ESTAdry D-Type, LVAC Power Capacitors

FEATURES

- Self-healing technology
- Over pressure tear-off fuse
- Smallest available height for 50 kvar units: 210 mm (+ 68 mm for terminals)
- Excellent heat dissipation
- Screw-on terminal with M10 bolts
- Resin filling provides thermal conductivity similar to that of oil-filled capacitors
- Aluminum case is welded and hermetically sealed
- No paint required for OUTDOOR application
- UL and cUL approved

APPLICATIONS

- Areas with dust and moisture, which require a high degree of protection and high creepage distances. Also for OUTDOOR
- Free standing, fixed individual-PFC (e.g. motors, lighting, transformers)
- Automatic central-PFC (e.g. group of loads)
- Harmonic trap (e.g. UPS, frequency drives, converter)
- Pole mounted PFC

QUICK REFERENCE DATA		
Series	PhMKDg…, triangular	PhMKDgF…, triangular
Description	ESTAdry D-type, LVAC power capacitors - dry - **INDOOR**, IP00	ESTAdry D-type, LVAC power capacitors - dry - **OUTDOOR**, IP00
Type	Capacitors, fixed, low voltage	Capacitors, fixed, low voltage
Technology	MKP, metallized polypropylene film	MKP, metallized polypropylene film
Voltage max. (V)	1000	1000
Capacitance min. (µF)	3-phase D: 3 x 115.5, 3-phase Y: 3 x 140.1	3-phase D: 3 x 115.5, 3-phase Y: 3 x 140.1
Capacitance max. (µF)	3-phase D: 3 x 331.6, 3-phase Y: 3 x 334.3	3-phase D: 3 x 331.6, 3-phase Y: 3 x 334.3
Output min. (kvar)	30	30
Output max. (kvar)	56.2	56.2

For technical questions, contact: esta@vishay.com

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CAPACITORS IN TRIANGULAR CASING

DESCRIPTION

The PhMKDg series capacitor in a triangular aluminum case with a standard rating of 50 kvar, augments Vishay ESTA broad line of reliable three-phase power capacitors. The PhMKDg series is preceded by our PhMKP and the ESTAdry PhMKPg series in aluminum tubular casings, with outputs up to 37 kvar, depending on their rated voltage.

The standard PhMKDg series capacitor is designed for indoor application, with externally arranged discharge resistors (U ≤ 50 V/60 s). For outdoor application, the discharge resistors can be incorporated internally (U ≤ 75 V/180 s). Also, the pure aluminum welded cases render these capacitors perfectly suitable for outdoor use.

The PhMKDg capacitor can be used for both controlled equipment and for stationary or mobile fixed compensation, e.g. for induction-motor-operated conveyer belts in the mining industry.

The indoor capacitor can be supplied with the option of a small protective cover for each individual connection or with an IP53-type overall protective cover.

The triangular case and corresponding triangular arrangement of the winding elements allows for simple connection in parallel of several units (IN-LINE). The joint insulation created by means of a solid ceramic terminal base with high surface-creepage resistance and very long tracking paths establishes an additionally superior mechanical stability for the three solid connector bolts.

With a resin filled pure aluminum case offering superior mechanical stability, low profile design, excellent thermal conductance, easy paralleling and a complete three-phase tear-off fuse system incorporated into the PhMKDg design, this series is the ideal first choice for new designs and applicable retrofit requirements.

3-PHASE CAPACITOR, INDOOR

Single bolt protection

IP53

3-PHASE CAPACITOR, OUTDOOR

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ESTAdry D-TYPE PhMKDg, INDOOR

TECHNICAL DATA	
STANDARDS	**IEC 60831-1+ 2, EN 60831-1 + 2, UL810 LATEST EDITION UL/ULC FILE # E97723**
Overvoltages (in accordance with the above standards)	U_{cn} + 10 % (up to 8 h daily) U_{cn} + 15 % (up to 30 min daily) U_{cn} + 20 % (up to 5 min, only 200 times in the life of the capacitor) U_{cn} + 30 % (up to 1 min, only 200 times in the life of the capacitor) **Please also refer to "Terms and Definitions".**
Overcurrent (in accordance with the above standards)	1.3 x In, 1.5 x In with 10 % overvoltages, 15 % over capacitance and harmonics included, continuous operation **Please also refer to "Terms and Definitions".**
Tolerance on capacitance	- 5/+ 10 % in accordance with the standards ± 5 % as Vishay ESTA standard
Test voltage, terminal/terminal	2.15 x U_{cn}, VAC, 2 s (routine test)
Test voltage, terminal/casing	6000 VAC , 2 s (routine test)
Inrush current	300 times rated current In
Losses	≤ 0.4 W/kvar to 0.5 W/kvar (without discharge resistors)
Statistical life expectancy	> 130 000 operating h (ESTAdry)
Degree of protection	IP00 (terminal cover for higher protection class upon request), indoor
Ambient temperature category	- 25/D (max. 55 °C), (- 40/D on request)
Permitted casing temperature	Max. 65 °C (measured on top of the can)
Cooling	Naturally air-cooled
Permissible relative humidity	Maximum 95 %
Maximum allowed altitude	2000 m above sea level
Mounting position	Vertical and horizontal
Mounting and grounding	Threaded M12 stud at the bottom of the container
Safety features	All-phase overpressure tear-off fuse, self-healing
Casing	Aluminum can, welded top
Dielectric	Polypropylene film, self-healing
Filling agent	Resin-filled (ESTAdry), non-PCB, non-toxic
Terminals	Threaded studs M10

3-PHASE CAPACITORS IN TRIANGULAR CASING, INDOOR

TYPE	ARTICLE NO. (1)	RATED VOLTAGE V	RATED OUTPUT kvar	CAPACITANCE µF	CURRENT A (50 Hz)	WEIGHT kg	HEIGHT H mm
PhMKDg400.3.50	5345-44814-xx	400	50	3 x 331.6 Δ	72.2	4.0	210
PhMKDg440.3.50	5345-44804-xx	440	50	3 x 274.0 Δ	65.6	4.0	210
PhMKDg440.3.56, 2	5345-44805-xx	440/415	56.2/50	3 x 308.0 Δ	73.7/69.6	4.0	210
PhMKDg460.3.50	5345-44803-xx	460	50	3 x 250.7 Δ	62.8	4.0	210
PhMKDg525.3.50	5345-44806-xx	525	50	3 x 192.5 Δ	55.0	4.0	210
PhMKDg690.2.50	5345-44807-xx	690	50	3 x 334.3 Y	41.8	4.0	210
PhMKDg760.2.50	5345-44808-xx	760	50	3 x 275.5 Y	38.0	4.0	210

ORDERING INFORMATION	
Packing units	1 piece per carton

Notes

- Other volltage ratings, outputs, and frequencies on request.

(1) Version no. xx may differ as it respects small changes, e.g. on the label

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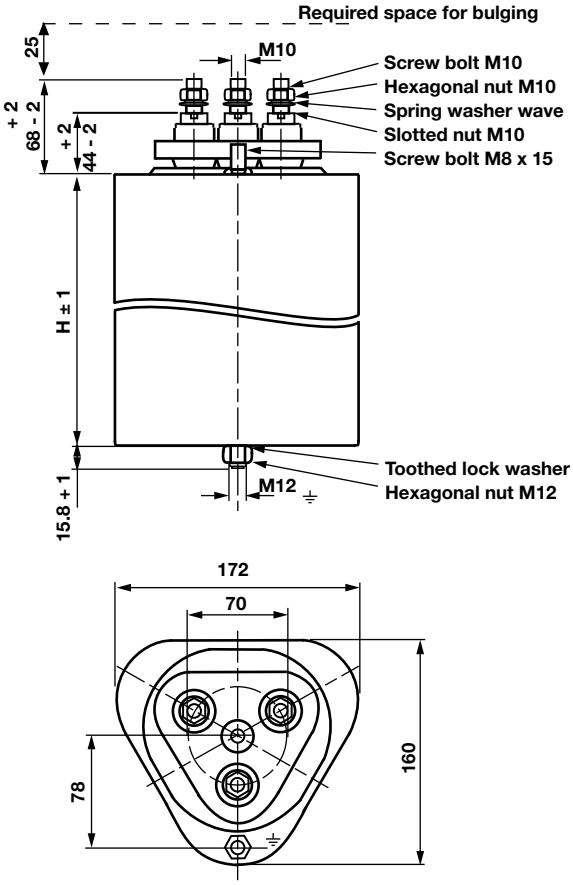
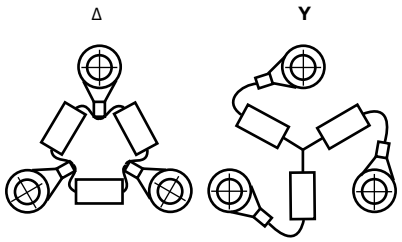
DIMENSIONS, INDOOR



Drawing 6

DISCHARGE RESISTORS



RECOMMENDED TORQUES	
STYLE	**RECOMMENDED TORQUE**
Terminals M8	6 Nm
Terminals M10	10 Nm
M12 mounting stud	10 Nm

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ESTAdry D-TYPE PhMKDgF, LVAC POWER CAPACITORS, OUTDOOR

TECHNICAL DATA	
STANDARDS	**IEC 60831-1 + 2, EN 60831-1 + 2, LATEST EDITION**
Overvoltages (in accordance with the above standards)	U_{cn} + 10 % (up to 8 h daily) U_{cn} + 15 % (up to 30 min daily) U_{cn} + 20 % (up to 5 min, only 200 times in the life of the capacitor) U_{cn} + 30 % (up to 1 min, only 200 times in the life of the capacitor) **Please also refer to "Terms and Definitions".**
Overcurrent (in accordance with the above standards)	1.3 x In, 1.5 x In with 10 % overvoltages, 15 % over capacitance and harmonics included, continuous operation **"Please also refer to Terms and Definitions".**
Tolerance on capacitance	- 5/+ 10 % in accordance with the standards ± 5 % as Vishay ESTA standard
Test voltage, terminal/terminal	2.15 x U_{cn}, VAC, 2 s (routine test)
Test voltage, terminal/casing	6000 VAC, 2 s (routine test)
Inrush current	300 times rated current In
Losses	≤ 0.4 W/kvar to 0.5 W/kvar (without discharge resistors)
Statistical life expectancy	> 130 000 operating h (ESTAdry)
Degree of protection	IP00 outdoor
Ambient temperature category	- 25/D (max. 55 °C), (- 40/D on request)
Permitted casing temperature	Max. 65 °C (measured on top of the can)
Cooling	Naturally air-cooled
Permissible relative humidity	Maximum 95 %
Maximum allowed altitude	2000 m above sea level
Mounting position	Vertical and horizontal
Mounting and grounding	Threaded M12 stud at the bottom of the container
Safety features	All-phase overpressure tear-off fuse, self-healing
Casing	Aluminum can, welded top
Dielectric	Polypropylene film, self-healing
Filling agent	Resin-filled (ESTAdry), non-PCB, non-toxic
Terminals	Threaded studs M10

Available types same as for indoor use, different type designation "F".
For example:

TYPE	RATED VOLTAGE V	RATED OUTPUT kvar	CAPACITANCE µF	CURRENT A (50 Hz)	WEIGHT kg	HEIGHT H mm
PhMKDgF460.3.50	460	50	3 x 250.7 Δ	62.8	4.0	210

ORDERING INFORMATION	
Packing units	1 piece per carton

RECOMMENDED TORQUES	
STYLE	**RECOMMENDED TORQUE**
Terminals M8	6 Nm
Terminals M10	10 Nm
M12 mounting stud	10 Nm

Note

- Other voltage ratings, output, and frequencies upon request

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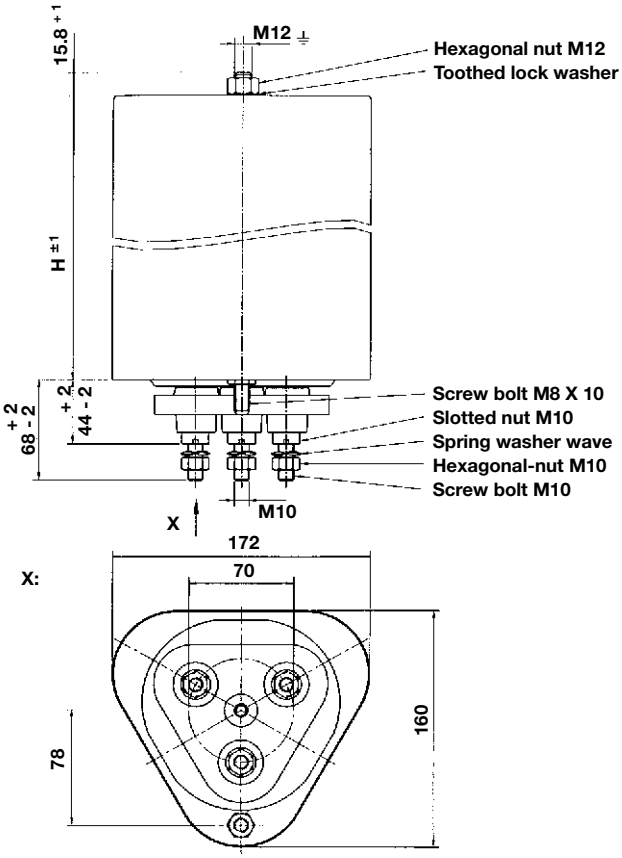
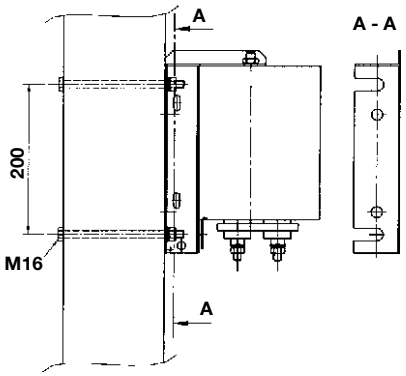
DIMENSIONS, OUTDOOR



Drawing 7

ACCESSORIES: SUPPORT FOR POLE AND WALL MOUNTING



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