PDetector

Handheld Partial Discharge Detector

Advanced Handheld Partial Discharge Detector for Electric Power Equipment with Multi-Sensor and Cloud Diagnostic Technologies, Data Management Software, and Test Management App

PMDT

Solutions for Condition-Based Maintenance

Our Mission

Increase the operational reliability and safety of power systems globally.

Global Application

Our products and services have been widely adopted by major electric utilities and industrial end users throughout the United States and in a number of countries and regions such as Canada, Switzerland, Saudi Arabia, Colombia, China, Singapore, India, Malaysia, Indonesia, Vietnam, South Korea, Philippines, Thailand, Hong Kong, Taiwan, and more.

With our proven, high-quality products and complete solutions, we possess notable references in various industries like Oil & Gas, Metals & Metallurgy, Chemical, Power Industry Manufacturing, Electronics Manufacturing, Commercial Buildings, Government, and more.

Customer Oriented

Customer satisfaction is of the utmost importance for PMDT. We strive to provide increased operational reliability and safety of power systems and are devoted to providing superior user experiences and consistently reliable customer support.

We aim to pursue long-term strategic partnerships with our customers, and to create added value for them now and into the future.

About PMDT

PMDT provides solutions worldwide for condition-based maintenance to the power industry. Our company has knowledgeable and experienced personnel that utilize the most advanced resources for online testing. Over 20 years of ongoing research and development into power asset condition assessment aids for our wide array of diagnostic and monitoring systems for medium and high voltage substations.

Our headquarters and manufacturing facility is located in San Jose, CA, US, which provides local access to high quality American-made components. We provide reliable and robust equipment with state-of-the-art capabilities for online testing of energized power equipment.

PMDT meets ISO9001: 2008 Quality Management System requirements and our products have passed laboratory tests and inspections.

Certifications: UL and CE certifications.

PMDT continuously puts forth an abundant R&D investment to provide perpetually better solutions for condition-based maintenance programs.

PDetector

Handheld Partial Discharge Detector

The PDetector is an ideal device for On-Line Partial Discharge (OLPD) testing of MV and HV equipment which employs all 5 types of OLPD sensor technology: Ultra-High Frequency (UHF), Acoustic Emissions (AE), Ultrasonic, High Frequency Current Transformer (HFCT), and Transient Earth Voltage (TEV). The information from multiple sensors gives the PDetector the versatility to detect all types of PD in all types of substation apparatus. The exact type of PD activity can be determined effectively using multiple on-screen data spectrum analysis. The PDetector greatly simplifies and standardizes the routine OLPD testing procedure by using the intelligent patrol function, the App, and the PMDTCloud. It is a very powerful and helpful tool for substation operators to conduct routine testing in a substation quickly, to determine what the issue is, and where it is located.

Applications

- MV & HV Switchgear
- Transformers
- Power Cables
- Gas Insulated Switchgear (GIS)
- And Other Equipment

Certifications

c UL us LISTED E468313

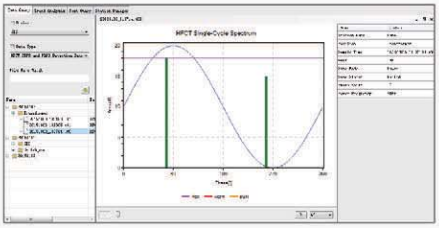
CE

Main Features

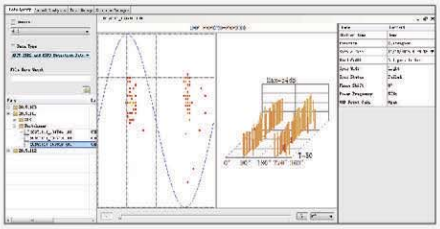
- Employs 5 types of online PD sensor technologies
- PRPD, PRPS, Single-Cycle, Phase, Waveform, and Amplitude spectrums to determine PD types
- Wireless connection to UHF and HFCT sensors
- Power/light frequency synchronization
- Intelligent Patrol Function to create a test task with a set standard test procedure to improve test efficiency
- RFID asset tagging on power equipment to standardize the field OLPD testing procedure to greatly improve test efficiency and achieve asset management
- One-key data saving and simple operation, ideal for quick PD testing for a whole substation
- The PDetector has WI-FI capabilities. It can communicate with the PMDTCloud via the PDetector App, download the test task, and upon finishing testing, it also can upload the test data to the PMDTCloud. The PMDTCloud can give the diagnostic result by using the deep learning algorithm programmed into the PMDTCloud itself.
- Records up to 5 minutes of video while in the PRPS/PRPD Detection Modes of the UHF/HFCT Sensors
- PC-based data management software with automatic report generation function in JPEG/MS Word/PDF formats
- On-board data storage
- Environmentally friendly and supports paperless testing

Multiple Detection Modes and Data Spectrums Used to Determine the PD Type

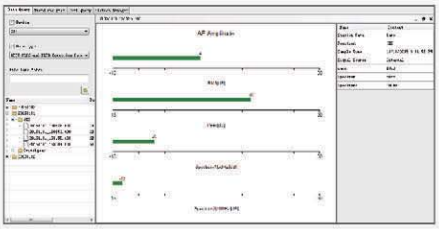
The core issue for analyzing the severity of the PD signal is to first determine what type of PD signal it is. PMDT utilizes PD type determination technique based on time domain spectrums. Each PD type has a typical characteristic which is useful in determining the PD's developing progress and critical level. The PDetector provides multiple kinds of data spectrums which are useful for data analysis and determining PD types.



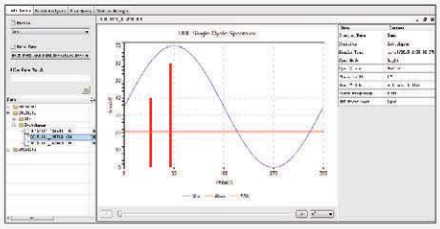
HFCT Single-Cycle Spectrum



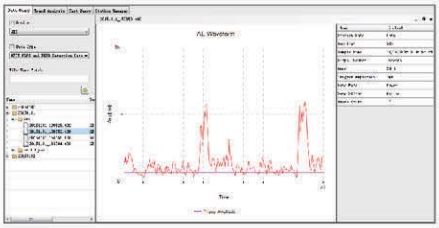
UHF PRPD-PRPS Spectrum



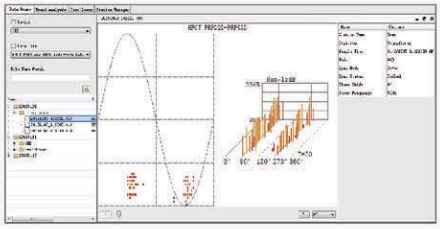
AE Amplitude Spectrum



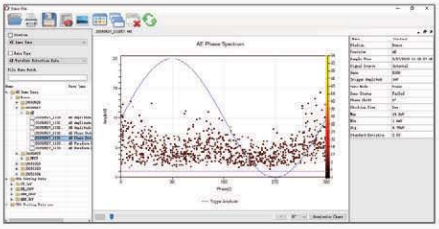
UHF Single-Cycle Spectrum



AE Waveform Spectrum



HFCT PRPD-PRPS Spectrum



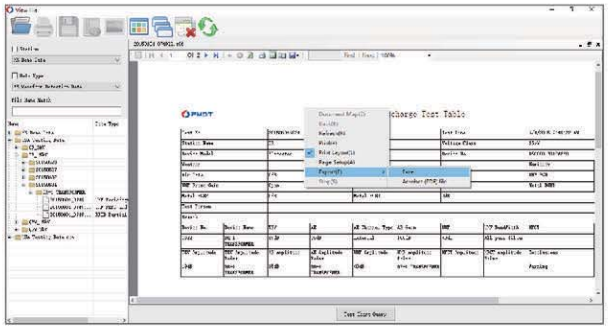
AE Phase Spectrum

Data Management Software

The PDetector data management software is a powerful, PC-based tool that stores, manages, and analyzes the test data.

Main Features

- Builds a network tree which includes all of the monitored assets.
- Generates analysis and management reports in JPEG/MS Word/PDF formats automatically.
- Manages historic data and produces PD trends.



Wireless Sensor Connections and Frequency Synchronization

Wireless Sensor Connection

The most convenient feature of the PDetector is the wireless connectivity of the UHF and HFCT sensors. The sensors are equipped with wireless signal processors that transmit the test data wirelessly to the PDetector main unit.

Light Frequency Synchronization

Not only do the signal processors allow for wireless transmission of the UHF and HFCT sensor signals to the PDetector, but they can also reference the frequency of the power supply through a light sensor on the signal processors. This allows you to synchronize your signals up to the actual frequency, instead of having it fixed at either 50 or 60Hz.

Wireless Power Frequency Synchronization

Additionally, the USB charger also functions as a wireless transmitter of the local power frequency to the main handheld unit. Simply plug the charger into an outlet which is fed by one phase of the power system under test. The PDetector automatically detects and synchronizes the UHF/HFCT Single-Cycle, PRPD, and PRPS spectrums with the referenced local power frequency.

The frequency synchronization functions have enhanced the resolution of the PDetector and given us the ability to determine the exact type of PD activity.

Improve Test Efficiency and Condition-Based Asset Management with the Intelligent Patrol Function

Are you still performing OLPD testing the traditional way? Spending an extensive amount of time testing all the power equipment in the substations and recording the data by pen and paper?
PMDT presents new, intelligent OLPD testing methods that will truly simplify your testing process!

Routine Patrol - Efficient OLPD Testing

Create Test Jobs

Create a new test job with all test points in a list on the App/PMDTCloud/PC-Based software and download it to the PDetector main unit.

Patrol the Substation and Test for PD Efficiently

Patrol the substation and test each programmed test point for the power equipment; the test data is then stored in the onboard memory.

Data Management, Analysis, and Report

Upload the test data to the PMDTCloud/PC-Based software after all tests are completed for data management and analysis.

RFID Patrol - The Most Accomplished OLPD Testing and Asset Management Technique

The PDetector provides an innovative PD asset management solution via RFID tagging based on the Internet of Things. With the RFID Patrol program, the OLPD testing procedure is standardized; thus, PD testing efficiency is greatly improved, data flow and accuracy are ensured, and your power assets are better managed.

Create Electronic IDs for Your Power Assets via RFID Tagging

The RFID tags can be affixed to your power assets and store the power equipment information such as asset name, asset ID #, substation name, and provides prompts for the appropriate tests for that asset. Each test is recorded with a unique test ID number and date/time stamp to ensure reliability, consistency, and credibility.

RFID Patrol Function - Provides Efficiency by Utilizing the Internet of Things

Following the routine patrol procedure to perform field testing will vastly improve the testing efficiency. Use the PDetector to scan the RFID tags and it will obtain the asset's information automatically. All the test data will then be imbedded with the asset's information after the scan is complete. This allows the system to automatically identify and link the data to each specific asset.

Dedicated to Asset Management

Achieves accurate management of the asset's ID, physical status, and test point information. Standardizes the field OLPD testing procedure and retains the PD test data accurately, consistently, and comparably.

Test PD Environmentally-Friendly

Eliminates the need to write down all the asset information and test data with the paperless OLPD testing realized with PMDT's innovative RFID function.

** Note: The Intelligent Patrol function is supplied with the PDetector. The RFID tags are additionally priced and programmed for your custom application. Please inquire for more information.*

Configurations

Hardware & Software Configurations	■ Main Unit ■ Internal TEV Sensor ■ Internal Ultrasonic Sensor ■ UHF Sensor with Wireless Signal Processor ■ HFCT Sensor with Wireless Signal Processor ■ AE Contact Sensor ■ Ultrasonic Parabolic Dish with Laser Sight ■ Ultrasonic Extension Wand ■ PDetector Software
Standard Accessories	■ TEV Function Checker ■ Vacuum Grease for the AE Contact Sensor ■ Magnetic Holder for the AE Contact Sensor ■ Basic Headphones ■ Battery Charger with Sync. ■ Mini USB Cable ■ Coaxial Cables for UHF and HFCT Sensors ■ Carrying Case ■ Software Dongle

Six Recommended Kits Configured with Optional Combinations of TEV, Ultrasonic, AE, UHF, and HFCT Sensors

Config.	Application	Internal TEV	Internal Ultrasonic	AE Contact	UHF	HFCT	Ultrasonic Parabolic Dish	Ultrasonic Extension Wand
Kit 1	**Multi-Function, Five-in-One,** for GIS, MV Switchgear, Power Cables, and Transformers	√	√	√	√	√	√	√
Kit 2	**TEV/Ultrasonic, Two-in-One,** for MV Switchgear	√	√					
Kit 3	**TEV/Ultrasonic/AE, Three-in-One,** for GIS, MV Switchgear, Cable Accessories, and Transformers	√	√	√				
Kit 4	**TEV/Ultrasonic/UHF, Three-in-One,** for MV Switchgear	√	√		√			
Kit 5	**TEV/Ultrasonic/AE/UHF, Four-in-One,** for GIS	√	√	√	√			
Kit 6	**TEV/Ultrasonic/AE/HFCT, Four-in-One,** for Transformer	√	√	√		√		

* Configurations and functions are customizable upon your request.

Technical Specifications

Main Unit	
Display	LCD screen
Dimensions	7.3" x 4.3" x 1.4" 185mm x 110mm x 35mm
Weight	1.05 lb / 0.48 kg
Communication	WI-FI/USB

Internal TEV Sensor	
Bandwidth	3MHz~100MHz
Measurement Range	0dB~60dB
Resolution	1dB
Accuracy	±1dB
Max Number of Pulses/Cycle	2000

AE & Ultrasonic Sensors	
Bandwidth of the AE Contact Sensor	20kHz~300kHz
Center Frequency of the Ultrasonic Sensors	40kHz
Measurement Range	-10dB~70dB
Resolution	1dB
Accuracy	±1dB

External UHF Sensor	
Bandwidth	300MHz~1.5GHz (Customizable between 100MHz~2.0GHz upon request)
Measurement Range	0dB~70dB
Resolution	1dB
Accuracy	±1dB
Filters	All pass, low pass, and high pass
Communication	Wireless communication with the detection unit

HFCT Sensor	
Bandwidth	3MHz~50MHz (Customizable between 500kHz~80MHz upon request)
Measurement Range	0dB~80dB
Resolution	1dB
Accuracy	±1dB
Communication	Wireless communication with the detection unit

Environmental	
Operating Temperature	32°F~131°F / 0°C~55°C
Humidity	0-90% RH non-condensing
IP Rating	55
Certifications	CE and UL certified, IEC 62478 and EN 61010-1 compliance

Power Supply	
Internal Battery	Lithium-ion
Operating Time	Approx. 6 hours

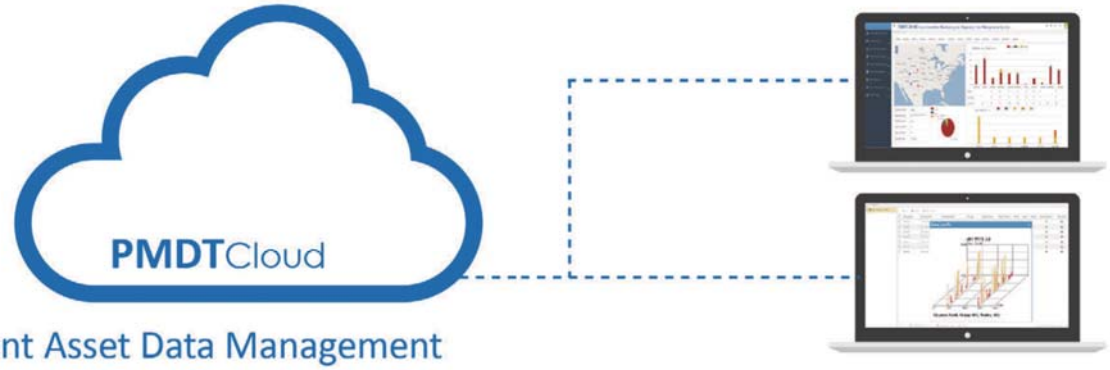
Battery Charger & Synchronizer	
Input	85V~264V AC, 50/60Hz
Output	5V DC 1A

Global Testing Experiences

PMDT's unique experiences consist of over 20 years of R&D combined with many years of field work: testing PD and Infrared for over 180,000 various power assets in thousands of substations globally for a variety of electric utilities, industrial end users, and power equipment manufacturers. PMDT has the expertise needed to provide the best Condition-Based Maintenance Programs for your power assets.

The PMDT Solution

Solutions for Condition-Based Maintenance

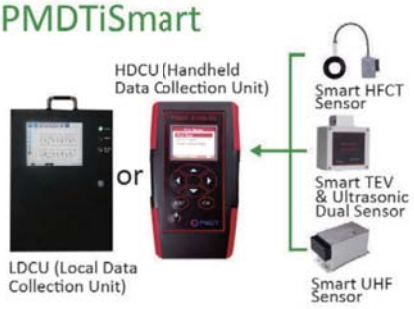


Intelligent Asset Data Management

Detection and Monitoring

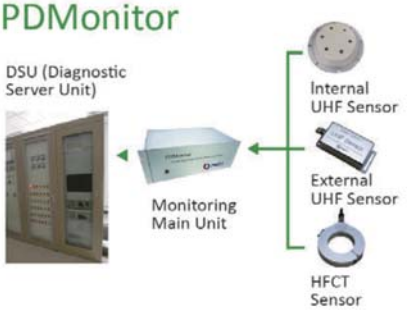
Online PD&IR Testing

PMDTiSmart



Wireless Autonomous Online PD Testing

PDMonitor



Permanent Online PD Monitoring

Diagnostic and Location

Online PD Diagnostic and Location

Online PD Expert Diagnostic and Location

Short-Term Online PD Monitoring for Critical Assets

Solutions for
Condition-Based Maintenance

Power Monitoring and Diagnostic Technology Ltd.

6840 Via Del Oro, Suite 150
San Jose, CA 95119, USA

Tel: +1 (408) 972-5588
Fax: +1 (408) 972-5678
Email: sales@powermdt.com

www.powermdt.com

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