PD-SGS
On-line PD Detection of HV Assets

PD Detection

Switchgear – Air Insulated (AIS)
Partial Discharge activity inside metal clad high voltage plant induces small voltage impulses called Transient Earth Voltages on the surface of the metal panels. TEVs travel around the surface to the outside of the switchgear, where they can be picked up externally using the PD Detector.

Defects on the surface of high voltage insulators are prone to a phenomenon known as surface tracking. Tracking causes carbon deposits that build up over time, ultimately leading to flashover and insulation failure. The PD Detector is highly sensitive to the ultrasonic emissions produced by tracking and enable the onset to be detected before insulation failure.

Switchgear – Gas Insulated (GIS)
IPEC’s UHF (Ultra High Frequency) sensor is used to detect PD in EHV cable terminations, GIS (Gas Insulated Switchgear), GIL (Gas Insulated transmission Lines) & GIT (Gas Insulated Transformers). The sensors pick up signals in the UHF range (200MHz-2.0GHz) and are mounted against the insulating barrier spacers that separate components of the HV asset.

Cable
Partial discharge activity in solid high voltage insulation induces small high frequency currents in the earth conductor of the electrical system. These impulses travel along the equipment earth to the substation earth. Using a high frequency current transformer, they can be detected as they pass through the CT.

The Benefits
- **Advanced Noise Rejection** – System detects PD in higher noise environments, reducing the possibility false positives
- **PRPD** – PRPD display allows user to distinguish between PD and Noise
- **Rapidly survey whole substation** – detects MV and HV problems before developing into tangible failure risks

Compatible Sensors & Asset Types

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# Technical Specification

## PD-SGS

### TEV Measurements
- **Measurement Range**: 0 to 80dBmV
- **Measurement Bandwidth**: 3 to 200MHz (with FM Bandstop)
- **Resolution**: 1dB (Accuracy ±1dB)
- **Noise Rejection**: Yes, with PRPD

### Ultrasonic Measurements
- **Measurement Range**: -6dBμV to +68dBμV
- **Resolution**: 1dB (Accuracy ±1dB)
- **Transducer Sensitivity**: -65dB (0dB = 1volt/μbar RMS SPL)
- **Transducer Centre Frequency**: 40 kHz

### HFCT Measurements
- **Measurement Range**: 0 to 50,000pC
- **Measurement Bandwidth**: 100kHz to 70MHz
- **Resolution**: 5pC (Accuracy ±5pC)

### UHF Measurements
- **Measurement Range**: 0dB-75dB
- **Resolution**: 1dB (Accuracy ±1dB)
- **Bandwidth**: 200MHz – 2.0GHz

### Hardware
- **Enclosure**: Injection moulded plastic case
- **Control**: Membrane keypad
- **Connectors**: Power, Headphones and optional sensors
- **Display**: OLED with level LEDs, dB, PRPD, Noise

### Operating Environment
- **Operating Temperature**: 0°C to 60°C
- **Humidity**: 0 - 95% RH non-condensing
- **IP Rating**: 54

### Dimensions
- **Unit Size**: 190 x 90 x 55 mm
- **Unit Weight**: 210 g
- **Kit Size**: 295 x 340 x 145 mm
- **Kit Weight**: 2.9 kg

### Power
- **Internal Battery**: Lithium Ion, 3.75V, 2.2Ah, 8.25Wh
- **Operating Time Approx.**: 8 hours

### Battery Charger
- **Charging Temperature**: 0°C to 45°C
- **Rated Voltage**: 100 to 250 VAC, 5V, 3A
- **Frequency**: 47 to 63Hz
- **Country Adapters**: UK, EU, Australia, USA
- **Charge time**: 3 hours

### Compliance
- CE-compliant in accordance with EMC Directive (2014/30/EU)
- Designed and manufactured in the United Kingdom

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**PD-SGS kit contains**
- PD-SGS
- Headphones
- Function Tester
- Mains Charger
- USB Charger
- Hard wearing PELI™ case

**Optional Accessories**
- HFCT Sensor
- UHF Sensor

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[Level mode - HFCT]

[PRPD mode - TEV]