





KELCAP – POWER CAPACITORS

FOR LIGHT DUTY APPLICATION

SPECIALLY MADE FOR AGRICULTURAL PUMP SETS

KELCAP – LDC		KELCAP - LDS
		

KELTRON COMPONENT COMPLEX LIMITED

KELCAP - POWER CAPACITORS
KELCAP – LDC / KELCAP – LDS

KELTRON POWER CAPACITORS – SELF HEALING TYPE
FOR AC POWER SYSTEMS CONFIRMING TO INDIAN STANDARD IS 13340-1993

The need for improved power quality and reduction in energy cost is the order of the day. Every electrical load operating on the principle of magnetic field such as motors, chokes, transformers, welding sets, inductive heating and generators consume both reactive and active power. This scenario results in lower quality of power and reduced availability with lower capacity utilization and increased cost of generation. Keltron with the state of art latest technologies and extensive expertise has developed wide range of low tension power factor correction capacitors which offer simple and cost effective solution to improve power quality with reduction in energy cost.

CONSTRUCTIONAL FEATURES

Keltron power factor correction capacitor integrates MPP wound elements using self healing low loss MPP film. These dry sections are end sprayed with Zinc and are inserted into cans with filling of fire retardant resin and then cured. These cans are mounted inside metal enclosures with appropriate termination and discharge resistors. The different types of light duty power factor correction capacitors are:

MODEL	SALIENT FEATURES
KELCAP-LDC	<ul style="list-style-type: none"> ➤ For light duty application with cylindrical metal can construction. ➤ For use with agricultural pump sets. ➤ stud mounting ➤ Confirms to Indian Standard IS 13340-1993 ➤ MPP Self healing type/ with safety discharge resistor ➤ ISI marked/ Low wattage losses
KELCAP-LDS	<ul style="list-style-type: none"> ➤ For light duty application with square cap construction. ➤ For use with agricultural pump sets. ➤ stud mounting ➤ Confirms to Indian Standard IS 13340-1993 ➤ MPP Self healing type/ with safety discharge resistor ➤ ISI marked/ Low wattage losses

I. KELCAP - LDC

**POWER CAPACITOR – METALLIZED POLY PROPYLENE FILM SELF HEALING TYPE
LIGHT DUTY – CYLINDRICAL CONSTRUCTION**

KELCAP – LDC capacitors are light duty power factor correction capacitors of cylindrical aluminium can construction. Capacitors conform to Indian standard IS 13340 -1993. Mounting clamp is fitted with nut and washer along with the capacitor. These capacitors are meant for light duty application and are mainly used for agriculture pump sets with a maximum of 5% harmonics withstand capability.

I.1) Technical specifications		I.2) Other Information		
Voltage rating	440V/415V/3 phase/50Hz	Rating	Ordering code	Overall dimensions (Dia X Height) in mm
Kvar rating	1 kvar – 10 kvar			
Connection	Delta	1 kvar	PC01R0LDC440 PC01R0LDC415	40x165 (440 & 415V)
Temperature class	-10 ⁰ C to +55 ⁰ C	2 kvar	PC02R0LDC440 PC02R0LDC415	45x175 (440V) 50x175 (415V)
Dielectric	MPP		3 kvar	PC03R0LDC440 PC03R0LDC415
Maximum over current	1.3 rated I	4 kvar		PC04R0LDC440 PC04R0LDC415
Peak inrush current	100 times rated I		5 kvar	PC05R0LDC440 PC05R0LDC415
Operational losses at dielectric level	≤ 0.20 W/kvar	6 kvar		PC06R0LDC440 PC06R0LDC415
Operational losses at termination including discharge resistor	≤ 0.45 W/kvar		7 kvar	PC07R0LDC440 PC07R0LDC415
Insulation level	3 KV	8 kvar		PC08R0LDC440 PC08R0LDC415
Installation	Indoor		9 kvar	PC09R0LDC440 PC09R0LDC415
Reference standard	IS 13340/1993, IS 13341/1992, IEC 60831-1(2002), IEC 60831-2(1995)	10 kvar		PC10R0LDC440 PC10R0LDC415
Mounting position	Any position except upside down			
Mounting and earthing	Threaded stud with clamp			
Protection and safety	Selfhealing, discharge resistor			
Termination	Provided with wire			

II. KELCAP - LDS

**POWER CAPACITOR – METALLIZED POLY PROPYLENE FILM SELF HEALING TYPE
LIGHT DUTY – SQUARE CAP CONSTRUCTION**

KELCAP – LDS capacitors are light duty power factor correction capacitors of square cap construction. Capacitors conform to Indian standard IS 13340 -1993. Mounting of capacitors are with the help of mounting stud. These capacitors are meant for light duty application and are mainly used for agriculture pump sets with a maximum of 5% harmonics withstand capability.

II.1) Technical specifications		II.2) Other Information		
Voltage rating	440V/415V/3 phase/50Hz	Rating	Ordering code	MS enclosure size in mm
Kvar rating	1 kvar – 10 kvar			
Connection	Delta	1 kvar	PC01R0LDS440	50x50x155 (440 & 415V)
Temperature class	-10°C to +55°C		PC01R0LDS415	
Dielectric	MPP	2 kvar	PC02R0LDS440	65x65x155 (440 & 415V)
Maximum over current	1.3 rated I		PC02R0LDS415	
Peak inrush current	100 times rated I	3 kvar	PC03R0LDS440	65x65x175 (440 & 415V)
Operational losses at dielectric level	≤ 0.20 W/kvar		PC03R0LDS415	
Operational losses at termination including discharge resistor	≤ 0.45 W/kvar	4 kvar	PC04R0LDS440	65x65x185 (440 & 415V)
Insulation level	3 KV		PC04R0LDS415	
Installation	Indoor	5 kvar	PC05R0LDS440	65x65x185 (440V) 80x80x185 (415V)
Reference standard	IS 13340/1993, IS 13341/1992, IEC 60831-1(2002), IEC 60831-2(1995)		PC05R0LDS415	
Mounting position	Any position except upside down	6 kvar	PC06R0LDS440	80x80x185 (440 & 415V)
Mounting and earthing	stud mounting		PC06R0LDS415	
Protection and safety	Selfhealing, discharge resistor	7 kvar	PC07R0LDS440	80x80x185 (440 & 415V)
Termination	Provided with wire		PC07R0LDS415	
		8 kvar	PC08R0LDS440	80x80x185 (440V) 90x90x185 (415V)
			PC08R0LDS415	
		9 kvar	PC09R0LDS440	80x80x235 (440 & 415V)
			PC09R0LDS415	
		10 kvar	PC10R0LDS440	80x80x235 (440 & 415V)
			PC10R0LDS415	

RECOMMENDED CAPACITOR RATING FOR DIRECT CONNECTION TO INDUCTION MOTORS

(For improvement of power factor to 0.95 or better)

Motor rating in HP	Capacitor rating in Kvar when motor speed in RPM is:						Motor rating in HP	Capacitor rating in Kvar when motor speed in RPM is:					
	3000	1500	1000	750	600	500		3000	1500	1000	750	600	500
2.5	1	1	1.5	2	2.5	2.5	105	22	24	27	29	36	41
5	2	2	2.5	3.5	4	4	110	23	25	28	30	38	43
7.5	2.5	3	3.5	4.5	5	5.5	115	24	26	29	31	39	44
10	3	4	4.5	5.5	6	6.5	120	25	27	30	32	40	46
12.5	3.5	4.5	5	6.5	7.5	8	125	26	28	31	33	41	47
15	4	5	6	7.5	8.5	9	130	27	29	32	34	43	49
17.5	4.5	5.5	6.5	8	10	10.5	135	28	30	33	35	44	50
20	5	6	7	9	11	12	140	29	31	34	36	46	52
22.5	5.5	6.5	8	10	12	13	145	30	32	35	37	47	54
25	6	7	9	10.5	13	14.5	150	31	33	36	38	48	55
27.5	6.5	7.5	9.5	11.5	14	16	115	32	34	37	39	49	56
30	7	8	10	12	15	17	160	33	35	38	40	50	57
32.5	7.5	8.5	11	13	16	18	165	34	36	39	41	51	59
35	8	9	11.5	13.5	17	19	170	35	37	40	42	53	60
37.5	8.5	9.5	12	14	18	20	175	36	38	41	43	54	61
40	9	10	13	15	19	21	180	37	39	42	44	55	62
42.5	9.5	11	14	16	20	22	185	38	40	43	45	56	63
45	10	11.5	14.5	16.5	21	23	190	38	40	43	45	58	65
47.5	10.5	12	15	17	22	24	195	39	41	44	46	59	66
50	11	12.5	16	18	23	25	200	40	42	45	47	60	67
55	12	13.5	17	19	24	26	205	41	43	46	48	61	68
60	13	14.5	18	20	26	28	210	42	44	47	49	61	69
65	14	15.5	19	21	27	29	215	42	44	47	49	62	70
70	15	16.5	20	22	28	31	220	43	45	48	50	63	71
75	16	17	21	23	29	32	225	44	46	49	51	64	72
80	17	19	22	24	30	34	230	45	47	50	52	65	73
85	18	20	23	25	31	35	235	46	48	51	53	65	74
90	19	21	24	26	33	37	240	46	48	51	53	66	75
95	20	22	25	27	34	38	245	47	49	52	54	67	75
100	21	23	26	28	35	40	250	48	50	53	55	68	76

RECOMMENDED CABLE SIZE, HRC FUSES AND CONTACTOR RATINGS FOR USE WITH DIFFERENT KVAR RATING CAPACITORS

Unit Rating (Kvar)	Rated current @ Rated voltage (A)		Recommended				Unit rating (Kvar)	Rated current @ Rated voltage (A)		Recommended			
	415V Rated volt	440V Rated volt	Cable size (sq.mm)		HRC fuse Rating (A)	Contactor* Rating (A)		415V Rated volt	440V Rated volt	Cable size (sq.mm)		HRC fuse Rating (A)	Contactor* Rating (A)
			Cu.	Al.						Cu.	Al.		
1	1.39	1.31	0.75	1.5	4	9	8	11.13	10.50	2.50	4	20	32
2	2.78	2.62	0.75	1.5	6	9	9	12.52	11.81	4	6	25	32
3	4.17	3.94	1	1.5	10	12	10	13.91	13.12	4	6	25	32
4	5.56	5.25	1	1.5	10	12	12.5	17.39	16.40	6	10	32	40
5	6.96	6.56	1.5	2.5	16	16	15	20.87	19.68	10	16	40	63
6	8.35	7.87	2.5	2.5	16	22	20	27.82	26.24	10	16	50	63
7	9.74	9.19	2.50	4	20	22	25	34.78	32.80	16	25	63	63
7.5	10.43	9.84	2.5	4	20	22	30	41.74	39.36	25	35	80	85

GUIDELINES FOR INSTALLATION

- 1) Preferably capacitor must be installed in vertical position.
- 2) Installed area should be free from water, vermin dust oil and chemical.
- 3) Capacitor body should be earthed at two different positions.
- 4) SFU/MCB/MCCB is recommended for short circuit protection.
- 5) Capacitor should be installed in a cross ventilated area only.
- 6) Current rating of the cable should be minimum 1.8 times capacitor current.
- 7) Appropriate size of lugs should be used for connecting cable to terminals and tightened fully.

OPERATIONAL GUIDELINES

- 1) Avoid touching the terminals of a charged capacitor.
- 2) Do not short circuit the terminals of a capacitor.
- 3) Ensure proper earthing of capacitors before energizing the unit.
- 4) HRC fuses/MCB/MCCB of proper current rating are recommended to be installed in SERIES with power capacitors to avoid over current driving through the units.
- 5) Ensure proper tightening of cables connected to the capacitor terminals to avoid heating up at terminations.
- 6) Ensure proper selection of capacitors depending upon harmonic distortion in the electrical system and in case if the distortion is high harmonic filters may be employed to limit the current through the power capacitor.
- 7) Connect capacitors to the system when the inductive load is switched on and ensure proper compensation as per selection guideline for power factor improvement.

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