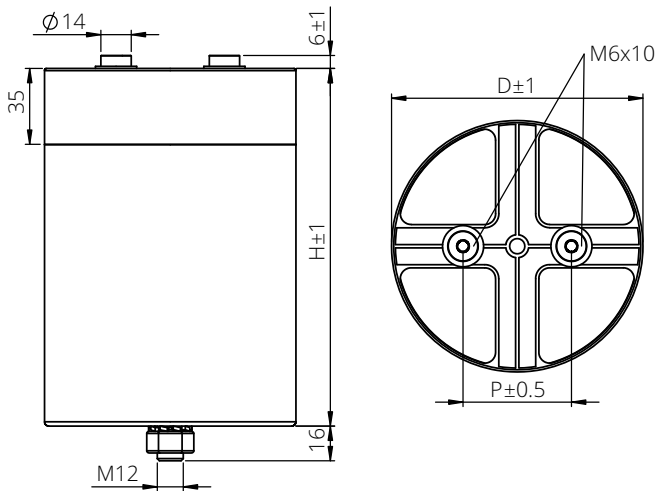
KNG2047, KNG3047- D85 mm



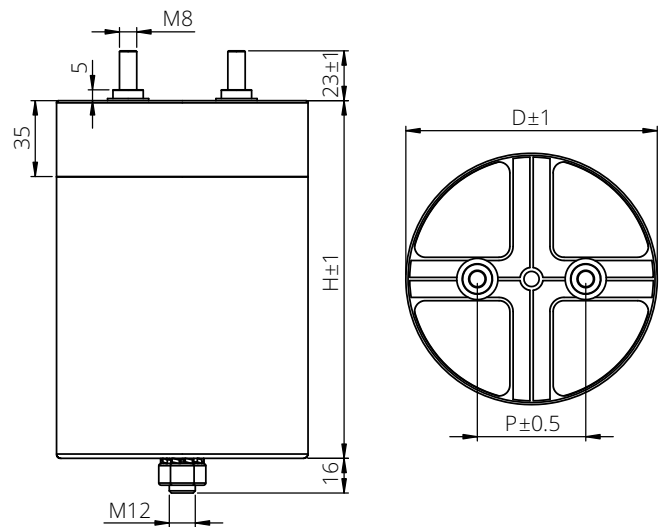
KNG2048, KNG3048- D85 mm



KNG2047, KNG3047- D116 mm



KNG2048, KNG3048- D116 mm



CONSTRUCTION

- **DIELECTRIC:** POLYPROPYLENE FILM
- **CAPACITOR ELECTRODES:** VACUUM-DEPOSITED METAL LAYERS (WITHOUT OVERPRESSURE DEVICE)
- **CASING:** CYLINDRICAL ALUMINIUM CASE WITH PLASTIC SELF-EXTINGUISHING SEALING COVER (UL 94 V-0)
- **FILLING:** EPOXY RESIN DRY (UL94 V-0)
- **TERMINALS:** M6x10 INTERNAL THREADS (TYPES KNG2047, KNG3047) - MAX. TORQUE 5 Nm
M8 SCREW (TYPES KNG2048, KNG3048) - MAX. TORQUE 6 Nm
- **BASE STUD:** M12x16 - MAX. TORQUE 12 Nm

HIGH POWER DC LINK CAPACITORS

TYPE KNG4910, KNG4914

APPLICATIONS

- SWITCHING MODE POWER SUPPLIES (SMPS)
- WIND PLANTS
- SOLAR POWER PLANTS
- MOTOR DRIVES
- INDUCTION HEATERS
- FREQUENCY INVERTERS
- UNINTERRUPTIBLE POWER SUPPLIES (UPS)



FEATURES

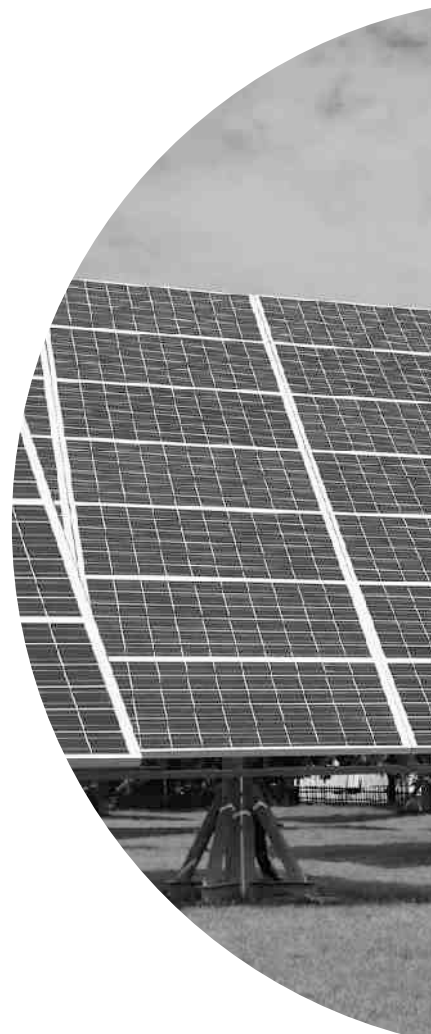
- FOR HARSH ENVIRONMENT
- SELF-HEALING PROPERTIES
- HIGH RIPPLE CURRENT
- HIGH RELIABILITY
- VERY LOW LOSSES

REFERENCE STANDARD

- IEC 61071
- AEC-Q200 (ON REQUEST)

SPECIFICATIONS

• RATED CAPACITANCE	0.22 µF UP TO 100 µF
• CAPACITANCE TOLERANCE	± 5 %, ± 10 %
• RATED VOLTAGE U_{NDC}	250 V DC, 300 V DC, 450 V DC, 630 V DC, 750 V DC, 875 V DC
• TEST VOLTAGE (BETWEEN TERMINALS)	$1.5 \times U_{NDC}$, 10 s
• SELF-INDUCTANCE	< 1 nH PER mm OF PITCH
• INSULATION RESISTANCE BETWEEN TERMINALS	$R \times C \geq 30\,000$ s AFTER 1 min AT 100 V FOR $U_{NDC} < 500$ V DC AT 500 V FOR $U_{NDC} \geq 500$ V DC
• OPERATING TEMPERATURE RANGE	-40 °C to +110 °C
• MAX. HOT SPOT TEMPERATURE	+110 °C
• CLIMATIC CATEGORY	40/110/56 ACCORDING TO IEC 60068-1
• LIFE EXPECTANCY	$\geq 100\,000$ HOURS AT U_{NDC} , $\theta_{hs} = 70$ °C
• FAILURE RATE	100 FIT



HIGH POWER DC LINK CAPACITORS

TYPE KNG4910, KNG4914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{NDC} @ 85\text{ °C} = 250\text{ V DC}$, $U_{op} @ 70\text{ °C} = 300\text{ V DC}$

$C_N^{(1)}$ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}^{(3)}$ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	$I_{max}@10\text{ kHz}^{(5)}$ (A)	$(dU/dt)_{max}$ (V/ μs)	\hat{I} (A)
	L	H	W	P	P1					
1.5	32.0	16.0	7.5	27.5	-	10	27.0	3.8	32	48
2.2	32.0	17.0	9.0	27.5	-	10	19.0	4.8	32	70
3	32.0	19.0	10.0	27.5	-	10	14.5	5.8	32	96
3.3	32.0	20.0	11.0	27.5	-	10	13.8	6.2	32	106
4.7	32.0	22.0	13.0	27.5	-	10	10.0	7.8	32	150
5	32.0	22.0	13.0	27.5	-	10	9.5	8.0	32	160
5.6	32.0	23.5	14.0	27.5	-	10	8.6	8.7	32	179
6	32.0	24.5	15.0	27.5	-	10	8.2	9.2	32	192
6.8	32.0	24.5	15.0	27.5	-	10	7.4	9.7	32	218
8	32.0	26.5	17.0	27.5	-	10	6.5	10.9	32	256
8.2	32.0	28.0	18.0	27.5	-	10	6.3	11.4	32	262
10	32.0	28.0	18.0	27.5	-	10	5.3	12.0	32	320
12	32.0	32.0	18.0	27.5	-	10	4.5	12.0	32	384
15	32.0	35.0	20.0	27.5	-/10.2	10	3.7	16.6	32	480
18	32.0	35.5	24.0	27.5	-/10.2	10	3.2	18.7	32	576
20	32.0	40.0	25.0	27.5	-/10.2	10	3.0	20.1	32	640
10	42.0	27.0	16.0	37.5	-	15	9.2	10.1	22	220
12	42.0	27.0	16.0	37.5	-	15	8.0	10.8	22	264
15	42.0	31.0	18.0	37.5	10.2	15	6.5	12.9	22	330
18	42.0	38.0	21.0	37.5	10.2	15	5.6	15.0	22	396
20	42.0	38.0	21.0	37.5	10.2	15	5.1	15.8	22	440
22	42.0	38.0	21.0	37.5	10.2	15	4.7	16.4	22	484
25	42.0	43.0	28.0	37.5	10.2	15	4.2	17.7	22	550
30	42.0	43.0	28.0	37.5	10.2	15	3.7	18.9	22	660
35	42.0	43.0	28.0	37.5	10.2	15	3.3	20.0	22	770
40	42.0	45.0	30.0	37.5	10.2/20.3	15	3.0	21.8	22	880
50	42.0	50.0	36.0	37.5	10.2/20.3	15	2.6	24.0	22	1100
55	42.0	50.0	36.0	37.5	10.2/20.3	15	2.5	24.0	22	1210
55	57.5	45.0	30.0	52.5	20.3	20	3.0	24.1	15	825
60	57.5	45.0	30.0	52.5	20.3	20	2.8	24.9	15	900
70	57.5	50.0	35.0	52.5	20.3	20	2.5	28.2	15	1050
75	57.5	50.0	35.0	52.5	20.3	20	2.4	28.8	15	1125
80	57.5	50.0	35.0	52.5	20.3	20	2.3	29.4	15	1200
90	57.5	55.0	40.0	52.5	20.3	20	2.1	31.7	15	1350
100	57.5	55.0	40.0	52.5	20.3	20	1.9	32.0	15	1500

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES MEASURED AT 1 kHz.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

HIGH POWER DC LINK CAPACITORS

TYPE KNG4910, KNG4914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{NDC} @ 85\text{ °C} = 300\text{ V DC}$, $U_{op} @ 70\text{ °C} = 450\text{ V DC}$

C_N ⁽¹⁾ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}$ ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ ($\text{m}\Omega$)	$I_{max}@10\text{ kHz}$ ⁽⁵⁾ (A)	$(dU/dt)_{max}$ ($\text{V}/\mu\text{s}$)	\hat{I} (A)
	L	H	W	P	P1					
1	32.0	16.0	7.5	27.5	-	10	36.0	3.3	36	36
2.2	32.0	19.0	10.0	27.5	-	10	16.5	5.5	36	79
3.3	32.0	21.0	12.0	27.5	-	10	12.0	6.9	36	119
4	32.0	23.5	14.0	27.5	-	10	11.5	7.9	36	144
4.7	32.0	24.5	15.0	27.5	-	10	9.0	8.8	36	169
5	32.0	24.5	15.0	27.5	-	10	8.7	9.0	36	180
5.6	32.0	26.5	17.0	27.5	-	10	7.9	9.9	36	202
6	32.0	26.5	17.0	27.5	-	10	7.5	10.1	36	216
6.8	32.0	28.0	18.0	27.5	-	10	6.8	11.0	36	245
8	32.0	32.0	18.0	27.5	-	10	6.0	12.0	36	288
8.2	32.0	32.0	18.0	27.5	-	10	5.9	12.0	36	295
10	32.0	33.0	20.0	27.5	-/10.2	10	5.0	14.0	36	360
12	32.0	35.5	24.0	27.5	-/10.2	10	4.2	16.3	36	432
15	32.0	40.0	25.0	27.5	-/10.2	10	3.4	19.2	36	540
8.2	42.0	27.0	16.0	37.5	-	15	10.4	9.5	25	205
9	42.0	31.0	18.0	37.5	10.2	15	9.3	10.8	25	225
10	42.0	31.0	18.0	37.5	10.2	15	8.5	11.3	25	250
11	42.0	31.0	18.0	37.5	10.2	15	7.7	11.8	25	275
12	42.0	31.0	18.0	37.5	10.2	15	7.0	12.4	25	300
15	42.0	38.0	21.0	37.5	10.2	15	5.7	14.9	25	375
18	42.0	38.0	21.0	37.5	10.2	15	4.8	16.2	25	450
20	42.0	43.0	28.0	37.5	10.2	15	4.3	17.5	25	500
22	42.0	43.0	28.0	37.5	10.2	15	3.9	18.4	25	550
25	42.0	43.0	28.0	37.5	10.2	15	3.5	19.4	25	625
30	42.0	45.0	30.0	37.5	10.2/20.3	15	2.9	22.2	25	750
35	42.0	50.0	36.0	37.5	10.2/20.3	15	2.6	24.0	25	875
40	42.0	50.0	36.0	37.5	10.2/20.3	15	2.3	24.0	25	1000
40	57.5	45.0	30.0	52.5	20.3	20	3.1	23.7	17	680
45	57.5	45.0	30.0	52.5	20.3	20	2.8	24.9	17	765
50	57.5	50.0	35.0	52.5	20.3	20	2.6	27.7	17	850
55	57.5	50.0	35.0	52.5	20.3	20	2.4	28.8	17	935
60	57.5	50.0	35.0	52.5	20.3	20	2.2	30.1	17	1020
65	57.5	55.0	40.0	52.5	20.3	20	2.1	31.7	17	1105
70	57.5	55.0	40.0	52.5	20.3	20	2.0	32.0	17	1190
75	57.5	55.0	40.0	52.5	20.3	20	1.9	32.0	17	1275

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES MEASURED AT 1 kHz.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

HIGH POWER DC LINK CAPACITORS

TYPE KNG4910, KNG4914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{NDC} @ 85\text{ °C} = 450\text{ V DC}$, $U_{op} @ 70\text{ °C} = 630\text{ V DC}$

$C_N^{(1)}$ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}^{(3)}$ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	$I_{max}@10\text{ kHz}^{(5)}$ (A)	$(dU/dt)_{max}$ (V/ μs)	\hat{I} (A)
	L	H	W	P	P1					
0.82	32.0	16.0	7.5	27.5	-	10	38.0	3.2	45	37
1	32.0	17.0	9.0	27.5	-	10	32.0	3.7	45	45
1.5	32.0	19.0	10.0	27.5	-	10	21.0	4.8	45	68
2	32.0	21.0	12.0	27.5	-	10	16.5	5.9	45	90
3.3	32.0	24.5	15.0	27.5	-	10	10.5	8.2	45	149
4	32.0	26.5	17.0	27.5	-	10	9.0	9.2	45	180
4.7	32.0	28.0	18.0	27.5	-	10	7.5	10.5	45	212
5	32.0	28.0	18.0	27.5	-	10	7.3	10.6	45	225
5.6	32.0	32.0	18.0	27.5	-	10	6.4	11.8	45	252
6	32.0	33.0	20.0	27.5	-/10.2	10	6.2	12.6	45	270
6.8	32.0	33.0	20.0	27.5	-/10.2	10	5.6	13.2	45	306
8	32.0	35.5	24.0	27.5	-/10.2	10	4.9	15.1	45	360
8.2	32.0	35.5	24.0	27.5	-/10.2	10	4.8	15.3	45	369
10	32.0	40.0	25.0	27.5	-/10.2	10	4.1	17.5	45	450
5	42.0	27.0	16.0	37.5	-	15	13.0	8.5	32	160
5.6	42.0	27.0	16.0	37.5	-	15	11.5	9.0	32	179
6	42.0	31.0	18.0	37.5	10.2	15	10.8	10.0	32	192
6.8	42.0	31.0	18.0	37.5	10.2	15	9.5	10.7	32	218
7.5	42.0	31.0	18.0	37.5	10.2	15	8.7	11.1	32	240
8	42.0	38.0	21.0	37.5	10.2	15	8.1	12.5	32	256
8.2	42.0	38.0	21.0	37.5	10.2	15	7.9	12.7	32	262
10	42.0	38.0	21.0	37.5	10.2	15	6.6	13.8	32	320
12	42.0	38.0	21.0	37.5	10.2	15	5.6	15.0	32	384
14	42.0	43.0	28.0	37.5	10.2	15	4.9	16.4	32	448
15	42.0	43.0	28.0	37.5	10.2	15	4.6	16.9	32	480
18	42.0	43.0	28.0	37.5	10.2	15	3.9	18.4	32	576
20	42.0	45.0	30.0	37.5	10.2/20.3	15	3.5	20.2	32	640
22	42.0	50.0	36.0	37.5	10.2/20.3	15	3.2	22.6	32	704
25	42.0	50.0	36.0	37.5	10.2/20.3	15	2.9	23.8	32	800
25	57.5	45.0	30.0	52.5	20.3	20	3.7	21.7	22	550
30	57.5	45.0	30.0	52.5	20.3	20	3.2	23.3	22	660
35	57.5	50.0	35.0	52.5	20.3	20	2.8	26.7	22	770
40	57.5	50.0	35.0	52.5	20.3	20	2.5	28.2	22	880
45	57.5	55.0	40.0	52.5	20.3	20	2.3	30.3	22	990
50	57.5	55.0	40.0	52.5	20.3	20	2.1	31.7	22	1100

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES MEASURED AT 1 kHz.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

HIGH POWER DC LINK CAPACITORS

TYPE KNG4910, KNG4914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{NDC} @ 85\text{ °C} = 630\text{ V DC}$, $U_{op} @ 70\text{ °C} = 800\text{ V DC}$

$C_N^{(1)}$ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}^{(3)}$ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	$I_{max}@10\text{ kHz}^{(5)}$ (A)	$(dU/dt)_{max}$ (V/ μs)	\hat{I} (A)
	L	H	W	P	P1					
0.56	32.0	16.0	7.5	27.5	-	10	48.0	2.9	54	30
0.68	32.0	17.0	9.0	27.5	-	10	40.0	3.3	54	37
0.82	32.0	17.0	9.0	27.5	-	10	33.0	3.6	54	44
1	32.0	19.0	10.0	27.5	-	10	26.8	4.3	54	54
1.2	32.0	21.0	12.0	27.5	-	10	23.0	5.0	54	65
2	32.0	24.5	15.0	27.5	-	10	14.0	7.1	54	108
2.2	32.0	24.5	15.0	27.5	-	10	13.0	7.3	54	119
3	32.0	28.0	18.0	27.5	-	10	9.8	9.2	54	162
3.3	32.0	28.0	18.0	27.5	-	10	8.8	9.7	54	178
4	32.0	32.0	18.0	27.5	-	10	7.2	11.2	54	216
4.7	32.0	33.0	20.0	27.5	-10.2	10	6.6	12.2	54	254
5	32.0	35.0	20.0	27.5	-10.2	10	6.3	12.7	54	270
5.6	32.0	35.5	24.0	27.5	-10.2	10	5.8	13.9	54	302
6	32.0	35.5	24.0	27.5	-10.2	10	5.5	14.3	54	324
6.8	32.0	40.0	25.0	27.5	-10.2	10	4.9	16.0	54	258
7	32.0	40.0	25.0	27.5	-10.2	10	4.8	16.1	54	266
4	42.0	27.0	16.0	37.5	-	15	12.0	8.8	38	152
4.7	42.0	31.0	18.0	37.5	10.2	15	10.2	10.3	38	179
5	42.0	31.0	18.0	37.5	10.2	15	9.5	10.7	38	190
5.6	42.0	32.0	19.0	37.5	10.2	15	8.7	11.4	38	213
6	42.0	32.0	19.0	37.5	10.2	15	8.2	11.7	38	228
6.8	42.0	38.0	21.0	37.5	10.2	15	7.3	13.2	38	258
8	42.0	38.0	21.0	37.5	10.2	15	6.5	14.0	38	304
8.2	42.0	38.0	21.0	37.5	10.2	15	6.3	14.2	38	312
10	42.0	43.0	28.0	37.5	10.2	15	5.2	15.9	38	380
12	42.0	43.0	28.0	37.5	10.2	15	4.3	17.5	38	456
15	42.0	50.0	36.0	37.5	10.2/20.3	15	3.6	21.3	38	570
18	42.0	50.0	36.0	37.5	10.2/20.3	15	3.1	23.0	38	684
20	42.0	50.0	36.0	37.5	10.2/20.3	15	2.8	24.0	38	760
18	57.5	45.0	30.0	52.5	20.3	20	4.5	19.7	26	468
20	57.5	45.0	30.0	52.5	20.3	20	4.1	20.6	26	520
22	57.5	50.0	35.0	52.5	20.3	20	3.8	22.9	26	572
25	57.5	50.0	35.0	52.5	20.3	20	3.4	24.2	26	650
30	57.5	55.0	40.0	52.5	20.3	20	2.9	26.9	26	780
35	57.5	55.0	40.0	52.5	20.3	20	2.5	29.0	26	910

NOTES:

- ⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.
⁽²⁾ NOMINAL DIMENSIONS.
⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES MEASURED AT 1 kHz.
⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.
⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

HIGH POWER DC LINK CAPACITORS

TYPE KNG4910, KNG4914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

U_{NDC} @ 85 °C = 750 V DC, U_{op} @ 70 °C = 900 V DC

C_N ⁽¹⁾ (μ F)	Dimensions (mm) ⁽²⁾					$\tan(\delta)$ @1kHz ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	I_{max} @10 kHz ⁽⁵⁾ (A)	$(dU/dt)_{max}$ (V/ μ s)	\hat{I} (A)
	L	H	W	P	P1					
0.39	32.0	16.0	7.5	27.5	-	10	60.0	2.6	63	25
0.47	32.0	17.0	9.0	27.5	-	10	50.0	3.0	63	30
0.56	32.0	17.0	9.0	27.5	-	10	41.5	3.2	63	35
0.68	32.0	19.0	10.0	27.5	-	10	35.0	3.7	63	43
0.82	32.0	20.0	11.0	27.5	-	10	30.0	4.2	63	52
1	32.0	21.0	12.0	27.5	-	10	25.5	4.7	63	63
1.5	32.0	24.5	15.0	27.5	-	10	17.0	6.4	63	95
2	32.0	26.5	17.0	27.5	-	10	13.0	7.7	63	126
2.2	32.0	26.5	17.0	27.5	-	10	11.6	8.1	63	139
3	32.0	33.0	20.0	27.5	-10.2	10	8.8	10.6	63	189
3.3	32.0	33.0	20.0	27.5	-10.2	10	8.2	10.9	63	208
4	32.0	35.5	24.0	27.5	-10.2	10	6.9	12.7	63	252
4.7	32.0	40.0	25.0	27.5	-10.2	10	6.0	14.4	63	296
5	32.0	40.0	25.0	27.5	-10.2	10	5.6	14.9	63	315
2.2	42.0	27.0	16.0	37.5	-	15	17.0	7.4	45	140
3	42.0	27.0	16.0	37.5	-	15	13.0	8.5	45	135
3.3	42.0	31.0	18.0	37.5	10.2	15	12.3	9.4	45	149
4	42.0	32.0	19.0	37.5	10.2	15	10.5	10.4	45	180
4.7	42.0	38.0	21.0	37.5	10.2	15	9.0	11.9	45	212
5	42.0	38.0	21.0	37.5	10.2	15	8.5	12.2	45	225
5.6	42.0	38.0	21.0	37.5	10.2	15	7.7	12.8	45	252
6	42.0	38.0	21.0	37.5	10.2	15	7.3	13.2	45	270
6.8	42.0	43.0	28.0	37.5	10.2	15	6.6	14.1	45	306
8	42.0	43.0	28.0	37.5	10.2	15	5.8	15.1	45	360
8.2	42.0	43.0	28.0	37.5	10.2	15	5.7	15.2	45	369
9	42.0	45.0	30.0	37.5	10.2	15	5.3	16.4	45	405
10	42.0	45.0	30.0	37.5	10.2/20.3	15	4.8	17.3	45	450
12	42.0	50.0	36.0	37.5	10.2/20.3	15	4.1	20.0	45	540
14	42.0	50.0	36.0	37.5	10.2/20.3	15	3.7	21.0	45	630
14	57.5	45.0	30.0	52.5	20.3	20	4.8	19.0	30	420
15	57.5	45.0	30.0	52.5	20.3	20	4.6	19.4	30	450
18	57.5	50.0	35.0	52.5	20.3	20	3.8	22.9	30	540
20	57.5	50.0	35.0	52.5	20.3	20	3.5	23.9	30	600
22	57.5	55.0	40.0	52.5	20.3	20	3.2	25.6	30	660
25	57.5	55.0	40.0	52.5	20.3	20	3.0	26.5	30	750

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES MEASURED AT 1 kHz

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70^\circ\text{C}$ FOR $\Delta\theta_{case} \leq 20^\circ\text{C}$.

HIGH POWER DC LINK CAPACITORS

TYPE KNG4910, KNG4914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{NDC} @ 85\text{ °C} = 875\text{ V DC}$, $U_{ov} @ 70\text{ °C} = 1050\text{ V DC}$

C_N ⁽¹⁾ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}$ ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	$I_{max}@10\text{ kHz}$ ⁽⁵⁾ (A)	$(dU/dt)_{max}$ (V/ μs)	\hat{I} (A)
	L	H	W	P	P1					
0.22	32.0	16.0	7.5	27.5	-	10	80.0	2.2	72	16
0.33	32.0	17.0	9.0	27.5	-	10	55.0	2.8	72	24
0.47	32.0	19.0	10.0	27.5	-	10	42.0	3.4	72	34
0.56	32.0	19.0	10.0	27.5	-	10	37.0	3.6	72	40
0.68	32.0	20.0	11.0	27.5	-	10	30.0	4.2	72	49
0.82	32.0	21.0	12.0	27.5	-	10	25.0	4.8	72	59
1	32.0	22.0	13.0	27.5	-	10	22.0	5.2	72	72
1.5	32.0	26.5	17.0	27.5	-	10	15.0	7.2	72	108
2	32.0	28.0	18.0	27.5	-	10	11.5	8.5	72	144
2.2	32.0	32.0	18.0	27.5	-	10	10.5	9.2	72	158
3	32.0	35.5	24.0	27.5	-10.2	10	7.8	12.0	72	216
3.3	32.0	35.5	24.0	27.5	-10.2	10	7.3	12.4	72	238
4	32.0	40.0	25.0	27.5	-10.2	10	6.3	14.1	72	288
2	42.0	27.0	16.0	37.5	-	15	16.0	7.6	51	102
2.2	42.0	27.0	16.0	37.5	-	15	15.0	7.9	51	112
3	42.0	31.0	18.0	37.5	10.2	15	11.5	9.7	51	153
3.3	42.0	38.0	21.0	37.5	10.2	15	10.5	11.0	51	168
4	42.0	38.0	21.0	37.5	10.2	15	9.0	11.9	51	204
4.7	42.0	38.0	21.0	37.5	10.2	15	7.6	12.9	51	240
5	42.0	43.0	28.0	37.5	10.2	15	7.0	13.7	51	255
5.6	42.0	43.0	28.0	37.5	10.2	15	6.3	14.5	51	286
6	42.0	43.0	28.0	37.5	10.2	15	6.1	14.2	51	306
6.8	42.0	43.0	28.0	37.5	10.2	15	5.8	15.1	51	347
7.5	42.0	45.0	30.0	37.5	10.2/20.3	15	5.4	16.3	51	383
8	42.0	45.0	30.0	37.5	10.2/20.3	15	5.1	16.7	51	408
8.2	42.0	45.0	30.0	37.5	10.2/20.3	15	5.0	16.9	51	418
9	42.0	50.0	36.0	37.5	10.2/20.3	15	4.6	18.9	51	459
10	42.0	50.0	36.0	37.5	10.2/20.3	15	4.4	19.3	51	510
10	57.5	45.0	30.0	52.5	20.3	20	5.2	18.3	35	350
12	57.5	45.0	30.0	52.5	20.3	20	4.6	19.4	35	420
14	57.5	50.0	35.0	52.5	20.3	20	4.0	22.3	35	490
15	57.5	50.0	35.0	52.5	20.3	20	3.8	22.9	35	525
16	57.5	50.0	35.0	52.5	20.3	20	3.7	23.2	35	560
18	57.5	55.0	40.0	52.5	20.3	20	3.3	25.3	35	630
20	57.5	55.0	40.0	52.5	20.3	20	3.0	26.5	35	700

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES MEASURED AT 1kHz.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

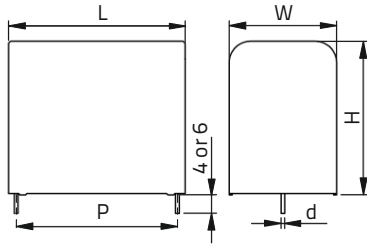
⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

HIGH POWER DC LINK CAPACITORS

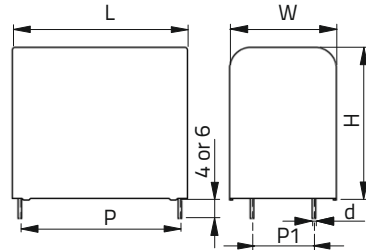
TYPE KNG4910, KNG4914

DIMENSIONS

KNG4910 (2 pins)



KNG4914 (4 pins)

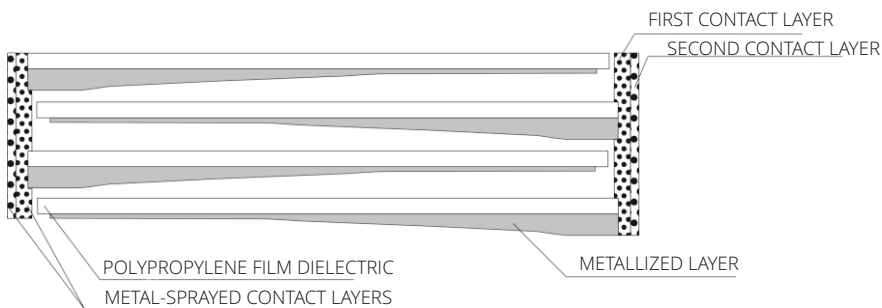


TERMINAL DIMENSIONS					MAX. BOX DIMENSIONS			
P (mm)	TOLERANCE (mm)	P1 (mm)	TOLERANCE (mm)	d (mm)	TOLERANCE (mm)	L _{max} (mm)	H _{max} (mm)	W _{max} (mm)
27.5	±0.5	-	-	0.8	±0.05	L + 0.5	H + 0.2	W + 0.5
27.5	±0.5	10.2	±0.5	1 OR 1.2	±0.05	L + 0.5	H + 0.2	W + 0.5
37.5	±0.5	-	±0.5	1 OR 1.2	±0.05	L + 0.5	H + 0.5	W + 0.5
37.5	±0.5	10.2	±0.5	1 OR 1.2	±0.05	L + 0.5	H + 0.5	W + 0.5
37.5	±0.5	20.3	±0.5	1 OR 1.2	±0.05	L + 0.5	H + 0.5	W + 0.5
52.5	±0.5	20.3	±0.5	1.2	±0.05	L + 1.0	H + 1.0	W + 1.0

CONSTRUCTION

- **DIELECTRIC:** POLYPROPYLENE FILM
- **CAPACITOR ELECTRODES:** VACUUM-DEPOSITED METAL LAYERS
- **CASING:** PLASTIC CASE WITH FLAME-RETARDANT EPOXY RESIN SEALING (UL 94V-0)
- **TERMINALS:** PARALLEL TINNED COPPER WIRE (2 OR 4 PINS)

INTERNAL CONSTRUCTION



HIGH DENSITY DC LINK CAPACITORS

TYPE KNG1910, KNG1914

APPLICATIONS

- HYBRID VEHICLES
- WIND PLANTS
- SOLAR POWER PLANTS
- ELECTRIC ENERGY GENERATION FROM SEA WAVES
- MEDICAL EQUIPMENT
- INDUSTRIAL EQUIPMENT
- CAR ELECTRONICS
- RAILWAYS AND TURBINES (GENERATOR)
- FREQUENCY INVERTERS
- DC FILTERING APPLICATIONS



FEATURES

- HIGH CAPACITANCE
- SELF-HEALING PROPERTIES
- HIGH RELIABILITY
- LOW LOSSES
- LOW DISSIPATION FACTOR OF DIELECTRIC

REFERENCE STANDARD

- IEC 61071
- AEC-Q200 (ON REQUEST)

SPECIFICATIONS

- | | |
|---|--|
| • RATED CAPACITANCE | 0.1 µF UP TO 480 µF |
| • CAPACITANCE TOLERANCE | ± 5 %, ± 10 % |
| • RATED VOLTAGE | 450 V DC, 700 V DC, 800 V DC, 900 V DC, 1100 V DC, 1300 V DC |
| • TEST VOLTAGE (BETWEEN TERMINALS) | 1.5xU _{NDC} , 10 s |
| • SELF-INDUCTANCE | < 1nH PER mm OF PITCH |
| • INSULATION RESISTANCE BETWEEN TERMINALS | RxC ≥ 30 000 s AFTER 1 min
AT 100 V FOR U _{NDC} < 500 V DC
AT 500 V FOR U _{NDC} ≥ 500 V DC |
| • MAX. PEAK-TO-PEAK VOLTAGE | 0.2xU _{NDC} |
| • OPERATING TEMPERATURE RANGE | -40 °C to +85 °C |
| • MAX. HOT SPOT TEMPERATURE | 105 °C |
| • CLIMATIC CATEGORY | 40/85/56 ACCORDING TO IEC 60068-1 |
| • LIFE EXPECTANCY | ≥ 100 000 HOURS AT U _{NDC} , θ _{HS} = 70 °C |
| • FAILURE RATE | 100 FIT |



HIGH DENSITY DC LINK CAPACITORS

TYPE KNG1910, KNG1914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{NDC} @ 85\text{ °C} = 450\text{ V DC}$, $U_{op} @ 70\text{ °C} = 500\text{ V DC}$, $U_{op} @ 105\text{ °C} = 300\text{ V DC}$

C_N ⁽¹⁾ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}$ ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	$I_{max}@10\text{ kHz}$ ⁽⁵⁾ (A)	$(dU/dt)_{max}$ (V/ μs)	\hat{I} (A)
	L	H	W	P	P1					
1	32.0	17.0	9.0	27.5	-	15	40.0	3.3	27	27
2	32.0	17.0	9.0	27.5	-	15	35.0	3.5	27	54
3	32.0	17.0	9.0	27.5	-	15	27.0	4.0	27	81
4	32.0	19.0	10.0	27.5	-	15	22.0	4.7	27	108
5	32.0	21.0	12.0	27.5	-	15	18.5	5.5	27	135
6	32.0	21.0	12.0	27.5	-	15	16.7	5.8	27	162
7	32.0	22.0	13.0	27.5	-	15	15.2	6.3	27	189
8	32.0	23.5	14.0	27.5	-	15	14.0	6.8	27	216
9	32.0	24.5	15.0	27.5	-	15	12.8	7.4	27	243
10	32.0	26.5	17.0	27.5	-	20	11.7	8.1	27	270
12	32.0	28.0	18.0	27.5	-	20	10.2	9.0	27	324
14	32.0	32.0	18.0	27.5	-	20	9.0	10.0	27	378
15	32.0	32.0	18.0	27.5	-	20	8.5	10.3	27	405
20	32.0	35.5	24.0	27.5	-/10.2	20	6.5	13.1	27	540
25	32.0	40.0	25.0	27.5	-/10.2	20	5.3	15.4	27	675
28	32.0	40.0	25.0	27.5	-/10.2	20	4.8	16.1	27	756
15	42.0	27.0	16.0	37.5	-	25	10.5	9.4	20	300
20	42.0	31.0	18.0	37.5	10.2	25	8.0	11.6	20	400
25	42.0	32.0	19.0	37.5	10.2	25	7.0	12.7	20	500
30	42.0	38.0	21.0	37.5	10.2	25	6.5	14.0	20	600
35	42.0	43.0	28.0	37.5	10.2	25	6.0	14.8	20	700
40	42.0	43.0	28.0	37.5	10.2	25	5.4	15.6	20	800
45	42.0	43.0	28.0	37.5	10.2	25	4.8	16.6	20	900
50	42.0	43.0	28.0	37.5	10.2	25	4.5	17.1	20	1000
55	42.0	45.0	30.0	37.5	10.2/20.3	25	4.2	18.4	20	1100
60	42.0	50.0	36.0	37.5	10.2/20.3	25	4.0	20.2	20	1200
65	42.0	50.0	36.0	37.5	10.2/20.3	25	3.8	20.8	20	1300
70	42.0	50.0	36.0	37.5	10.2/20.3	25	3.5	21.6	20	1400
75	42.0	50.0	36.0	37.5	10.2/20.3	25	3.3	22.0	20	1500
70	57.5	45.0	30.0	52.5	20.3	40	4.7	19.2	13	910
75	57.5	45.0	30.0	52.5	20.3	40	4.4	19.9	13	975
80	57.5	45.0	30.0	52.5	20.3	40	4.2	20.3	13	1040
90	57.5	50.0	35.0	52.5	20.3	40	3.8	22.9	13	1170
100	57.5	50.0	35.0	52.5	20.3	40	3.5	23.9	13	1300
110	57.5	50.0	35.0	52.5	20.3	40	3.2	25.0	13	1430
120	57.5	55.0	40.0	52.5	20.3	40	3.0	26.5	13	1560
130	57.5	55.0	40.0	52.5	20.3	40	2.9	26.9	13	1690
480	59.0	59.0	130.0	52.5	20.3x5	45	1.0	71.0	13	6240

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

HIGH DENSITY DC LINK CAPACITORS

TYPE KNG1910, KNG1914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{NDC} @ 85\text{ °C} = 700\text{ V DC}$, $U_{op} @ 70\text{ °C} = 800\text{ V DC}$, $U_{op} @ 105\text{ °C} = 500\text{ V DC}$

C_N ⁽¹⁾ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}$ ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ ($\text{m}\Omega$)	$I_{max}@10\text{ kHz}$ ⁽⁵⁾ (A)	$(dU/dt)_{max}$ ($\text{V}/\mu\text{s}$)	\hat{I} (A)
	L	H	W	P	P1					
1	32.0	17.0	9.0	27.5	-	10	40.0	3.3	30	30
2	32.0	17.0	9.0	27.5	-	10	35.0	3.5	30	60
3	32.0	19.0	10.0	27.5	-	10	25.0	4.4	30	90
4	32.0	21.0	12.0	27.5	-	10	19.0	5.5	30	120
5	32.0	22.0	13.0	27.5	-	10	15.5	6.2	30	150
6	32.0	24.5	15.0	27.5	-	15	13.0	7.3	30	180
7	32.0	24.5	15.0	27.5	-	15	11.5	7.8	30	210
8	32.0	26.5	17.0	27.5	-	15	10.2	8.7	30	240
9	32.0	28.0	18.0	27.5	-	15	9.3	9.4	30	270
10	32.0	28.0	18.0	27.5	-	15	8.5	9.8	30	300
12	32.0	32.0	18.0	27.5	-	15	7.3	11.1	30	360
14	32.0	35.0	20.0	27.5	-/10.2	15	6.5	12.5	30	420
15	32.0	35.0	20.0	27.5	-/10.2	15	6.1	12.9	30	450
18	32.0	35.5	24.0	27.5	-/10.2	15	5.1	14.8	30	540
20	32.0	40.0	25.0	27.5	-/10.2	15	4.6	16.5	30	600
10	42.0	27.0	16.0	37.5	-	20	14.0	8.2	22	220
12	42.0	27.0	16.0	37.5	-	20	12.0	8.8	22	264
15	42.0	31.0	18.0	37.5	10.2	20	9.8	10.5	22	330
18	42.0	38.0	21.0	37.5	10.2	20	8.2	12.4	22	396
20	42.0	38.0	21.0	37.5	10.2	20	7.4	13.1	22	440
22	42.0	38.0	21.0	37.5	10.2	20	6.8	13.6	22	484
25	42.0	43.0	28.0	37.5	10.2	25	6.1	14.7	22	550
30	42.0	43.0	28.0	37.5	10.2	25	5.7	15.2	22	660
35	42.0	43.0	28.0	37.5	10.2	25	5.0	16.2	22	770
40	42.0	45.0	30.0	37.5	10.2/20.3	25	4.5	17.8	22	880
45	42.0	45.0	30.0	37.5	10.2/20.3	25	4.1	18.7	22	990
50	42.0	50.0	36.0	37.5	10.2/20.3	25	3.8	20.8	22	1100
55	42.0	50.0	36.0	37.5	10.2/20.3	25	3.5	21.6	22	1210
50	57.5	45.0	30.0	52.5	20.3	35	6.0	17.0	15	750
55	57.5	45.0	30.0	52.5	20.3	35	5.5	17.8	15	825
60	57.5	45.0	30.0	52.5	20.3	35	5.1	18.5	15	900
65	57.5	50.0	35.0	52.5	20.3	35	4.7	20.6	15	975
70	57.5	50.0	35.0	52.5	20.3	35	4.4	21.3	15	1050
75	57.5	50.0	35.0	52.5	20.3	35	4.2	21.8	15	1125
80	57.5	55.0	40.0	52.5	20.3	35	4.0	22.9	15	1200
85	57.5	55.0	40.0	52.5	20.3	35	3.8	23.5	15	1275
90	57.5	55.0	40.0	52.5	20.3	35	3.6	24.2	15	1350
100	57.5	55.0	40.0	52.5	20.3	35	3.3	25.3	15	1500
360	59.0	59.0	130.0	52.5	20.3x5	40	1.1	67.0	15	5400

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

HIGH DENSITY DC LINK CAPACITORS

TYPE KNG1910, KNG1914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{NDC} @ 85\text{ }^{\circ}\text{C} = 800\text{ V DC}$, $U_{op} @ 70\text{ }^{\circ}\text{C} = 950\text{ V DC}$, $U_{op} @ 105\text{ }^{\circ}\text{C} = 550\text{ V DC}$

C_N ⁽¹⁾ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}$ ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	$I_{max}@10\text{ kHz}$ ⁽⁵⁾ (A)	$(dU/dt)_{max}$ (V/ μs)	\hat{I} (A)
	L	H	W	P	P1					
1	32.0	17.0	9.0	27.5	-	10	40.0	3.3	35	35
2	32.0	19.0	10.0	27.5	-	10	27.0	4.3	35	70
3	32.0	21.0	12.0	27.5	-	10	19.0	5.5	35	105
4	32.0	22.0	13.0	27.5	-	10	15.0	6.3	35	140
5	32.0	24.5	15.0	27.5	-	10	13.0	7.3	35	175
6	32.0	26.5	17.0	27.5	-	10	10.9	8.4	35	210
7	32.0	28.0	18.0	27.5	-	10	9.3	9.4	35	245
8	32.0	32.0	18.0	27.5	-	15	8.1	10.5	35	280
9	32.0	33.0	20.0	27.5	-/10.2	15	7.2	11.7	35	315
10	32.0	35.0	20.0	27.5	-/10.2	15	6.5	12.5	35	350
12	32.0	35.5	24.0	27.5	-/10.2	15	5.4	14.4	35	420
15	32.0	40.0	25.0	27.5	-/10.2	15	4.4	16.9	35	525
8	42.0	27.0	16.0	37.5	-	20	11.5	9.0	25	200
9	42.0	31.0	18.0	37.5	10.2	20	10.5	10.1	25	225
10	42.0	31.0	18.0	37.5	10.2	20	9.5	10.7	25	250
11	42.0	31.0	18.0	37.5	10.2	20	9.0	11.0	25	275
12	42.0	31.0	18.0	37.5	10.2	20	8.5	11.3	25	300
15	42.0	38.0	21.0	37.5	10.2	20	7.2	13.3	25	375
18	42.0	38.0	21.0	37.5	10.2	20	6.2	14.3	25	450
20	42.0	43.0	28.0	37.5	10.2	20	5.7	15.2	25	500
22	42.0	43.0	28.0	37.5	10.2	20	5.5	15.5	25	550
25	42.0	43.0	28.0	37.5	10.2	20	5.0	16.2	25	625
30	42.0	45.0	30.0	37.5	10.2/20.3	20	4.5	18.8	25	750
35	42.0	50.0	36.0	37.5	10.2/20.3	25	3.9	20.5	25	875
40	42.0	50.0	36.0	37.5	10.2/20.3	25	3.5	21.6	25	1000
40	57.5	45.0	30.0	52.5	20.3	30	6.3	16.6	17	680
45	57.5	45.0	30.0	52.5	20.3	30	5.6	17.3	17	765
50	57.5	50.0	35.0	52.5	20.3	30	5.3	19.4	17	850
55	57.5	50.0	35.0	52.5	20.3	30	4.9	20.2	17	935
60	57.5	50.0	35.0	52.5	20.3	30	4.5	21.1	17	1020
65	57.5	55.0	40.0	52.5	20.3	30	4.2	22.4	17	1105
70	57.5	55.0	40.0	52.5	20.3	30	4.0	22.9	17	1190
75	57.5	55.0	40.0	52.5	20.3	30	3.8	23.5	17	1275
220	59.0	59.0	130.0	52.5	20.3x5	35	1.4	60.0	17	3740
270	59.0	59.0	130.0	52.5	20.3x5	35	1.2	65.0	17	4590

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ }^{\circ}\text{C}$ FOR $\Delta\theta_{case} \leq 20\text{ }^{\circ}\text{C}$.

HIGH DENSITY DC LINK CAPACITORS

TYPE KNG1910, KNG1914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{NDC} @ 85\text{ °C} = 900\text{ V DC}$, $U_{op} @ 70\text{ °C} = 1100\text{ V DC}$, $U_{op} @ 105\text{ °C} = 650\text{ V DC}$

C_N ⁽¹⁾ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}$ ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ ($\text{m}\Omega$)	$I_{max}@10\text{ kHz}$ ⁽⁵⁾ (A)	$(dU/dt)_{max}$ ($\text{V}/\mu\text{s}$)	\hat{I} (A)
	L	H	W	P	P1					
1	32.0	17.0	9.0	27.5	-	10	40.0	3.3	40	40
2	32.0	21.0	12.0	27.5	-	10	22.0	5.1	40	80
3	32.0	24.5	15.0	27.5	-	10	17.5	6.3	40	120
4	32.0	26.5	17.0	27.5	-	10	14.0	7.4	40	160
5	32.0	32.0	18.0	27.5	-	10	12.5	8.5	40	200
6	32.0	33.0	20.0	27.5	-/10.2	10	10.5	9.7	40	240
7	32.0	35.5	24.0	27.5	-/10.2	10	9.0	11.2	40	280
8	32.0	35.5	24.0	27.5	-/10.2	10	7.8	12.0	40	320
9	32.0	40.0	25.0	27.5	-/10.2	10	7.0	13.4	40	360
10	32.0	40.0	25.0	27.5	-/10.2	10	6.3	14.1	40	400
5	42.0	27.0	16.0	37.5	-	15	16.5	7.5	29	145
6	42.0	27.0	16.0	37.5	-	15	14.0	8.2	29	174
7	42.0	31.0	18.0	37.5	10.2	15	12.5	9.3	29	203
8	42.0	38.0	21.0	37.5	10.2	15	11.0	10.7	29	232
9	42.0	38.0	21.0	37.5	10.2	15	10.0	11.3	29	261
10	42.0	38.0	21.0	37.5	10.2	15	9.0	11.9	29	290
12	42.0	43.0	28.0	37.5	10.2	15	7.5	13.2	29	348
14	42.0	43.0	28.0	37.5	10.2	15	6.6	14.1	29	406
15	42.0	43.0	28.0	37.5	10.2	15	6.2	14.6	29	435
18	42.0	43.0	28.0	37.5	10.2/20.3	20	5.3	15.8	29	522
20	42.0	45.0	30.0	37.5	10.2/20.3	20	4.8	17.3	29	580
22	42.0	50.0	36.0	37.5	10.2/20.3	20	4.4	19.3	29	638
25	42.0	50.0	36.0	37.5	10.2/20.3	20	4.0	20.2	29	725
30	42.0	50.0	36.0	37.5	10.2/20.3	20	3.5	21.6	29	870
25	57.5	45.0	30.0	52.5	20.3	25	7.0	15.8	20	500
26	57.5	45.0	30.0	52.5	20.3	25	6.8	16.0	20	520
30	57.5	50.0	35.0	52.5	20.3	25	6.0	18.2	20	600
35	57.5	50.0	35.0	52.5	20.3	25	5.5	19.0	20	700
40	57.5	50.0	35.0	52.5	20.3	25	5.0	20.0	20	800
45	57.5	50.0	35.0	52.5	20.3	25	4.8	20.4	20	900
50	57.5	55.0	40.0	52.5	20.3	25	4.5	21.6	20	1000
55	57.5	55.0	40.0	52.5	20.3	25	4.2	22.4	20	1100
60	57.5	55.0	40.0	52.5	20.3	25	3.9	23.2	20	1200
150	59.0	59.0	130.0	52.5	20.3x5	30	2.3	47.0	20	3000
200	59.0	59.0	130.0	52.5	20.3x5	30	1.8	53.0	20	4000

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

HIGH DENSITY DC LINK CAPACITORS

TYPE KNG1910, KNG1914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{NDC} @ 85\text{ °C} = 1100\text{ V DC}$, $U_{op} @ 70\text{ °C} = 1350\text{ V DC}$, $U_{op} @ 105\text{ °C} = 800\text{ V DC}$

C_N ⁽¹⁾ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}$ ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	$I_{max}@10\text{ kHz}$ ⁽⁵⁾ (A)	$(dU/dt)_{max}$ (V/ μs)	\hat{I} (A)
	L	H	W	P	P1					
1	32.0	19.0	10.0	27.5	-	10	35.0	3.7	50	50
1.2	32.0	21.0	12.0	27.5	-	10	29.0	4.4	50	60
2	32.0	24.5	15.0	27.5	-	10	18.0	6.2	50	100
2.2	32.0	24.5	15.0	27.5	-	10	17.5	6.3	50	110
3	32.0	28.0	18.0	27.5	-	10	13.5	7.8	50	150
3.3	32.0	32.0	18.0	27.5	-	10	12.8	8.4	50	165
4	32.0	32.0	18.0	27.5	-	10	12.0	8.7	50	200
4.7	32.0	33.0	20.0	27.5	-/10.2	10	10.5	9.7	50	235
5	32.0	33.0	20.0	27.5	-/10.2	10	10.0	9.9	50	250
6	32.0	35.5	24.0	27.5	-/10.2	10	8.5	11.5	50	300
7	32.0	40.0	25.0	27.5	-/10.2	10	7.5	12.9	50	350
8	32.0	40.0	25.0	27.5	-/10.2	10	6.8	13.6	50	400
4	42.0	27.0	16.0	37.5	-	15	15.0	7.9	35	140
4.7	42.0	31.0	18.0	37.5	10.2	15	13.0	9.1	35	165
5	42.0	31.0	18.0	37.5	10.2	15	12.5	9.3	35	175
6	42.0	32.0	19.0	37.5	10.2	15	10.4	10.4	35	210
6.8	42.0	32.0	19.0	37.5	10.2	15	9.2	11.1	35	238
7	42.0	38.0	21.0	37.5	10.2	15	9.0	11.9	35	245
8	42.0	38.0	21.0	37.5	10.2	15	8.5	12.2	35	280
9	42.0	38.0	21.0	37.5	10.2	15	8.0	12.6	35	315
10	42.0	43.0	28.0	37.5	10.2	15	7.5	13.2	35	350
12	42.0	43.0	28.0	37.5	10.2	15	7.0	13.7	35	420
14	42.0	45.0	30.0	37.5	10.2/20.3	15	6.8	14.5	35	490
15	42.0	45.0	30.0	37.5	10.2/20.3	15	6.1	15.3	35	525
20	42.0	50.0	36.0	37.5	10.2/20.3	15	5.1	17.9	35	700
18	57.5	45.0	30.0	52.5	20.3	20	8.2	14.6	25	450
20	57.5	45.0	30.0	52.5	20.3	20	7.5	15.2	25	500
22	57.5	50.0	35.0	52.5	20.3	20	7.0	16.9	25	550
25	57.5	50.0	35.0	52.5	20.3	20	6.2	17.9	25	625
26	57.5	50.0	35.0	52.5	20.3	20	6.0	18.2	25	650
30	57.5	55.0	40.0	52.5	20.3	20	5.3	19.9	25	750
35	57.5	55.0	40.0	52.5	20.3	25	4.6	21.4	25	875
40	57.5	55.0	40.0	52.5	20.3	25	4.1	22.7	25	1000
110	59.0	59.0	130.0	52.5	20.3x5	30	3.1	40.0	25	2750
120	59.0	59.0	130.0	52.5	20.3x5	30	2.9	42.0	25	3000

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

HIGH DENSITY DC LINK CAPACITORS

TYPE KNG1910, KNG1914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{NDC} @ 85\text{ °C} = 1300\text{ V DC}$, $U_{op} @ 70\text{ °C} = 1550\text{ V DC}$, $U_{op} @ 105\text{ °C} = 900\text{ V DC}$

C_N ⁽¹⁾ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}$ ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ ($\text{m}\Omega$)	$I_{max}@10\text{ kHz}$ ⁽⁵⁾ (A)	$(dU/dt)_{max}$ ($\text{V}/\mu\text{s}$)	\hat{I} (A)
	L	H	W	P	P1					
0.1	32.0	16.0	7.5	27.5	-	10	150.0	1.6	65	7
0.15	32.0	16.0	7.5	27.5	-	10	120.0	1.8	65	10
0.22	32.0	16.0	7.5	27.5	-	10	110.0	1.9	65	14
0.33	32.0	17.0	9.0	27.5	-	10	75.0	2.4	65	21
0.47	32.0	17.0	9.0	27.5	-	10	55.0	2.8	65	31
0.56	32.0	17.0	9.0	27.5	-	10	45.0	3.1	65	36
0.68	32.0	19.0	10.0	27.5	-	10	40.0	3.5	65	44
0.82	32.0	21.0	12.0	27.5	-	10	38.0	3.9	65	53
1	32.0	21.0	12.0	27.5	-	10	30.0	4.3	65	65
1.5	32.0	24.5	15.0	27.5	-	10	20.0	5.9	65	98
2	32.0	26.5	17.0	27.5	-	10	16.0	6.9	65	130
2.2	32.0	26.5	17.0	27.5	-	10	15.0	7.2	65	143
3	32.0	33.0	20.0	27.5	-/10.2	10	12.0	9.0	65	195
3.3	32.0	35.0	20.0	27.5	-/10.2	10	11.0	9.6	65	215
4	32.0	35.5	24.0	27.5	-/10.2	10	10.0	10.6	65	260
5	32.0	40.0	25.0	27.5	-/10.2	10	8.0	12.5	65	325
2	42.0	27.0	16.0	37.5	-	15	22.0	6.5	45	90
3	42.0	31.0	18.0	37.5	10.2	15	15.0	8.5	45	135
4	42.0	32.0	19.0	37.5	10.2	15	11.5	9.9	45	180
5	42.0	38.0	21.0	37.5	10.2	15	9.5	11.5	45	225
6	42.0	43.0	28.0	37.5	10.2	15	8.5	12.2	45	270
7	42.0	43.0	28.0	37.5	10.2	15	8.1	12.7	45	315
8	42.0	43.0	28.0	37.5	10.2	15	7.8	13.0	45	360
9	42.0	43.0	28.0	37.5	10.2	15	7.5	13.2	45	405
10	42.0	45.0	30.0	37.5	10.2/20.3	15	7.0	14.3	45	450
12	42.0	50.0	36.0	37.5	10.2/20.3	15	6.4	16.0	45	540
14	42.0	50.0	36.0	37.5	10.2/20.3	15	5.8	16.8	45	630
14	57.5	45.0	30.0	52.5	20.3	20	9.0	13.9	30	420
15	57.5	45.0	30.0	52.5	20.3	20	8.5	14.3	30	450
18	57.5	50.0	35.0	52.5	20.3	20	7.2	16.6	30	540
20	57.5	55.0	40.0	52.5	20.3	20	6.6	17.9	30	600
22	57.5	55.0	40.0	52.5	20.3	20	6.2	18.4	30	660
25	57.5	55.0	40.0	52.5	20.3	20	5.5	19.6	30	750
70	59.0	59.0	130.0	52.5	20.3x5	30	4.0	35.0	30	2100
90	59.0	59.0	130.0	52.5	20.3x5	30	3.2	40.0	30	2700

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES.

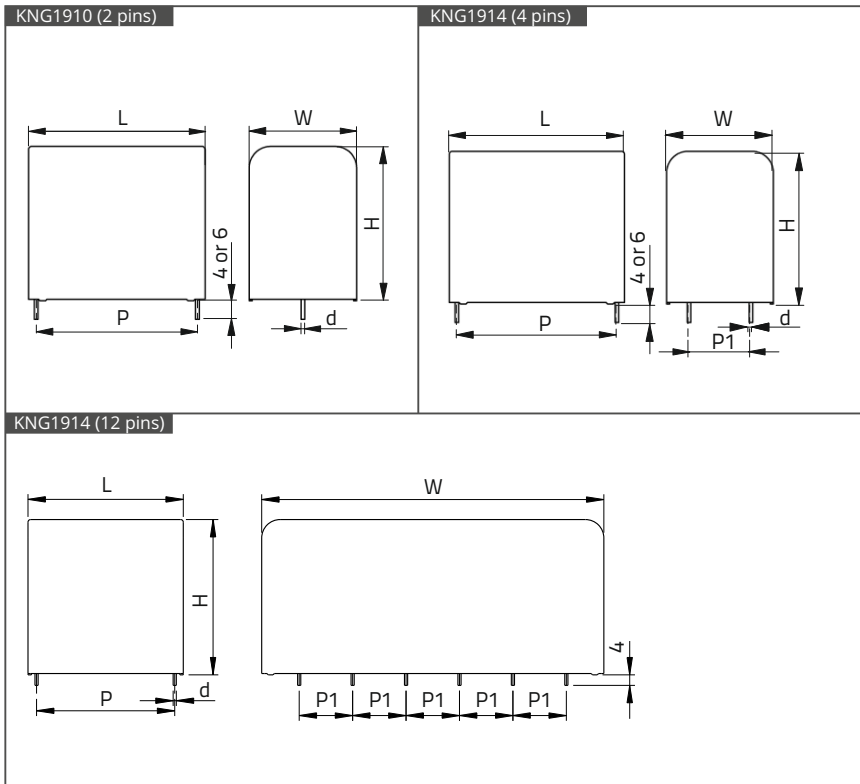
⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

HIGH DENSITY DC LINK CAPACITORS

DIMENSIONS AND CONSTRUCTION

DIMENSIONS

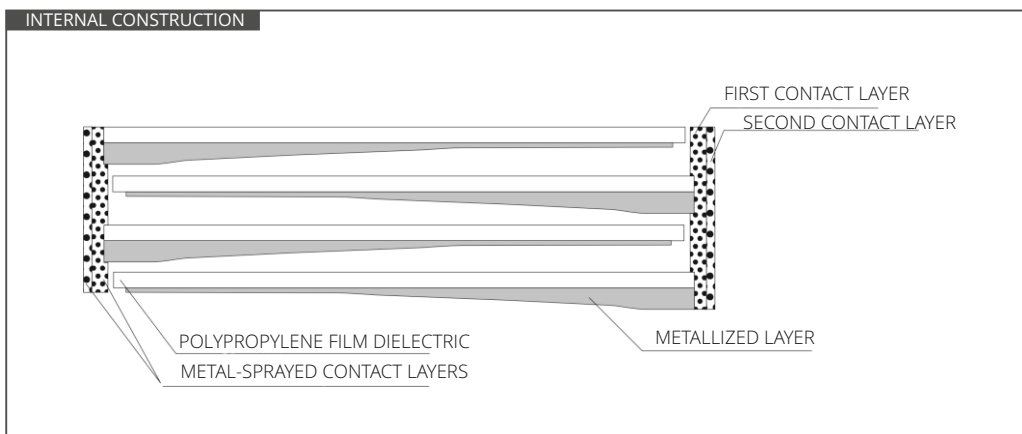


TERMINAL DIMENSIONS					MAX. BOX DIMENSIONS			
P (mm)	TOLERANCE (mm)	P1 (mm)	TOLERANCE (mm)	d (mm)	TOLERANCE (mm)	L _{max} (mm)	H _{max} (mm)	W _{max} (mm)
27.5	±0.5	-	-	0.8	±0.05	L + 0.5	H + 0.2	W + 0.5
27.5	±0.5	10.2	±0.5	1 OR 1.2	±0.05	L + 0.5	H + 0.2	W + 0.5
37.5	±0.5	-	±0.5	1 OR 1.2	±0.05	L + 0.5	H + 0.5	W + 0.5
37.5	±0.5	10.2	±0.5	1 OR 1.2	±0.05	L + 0.5	H + 0.5	W + 0.5
37.5	±0.5	20.3	±0.5	1 OR 1.2	±0.05	L + 0.5	H + 0.5	W + 0.5
52.5	±0.5	20.3	±0.5	1.2	±0.05	L + 1.0	H + 1.0	W + 1.0

CONSTRUCTION

- **DIELECTRIC:** POLYPROPYLENE FILM
- **CAPACITOR ELECTRODES:** VACUUM-DEPOSITED METAL LAYERS
- **CASING:** PLASTIC CASE WITH FLAME-RETARDANT EPOXY RESIN SEALING (UL 94 V-0)
- **TERMINALS:** PARALLEL TINNED COPPER WIRE (2, 4 OR 12 PINS)

INTERNAL CONSTRUCTION



DC LINK CAPACITORS

CAUTIONS AND WARNINGS

CAUTIONS AND WARNINGS

MECHANICAL OVERLOADS



ATTENTION: THE CAPACITOR IS DESIGNED FOR MOUNTING ON A PC BOARD. DO NOT MOVE THE CAPACITOR, AFTER IT HAS BEEN SOLDERED TO THE PC BOARD. THE CAPACITOR SHOULD NOT BE MOUNTED ON PLACES WHERE VIBRATIONS OR ACCELERATIONS OCCUR. DO NOT EXCEED THE TESTED ABILITY TO WITHSTAND VIBRATION. AVOID ANY COMPRESSIVE, TENSILE OR FLEXURAL STRESS.

NOTE: MOVEMENT OF THE CAPACITOR WITHIN THE CASE CAN CAUSE LOW INSULATION RESISTANCE, SHORTS, FAILURE ON TERMINALS AND THE CAPACITOR CASE.

OVERLOAD



ATTENTION: DO NOT OVERLOAD THE CAPACITOR. AVOID OVERLOADING THE CAPACITOR AND CONSIDER THE FLAMMABILITY OF MATERIALS.

IMPULSES



ATTENTION: IF ELECTRIC ENERGY IMPULSES ARE HIGHER, DIELECTRIC WILL BREAK DOWN. AVOID EXTERNAL ELECTRIC ENERGY IMPULSE. THE PEAK VOLTAGE ($U_{p, AC}$) SHOULD NOT BE HIGHER THAN THE RATED DC VOLTAGE (U_{NDC}).

ENVIRONMENTAL CONDITIONS



ATTENTION: DO NOT EXCEED OPERATING TEMPERATURE. DO NOT EXPOSE THE CAPACITOR TO HUMIDITY LONGER THAN IT IS RECOMMENDED. DO NOT EXPOSE THE CAPACITOR TO INCREASED TEMPERATURE MORE THAN IT IS RECOMMENDED. THE DISSIPATION FACTOR MAY GO UP AND DOWN WITH INCREASED TEMPERATURE. AVOID EXTERNAL FIRE OR ELECTRICITY.

DC LINK CAPACITORS

TYPE DC LINK EV - CUSTOMIZED PRODUCTS



SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

• RATED CAPACITANCE	500 μ F, \pm 10 %
• RATED DC VOLTAGE	450 VDC
• PEAK VOLTAGE	675 VAC
• NOM. RMS CURRENT (@ T _{amb} = MAX. 80 °C)	85 A _{rms}
• MAX. RMS CURRENT (@ T _{amb} = MAX. 70 °C)	120 A _{rms}
• MAX. PEAK CURRENT	2500 A
• EQUIVALENT SERIES RESISTANCE @ 1 kHz	< 1 m Ω
• EQUIVALENT SERIES INDUCTANCE	15 nH
• MAX. PULSE RISE TIME	4 V/ μ s

THERMAL CHARACTERISTICS

• MIN. OPERATING TEMPERATURE	-40 °C
• MAX. OPERATING TEMPERATURE	+110 °C
• STORAGE TEMPERATURE	-40 °C to +85 °C

TEST METHODS & PERFORMANCES

• VOLTAGE TEST (BETWEEN TERMINALS)	675 V, 10 s
• VOLTAGE TEST (TERMINALS TO CASE)	2500 V, 50 Hz, 2 s

LIFE EXPENTANCY

• LIFE EXPENTANCY @ U _{NDC}	15 000 HOURS (HOTSPOT MAX. TEMPERATURE 90 °C)
• RELIABILITY	300 FIT

CONSTRUCTION

• DIELECTRIC	METALLIZED POLYPROPYLENE
• WINDING	NON-INDUCTIVE
• FILLING	POLYURETHANE RESIN
• CASE CONSTRUCTIONS	PBT (METALLIC FOR PROTOTYPE)
• TERMINALS	FLAT COPPER

DIMENSIONS

• WIDTH	72 mm
• HEIGHT	50 mm
• LENGHT	237 mm
• APP. WEIGHT	< 1.5 kg

APPLICATIONS

- ENERGY CONVERSION
- AC MOTOR DRIVES
- HYBRID/ELECTRIC VEHICLES
- INVERTER MODULES

FEATURES

- METALLIZED SELF-HEALING POLYPROPYLEN
- LOW ESR (HIGH RIPPLE CURRENT)
- LOW ESL
- LONG LIFETIME

REFERENCE STANDARD

- IEC 61071



SNUBBER CAPACITORS

TYPE KNO19Ax, KNO19Bx, KNO1910, KNO1914



APPLICATIONS

SNUBBER CAPACITORS ARE USED IN APPLICATIONS WITH HIGH PULSE LOADINGS AND HIGH FREQUENCIES. THE PURPOSE OF SNUBBER CAPACITORS IS TO ELIMINATE VOLTAGE SPIKES WHICH ARE CAUSED BY SEMICONDUCTORS OR OTHER DEVICES.

- IGBT (INSULATED GATE BIPOlar TRANSISTOR) MODULE
- AC AND DC CONVERTER AND INVERTER (ELECTRIC DRIVES)
- UNINTERRUPTIBLE POWER SYSTEM (UPS)
- POWER SUPPLY

FEATURES

- HIGH VOLTAGE
- HIGH PULSE LOAD CAPABILITY
- SELF-HEALING PROPERTIES
- HIGH RELIABILITY
- LOW SELF-INDUCTANCE
- LOW DISSIPATION FACTOR OF DIELECTRIC
- TERMINAL OPTIONS FOR DIRECT MOUNT OR BOARD
- HIGH INSULATION RESISTANCE

SPECIFICATIONS

• RATED CAPACITANCE	0.047 μ F UP TO 8 μ F
• CAPACITANCE TOLERANCE	$\pm 5\%$, $\pm 10\%$
• RATED VOLTAGE	630 V DC, 850 V DC, 1000 V DC, 1200 V DC, 1600 V DC, 2000 V DC, 2500 V DC, 3000 V DC
• OPERATING TEMPERATURE RANGE	-40 °C TO +85 °C
• MAX. HOT SPOT TEMPERATURE	105 °C
• CLIMATIC CATEGORY	40/85/56 ACCORDING TO IEC 60068-1
• DISSIPATION FACTORS AT 1 kHz	$\text{tg}\delta \leq 5 \times 10^{-4}$
• TEST VOLTAGE TERMINAL TO TERMINAL	$1.5 \times U_{\text{NDC}}$, 10 s
• PEAK NON-REPETITIVE MAX. CURRENT	$\hat{I} \times 1.5$
• LIFE EXPECTANCY	$\geq 100\,000$ HOURS AT U_{NDC} , $\theta_{\text{hs}} = 70\text{ °C}$
• FAILURE RATE	100 FIT

REFERENCE STANDARD

- IEC 61071
AEC-Q200 (ON REQUEST)



SNUBBER CAPACITORS

TYPE KNO19Ax, KNO19Bx, KNO1910, KNO1914

GENERAL CHARACTERISTICS

TYPE KNO19Ax, KNO19Bx, KNO1910, KNO1914

C_N (μF)	U_{NDC} (V DC)	U_{rms} (V AC)	$(dU/dt)_{\text{max}}$ (V/ μs)	DIMENSIONS (mm) LxHxW
0.33	630	400	600	32 x 20 x 11
0.39	630	400	600	32 x 24.5 x 15
0.47	630	400	600	32 x 24.5 x 15
0.56	630	400	600	41.5 x 23 x 14
0.68	630	400	600	41.5 x 23 x 14
1	630	400	500	41.5 x 27 x 16
1.2	630	400	500	41.5 x 31 x 18
1.5	630	400	500	41.5 x 31 x 18
2	630	400	500	41.5 x 38 x 21
2.2	630	400	500	41.5 x 38 x 21
2.5	630	400	400	41.5 x 43 x 28
2.7	630	400	400	41.5 x 43 x 28
3	630	400	400	41.5 x 43 x 28
3.3	630	400	400	41.5 x 43 x 28
3.5	630	400	400	41.5 x 43 x 28
4	630	400	300	42 x 45 x 30
4.7	630	400	300	57.5 x 45 x 30
5	630	400	300	57.5 x 45 x 30
5.6	630	400	300	57.5 x 45 x 30
6	630	400	300	57.5 x 45 x 30
6.3	630	400	300	57.5 x 50 x 35
7	630	400	100	57.5 x 50 x 35
8	630	400	100	57.5 x 50 x 35

C_N (μF)	U_{NDC} (V DC)	U_{rms} (V AC)	$(dU/dt)_{\text{max}}$ (V/ μs)	DIMENSIONS (mm) LxHxW
0.22	850	500	600	32 x 20 x 11
0.27	850	500	600	32 x 24.5 x 15
0.33	850	500	600	32 x 24.5 x 15
0.39	850	500	600	41.5 x 23 x 14
0.47	850	500	600	41.5 x 23 x 14
0.56	850	500	600	41.5 x 27 x 16
0.68	850	500	600	41.5 x 27 x 16
0.82	850	500	600	41.5 x 31 x 18
1	850	500	600	41.5 x 31 x 18
1.2	850	500	500	41.5 x 38 x 21
1.5	850	500	500	41.5 x 38 x 21
1.8	850	500	500	41.5 x 43 x 28
2	850	500	500	41.5 x 43 x 28
2.2	850	500	500	42 x 45 x 30
2.5	850	500	500	42 x 45 x 30
2.7	850	500	400	42 x 45 x 30
3	850	500	400	57.5 x 45 x 30
3.3	850	500	400	57.5 x 45 x 30
4	850	500	400	57.5 x 45 x 30
4.7	850	500	400	57.5 x 50 x 35
5.6	850	500	300	57.5 x 50 x 35

C_N (μF)	U_{NDC} (V DC)	U_{rms} (V AC)	$(dU/dt)_{\text{max}}$ (V/ μs)	DIMENSIONS (mm) LxHxW
0.22	1000	600	1000	32 x 24.5 x 15
0.27	1000	600	1000	32 x 24.5 x 15
0.33	1000	600	900	32 x 24.5 x 15
0.33	1000	600	900	41.5 x 23 x 14
0.39	1000	600	900	41.5 x 23 x 14
0.47	1000	600	900	41.5 x 27 x 16
0.56	1000	600	900	41.5 x 27 x 16
0.68	1000	600	900	41.5 x 31 x 18
0.82	1000	600	500	41.5 x 32 x 19
1	1000	600	500	41.5 x 38 x 21
1.2	1000	600	400	41.5 x 38 x 21
1.5	1000	600	400	41.5 x 43 x 28
1.8	1000	600	400	42 x 45 x 30
2	1000	600	400	42 x 45 x 30
2.2	1000	600	400	42 x 45 x 30
2.5	1000	600	400	57.5 x 45 x 30
2.7	1000	600	400	43 x 48 x 33
2.7	1000	600	400	57.5 x 45 x 30
3	1000	600	400	57.5 x 45 x 30
3.3	1000	600	400	57.5 x 50 x 35
4	1000	600	300	57.5 x 50 x 35

C_N (μF)	U_{NDC} (V DC)	U_{rms} (V AC)	$(dU/dt)_{\text{max}}$ (V/ μs)	DIMENSIONS (mm) LxHxW
0.15	1200	630	800	32 x 20 x 11
0.22	1200	630	800	41.5 x 23 x 14
0.27	1200	630	800	41.5 x 23 x 14
0.33	1200	630	700	41.5 x 27 x 16
0.39	1200	630	700	41.5 x 27 x 16
0.47	1200	630	700	41.5 x 31 x 18
0.56	1200	630	700	41.5 x 32 x 19
0.68	1200	630	700	41.5 x 38 x 21
0.82	1200	630	700	41.5 x 38 x 21
1	1200	630	500	41.5 x 43 x 28
1.2	1200	630	500	41.5 x 43 x 28
1.5	1200	630	500	42 x 45 x 30
1.8	1200	630	500	43 x 48 x 33
2	1200	630	500	57.5 x 45 x 30
2.2	1200	630	500	57.5 x 45 x 30
2.5	1200	630	500	57.5 x 50 x 35
2.7	1200	630	500	57.5 x 50 x 35
3	1200	630	500	57.5 x 50 x 35
3.3	1200	630	500	57.5 x 50 x 35

SNUBBER CAPACITORS

TYPE KNO19Ax, KNO19Bx, KNO1910, KNO1914

GENERAL CHARACTERISTICS

TYPE KNO19Ax, KNO19Bx, KNO1910, KNO1914

C _N (μF)	U _{NDC} (V DC)	U _{rms} (V AC)	(dU/dt) _{max} (V/μs)	DIMENSIONS (mm) LxHxW
0.1	1600	650	900	32 x 20 x 11
0.12	1600	650	900	32 x 24.5 x 15
0.15	1600	650	900	41.5 x 23 x 14
0.22	1600	650	900	41.5 x 23 x 14
0.27	1600	650	700	41.5 x 27 x 16
0.33	1600	650	700	41.5 x 27 x 16
0.39	1600	650	700	41.5 x 31 x 18
0.47	1600	650	700	41.5 x 32 x 19
0.56	1600	650	700	41.5 x 38 x 21
0.68	1600	650	700	41.5 x 38 x 21
0.75	1600	650	700	41.5 x 43 x 28
0.82	1600	650	700	41.5 x 43 x 28
1	1600	650	700	41.5 x 43 x 28
1.2	1600	650	700	57.5 x 45 x 30
1.5	1600	650	700	57.5 x 45 x 30
2	1600	650	500	57.5 x 50 x 35
2.2	1600	650	500	57.5 x 50 x 35
2.5	1600	650	400	57.5 x 50 x 35
3	1600	650	400	57.5 x 55 x 40

C _N (μF)	U _{NDC} (V DC)	U _{rms} (V AC)	(dU/dt) _{max} (V/μs)	DIMENSIONS (mm) LxHxW
0.1	2000	700	1000	32 x 24.5 x 15
0.1	2000	700	1000	41.5 x 23 x 14
0.12	2000	700	1000	41.5 x 23 x 14
0.15	2000	700	1000	41.5 x 23 x 14
0.22	2000	700	900	41.5 x 27 x 16
0.27	2000	700	900	41.5 x 31 x 18
0.33	2000	700	900	41.5 x 32 x 19
0.39	2000	700	900	41.5 x 38 x 21
0.47	2000	700	900	41.5 x 38 x 21
0.56	2000	700	900	41.5 x 43 x 28
0.68	2000	700	900	41.5 x 43 x 28
0.82	2000	700	600	42 x 45 x 30
1	2000	700	700	42 x 45 x 35
1	2000	700	600	57.5 x 45 x 30
1.2	2000	700	600	57.5 x 45 x 30
1.5	2000	700	600	57.5 x 50 x 35

C _N (μF)	U _{NDC} (V DC)	U _{rms} (V AC)	(dU/dt) _{max} (V/μs)	DIMENSIONS (mm) LxHxW
0.1	2500	725	1100	41.5 x 27 x 16
0.15	2500	725	1100	41.5 x 31 x 18
0.22	2500	725	1100	41.5 x 38 x 21
0.33	2500	725	1100	41.5 x 43 x 28
0.47	2500	725	1100	42 x 45 x 30
0.56	2500	725	1000	57.5 x 45 x 30
0.68	2500	725	1000	57.5 x 45 x 30
0.82	2500	725	1000	57.5 x 45 x 30
1	2500	725	900	57.5 x 50 x 35
1.2	2500	725	900	57.5 x 55 x 40

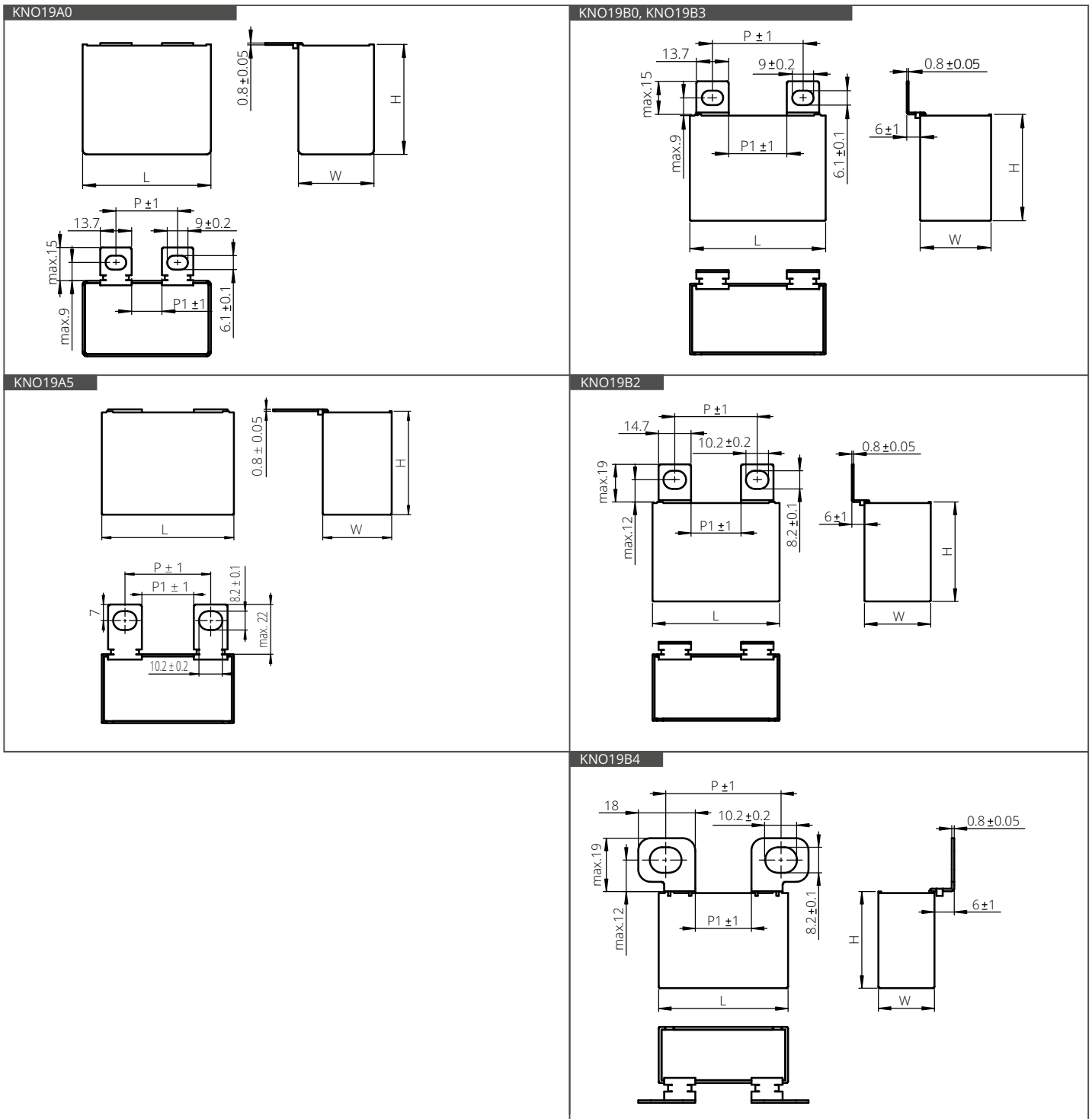
C _N (μF)	U _{NDC} (V DC)	U _{rms} (V AC)	(dU/dt) _{max} (V/μs)	DIMENSIONS (mm) LxHxW
0.047	3000	750	1600	41.5 x 23x 14
0.068	3000	750	1600	41.5 x 27 x 16
0.1	3000	750	1600	41.5 x 27 x 16
0.15	3000	750	1600	41.5 x 32 x 19
0.22	3000	750	1600	41.5 x 38 x 21
0.33	3000	750	1400	42 x 45 x 30
0.47	3000	750	1400	57.5 x 45 x 30
0.68	3000	750	1200	57.5 x 50 x 35
0.82	3000	750	900	57.5 x 50 x 35
1	3000	750	900	57.5 x 55 x 40

POSSIBLE LUG VERSION DEPENDING ON BOX SIZE

DIMENSIONS (LxHxW)	TYPE KNO19xx (DIGIT 6-7)							
	WIRE		LUGS FOR VERTICAL MOUNTING		LUGS FOR HORIZONTAL MOUNTING			
	10	14	A0	A5	B0	B2	B3	B4
32 x 20 x 11								
32 x 24.5 x 15								
41.5 x 23 x 14								
41.5 x 27 x 16								
41.5 x 31 x 18								
41.5 x 32 x 19								
41.5 x 38 x 21								
41.5 x 43 x 28								
42 x 45 x 30								
42 x 45 x 35								
43 x 48 x 33								
57.5 x 45 x 30								
57.5 x 50 x 35								
57.5 x 55 x 40								

SNUBBER CAPACITORS

DIMENSIONS



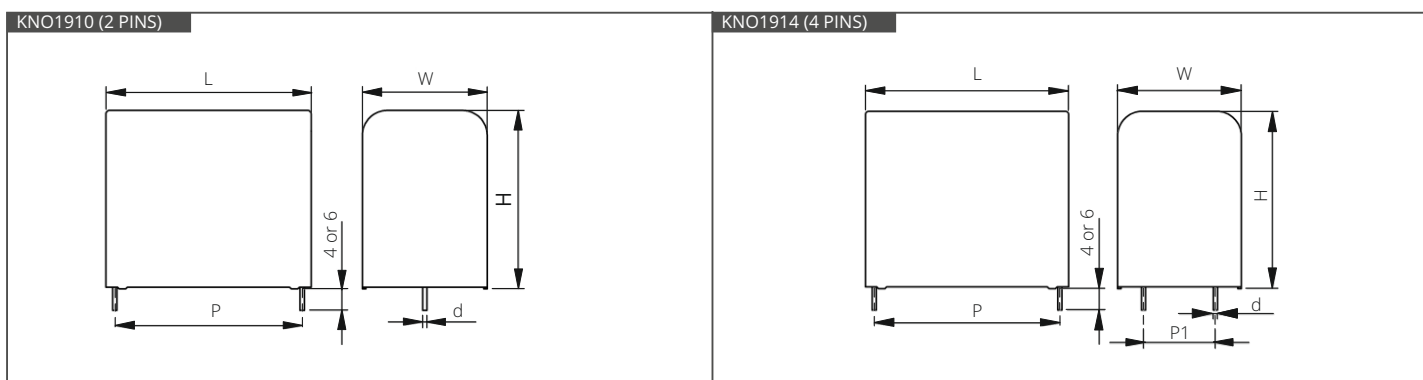
LUG DIMENSIONS

VERSION	L (mm)	P (mm)	P1 (mm)	SCREW
A0	41.5	24	10	M6
A0	42	24	10	M6
A0	43	24	10	M6
A0	57.5	37	23	M6
A5	57.5	37	23	M8

VERSION	L (mm)	P (mm)	P1 (mm)	SCREW
B0	41.5	24	10	M6
B0	42	24	10	M6
B0	43	24	10	M6
B0	57.5	37	23	M6
B2	57.5	37	23	M8
B3	57.5	22	8	M6
B4	41.5	37	18	M8

SNUBBER CAPACITORS

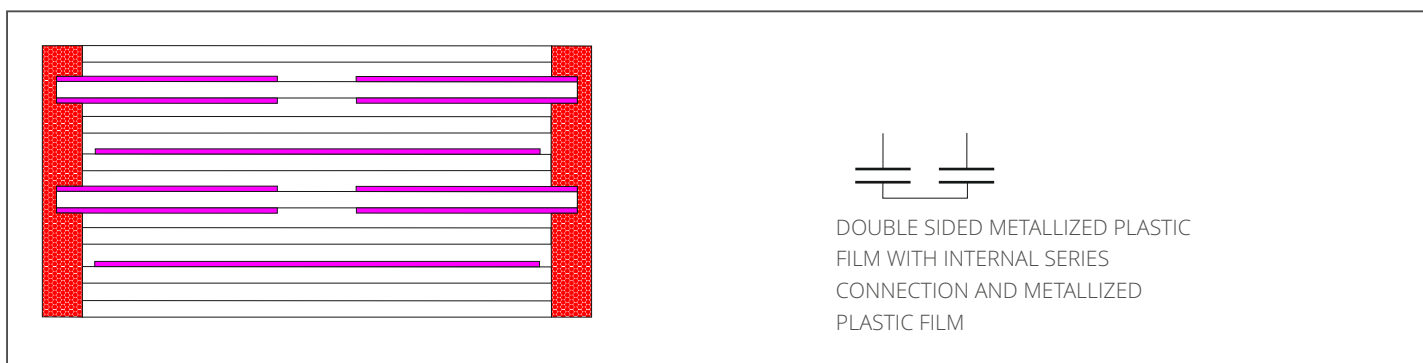
DIMENSIONS AND CONSTRUCTION



VERSION	L (mm)	P (mm)	TOLERANCE (mm)	P1 (mm)	TOLERANCE (mm)	d (mm)	TOLERANCE (mm)
10	32	27.5	±0.4	/	/	0.8	±0.05
	41.5	37.5	±0.4	/	±0.5	1 OR 1.2	±0.05
	42	37.5	±0.4	/	±0.5	1 OR 1.2	±0.05
	57.5	50.5	±0.4	/	±0.5	1.2	±0.05
14	41.5	37.5	±0.4	10.2 OR 20.3	±0.5	1 OR 1.2	±0.05
	42	37.5	±0.4	10.2 OR 20.3	±0.5	1 OR 1.2	±0.05
	57.5	50.5	±0.4	20.3	±0.5	1.2	±0.05

CONSTRUCTION

- **DIELECTRIC:** POLYPROPYLENE FILM
- **CAPACITOR ELECTRODES:** VACUUM-DEPOSITED METAL LAYERS
- **CASING:** PLASTIC CASE WITH FLAME-RETARDANT EPOXY RESIN SEALING (UL 94 V-0)
- **TERMINALS:** TINNED LUGS FROM BRASS OR PARALLEL TINNED COPPER WIRE (2 OR 4 PINS)



SNUBBER CAPACITORS

CAUTIONS AND WARNINGS

CAUTIONS AND WARNINGS

MECHANICAL OVERLOADS



ATTENTION: THE CAPACITOR IS DESIGNED FOR MOUNTING ON A PC BOARD. DO NOT MOVE THE CAPACITOR, AFTER IT HAS BEEN SOLDERED TO THE PC BOARD. THE CAPACITOR SHOULD NOT BE MOUNTED ON PLACES WHERE VIBRATIONS OR ACCELERATIONS OCCUR. DO NOT EXCEED THE TESTED ABILITY TO WITHSTAND VIBRATION. AVOID ANY COMPRESSIVE, TENSILE OR FLEXURAL STRESS. WHEN FIXING THE LUGS THE SCREW TORQUE IS TO BE LIMITED TO MAX. 10 Nm.

OVERLOAD



ATTENTION: DO NOT OVERLOAD THE CAPACITOR. AVOID OVERLOADING THE CAPACITOR AND CONSIDER THE FLAMMABILITY OF MATERIALS.

IMPULSES



ATTENTION: IF ELECTRIC ENERGY IMPULSES ARE HIGHER, DIELECTRIC WILL BREAK DOWN. AVOID EXTERNAL ELECTRIC ENERGY IMPULSE. THE PEAK VOLTAGE (U_p , AC) SHOULD NOT BE HIGHER THAN THE RATED DC VOLTAGE (U_{NDC}).

ENVIRONMENTAL CONDITIONS



ATTENTION: DO NOT EXCEED OPERATING TEMPERATURE. DO NOT EXPOSE THE CAPACITOR TO HUMIDITY LONGER THAN IT IS RECOMMENDED. DO NOT EXPOSE THE CAPACITOR TO INCREASED TEMPERATURE MORE THAN IT IS RECOMMENDED. THE DISSIPATION FACTOR MAY GO UP AND DOWN WITH INCREASED TEMPERATURE. AVOID EXTERNAL FIRE OR ELECTRICITY.

AC/DC GENERALS PURPOSE CAPACITORS

TYPE KNI5048

APPLICATIONS

METALLIZED POLYPROPYLENE AC AND DC CAPACITORS ARE USED FOR POWER ELECTRONIC APPLICATIONS WITH HIGH CURRENT AND HARMONICS DISTORTION WITH LONG LIFE EXPECTANCY.

- INVERTER
- FILTERING
- SWITCHING



FEATURES

- AC/DC VOLTAGE
- SELF-HEALING PROPERTIES
- HIGH RELIABILITY
- CYLINDRICAL ALUMINIUM CASE WITH PLASTIC SELF-EXTINGUISHING SEALING COVER
- OVERPRESSURE DISCONNECTOR
- TINNED BRASS SCREW

REFERENCE STANDARD

- IEC 61071
- UL-CSA APPROVED (FILE No. E163120)



SPECIFICATIONS

• RATED CAPACITANCE	10 μ F UP TO 600 μ F
• CAPACITANCE TOLERANCE	$\pm 5\%$, $\pm 10\%$
• RATED VOLTAGE (U_{rms})	250 V AC, 330 V AC, 480 V AC, 690 V AC
• OPERATING TEMPERATURE RANGE	-40 °C to +85 °C
• CLIMATIC CATEGORY	40/070/56 ACCORDING TO IEC 60068-1
• DISSIPATION FACTORS	$tg\delta \leq 10 \times 10^{-4}$ AT 100 Hz
• TEST VOLTAGE (BETWEEN TERMINALS)	$1.5 \times U_N$, 10 s
• TEST VOLTAGE (TERMINALS TO CASE)	3 kV, 50 Hz, 2 s
• LIFE EXPECTANCY	$\geq 100\ 000$ HOURS AT U_{rms} , $\theta_{hs} = 70\ ^\circ\text{C}$
• FAILURE RATE	300 FIT




AC/DC GENERALS PURPOSE CAPACITORS

TYPE KNI5048

GENERAL CHARACTERISTICS


CAPACITANCE RANGE

$U_{rms} = 250 \text{ V AC}$, $U_N = 350 \text{ V AC}$, $U_{NDC} = 400 \text{ V DC}$

C_N (μF)	I_{max} (A)	\hat{I} (kA)	dU/dt (V/ μs)	R_s (m Ω)	R_{th} (K/W)	D x H (mm)	H1 (mm)	M (mm)	P (mm)	M1 (mm)	L (mm)	 U _{rms} = 250 V AC
30	22	0.75	25	5.1	11.0	50 x 77	27	6	22	12	12	
40	22	1	25	5.1	11.0	50 x 77	27	6	22	12	12	
50	22	1.25	25	4.9	9.7	50 x 90	27	6	22	12	12	
60	25	1.5	25	4.7	8.7	60 x 77	27	6	22	12	12	●
70	25	1.75	25	4.7	8.7	60 x 77	27	6	22	12	12	●
80	25	2	25	4.2	7.8	60 x 90	27	6	22	12	12	●
100	25	2.5	25	3.6	7.1	60 x 102	27	6	22	12	12	●
130	25	1.95	15	3.9	6.0	60 x 127	27	6	22	12	12	●
150	25	2.25	15	3.9	6.0	60 x 127	27	6	22	12	12	●
150	35	2.25	15	3.6	5.2	75 x 108	33	10	35	12	16	●
175	25	2.62	15	4.0	5.2	60 x 152	27	6	22	12	12	●
200	25	3	15	4.0	5.2	60 x 152	27	6	22	12	12	●
200	35	3	15	3.5	4.4	75 x 133	33	10	35	12	16	●
250	40	3	12	3.8	3.9	75 x 158	33	10	35	12	16	●
300	50	3.6	12	3.8	3.9	75 x 158	33	10	35	12	16	●
400	50	4.8	12	3.0	2.8	85 x 194	33	10	35	12	16	●
500	50	5	10	2.7	2.3	85 x 244	33	10	35	12	16	●
600	50	6	10	2.4	2.3	85 x 244	33	10	35	12	16	●

CAPACITANCE RANGE

$U_{rms} = 330 \text{ V AC}$, $U_N = 465 \text{ V AC}$, $U_{NDC} = 600 \text{ V DC}$

C_N (μF)	I_{max} (A)	\hat{I} (kA)	dU/dt (V/ μs)	R_s (m Ω)	R_{th} (K/W)	D x H (mm)	H1 (mm)	M (mm)	P (mm)	M1 (mm)	L (mm)	 U _{rms} = 340 V AC
25	22	0.75	30	5.3	11.0	50 x 77	27	6	22	12	12	
30	22	0.9	30	5.3	11.0	50 x 77	27	6	22	12	12	
40	22	1.2	30	5.1	9.7	50 x 90	27	6	22	12	12	
50	22	1.25	25	5.0	8.7	55 x 90	27	6	22	12	12	
60	25	1.5	25	4.8	7.1	60 x 102	27	6	22	12	12	●
70	25	1.4	20	4.8	7.1	60 x 102	27	6	22	12	12	●
75	25	1.5	20	4.6	7.1	60 x 102	27	6	22	12	12	●
80	25	1.6	20	4.6	7.1	60 x 102	27	6	22	12	12	●
100	25	2	20	4.1	6.0	60 x 127	27	6	22	12	12	●
100	30	1.5	15	3.8	5.2	75 x 108	33	10	35	12	16	●
150	30	2.25	15	3.5	4.4	75 x 133	33	10	35	12	16	●
200	40	3	15	2.9	4.0	75 x 153	33	10	35	12	16	●
250	45	3.75	15	3.0	2.8	85 x 194	33	10	35	12	16	●
300	50	4.5	15	3.0	2.8	85 x 194	33	10	35	12	16	●
400	50	4.8	12	2.6	2.3	85 x 244	33	10	35	12	16	●

● APPROVALS IN USE

NOTES: OTHER VALUES AND DIMENSIONS AVAILABLE ON REQUEST.


AC/DC GENERALS PURPOSE CAPACITORS

TYPE KNI5048

GENERAL CHARACTERISTICS


CAPACITANCE RANGE

$U_{rms} = 480 \text{ V AC}$, $U_N = 675 \text{ V AC}$, $U_{NDC} = 850 \text{ V DC}$

C_N (μF)	I_{max} (A)	\hat{I} (kA)	dU/dt (V/ μs)	R_s ($m\Omega$)	R_{th} (K/W)	D x H (mm)	H1 (mm)	M (mm)	P (mm)	M1 (mm)	L (mm)	 $U_{rms} = 500 \text{ V AC}$
10	22	0.4	40	5.5	11.0	50 x 77	27	6	22	12	12	
15	22	0.6	40	5.5	9.7	55 x 77	27	6	22	12	12	
20	25	0.8	40	5.3	8.7	60 x 77	27	6	22	12	12	●
25	25	1	40	5.2	7.8	60 x 90	27	6	22	12	12	●
30	25	1.2	40	4.8	7.1	60 x 102	27	6	22	12	12	●
35	25	1.4	40	4.8	7.1	60 x 102	27	6	22	12	12	●
40	25	1.6	40	4.1	6.0	60 x 127	27	6	22	12	12	●
50	25	2	40	4.0	6.0	60 x 127	27	6	22	12	12	●
60	30	2.1	35	3.8	4.4	75 x 133	33	10	35	12	16	●
70	30	2.1	30	3.8	4.4	75 x 133	33	10	35	12	16	●
80	35	2	25	4.9	3.9	75 x 158	33	10	35	12	16	●
90	35	2.25	25	4.7	3.9	75 x 158	33	10	35	12	16	●
100	30	2	20	5.1	3.3	75 x 193	33	10	35	12	16	●
100	35	2.5	25	2.6	3.1	85 x 169	33	10	35	12	16	●
133	35	2.66	20	3.5	2.8	85 x 194	33	10	35	12	16	●
150	50	3	20	3.4	2.8	85 x 194	33	10	35	12	16	●
200	50	4	20	3.0	2.3	85 x 244	33	10	35	12	16	●
250	50	3.75	15	2.6	2.0	85 x 294	33	10	35	12	16	●

CAPACITANCE RANGE

$U_{rms} = 690 \text{ V AC}$, $U_N = 970 \text{ V AC}$, $U_{NDC} = 1200 \text{ V DC}$

C_N (μF)	I_{max} (A)	\hat{I} (kA)	dU/dt (V/ μs)	R_s ($m\Omega$)	R_{th} (K/W)	D x H (mm)	H1 (mm)	M (mm)	P (mm)	M1 (mm)	L (mm)	 $U_{rms} = 690 \text{ V AC}$
10	25	0.4	40	4.8	8.7	60 x 77	27	6	22	12	12	
15	22	0.45	30	4.5	7.1	60 x 102	27	6	22	12	12	
22	25	0.66	30	4	6.0	60 x 127	27	6	22	12	12	
33	35	0.82	25	4.2	4.2	85 x 114	33	10	35	12	16	
47	50	1.17	25	2.9	3.6	85 x 139	33	10	35	12	16	
68	65	1.7	25	3.2	3.2	85 x 164	33	10	35	12	16	

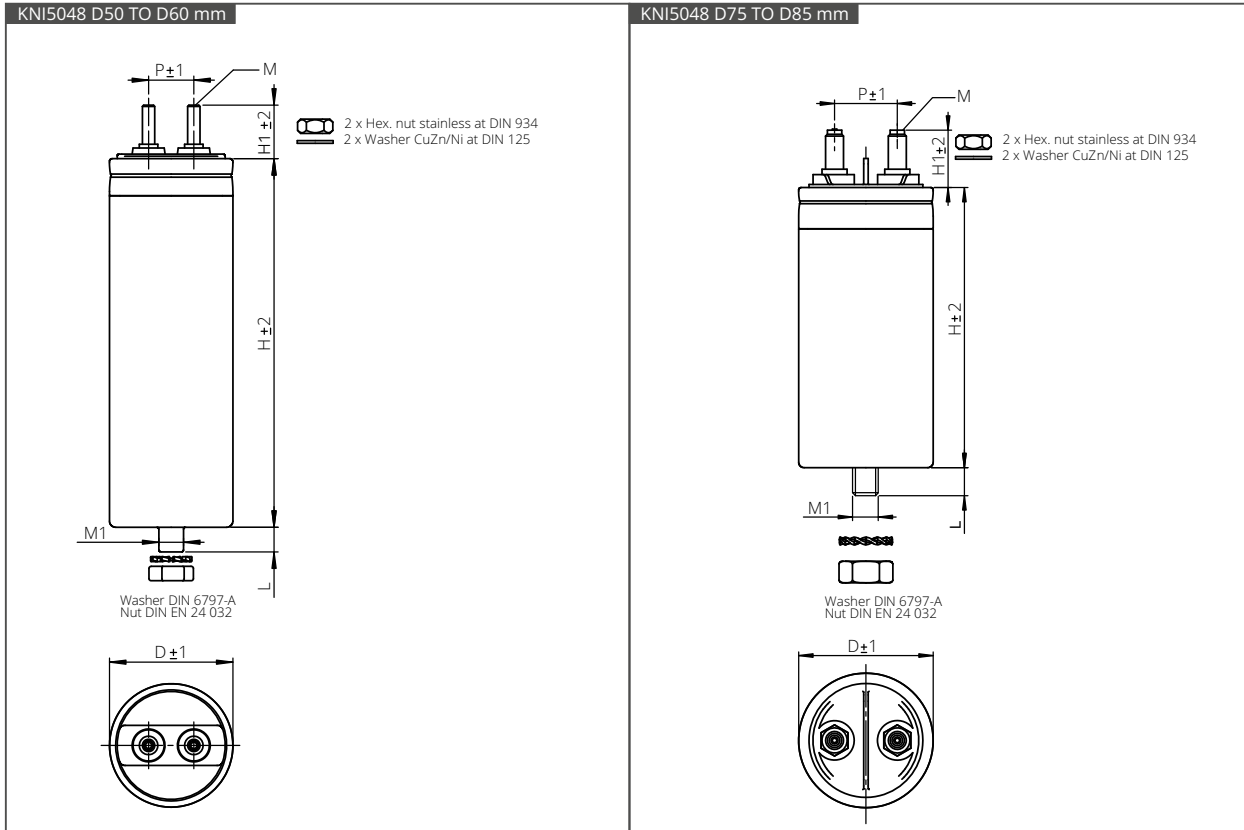
● APPROVALS IN USE

NOTES: OTHER VALUES AND DIMENSIONS AVAILABLE ON REQUEST.

AC/DC GENERALS PURPOSE CAPACITORS

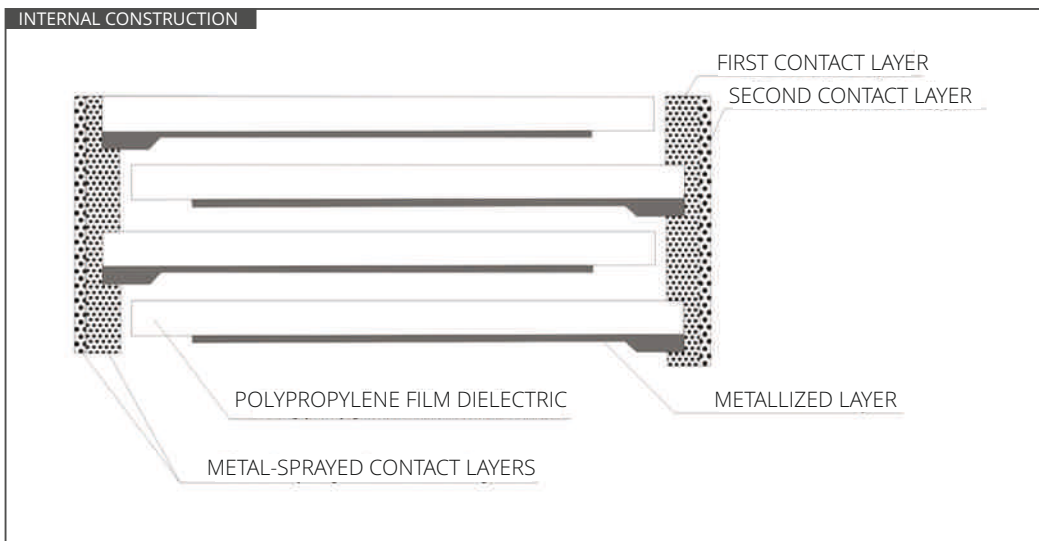
DIMENSIONS AND CONSTRUCTION

DIMENSIONS



CONSTRUCTION

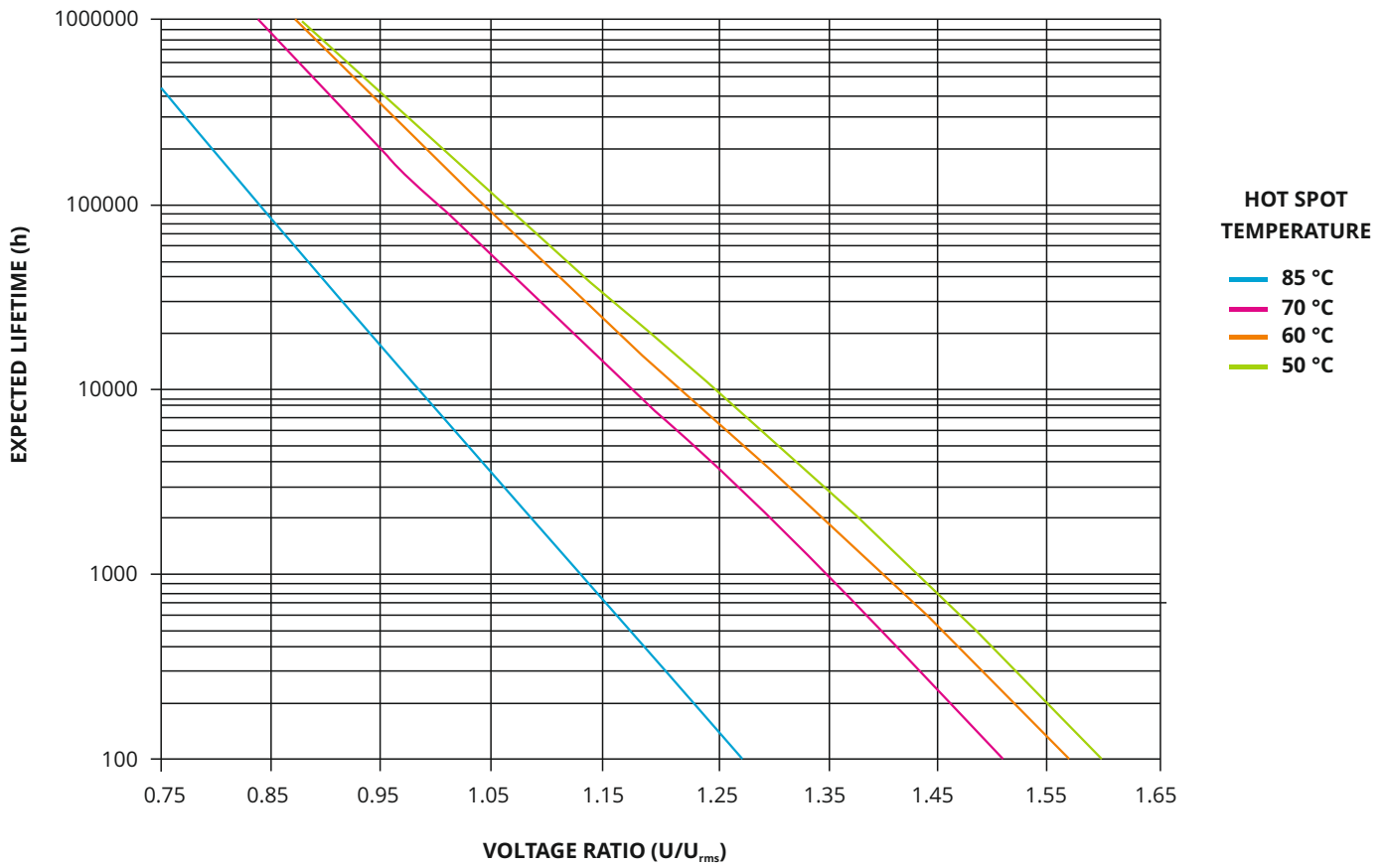
- **DIELECTRIC:** POLYPROPYLENE FILM
- **CAPACITOR ELECTRODES:** VACUUM-DEPOSITED METAL LAYERS (OVERPRESSURE DISCONNECTOR)
- **CASING:** CYLINDRICAL ALUMINIUM CASE WITH PLASTIC SELF-EXTINGUISHING SEALING COVER (UL94 V-0)
- **FILLING:** BIODEGRADABLE VEGETABLE OIL (NON PCB)
- **TERMINALS:** TINNED BRASS SCREW



AC/DC GENERALS PURPOSE CAPACITORS

LIFETIME EXPECTANCY

EXPECTED LIFETIME CURVES



AC FILTER CAPACITORS (3-PHASE DELTA CONNECTION)

TYPE KNI4053

APPLICATIONS

- SWITCHING MODE POWER SUPPLIES (SMPS)
- SOLAR POWER PLANT
- WIND PLANTS
- FREQUENCY INVERTERS
- UNINTERRUPTIBLE POWER SUPPLIES (UPS)

FEATURES

- FOR HARSH ENVIRONMENT
- SELF-HEALING PROPERTIES
- ALUMINIUM CASE; FILLED WITH VEGETABLE OIL, NON-PCB
- OVERPRESSURE DISCONNECTOR SUITABLE FOR PFC AND LCL FILTER
- HIGH RIPPLE CURRENT
- HIGH RELIABILITY
- VERY LOW LOSSES

SPECIFICATIONS

- | | |
|--|--|
| • RATED CAPACITANCE | 3x8 μ F UP TO 3x200 μ F |
| • CAPACITANCE TOLERANCE | $\pm 5\%$, $\pm 10\%$ |
| • RATED VOLTAGE (U_{rms}) | 450 VAC - 850 VAC |
| • RATED FREQUENCY | 50/60 Hz |
| • DISSIPATION FACTOR ($\tan \delta_o$) | 2×10^{-4} |
| • INSULATION STRENGTH $C \times R_i$ | > 5000 s |
| • OPERATING TEMPERATURE RANGE | -40 °C to +85 °C |
| • MAX. HOT SPOT TEMPERATURE | +85 °C |
| • STORAGE TEMPERATURE | -40 °C to +85 °C |
| • HUMIDITY CLASS | C |
| • PROTECTION | IP20 |
| • CONTACTS | 2x35 mm ² , M6 (5 Nm), $I_{max} = 80$ A
2x25 mm ² , M5 (3 Nm), $I_{max} = 60$ A
2x16 mm ² , M4 (2 Nm), $I_{max} = 36$ A |
| • DISCHARGE RESISTOR | NO |
| • TEST VOLTAGE (BETWEEN TERMINALS) | 1.5 x U_n , 50 Hz, 10 s |
| • TEST VOLTAGE (TERMINALS TO CASE) | 4000 V, 50 Hz, 2 s |
| • SEALING TEST | 75 °C, 6 h |
| • MOUNTING POSITION | UPWARDS |
| • INTERNAL PROTECTION | OVERPRESSURE DISCONNECTOR (ALL PHASES) |
| • ALTITUDE | UP TO 4000 m |
| • EXPECTED LIFETIME | $\geq 100\,000$ HOURS AT U_{rms} , $\theta_{hs} = 70$ °C |
| • FAILURE RATE | 100 FIT |



REFERENCE STANDARD

- IEC 61071
- OPTIONAL IEC 60831, UL 810



AC FILTER CAPACITORS (3-PHASE DELTA CONNECTION)

TYPE KNI4053

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{rms} = 450 \text{ V AC}$, $U_N = 640 \text{ V AC}$

C_N (μF)	R_s ($\text{m}\Omega$)	L_s (nH)	I_{max} (A)	\hat{I} (kA)	I_s (kA)	R_{th} (K/W)	H (mm)	D (mm)	Weight (kg)	Packing unit (pcs)
3x25	3x1.4	110	3x35	0.63	1.89	4.8	165	75	0.8	16
3x38	3x1.2	110	3x60	0.9	2.7	4.2	165	90	1.0	16
3x40	3x0.7	110	3x60	2.7	8.2	4.2	165	90	1.0	16
3x46	3x1.2	110	3x60	1.3	3.9	4.2	165	90	1.0	16
3x58	3x1	110	3x60	1.3	3.9	3.6	210	90	1.3	16
3x77	3x0.9	120	3x60	2	6	3.2	245	90	1.5	16
3x100	3x0.9	120	3x60	2.2	6.6	2.6	210	116	2.2	9
3x135	3x0.8	130	3x60	2.3	6.9	2.2	245	116	2.6	9
3x150	3x0.7	130	3x60	3	9	1.9	245	136	4.1	1
3x200	3x0.6	130	3x60	3.5	10.5	1.9	245	136	4.1	1

CAPACITANCE RANGE

$U_{rms} = 530 \text{ V AC}$, $U_N = 750 \text{ V AC}$

C_N (μF)	R_s ($\text{m}\Omega$)	L_s (nH)	I_{max} (A)	\hat{I} (kA)	I_s (kA)	R_{th} (K/W)	H (mm)	D (mm)	Weight (kg)	Packing unit (pcs)
3x16	3x1.6	110	3x35	0.8	2.4	4.8	165	75	0.8	16
3x30	3x1.5	120	3x60	1.2	3.6	3.6	210	90	1.3	16
3x35	3x1.4	120	3x60	1.4	4.2	3.6	210	90	1.3	16
3x48	3x1.2	120	3x60	1.5	4.5	3.2	245	90	1.5	16
3x50	3x0.6	130	3x60	1.6	4.8	2.6	210	116	2.2	9
3x83	3x0.8	130	3x60	2	6	2.2	245	116	2.6	9
3x100	3x0.8	130	3x60	2.2	6.6	1.9	245	136	4.1	1

CAPACITANCE RANGE

$U_{rms} = 600 \text{ V AC}$, $U_N = 850 \text{ V AC}$

C_N (μF)	R_s ($\text{m}\Omega$)	L_s (nH)	I_{max} (A)	\hat{I} (kA)	I_s (kA)	R_{th} (K/W)	H (mm)	D (mm)	Weight (kg)	Packing unit (pcs)
3x19	3x1.0	110	3x60	1.6	4.8	4.2	165	90	1.0	16
3x30	3x0.7	120	3x60	2.1	6.3	3.6	210	90	1.3	16
3x50	3x0.7	120	3x60	2.5	7.5	2.6	210	116	2.2	9
3x86	3x0.6	130	3x60	4.2	12.6	1.9	245	136	4.1	1

CAPACITANCE RANGE

$U_{rms} = 760 \text{ V AC}$, $U_N = 1080 \text{ V AC}$

C_N (μF)	R_s ($\text{m}\Omega$)	L_s (nH)	I_{max} (A)	\hat{I} (kA)	I_s (kA)	R_{th} (K/W)	H (mm)	D (mm)	Weight (kg)	Packing unit (pcs)
3x11	3x1.2	120	3x50	1.3	3.9	4.2	165	90	1.0	16
3x33.4	3x0.8	120	3x60	2.1	6.3	2.6	210	116	2.2	9
3x55.7	3x0.6	130	3x60	4	12	1.9	245	136	4.1	1

CAPACITANCE RANGE

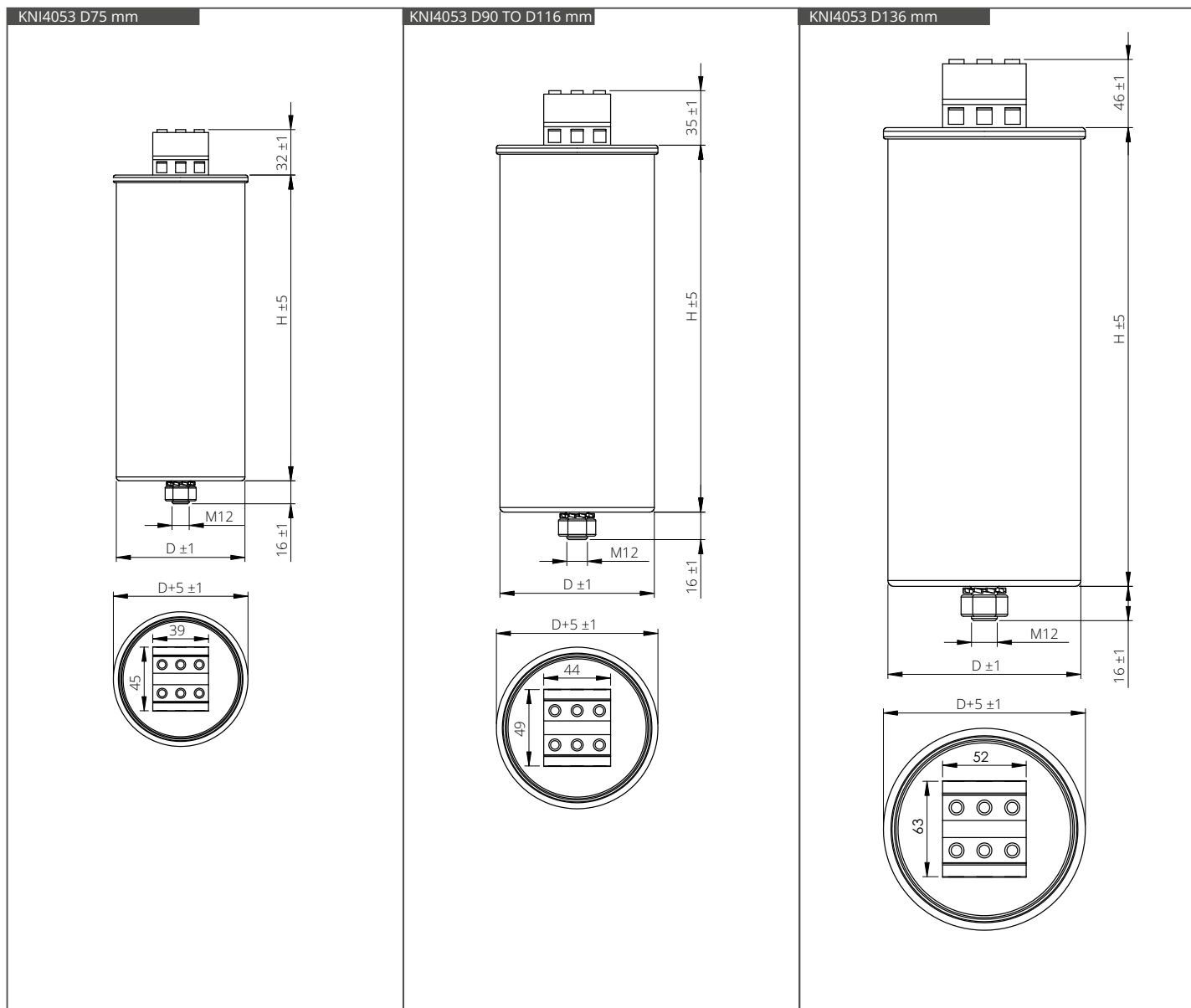
$U_{rms} = 850 \text{ V AC}$, $U_N = 1200 \text{ V AC}$

C_N (μF)	R_s ($\text{m}\Omega$)	L_s (nH)	I_{max} (A)	\hat{I} (kA)	I_s (kA)	R_{th} (K/W)	H (mm)	D (mm)	Weight (kg)	Packing unit (pcs)
3x8	3x1.4	110	3x50	1	3	4.8	165	75	0.8	16
3x12	3x1.2	110	3x60	1.5	4.5	4.2	165	90	1.0	16
3x25	3x0.5	130	3x60	3	9	2.6	210	116	2.2	9
3x50	3x0.6	130	3x60	4.8	14.4	1.9	245	136	4.1	1
3x55.7	3x0.6	130	3x60	4	12	1.9	245	136	4.1	1

AC FILTER CAPACITORS (3-PHASE DELTA CONNECTION)

DIMENSIONS AND CONSTRUCTION

DIMENSIONS



CONSTRUCTION

- **DIELECTRIC:** POLYPROPYLENE FILM
- **CAPACITOR ELECTRODES:** VACUUM-DEPOSITED METAL LAYERS (OVERPRESSURE DISCONNECTOR)
- **CASING:** CYLINDRICAL ALUMINIUM CASE AND COVER
- **FILLING:** BIODEGRADABLE VEGETABLE OIL (NON PCB)
- **TERMINALS:** CONTACT BLOCK (M4, M5, M6)
- **BASE STUD:** M12x16 - MAX: TORQUE 12 Nm

AC FILTER CAPACITORS (3-PHASE DELTA CONNECTION)

CONNECTION AND MOUNTING INSTRUCTIONS

SAFE OPERATION OF THE CAPACITORS CAN BE EXPECTED ONLY IF ALL ELECTRICAL AND THERMAL SPECIFICATIONS AS STATED ON THE LABEL, IN THE DATA SHEETS OR CATALOGUES AND THE FOLLOWING INSTRUCTIONS ARE STRICTLY OBSERVED. THE MANUFACTURER DOES NOT ACCEPT RESPONSIBILITY FOR ANY DAMAGE THAT COULD ARISE DUE TO NON-OBSERVANCE.

CONNECTION

USE THE APPROPRIATE TAB CONNECTORS TO CONNECT THE CABLES OF THE CAPACITORS.

DO NOT SOLDER LEADS TO THE TERMINALS.

DO NOT BEND OR TURN OR MOVE IN ANY OTHER WAY THE CONNECTING TERMINALS AND THE TAB CONNECTORS.

DO NOT USE HEAVY OR SHARP OBJECTS AND TOOLS ON THE BORDERING OR THE CONNECTING TERMINALS.

CONNECTION AT THREADED STUDS SHOULD BE MADE BETWEEN TWO NUTS. DURING THE CONNECTION THE LOWER NUT SHOULD BE BACKED UP TO AVOID ANY TRANSMISSION OF THE TORQUE.

PERMITTED TORQUE FOR SCREW CONNECTIONS:

M4 - 2 Nm

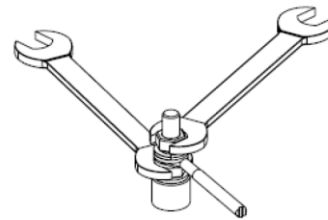
M5 - 3 Nm

M6 - 5 Nm

M8 - 6 Nm

M10 - 10 Nm

WARNING: SAFE CONNECTION



TO PREVENT BREAKING AT TIGHTENING
ALWAYS USE TWO WRENCHES

MOUNTING

CAN BE MOUNTED IN ANY POSITION.

THE CAPACITOR HAS TO BE INSTALLED IN SUCH A WAY AS TO AVOID ANY MECHANICAL DAMAGE AND DENTS IN THE ALUMINIUM.

CAPACITORS WITH OVERPRESSURE SAFETY DEVICE SHOULD BE CONNECTED WITH SUFFICIENTLY FLEXIBLE LEADS IN ORDER TO ENABLE PROPER FUNCTIONING OF THE MECHANISM. ABOVE THE TERMINALS LEAVE ENOUGH SPACE FOR EXPANSION OF THE CAPACITOR CASE.

LEAVE A MINIMUM DISTANCE OF 15 MM OF FREE SPACE ABOVE EACH CAPACITOR.

CONNECT THESE CAPACITORS BY USING ONLY FLEXIBLE CABLES OR ELASTIC COPPER BANDS.

EARTHING

CAPACITORS WITH A METAL CASE MUST BE EARTHED AT THE MOUNTING STUD.

PERMITTED TORQUE FOR STUDS:

M8 - 5 Nm

M12 - 12 Nm

AC FILTER CAPACITORS (3-PHASE DELTA CONNECTION)

CAUTIONS AND WARNINGS

CAUTIONS AND WARNINGS



ATTENTION: IN CASE OF DENTS OF MORE THAN 1 MM IN DEPTH OR ANY OTHER MECHANICAL DAMAGE, CAPACITORS MUST NOT BE USED AT ALL. THIS ALSO APPLIES TO CASES OF LEAKAGE. TO ENSURE THE FULL FUNCTIONALITY OF THE OVERPRESSURE DISCONNECTOR, ELASTIC ELEMENTS MUST NOT BE HINDERED AND A MINIMUM SPACE OF 15 MM HAS TO BE KEPT ABOVE EACH CAPACITOR. CHECK TIGHTNESS OF THE CONNECTIONS/TERMINALS PERIODICALLY. THE ENERGY STORED IN CAPACITORS MAY BE LETHAL. TO PREVENT ANY CHANCE OF SHOCK, DISCHARGE AND SHORT CIRCUIT THE CAPACITOR BEFORE HANDLING. FAILURE TO FOLLOW CAUTIONS MAY RESULT, IN THE WORST CASE, IN PREMATURE FAILURES, BURSTING AND FIRE. ISKRA, D.D. IS NOT RESPONSIBLE FOR ANY DAMAGE CAUSED TO PEOPLE OR THINGS AND RESULTING FROM AN IMPROPER INSTALLATION OR A MISAPPLICATION OF CAPACITORS.

SAFETY



ATTENTION: ELECTRICAL OR MECHANICAL MISAPPLICATION OF CAPACITORS MAY BE HAZARDOUS. PERSONAL INJURY OR PROPERTY DAMAGE MAY RESULT FROM BURSTING OF THE CAPACITOR OR FROM THE EXPULSION OF OIL OR MELTED MATERIAL DUE TO MECHANICAL DISRUPTION OF THE CAPACITOR. ENSURE GOOD, EFFECTIVE GROUNDING FOR CAPACITOR ENCLOSURES. OBSERVE APPROPRIATE SAFETY PRECAUTIONS DURING OPERATION (SELF-RECHARGING PHENOMENA AND HIGH ENERGY CONTAINED IN THE CAPACITOR). HANDLE CAPACITORS CAREFULLY, BECAUSE EVEN AFTER THE DISCONNECTION THEY MAY STILL BE CHARGED. THE TERMINALS OF CAPACITORS, CONNECTED BUS BARS AND CABLES AS WELL AS OTHER DEVICES MAY ALSO BE ENERGIZED. FOLLOW GOOD ENGINEERING PRACTICE.

THERMAL LOAD



ATTENTION: AFTER INSTALLATION OF THE CAPACITOR IT IS NECESSARY TO VERIFY THAT MAXIMUM HOT SPOT TEMPERATURE DOES NOT EXCEED DURING EXTREME SERVICE CONDITIONS.

MECHANICAL PROTECTION



ATTENTION: THE CAPACITOR HAS TO BE INSTALLED IN SUCH A WAY AS TO AVOID ANY MECHANICAL DAMAGE AND DENTS IN THE ALUMINIUM.

STORAGE AND OPERATING CONDITIONS



ATTENTION: DO NOT USE OR STORE CAPACITORS IN CORROSIVE ATMOSPHERE, ESPECIALLY WHERE CHLORIDE GAS, SULFIDE GAS, ACID, ALKALI, SALT OR THE LIKE ARE PRESENT. IN DUSTY ENVIRONMENTS, IT IS REQUIRED TO PERFORM REGULAR MAINTENANCE AND PROPER CLEANING, ESPECIALLY OF THE TERMINALS, TO AVOID CONDUCTIVE PATH BETWEEN PHASES AND/OR PHASES AND GROUND. THE MAXIMUM STORAGE TEMPERATURE IS 85 °C.

OVERPRESSURE DISCONNECTOR



ATTENTION: TO ENSURE FULL FUNCTIONALITY OF AN OVERPRESSURE DISCONNECTOR, THE FOLLOWING MUST BE OBSERVED: THE ELASTIC ELEMENTS MUST BE HINDERED, I.E.: CONNECTING LINES MUST BE FLEXIBLE LEADS (CABLES); THERE MUST BE ENOUGH SPACE FOR EXPANSION ABOVE THE CONNECTIONS; FOLDING CRIMPS MUST NOT BE RETAINED BY CLAMPS; STRESS PARAMETERS OF THE CAPACITOR MUST FOLLOW IEC 61071 SPECIFICATION.

AC FILTERING CAPACITORS

TYPE KNB1910, KNB1914



APPLICATIONS

- INPUT/OUTPUT AC FILTERS FOR POWER CONVERTERS
- SWITCHING MODE POWER SUPPLIES (SMPS)
- SOLAR POWER PLANTS
- WIND PLANTS
- MOTOR DRIVES
- INDUCTION HEATERS
- FREQUENCY INVERTERS
- UNINTERRUPTIBLE POWER SUPPLIES (UPS)

REFERENCE STANDARD

- IEC 61071
- AEC-Q200 (ON REQUEST)

FEATURES

- SELF-HEALING PROPERTIES
- HIGH RIPPLE CURRENT
- HIGH RELIABILITY
- LOW LOSSES
- SMALL DIMENSIONS
- DESIGNED FOR PCB MOUNTING

SPECIFICATIONS

• RATED CAPACITANCE	0.1 µF UP TO 80 µF
• CAPACITANCE TOLERANCE	± 5 %, ± 10 %
• RATED RMS VOLTAGE U_{rms}	250 V AC, 300 V AC, 350 V AC, 400 V AC, 440 V AC
• TEST VOLTAGE (BETWEEN TERMINALS)	$1.5 \times U_{NDCr}$, 10 s
• SELF-INDUCTANCE	< 1 nH PER mm OF PITCH
• INSULATION RESISTANCE BETWEEN TERMINALS	$R \times C \geq 30\,000 \leq$ AFTER 1 min AT 500 V
• OPERATING TEMPERATURE RANGE	-40 °C TO 85 °C
• MAX. HOT SPOT TEMPERATURE	105 °C
• CLIMATIC CATEGORY	40/85/56 ACCORDING TO IEC 60068-1
• LIFE EXPECTANCY	$\geq 60\,000$ HOURS AT U_{rms} , $\theta_{hs} = 70$ °C
• FAILURE RATE	100 FIT



AC FILTERING CAPACITORS

TYPE KNB1910, KNB1914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{rms} @ 85\text{ °C} = 250\text{ V AC}$, $U_N @ 85\text{ °C} = 350\text{ V AC}$, $U_{NDC} @ 85\text{ °C} = 600\text{ V DC}$

C_N ⁽¹⁾ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)$ @1kHz ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	I_{max} @10 kHz ⁽⁵⁾ (A)	$(dU/dt)_{max}$ (V/ μs)	\hat{I} (A)
	L	H	W	P	P1					
1	32.0	19.0	10.0	27.5	-	10	30.0	4.0	32	32
2	32.0	19.0	10.0	27.5	-	10	24.3	4.5	32	64
3	32.0	21.0	12.0	27.5	-	10	17.1	5.8	32	96
4	32.0	22.0	13.0	27.5	-	10	13.5	6.7	32	128
5	32.0	24.5	15.0	27.5	-	10	11.0	8.0	32	160
6	32.0	26.5	17.0	27.5	-	10	9.5	9.0	32	192
7	32.0	28.0	18.0	27.5	-	10	8.2	10.0	32	224
8	32.0	32.0	18.0	27.5	-	10	7.3	11.1	32	256
9	32.0	33.0	20.0	27.5	-/10.2	10	6.5	12.3	32	288
10	32.0	35.0	20.0	27.5	-/10.2	10	5.9	13.2	32	320
12	32.0	35.5	24.0	27.5	-/10.2	10	4.9	15.2	32	384
15	32.0	40.0	25.0	27.5	-/10.2	10	4.0	17.8	32	480
8	42.0	27.0	16.0	37.5	-	10	15.0	7.9	23	184
9	42.0	27.0	16.0	37.5	-	10	13.5	8.3	23	207
10	42.0	31.0	18.0	37.5	10.2	10	12.3	9.4	23	230
11	42.0	31.0	18.0	37.5	10.2	10	11.4	9.7	23	253
12	42.0	31.0	18.0	37.5	10.2	10	10.8	10.0	23	276
15	42.0	38.0	21.0	37.5	10.2	10	8.7	12.1	23	345
20	42.0	43.0	28.0	37.5	10.2	10	6.6	14.1	23	460
22	42.0	43.0	28.0	37.5	10.2	10	6.0	14.8	23	506
25	42.0	43.0	28.0	37.5	10.2	10	5.5	15.5	23	575
30	42.0	45.0	30.0	37.5	10.2/20.3	15	5.0	16.9	23	690
35	42.0	50.0	36.0	37.5	10.2/20.3	15	4.5	19.1	23	805
40	42.0	50.0	36.0	37.5	10.2/20.3	15	4.0	20.2	23	920
40	57.5	45.0	30.0	52.5	20.3	25	4.7	19.2	15	600
45	57.5	45.0	30.0	52.5	20.3	25	4.2	20.3	15	675
50	57.5	50.0	35.0	52.5	20.3	25	3.8	22.9	15	750
55	57.5	50.0	35.0	52.5	20.3	25	3.5	23.9	15	825
60	57.5	50.0	35.0	52.5	20.3	30	3.2	25.0	15	900
65	57.5	50.0	35.0	52.5	20.3	30	3.0	25.8	15	975
70	57.5	50.0	35.0	52.5	20.3	30	2.9	26.2	15	1050
75	57.5	55.0	40.0	52.5	20.3	30	2.8	27.4	15	1125
80	57.5	55.0	40.0	52.5	20.3	30	2.7	27.9	15	1200

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

AC FILTERING CAPACITORS

TYPE KNB1910, KNB1914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

U_{rms} @ 85 °C = 300 V AC, U_N @ 85 °C = 420 V AC, U_{NDC} @ 85 °C = 750 V DC

C_N ⁽¹⁾ (μ F)	Dimensions (mm) ⁽²⁾					$\tan(\delta)$ @1kHz ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	I_{max} @10 kHz ⁽⁵⁾ (A)	$(dU/dt)_{max}$ (V/ μ s)	\hat{I} (A)
	L	H	W	P	P1					
1	32.0	19.0	10.0	27.5	-	10	30.0	4.0	40	40
2	32.0	21.0	12.0	27.5	-	10	19.8	5.3	40	80
3	32.0	24.5	15.0	27.5	-	10	14.0	7.1	40	120
3.3	32.0	24.5	15.0	27.5	-	10	13.0	7.3	40	132
4	32.0	26.5	17.0	27.5	-	10	11.0	8.4	40	160
5	32.0	32.0	18.0	27.5	-	10	9.5	9.7	40	200
6	32.0	33.0	20.0	27.5	-/10.2	10	8.3	10.9	40	240
7	32.0	35.5	24.0	27.5	-/10.2	10	7.3	12.4	40	280
8	32.0	35.5	24.0	27.5	-/10.2	10	6.6	13.0	40	320
9	32.0	40.0	25.0	27.5	-/10.2	10	6.0	14.4	40	360
10	32.0	40.0	25.0	27.5	-/10.2	10	5.5	15.1	40	400
5	42.0	27.0	16.0	37.5	-	10	17.0	7.4	28	140
5.6	42.0	27.0	16.0	37.5	-	10	15.4	7.8	28	157
6	42.0	31.0	18.0	37.5	10.2	10	14.5	8.6	28	168
7	42.0	31.0	18.0	37.5	10.2	10	13.2	9.0	28	196
7.5	42.0	38.0	21.0	37.5	10.2	10	12.5	10.1	28	210
8	42.0	38.0	21.0	37.5	10.2	10	12.0	10.3	28	224
9	42.0	38.0	21.0	37.5	10.2	10	11.0	10.7	28	252
10	42.0	38.0	21.0	37.5	10.2	10	10.0	11.3	28	280
12	42.0	43.0	28.0	37.5	10.2	10	8.5	12.4	28	336
15	42.0	43.0	28.0	37.5	10.2	10	6.8	13.9	28	420
16	42.0	43.0	28.0	37.5	10.2	10	6.5	14.2	28	448
20	42.0	45.0	30.0	37.5	10.2/20.3	15	5.3	16.4	28	560
25	42.0	50.0	36.0	37.5	10.2/20.3	15	4.3	19.5	28	700
25	57.5	45.0	30.0	52.5	20.3	15	6.8	16.0	19	475
30	57.5	50.0	35.0	52.5	20.3	15	5.8	18.5	19	570
35	57.5	50.0	35.0	52.5	20.3	20	5.0	20.0	19	665
40	57.5	50.0	35.0	52.5	20.3	20	4.4	19.9	19	760
45	57.5	55.0	40.0	52.5	20.3	20	4.0	22.9	19	855
50	57.5	55.0	40.0	52.5	20.3	20	3.6	24.2	19	950
55	57.5	55.0	40.0	52.5	20.3	20	3.3	25.3	19	1045

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70^\circ\text{C}$ FOR $\Delta\theta_{case} \leq 20^\circ\text{C}$.

AC FILTERING CAPACITORS

TYPE KNB1910, KNB1914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

U_{rms} @ 85 °C = 350 V AC, U_N @ 85 °C = 490 V AC, U_{ndc} @ 85 °C = 900 V DC

C_N ⁽¹⁾ (μ F)	Dimensions (mm) ⁽²⁾					$\tan(\delta)$ @1kHz ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	I_{max} @10 kHz ⁽⁵⁾ (A)	$(dU/dt)_{max}$ (V/ μ s)	\hat{I} (A)
	L	H	W	P	P1					
1	32.0	19.0	10.0	27.5	-	10	30.0	4.0	50	50
1.2	32.0	21.0	12.0	27.5	-	10	25.0	4.8	50	60
2	32.0	24.5	15.0	27.5	-	10	17.0	6.4	50	100
2.2	32.0	24.5	15.0	27.5	-	10	16.0	6.6	50	110
3	32.0	28.0	18.0	27.5	-	10	12.5	8.1	50	150
3.3	32.0	32.0	18.0	27.5	-	10	11.5	8.8	50	165
4	32.0	32.0	18.0	27.5	-	10	9.8	9.6	50	200
5	32.0	35.0	20.0	27.5	-/10.2	10	8.5	10.9	50	250
6	32.0	35.5	24.0	27.5	-/10.2	10	7.5	12.2	50	300
7	32.0	40.0	25.0	27.5	-/10.2	10	6.8	13.6	50	350
7.5	32.0	40.0	25.0	27.5	-/10.2	10	6.5	13.9	50	375
4	42.0	27.0	16.0	37.5	-	10	19.0	7.0	35	140
5	42.0	31.0	18.0	37.5	10.2	10	16.0	8.2	35	175
6	42.0	38.0	21.0	37.5	10.2	10	13.5	9.7	35	210
7	42.0	38.0	21.0	37.5	10.2	10	11.8	10.4	35	245
8	42.0	38.0	21.0	37.5	10.2	10	10.5	11.0	35	280
9	42.0	43.0	28.0	37.5	10.2	10	9.5	11.8	35	315
10	42.0	43.0	28.0	37.5	10.2	10	8.8	12.2	35	350
12	42.0	43.0	28.0	37.5	10.2	10	7.3	13.4	35	420
14	42.0	45.0	30.0	37.5	10.2/20.3	15	6.5	14.8	35	490
15	42.0	45.0	30.0	37.5	10.2/20.3	15	6.0	15.4	35	525
18	42.0	50.0	36.0	37.5	10.2/20.3	15	5.0	18.1	35	630
20	42.0	50.0	36.0	37.5	10.2/20.3	15	4.5	19.1	35	700
18	57.5	45.0	30.0	52.5	20.3	15	8.7	14.1	23	414
20	57.5	45.0	30.0	52.5	20.3	15	7.9	14.8	23	460
22	57.5	50.0	35.0	52.5	20.3	20	7.2	16.6	23	506
24	57.5	50.0	35.0	52.5	20.3	20	6.7	17.3	23	552
25	57.5	50.0	35.0	52.5	20.3	20	6.5	17.5	23	575
26	57.5	50.0	35.0	52.5	20.3	20	6.3	17.8	23	598
30	57.5	55.0	40.0	52.5	20.3	20	5.5	19.6	23	690
35	57.5	55.0	40.0	52.5	20.3	20	4.8	20.9	23	805

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70^\circ\text{C}$ FOR $\Delta\theta_{case} \leq 20^\circ\text{C}$.

AC FILTERING CAPACITORS

TYPE KNB1910, KNB1914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{rms} @ 85\text{ °C} = 400\text{ V AC}$, $U_N @ 85\text{ °C} = 560\text{ V AC}$, $U_{NDC} @ 85\text{ °C} = 1000\text{ V DC}$

C_N ⁽¹⁾ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}$ ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	$I_{max}@10\text{ kHz}$ ⁽⁵⁾ (A)	$(dU/dt)_{max}$ (V/ μs)	\hat{I} (A)
	L	H	W	P	P1					
0.47	32.0	16.0	7.5	27.5	-	10	45.0	2.9	57	27
0.56	32.0	17.0	9.0	27.5	-	10	40.0	3.3	57	32
0.68	32.0	19.0	10.0	27.5	-	10	38.0	3.6	57	39
0.82	32.0	21.0	12.0	27.5	-	10	33.0	4.1	57	47
1	32.0	21.0	12.0	27.5	-	10	28.0	4.5	57	57
1.5	32.0	24.5	15.0	27.5	-	10	20.0	5.9	57	86
2	32.0	26.5	17.0	27.5	-	10	16.0	6.9	57	114
2.2	32.0	26.5	17.0	27.5	-	10	15.0	7.2	57	125
3	32.0	33.0	20.0	27.5	-/10.2	10	11.5	9.2	57	171
3.5	32.0	35.0	20.0	27.5	-/10.2	10	10.5	9.8	57	200
5	32.0	40.0	25.0	27.5	-/10.2	10	7.5	12.9	57	285
2.7	42.0	27.0	16.0	37.5	-	10	20.0	6.8	40	108
3	42.0	31.0	18.0	37.5	10.2	10	19.0	7.5	40	120
3.5	42.0	31.0	18.0	37.5	10.2	10	17.0	8.0	40	140
4	42.0	38.0	21.0	37.5	10.2	10	15.0	9.2	40	160
5	42.0	38.0	21.0	37.5	10.2	10	12.0	10.3	40	200
6	42.0	43.0	28.0	37.5	10.2	10	10.3	11.3	40	240
7	42.0	43.0	28.0	37.5	10.2	10	9.0	12.1	40	280
7.5	42.0	43.0	28.0	37.5	10.2	10	8.6	12.4	40	300
8	42.0	43.0	28.0	37.5	10.2	10	8.3	12.6	40	320
9	42.0	45.0	30.0	37.5	10.2/20.3	10	7.6	13.7	40	360
10	42.0	45.0	30.0	37.5	10.2/20.3	15	7.0	14.3	40	400
12	42.0	50.0	36.0	37.5	10.2/20.3	15	6.0	16.5	40	480
13	42.0	50.0	36.0	37.5	10.2/20.3	15	5.6	17.1	40	520
13	57.5	45.0	30.0	52.5	20.3	15	8.2	14.6	27	351
14	57.5	45.0	30.0	52.5	20.3	15	7.7	15.0	27	378
15	57.5	45.0	30.0	52.5	20.3	20	7.3	15.4	27	405
16	57.5	50.0	35.0	52.5	20.3	20	7.0	16.9	27	432
18	57.5	50.0	35.0	52.5	20.3	20	6.3	17.8	27	486
20	57.5	50.0	35.0	52.5	20.3	20	5.7	18.7	27	540
22	57.5	55.0	40.0	52.5	20.3	20	5.2	20.1	27	594
25	57.5	55.0	40.0	52.5	20.3	20	4.6	21.4	27	675
26	57.5	55.0	40.0	52.5	20.3	20	4.4	21.9	27	702

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM $\tan(\delta)$ VALUES.

⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

AC FILTERING CAPACITORS

TYPE KNB1910, KNB1914

GENERAL CHARACTERISTICS

CAPACITANCE RANGE

$U_{rms} @ 85\text{ °C} = 440\text{ V AC}$, $U_N @ 85\text{ °C} = 620\text{ V AC}$, $U_{NDC} @ 85\text{ °C} = 1100\text{ V DC}$

C_N ⁽¹⁾ (μF)	Dimensions (mm) ⁽²⁾					$\tan(\delta)@1\text{kHz}$ ⁽³⁾ ($\times 10^{-4}$)	ESR@10 kHz ⁽⁴⁾ (m Ω)	$I_{max}@10\text{ kHz}$ ⁽⁵⁾ (A)	$(dU/dt)_{max}$ (V/ μs)	\hat{i} (A)
	L	H	W	P	P1					
0.1	32.0	16.0	7.5	27.5	-	10	100.0	2.0	150	15
0.15	32.0	16.0	7.5	27.5	-	10	70.0	2.4	150	23
0.22	32.0	17.0	9.0	27.5	-	10	55.0	2.8	150	33
0.33	32.0	17.0	9.0	27.5	-	10	45.0	3.1	150	50
0.47	32.0	19.0	10.0	27.5	-	10	35.0	3.7	150	71
0.56	32.0	21.0	12.0	27.5	-	10	33.0	4.1	150	84
0.68	32.0	22.0	13.0	27.5	-	10	30.0	4.5	150	102
0.82	32.0	24.5	15.0	27.5	-	10	25.0	5.1	150	123
1	32.0	24.5	15.0	27.5	-	10	22.0	5.6	150	150
1.5	32.0	28.0	18.0	27.5	-	10	16.0	7.2	150	225
2	32.0	33.0	20.0	27.5	-/10.2	10	13.0	8.7	150	300
2.2	32.0	35.0	20.0	27.5	-/10.2	10	12.0	9.2	150	330
3	32.0	40.0	25.0	27.5	-/10.2	10	10.0	11.2	150	450
1.5	42.0	27.0	16.0	37.5	-	15	21.0	6.7	100	150
2	42.0	31.0	18.0	37.5	10.2	15	17.0	8.0	100	200
2.2	42.0	31.0	18.0	37.5	10.2	15	16.0	8.2	100	220
3	42.0	38.0	21.0	37.5	10.2	15	12.0	10.3	100	300
3.3	42.0	38.0	21.0	37.5	10.2	15	11.0	10.7	100	330
4	42.0	38.0	21.0	37.5	10.2	15	10.5	11.0	100	400
4.7	42.0	43.0	28.0	37.5	10.2	15	9.5	11.8	100	470
5	42.0	43.0	28.0	37.5	10.2	15	9.0	12.1	100	500
5.6	42.0	43.0	28.0	37.5	10.2	15	8.2	12.7	100	560
6	42.0	45.0	30.0	37.5	10.2/20.3	15	7.8	13.5	100	600
6.8	42.0	45.0	30.0	37.5	10.2/20.3	15	7.0	14.3	100	680
7	42.0	50.0	36.0	37.5	10.2/20.3	15	6.9	15.4	100	700
8	42.0	50.0	36.0	37.5	10.2/20.3	15	6.2	16.3	100	800
8	57.5	45.0	30.0	52.5	20.3	20	6.5	16.4	65	520
9	57.5	45.0	30.0	52.5	20.3	20	6.2	16.7	65	585
10	57.5	45.0	30.0	52.5	20.3	20	5.8	17.3	65	650
12	57.5	50.0	35.0	52.5	20.3	20	5.0	20.0	65	780
15	57.5	55.0	40.0	52.5	20.3	20	4.1	22.7	65	975
16	57.5	55.0	40.0	52.5	20.3	20	4.0	22.9	65	1040
18	57.5	55.0	40.0	52.5	20.3	20	3.9	23.2	65	1170

NOTES:

⁽¹⁾ CAPACITANCE VALUE MEASURED AT 1 kHz. INTERMEDIATE CAPACITANCE VALUES AVAILABLE ON REQUEST.

⁽²⁾ NOMINAL DIMENSIONS.

⁽³⁾ MAXIMUM TAN(δ) VALUES.

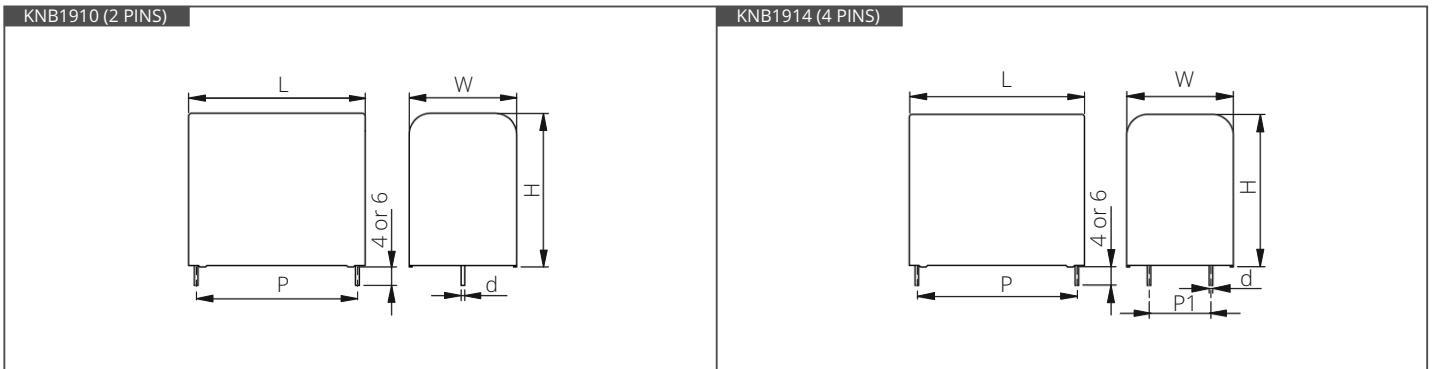
⁽⁴⁾ TYPICAL EQUIVALENT SERIES RESISTANCE AT 10 kHz.

⁽⁵⁾ MAXIMUM R.M.S. CURRENT AT 10 kHz, $\theta_{amb} = 70\text{ °C}$ FOR $\Delta\theta_{case} \leq 20\text{ °C}$.

AC FILTERING CAPACITORS

DIMENSIONS AND CONSTRUCTION

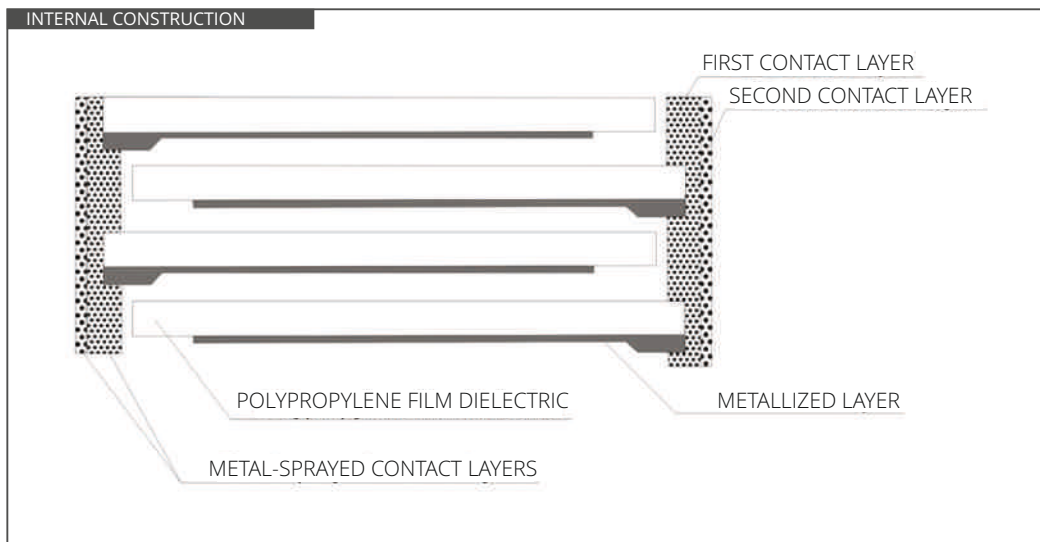
DIMENSIONS



TERMINAL DIMENSIONS					MAX. BOX DIMENSIONS			
P (mm)	TOLERANCE (mm)	P1 (mm)	TOLERANCE (mm)	d (mm)	TOLERANCE (mm)	L _{max} (mm)	H _{max} (mm)	W _{max} (mm)
27.5	±0.5	-	-	0.8	±0.05	L + 0.5	H + 0.2	W + 0.5
27.5	±0.5	10.2	±0.5	1 OR 1.2	±0.05	L + 0.5	H + 0.2	W + 0.5
37.5	±0.5	-	±0.5	1 OR 1.2	±0.05	L + 0.5	H + 0.5	W + 0.5
37.5	±0.5	10.2	±0.5	1 OR 1.2	±0.05	L + 0.5	H + 0.5	W + 0.5
37.5	±0.5	20.3	±0.5	1 OR 1.2	±0.05	L + 0.5	H + 0.5	W + 0.5
52.5	±0.5	20.3	±0.5	1.2	±0.05	L + 1.0	H + 1.0	W + 1.0

CONSTRUCTION

- **DIELECTRIC:** POLYPROPYLENE FILM
- **CAPACITOR ELECTRODES:** VACUUM-DEPOSITED METAL LAYERS
- **CASING:** PLASTIC CASE WITH FLAME-RETARDANT EPOXY RESIN SEALING (UL 94V-0)
- **TERMINALS:** PARALLEL TINNED COPPER WIRE (2 OR 4 PINS)



NOTE: CAPACITORS WITH RATED RMS VOLTAGE 440 VAC HAVE AN INTERNAL SERIAL CONNECTION.

AC FILTERING CAPACITORS

CAUTIONS AND WARNINGS

CAUTIONS AND WARNINGS

MECHANICAL OVERLOADS



ATTENTION: THE CAPACITOR IS DESIGNED FOR MOUNTING ON A PC BOARD. DO NOT MOVE THE CAPACITOR, AFTER IT HAS BEEN SOLDERED TO THE PC BOARD. THE CAPACITOR SHOULD NOT BE MOUNTED ON PLACES WHERE VIBRATIONS OR ACCELERATIONS OCCUR. DO NOT EXCEED THE TESTED ABILITY TO WITHSTAND VIBRATION. AVOID ANY COMPRESSIVE, TENSILE OR FLEXURAL STRESS.

OVERLOAD



ATTENTION: DO NOT OVERLOAD THE CAPACITOR. AVOID OVERLOADING THE CAPACITOR AND CONSIDER THE FLAMMABILITY OF MATERIALS.

IMPULSES

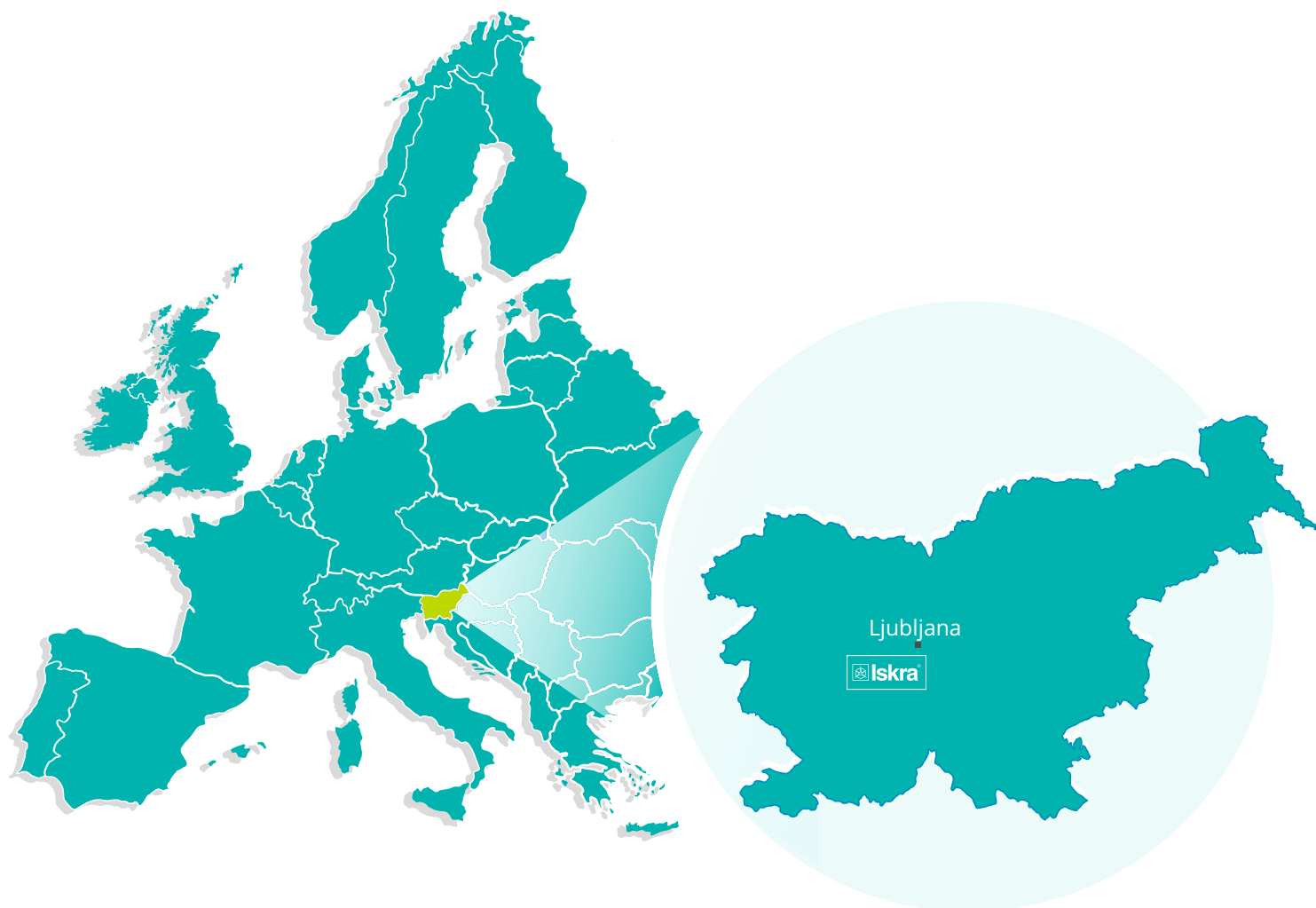


ATTENTION: IF ELECTRIC ENERGY IMPULSES ARE HIGHER, DIELECTRIC WILL BREAK DOWN. AVOID EXTERNAL ELECTRIC ENERGY IMPULSE. THE PEAK VOLTAGE (U_p , AC) SHOULD NOT BE HIGHER THAN THE RATED DC VOLTAGE (U_{NDC}).

ENVIRONMENTAL CONDITIONS



ATTENTION: DO NOT EXCEED OPERATING TEMPERATURE. DO NOT EXPOSE THE CAPACITOR TO HUMIDITY LONGER THAN IT IS RECOMMENDED. DO NOT EXPOSE THE CAPACITOR TO INCREASED TEMPERATURE MORE THAN IT IS RECOMMENDED. THE DISSIPATION FACTOR MAY GO UP AND DOWN WITH INCREASED TEMPERATURE. AVOID EXTERNAL FIRE OR ELECTRICITY.



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