

PARTIAL DISCHARGE METER (DTM)

- * Measurement of Partial Discharges in pC and μV .
- * Variable selective filter, 600 kHz to 2400 kHz

1. GENERAL

The measurement of partial discharge is a non-destructive test on electrical apparatus or equipments. The measured quantities are valuable data to determine the quality of an insulation. In high voltage test technique, special importance is, therefore, attached to the measurement of partial discharges.

The reading of the partial discharge intensity is in picocoulombs (pC) or alternatively in microvolts (μV).

A complete partial discharge measuring equipments consists of :

- Partial discharge meter DTM with filter insert
- Measuring impedance and coaxial connecting cable

2. MEASURING PRINCIPLE

Partial discharge in or on the test object cause charge transfers in the high-voltage circuit, giving rise to voltage pulse variation on the measuring Impedance (quadripole). These are evaluated by the partial discharge meter.

The filter with adjustable center Frequency allows to select parts of the high-voltage spectre for measurement purpose.

3. DESCRIPTION

3.1. PARTIAL DISCHARGE METER (TYPE:DTM)

The measured partial discharge intensity either in pC or μV in accordance with IEC60270 or VDE 0434 and VDE 0876. According to IEC 60270, the measured quantity shall be multiplied by a correction factor, which considers the circuit characteristics of the complete test arrangement. With the built-in correction circuit it is possible to incorporate correction factor into the display. The actual partial discharge intensity can then be read directly without the usual calculations. In position "CORR", the correction factor is displayed also directly.

An analogue output terminal is provided for the display of the partial discharge pulses on an oscilloscope.

An internal calibration voltage allows to verify proper performance of the instruments in position "CAL".

3.2. FILTER INSERTS

For PD Meter (DTM), a selective filter with variable center frequency and broadband filter can be supplied.

- Selective filter :
Variable center frequencies = 0.6...2.4MHz
Bandwidth = 9 kHz

- Broad-band filter :
Bandwidth = 40 kHz ... 220 kHz

The basic noise level of the instruments is less than 0.5 pC in the most sensitive measuring range. The measuring accuracy and linearity correspond to VDE 0876 and IEC 60270.

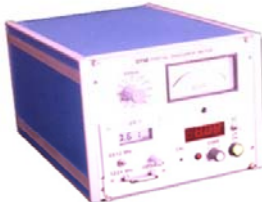
- Measuring Ranges :
2 pC to 50,000 pC (IEC 270)
1 μV to 25,000 pV (VDE, CISPER, NEMA)

3.3. MEASURING-IMPEDANCE(TYPE:AKV-D/AKU-DU)

The measuring impedance (quadripole) filters the HF voltage portion from the test circuit. It can continuously loaded with 4 A. It has built-in surge protector which protect the instrument from over voltages.

4. DIMENSIONS AND WEIGHT

- 206 mm wide X 177 mm high X 245 mm deep
(1/2-19" plug-in unit)
Weight : approx 5 kg

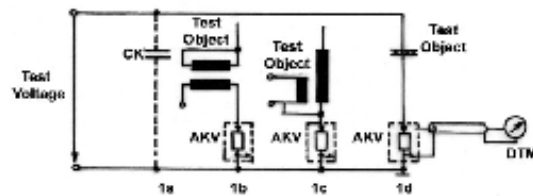


5. ACCESSORY

Housing, in case the instruments is not intended for rack-mounting

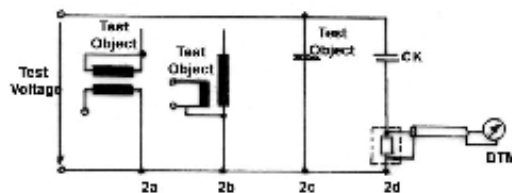
6. DTM - TEST CIRCUITS

Fig. 1 Connection of partial discharge meter DTM between test object and ground (Test circuit according to IEC Publ. 270 and VDE 0434.



- 1a. A coupling capacitor may be used to improve the transfer characteristics of the test circuit
 - 1b. PD measurement during applied potential test of inductive test objects
 - 1c. PD measurement during induced potential test of inductive test objects
 - 1d. PD measurement on capacitive test objects
- CK = Coupling capacitor
AKV = Measuring impedance

Fig. 2 Connection of partial discharge meter Dtm between coupling capacitor and ground (test circuit according to NEMA Publ. 107)



- 2a. PD measurement during applied potential test of inductive test objects
- 2b. PD measurement during induced potential test of inductive test objects
- 2c. PD measurement on capacitive test objects
- 2d. Coupling capacitor (C = 1000 pF measurements according to NEMA Publ.107)

