



# PDS Product Guide

Complete range of partial discharge solutions

**PDS**

Power Diagnostic Service

[www.pdservice.com](http://www.pdservice.com)

US | Switzerland | Taiwan | Singapore | Korea | China

# About PDS

## PDS Milestones

- 1990** ● PDS founded
- 2005** ● High voltage laboratory
- 2013** ● R&D Center
- 2015** ● Headquarters relocation

## Vital Statistics

- 2,766** Monitoring Systems Installed
- 13,000+** Monitored Equipment
- 14,000+** Annual Measurements
- 6** Global Offices

Power Diagnostic Service Co. (PDS) has been providing state of the art instruments and services for the diagnostics of partial discharge (PD) activities in high voltage electrical apparatus since 2004. To date, over 13,000 electrical apparatus are monitored continuously on-line.

Partial discharge measurement is one of the most effective methods in detecting defects in HV/MV insulation systems, including material aging, contamination, poor installation and manufacturing flaws. PD activity is usually irreversible and catastrophic and can lead to unplanned outages, production interruptions, or even personnel injuries. Early detection of partial discharge by on-line monitoring enables users to take corrective maintenance action and ultimately avoids catastrophic failure of the apparatus.

PDS's extensive on-site service experience and in-house R&D efforts has led to the development of the most advanced condition-based monitoring system that includes various UHF sensors, diagnostic instruments, and portable PD analyzers to provide a full range of protection solutions for HV/MV assets.

PDS specializes in UHF PD detection, which offers the best signal-to-noise ratio and detects internal discharge. PDS offers a full range of PD solutions in the field of apparatus condition analysis and on-line monitoring, including a handheld screening tool, advanced online/off-line PD analyzers, customized monitoring system designs, and PD fault locators, providing a comprehensive protection solution for an early warning detection strategy.





# On-line Partial Discharge Applications

PDS offers on-line UHF sensors for generators, cable terminations, gas insulated switchgear (GIS), transformers and switchgear. In a typical configuration, all sensors are connected to a PDS data acquisition unit such as PDSimply. PDSimply continuously acquires and processes data for PD diagnostics. Data from PDSimply can be accessed from a local PC or remotely via WAN.

A robust PDS on-line continuous monitoring system consists of three main components: the PD sensor suitable for the apparatus being monitored, a PDS data acquisition and processing instrument such as PDSimply, and a local computer running the PDCare software system. In this configuration, PDSimply is connected to the computer running the PDCare software system which is used to configure various alarms that are triggered once certain conditions are met. Alarms can be sent locally or remotely via WAN. The alerted user can then login to the PDCare system locally or remotely to further analyze the collected data and take any necessary action.

For a system where permanent installation is not required, the PDSimply Portable unit can be used.

In cases where the presence of PD must be checked instead of continuous monitoring, the three channel PDSurvival instrument can be used. In this case, a local PC running the PDCare software system can be connected to the PDSurvival instrument for data analysis.

PDS also offers PDSolution, a portable, flexible, yet powerful general purpose instrument for PD detection on any electrical apparatus. It provides 4 high speed (1.25 GHz) data acquisition channels that can be combined as one extra high speed (5 GHz) channel for PD detection. PDSolution's ability to interface with all types of sensors makes it an ideal instrument for PD detection in the field, as well as in manufacturing or R&D applications.

Additionally, PDS offers the PDLabS type SC4001 instrument especially designed for laboratory research and factory testing in accordance with the IEC60270 standard. This instrument can be used to test all high voltage apparatus such as transformers, switchgear, motors, generators and cables. It provides 4 high-speed data acquisition channels which can be extended to 8 channels if required.



GIS Window Sensor



Bushing Sensor



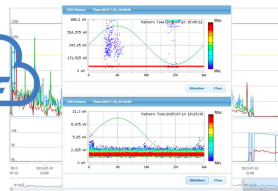
Switchgear Sensor: TEM



PDSimply



**PDCARE**  
System



Cable Termination Sensor: TM



Tfr. Drain Valve Sensor



GIS Spacer Sensor

# Data Acquisition Modules



## PDSimply

On-line data acquisition system for on-line PD monitoring

PDSimply is the state of the art solution for continuous on-line monitoring of most HV/MV electrical apparatus. PDSimply's UHF PD technology effectively separates noise from partial discharge.

- IEC TS 62478 Compliant
- Permanently installed in the field with the apparatus
- Ultra-high frequency bandwidth: 150 MHz - 1.2 GHz
- 6 channels for wide range of measurement
- Built-in front-end processor for fast data processing
- Internal high pass filter
- Smart pattern recognition algorithm that eliminates false alarms
- Records PD magnitude, Pulse Count, Trend and PRPD pattern
- 5 output contacts for SCADA communication



## PDSimply Portable

On-line data acquisition system for on-line PD monitoring

PDSimply Portable offers all the features of PDSimply in a portable, field rugged enclosure. It is used in situations where permanent installation is not required.

- Multiple display modes for PD diagnostics and data analysis
- Ultra-high frequency bandwidth: 150 MHz - 1.2 GHz
- Multiple monitoring modes : stand-alone, network and local
- PDCare software system for data analysis and diagnostics
- Remote communication eliminates need for local computer
- 4.4 Kgs (9.5 Lbs) in a rugged case for outdoor use



## PDSurvival

3 Channel data acquisition system for on-line PD monitoring

PDSurvival is the economical solution where 6 Channels are not required for PD measurement. PDSurvival is an ideal instrument where only on-line PD measurement is required in the field. As it is not intended to be installed for an extended period of time, the trending feature is not available.

- On-line PD measurement of most HV/MV apparatus
- Application : PD measurement (not continuous monitoring)
- Ultra-high frequency bandwidth : 50 MHz - 900 MHz
- 3 channels for PD measurement
- Built-in front-end processor for fast data processing
- Internal high pass filter
- Smart pattern recognition algorithm
- PD magnitude, Pulse Count, and PRPD pattern
- 2 output contacts for SCADA communication



## PDS One

Integrated Generator Monitoring System

PDS One is the latest addition to the PDS line of PD monitoring solutions. This state of the art system provides comprehensive on line generator monitoring. PDS One is based on PDS's 10 years of field experience in monitoring generators.

- Modular construction : economical and flexible system
- 3 channel PD monitoring via capacitor sensor
- Provides PD magnitude, Trend, Pulse count & PRPD pattern
- 4 channels vibration sensing module
- 8 channels for temperature monitoring via 3 wire RTD sensors
- 3 phase electric energy measurement

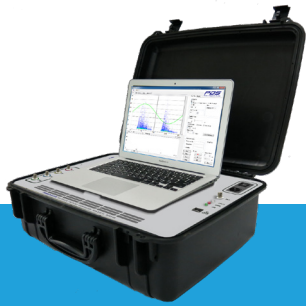


## TPS 100

Thermal Monitoring for dry type transformers

TPS 100 is a thermal monitoring system designed for dry type transformers.

- Detects thermal failure of dry type transformers
- User settable temperature limit
- Optical temperature sensor attached to the transformer can detect high temperature and take the transformer out of service



## PDSolution

Portable 4 Channel PD measurement system

PDSolution is a portable instrument for on-site partial discharge measurement. It is housed in a field rugged portable enclosure.

- 4 high speed (1.25 GHz) data acquisition channels that can be combined as one extra high speed (5 GHz) channel
- Suitable for use with HF/VHF/UHF PD sensors
- Selectable frequency band for background noise elimination
- Can distinguish multi-PD sources by time-frequency method
- Can Locate PD source with oscilloscope/spectrum analysis
- PRPD, frequency domain and time domain analysis



## PDLabS SC4001

Off-line partial discharge measurement system

PDLabS SC4001 is the off-line partial discharge measurement system specifically designed to be used in labs and R&D environments. It measures partial discharge per the IEC 60270 standard. The system's state of the art and flexible design makes it ideal for R&D, laboratory use, and for performing manufacturing tests.

- Built-in high and low pass filter for noise elimination
- High signal to noise ratio
- High speed ADC and computing power enables fast and accurate results
- Multiple operation modes: 2D/3D PRPD, Ellipse Display, 3D PRPS, PPS/PD modes
- Display up to 4 modes simultaneously for accurate and fast analysis
- FFT spectrum analysis function
- Expandable to 8 channels



## PDProbe

Handheld partial discharge measurement system

PD Probe is the latest development by PDS, allowing users to survey the presence of partial discharge in electrical apparatus. PD Probe is a useful tool in asset management for prioritizing the maintenance of HV/MV electrical apparatus.

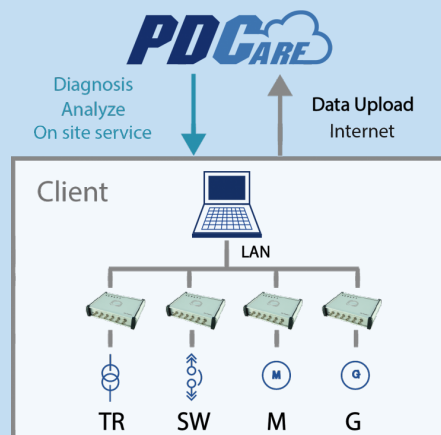
- Two channels :
  - Channel One :** Acoustic:  $150 \pm 2$  kHz, Ultrasonic:  $40 \pm 2$  kHz
  - Channel Two:** RFCT/TEV/UHF: 20-900 MHz
- Rechargeable: up to 8 hours of battery life
- Dual display : shows results of both channels simultaneously for accurate and quick analysis
- 3.5" back-lit color touch screen display

# PDCARE

## Software system for PD Monitoring of HV/MV electrical apparatus

The PDCare software system communicates with PD monitoring devices such as PDSimply, PDSimply portable, PDSurval, and PDSolution. The PDCare system allows users to monitor devices locally or remotely.

- Can monitor electrical apparatus for PD activity locally or remotely
- Works in all three communication modes: standalone mode, local mode and network mode.
- Periodical report presents up-to date operating conditions
- Remote or local alert notification if abnormal PD activity is detected
- Data access anytime with any smart device





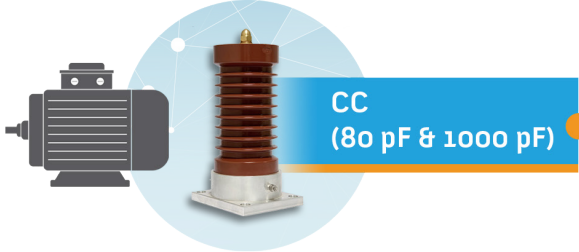
# Sensors

	Sensor	Application	Frequency Range
	TM	Cable Joints, Cable Terminations to HV/MV electrical apparatus	30 MHz - 900 MHz
	TEM	Switghear Monitoring	150 MHz - 1.2 GHz
	TEV	Switchgear Monitoring (mounted outside on the metal clad switchgear)	3 MHz - 100 MHz
	BMS	Bushing Monitoring	30 MHz - 900 MHz
	UHF DN 50	Transformer Drain Valve UHF Sensor	150 MHz - 1.2 GHz
	T10	Transformer Hatch UHF Sensor	150 MHz - 1.2 GHz
	GSS	GIS Spacer Sensor	300 MHz - 1.5 GHz
	HFCT	Generic PD Sensor	1.5 MHz - 20 MHz
	CC: 80 pF CC: 1000 pF	Generator Monitoring Coupling Capacitor	40 MHz 2 MHz

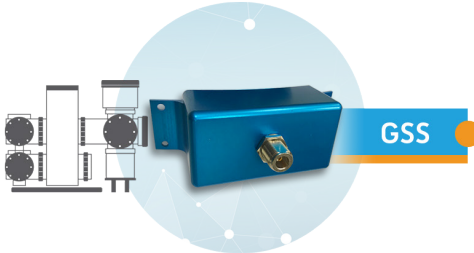
All sensors work with data acquisition units such as PDSimply, PDSimply portable, PDSurvival, PDSolution, PDProbe, and PDLabS. PDCare software system works with all installations for data analysis, retrieval and remote alerts.

# Applications

## Generator Monitoring



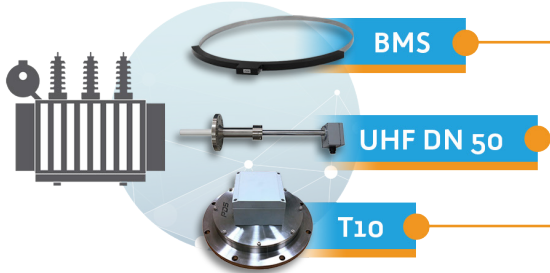
## GIS Monitoring



## Cable Termination Monitoring



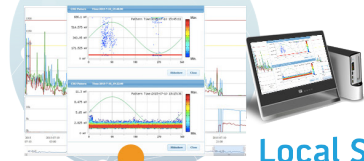
## Transformer Monitoring



## Switchgear Monitoring



## Data Acquisition



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