CAPACITIVE VOLTAGE TRANSFORMERS AND COUPLING CAPACITORS
_DDB/DFK Series
_DDRN/DFN Series
Capacitive voltage transformers are designed to provide a scaled down replica of the voltage in the HV line and isolate the measuring instruments, meters, relays, etc., from the high voltage power circuit.

They enable transmission of high frequency signals through the high voltage (HV) lines.

Coupling capacitors are only used for coupling high frequency communication signals, making them equivalent to the capacitive part of a CVT.

APPLICATIONS

Voltage input to different types of protection relays.

Ideal for installation at metering points due to its very high accuracy class and extremely steady capacitance.

Transmission of high-frequency signals through the high voltage lines (PLC).

Helps to reduce voltage peaks in the line.

Harmonic measurement in conjunction with PQSensor®.

Examples of applications:

1. Revenue metering.

2. Protection for high voltage lines and substations.

3. Transmission of high frequency signals.
DDB/DFK SERIES

Capacitive voltage transformer:
model DDB 72.5 kV to 170 kV;
model DFK 245 kV to 800 kV.

1. Primary terminal
2. Oil volume compensating system
3. Insulator
4. Capacitors
5. Intermediate voltage tap
6. Inductive voltage transformer
7. Secondary terminal box
DESIGN AND MANUFACTURING

Capacitive voltage transformers consist of a number of capacitors connected in series on top of a tank in which the electromagnetic unit (EMU) is housed. The EMU includes an inductive transformer (5), a series reactor (8) and other auxiliary elements. These capacitors form a voltage divider (2, 3) between the high voltage terminal (1) and the high frequency terminal (4).

The capacitors, impregnated with high grade dielectric oil, are housed within one or more insulators. Each of them forms an hermetically sealed independent unit, with a very stable capacitance over time.

The high frequency terminal (4) for the PLC signal comes out of one side through a piece of resin that separates the capacitive unit from the inductive voltage transformer.

The medium voltage inductive voltage transformer is immersed in mineral oil and housed inside an hermetically sealed metallic tank.

The secondary terminals are located inside the secondary terminal box (7) enabling connection; sufficient space is available to install protection elements such as fuses or circuit breakers.

CHARACTERISTICS

› High stability of capacitance, and therefore of accuracy, steady for the operational life of the equipment, with maximum reliability.
› Up to 4 secondary windings with or without taps, with metering, protection, or dual function.
› Reliable ferroresonance suppression system that does not affect transient response or accuracy.
› Robust mechanical strength.
› Excellent response under extreme environmental conditions: Temperatures from -60°C up to +60°C, high altitudes, seismic hazard areas, violent winds, etc.
› Maintenance-free throughout their complete lifespan of more than 30 years. Only periodic monitoring is recommended.
› Oil sampling valve and EMU oil level indicator for monitoring.
› Hermetically sealed to guarantee complete water tightness with the minimum volume of oil. Each unit is tested individually.
› Metallic oil level compensating system that effectively regulates changes in oil volume mainly caused by temperature.
› Officially homologated in-house testing facilities.
› Quality management system certifications: ISO9001, ISO14001 and OHSAS 18001.
› Each unit is routine tested following applicable standards.

› Complete type tests reports following international standards.
› Compliance to any international or domestic standards.
› Environmentally friendly. The materials used for construction are recyclable and resistant to the elements. Its advanced design adheres to environmental regulations using high-quality insulating oils, free of PCBs.
› Reduced size due to a compact design that is easy to transport, store and install, and which reduces visual impact.

OPTIONS:

› Carrier accessories for HF signal transmission.
› Line trap mounted on top of the CVT.
› EMU grounding switch.
› PQSensor® for HF harmonic measurement.
› Porcelain or polymeric insulators.
› Sealable secondary terminals.
› Different cable glands and accessories.
› Wide range of capacitance values available.
› Wide range of primary and secondary terminals.
› Secondary protection devices inside the terminal box (fuses, MCBs...).
RANGE

This series is named with the letters DDB or DFK followed by 2 or 3 numbers indicating the maximum service voltage for which they have been designed.

The table on the next page shows the range currently manufactured by ARTECHE. These characteristics are merely indicative. ARTECHE can manufacture these transformers to comply with any domestic or international standard.

Secondary windings for:

› Protection: all possible types.
› Metering: accuracy classes for any metering/billing need (including high accuracy class 0.1 / 0.15 with extended range in current).

Number of secondary windings: up to 4 secondary windings are possible in a single device.
<table>
<thead>
<tr>
<th>Model</th>
<th>Highest Voltage (kV)</th>
<th>Rated insulation level</th>
<th>Standard capacitance (pF)</th>
<th>High capacitance (pF)</th>
<th>Standard creepage distance (mm)</th>
<th>Dimensions</th>
<th>Weight (kg)</th>
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<tr>
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<td>Power frequency (kV)</td>
<td>Lightning impulse (BIL) (kVp)</td>
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These dimensions and weights are approximate based on standard requirements. For detailed values please consult with Arteche. Higher capacitances available on request.
DDN/DFN SERIES

Coupling capacitor:
model DFN up to 800 kV;
model DDN up to 170 kV.

DESIGN AND MANUFACTURING

Coupling capacitors consist of a number of capacitors connected in series. The capacitors, impregnated with high grade dielectric oil, are housed in one or more insulators. Each of them forms an hermetically sealed independent unit, with a very stable capacitance over time.

The high frequency terminal for the PLC signal comes out from the bottom of the unit and it is connected to the HF carrier accessories.
CHARACTERISTICS

› Carrier accessories for HF signal transmission.
› Robust mechanical strength.
› Excellent response under extreme environmental conditions: Temperatures from -60°C up to +60°C, high altitudes, seismic hazard areas, violent winds, etc.
› Maintenance-free throughout their complete lifespan of more than 30 years. Only periodic monitoring is recommended.
› Hermetically sealed to guarantee complete water tightness with the minimum volume of oil. Each unit is tested individually.
› Metallic oil level compensating system that effectively regulates changes in oil volume mainly caused by temperature.
› Officially homologated in-house testing facilities.
› Quality management system certifications: ISO9001, ISO14001 and OHSAS 18001.
› Each unit is routine tested following applicable standards.

› Complete type tests reports following international standards.
› Compliance to any international or domestic standards.
› Environmentally friendly. The materials used for construction are recyclable and resistant to the elements. Its advanced design adheres to environmental regulations using high-quality insulating oils, free of PCBs.
› Reduced size due to a compact design that is easy to transport, store and install, and which reduces visual impact.

OPTIONS:

› Line trap mounted on top of the Coupling Capacitor.
› Porcelain or polymeric insulators.
› Wide range of capacitance values available.
› Wide range of primary terminals.

RANGE

This series is named with the letters DDN or DFN followed by 2 or 3 numbers indicating the maximum service voltage for which they have been designed.

The table shows the range currently manufactured by ARTECHE. These characteristics are merely indicative. ARTECHE can manufacture these transformers to comply with any domestic or international standard.

<table>
<thead>
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<th>Coupling capacitors</th>
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