



HVPD Mini™ Monitor - Portable

Combined 4-Channel PD Detector, Locator and Monitor

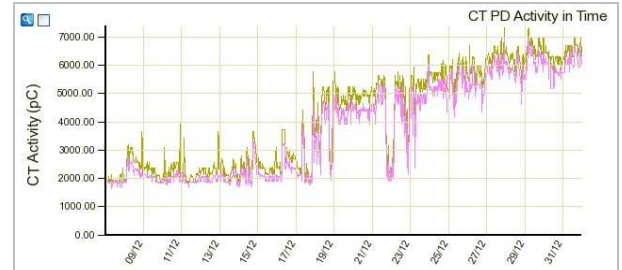
HVPD Ltd presents the latest addition to our range of Partial Discharge (PD) test and monitoring solutions – the portable HVPD-Mini™ Monitor. The technology represents a unique integration of technologies for the insulation condition monitoring of medium voltage (MV) electricity distribution plant and cables in the voltage range 3.3kV to 45kV.

The HVPD Mini™ Monitor is suitable for both short-term PD monitoring (of a few days) and medium-term PD monitoring (up to several months) of all types of MV power cables and metal-clad switchgear. The HVPD Mini™ Monitor is recommended for use in Phase 3 of the **HVPD 4-Phase Integrated PD Test and Monitoring Solution**, and it is possible to integrate alerts and alarms into Network Management Systems via the HVPD Wide Area PD Monitoring Database.

Features include:

- Low-cost, easy to install, 24/7 PD monitoring technology for MV cables, metal-clad switchgear and other MV plant.
- Incorporates 4x portable PD sensors; 2x HFCT sensors to measure PD activity in cables, and 2x TEV sensors to detect local PD activity within the plant/switchgear under test.
- **'Precedence'** detection functionality for timing HFCT and TEV PD signal arrival times to determine the direction of the source.
- Economical, entry-level PD monitoring technology for the remote monitoring detection of incipient faults and PD trends.
- Generates a PD **'Criticality'** measurement on a scale from 0-100 with 4 colour-coded PD severity levels (green-yellow-orange-red).
- Uploads PD data to remote FTP server and database at regular intervals via built-in GPRS mobile phone technology data transfer.
- Networked data from multiple HVPD Mini™ Monitors can be added to the **HVPD Wide Area PD Monitoring Database**, offering a means for rapid incipient fault location.

Test Results		Logout	
Test	Local	Cable	Last Data
<input type="checkbox"/> Inverbervie	1%	45%	2010-03-22 13:30:00 show delete
<input type="checkbox"/> Kiltirlity	1%	44%	2010-04-13 07:30:00 show delete
<input type="checkbox"/> Thimblelow	1%	35%	2010-04-13 01:30:00 show delete
<input type="checkbox"/> Waterloo Place (Additional Unit)	6%	32%	2010-04-12 14:00:00 show delete
<input type="checkbox"/> Constable PD Primary	2%	22%	2010-04-12 22:30:00 show delete
<input type="checkbox"/> Waterloo Place Inverness	3%	10%	2010-04-12 13:30:00 show delete
<input type="checkbox"/> Mac Alpine Primary Sub	3%	9%	2010-04-13 04:00:00 show delete
<input type="checkbox"/> BROUGHTHY FERRY S/S	40%	9%	2010-04-10 23:30:00 show delete



The HVPD Wide Area PD Monitoring Database

Standard Scope of Supply and Supply Options

The HVPD Mini™ Monitor is supplied complete with PD sensors, BNC signal cables and GPRS antenna.

1x	HVPD Mini™ Monitor		1 x	AC/DC Power Supply	
2x	CC-SG1 TEV Sensors		1x	HVPD MiniReader® & USB Driver Software for a Windows™ PC	
2x	HVPD HFCT 100/50 Sensors		1x	5 Metre Protective Earth Cable	
4x	10m BNC Cables		1x	GPRS Antenna with 3 Metre Cable	

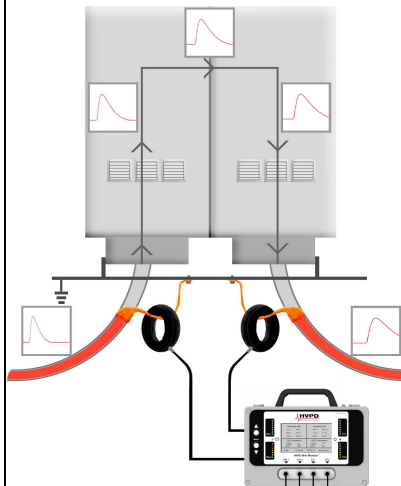


Application Testing



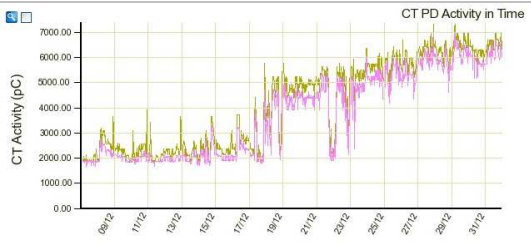
The HVPD Mini™ Monitor installed on its wall mounting bracket in a substation

Precedence Function

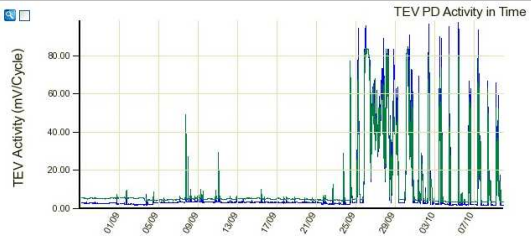


As signals cross the plant item under test (in this case a ring-main unit), tens of nanoseconds of delay separates the signals detected by the 2x HFCT sensors and 2xTEV sensors. Measurement of this delay indicates which direction the signals came from i.e. the 'precedence' of the PD.

When several HVPD Mini™ Monitors are installed around an MV network, the precedence measurements allow the cable sections where the source of the PD is to be indicated.

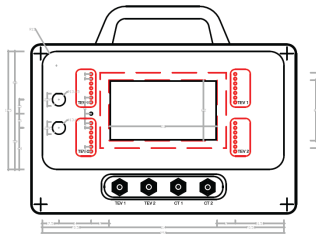


Increasing trend in Cable PD monitoring data



Increasing trend in Switchgear PD monitoring data

Unit Dimensions

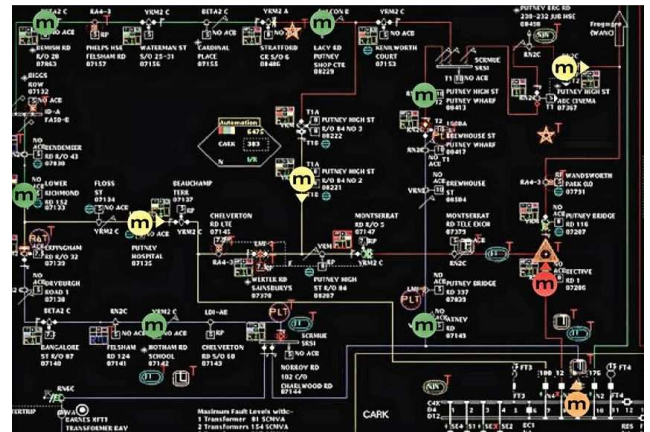


Dimensions:	W: 255mm H: 220mm D: 115mm
Weight:	3.76kg
Power Supply:	90-264 V AC 47-63 Hz
Communications:	USB / GPRS

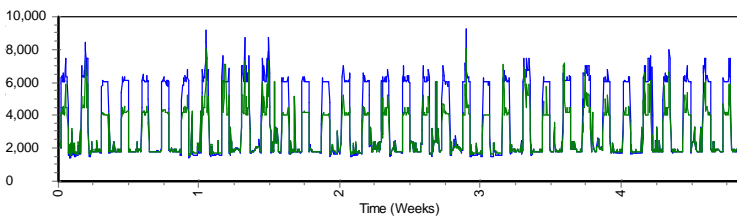
How it Works

PD signals are measured by the HFCT and TEV sensors and are processed by the HVPD Mini™ Monitor's embedded hardware. The system synchronously captures signals from the two HFCT channels and two TEV channels for signal 'precedence' measurements allowing localisation of PD signals to cable feeders and/or switchgear panels.

An instantaneous display of the peak PD level is shown on the front panel of the unit for each of the 4x channels on seven level LED arrays. This feature is useful during installation to help locate the source of any PD activity in the substation. The unit also has a 5" LCD screen which displays the past 24 hours of PD activity to show the Field Engineer working in the vicinity of any high levels of discharge. Data is also uploaded every 24 hours to a remote FTP server via the inbuilt GPRS modem, for viewing on the HVPD Wide Area PD Monitoring Database.



Distributed HVPD Mini™ Monitors in an MV Network



PD monitoring data over 5 weeks revealing a daily variation in Cable PD activity (high PD activity during the night)

PD Level Bands		
	TEV (dB)	HFCT (pC)
1	<6	300
2	12	600
3	17	1,100
4	25	2,600
5	30	5,500
6	35	8,500
7	>40	>12,000

