

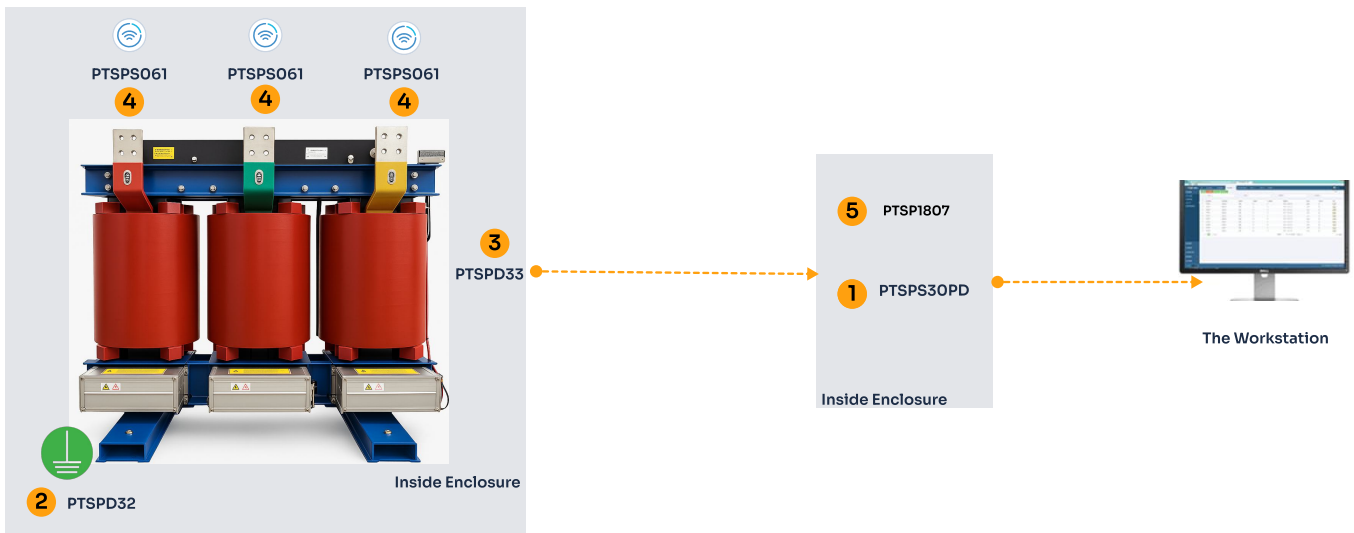
PTSDTX Dry Transformer AI Partial Discharge Monitoring Solutions

Product Overview

The PTSenR™ PTSDTX Dry Transformer AI Partial Discharge Monitoring Solutions for Dry-Type Transformers is a compact, high-performance solution that enables continuous online monitoring of partial discharge activity across mission-critical infrastructure.

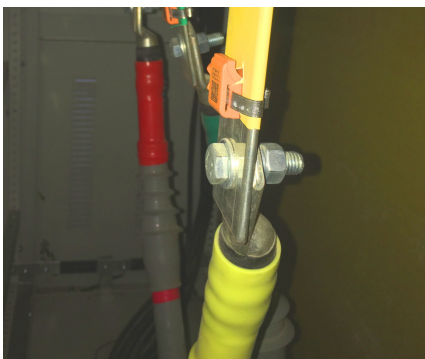
Built for cast resin transformers, it combines advanced sensor technology, intuitive software, and predictive analytics to detect insulation degradation before faults escalate. With proven deployment in sectors such as energy, semiconductors, and industrial manufacturing, it offers a reliable safeguard against downtime, while extending transformer life and reducing maintenance overhead.

System Architecture



Installed Sensors

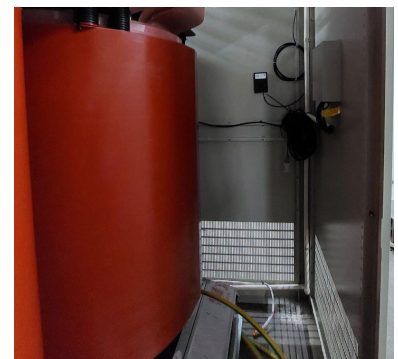
PTSPS061 - EH Temperature Sensor



PTSPD32 - iHFCT Sensor



PTSPD33 - iUHF Sensor



System Architecture & Components

The PTSDTX™ system is modular and site-adaptable, featuring:

- 1. PTSPS30PD:** The PTSPS30PD DAU features a compact design with customizable 4-16 channels input, built-in local alarm indicators, and advanced risk management driven by an internal algorithm for efficient partial discharge monitoring and streamlined installation.
- 2. PTSPD32:** The PTSPD32 iHFCT PD Sensor, featuring a minimized-contact design, is mounted on the iron core ground wire of dry-type transformers and offers a wide frequency range with superior low-frequency noise filtering, delivering high sensitivity for early detection of partial discharge in power cables and transformers.
- 3. PTSPD33:** The PTSPD33 iUHF Sensor offers Internal PD Sensor (magnetic) non-intrusive installation and superior noise immunity against harmonics and corona discharge, enabling early detection of weak partial discharge activity, while its IP65-rated encapsulation ensures enhanced durability in dusty and wet environments.
- 4. PTSPS061:** The PTSPS061 Energy Harvesting Wireless Temperature Sensor offers battery-free, wireless protocol communication for reliable, isolated temperature monitoring in high-voltage switchgear. With 20 years of technical refinement, it delivers exceptional stability, compact design, and zero-maintenance performance across global industrial applications.
- 5. PTSP1807:** The PTSP1807 Wireless Communication Gateway enables efficient, low-power data transmission across RS485, fiber, and Ethernet interfaces. Its high integration and signal conversion capabilities ensure real-time industrial monitoring with superior reliability and interference resistance.



Additional accessories include vibration sensors and expandable integration with external diagnostic equipment.

Characteristics

The system features non-intrusive UHF and HFCT sensors with superior sensitivity to detect weak PD signals amidst noise-heavy environments. Installation is quick and versatile – ideal for both new setups and retrofit applications.

High-frequency filtering and multi-channel data acquisition ensure diagnostic accuracy, while fiber optic communication enables seamless long-distance transmission.

A robust Windows-based software package empowers users with visualization, reporting, and SCADA integration. IP-rated hardware encapsulation ensures durability across challenging conditions, making PTSDTX™ a proven ally in transformer risk management.



Types of Partial Discharge in Dry-Type Transformer

Dry-type transformers are vulnerable to insulation faults that emerge as partial discharge activity. These discharges act as early warning signals of internal deterioration, and they typically manifest in three distinct forms:

- **Needle Tip Corona Discharge:** Caused by micro-burrs on conductor surfaces, this phenomenon results in electric field distortion during high-voltage operations, compromising internal winding insulation.
- **Surface Discharge:** When coil spacing or insulation margins between windings and ground are insufficient, surface discharge can occur. Accumulated dust or metallic debris further intensifies localized field strength, increasing discharge risk.
- **Internal Air Gap Discharge:** Improper winding casting or coil structural imbalance creates internal air pockets, generating discharge zones that escalate insulation degradation if left undetected.

Monitoring Methodology – Ultra High Frequency (UHF) Detection

PTSenR PTSCTX™ utilizes the UHF detection method to capture PD signals with superior precision. Unlike traditional pulse current, gas chromatography, or light-based methods, UHF detection offers:

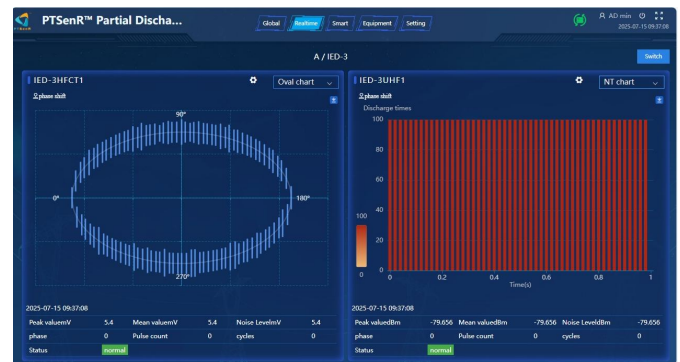
- Strong noise immunity by avoiding interference-prone frequency bands
- Capability to carry a broader spectrum of PD data
- Enhanced accuracy in identifying discharge characteristics under varying transformer conditions

VizionEye AI Diagnostic Software Suite

VizionEye™ windows-based software enables full configuration of instrumentation, automated data downloads, historical analysis, and visual insight tools. Designed for switchgear, cables, and dry-type transformers, it supports intuitive PD signal interpretation and real-time fault classification making it a versatile solution for continuous insulation health management.



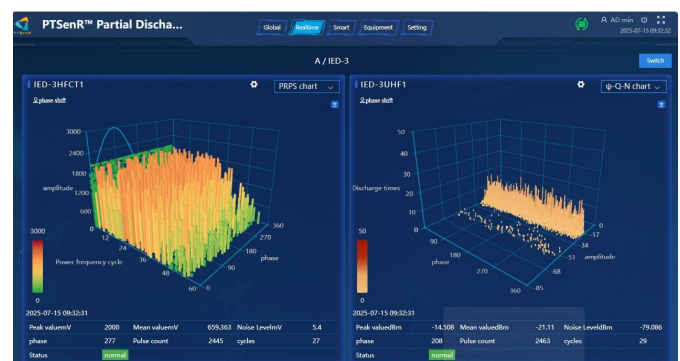
Discharge Rate & QT Chart



Oval & NT Chart



PRPD & NT Chart



PRPS & Q-N chart

Specifications

PTSPS30PD AI DAU	
No. of Acquisition Channels	4 ~ 16 Channels
Power Supply Mode	DC 5 V
Sampling Rate	≥ 100 MS/s
Sensor Connection	BNC
Communication Mode	Network Port
Communication Protocol	Modbus
Operation Temperature	-20°C - +75°C
Installation	DIN Rail Type
Dimension	166.4 x 119 x 46.5 mm
PTSPD32 PTSenR Intelligent HFCT PD Sensor	
PD Measurement Frequency	3 MHz - 30 MHz
Material	Aluminium Alloy
Average Transmission Impedance	10 mV/mA
Operation Temperature & RH	-45°C - + 80°C; < 95%
Aperture	Ø 54
Output Terminal	SMA
Installation	Clamp-on (Open Type)
Dimension	132.5 x 135.4 x 30 mm
PTSPS33 PTSenR Intelligent UHF PD Sensor	
PD Measurement Frequency	300 MHz - 1500 MHz

UHF Sensitivity	≤7 V/m
Connector Type	SMA Connector
Protection Level	IP 65
Housing	Aluminium Alloy Shell
Ambient Temperature	-40°C - +80°C
Installation Mode	UHF (magnetic)
Dimension	120 x 80 x 25.6 mm
PC	
Operating System (OS)	Microsoft Windows
Specification	Regular
VizionEye AI Software Partial Discharge System Software	
Measuring Mode	Real time, Event, Trend
Display	Real time data display (PRPD / PRPS / 2D / 3D) Event data display (PRPD / PRPS / 2D / 3D) Trend data graph (daily / weekly / monthly)
Expert PD Analysis	Programmable alarm criteria Warning of PD activity Automatic communication of warning/alarm condition Report generation (daily/weekly/monthly) Data stored on local or could

Customer Benefits

- **Streamlined Monitoring for Enhanced Reliability:** A unified online solution minimizes the risk of costly equipment failure and supports extended transformer life cycles through proactive fault detection.
- **Precision Fault Detection for Uninterrupted Operations:** Advanced diagnostic capabilities ensure accurate monitoring, boosting operational stability and significantly reducing power disruptions.
- **Data-Driven Maintenance Optimization:** The system's high-accuracy equipment status reporting empowers data-backed decisions, cutting maintenance costs and improving asset management efficiency.

Applications

PTSDTX™ systems have been widely adopted in critical infrastructure such as:

Chemical Processing Plants



Electronic Manufacturing



Wind farms

