

Intelligent UHF Sensor for Partial Discharge Monitoring



Product Overview

The UHF sensor is a critical component in Ultra High Frequency (UHF) Partial Discharge (PD) measurement systems, serving as the primary device for capturing electromagnetic signals generated by PD activity. These signals are subsequently processed and analyzed to assess insulation conditions and detect potential defects. As a result, sensor performance directly impacts the accuracy, sensitivity, and reliability of the overall PD detection system.

The PTSenR™ Intelligent UHF Sensor incorporates a broadband antenna specifically optimized for the UHF frequency spectrum associated with partial discharge emissions. The sensor is designed with robust mechanical adaptations to facilitate installation on power transformers, ensuring reliable signal acquisition in demanding operating environments.

To accommodate various monitoring requirements, the PTSenR™ Intelligent UHF Sensor is available with two mechanical adaptation options for internal PD detection, enabling flexible integration into different transformer designs and installation configurations.

Key Features & Benefits

1. High Sensitivity

- Up to 3X higher sensitivity compared to conventional UHF sensors
- Electromagnetically shielded design to minimize external interference
- Reliable detection of low-level partial discharge signals

2. Modular Design

- Compatible with a wide range of transformer types and ratings
- Simple and efficient installation process
- Ideal for both new installations and retrofit applications
- Supports modernization and upgrade of legacy equipment

3. Early Fault Detection

- Continuous monitoring for early detection of partial discharge activity
- Enables condition-based asset management strategies
- Supports in-service diagnostics without disrupting transformer operation
- Helps reduce unplanned outages and maintenance costs

4. Customization Available

- Backed by extensive industry experience and application expertise
- Custom mechanical and electrical configurations available upon request
- Flexible solutions to meet specific transformer and project requirements

Benefits

- Improved reliability of transformer condition assessment
- Enhanced asset performance and operational safety
- Early identification of insulation defects and developing faults
- Reduced maintenance risk and life-cycle costs

Two Type of Intelligent UHF Sensor

A. Intelligent UHF Drain Valve Sensor

The PTSDVSPD Intelligent UHF Drain Valve Sensor is designed for power transformers equipped with standard drain or gate valves. Installed directly through the drain valve, it enables reliable detection of internal partial discharge (PD) signals using UHF technology.

For optimal performance and compatibility, straight-through gate valves are recommended for new transformer installations.

Key Features

- Compatible with standard drain/gate valves
- High-sensitivity internal UHF PD detection
- Non-intrusive installation through existing valve interfaces
- Suitable for new and retrofit transformer applications
- Robust design for harsh substation environments



PTSDVSPD

B. Intelligent UHF Bushing Window Sensor

The PTSPDG63 Intelligent UHF Bushing Window Sensor is designed for internal partial discharge (PD) monitoring in power transformers. The sensor is mounted directly on the transformer tank wall through an integrated dielectric window, enabling efficient detection of UHF signals generated by PD activity.

It is ideally suited for new transformer installations and transformers undergoing refurbishment or repair, providing high-sensitivity PD detection for continuous condition monitoring and early fault diagnosis.

Key Features

- Direct tank-wall installation
- Integrated dielectric window for efficient UHF signal transmission
- High-sensitivity internal PD detection
- Suitable for new and refurbished transformers
- Supports continuous online monitoring and diagnostics



PTSPDG63

The PTSenR™ Intelligent UHF sensor provides a reliable solution for continuous transformer condition monitoring and early fault detection.

Specifications

Type	PTSDVSPD	PTSPDG63
Application	Indoor or Outdoor	Indoor or Outdoor
Bandwidth	300 ~ 2000 MHz	300 ~ 2000 MHz
Sensitivity	-80 dBm	-80 dBm
Load Impedence	50 Ω	50 Ω
Measurement Accuracy	0.1 dBm	0.1 dBm
Connector Type	N-Type	N-Type
Average Height	>12 mm	>12 mm
Material	304 Stainless Steel (External and Built-in Outlet)	6061 Aluminum Alloy (Built-in Housing)
Protection Level	IP 65	IP 65
Design Life	>50 years	>50 years
Operating Temperature	-25 ~ +65 °C	-25 ~ +65 °C
Storage Temperature	-20 ~ +95 °C RH 95% non-condensing	-20 ~ +95 °C RH 95% non-condensing