



CAPACITORS



TECHNOLOGY

Capacitors' technology

DUCATI was the first company in Italy, and among the first in the world, to introduce capacitors for the radio broadcasting equipment designed by Guglielmo Marconi.

Building upon this tradition, which has always seen DUCATI in the forefront of capacitor technology, the company has developed the innovative PPM and PPMh film with 4In capacitor.

Superior performance and reduced dimensions compared to the by now obsolete paper and oil and gas solutions make PPM/PPMh capacitors the new standard of reference for industrial power factor correction systems.

All the capacitors manufactured by DUCATI Energia feature a protection device conforming to standards EN 60831-1/2. This protection has been achieved by means of a special engineering technology: if a fault occurs the connections will be broken due to overpressure, leaving the insulation of the case intact and preventing the capacitor from exploding or burning.

Technology Long Life 4In

The Continuous research conducted in DUCATI Energia laboratories has led to the development of a polypropylene film with a special metallization, whose purpose is to promote the self-healing process and reduce dielectric losses.

Thanks to this innovative metallization treatment, the polypropylene is subjected to less stress during operation. As a result, it maintains its dielectric properties for a significantly longer period of time, while ensuring a significant improvement in performance in terms of both 4In voltage and current.

The above-described characteristics make these capacitors especially suitable for Continuous duty under highly demanding conditions in harmonic rich environments.

The Long Life 4In series of single-phase industrial power factor correction capacitors, with PPMh film wound elements, are the best in terms of reliability, performance and reduced size.

THREE-PHASE CAPACITORS

Metallized polypropylene technology (PPM / MKP) utilizes a vacuum evaporation technique to deposit an extremely thin layer of metal on one side of the polypropylene film.

The capacitor elements built using this technology are obtained by winding two polypropylene films. The capacitor plates consist in the metallized surface of the two films and the dielectric is the propylene film itself. Three elements are then housed in a plastic container which, together with the impregnating agents, assures dual insulation between the wound cores and metal enclosure. The main advantage of metallized film capacitors is their self-healing capability. This means that they are capable of restoring their electrical properties following the occurrence of a short circuit between the plates. In these capacitors the impregnating agent is a special type of resin. DUCATI Energia has developed an eco-friendly resin composition displaying high dielectric stability, which completely eliminates every possible risk of air and water molecules being present inside the capacitor.

The capacitors which use this kind of technology are:

- Three-phase capacitors STANDARD DUTY **MODULO SD** series
- Three-phase capacitors EXTRA DUTY **MODULO XD** series
- Three-phase capacitors EXTRA DUTY **MODULO XD MINI** series
- Three-phase capacitors F50 **MONO Long Life 4In** series

For further information about the usage of the capacitors, please check the **reference notes** and the installation notes on page **28**.

Single-phase capacitors

	Technology	Reactive Power (kVAr)	Voltage
MONO	4 In	1.67 - 8.33	400 - 525
MONO PLUS	4 In	1.67 - 6.66	400 - 525
FLOPPY CAP	Standard duty	1.67 - 4.17	400 - 550

Three-phase capacitors

	Technology	Reactive Power (kVAr)	Voltage
MODULO SD	Standard Duty	10 - 50	400 - 550
MODULO XD	Extra Duty	1.5 - 50	240 - 800
MODULO XD MINI	Extra Duty	0.5 - 10	400 - 550
F50	4 In	5 - 60	415 - 525



MONO Long Life 4In

Single-phase capacitors



General Characteristics

Power Range	1.67 - 8.33 kVar
Voltage range	400 - 525 V
Rated frequency	50 Hz/60 Hz
Capacitance tolerance	-5 +10%
Duty	Continuous
Dielectric losses	≤ 0.2 W/kVar
Expected life	≥ 110000h - 40/D
Max dV/dt	≤ 100 V/μs
Temperature class	-40/D
Maximum overload current	4 x In
Maximum inrush current	200 In
Terminals	Double faston 6.3x0.8/M6 screw for Q=8.33 kVar
Protection rating	IP 00
Discharge resistor	Not included. Available on request only for 400V systems only.
Impregnating material	Eco-friendly resin
Altitude	≤ 2000 m above s.l.
Test voltage (AC) between terminals	2.15 U _n x 2 s
Test voltage (AC) between terminals and case	3kV x 10 s
Standards	IEC 831 - 1/2
Approvals	us * with modified PN 416.84

The capacitors making up the series **MONO Long Life 4In** are manufactured using elements wound with the PPMh film and housed in metal cases with metal lids. The parts are assembled by crimping to ensure perfect airtightness of the system and efficient operation of the overpressure safety device.

The use of resin impregnation technology greatly enhances the capacitor's performance in terms of heat dissipation as well as ensuring a long life and excellent ground insulation.

Un (V)	Qn (kVar)	In (A)	Cn (μF)	DxH (mm)	Pcs x box	Part number 416.53
400	1.67	4.2	33.2	45x115	40	1100
	2.5	6.3	49.8	50x115	28	1150
	3.33	8.3	66.3	50x150	28	1200
	4.17	10.4	83	55x150	28	1250
	5	12.5	99.5	60x150	24	1300
	6.66	16.7	132.6	65x160	16	1355
	8.33	20.8	165.8	65x165	16	1400
415	1.67	4	30.9	45x115	40	2100
	2.5	6	46.2	50x115	28	2150
	3.33	8	61.6	50x150	28	2200
	4.17	10	77.1	55x150	28	2250
	5	12	92.5	60x150	24	2300
	6.66	16	123.2	65x160	16	2355
	8.33	20	154	65x165	16	2400
450	1.67	3.7	26.3	45x115	40	3100
	2.5	5.6	39.3	50x115	28	3150
	3.33	7.4	52.4	50x150	28	3200
	4.17	9.3	65.6	55x150	28	3250
	5	11.1	78.6	60x150	24	3300
	6.66	14.8	104.7	65x160	16	3355
	8.33	18.5	131	65x165	16	3400
525	1.67	3.2	19.3	45x115	40	4100
	2.5	4.8	28.9	50x115	28	4150
	3.33	6.3	38.5	50x150	28	4200
	4.17	7.9	48.2	55x150	28	4250
	5	9.5	57.8	60x150	24	4300
	6.66	12.7	77	65x160	16	4355
	8.33	15.9	96.2	65x165	16	4400

Box dimensions: 195x390x255 mm Weight: 9-11 kg

Terminal cover IP54

Part n. 316.	Diam. (mm)	Packages n. pcs. per box
23.0860	45	100
23.1070	50	200
52.3350	55	72
52.3355	60	60
52.3360	65	60

To enable the overpressure protection device to operate efficiently, it is necessary to leave a gap of at least 30 mm above the element and to use flexible wires for the connection.



MONO Long Life Plus 4In

Single-phase capacitors



General Characteristics

Power Range	1.67 - 6.66 kVAR
Voltage range	415 ÷ 525 V
Rated frequency	50 Hz/60 Hz
Capacitance tolerance	-5+10%
Duty	Continuous
Dielectric losses	≤ 0.2 W/kVAR
Expected life	≥ 130000h - 40/D
Max dV/dt	≤ 100 V /μs
Temperature class	-40/D
Maximum overload current	4 x I _n
Maximum inrush current	200 I _n
Terminals	Double faston 6.3x0.8
Protection rating	IP 00
Discharge resistor	Not included. Available on request only for 400V systems only.
Impregnating material	Eco-friendly resin
Altitude	≤ 2000 m above s.l.
Test voltage (AC) between terminals	2.15 U _n x 2 s
Test voltage (AC) between terminals and case	3kV x 10 s
Standards	IEC 831 - 1/2
Approvals	c us * with modified PN 416.84

The capacitors making up the new **MONO Long Life Plus 4In** series are made using elements wound with the PPMh film and housed in metal cases with metal lids. The parts are assembled by crimping to ensure perfect airtightness of the system and efficient operation of the overpressure safety device.

The use of resin impregnation technology greatly enhances the capacitor's performance in terms of heat dissipation as well as ensuring a long life and excellent ground insulation.

These characteristics make these capacitors especially suitable for Continuous duty under highly demanding condition in harmonic rich environments.

Un (V)	Qn (kVAR)	In (A)	Cn (μF)	DxH (mm)	Pcs x box	Part number 416.54
415	1.67	4	30.9	50x115	28	2100
	2.5	6	46.2	50x150	28	2150
	3.33	8	61.6	55x150	28	2200
	4.17	10	77.1	60x150	24	2250
	5	12	92.5	60x165	18	2300
	6.66	16	123.2	65x190	16	2350
450	1.67	3.7	26.3	50x115	28	3100
	2.5	5.6	39.3	50x150	28	3150
	3.33	7.4	52.4	55x150	28	3200
	4.17	9.3	65.6	60x150	24	3250
	5	11.1	78.6	60x165	18	3300
	6.66	18.8	104.7	65x190	16	3350
525	1.67	3.2	19.3	45x115	28	4100
	2.5	4.8	28.9	50x150	28	4150
	3.33	6.3	38.5	55x150	28	4200
	4.17	7.9	48.2	55x150	24	4250
	5	9.5	57.8	60x165	18	4300
	6.66	12.7	77	65x190	16	4350

Box dimensions: 195x390x255 mm Weight: 9 - 11 kg

Terminal cover IP54

Part n. 316.	Diam. (mm)	Packages n. pcs. per box
23.0860	45	100
23.1070	50	200
52.3350	55	72
52.3355	60	60
52.3360	65	60

To enable the overpressure protection device to operate efficiently, it is necessary to leave a gap of at least 30 mm above the element and to use flexible wires for the connection.



FLOPPY CAP

Single-phase capacitors



General Characteristics

Power Range	1.67 - 4.17 kVAR
Voltage range	230 ÷ 550 V
Rated frequency	50 Hz/60 Hz
Capacitance tolerance	-5+10%
Duty	Continuous
Dielectric losses	≤ 0.3 W/kVAR
Expected life	≥ 80000h - 40/D
Max dV/dt	≤ 25 V / μs
Temperature class	-40/D
Maximum overload current	4 x I _n
Maximum inrush current	100 I _n
Terminals	Double faston 6.3x0.8
Protection rating	IP 00
Discharge resistor	Not included. Available on request only for 400V systems only.
Impregnating material	Eco-friendly resin
Altitude	≤ 2000 m above s.l.
Test voltage (AC) between terminals	2.15 U _n x 2 s
Test voltage (AC) between terminals and case	3kV x 10 s
Standards	IEC 831 - 1/2
Approvals	(excluding 500-550 V models) (excluding U _n >440 V models)

The capacitors making up the **FLOPPY CAP** series are housed in metal cases. The lids are made of self-extinguishing plastic (Class V2 under the inflammability classification of standard UL 94). The capacitor is sealed closed by reading the case over the lid, a solution that guarantees perfect airtightness, which is necessary to ensure the efficiency of the over-pressure safety device.

The placement of an insulating container between the capacitor element and the metal case, combined with the embedding of the capacitor element in resin, makes the capacitor extremely safe from an electrical point of view (ground insulation) and insensitive to vibrations.

Un (V)	Qn (kVAR)	In (A)	Cn (μF)	DxH (mm)	Pcs x box	Part number 416.30	Dim. Box
230	0.83	3.6	50.2	45x122	25	0764	A
	1.67	5.2	100	60x137	25	0564	A
400	1.67	4.2	33.2	50x122	25	3964	B
	2.5	6.3	50	55x132	25	4064	A
	3.33	8.3	66.3	60x137	25	3764	A
	4.17	10.4	83	60x137	25	5064	A
	1.67	4	30.9	50x122	25	3264	A
415	2.5	6	46.2	55x132	25	3464	A
	3.33	8	61.6	60x137	25	3664	A
	4.17	10	77	60x137	25	5264	A
	1.67	3.7	26.3	50x132	25	6464	A
450	2.5	5.6	39.3	55x132	25	6164	A
	3.33	7.4	52.4	60x137	25	6264	A
	4.17	9.3	65.5	60x137	25	5364	A
	1.67	3.3	21.3	50x132	25	8664	A
500	2.5	5	31.8	55x132	25	7664	A
	3.33	6.6	42.4	60x137	25	7964	A
	4.17	8.3	53.1	60x137	25	5664	A
	1.67	3	17.6	45x132	25	8164	B
550	2.5	4.5	26.3	55x132	25	7464	A
	3.33	6.1	35.1	60x137	25	7764	A
	4.17	7.6	43.4	60x137	25	8064	A

Box dimensions: A= 195x390x255 mm. B= 195x390x200 mm.

Weight: 9 kg

Terminal cover IP54

Part n. 316.	Diam. (mm)	Packages n. pcs. per box
23.0860	45	100
23.1070	50	200
52.3350	55	72
52.3355	60	60

To enable the overpressure protection device to operate efficiently, it is necessary to leave a gap of at least 20 mm above the element and to use flexible wires for the connection.



MODULO XD MINI

Three-phase capacitors



MODULO XD Mini - COMPACT PERFORMANCE capacitors integrate the excellent MODULO XD technology with an innovative mechanical construction, which has been optimized for the 0.5 - 10 kVAr in the 400 - 550 V power/voltage ranges.

Thanks to their mechanical construction and a particularly effective dry-resin impregnation process, **MODULO XD Mini** capacitors deliver excellent performance in a very compact package. The **faston connections**, the integrated discharge resistors and the **IP20 protection cover** simplify their installation and maintenance in every type of application.

General Characteristics

Power Range	0.5 ÷ 10 kVAr
Voltage range	400 ÷ 550 V
Rated frequency	50 Hz/60 Hz
Capacitance tolerance	-5 +10%
Duty	Continuous
Dielectric losses	≤ 0.2 W/kVAr
Expected life	≥ 150000h - 40/D
Max dV/dt	100 V /μs
Temperature class	-40/D
Maximum overload current	3 x I _n
Maximum inrush current	200 I _n
Terminals	Double faston 6.3x0.8
Protection rating	IP20 (with cover supplied)
Internal construction	Delta
Discharge resistor	Internal (50 V after 60")
Impregnating material	Eco-friendly resin
Altitude	≤ 4000 m above s.l.
Storage Temperature	-40 +80 °C
Test voltage (AC) between terminals	2.15 U _n x 2"
Test voltage (AC) between terminals and case	3kV x 10 s (U _n ≤ 660V)
Standards	IEC 831 - 1/2



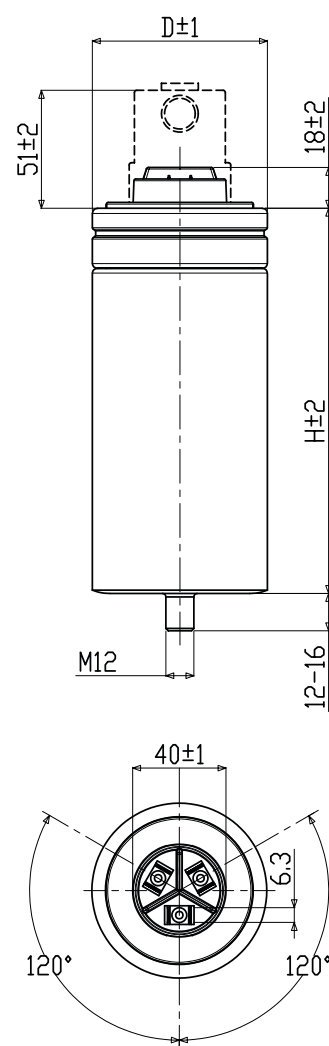
MODULO XD MINI

Un (V)	Qn (kVAr)	In (A)	Cn (μF)	DxH (mm)	Pcs x box	Part number 416.12.	Dim. Box
400	0.5	0.7	3x3.3	50x150	21	1010	E
	1	1.4	3x6.6	50x150	21	1020	E
	1.5	2.2	3x9.9	50x150	21	1040	E
	2.5	3.6	3x16.6	60x150	18	1060	E
	5	7.2	3x33.2	75x175	6	1130	D
	7.5	10.8	3x49.7	75x265	6	1150	D
	10	14.4	3x66.3	75x265	6	1170	D
415	0.5	0.7	3x3.1	50x150	21	2010	E
	1	1.4	3x6.2	50x150	21	2020	E
	1.5	2.1	3x9.2	50x150	21	2040	E
	2.5	3.5	3x15.4	60x150	18	2060	E
	5	7	3x30.8	75x175	6	2130	D
	7.5	10.4	3x46.2	75x265	6	2150	D
	10	13.9	3x61.6	75x265	6	2170	D
440	0.5	0.7	3x2.7	50x150	21	3010	E
	1	1.3	3x5.5	50x150	21	3020	E
	1.5	2.0	3x8.2	50x150	21	3040	E
	2.5	3.3	3x13.7	60x150	18	3060	E
	5	6.6	3x27.4	75x175	6	3130	D
	7.5	9.8	3x41.1	75x265	6	3150	D
	10	13.1	3x54.8	75x265	6	3170	D
450	0.5	0.6	3x2.6	50x150	21	4010	E
	1	1.3	3x5.2	50x150	21	4020	E
	1.5	1.9	3x7.9	50x150	21	4040	E
	2.5	3.2	3x13.1	60x150	18	4060	E
	5	6.4	3x26.2	75x175	6	4130	D
	7.5	9.6	3x39.3	75x265	6	4150	D
	10	12.8	3x52.4	75x265	6	4170	D
525	0.5	0.6	3x1.9	50x150	21	5010	E
	1	1.3	3x3.8	50x150	21	5020	E
	1.5	1.9	3x5.8	50x150	21	5040	E
	2.5	3.2	3x9.6	60x150	18	5060	E
	5	6.4	3x19.2	75x175	6	5130	D
	7.5	9.6	3x28.9	75x265	6	5150	D
	10	12.8	3x38.5	75x265	6	5170	D
550	0.5	0.6	3x1.7	50x150	21	6010	E
	1	1.3	3x3.5	50x150	21	6020	E
	1.5	1.9	3x5.3	50x150	21	6040	E
	2.5	3.2	3x8.8	60x150	18	6060	E
	5	6.4	3x17.5	75x175	6	6130	D
	7.5	9.6	3x26.3	75x265	6	6150	D
	10	12.8	3x35.1	75x265	6	6170	D

Standard box dimensions: **E**= 195x390x255 mm **D**= 195x290x330 mm

To enable the overpressure protection device to operate efficiently, it is necessary to leave a gap of at least 30 mm above the element and to use flexible wires for the connection.

TECHNICAL DRAWING



Stud	Fixing torque
M12	11 Nm



MODULO SD - Standard Duty

Three-phase capacitors



MODULO SD series capacitors are used for the fixed and automatic power factor correction systems in a wide range of standard industrial applications.

The **three delta-connected elements** are housed in a plastic container which, together with the impregnating agents, assures **dual insulation** between the wound cores and metal enclosure.

In order to guarantee perfect filling during the resin impregnation process, the process itself is carried out before the elements are placed in the enclosure, allowing a complete visual and dimensional control of the distribution and uniformity of the impregnation. The **overpressure protection system** is specially dimensioned so as to constantly ensure **maximum safety** in terms of ground protection and protection against the risk of arcing, even in conditions of **high energy density**.

General Characteristics

Power Range	10 – 50 kVAr
Voltage range	400 ÷ 550 V
Rated frequency	50 Hz/60 Hz
Capacitance tolerance	-5 +10%
Duty	Continuous
Dielectric losses	≤ 0.2 W/kVAr
Expected life	≥ 130000h - 40/D
Max dV/dt	100 V /μs
Temperature class	-40/D
Maximum overload current	4 x I _n
Maximum inrush current	200 I _n
Terminals	Screw clamp
Protection rating	IP 20 (IP54 on request)
Internal construction	Delta
Discharge resistor	External (50 V after 60 s)
Impregnating material	Eco-friendly resin
Altitude	≤ 4000 m above s.l.
Storage Temperature	-40 +80 °C
Test voltage (AC) between terminals	2.15 U _n x 2"
Test voltage (AC) between terminals and case	3kV x 10 s (U _n ≤ 660V)
Standards	IEC 831 - 1/2
Approvals	UL Excluding Ø 125 mm



MODULO SD

Un (V)	Qn (kVAr)	In (A)	C (μF)	DxH (mm)	Type	Pcs x box	Part number 416.46	Dim. Box
400	10	14.4	3x66	75x255	A	6	9100	D
	12.5	18.0	3x82	75x255	A	6	9110	D
	15	21.7	3x99	85x255	A	6	9120	D
	20	28.9	3x132	90x255	A	6	9130	D
	25	36.1	3x165	100x255	A	6	9140	G
	30	43.3	3x198	116x255	A	4	9150	H
	40	57.7	3x265	116x290	A	4	9160	H
	50	72.2	3x331	125x290	B	4	9170	H
415	10	13.9	3x61	75x255	A	6	9200	D
	12.5	17.4	3x77	75x255	A	6	9210	D
	15	20.9	3x92	85x255	A	6	9220	D
	20	27.8	3x123	90x255	A	6	9230	D
	25	34.8	3x154	100x255	A	6	9240	G
	30	41.7	3x184	116x255	A	4	9250	H
	40	55.6	3x246	116x290	A	4	9260	H
	50	69.6	3x308	125x290	B	4	9270	H
440	10	13.1	3x54	75x255	A	6	9300	D
	12.5	16.4	3x68	75x255	A	6	9310	D
	15	19.7	3x82	85x255	A	6	9320	D
	20	26.2	3x109	90x255	A	6	9330	D
	25	32.8	3x137	100x255	A	6	9340	G
	30	39.4	3x164	116x255	A	4	9350	H
	40	52.5	3x219	116x290	A	4	9360	H
	50	65.6	3x274	116x370	A	4	9370	I
450	10	12.8	3x52	75x255	A	6	9400	D
	12.5	16.0	3x65	75x255	A	6	9410	D
	15	19.2	3x78	85x255	A	6	9420	D
	20	25.7	3x104	90x255	A	6	9430	D
	25	32.1	3x130	100x255	A	6	9440	G
	30	38.5	3x157	116x255	A	4	9450	H
	40	51.3	3x209	116x290	A	4	9460	H
	50	64.2	3x261	116x370	A	4	9470	I

Standard box dimensions: D= 195x290x330 mm G= 225x345x330 mm H= 275x275x385 mm

I= 275x275x455 mm

Weight: 10÷12 kg

60 Hz models available on request



MODULO SD

Un (V)	Qn (kVAr)	In (A)	C (μF)	DxH (mm)	Type	Pcs x box	Part number 416.46	Dim. Box
500	10	11.5	3x42	75x255	A	6	9500	D
	12.5	14.4	3x53	75x255	A	6	9510	D
	15	17.3	3x63	85x255	A	6	9520	D
	20	23.1	3x84	90x255	A	6	9530	D
	25	28.9	3x106	100x255	A	6	9540	G
	30	34.6	3x127	116x255	A	4	9550	H
	40	46.2	3x169	116x290	A	4	9560	H
	50	57.7	3x212	116x370	A	4	9570	I
525	10	11.0	3x38	75x255	A	6	9600	D
	12.5	13.7	3x48	75x255	A	6	9610	D
	15	16.5	3x57	85x255	A	6	9620	D
	20	22.0	3x76	90x255	A	6	9630	D
	25	27.5	3x96	100x255	A	6	9640	G
	30	33.0	3x115	116x255	A	4	9650	H
	40	44.0	3x153	116x290	A	4	9660	H
	50	55.0	3x192	116x370	A	4	9670	I
550	10	10.5	3x35	75x255	A	6	9700	D
	12.5	13.1	3x43	75x255	A	6	9710	D
	15	15.7	3x52	85x255	A	6	9720	D
	20	21.0	3x70	100x255	A	6	9730	D
	25	26.2	3x87	116x255	A	4	9740	H
	30	31.5	3x105	116x255	A	4	9750	H
	40	42.0	3x140	116x290	A	4	9760	H
	50	52.5	3x175	116x370	A	4	9770	I

Standard box dimensions: D= 195x290x330 mm G= 225x345x330 mm H= 275x275x385 mm

I= 275x275x455 mm

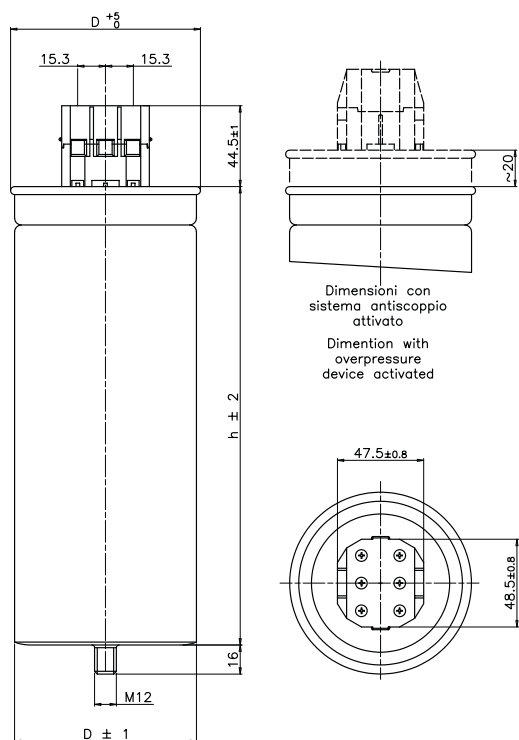
Weight: 10÷12 kg

60 Hz models available on request

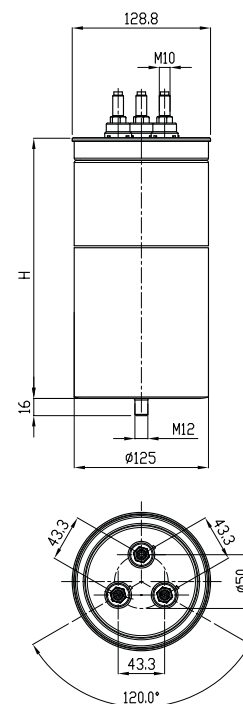


MODULO SD

TECHNICAL DRAWING TYPE A



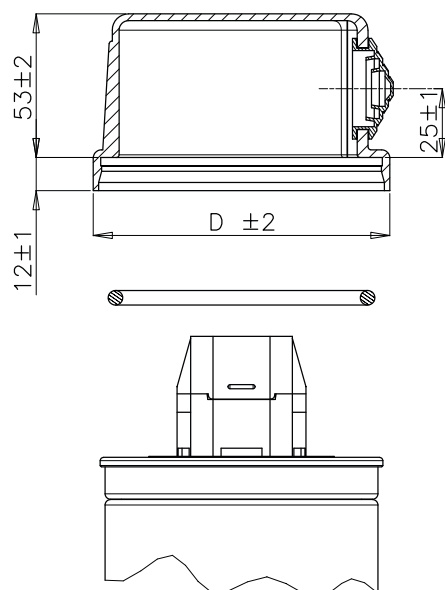
TECHNICAL DRAWING TYPE B



Terminals and stud	Fixing torque
Screw terminals	1.5 Nm
M10**	6 Nm**
M12	10 Nm

(**) Complete the tightening using two wrenches.

TERMINAL COVER IP54



Part n. 316.52	Diam (mm)	Packages n. pcs. per box
.3338	85	30
.3339	90	30
.3340	110	30
.3341	116	20
.3342	125	20

To enable the overpressure protection device to operate efficiently, it is necessary to leave a gap of at least 30 mm above the element and to use flexible wires for the connection.



MODULO XD - Extra Duty

Three-phase capacitors



General Characteristics

Power Range	1.5 ÷ 50 kVAr
Voltage range	240 ÷ 800 V
Rated frequency	50 Hz/60 Hz
Capacitance tolerance	-5 +10%
Duty	Continuous
Dielectric losses	≤ 0.2 W/kVAr
Expected life	≥ 180000h - 40/D
Max dV/dt	100 V /μs
Temperature class	-40/D
Maximum overload current	4 x I _n
Maximum inrush current	200 I _n
Terminals	Screw clamp
Protection rating	IP20 (IP54 on request)
Internal construction	Delta
Discharge resistor	External (50 V after 60 s)
Impregnating material	Eco-friendly resin
Altitude	≤ 4000 m above s.l.
Storage Temperature	-40 +80 °C
Test voltage (AC) between terminals	2.15 U _n x 2"
Test voltage (AC) between terminals and case	3kV x 10" (UN≤660 V)
Standards	IEC 831 - 1/2
Approvals	us Excluding Ø 125 mm

MODULO XD series capacitors are used for the fixed and automatic power factor correction systems in a wide range of standard industrial applications.

The characteristics of these capacitors are particularly suitable for **continuous operation** under **highly demanding conditions** in environments **with high levels of harmonics**.

The **three delta-connected elements** are housed in a plastic container which, together with the impregnating agents, assures dual insulation between the wound cores and metal enclosure. In order to guarantee perfect filling during the resin impregnation process, the process itself is carried out before the elements are placed in the enclosure, allowing a complete visual and dimensional control of the distribution and uniformity of the impregnation. The **overpressure protection system** is specially dimensioned so as to constantly ensure **maximum safety** in terms of ground protection and protection against the risk of arcing, even in conditions of **high energy density**.

Un (V)	Qn (kVAr)	In (A)	Cn (μF)	DxH (mm)	Type	Pcs. per box	Part number 416.46	Dim. box
240 (60Hz)	1.5	3.6	3x23	65x165	A	14	0020	E
	2.5	6	3x28	65x165	A	14	0030	E
	5	12	3x77	75x255	A	6	0050	E
	7.5	18	3x115	85x255	A	6	0080	E
	10	24	3x154	100x255	A	6	0100	G
	12.5	30	3x192	100x255	A	6	0150	G
	15	36	3x230	116x255	A	4	0200	H
400	1.5	2.2	3x9.9	65x165	A	14	1020	E
	2.5	3.6	3x17	65x165	A	14	1030	E
	5	7.2	3x33	75x165	A	6	1050	D
	7.5	10.8	3x50	75x255	A	6	1080	D
	10	14.4	3x66	75x255	A	6	1100	D
	12.5	18	3x83	85x255	A	6	1150	D
	15	21.7	3x99	90x255	A	6	1200	D
	20	28.9	3x133	100x255	A	6	1260	G
	25	36.1	3x166	116x255	A	4	1310	H
	30	43.3	3x199	116x290	A	4	1360	H
	40	57.7	3x265	116x370	A	4	1370	I
415	45	65	3x298	125x370	B	4	1375	I
	50	72.7	3x332	125x370	B	4	1380	I
	1.5	2.1	3x9.2	65x165	A	14	2020	E
	2.5	3.5	3x154	65x165	A	14	2030	E
	5	7	3x31	75x165	A	6	2050	D
	7.5	10.4	3x46	75x255	A	6	2080	D
	10	13.9	3x62	75x255	A	6	2100	D
	12.5	17.4	3x77	85x255	A	6	2150	D
	15	20.9	3x92	90x255	A	6	2200	D
	20	27.8	3x123	100x255	A	6	2260	G
	25	34.8	3x154	116x255	A	4	2310	H
	30	41.7	3x185	116x290	A	4	2360	H
	40	55.6	3x246	116x370	A	4	2370	I
	45	62.6	3x277	116x370	A	4	2375	I
	50	69.6	3x308	125x370	B	4	2380	I

Standard box dimensions: E= 195x390x255 mm D= 195x290x330 mm G= 225x345x330 mm H= 275x275x385 mm I= 275x275x455 mm

Weight: 10÷12 kg

60 Hz models available on request



MODULO XD

Un (V)	Qn (kVAr)	In (A)	C (μF)	DxH (mm)	Type	Pcs x box	Part number 416.46	Dim. Box
440	1.5	2	3x8.2	65x165	A	14	3023	E
	2.5	3.3	3x14	65x165	A	14	3033	E
	5	6.6	3x27	75x165	A	6	3053	D
	7.5	9.8	3x41	75x255	A	6	3083	D
	10	13.1	3x55	75x255	A	6	3103	D
	12.5	16.4	3x69	85x255	A	6	3153	D
	15	19.7	3x82	90x255	A	6	3203	D
	20	26.2	3x110	100x255	A	6	3263	G
	25	32.8	3x137	116x255	A	4	3313	H
	30	39.4	3x164	116x290	A	4	3363	H
	40	52.5	3x219	116x370	A	4	3373	I
	45	59	3x247	116x370	A	4	3378	I
450	50	65.6	3x274	125x370	A	4	3383	I
	1.5	1.9	3x7.9	65x165	A	14	3020	E
	2.5	3.2	3x13	65x165	A	14	3030	E
	5	6.4	3x26	75x165	A	6	3050	D
	7.5	9.6	3x39	75x255	A	6	3080	D
	10	12.8	3x52	75x255	A	6	3100	D
	12.5	16.0	3x65	85x255	A	6	3150	D
	15	19.2	3x79	90x255	A	6	3200	D
	20	25.7	3x105	100x255	A	6	3260	G
	25	32.1	3x131	116x255	A	4	3310	H
	30	38.5	3x157	116x290	A	4	3360	H
	40	51.3	3x210	116x370	A	4	3370	I
480	45	57.7	3x236	116x370	A	4	3375	I
	50	64.2	3x262	125x370	A	4	3380	I
	1.5	1.8	3x6.9	65x165	A	14	4420	E
	2.5	3	3x12	65x165	A	14	4432	E
	5	6	3x23	75x165	A	6	4451	D
	7.5	9	3x34	75x255	A	6	4454	D
	10	12	3x46	75x255	A	6	4456	D
	12.5	15	3x58	85x255	A	6	4460	D
	15	18	3x69	90x255	A	6	4465	D
	20	24	3x92	100x255	A	6	4467	G
	25	30	3x115	116x255	A	4	4468	H
	30	36.1	3x138	116x290	A	4	4470	H
500	40	48.1	3x184	116x370	A	4	4472	I
	45	54.1	3x207	116x370	A	4	4475	I
	50	60.1	3x230	125x370	A	4	4480	I
	1.5	1.7	3x6.4	65x165	A	14	4020	E
	2.5	2.9	3x11	65x165	A	14	4030	E
	5	5.8	3x21	75x165	A	6	4050	D
	7.5	8.7	3x32	75x255	A	6	4080	D
	10	11.5	3x42	75x255	A	6	4100	D
	12.5	14.4	3x53	85x255	A	6	4150	D
	15	17.3	3x64	90x255	A	6	4200	D
	20	23.1	3x85	100x255	A	6	4260	G
	25	28.9	3x106	116x255	A	4	4310	H
500	30	34.6	3x127	116x290	A	4	4360	H
	40	46.2	3x170	116x370	A	4	4370	I
	45	52.0	3x191	116x370	A	4	4375	I
	50	57.7	3x212	125x370	A	4	4380	I

Standard box dimensions: E= 195x390x255 mm D= 195x290x330 mm G= 225x345x330 mm

H= 275x275x385 mm I= 275x275x455 mm

Weight: 10±12 kg





MODULO XD

Un (V)	Qn (kVAr)	In (A)	C (μF)	DxH (mm)	Type	Pcs x box	Part number 416.46	Dim. Box
525	10	11	3x38	85x255	A	6	5130	D
	12.5	13.7	3x48	85x255	A	6	5170	D
	15	16.5	3x58	100x255	A	6	5230	G
	20	22	3x77	116x255	A	4	5270	H
	25	27.5	3x96	116x255	A	4	5330	H
	30	33	3x115	116x290	A	4	5370	H
	40	44	3x154	116x370	A	4	5373	I
	45	49.5	3x173	116x370	A	4	5377	I
	50	55	3x192	125x370	A	4	5385	I
550	1.5	1.6	3x5.3	65x165	A	14	5020	E
	2.5	2.6	3x8.8	65x165	A	14	5030	E
	5	5.2	3x18	75x165	A	6	5050	D
	7.5	7.9	3x26	75x255	A	6	5080	D
	10	10.5	3x35	75x255	A	6	5100	D
	12.5	13.1	3x44	85x255	A	6	5150	D
	15	15.7	3x53	90x255	A	6	5200	D
	20	21	3x70	100x255	A	6	5260	G
	25	26.2	3x88	116x255	A	4	5310	H
	30	31.5	3x105	116x290	A	4	5360	H
	40	42	3x140	116x370	A	4	5372	I
	45	47.2	3x158	116x370	A	4	5375	I
	50	52.5	3x175	125x370	A	4	5380	I
690 (*)	10	8.4	3x22	75x255	A	6	6100	D
	12.5	10.5	3x28	85x255	A	6	6150	D
	15	12.6	3x33	90x255	A	6	6200	D
	20	16.7	3x45	100x255	A	6	6260	G
	25	20.9	3x56	116x255	A	4	6310	H
	30	25.1	3x67	116x290	A	4	6360	H
	40	33.5	3x89	116x370	A	4	6370	I
	45	37.7	3x100	116x370	A	4	6375	I
	50	41.8	3x111	125x370	A	4	6380	I
800 (*)	10	7.2	3x17	75x255	A	6	8100	D
	12.5	9.0	3x21	85x255	A	6	8150	D
	15	10.8	3x25	90x255	A	6	8200	D
	20	14.4	3x33	100x255	A	6	8260	G
	25	18.0	3x41	116x255	A	4	8310	H
	30	21.7	3x50	116x290	A	4	8360	H
	40	28.9	3x66	116x370	A	4	8370	I
	45	32.5	3x75	116x370	A	4	8375	I
	50	36.1	3x83	125x370	A	4	8380	I

(*) Without discharge resistors.

Standard box dimensions: E= 195x390x255 mm D= 195x290x330 mm G= 225x345x330 mm

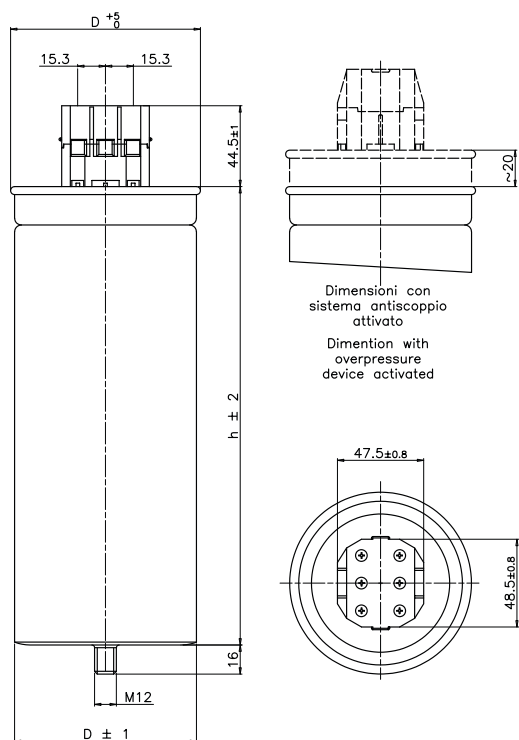
H= 275x275x385 mm I= 275x275x455 mm

Weight: 10 ÷ 12 kg

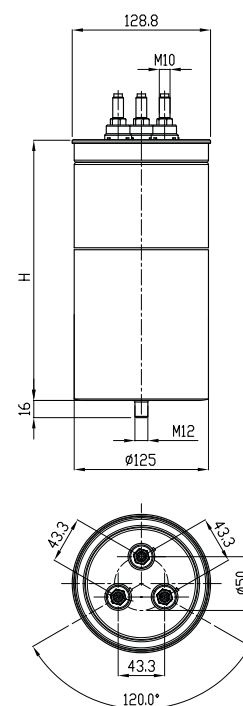


MODULO XD

TECHNICAL DRAWING TYPE A



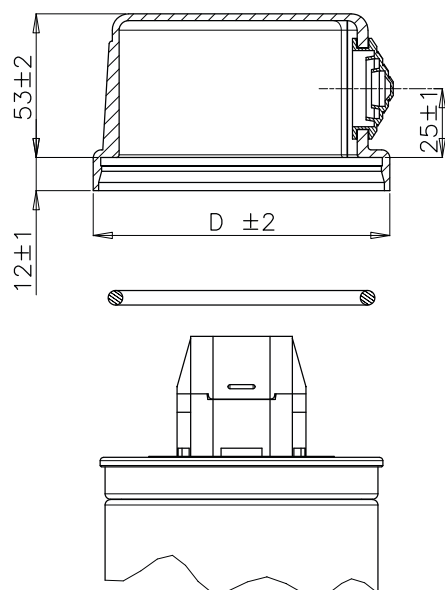
TECHNICAL DRAWING TYPE B



Terminals and stud	Fixing torque
Screw terminals	1.5 Nm
M10**	6 Nm**
M12 stud	10 Nm

(**) Complete the tightening using two wrenches.

TERMINAL COVER IP54



Part n. 316.52	Diam (mm)	Packages n. pcs. per box
.3338	85	30
.3339	90	30
.3340	100	30
.3341	116	20
.3342	125	20

To enable the overpressure protection device to operate efficiently, it is necessary to leave a gap of at least 30 mm above the element and to use flexible wires for the connection.



DUCATI F50 MONO Long Life 4In

Three-phase capacitors



The modular design of the **DUCATI F50** units makes them particularly suitable for fixed transformer power factor correction systems and local power factor correction of motors.

The **DUCATI F50** three-phase capacitor consists of 3 delta-connected single-phase capacitors of the **MONO Long Life 4In** series.

General Characteristics

Power Range	5 - 60 kVAr
Voltage range	415 ÷ 525 V
Rated frequency	50 Hz/60 Hz
Capacitance tolerance	-5 +10%
Duty	Continuous
Dielectric losses	≤ 0.2 W/kVAr
Expected life	≥ 110000 h -25/D
Max dV/dt	≤ 100 V / μ s
Temperature class	-40/D
Maximum overload current	4 x In
Maximum inrush current	≤ 200 In
Terminals	Pin 3xM8
Protection rating	IP40
Internal construction	Delta
Discharge resistor	Internal (50 V after 60")
External case material	Insulating V2 class
Altitude	≤ 2000 m above s.l.
Test voltage (AC) between terminals	2.15 Un x 2"
Test voltage (AC) between terminals and case	3 kV x 10"
Standards	EN 60831 - 1/2



DUCATI F50 Un cond = 415 V

$THD_{I\text{ MAX-C}} \% \leq 50\%$ $THD_I \% \leq 12\%$ Un 400 V - 50 Hz

Un (V)	Qn (kVAr)	Q (400 V) (kVAr)	In (A)	C (μF)	L (mm)	Part number 415.04.
415	5	4.7	7.0	3x31	79 (1)	7010
	10	9.3	13.9	3x62	79 (1)	7015
	12.5	11.6	17.4	3x77	79 (1)	7018
	15	13.9	20.9	3x92	79 (1)	7020
	20	18.6	27.9	3x123	79 (1)	7025
	25	23.2	34.8	3x154	148 (2)	7030
	30	27.9	41.8	3x185	148 (2)	7035
	40	37.2	55.7	3x247	148 (2)	7040
	50	46.7	69.6	3x308	217 (3)	7045

DUCATI F50 Un cond = 450 V

$THD_{I\text{ MAX-C}} \% \leq 70\%$ $THD_I \% \leq 20\%$ Un 400 V - 50 Hz

Un (V)	Qn (kVAr)	Q (400 V) (kVAr)	In (A)	C (μF)	L (mm)	Part number 415.04.
450	5	4.0	6.4	3x26	79 (1)	7110
	10	7.9	12.8	3x52	79 (1)	7115
	12.5	9.9	16.1	3x66	79 (1)	7118
	15	11.9	19.3	3x79	79 (1)	7120
	20	15.8	25.7	3x105	79 (1)	7125
	25	19.8	32.1	3x131	148 (2)	7130
	30	23.7	38.5	3x157	148 (2)	7135
	40	31.6	51.4	3x210	148 (2)	7140
	50	39.5	64.2	3x262	217 (3)	7145

DUCATI F50 Un cond = 525 V

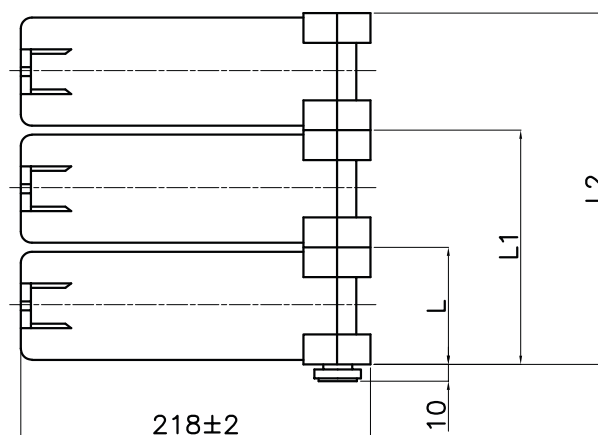
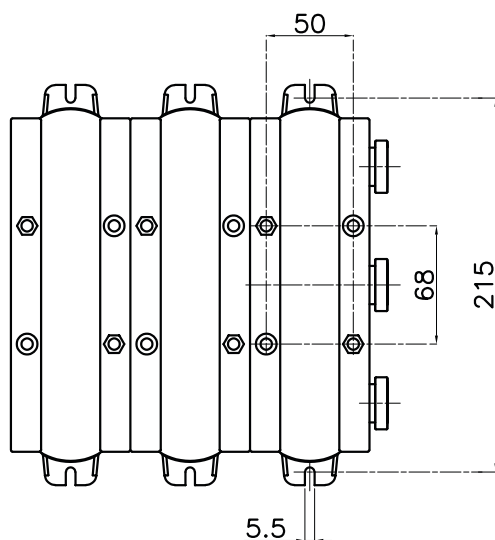
$THD_{I\text{ MAX-C}} \% \leq 85\%$ $THD_I \% \leq 27\%$ Un 400 V - 50 Hz

Un (V)	Qn (kVAr)	Q (400 V) (kVAr)	In (A)	C (μF)	L (mm)	Part number 415.04.
525	5	2.9	5.5	3x19	79 (1)	7210
	10	5.8	11.0	3x39	79 (1)	7215
	12.5	7.3	13.8	3x48	79 (1)	7218
	15	8.7	16.5	3x58	79 (1)	7220
	20	11.6	22.0	3x77	79 (1)	7225
	25	14.5	27.5	3x96	148 (2)	7230
	30	17.4	33.0	3x116	148 (2)	7235
	40	23.2	44.0	3x154	148 (2)	7240
	50	29.0	50.1	3x193	217 (3)	7245
	60	34.8	66.1	3x231	217 (3)	7250



DUCATI F50 MONO Long Life 4In

TECHNICAL DRAWING F50



Kit for unit parallel part. n. 415.69.9910