



# POWER CAPACITORS

Models PhMKP and PhMKPg



## ESTAprop<sup>®</sup> and ESTAdry<sup>®</sup> Low-Voltage Power Factor Correction Capacitors

### 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 up to 3 times and inrush current capability of 300 times rated current
- Life expectancy of > 150,000 operating hours (ESTAprop<sup>®</sup>)
- Highest outputs of at least 25 kvar for most popular voltage ratings
- Two versions available: oil-filled and dry

### APPLICATIONS

- Recommended for power factor correction in low-voltage applications  $\leq 1000$  V

Datasheet is available on our web site at [www.vishay.com](http://www.vishay.com) for PhMKP and PhMKPg - <http://www.vishay.com/doc?13004>

## ESTApr<sup>®</sup>/ESTAdry<sup>®</sup> Power Factor Correction Capacitors Low Voltage

### APPLICATION

ESTApr<sup>®</sup> PhMKP-type capacitors in cylindrical aluminum casing have been designed for Power Factor Correction in low voltage plants. Loads as motors and transformers consume real power as well as reactive power. Generators, supply cables, and other electrical distribution equipment should be relieved from reactive power.

**ESTApr<sup>®</sup> capacitors may be used for:**

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

### DESIGN

The ESTApr<sup>®</sup> MKP capacitor is a metalized polypropylene film capacitor 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 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 assembly is impregnated with a natural oil (fire point > 300°C) under vacuum and hermetically sealed. This construction method ensures excellent heat dissipation and constant capacitance over an extended period of time.

The capacitor is housed in a tubular aluminum container with a metal lid press-rolled onto it. The current is supplied via screw-on (M5) or push-on (6.3 \* 0.8 mm) connectors. A threaded stud (M12) at the bottom of the container serves for both grounding and mounting.

ESTApr<sup>®</sup> and ESTAdry<sup>®</sup> capacitors will be delivered together with discharge resistors and hardware for mounting and connection.

ESTA standard capacitors of 84.4mm diameter will come with a THICK FILM DISCHARGE RESISTOR UNIT, forked terminals for easy mounting and IN-LINE-connection of the capacitors to the supply.

Capacitors are in accordance with protection class IP00. For all types, plastic covers for a higher degree of protection are available.

### 3-PHASE CAPACITOR, SCREW-TYPE TERMINALS



### 3-PHASE CAPACITOR, PUSH-ON TYPE TERMINALS



### 1-PHASE CAPACITOR, PUSH-ON TYPE TERMINALS



### THICK FILM DISCHARGE RESISTOR UNIT



TECHNICAL DATA	
STANDARDS:	IEC 60831-1+2, EN 60831-1+2, VDE 0560-46-47
Overvoltages: (in accordance with the above standards)	U <sub>cn</sub> + 10% (up to 8 hours daily) U <sub>cn</sub> + 15% (up to 30 minutes daily) U <sub>cn</sub> + 20% (up to 5 minutes) U <sub>cn</sub> + 30% (up to 1 minute)
Overcurrent: (in accordance with the above standards)	1.3" In, 1.5" In with 10% overvoltage, 15% overcapacitance and harmonics included, continuous operation
Tolerance on capacitance:	- 5/ + 10% in accordance with the standards ± 5% as Vishay ESTA standard
Test voltage, terminal / terminal:	2.15 * U <sub>cn</sub> , AC, 2 seconds
Test voltage, terminal / casing:	4800 VAC, 2 seconds
Inrush current:	300 times rated current In
Losses:	app. 0.25W/KVA* (without discharge resistors) app. 0.35W/KVA* (inclusive discharge resistors)
Statistical life expectancy:	> 150,000 operating hours (ESTApr <sup>®</sup> ) > 130,000 operating hours (ESTAdry <sup>®</sup> )
Degree of protection:	IP00 (terminal cover for higher protection class, for instance IP54 upon request), indoor mounting
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 meters 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:	deep-drawn aluminum can
Dielectric:	polypropylene film, self-healing
Impregnant:	natural oil, non-PCB, biodegradable (ESTApr <sup>®</sup> ) or dry/gas - filled (ESTAdry <sup>®</sup> )
Terminals:	casing Ø 84mm: M5 screw-on terminals casing Ø 64mm: double push-on (6.3*0.8mm) connectors