LOW-VOLTAGE POWER CAPACITORS

Models PhMKP and PhMKPg

Metallized Film Capacitors
ESTAprop / ESTAdry

KEY BENEFITS

- Compact design to fit 300-mm cubicle modules
- Very low losses, and small diameters for excellent heat dissipation
- Stacked assembled winding elements reduce the risk of device breakdown
- Highest overcurrent capability of up to 3 times rated current; and inrush current capability of 300 times rated current
- Life expectancy of > 150,000 operating hours
- Highest outputs of up to 37 kvar
- Two versions available: oil-filled and dry, gas-filled

APPLICATIONS

- Recommended for power factor correction and filters in low-voltage applications ≤ 1000 Vrms

Datasheet is available on our web site at www.vishay.com
for PhMKP and PhMKPg - http://www.vishay.com/doc?13004

Low Voltage Power Capacitors
ESTAprop/ESTAdry

CAPACITORS IN CYLINDRICAL ALUMINUM CASING

APPLICATION

The Vishay ESTA PhMKP/PhMKPg series of power factor correction capacitors in cylindrical aluminum casing now provide higher kvar/voltage combinations for use in low-voltage systems.

The newly available 116 mm and 136 mm diameter capacitors complete the successful range of compact and slim cylindrical capacitors of 64 mm and 84.4 mm diameter design up to the lowest outputs of the triangular can design of the PhMKDg model.

The 116 mm and 136 mm start where the output of the 84 mm design ends. At the point of change, the customer has two options: the lower height profile of the 116 mm and 136 mm or the slimmer diameter of the 84.4 mm design.

The Vishay ESTA LVAC capacitors are suitable for use in both standard PFC applications and in heavy-duty applications such as wind turbines:

- automatic PFC-equipment
- individual fixed PFC (e.g. motors, transformers, lighting)
- group fixed PFC
- tuned and detuned capacitor banks
- harmonic filters (e.g. UPS, frequency drives, converter)

DESIGN

The Vishay ESTA LVAC MKP capacitors are metallized polypropylene film capacitors with self-healing properties. The current carrying metal layer of an MKP capacitor is vaporised onto one side of the polypropylene film. The front surface of tubular winding elements are joined by means of the metal spray method (schooping). Three winding elements are encapsulated in one aluminum casing and and connected to form a true 3-phase capacitor. The overpressure tear-off fuse prevents the capacitor from bursting at the end of service life, or due to inadmissible electrical or thermal overloads.

The capacitor is housed in a tubular aluminum container with a aluminum lid press-rolled onto it (64 mm and 84.4 mm) or welded (116 mm and 136 mm). The current is supplied via IP00 screw-on (M5) or IP20 block type safety terminal. A threaded stud (M12) at the bottom of the container serves for both grounding and mounting.

The Vishay ESTAprop and ESTAdry capacitors will be delivered together with discharge resistors and hardware for mounting and connection.

Vishay ESTA standard capacitors of 64 mm, 84.4 mm, 116 mm and 136 mm diameter will be delivered together with a thickfilm discharge resistor unit and fixing material for easy mounting and connection. In 84.4 mm diameter IP00 design there is also an option for feed-through (IN-LINE) connection of the capacitors to the supply.

The entire range of Vishay ESTA LVAC products are offered in both natural oil-filled ESTAprop PhMKP and gas-filled ESTAdry PhMKPg versions.

1-/3-PHASE CAPACITOR, IP00 SCREW-TYPE TERMINALS 84.4 mm DIAMETER

1-/3-PHASE CAPACITOR, IP20 TERMINAL BLOCK 64 mm/84.4 mm DIAMETER

3-PHASE CAPACITOR, IP20 TERMINAL BLOCK 116 mm DIAMETER

3-PHASE CAPACITOR, IP20 TERMINAL BLOCK 136 mm DIAMETER

Revision 17-Mar-10

TECHNICAL DATA	
STANDARDS	**IEC 60831-1+ 2, EN 60831-1+ 2, UL810 LATEST EDITIONS, 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}, V_{AC} , 2 s (routine test)
Test voltage, terminal/casing	4800 V_{AC} , 2 s (routine test)
Inrush current	300 times rated current I_n
Losses	≤ 0.25 W/kvar to 0.45 W/kvar (without discharge resistors)
Statistical life expectancy	> 150 000 operating h (ESTAprop) > 130 000 operating h (ESTAdry)
Degree of protection	IP20 clamp terminal with mounted discharge resistor unit or IP00 (terminal cover for higher protection class upon request), indoor
Ambient temperature category	- 25/D (max. 55 °C) ESTAprop , - 40/D (max. 55 °C) ESTAdry D (max. 55 °C) ESTAprop
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
Dielectric	polypropylene film, self-healing
Filling agent	natural oil, non-PCB, biodegradable (ESTAprop) or dry/gas - filled (ESTAdry)
Terminals per casing Ø (cross-head screws)	**Ø 64 mm** **IP20** M4 terminal block **A** (D-351), **3.0 Nm, max. 16 mm²** drawing ME-131-400-015 max. current, depending on ambient conditions: 34 A (1-phase)/25 A (3-phase)
	Ø 84 mm **IP00** M5 screw terminals (D-203), **2.0 Nm, max. 25 mm²** drawing ME-131-400-021, feed through max. current, depending on ambient conditions: 57 A (1-phase)/52 A (3-phase)
	IP20 M4 terminal block **A** (D-351), **3.0 Nm, max. 16 mm²** drawing ME-131-400-016 max. current, depending on ambient conditions: 57 A (1-phase)/52 A (3-phase)
	Ø 116 mm **IP20** M5 terminal block **B** (D-352), **3.0 Nm, max. 25 mm²** drawing ME-131-400-018 max. current, depending on ambient conditions: 60 A (3-phase)
	Ø 136 mm **IP20** M5 terminal block **B** (D-352), **3.0 Nm, max. 25 mm²** drawing ME-131-400-020 max. current, depending on ambient conditions: 60 A (3-phase)