

# PD-HVX: measurement system for electric drive units



- **Modular partial discharge (PD) test set for a range of high voltage assets**
- **Versatile equipment options**
- **Allows PD and RIV acceptance tests according to international standards**
- **Parallel recording of PD activity to test complex assets**
- **Up to ten parallel measurement channels (multi-channel system)**

## Description

PD-HVX is a universal partial discharge (PD) device which can be flexibly used by adjusting versatile features and accessories to fit your testing purpose. It has the highest grade of modularity and versatility, therefore, it can be used for laboratory tasks (QAQC) and on-site testing (on-line and off-line) for all your assets.

All controls and displays are accessible on the screen of a PC via a graphical interface, a so-called "virtual instrument".

## Your advantages

- Flexibly configurable for all assets by changing the accessories
- Time saving due to simultaneous PD measurements with optional multi-channel system
- Easy analysis of your results due to clear and understandable PD patterns

## Features and options

As a multi-purpose PD measurement instrument, the PD-HVX offers the following features and options:

- PD spectrum analysis
- High voltage measurement (HVM)
- Synchronisation frequency from VLF to 510 Hz
- DC measurement mode
- DAKS calibrated voltage measurement and PD calibrator
- Can be equipped with up to ten channels for parallel measurement of PD and RIV in real-time
- Effective noise gating for blocking phase-stable or phase-independent noises
- Radio interference voltage (RIV) measurement
- High-resolution PD patterns
- Available with pre-installed PCs or notebooks

# Technical data

## Acquisition unit

<b>Mains supply</b>	90–264 V AC, 47–440 Hz (automatic)
<b>Line fuse</b>	2 A (time-lag) (PD-HVX with up to four channels) 3.15 A (time-lag) (PD-HVX with five to ten channels)
<b>Power requirements</b>	ca. 110 VA max.
<b>Operation</b>	Remote-controlled via PD-HVX software
<b>Operation temperature</b>	0–40 °C (non-condensing)
<b>Input impedance (AMP IN)</b>	50 Ω    50 pF
<b>A/D converter (PD)</b>	12 bits, compressed into 8 bits (unipolar) / ±7 bits (bipolar)
<b>Size (W x H x D, excl. BNC connectors)</b>	236 x 133 x 300 mm <sup>3</sup> (PD-HVX with up to four channels) 450 x 133 x 300 mm <sup>3</sup> (PD-HVX with five to ten channels)
<b>Weight</b>	Approx. 6.9–9 kg

## Standard PD mode

<b>Lower cut-off (-6 dB)</b>	40, 80, or 100 kHz (software-controlled)
<b>Upper cut-off (-6 dB)</b>	250, 600, or 800 kHz (software-controlled)
<b>Input sensitivity</b>	< 500 μV RMS/5 pC (without preamplifiers)
<b>Gain range</b>	4, 8, 10, 20, ..., 200, 400, 800
<b>PD pattern resolution (x-y-z)</b>	8 x 8 x 16 bits

## Synchronisation/HVM

<b>Synchronisation frequency</b>	20–510 Hz (automatic)/ 0.02–510 Hz (manual)
<b>Maximum voltage</b>	200 V <sub>peak</sub> (140 V RMS), 100 V RMS nom.
<b>Input impedance</b>	10 MΩ
<b>A/D converter</b>	±15 bits
<b>Measurement uncertainty</b>	Typ. < 1.5 %

## Spectrum function

<b>Input sensitivity</b>	< 5 μV RMS/0.5 pC (270 kHz bandwidth) < 1 μV RMS/2 pC (9 kHz bandwidth)
<b>Maximum input voltage</b>	120 mV RMS (300 kHz bandwidth, SPEC mode) 5 mV RMS (9 kHz bandwidth, SPEC mode) 2.5 mV RMS (RIV measurement)
<b>Frequency range</b>	10 kHz–10 MHz (in steps of 10 kHz)
<b>Bandwidth</b>	9 kHz or 270 kHz
<b>Measurement uncertainty</b>	Typ. < 5 %

## Preamplifiers

<b>Input impedance</b>	
<b>RPA1/RPAID/RPAIG/RPA4</b>	10 kΩ    50 pF
<b>RPA1L / RPA1H</b>	1 kΩ    50 pF
<b>FCU3</b>	50 Ω    50 pF

## Input sensitivity

<b>RPA1/RPAID/RPAIG/RPA4</b>	< 50 μV RMS/0.03 pC
<b>RPA1L</b>	< 15 μV RMS /0.02 pC
<b>RPA1H</b>	< 40 μV RMS/0.05 pC
<b>RPA2</b>	< 800 μV RMS/1 pC
<b>RPA3</b>	< 2 μV RMS
<b>FCU3</b>	< 200 μV RMS (46 dBμV)

## Bandwidth

<b>RPA1/RPAID/RPAIG/RPA4</b>	40–800 kHz
<b>RPA1L/RPA1H</b>	40 kHz–20 MHz
<b>RPA2</b>	2–20 MHz
<b>RPA3</b>	200 MHz–1 GHz
<b>FCU3</b>	100 kHz–50 MHz

## Available communication interfaces

USB, GPIB, LAN

To perform a measurement in electric drive units, the PD-HVX comes with specialised accessories for this specific measurement task, such as:

- Frequency converter units FCU3 for detecting PD signals and converting them from the UHF to the HF range
- NFA1 near field antenna for noise detection on high voltage equipment
- Remote power supplied and controlled preamplifiers for sensitive measurements
- PWM pulse decoupling set for inverter driven systems