



PD-SG1

Online Portable Switchgear PD Locator



PD-SG1 is used to detect, verify and locate PD activity in switchgear. The unit offers both TEV detection for internal discharge and ultrasonic detection for surface tracking and corona.

Key Features

- Ultrasonic detection of surface PD activity. Displayed on the LCD screen as dB reading, as well as audible signals through headphones.
- Measurement of TEV signals generated by internal PD
- PRPD Mode for viewing PD pattern in power cycle, allowing for the recognition of noise
- Precedence Mode for location of PD within the assets under test



PD Detection

Partial Discharge activity inside metal clad high voltage plant induces small voltage impulses TEV (Transient Earth Voltages) on the surface of the metal cladding. TEVs travel around the cladding surface to the outside of the switchgear panel where they can be picked up externally using CC-TEV transducers.

The PD-SG1 has three modes: **Level Mode**, used to detect presence of both TEV and ultrasonic activity; **Cycle Mode**, Phase Resolved Partial Discharge Display (PRPD) enables the user to verify PD activity is genuine and not from electrical noise interference before taking further remedial action; **Precedence Mode**, dual sensor precedence allows users to pin-point the source of PD activity.



The Benefits

- **Detect MV and HV problems** – before they present tangible risk of failure
- **Personnel Safety Device** – ensure the substation is clear of PD before conducting work
- **Locate PD Source** – precedence with pico second timing accurately locates PD within Switchgear
- **PRPD** – PRPD display allows user to distinguish between PD and Noise
- **Hear the PD** – only instrument available that allows the user to hear both ultrasonic and TEV PD activity



Technical Specification

PD-SG1

TEV Measurements

| | |
|-------------------|----------------|
| Sensor | Capacitive |
| Measurement Range | 0 to 80 dBmV |
| Resolution | 1 dB |
| Accuracy | ±1 dB |
| Noise Rejection | Yes, with PRPD |

Ultrasonic Measurements

| | |
|-----------------------------|----------------------------------|
| Measurement Range | -6dBμV to + 70dBμV |
| Resolution | 1 dB |
| Accuracy | ±1 dB |
| Transducer Sensitivity | -65dB (0dB = 1volt/μbar RMS SPL) |
| Transducer Centre Frequency | 40 kHz |

High Frequency CT (HFCT)

| | |
|-------------------|-------------------|
| Measurement Range | 0 to 2,000,000pC |
| Transfer Function | 4.8V/A |
| Frequency | 100 kHz to 13 MHz |

Precedence

| | |
|---------------------|------------------|
| Time Resolution | 240 pico-seconds |
| Distance Resolution | 85mm |

Power Cycle Mode

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|---------------|-----------------------------|
| Frequency | 50/60Hz |
| Display Modes | Live & Infinite Persistence |
| Linear Range | Min 0 to 20mV, Max 0 to 20V |
| dB Range | 0 to 60dBmV |

Hardware

| | |
|------------|--|
| Enclosure | Tough Aluminium case, with rubber protective side panels |
| Control | Membrane keypad |
| Connectors | Power, Headphones and External TEV and Acoustic Sensor |
| Display | Back-lit LCD with precedence LEDs |

Operating Environment

| | |
|-----------------------|----------------------------|
| Operating Temperature | -10°C to 60°C |
| Humidity | 0 - 95% R.H non-condensing |
| IP Rating | 54 |

Dimensions

| | |
|-------------|--------------------|
| Unit Size | 210 x 90 x 65 mm |
| Unit Weight | 1.8 kg |
| Kit Size | 565 x 340 x 230 mm |
| Kit Weight | 10.25 kg |

Power

| | |
|------------------------|-----------------------------|
| Internal Battery | Lithium Ion, 12V, 4Ah, 48Wh |
| Operating Time Approx. | 8 hours |

Battery Charger

| | |
|----------------------|------------------------------|
| Charging Temperature | 0°C to 45°C |
| Rated Voltage | 100 to 250 VAC, 12.6V, 1.65A |
| Frequency | 50 to 60Hz |
| Country Adapters | UK, EU, Australia, USA |
| Charge time | 4 hours |

| | |
|----------------|---|
| Safety and EMC | CE-compliant in accordance with Low Voltage Directive (2014/35/EU) and EMC Directive (2014/30/EU) |
|----------------|---|

Designed and manufactured in the United Kingdom

www.ipec.co.uk



The PD-SG1 kit contains

| |
|---|
| PD-SG1 |
| Headphones |
| Function Tester |
| Sync Transmitter |
| 2x CC-TEV PD Sensor |
| AA Ultrasonic PD Sensor |
| HFCT 48 PD Sensor |
| AA Ultrasonic Probe |
| Mains Charger |
| Hard wearing PELI™ case (suitable for hold luggage) |