



Partial Discharge Diagnostic System

high performance, fast, reliable and flexible, the ultimate solution for industrial monitoring & quality control



DS-04.06.040_ENG - REV.02 - 25/08/2010

Innovative instrument for Partial Discharge recording & processing

Ultra Wide band, fast integrated processing capability

Up to 6 PD Channels, external, line or GPS synchronized

Powerful, PD Pulse detector and Waveform analyzer

Fuzzy logic diagnostic tools and statistical processing

IEC 60270 compliant!

Has your PRPD (Phase Resolved Partial Discharge) ever been affected by two or more PD activities and overlapping noise at the same time?

Even very skilled operators will find hard to make a diagnosis, in situations as the one mentioned above, through a mere visual evaluation of the pattern graph.

Techimp new technology bases itself on the principle that efficient separation and identification of PD data can be achieved collecting PD pulses themselves and not only, as digital instrumentation commonly available does, PD pulse peak and phase.

PDBase II® has been expressly designed as a system able to collect a large number of PD pulses and separate them according to their waveform. In order to accomplish this task, **PDBase II®** hardware is equipped with an ultra-wide band digitizer and integrated processing capabilities. Thanks to its fast sampling rate (200 MS/s) and its on-board processing capabilities, a considerable number of digitized

PD pulse waveforms are analyzed and pulse features are stored for a further processing leading to the final PD source identification.

Applications field

PDBase II® is suitable for quality control purposes and periodic assessment of:

- Cable and cable accessories (such as joints and terminations);
- Electric Generators & Motors;
- Power and Measurement Transformers;
- Gas Insulated and Air Insulated Switchgears;
- Outdoor Insulators for Overhead Lines (pollution assessment).

Techimp offers a wide and complete range of sensors, filters and signal conditioning devices to cover any possible PD acquisition and optimise the circuit measurement .

Techimp PDBase mark II

Techimp ultimate technology

Techimp technology (patented) allows different PD phenomena to be classified on the basis of their pulse shape, thus enabling further analysis to be carried out separately on each dataset. PD source identification is, so, highly enhanced and even a non skilled operator will be able to carry it out.

Techimp acquisition technology provides efficient noise rejection as well. As a matter of fact, noise signals have been observed to be very different from PD signals. Techimp classification system is really successful in separating PD phenomena from those generated by disturbances. In detail, each PD pulse waveform is acquired and the so-called equivalent time-length and bandwidth are evaluated and plotted on the TF map. Different types of discharges (e.g. PD due to distributed microvoids, slot discharges and noise

in a rotating machine) shall group into different clusters in the TW map being characterized by different pulse shapes.

Specifications

Wide Band Acquisition PD channel

Acquisition rate	200MS/s, 3 PD Channel
Quantity	4, 6 with MUX hardware add on
Bandwidth selectable	16 kHz ÷ 48 MHz 2.5 MHz ÷ 48 MHz 115÷440 kHz (IEC 60270compliant)
Resolution	12 bit
Dynamic range	75 dB
Maximum sampling frequency	200 MS/s
Input voltage range	1 mVpp÷5.0 Vpp
Input sensitivity	< 1.0 mVpp
Input Impedance	50 Ohm
Recording time length	1 • s (min) 40 • s (max)
Pre-trigger recording	0÷100% of time length
Dead time (min)	About 1/2 acquisition time length non continuous
Connectors type	BNC

Synchronization (phase reference) channel (all the detection options allow phase resolved data to be acquired).

Input voltage range	0.1 Vrms ÷ 200 Vrms
Frequency range	0.1 ÷ 2000 Hz
Phase resolution	<1 degrees referenced on phase to ground voltage reference
Connector type	BNC

Internal Line Synchronization

Quantity	1
Sampling frequency	100 kS/s
Resolution	16 bit

Narrow bandwidth Analog Channels (for synchronisation or other analogue signals monitoring)

Quantity	5
Sampling frequency	100 kS/s
Resolution	16 bit
Input impedance	10 M•
Full scale values	0.5, 2.5, 5.0, 25, 50, 100 V
1 st order Low Pass Filter bandwidth	15, 30, 75, 150, 300, 750, 1500 Hz
Connector type	BNC

Digital Channel

Quantity	1 digital input
Type	high speed TTL as external trigger input or external sync
Casing	
Dimensions	230 x 300 x 110 h mm
Weight	6 kg

Power Supply

Voltage	85-250 Vac
Maximum power consumption	40 W

PC platform recommended requirements

Hardware	Pentium Core 2 Duo 2.0 GHz, 2 GB RAM, HDD 100 GB, 1024x680 screen resolution, Ethernet 10/100, USB.
OS/Software	Win XP professional, MS Office for report generation, win 7

Communication

Physical Interface	Ethernet (100-base FX, 10-base FX)
Bit Rate	100MBps (10MBps compatible)
Communication Protocol	TCP-IP
Connector type	ST

Operating environmental conditions

Temperature	-5 to 50 °C
Humidity	90%, not condensing

General

Firmware	updating via internet connection to Techimp website
Certifications	IEC 60270 compliance both for Hardware and Software.

Options

Location tool (for cables), max length 2km, sensitivity 10m (*)	
Spectrum Analyzer tool, max Frequency 50MHz	
Techimp SW for IEC 60270 compliance	
PD Calibrator, range 1-100pC	
GPS (**)	
Quality Control Software add-on	

The Product

PDBase II® is provided with different acquisition modes to give maximum measurement flexibility.

It is able to perform PD tests within a broad frequency range for various applications.

PDBase II® takes advantage of three main acquisition modes: 2 diagnostic and one standard. In standard mode a hardware filter (integrated in the system) narrows the band of the system, thus complying the requirements of IEC60270 STD.

The software

The **PDBase II®** acquisition software holds all the needed functions to control the instrument, to set the correct acquisition parameters, to acquire and visualize the PD dataset in order to get an immediate diagnostic response.



PDProcessing and Quality

Control add-on are software that allow the acquired data files to be

processed for a deep analysis of the detected phenomena.

(*) actual performances may change depending on test conditions

(**) The system can be equipped with an optional GPS module for precise absolute time acquisition over all channels, which may be used for PD location by means of the Time of Flight technique from 2 different locations