

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 - INDOOR , IP00, 3-phase/1-phase
Type	Capacitors, fixed, low voltage
Technology	MKP, metallized polypropylene film
Voltage max. (V)	1000
Capacitance min. (μF)	1-phase: 200 μF , 3-phase D: 3 x 70 μF , 3-phase Y: 3 x 219 μF
Capacitance max. (μF)	1-phase: 3600 μF , 3-phase D: 3 x 780 μF , 3-phase Y: 3 x 1700 μF
Output min. (kvar)	30
Output max. (kvar)	450

DW-FILTER TYPE CAPACITORS

APPLICATION

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**

TECHNICAL DATA	
STANDARDS	IEC 60831-1 + 2, EN 60831-1 + 2, LATEST EDITIONS
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)	$1.3 \times I_n$, $1.5 \times I_n$ with 10 % overvoltages, 15 % overcapacitance and harmonics included, continuous operation Please also refer to "Terms and Definitions". 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	$> 150\,000$ 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



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.

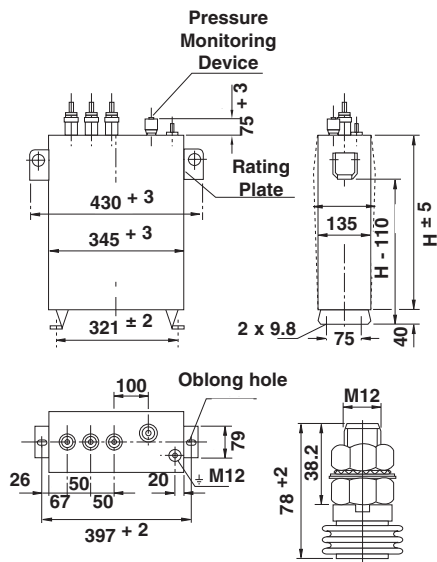
Overcurrent loading in excess of standard figures is possible.

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.

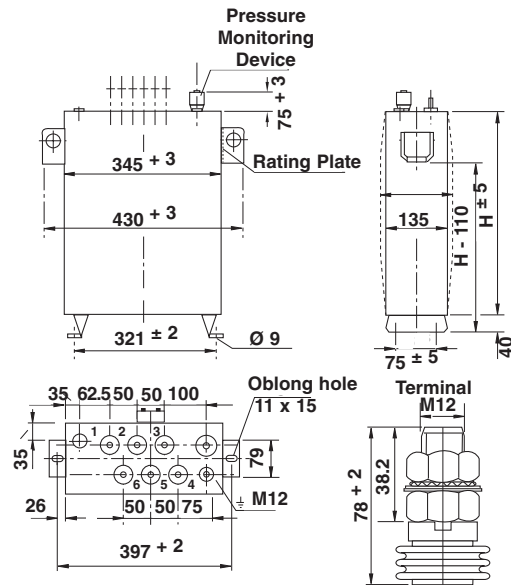
DIMENSIONS FILTER CIRCUIT CAPACITORS

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



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.