

## LVAC DW-Type Filter Capacitors



### FEATURES

- High output and high over-current design
- Welded rectangular capacitors with 3 or 6 terminals
- Overpressure monitoring device

### APPLICATIONS

- Automatic and individual fixed Power Factor Correction in LVAC applications
- Detuned and tuned filter applications to reduce harmonics in LVAC networks

QUICK REFERENCE DATA	
Series	PhMKP.../-DW
Description	DW-Type High Current Filter Capacitors - Oil/DRY - <b>INDOOR</b> , IP00, 3-phase/1-phase
Type	Capacitors, fixed, low voltage
Technology	MKP, metallized polypropylene film
Voltage max. (V)	1000
Capacitance min. ( $\mu\text{F}$ )	1-phase: 200, 3-phase D: 3 x 70, 3-phase Y: 3 x 219
Capacitance max. ( $\mu\text{F}$ )	1-phase: 3600, 3-phase D: 3 x 780, 3-phase Y: 3 x 1700
Output min. (kvar)	30
Output max. (kvar)	450

## DW-FILTER TYPE CAPACITORS

### DESCRIPTION

ESTAprop and ESTAdry DW-type capacitors in rectangular steel or Aluminum casing have been designed for high current filter circuit applications in low voltage plants. Loads such as frequency drives, converters, and other non-linear loads create harmonics. The purpose of tuned and detuned filters is the protection of electrical equipment and reduction of harmonics. DW-type capacitors have an excellent current-carrying capability and may be built for high voltages as well as high loads within one casing.

DW-type capacitors may be used for:

- fixed detuned power factor correction equipment
- automatic detuned power factor correction equipment
- tuned filter circuits

### DESIGN

The DW-type capacitor is based on MKP-technology. The active element consists of metallized polypropylene film with self-healing properties. The current-carrying metal layer 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). A number of elements will be connected together to get the required capacitance. The entire winding package will be incorporated within a welded stainless steel casing.

The casing is fitted with hermetically sealed bushings M12, for connection of the supply cable.

A threaded stud M10 for grounding is provided. Easy mounting will be ensured by 4 drillings, Ø 9.8 mm, at the bottom of the container, or by side-brackets.

This design ensures the highest safety by self-healing technology as well as by an over pressure monitoring device. In case of an internal failure, an over pressure may occur and operate a potential-free contact, which will (connected to a switching device like a contactor) disconnect the capacitor from the supply and thus protect the capacitor from bursting.

### DW-TYPE CAPACITOR, IP00, 6 TERMINALS



### DW-TYPE CAPACITOR, IP00, 3 TERMINALS



**DW-TYPE FILTER CAPACITORS**

<b>TECHNICAL DATA</b>	
<b>STANDARDS</b>	<b>IEC 60831-1 + 2, EN 60831-1 + 2, LATEST EDITIONS</b>
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) <b>Please also refer to "Terms and Definitions".</b>
Overcurrent (in accordance with the above standards)	$1.3 \times I_n$ , $1.43 \times I_n$ with 10 % overvoltages, 10 % overcapacitance and harmonics included, continuous operation <b>Please also refer to "Terms and Definitions".</b> Higher currents upon request!
Tolerance on capacitance	$\pm 5\%$ (very narrow tolerances of $\pm 3\%$ upon request)
Test voltage, terminal / terminal	$2.15 \times U_{cn}$ , VAC, 2 s (routine test)
Test voltage, terminal / casing	3600 / 7200 ( $\leq / > 660$ V) VAC, 2 s (routine test)
Inrush current	300 times rated current
Losses	$< 0.50$ W/kvar (without discharge resistors)
Statistical life expectancy <sup>(1)</sup>	$> 150\,000$ operating h
Degree of protection	IP00, indoor mounting
Permitted ambient temperature	-25 / up to D (max. 55 °C)
Permitted casing temperature	Max. 65 °C (measured on top of the capacitor)
Cooling	Naturally air-cooled
Permissible relative humidity	Max. 95 %
Maximum allowed altitude	2000 m above sea level
Mounting position	Vertical or horizontal
Mounting	4 drillings, $\varnothing 9.8$ mm
Safety features	Over pressure monitoring device, self-healing
Casing	Welded stainless sheet steel casing, color RAL 7033 or aluminum casing (ESTAdry)
Dielectric	Polypropylene film, self-healing
Filling agent	Natural oil, non-PCB, biodegradable (ESTAprop) or dry / resin filled (ESTAdry)
Terminals	Threaded studs, M12

**Note**

<sup>(1)</sup> Statements about product lifetime are based on calculations and internal testing. They should only be interpreted as estimations. Also due to external factors, the lifetime in the field application may deviate from the calculated lifetime. In general, nothing stated herein shall be construed as a guarantee of quality or durability.



This capacitor type will be built upon customer request. With its narrow tolerances, it is ideal for use in filter circuit applications.

Available voltage ratings are between 230 V and 1000 V. Output ratings are up to 500 kvar, depending on the voltage.

Overcurrent loading in excess of standard figures is possible.

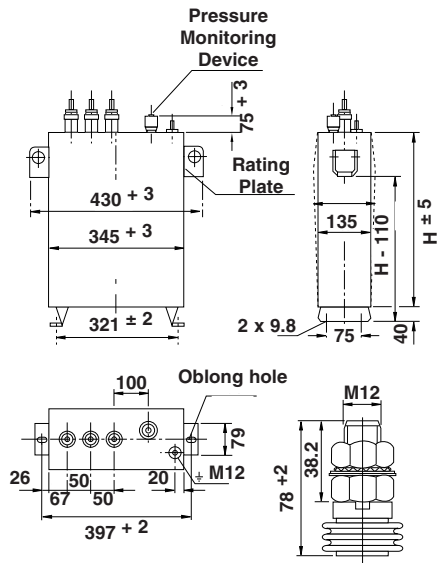
The protection of DW-type capacitors is provided by an OVER PRESSURE MONITORING DEVICE, which must be connected to a contactor or breaker to switch off the unit in case of internal over pressure.

**DIMENSIONS FILTER CIRCUIT CAPACITORS**

The total output within one casing may be divided into two outputs and six bushings. Using such an “S”-type terminal arrangement may be of cost advantage when two outputs are required, but neither of them is large enough to fill up the capacitor casing.

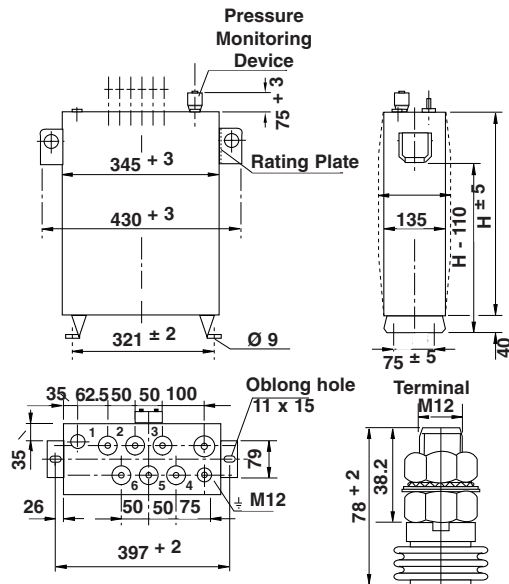
**Drawing 10**

DW-type with 3 terminals



**Drawing 11**

DW-type with 6 terminals



RECOMMENDED TORQUES	
TERMINAL STYLE	RECOMMENDED TORQUE
Terminals M6	3 Nm
Terminals M8	6 Nm
Terminals M10	10 Nm
Terminals M12	15.5 Nm



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