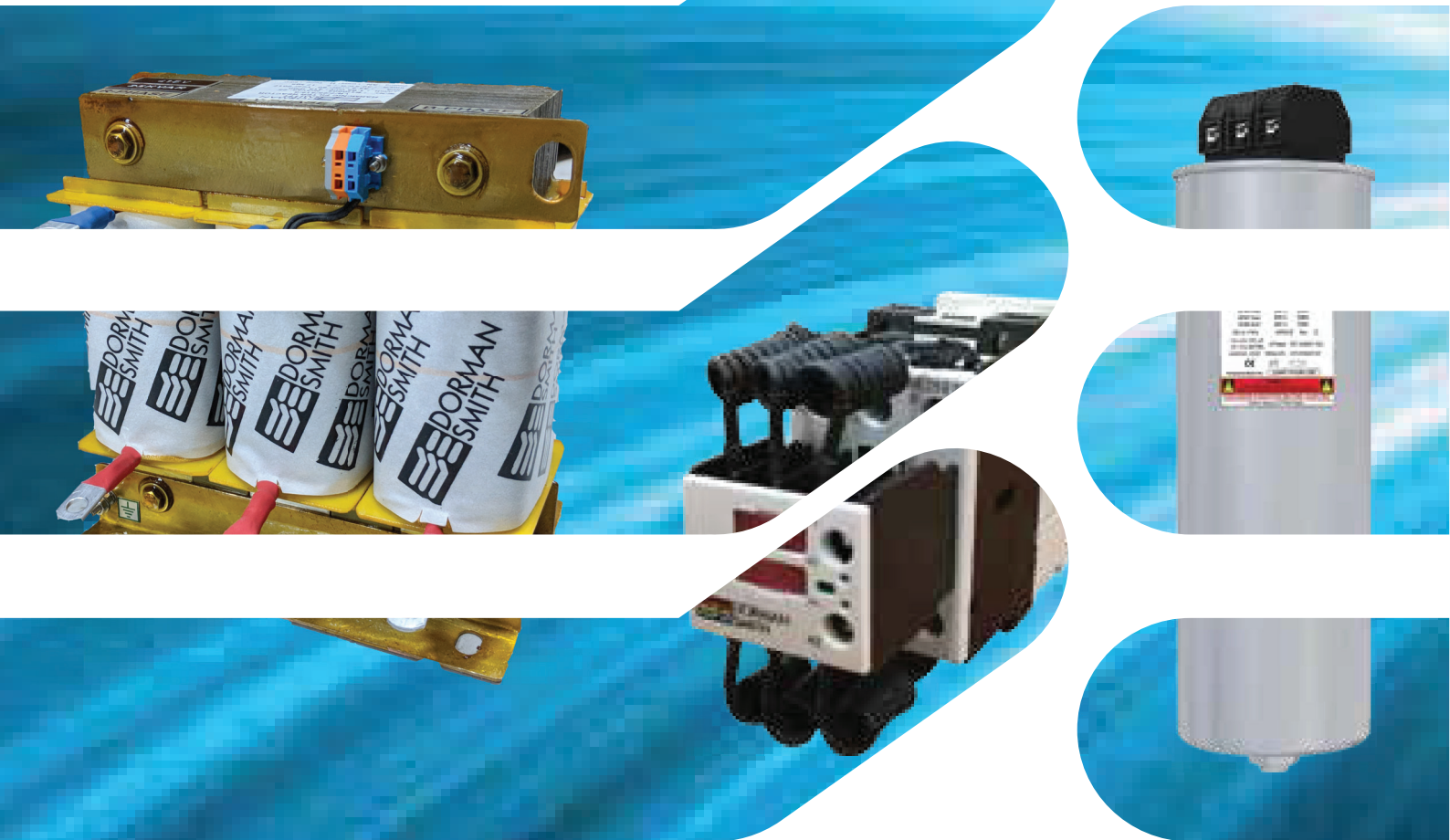
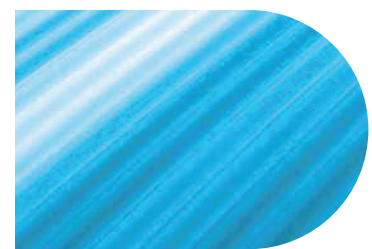
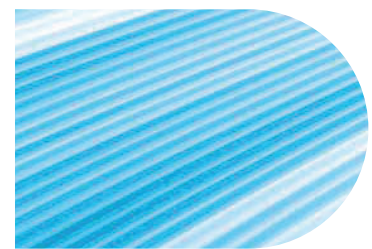
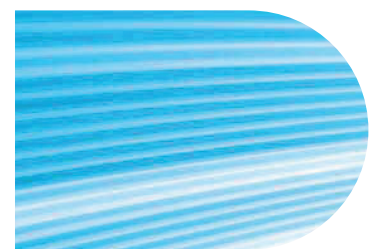


Loadcap

Power Factor Correction
Components





Dorman Smith Switchgear Limited

With over 130 years of experience in switchgear design and production Dorman Smith Switchgear Limited continues to provide high quality equipment for low-voltage electrical distribution and circuit protection.

Our product range begins with single-pole and neutral distribution board systems and continues up to custom designed, factory built low-voltage electrical switchboards for a broad range of commercial, industrial and retrofit applications.

We continue to build on our extensive technical knowledge and awareness of customer and market demands, operating conditions and current regulations.

This breadth of experience supports the development and manufacturing techniques of our electrical products to exceed the industry standards.



Index

Content	Page No
Power Factor Correction Capacitors	1
Detuned Harmonic Reactors	9
Capacitor Switching Contactors	15
Automatic Power Factor Controller	17

Power Factor Correction Capacitors

Introduction

The efficiency of power generation, transmission or conversion is improved when operated at near unity power factor. The least expensive way to achieve the same is by installing Power Factor Correction Capacitors. Power factor correction capacitors must be able to withstand high voltage transients and power line variations without breakdown.

Dorman Smith PFC Capacitors are designed and manufactured for the most demanding applications and toughest ambient conditions. These capacitors are durable, safe, reliable and offer a high performance solution for power factor correction in Industrial & semi-industrial application.

Dorman Smith PFC Capacitors are made in accordance with Metallized Polypropylene technology with built-in SELF HEALING properties. Dorman Smith Capacitors are manufactured in state of the art manufacturing facility for metallization of the film. The elements are wound on fully automatic numerically controlled winding machine that ensures no corona discharge & ionization. The elements are housed in a cylindrical shaped aluminum case with built in over pressure disconnection device.



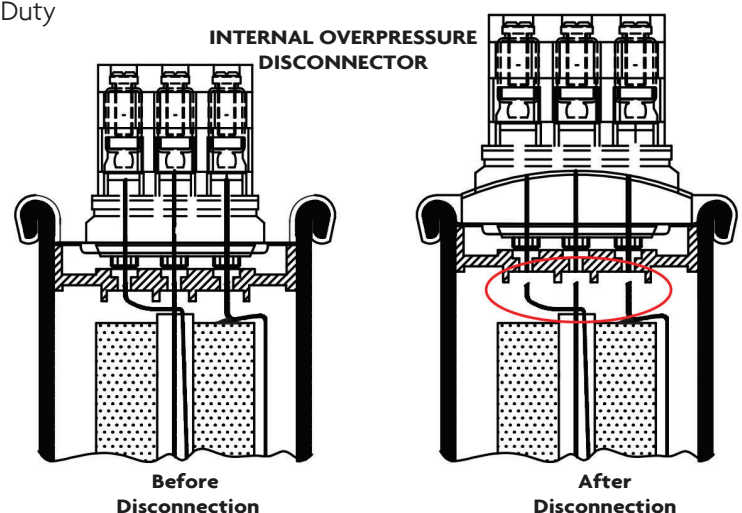
Unique Features

- Compact Cylindrical Construction
- 3 Phase - Delta Connection
- Non-PCB Oil Encapsulation
- High Temperature Withstanding Capacity
- Self Healing Properties
- Over Pressure Disconnection
- Safe-Touch, Shock-Proof Terminals
- Longer Life Expectancy
- ECO-Friendly
- Wide Range - Standard Duty, Heavy Duty & Super Heavy Duty

Construction

Over Pressure Disconnection Device

Sometimes Capacitors may explode due to very high voltages in repetitive peaks, which cannot be 'self healed' by the regenerative property. Dorman Smith Capacitors are provided with an internal Over-Pressure Disconnector, which disconnects the capacitor from the power source and prevents it from exploding.

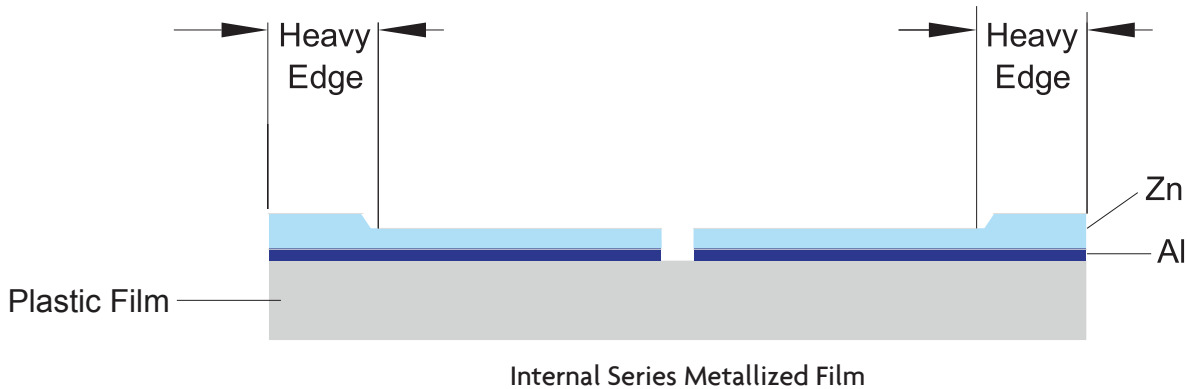


Construction details of capacitors

Dorman Smith manufactures three different types of PFC Capacitors - Standard Duty (400/415/440V), Heavy Duty (440/480V) and Super Heavy Duty (525/690V). The Standard Duty capacitors are manufactured by using standard thickness of dielectric material with heavy edge metallization.

Heavy Duty Capacitors are manufactured with thicker dielectric material, housed in a bigger aluminium can.

Super Heavy Duty Capacitors are made of Internal Series Metallized Film, which will reduce the terminal voltage at the capacitor level half. This will help in drastic reduction of temperature within the capacitor.



Range of PFC Capacitors

Series	Voltage	Type	Output
STANDARD DUTY	400V	Cylindrical	1-50 KVAR
		Box Type	1-30 KVAR
	415V	Cylindrical	1-50 KVAR
		Box Type	1-30 KVAR
440V	Cylindrical	1-50 KVAR	
	Box Type	1-30 KVAR	
HEAVY DUTY	440V	Cylindrical	5-25 KVAR
		Box Type	5-25 KVAR
	480V	Cylindrical	5-30 KVAR
		Box Type	5-25 KVAR
SUPER HEAVY DUTY	525V	Cylindrical	5-33 KVAR
		Box Type	5-25 KVAR
	690V	Cylindrical	5-25 KVAR
		Box Type	5-25 KVAR

Technical Specifications

ALUMINIUM CYLINDRICAL & MS BOX TYPE

•Standard	IEC 60831-1 & 2, IS :13340 PART 1 & 2
•Type	MKP Cylindrical / MS Box
•Rated Voltage	230-690 Volts
•Rated Frequency	50/ 60 Hz
•Maximum Over Voltage U Max	U _N +10% 8 h in every 24 h U _N +15% 30min in every 24 h U _N + 20% 5 min in every 24 h U _N + 30% 1 min in every 24 h
•Dielectric System	Metallized Polypropylene film with Zn/Al alloy, slope profile, special edge (wave cut)
•Losses	<0.25 Watt/Kvar (Without Resistor) & <0.5 Watt/Kvar (With Resistor)
•Protection Class	IP20
•Cooling	Natural Air Cooled
•Max Above Sea Level	4,000 Mtrs.
•Case:	Extruded Aluminum Can / Powder Coated MS Box
•Discharge Resistor	Special Design Internal Discharge. Resistance 50 V In Less Than 60 Sec
•Terminals	Three phase terminal with electric shock protection (finger proof), designed for up to 25sq.mm cable termination, Double fast-on with cable (<8kVAR) Tin Plated MS Studs for Box Type Capacitors
• Execution	Indoor
•Tolerance On Capacitance	-5% To +10%
•Test Voltage Terminal To Terminal	Type Test : 2.15 U _N , 10 Sec, Routine Test : 2.15 U _N , 2 Sec
•Test Voltage Terminal To Casing	U ≤ 660 V: 3000V AC 10 Sec, U = 660 V :6000V AC 10 Sec
•Temperature Category	-25°C / + 55°C (Class D)
•Max Humidity	95%
•Grounding And Mounting	With M12 Stud At The Bottom Of Case
•Mounting Position	Vertical
•Connection	Three Phase Delta Connection (Single Phase on Request)
•Protection Type	Dry Type, Self-Healing, Internal Over Pressure Disconnecter
•Impregnant	Non PCB, Biodegradable Natural Oil, High Viscosity Resin

STANDARD DUTY - CYLINDRICAL

•Rated Reactive Power	0.25-50 KVAR Single Unit
•Over Current	1.5 x I _n
•Inrush Current	200 x I _n
•Life Expectancy	100,000 Operating Hours
•No. of Annual Switching Operations	5,000

HEAVY DUTY - CYLINDRICAL

•Rated Reactive Power	5-30 KVAR Single Unit
•Over Current	2.0 x I _n
•Inrush Current	300 x I _n
•Life Expectancy	150,000 Operating Hours
•No. of Annual Switching Operations	10,000

SUPER HEAVY DUTY - CYLINDRICAL

•Rated Reactive Power	5-33 KVAR Single Unit
•Over Current	2.7 x I _n
•Inrush Current	400 x I _n
•Life Expectancy	200,000 Operating Hours
•No. of Annual Switching Operations	20,000

Technical details - Cylindrical Type

STANDARD DUTY CAPACITORS - CYLINDRICAL TYPE.
Rated Voltage 400V,50Hz, 3-Phase, Delta Connection

Voltage	Output KVAR			Dimensions D x H (mm)	Capacitance (uF)	Current	Fig
	400V	380V	240V				
400	01.00	00.90	00.36	063.50 X 087	3X006.64	01.44	A
400	02.00	01.81	00.72	063.50 X 087	3X013.30	02.88	A
400	02.50	02.26	00.90	063.50 X 087	3X016.60	03.60	A
400	05.00	04.52	1.80	063.50 X 155	3x033.20	07.20	A
400	07.50	06.76	2.70	075.00 X 175	3x049.70	10.80	B
400	10.00	09.02	3.60	075.00 X 210	3x066.30	14.40	B
400	12.50	11.28	4.50	085.00 X 210	3x082.90	18.00	B
400	15.00	13.54	5.40	085.00 X 210	3x099.50	21.60	B
400	20.00	18.04	7.19	085.00 X 278	3x132.60	28.80	B
400	20.00	18.04	7.19	095.00 X 210	3x132.60	28.80	B
400	25.00	22.56	8.99	085.00 X 278	3x165.80	36.00	B
400	25.00	22.56	8.99	095.00 X 247	3x165.80	36.00	B
400	30.00	27.06	10.79	116.00 X 247	3x198.90	43.20	B/C
400	40.00	36.08	14.38	116.00 X 247	3x265.20	57.60	B/C
400	50.00	45.10	17.98	136.00 X 247	3x331.50	72.00	C

STANDARD DUTY CAPACITORS - CYLINDRICAL TYPE.
Rated Voltage 415V,50Hz, 3-Phase, Delta Connection

Voltage	Output KVAR			Dimensions D x H (mm)	Capacitance (uF)	Current	Fig
	400V	380V	240V				
415	01.00	00.93	00.84	050.00 X 135	3x006.16	01.39	A
415	02.00	01.86	1.68	050.00 X 135	3x012.32	02.78	A
415	02.00	02.32	2.10	050.00 X 135	3x015.40	03.48	A
415	05.00	04.65	4.19	063.50 X 155	3x030.80	06.95	A
415	07.50	06.97	6.29	075.00 X 175	3x046.20	10.42	A
415	10.00	09.29	8.38	075.00 X 210	3x061.60	13.90	B
415	12.50	11.61	10.48	075.00 X 210	3x077.00	17.37	B
415	15.00	13.94	12.57	085.00 X 210	3x092.40	20.85	B
415	20.00	18.58	16.76	085.00 X 278	3x123.20	27.80	B
415	20.00	18.58	16.76	095.00 X 210	3x123.20	27.80	B
415	25.00	23.23	20.95	085.00 X 278	3x154.00	34.75	B
415	25.00	23.23	20.95	095.00 X 247	3x154.00	34.75	B
415	30.00	27.87	25.14	095.00 X 247	3x184.80	41.70	B
415	40.00	37.11	33.52	116.00 X 247	3x246.40	55.60	B/C
415	50.00	46.45	41.90	136.00 X 247	3x308.00	65.50	C

Technical details - Cylindrical Type

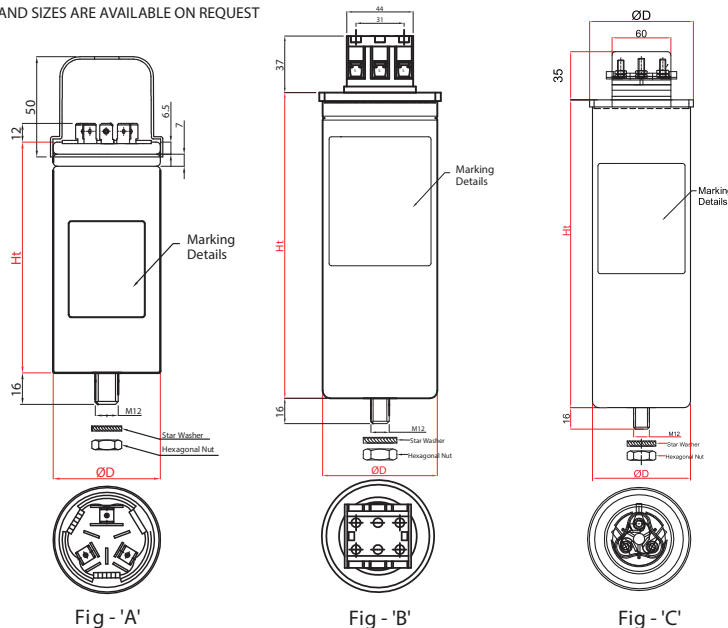
STANDARD DUTY CAPACITORS - CYLINDRICAL TYPE.
Rated Voltage 440V,50Hz, 3-Phase, Delta Connection

Voltage	Output KVAR			Dimensions D x H (mm)	(uF)	Current	Fig
	400V	380V	240V				
440	01.00	00.89	00.83	050.00 X 135	3x005.48	01.31	A
440	02.00	01.78	01.65	050.00 X 135	3x010.96	02.62	A
440	02.50	02.22	02.07	050.00 X 135	3x013.70	03.27	A
440	03.00	02.67	02.48	050.00 X 155	3x016.44	03.93	A
440	04.00	03.56	03.30	063.50 X 135	3x021.92	05.24	A
440	05.00	04.45	04.15	063.50 X 155	3x027.40	06.55	A
440	07.50	06.67	06.20	063.50 X 195	3x041.10	09.82	A
440	08.33	07.41	06.87	063.50 X 195	3x045.64	10.90	A
440	10.00	08.90	08.26	075.00 X 210	3x054.80	13.10	B
440	12.50	11.12	10.33	075.00 X 210	3x068.50	16.40	B
440	15.00	13.34	12.40	075.00 X 210	3x082.20	19.65	B
440	20.00	17.79	16.53	085.00 X 210	3x109.60	26.20	B
440	25.00	22.24	20.66	095.00 X 210	3x137.00	32.75	B
440	28.00	24.91	23.11	085.00 X 278	3x153.44	36.68	B
440	30.00	26.69	24.79	095.00 X 247	3x164.40	39.30	B
440	40.00	35.58	33.06	116.00 X 247	3x219.20	52.40	B/C
440	50.00	44.48	41.32	116.00 X 247	3x274.00	65.50	B/C

HEAVY DUTY CAPACITORS - CYLINDRICAL TYPE.
Rated Voltage 440V, 50Hz, 3-Phase, Delta Connection

Voltage	Output KVAR			Dimensions D x H (mm)	(uF)	Current	Fig
	400V	380V	240V				
400	05.00	04.45	4.15	075.0 X 175	3x027.40	06.55	B
400	07.50	06.67	6.20	075.0 X 210	3x041.10	09.82	B
400	08.33	07.41	6.87	075.0 X 210	3x045.64	10.91	B
400	10.00	08.90	8.26	085.0 X 210	3x054.80	13.10	B
400	12.50	11.12	10.33	095.0 X 210	3x068.50	16.40	B
400	15.00	13.34	12.40	095.0 X 247	3x082.20	19.65	B
400	20.00	17.79	16.53	116.0 X 210	3x109.60	26.20	B/C
400	25.00	22.24	20.66	116.0 X 247	3x137.00	32.75	B/C
400	30.00	26.69	24.79	136.0 X 247	3x164.40	39.30	C

NOTE : OTHER VOLTAGES, FREQUENCIES AND SIZES ARE AVAILABLE ON REQUEST



Technical details - Cylindrical Type

HEAVY DUTY CAPACITORS - CYLINDRICAL TYPE.

Rated Voltage 480V,50Hz, 3-Phase, Delta Connection

Voltage	Output KVAR			Dimensions D x H (mm)	(uF)	Current	Fig
	400V	380V	240V				
480	05.00	04.20	03.74	075.0 X 175	3x023.05	06.00	B
480	07.50	06.30	05.64	075.0 X 175	3x034.57	09.00	B
480	08.33	07.00	06.23	075.0 X 210	3x038.40	10.00	B
480	10.00	08.40	07.48	075.0 X 210	3x046.00	12.00	B
480	12.50	10.50	09.34	085.0 X 210	3x057.50	15.00	B
480	15.00	12.60	11.21	095.0 X 210	3x069.00	18.00	B
480	20.00	16.81	14.95	116.0 X 210	3x092.00	24.00	B/C
480	25.00	21.01	18.69	116.0 X 247	3x115.00	30.00	B/C
480	28.00	23.56	20.96	116.0 X 247	3x129.08	33.60	B/C
480	30.00	25.21	22.45	116.0 X 247	3x138.30	36.00	B/C

SUPER HEAVY DUTY CAPACITORS - CYLINDRICAL TYPE.

Rated Voltage 525/690V,50Hz, 3-Phase, Delta Connection

Voltage	Output KVAR			Dimensions D x H (mm)	(uF)	Current	Fig
	400V	380V	240V				
525	05.00	04.18	03.51	075.0 X 175	3x19.25	05.50	B
525	07.50	06.31	05.30	075.0 X 175	3x28.87	08.25	B
525	08.33	06.96	05.85	075.0 X 210	3x32.07	09.16	B
525	10.00	08.36	07.02	085.0 X 210	3x38.50	11.00	B
525	12.50	10.45	08.78	085.0 X 210	3x48.12	13.70	B
525	15.00	12.54	10.54	095.0 X 210	3x57.75	16.50	B
525	17.00	14.20	11.94	095.0 X 247	3x65.45	18.70	B
525	20.00	16.72	14.05	095.0 X 247	3x77.00	22.00	B
525	25.00	20.90	17.56	116.0 X 247	3x96.25	27.50	B/C
525	28.00	23.39	19.67	116.0 X 247	3x107.80	30.80	B/C
525	30.00	25.05	21.08	116.0 X 247	3x115.50	33.00	B/C
525	33.33	27.84	23.42	136.0 X 247	3x128.32	36.30	C

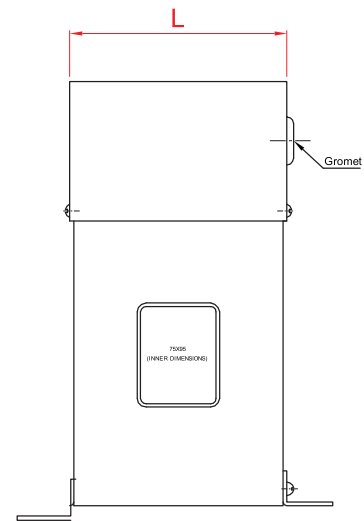
Voltage	Output KVAR			Dimensions D x H (mm)	(uF)	Current	Fig
	400V	380V	240V				
690	05.00	04.57	03.80	075.0 X 210	3x11.15	04.20	B
690	07.50	06.86	05.70	075.0 X 210	3x16.72	06.30	B
690	08.33	07.62	06.30	075.0 X 210	3x18.57	07.00	B
690	10.00	09.15	07.56	085.0 X 210	3x22.30	08.40	B
690	12.50	11.44	09.45	095.0 X 210	3x27.87	10.50	B
690	15.00	13.72	11.34	095.0 X 210	3x33.45	12.60	B
690	20.00	18.30	15.12	116.0 X 210	3x44.60	16.80	B/C
690	25.00	22.87	18.90	116.0 X 247	3x55.75	21.00	B/C

Technical details - Box Type

COMPACT MODEL BOX TYPE.

Rated Voltage 440V, 50Hz, 3-Phase, Delta Connection

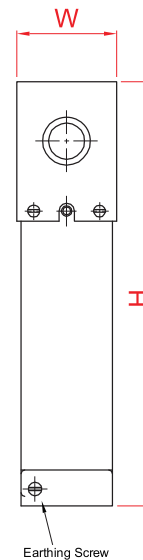
Voltage	Output KVAR (uF)	Dimensions LxWxH (mm)	Capacitance	Current(A)
440	01.0	108 x 38 x 123	3x005.48	01.31
440	02.0	121 x 42 x 145	3x011.00	02.62
440	03.0	121 x 42 x 145	3x016.44	03.93
440	04.0	140 x 48 x 213	3x021.92	05.24
440	05.0	140 x 48 x 213	3x027.40	06.55
440	07.5	155 x 52 x 213	3x041.10	09.82
440	10.0	155 x 52 x 213	3x054.80	13.10
440	12.5	202 x 72 x 236	3x068.50	16.38
440	15.0	202 x 72 x 236	3x082.20	19.65
440	20.0	202 x 72 x 346	3x109.60	26.20
440	25.0	202 x 72 x 346	3x137.00	32.75



STANDARD MODULAR BOX TYPE.

Rated Voltage 440V, 50Hz, 3-Phase, Delta Connection

Voltage	Output KVAR (uF)	Dimensions LxWxH (mm)	Capacitance	Current(A)
440	05.0	175 x 056 x 260	3x027.40	06.55
440	07.5	175 x 056 x 260	3x041.10	09.82
440	10.0	212x076x320	3x054.80	13.10
440	12.5	212x076x320	3x068.50	16.38
440	15.0	212x076x320	3x082.20	19.65
440	20.0	212x142x320	3x109.60	26.20
440	25.0	212x142x320	3x137.00	32.75



HEAVY DUTY MODULAR BOX TYPE.

Rated Voltage 440V, 50Hz, 3-Phase, Delta Connection

Voltage	Output KVAR (uF)	Dimensions LxWxH (mm)	Capacitance	Current(A)
440	05.0	175 x 056 x 260	3x027.40	06.55
440	07.5	212 x 076 x 320	3x041.10	09.82
440	10.0	245 x 085 x 415	3x054.80	13.10
440	12.5	245 x 085 x 415	3x068.50	16.38
440	15.0	245 x 085 x 415	3x082.20	19.65
440	20.0	245 x 170 x 415	3x109.60	26.20
440	25.0	245 x 170 x 415	3x137.00	32.75

NOTE : OTHER VOLTAGES, FREQUENCIES AND SIZES ARE AVAILABLE ON REQUEST

Product Selection

LC/5.00/400/3/A	
Frequency-50 Hz	
Capacitor Code	Common Criteria
LC	Product-Loadline capacitor
5.00	Rating in KVAR
400	Input Voltage
3	No. Of Phase
A	Cylinder Size

Cylinder-Size	Code
95 x 210	A
75 x 175	B
75 x 210	C
85 x 210	D
85 x 278	E
85 x 353	F
63.5 x 135	G
63.5 x 195	H
95 x 247	I
116 x 247	J
136 x 247	K

Capacitor Code	Description
LC/05.00/400/3/G	400V 3 Phase Cylindrical Capacitor 5kVAR
LC/07.50/400/3/B	400V 3 Phase Cylindrical Capacitor 7.50kVAR
LC/10.00/400/3/C	400V 3 Phase Cylindrical Capacitor 10kVAR
LC/12.50/400/3/D	400V 3 Phase Cylindrical Capacitor 12.50kVAR
LC/15.00/400/3/D	400V 3 Phase Cylindrical Capacitor 15kVAR
LC/20.00/400/3/E	400V 3 Phase Cylindrical Capacitor 20kVAR
LC/25.00/400/3/E	400V 3 Phase Cylindrical Capacitor 25kVAR
LC/30.00/400/3/F	400V 3 Phase Cylindrical Capacitor 30kVAR
LC/05.00/415/3/G	415V 3 Phase Cylindrical Capacitor 5kVAR
LC/07.50/415/3/H	415V 3 Phase Cylindrical Capacitor 7.50kVAR
LC/10.00/415/3/C	415V 3 Phase Cylindrical Capacitor 10kVAR
LC/12.50/415/3/C	415V 3 Phase Cylindrical Capacitor 12.50kVAR
LC/15.00/415/3/D	415V 3 Phase Cylindrical Capacitor 15kVAR
LC/20.00/415/3/E	415V 3 Phase Cylindrical Capacitor 20kVAR
LC/25.00/415/3/E	415V 3 Phase Cylindrical Capacitor 25kVAR
LC/30.00/415/3/F	415V 3 Phase Cylindrical Capacitor 30kVAR
LC/06.00/440/3/G	440V 3 Phase Cylindrical Capacitor 6kVAR
LC/12.50/440/3/D	440V 3 Phase Cylindrical Capacitor 12.50kVAR
LC/15.00/440/3/E	440V 3 Phase Cylindrical Capacitor 15kVAR
LC/17.50/440/3/E	440V 3 Phase Cylindrical Capacitor 17.50kVAR
LC/22.50/440/3/E	440V 3 Phase Cylindrical Capacitor 22.50kVAR
LC/28.00/440/3/F	440V 3 Phase Cylindrical Capacitor 28.00kVAR
LC/30.00/440/3/F	440V 3 Phase Cylindrical Capacitor 30.00kVAR
LC/06.00/480/3/G	480V 3 Phase Cylindrical Capacitor 6kVAR
LC/12.50/480/3/D	480V 3 Phase Cylindrical Capacitor 12.50kVAR
LC/15.00/480/3/E	480V 3 Phase Cylindrical Capacitor 15.00kVAR
LC/18.00/480/3/E	480V 3 Phase Cylindrical Capacitor 18.00kVAR
LC/20.00/480/3/E	480V 3 Phase Cylindrical Capacitor 20.00kVAR
LC/25.00/480/3/F	480V 3 Phase Cylindrical Capacitor 25.00kVAR
LC/30.00/480/3/F	480V 3 Phase Cylindrical Capacitor 30.00kVAR
LC/06.00/525/3/B	525V 3 Phase Cylindrical Capacitor 6kVAR
LC/15.00/525/3/A	525V 3 Phase Cylindrical Capacitor 15.00kVAR
LC/17.00/525/3/I	525V 3 Phase Cylindrical Capacitor 17kVAR
LC/20.00/525/3/I	525V 3 Phase Cylindrical Capacitor 20kVAR
LC/28.00/525/3/J	525V 3 Phase Cylindrical Capacitor 28kVAR
LC/33.30/525/3/K	525V 3 Phase Cylindrical Capacitor 33kVAR

Note: Please refer to Page 12 for Capacitor ratings and Selections with Harmonic Filters

Detuned Harmonic Reactors

Introduction

Influence of Harmonics & the need for Harmonic Filters

Developments in modern semiconductor technology have led to a significant increase in the number of thyristor and inverter fed loads. The growing use of these types of power electronic devices is causing an increasing level of harmonic distortion in the electrical system which very often leads to problems with capacitor installations. This can

Installation of Detuned Harmonic Filters is recommended, if your Harmonic generating load is more than 10% of the rated transformer power. We strongly advise to conduct a comprehensive mains analysis, including measurement of the harmonic content, before designing and installing your power factor correction equipment.

Dorman Smith Detuned filter reactors are high quality reactors designed to be used in detuned power factor correction units. Our reactors are made with special air gap configurations and the latest winding technology and as a result, there is a very small power loss in operation with a high degree of reliability. An integrated bimetal switch is provided for additional operational reliability. These reactors are compatible with European standards.

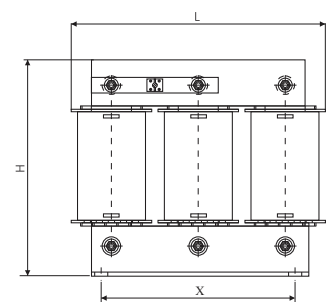
Features

- Three phase, high permeable CRGO iron core, air cooled
- High conductive Copper or Aluminium Windings
- High harmonic loading capability
- Designed for very low power losses
- Low noise emissions of <65dB
- Terminals for easy Termination in up to 20KVAR
- Bus bar Terminals for 25KVAR & above
- Thermal Switch for overload protection
- Vacuum impregnated varnish to ensure silent and moisture immune operation
- Manufactured under ISO 9000 quality management
- Wide range from 5KVAR to 100KVAR both in Aluminium & Copper

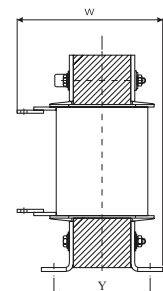


Technical Data of Three Phase Reactors

Manufacturing Standard	IS 5553/IEC60289
Design	3Phase Iron Cored
Harmonics*	$V_3 = 0.5\% V_n$ (duty cycle = 100%)
	$V_5 = 6.0\% V_n$ (duty cycle = 100%)
	$V_7 = 5.0\% V_n$ (duty cycle = 100%)
	$V_{11} = 3.5\% V_n$ (duty cycle = 100%)
	$V_{15} = 3.0\% V_n$ (duty cycle = 100%)
Effective current	$I_{rms} = \sqrt{(I_1^2 + I_2^2 + \dots + I_n^2)}$
Fundamental current	$I_1 = 1.06 \cdot I_n + (50 \text{ Hz or } 60 \text{ Hz current of capacitor})$
Rated Voltage	400V & 440V AC
Detuning	5.67%, 7% & 14%
Output	5 - 100KVAR
Cooling	AN
Noise Level	65dB
Enclosure	IP00
Type of Core (Core Material)	CRGO
Nominal Line Frequency	50Hz
Ambient Temperature	- 10 to +40°C
Storage Temperature	- 25 to +60°C
Temperature Rise Limited to	90 °C
Temperature Protection	Micro Switch (NC-140°C)
Insulation Class	H
Separate coil test voltage (HV Test)	3KV
Tolerance of Inductance	±5%



Elevation



R.H.Side View

Technical Details & Dimensions

400V, 50Hz, 5.67% REACTOR ($f_r = 210$ Hz, Linearity: $L \geq 0.95$, L_r for current up to $2.08 \times I$)

Reactor Rating	5KVAr	10KVAr	12.5KVAr	15KVAr	20KVAr	25KVAr	50KVAr	100KVAr
Rated Inductance mH	6.12	3.06	2.45	2.04	1.53	1.22	0.61	0.31
RMS Current A	9.2	18.4	23.0	27.6	36.9	46.1	92.1	184.3
Terminal	STUD TYPE	STUD TYPE	STUD TYPE	STUD TYPE	STUD TYPE	BUS BAR	BUS BAR	BUS BAR
COPPER REACTOR								
Weight (Approx) in Kgs	6	9	11	12	14	16	28	50
Length in mm (L)	180	180	180	180	210	210	240	270
Depth in mm (W)	70	85	95	100	80	90	100	120
Height in mm (H)	165	165	165	165	215	215	265	315
Mounting Dimension X	136	136	136	136	136	175	175	175
Mounting Dimension Y	60	75	85	90	80	90	110	140
ALUMINIUM REACTOR								
Weight (Approx) in Kgs	6	8	12	11	12	12	29	46
Length in mm (L)	180	180	210	180	210	210	240	270
Depth in mm (W)	71	86	80	100	80	80	110	120
Height in mm (H)	165	165	215	165	215	215	265	315
Mounting Dimension X	136	136	136	136	136	175	175	175
Mounting Dimension Y	61	76	80	90	80	80	120	140

400V, 50Hz, 7% REACTOR ($f_r = 210$ Hz, Linearity: $L \geq 0.95$, L_r for current up to $1.73 \times I$)

Reactor Rating	5KVAr	10KVAr	12.5KVAr	15KVAr	20KVAr	25KVAr	50KVAr	100KVAr
Rated Inductance mH	7.67	3.83	3.07	2.56	1.92	1.53	0.77	0.38
RMS Current A	8.2	16.4	20.5	24.6	32.8	41.0	81.9	163.9
Terminal	STUD TYPE	STUD TYPE	STUD TYPE	STUD TYPE	STUD TYPE	BUS BAR	BUS BAR	BUS BAR
COPPER REACTOR								
Weight (Approx) in Kgs	6	9	10	12	14	13	23	40
Length in mm (L)	180	180	180	180	210	210	210	240
Depth in mm (W)	73	90	95	102	90	80	110	125
Height in mm (H)	150	150	150	165	195	195	215	265
Mounting Dimension X	136	136	136	136	136	175	175	175
Mounting Dimension Y	63	80	85	92	90	80	110	135
ALUMINIUM REACTOR								
Weight (Approx) in Kgs	7	9	9	12	12	15	27	44
Length in mm (L)	180	180	180	210	210	210	240	240
Depth in mm (W)	80	95	95	81	81	90	105	150
Height in mm (H)	150	150	150	215	215	215	265	265
Mounting Dimension X	136	136	136	136	136	175	175	175
Mounting Dimension Y	70	85	85	81	81	90	115	160

Technical Details & Dimensions

400V, 50Hz, 14% REACTOR ($f_r = 135$ Hz, Linearity: $L \geq 0.95$, L_R for current up to $1.37 \times I_l$)

Reactor Rating	5KVA _r	10KVA _r	12.5KVA _r	15KVA _r	20KVA _r	25KVA _r	50KVA _r	100KVA _r
Rated Inductance mH	16.58	8.29	6.63	5.53	4.15	3.32	1.66	0.83
RMS Current A	7.7	15.5	19.3	23.2	30.9	38.6	77.3	154.5
Terminal	STUD TYPE	STUD TYPE	STUD TYPE	STUD TYPE	STUD TYPE	BUS BAR	BUS BAR	BUS BAR
COPPER REACTOR								
Weight (Approx) in Kgs	8	10	12	14	17	20	37	54
Length in mm (L)	180	180	180	180	210	210	240	240
Depth in mm (W)	80	90	102	110	95	105	125	160
Height in mm (H)	175	175	175	175	225	225	275	275
Mounting Dimension X	136	136	136	136	136	175	175	175
Mounting Dimension Y	70	80	92	100	95	105	135	170
ALUMINIUM REACTOR								
Weight (Approx) in Kgs	8	11	12	16	15	18	35	65
Length in mm (L)	180	180	210	210	210	210	240	270
Depth in mm (W)	83	105	80	95	95	105	125	155
Height in mm (H)	175	175	225	225	225	225	275	325
Mounting Dimension X	136	136	136	136	136	175	175	175
Mounting Dimension Y	73	95	80	95	95	105	135	175

440V, 50Hz, 5.67% REACTOR ($f_r = 210$ Hz, Linearity: $L \geq 0.95$, L_R for current up to $2.08 \times I_l$)

Reactor Rating	5KVA _r	10KVA _r	12.5KVA _r	15KVA _r	20KVA _r	25KVA _r	50KVA _r	100KVA _r
Rated Inductance mH	7.41	3.7	2.96	2.47	1.85	1.48	0.74	0.37
RMS Current A	8.4	16.8	21	25.2	33.7	42.1	84.1	168.3
Terminal	STUD TYPE	STUD TYPE	STUD TYPE	STUD TYPE	STUD TYPE	BUS BAR	BUS BAR	BUS BAR
COPPER REACTOR								
Weight (Approx) in Kgs	7	9	11	13	13	14	24	42
Length in mm (L)	180	180	180	180	180	180	240	240
Depth in mm (W)	76	90	100	105	100	110	90	130
Height in mm (H)	150	150	150	165	165	165	265	265
Mounting Dimension X	136	136	136	136	136	175	175	175
Mounting Dimension Y	66	80	90	95	90	100	100	140
ALUMINIUM REACTOR								
Weight (Approx) in Kgs	7	9	10	11	13	16	24	51
Length in mm (L)	180	180	180	180	210	210	240	240
Depth in mm (W)	80	95	100	105	85	95	95	165
Height in mm (H)	150	150	165	165	215	215	265	265
Mounting Dimension X	136	136	136	136	136	175	175	175
Mounting Dimension Y	70	85	90	95	85	95	105	175

Technical Details & Dimensions

440V, 50Hz, 7% REACTOR ($f_r = 189$ Hz, Linearity: $L \geq 0.95$, L_r for current up to $1.73 \times I_l$)

Reactor Rating	5KVAr	10KVAr	12.5KVAr	15KVAr	20KVAr	25KVAr	50KVAr	100KVAr
Rated Inductance mH	9.28	4.64	3.71	3.09	2.32	1.86	0.93	0.46
RMS Current A	7.4	14.9	18.6	22.3	29.8	37.2	74.5	149.0
Terminal	STUD TYPE	STUD TYPE	STUD TYPE	STUD TYPE	STUD TYPE	BUS BAR	BUS BAR	BUS BAR
COPPER REACTOR								
Weight (Approx) in Kgs	7	8	10	10	13	14	25	42
Length in mm (L)	180	180	180	180	180	180	240	240
Depth in mm (W)	80	85	95	90	105	110	90	130
Height in mm (H)	150	150	150	165	165	165	265	265
Mounting Dimension X	136	136	136	136	136	175	175	175
Mounting Dimension Y	70	75	85	80	95	100	100	140
ALUMINIUM REACTOR								
Weight (Approx) in Kgs	7	10	10	13	11	14	25	45
Length in mm (L)	180	180	180	210	210	210	240	240
Depth in mm (W)	80	100	95	86	77	86	100	150
Height in mm (H)	150	150	165	215	215	215	265	265
Mounting Dimension X	136	136	136	136	136	175	175	175
Mounting Dimension Y	70	90	85	86	77	86	110	160

440V, 50Hz, 14% REACTOR ($f_r = 135$ Hz, Linearity: $L \geq 0.95$, L_r for current up to $1.37 \times I_l$)

Reactor Rating	5KVAr	10KVAr	12.5KVAr	15KVAr	20KVAr	25KVAr	50KVAr	100KVAr
Rated Inductance mH	20.06	10.03	8.03	6.69	5.02	4.01	2.01	1.00
RMS Current A	7.0	14.0	17.6	21.1	28.1	35.1	70.2	140.5
Terminal	STUD TYPE	STUD TYPE	STUD TYPE	STUD TYPE	STUD TYPE	BUS BAR	BUS BAR	BUS BAR
COPPER REACTOR								
Weight (Approx) in Kgs	8	11	13	15	19	23	39	57
Length in mm (L)	180	180	180	180	210	210	240	240
Depth in mm (W)	83	95	110	115	100	115	130	165
Height in mm (H)	165	165	165	165	215	215	265	265
Mounting Dimension X	136	136	136	136	136	175	175	175
Mounting Dimension Y	73	85	100	105	100	115	140	175
ALUMINIUM REACTOR								
Weight (Approx) in Kgs	9	12	13	17	17	21	37	67
Length in mm (L)	180	180	210	210	210	210	240	270
Depth in mm (W)	90	110	85	100	100	115	130	160
Height in mm (H)	165	165	215	215	215	215	265	315
Mounting Dimension X	136	136	136	136	136	175	175	175
Mounting Dimension Y	80	100	85	100	100	115	140	180

CAPACITOR SELECTION CHART FOR HARMONIC FILTER APPLICATION

System Voltage 400V 50Hz

Input Voltage	Output KVAR	Required Reactor Inductance - mH	Required Capacitance uF	Capacitor Recommended	Part Reference
5.67% Detuned Reactor					
400	10.0	3.034	3x62.62	440V 12.50 kVAR	LC/12.50/440/3/D
400	12.5	2.427	3x78.27	440V 15 kVAR	LC/15.00/440/3/E
400	15.0	2.023	3x93.93	440V 10.00 kVAR - 2 Nos	LC/10.00/440/3/C
400	20.0	1.517	3x125.24	440V 25 kVAR	LC/25.00/440/3/F
400	25.0	1.214	3x156.55	440V 28 kVAR	LC/28.00/440/3/F
400	50.0	0.607	3x313.10	440V 28 kVAR - 2 Nos	LC/28.00/440/3/F
400	75.0	0.405	3x469.65	440V 28 kVAR - 3 Nos	LC/28.00/440/3/F
400	100.0	0.303	3x626.19	440V 28 kVAR - 4 Nos	LC/28.00/440/3/F

7% Detuned Reactor					
400	10.0	3.835	3x61.70	440V 12.50 kVAR	LC/12.50/440/3/D
400	12.5	3.068	3x77.13	440V 15 kVAR	LC/15.00/440/3/E
400	15.0	2.557	3x92.56	440V 8.33 kVAR - 2 Nos	LC/10.00/440/3/C
400	20.0	1.918	3x123.41	440V 25 kVAR	LC/25.00/440/3/F
400	25.0	1.534	3x154.26	440V 30 kVAR	LC/30.00/440/3/F
400	50.0	0.767	3x308.52	440V 30 kVAR - 2 Nos	LC/30.00/440/3/F
400	75.0	0.511	3x462.78	440V 30 kVAR - 3 Nos	LC/30.00/440/3/F
400	100.0	0.384	3x617.04	440V 30 kVAR - 4 Nos	LC/30.00/440/3/F

14% Detuned Reactor					
400	10.0	8.295	3x57.06	480V 12.5 kVAR	LC/12.50/480/3/D
400	12.5	6.636	3x71.32	480V 15 kVAR	LC/15.00/480/3/E
400	15.0	5.530	3x85.59	480V 20 kVAR	LC/20.00/480/3/E
400	20.0	4.148	3x114.12	480V 25 kVAR	LC/25.00/480/3/F
400	25.0	3.318	3x142.65	480V 30 kVAR	LC/30.00/480/3/F
400	50.0	1.659	3x285.29	480V 30 kVAR - 2 Nos	LC/30.00/480/3/F
400	75.0	1.106	3x427.95	480V 30 kVAR - 3 Nos	LC/30.00/480/3/F
400	100.0	0.830	3x570.59	480V 30 kVAR - 4 Nos	LC/30.00/480/3/F

CAPACITOR SELECTION CHART FOR HARMONIC FILTER APPLICATION

System Voltage 415V 50Hz

Input Voltage	Output KVAR	Required Reactor Inductance - mH	Required Capacitance uF	Capacitor Recommended	Part Reference
5.67% Detuned Reactor					
415	10.0	3.266	3x58.17	480V 12.5 kVAR	LC/12.50/480/3/D
415	12.5	2.613	3x72.72	480V 15 kVAR	LC/15.00/480/3/E
415	15.0	2.177	3x87.26	480V 20 kVAR	LC/20.00/480/3/E
415	20.0	1.633	3x116.35	480V 25 kVAR	LC/25.00/480/3/F
415	25.0	1.306	3x145.44	480V 30 kVAR	LC/30.00/480/3/F
415	50.0	0.653	3x290.87	480V 30 kVAR - 2 Nos	LC/30.00/480/3/F
415	75.0	0.435	3x436.31	480V 30 kVAR - 3 Nos	LC/30.00/480/3/F
415	100.0	0.327	3x581.75	480V 30 kVAR - 4 Nos	LC/30.00/480/3/F

7% Detuned Reactor					
415	10.0	4.128	3x57.32	480V 12.5 kVAR	LC/12.50/480/3/D
415	12.5	3.303	3x71.66	480V 15 kVAR	LC/15.00/480/3/E
415	15.0	2.752	3x85.99	480V 20 kVAR	LC/20.00/480/3/E
415	20.0	2.064	3x114.65	480V 25 kVAR	LC/25.00/480/3/F
415	25.0	1.651	3x143.31	480V 30 kVAR	LC/30.00/480/3/F
415	50.0	0.826	3x286.62	480V 30 kVAR - 2 Nos	LC/30.00/480/3/F
415	75.0	0.550	3x429.93	480V 30 kVAR - 3 Nos	LC/30.00/480/3/F
415	100.0	0.413	3x573.24	480V 30 kVAR - 4 Nos	LC/30.00/480/3/F

14% Detuned Reactor					
415	10.0	8.929	3x53.01	480V 12.5 kVAR	LC/12.50/480/3/D
415	12.5	7.143	3x66.26	480V 15 kVAR	LC/15.00/480/3/E
415	15.0	5.953	3x79.52	480V 10.00 kVAR - 2 Nos	LC/10.00/480/3/C
415	20.0	4.464	3x106.02	480V 25 kVAR	LC/25.00/480/3/F
415	25.0	3.572	3x132.52	480V 28 kVAR	LC/28.00/480/3/F
415	50.0	1.786	3x265.05	480V 28 kVAR - 2 Nos	LC/28.00/480/3/F
415	75.0	1.191	3x397.57	480V 28 kVAR - 3 Nos	LC/28.00/480/3/F
415	100.0	0.893	3x530.09	480V 28 kVAR - 4 Nos	LC/28.00/480/3/F

Product Selection

LR/7/12.5/400/3		Frequency-50 Hz
Reactor Code	Common Criteria	
LR	Product-Loadline Harmonic Filter Reactor	
7	Detuning Factor	
12.5	Suitable For Kvar	
400	Rated Voltage	
3	No. of Phase	

Reactor code	Description
LR/7/5/400/3	Harmonic filter reactor - 5k VAR - 400 V - 7% detuned
LR/7/10/400/3	Harmonic filter reactor - 10kVAR - 400 V - 7% detuned
LR/7/12.5/400/3	Harmonic filter reactor - 12.5kVAR - 400 V - 7% detuned
LR/7/15/400/3	Harmonic filter reactor - 15kVAR - 400 V - 7% detuned
LR/7/20/400/3	Harmonic filter reactor - 20kVAR - 400 V - 7% detuned
LR/7/25/400/3	Harmonic filter reactor - 25kVAR- 400 V - 7% detuned
LR/7/50/400/3	Harmonic filter reactor - 50kVAR - 400 V - 7% detuned
LR/7/5/415/3	Harmonic filter reactor - 5kVAR - 415 V - 7% detuned
LR/7/10/415/3	Harmonic filter reactor - 10kVAR - 415 V - 7% detuned
LR/7/12.5/415/3	Harmonic filter reactor -12.5kVAR - 415 V - 7% detuned
LR/7/15/415/3	Harmonic filter reactor - 15kVAR - 415 V - 7% detuned
LR/7/20/415/3	Harmonic filter reactor - 20kVAR - 415 V - 7% detuned
LR/7/25/415/3	Harmonic filter reactor - 25kVAR- 415 V - 7% detuned
LR/7/50/415/3	Harmonic filter reactor - 50kVAR - 415 V - 7% detuned
LR/5.67/5/400/3	Harmonic filter reactor - 5kVAR - 400 V - 5.67% detuned
LR/5.67/10/400/3	Harmonic filter reactor - 10kVAR - 400 V - 5.67% detuned
LR/5.67/12.5/400/3	Harmonic filter reactor -12.5kVAR - 400 V - 5.67% detuned
LR/5.67/15/400/3	Harmonic filter reactor - 15kVAR - 400 V - 5.67% detuned
LR/5.67/20/400/3	Harmonic filter reactor - 20kVAR - 400 V - 5.67% detuned
LR/5.67/25/400/3	Harmonic filter reactor - 25kVAR- 400 V - 5.67% detuned
LR/5.67/50/400/3	Harmonic filter reactor - 50kVAR - 400 V - 5.67% detuned
LR/5.67/5/415/3	Harmonic filter reactor - 5kVAR - 415V -5.67% detuned
LR/5.67/10/415/3	Harmonic filter reactor - 10kVAR - 415V -5.67% detuned
LR/5.67/12.5/415/3	Harmonic filter reactor - 12.5kVAR - 415V - 5.67% detuned
LR/5.67/15/415/3	Harmonic filter reactor - 15kVAR - 415V -5.67% detuned
LR/5.67/20/415/3	Harmonic filter reactor - 20kVAR - 415V - 5.67% detuned
LR/5.67/25/415/3	Harmonic filter reactor - 25kVAR - 415V - 5.67% detuned
LR/5.67/50/415/3	Harmonic filter reactor - 50kVAR - 415V -5.67% detuned
LR/14.0/5/400/3	Harmonic filter reactor - 5kVAR - 400 V - 14% detuned
LR/14.0/10/400/3	Harmonic filter reactor - 10kVAR - 400 V - 14% detuned
LR/14.0/12.5/400/3	Harmonic filter reactor - 12.5kVAR - 400 V - 14% detuned
LR/14.0/15/400/3	Harmonic filter reactor - 15kVAR - 400 V - 14% detuned
LR/14.0/20/400/3	Harmonic filter reactor - 20kVAR - 400 V - 14% detuned
LR/14.0/25/400/3	Harmonic filter reactor - 25kVAR - 400 V - 14% detuned
LR/14.0/50/400/3	Harmonic filter reactor - 50kVAR - 400 V - 14% detuned
LR/14.0/5/415/3	Harmonic filter reactor - 5kVAR - 415V - 14% detuned
LR/14.0/10/415/3	Harmonic filter reactor - 10kVAR - 415V - 14% detuned
LR/14.0/12.5/415/3	Harmonic filter reactor - 12.5kVAR - 415V - 14% detuned
LR/14.0/15/415/3	Harmonic filter reactor - 15kVAR - 415V - 14% detuned
LR/14.0/20/415/3	Harmonic filter reactor - 20kVAR - 415V - 14% detuned
LR/14.0/25/415/3	Harmonic filter reactor - 25kVAR - 415V - 14% detuned
LR/14.0/50/415/3	Harmonic filter reactor - 50kVAR - 415V - 14% detuned

Capacitor Switching Contactors

Technical Details

Features

- In conformity with: IEC 60947-1, IEC 60947-4
- Switching of 3 phase capacitors
- Ambient temperature of 55 C
- Available in other AC voltages on request

Capacitor Code	Capacitor Rating at Operating Voltage 50Hz		Ie (A) 400V/50Hz	Main Contact	Control Voltage	Auxiliary Contacts		DSS Code	Weight (kg)	
	240V	415/440V				NO	NC			
K2	1.4	2.5	3.6	3P	240V AC	1	0	LCC/K2/2/3/10	0.25	
					24V AC			LCC/K2/1/3/10		
					48V AC			LCC/K2/3/3/10		
					240V AC	0	1	LCC/K2/2/3/01		
					24V AC			LCC/K2/1/3/01		
					48V AC			LCC/K2/3/3/01		
K5	2.8	5	7.2	3P	240V AC	1	0	LCC/K5/2/3/10	0.26	
					24V AC			LCC/K5/1/3/10		
					48V AC			LCC/K5/3/3/10		
					240V AC	0	1	LCC/K5/2/3/01		
					24V AC			LCC/K5/1/3/01		
					48V AC			LCC/K5/3/3/01		
K7	4	7.5	11	3P	240V AC	0	0	LCC/K7/2/3/00	0.27	
					24V AC			LCC/K7/1/3/00		
					48V AC			LCC/K7/3/3/00		
					240V AC	1	1	LCC/K7/2/3/11		
					24V AC			LCC/K7/1/3/11		
					48V AC			LCC/K7/3/3/11		
K10	5	10	14	3P	240V AC	2	0	LCC/K10V2/3/20	0.314	
					24V AC			LCC/K10/1/3/20		
					48V AC			LCC/K10V3/3/20		
					240V AC	1	1	LCC/K10/2/3/11		
					24V AC			LCC/K10/1/3/11		
					48V AC			LCC/K10V3/3/11		
					240V AC	0	2	LCC/K10/2/3/02		
					24V AC			LCC/K10/1/3/02		
					48V AC			LCC/K10V3/3/02		
					240V AC	2	0	LCC/K12/2/3/20		0.316
					24V AC			LCC/K12/1/3/20		
					48V AC			LCC/K12/3/3/20		
240V AC	1	1	LCC/K12/2/3/11							
24V AC			LCC/K12/1/3/11							
48V AC			LCC/K12/3/3/11							
240V AC	0	2	LCC/K12/2/3/02							
24V AC			LCC/K12/1/3/02							
48V AC			LCC/K12/3/3/02							
K15	8.5	15	22	3P	240V AC	2	0	LCC/K15/2/3/20	0.318	
					24V AC			LCC/K15/1/3/20		
					48V AC			LCC/K15/3/3/20		
					240V AC	1	1	LCC/K15/2/3/11		
					24V AC			LCC/K15/1/3/11		
					48V AC			LCC/K15/3/3/11		
240V AC	0	2	LCC/K15/2/3/02							
24V AC			LCC/K15/1/3/02							
48V AC			LCC/K15/3/3/02							
K20	11	20	29	3P	240V AC	1	0	LCC/K20V2/3/10	0.333	
					24V AC			LCC/K20V1/3/10		
					48V AC			LCC/K20V3/3/10		
					240V AC	0	1	LCC/K20V2/3/01		
					24V AC			LCC/K20V1/3/01		
					48V AC			LCC/K20V3/3/01		
K25	14	25	36	3P	240V AC	1	0	LCC/K25/2/3/10	0.404	
					24V AC			LCC/K25/1/3/10		
					48V AC			LCC/K25/3/3/10		
					240V AC	0	1	LCC/K25/2/3/01		
					24V AC			LCC/K25/1/3/01		
					48V AC			LCC/K25/3/3/01		
K25E	14	25	36	3P	240V AC	1	0	LCC/K25E/2/3/10*	0.404	
					24V AC			LCC/K25E/1/3/10*		
					48V AC			LCC/K25E/3/3/10*		
					240V AC	0	1	LCC/K25E/2/3/01*		
					24V AC			LCC/K25E/1/3/01*		
					48V AC			LCC/K25E/3/3/01*		

* - Contactor suitable for 4-10 sqmm

Capacitor Switching Contactors

Technical Details

Capacitor Code	Capacitor Rating at Operating		I _e (A) 400V/50Hz	Main Contact	Control Voltage	Auxiliary Contacts		DSS Code	Weight (kg)
	240V	415/440V				NO	NC		
K30	20	30	44	3P	240V AC	1	0	LCC/K30/2/3/10	0.404
					48V AC			LCC/K30/3/3/10	
					24V AC			LCC/K30/1/3/10	
					240V AC			LCC/K30/2/3/01	
					48V AC			LCC/K30/3/3/01	
					24V AC			LCC/K30/1/3/01	
K40	25	40	58		240V AC	1	0	LCC/K40/2/3/10	0.943
					48V AC			LCC/K40/3/3/10	
					24V AC			LCC/K40/1/3/10	
					240V AC			LCC/K40/2/3/01	
					48V AC			LCC/K40/3/3/01	
					24V AC			LCC/K40/1/3/01	
K50	29	50	72	240V AC	1	0	LCC/K50/2/3/10	0.945	
				48V AC			LCC/K50/3/3/10		
				24V AC			LCC/K50/1/3/10		
				240V AC			LCC/K50/2/3/01		
				48V AC			LCC/K50/3/3/01		
				24V AC			LCC/K50/1/3/01		
K60	32	60	87	240V AC	1	0	LCC/K60/2/3/10	1	
				48V AC			LCC/K60/3/3/10		
				24V AC			LCC/K60/1/3/10		
				240V AC			LCC/K60/2/3/01		
				48V AC			LCC/K60/3/3/01		
				24V AC			LCC/K60/1/3/01		
M60	34	60	87	240V AC	2	2	LCC/M60/2/3/22/5	2.4	
				48V AC			LCC/M60/3/3/22/5		
				24V AC			LCC/M60/1/3/22/5		
M75	38	75	108	240V AC	2	2	LCC/M75/2/3/22/5	2.45	
				48V AC			LCC/M75/3/3/22/5		
				24V AC			LCC/M75/1/3/22/5		

Automatic Power Factor Controller

Features

1. Power Factor Controller for universal application, requires no settings and is self- configuring in basic mode of functioning.
2. Advanced Microcontroller based logic for measurements, monitoring, analysis and control. It is suitable for balanced 3-Phase Compensation by capacitor switching.
3. 16 Character, 2 Lines, alpha-numeric, dot matrix LCD display with LED back-light.
4. 7 keys, tactile keypad for user interaction.
5. Front panel flashing LED indication for PF Controller healthy (running) status.
6. Phase-to-Phase input voltage measurement with over-voltage transients protection.
7. Single-Phase load current CT secondary input, field selectable for 1Amp or 5Amp range.
8. 4 Models, as per Order Code, suitable for 4, 8, 12 or 16 Capacitor Banks control.
9. Independent, fast-blow fuse protection for control outputs relay commands, for banks 1 to 8 and 9 to 16.
10. Potential free, “normally-open” relay contact outputs for external contactor switching control.
11. Two auxiliary outputs, “normally-open” relay contacts for external interlocking.
12. THD% measurements of supply voltage and current. Odd harmonics up to 15th.
13. In “Expert” Mode facility of Un-equal bank size selection. Including user defined bank values in kVAR.
14. Capacitor Bank Step Protection features like
 - Over / Under Voltage at measurement input.
 - Harmonic overload, both for voltage and current.
 - Over-Temperature inside the APFC-03 Controller Unit.
 - Over / Under AC Mains Line Frequency.
15. DIN Standard 144 x 144 mm Plastic Cabinet for Panel-door flush-mounting. Rear side dimensions as 137 x 137 mm with recommended Panel door cut-out as 138 x 138 mm. Max. Depth of 76 mm on rear side of panel mounting door.
16. Three-Sides Closed Screw Terminals on the rear side suitable for fork type lugs providing easy field wiring connections.
17. Optional “Expert Configuration” allows Line-to-Neutral as voltage sensing input.
18. Use of SMPS which facilitates wide range Auxiliary Supply voltage, with externally accessible input auxiliary supply slow-blow fuse protection.
19. Most important and advanced feature is the “BASIC Configuration”.

Controller in Basic Configuration has the following features:

- Automatic detection and usage of the optimum capacitor banks.
- Fully automatic capacitor bank step value setting and self-adapting.
- System parameters (voltage, current, active power, reactive power, apparent power, Maximum values of these parameters, kVAR value of every bank that are connected) are displayed in terms of percentage of it's rated 100% values.

Specifications

1. Balanced 3-Phase Reactive Power Compensation because of 3-Phase Balanced Connected Power Capacitor Bank Steps.
2. Operating Auxiliary and Measurement voltage: 100V to 500V AC Line-to-Line value, and Supply frequency Nominal as 50 (+/-3) Hz or 60 (+/-3) Hz.
3. Active Power Measurements with 1.0 Class accuracy, Reactive Power Measurement with 2.0 Class accuracy for the recommended Measurement Voltage & Load Current phase inputs, as per the line diagram at the rear side of APFC controller.
4. Single-CT Load Current Input (from CT secondary): 1A or 5A, selectable at the rear terminal block.
5. Output Stages: Standard Models with 4, 8, 12 or 16 Outputs, as per Order Code.
6. Relay Output N.O. contact rating: Max: 250Vac, 0.5Amp, resistive / inductive load, continuous.
7. Operating Temperature Range: 0 to +55° C.
8. Storage Temperature Range: 0 to +65° C.
9. Relative Humidity Range: 10% to 95% (Non-condensing)
10. Un-packed Net Weight of the Unit: 650 grams.



Product Selection

DOS-LLPC/03/04/M	
Reactor Code	Common Criteria
LLPC	Product-Loadlimiter Power Factor controller
03	Frame
04	Number of Steps
M	RS485 MODBUS

Frequency-50 Hz

Controller Code	Description
LLPC/03/04/M	Power Factor Controller - 4 steps- with Modbus
LLPC/03/08/M	Power Factor Controller - 8 steps- with Modbus
LLPC/03/12/M	Power Factor Controller - 12 steps- with Modbus
LLPC/03/16/M	Power Factor Controller - 16 steps- with Modbus
LLPC/03/04	Power Factor Controller - 4 steps- without Modbus
LLPC/03/08	Power Factor Controller - 8 steps- without Modbus
LLPC/03/12	Power Factor Controller - 12 steps- without Modbus
LLPC/03/16	Power Factor Controller - 16 steps- without Modbus

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