

SCOPE

PD-Analyzer PORTABLE DIAGNOSTIC SYSTEMS A DIMRUS PRODUCT MARKETED BY SCOPE



Multipurpose Device for PD Measuring and Analyzing in the Transformer Insulation, GIS, High voltage Cables and Joints...
... PD-Analyzer HF/UHF

The Product

PD-Analyzer: PORTABLE DIAGNOSTIC SYSTEMS FOR VARIOUS APPLICATIONS

This is an 'All in One' solution for testing and analysing partial discharges in the insulation of high-voltage transformers, cables, GIS and electric machines. The DIMRUS 'PD Analyser' help diagnose their insulation state and find any type of defects very effectively.

It can be used for temporary or constant monitoring of partial discharge in medium and high voltage systems and cables of any rated voltage.

The PD Analyser is the most useful device for condition estimation of high-voltage insulation. This multipurpose device is designed for -

- Partial discharge measuring in high-voltage insulation at a high noise level.
- Fast detecting of the defects in different high-voltage equipment and identifying how dangerous/severe they are.



Measurement

Six simultaneous measurement channels:

The kit has six independent measuring channels in which the signals are measured absolutely synchronously. This function gives the opportunity to see how pulses from partial discharges are distributed and where they are located in high-voltage equipment.

PD signals are recorded using inductive (RFCT), capacitive (TEV) and other Ultra high frequency (UHF) sensors and antennae.

The inductive sensors are placed directly around the insulated conductor or the cable sheath. The capacitive sensors can be easily attached to metal parts of the equipment/switchgear as they have inbuilt magnet. Depending on the number of sensors, the signals from each sensor are recorded at a set interval.

The device offers three modes of measurement and monitoring- Real time measurement, Single measurement and Measurement series. In real time measurement we can also record the whole measurement continuously. These readings & records are simultaneously analysed by the 'Expert Software and are categorised into different types of PD like Floating potential, Corona etc.

The device provides insulation partial discharge measurement, in the wide frequency range including HF, RF and UHF and allows partial discharge measurement and analysis in any type of high-voltage equipment such as transformers, GIS, cables, etc. Pulse frequency in these things is hundred or even thousand times different. It depends on the type of the insulation defect, how far this defect is from the measuring sensor and the design characteristics of the equipment.

Partial discharge measurement in Power Transformers.

Partial discharges in Power Transformers can be measured by the 'PD-Analyzer' in different ways:

- Using DB-2 sensors (not enclosed in the standard delivery set) which are put to the test tap of the bushing and the neutral of a three-phase winding.
- Using TEV's sensors (to measure surface current) which are put on the transformer tank.
- Using electromagnetic UHF antennas which are put into the tank through a drain valve or special radio transparent hatch on the surface of the transformer tank.

Partial discharge measurement in Cables.

For partial discharge measurement in high-voltage cables and their joints the following sensors (enclosed in the standard delivery set) can be used:

- External electromagnetic antennas of different types - directional and rod - to test joint insulation and insulation of the nearby cables.
- High-voltage transformers RFCT made for joint and cable testing. With "PD-Analyzer" you can locate defects in cable lines. A partial discharge pulse coming from the defect found in the insulation is used as a test pulse. There is one more useful function of this device - it has an on-line reflectometer.

Partial discharge measuring in GIS.

- For this, we use AES sensors which are put in between two GIS enclosures where the insulator spacers are there. Partial discharges inside GIS can be measured through this radio-transparent gap. TEV's sensors are suitable too. They are put on the enclosure surface especially when there are no radio-transparent spacers. If internal sensors are present in a GIS then still PD Analyser can be used to measure PD in GIS by using suitable couplers.

Partial discharge measurement in the Electric Machines.

There are two ways for partial discharge measuring in stator winding insulation in HV motors and generators:

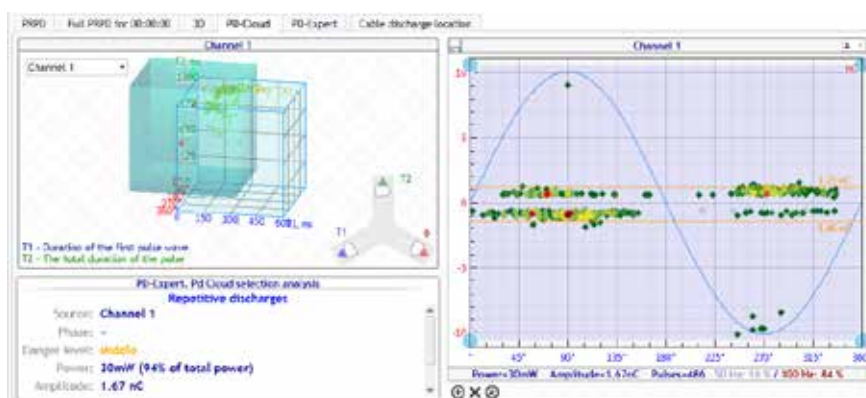
- Using coupling capacitors (as partial discharge sensors) which are able to work at maximum voltage of the stator winding
- Using various electromagnetic antennas put inside the stator, such as temperature sensors in the winding or special antennas put in the stator slots or circular antennas put near end connections of the winding.



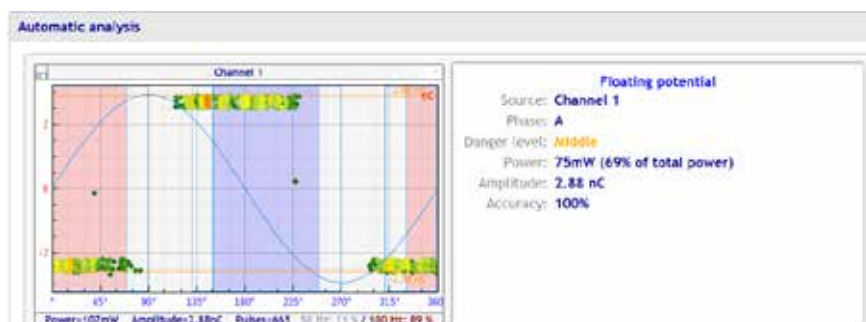
Features

PD Cloud and PD Expert:

- One of the main advantages of this device is its built-in expert system "PD-Expert" used for automatic diagnosis of insulation defects in high-voltage equipment. This intellectual expert system is very important for the personnel with little experience.



Automatic Analysis in "PD expert":



PD-Analyzer HF/UHF

Features of "PD-Expert" system:

- It separates stray noise pulses and partial discharge pulses while comparing their frequency and time of arrival.
- It uses phase resolved partial discharge (PRPD) and time frequency analysis (PD- Cloud).
- It has the database of the most defects which can be upgraded with new diagnostic information.
- Danger level shows how severe the signal can be.
- It uses special algorithms to estimate if the received data is authentic.
- Automatic report generation on the condition of the insulation of the high-voltage equipment.

Specifications

Parameters	PD Analyser 3	PD-Analyzer HF/UHF
No. of measuring Channel	3	6
Sensor options	HF, UHF	HF, TEV, UHF
HF/RF discharge pulse frequency	0.1MHz to 100MHz	
UHF discharge pulse frequency	200 - 1500MHz	
HF discharge amplitude	5 pC to 100000pC	
UHF discharge amplitude	-70dBm to 5dBm	
Computer connection	USB, Wi-Fi	USB
Supply voltage	90 to 260V AC	
Operating temperature range	-10°C to 50°C	
Dimension	222 x 160 x 45 mm	520 x 435 x 230 mm
Weight	12 Kg	25Kg

Benefits

- The PD Analyzer offers online testing and monitoring so no outage is required for PD measurement or monitoring.
- Know the developing faults before the breakdown.
- Effectively plan the maintenance based on specific input about the defects and thus reduce the outage.
- Helps enhance the performance of the assets by increasing uptime.

Simple solutions for difficult measurements®

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