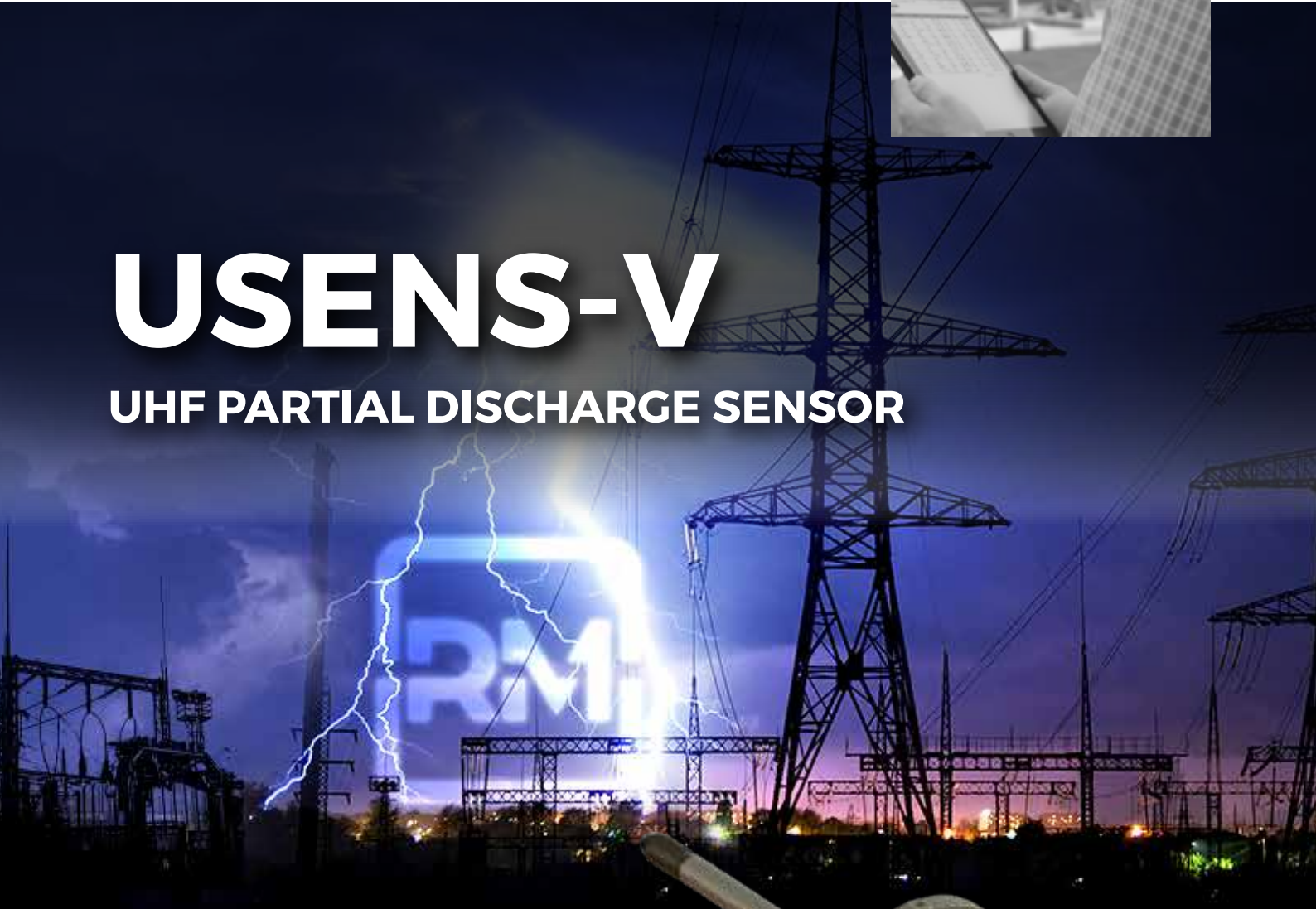




# USENS-V

## UHF PARTIAL DISCHARGE SENSOR

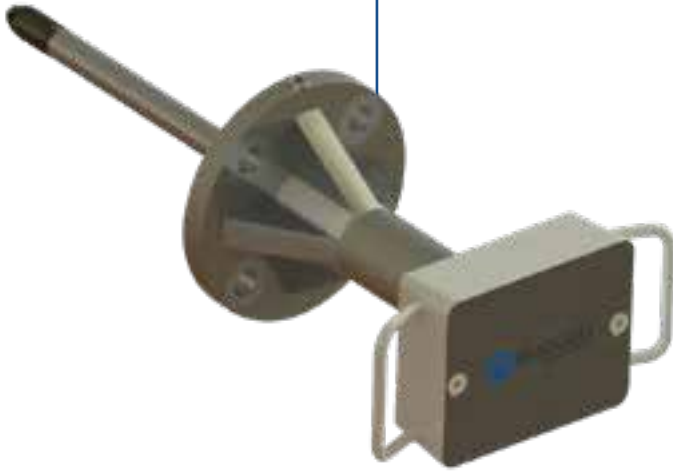


Highly sensitive and accurate  
Partial Discharge sensor for measuring  
ultra-high frequency signals emitted by partial  
discharge activity inside Transformers.



# USENS-V

## Sensors for Transformer and GIS UHF Partial Discharge Sensor



- **Wide band, Highly Sensitive, UHF PD Sensors for Transformer Drain Valves**
- **High Dielectric, Rugged, and Reliable design**
- **Built-in overvoltage (transient) protection**
- **Shielded to avoid electromagnetic interface**
- **100% Leak proof and pressure tested for 10 bar**
- **Suitable for extreme environment, Outdoor Substation**
- **Customized according to Transformer Drain Valve design**

UHF PD sensing technology has proved to be the best technology in detecting partial discharge activity inside transformer tank and real time monitoring of PD activity. Rugged Monitoring has developed the most advanced UHF PD sensor for Transformers, capable of detecting smallest PD signals.

USENS-V is an Ultra High Frequency (UHF) antenna that can detect smallest UHF frequencies emitted by the partial discharge (PD) activity. The sensors are suitable for all types of Transformers and can easily be installed on the transformer drain valves. The IP65 rated ingress protection allows sensor to be installed at Outdoor installations. Their wide band (200 - 2000 MHz) frequency response and high sensitivity (up to -90dBm) enables lower cost of PD monitoring system and higher ROI (Return on Investment).

Rugged Monitoring USENS-V is designed to fit into most of the Transformer Valves and all voltage levels. The sensors can also be customized according to Transformer Valve design and customer technical requirements. The sensors come with built-in overvoltage protection and N-type connection. The sensors can be connected to any UHF based PD monitoring system regardless of manufacturers.

**Highly sensitive and accurate Partial Discharge sensor for measuring ultrahigh frequency signals emitted by partial discharge activity inside Transformers.**

### Applications

- Continuous Online Partial Discharge Monitoring
- Periodic Partial Discharge Testing and Measurements
- High Voltage Testing during Commissioning
- Power Transformer PD Testing and Monitoring
- Reactor PD Testing and Monitoring
- Distribution Transformer PD Testing and Monitoring

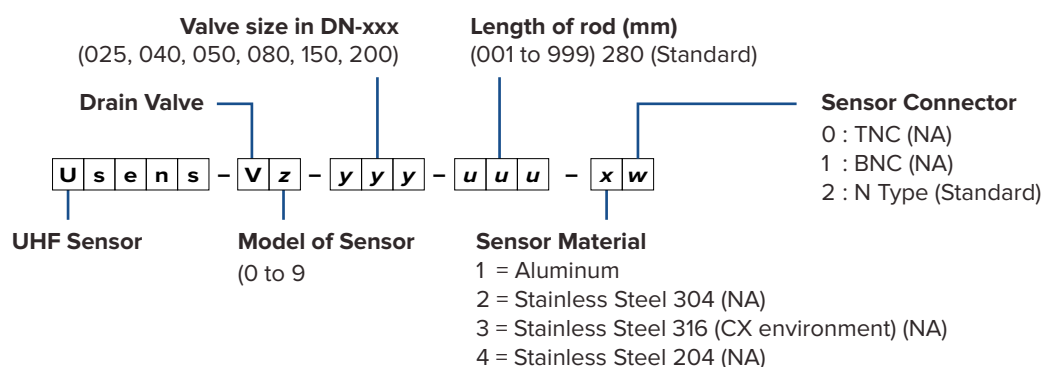
## Benefits

- Higher sensitivity (-90dBm) ensure higher ROI of monitoring
- Wide frequency response, compatible with all PDM systems
- Easy installation and High Dielectric strength, Safest Sensors
- Shielded Sensor, Noise Immunity
- Built-in overvoltage protection keeps the PDM electronics safer
- IP68 protection and rugged design, suitable for outdoor installations
- Leak proof sensors enables safety and 0% oil leakage
- Customizable according to Transformer Valve design and customer requirements

## Technical Specifications

|   |  |
|---|--|
| UHF Frequency Response                          | 200 - 3000 MHz                                       |
| Sensitivity                                     | up to -90 dBm  |
| Average Effective Height over 500MHz – 1500MhHz | 15 mm+   |
| Min Effective Height over 500Mhz – 1500Mhz      | 6 mm+  |
| Withstand Voltage                               | up to 1500 kV  |
| Output  | N-Type connector; Customized option available        |
| Connector Circuit Impedance                     | 50 $\Omega$  |
| Pressure Testing                                | up to 10bar  |
| Vibration Testing                               | Suitable for HV - Transformer applications           |
| Ingress Protection (IP)                         | IP68   |
| Ambient (Operating Temperature)                 | -60 °C to +150 °C                                    |
| Storage Temperature                             | -60 °C to +150 °C                                    |
| Operating Humidity                              | 95% humidity at 50 °C                                |
| Dimensions                                      | Customized as per Transformer Valve design           |
| Weight  | app. 2.0 KG; Customized as per customer requirements |
| Install Position                                | Inside drain valve of Transformer                    |
| Signal Cable                                    | Very low attenuation UHF (Coax) cable                |

## Ordering Code



# Asset Monitoring : Enterprise Architecture

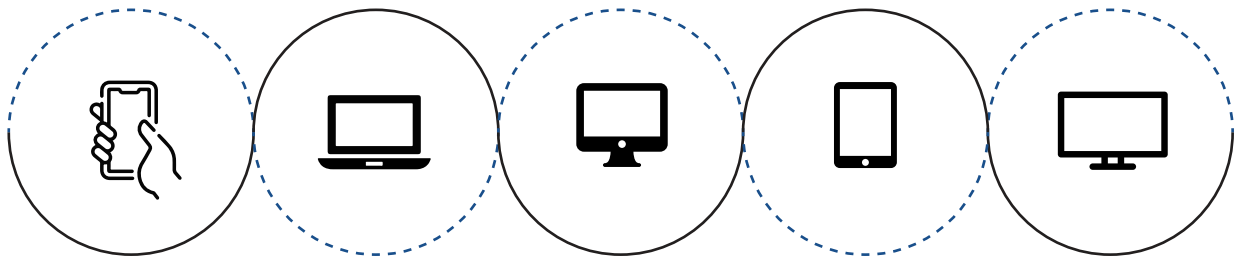
Compatible with Rugged Monitoring Enterprise Solution

## UI/UX



- Data Layer
- Analytics
- User Interface
- Custom Dashboards
- Reporting
- Email/SMS Notifications

## RM EYE



Private Cloud (Customer Cloud),  
Rugged Monitoring Cloud

**IEC 60870-104**

**IEC 61850**

**FTP/SFTP**

- XML, JSON

- CSV, COMTRADE



**Data Collection**

**ODBC**

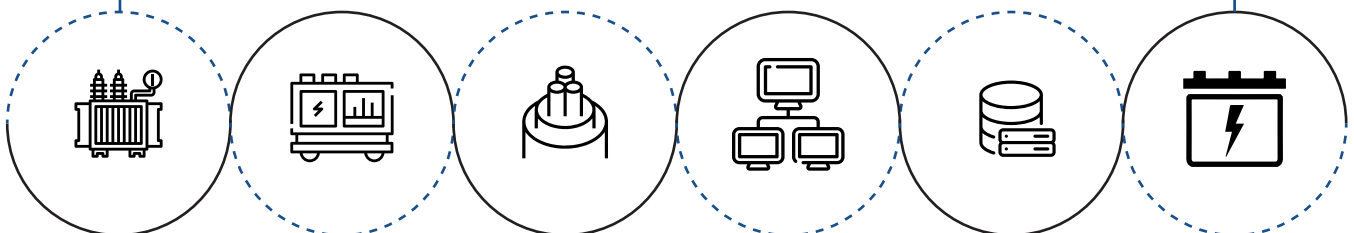
**MODBUS**

**DNP 3.0**

**HTTPS**

**MQTT**

## Asset Data



Transformer  
Monitoring  
System

Switchgear  
Monitoring  
System

Power Cable  
Monitoring  
System

- Offline Test Results  
- Inspection Records  
- Name Plate

- Historian  
- CMMS  
- SCADA/ DCS

Power Electronics  
(Battery, UPS,  
VFD, Relay)

# One Solution for Advanced Asset Performance Management System

Manage different industrial assets on one platform without human intervention

## Features

- **Advanced and Exceptional Reporting** Technology with automated alerts
- **Modern remote monitoring solutions** provide valuable insights to Multiple Assets at Multiple Sites on real-time
- **Robust asset health monitoring** with analysis and recommendations support asset effectiveness in addition to maximizing equipment uptime
- **Establish a real time and consistent monitoring** by getting the right information into right hands
- **An efficient, reliable partial discharge monitoring** for all the assets
- **A detailed comprehensive DGA Analysis**
- **Lifetime Consumption details.**
- **Built on well-established remote and cloud-based monitoring technology**
- **Simple user-friendly interface** providing fast access to all the features and commands
- **Quick and easy 1 step configuration setup**
- **Encompasses a secure access to data and configuration**
- **Advanced asset algorithms** based on standard ones with new ideas
- **Systematic fleet management and analysis**
- **Extended multilingual support** to handle product inquires or troubleshoot problems proactively
- **Up System Level Reporting**
- **Industrial IoT**

## Features Specific to PD Monitoring

- Partial Discharge monitoring and Analysis
- PRPD : Phase resolve partial discharge
- Partial Discharge Amplitude and Discharge rate trend analysis
- Partial Discharge Fault localization
- Artificial Intelligence based PD fault Identification
- Realtime PD Alarm system
- Get Alarm notifications for individual bushing parameters over Email, sms and push notifications
- Analytics on Online, and offline partial discharge test data



# Why Customers Choose Us?

RM solution, the trusted monitoring solution for over 10000+ assets across 50+ countries. We are a leading High Value Electrical Asset Monitoring Company integrating fibre optic technology to the assets.



## Attention to Detail

It's our attention to the small stuff, scheduling of timelines and keen project management that makes us stand out from the rest.



## A plan for Success

Our Customers are well satisfied with the advisory services that we offer to help them with best in class technological performance and a long durable life.



## Experts only

We bring in our diversified experienced team with over 100+ years of experience in Asset Monitoring



## Meeting Deadlines

Work with us, and you'll work with seasoned professionals – vigilant of deadlines, and committed to exceeding client expectations.



## Money Matters

We protect you against currency fluctuation with competitive and fair market prices



## Rugged Monitoring Services

Rugged Monitoring provides customization of sensors, monitors & software. In addition we offer on-site commissioning services, maintenance contracts and technical support to all customers worldwide.

## About Rugged Monitoring

Industry's leading team of asset condition monitoring experts with 100+ years of combined experience committed to delivering customizable solutions for challenging applications. We offer a range of reliable, high performance, customizable sensors and monitoring solutions that are immune to external influence.

# Certification



ISO 9001



ISO 14001



ISO 45001/  
OHSAS 18000



Lloyd's  
Register



ATEX  
Certification

## Our Presence Across the Globe



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