



DDX 9121a-1

Partial Discharge (PD) & Radio interference voltage (RIV) Detector



The DDX 9121-1 partial discharge & radio interference voltage (RIV) detector is the latest in the DDX family of PD detection equipment. It's our solution for single partial discharge & radio interference voltage testing. With the DDX 9121-1 you can setup, control, test, monitor and generate test reports from a single computer. Its modular design makes possible to add additional channels.

The DDX 9121-1 comprises 1 rack-mounted unit communicating with a remote PC (Laptop, not included), which handles the display of PD information using the DDX 9121/SWR data acquisition and remote control software. The detector is controlled from the PC via an Ethernet link. The PC displays test-results, provides means of calibrating the system and logging of the results into a test report. The reports can then be printed out from the software or displayed as a web page. With help of the software the user can also export the results for use in a spreadsheet. Software also provides bitmaps for inclusion in other reports.

Measuring band can be adjusted in both high and low range to suppress frequency dependent noise. In addition gating possibilities allow blanking out fix positioned interferences.

FEATURES

- Phase resolved displays of each phase
- Real time measurement and display
- Simple setup and testing via a single PC
- Data acquisition and test reporting
- Independent rack mounted units
- Automatic synchronization to a motor generator set
- Upgradeable at any time by adding additional channels
- Compact, 3U (19") desktop case ideal for integrating into a test system

BENEFITS

Perfect for pass/fail testing –The allowable PD level is set and the unit determines pass or fail.

Simple to use –Windows based customer orientated software is all needed to operate the detector.

Straightforward replacement – An analog unit is old and needs a cost effective, simple replacement.

Multiple detectors – With the data acquisition/remote control software monitor multiple detectors can be operated at the same time.

Integrated test systems – because of its compact design and functionality this unit is ideal for an integrated PD test system including an AC power supply.

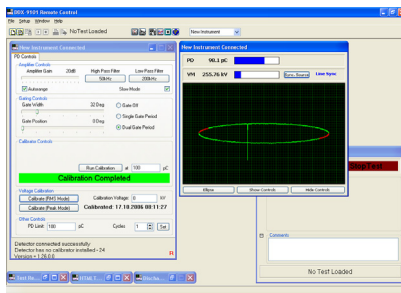
APPLICATIONS

Testing of:

- Distribution Transformers
- Power Transformers
- Current and Potential Transformers
- Rotating Machines
- Switchgears
- Surge Arrestors
- Research & Development
- Universities

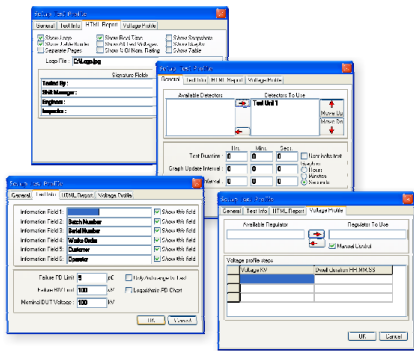
REAL TIME MEASUREMENTS

The Remote Control and Data Acquisition software enables control of the detector from a remote location via the Ethernet port of a PC. All data is acquired during the test based upon user-defined parameters. The user can generate customized test reports with graphs and charts.

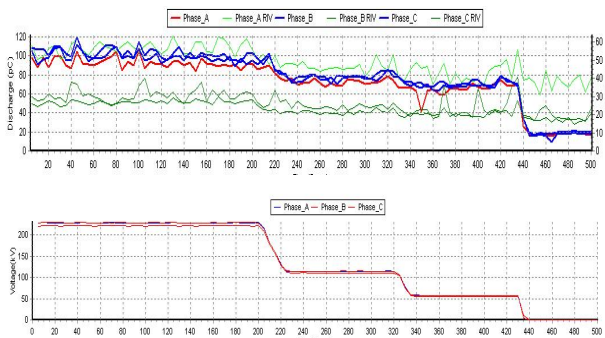


Display Screen DDX9121-1 with active partial discharge measurement channel(s)

Test configuration is extremely easy to do through the Test Info Tab, which will guide the operator through the main parameters requested to perform the test and release the report.

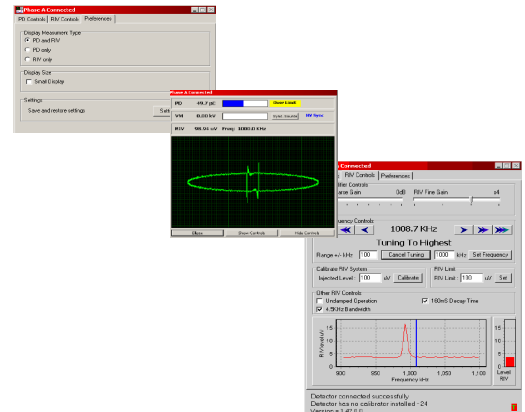


Reports are saved as HTML files containing graphs and charts. In addition all data can be exported as comma separated value (CSV) format for further analysis or highly customized test reports in other programs like MS Excel.



RIV MEASUREMENTS

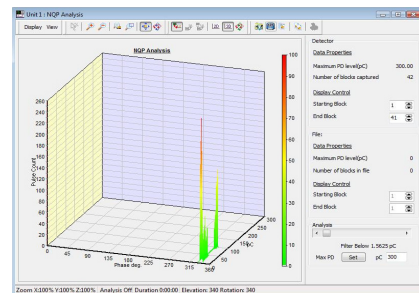
The DDX 9121-1 provide as an option the measurement of the Partial Discharges according ANSI standard in mV, commonly known as RIV measurement. PD in pC and mV can be measured simultaneously.



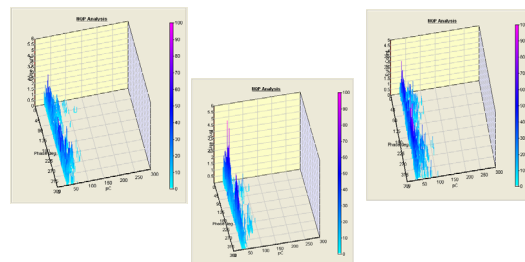
ADVANCE ANALYSIS SOFTWARE

With the advanced NQP analysis software for the DDX 9121-1, measurements in analysis mode can be performed.

The advance analysis software allows the user to collect data on partial discharge activity and display it as 2D graphics (Position and relative number of pulses, the PD



value will be defined by colours) or as 3D graph (Position, PD value and relative number of pulses). Measurements can be saved in the hard disk for a later evaluation. The graphics can also be copied and pasted in any document or report as a normal Windows BMP file or exported to CSV file.



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TECHNICAL SPECIFICATIONS

Amplifier

Gain(Attenuation)	0 dB to 75 dB in 5 dB steps
Attenuator Accuracy	1 %
Gain	9000
Input Impedance	50 Ω
System Noise	< 12 μ V referred to input on highest gain range
Filters	High Pass - 20, 30, 50, 60, 80 kHz Low Pass - 100, 200, 300, 400, 500 kHz

PD Measurement

PD Meter Resolution	10 bits displayed
PD Capture	8 bits (7 plus sign)
Phase Resolution	0.1 %
Linearity Error	< 1 %

Voltage Measurement

Uncertainty of Scale Factor	< 1 %
Linearity (10-100% FS)	< 1 %
Resolution	11 bits
Measurement modes	Peak / $\sqrt{2}$ true RMS
Synchronization	Local Mains, HV source (automatic)
Sync Lock range	20 Hz to 400 Hz

Mechanical

Weight	6 kg
Dimensions	19" 3HU case, 340 mm deep
Power Supply	100-240 V, 40-70 Hz

Environmental

Operating Temp Range	0 to 40 °C
Storage Temp Range	-10 to 75 °C
Humidity Range	95% non-condensing

Ethernet Port

Isolated	100BaseT
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(Note: Optically isolated cable for connection to LAN is recommended)

RIV measurement

Measurement frequency range	500 kHz to 2 MHz
Bandwidth	9 KHz (- 6 dB)
Output level	1uV onwards
RIV system linearity (1 range)	< 2 % FSD

Applicable Standards

IEC-60060 Parts 1&2	ICEA T-24-380
IEC-60270	ASTM D1868-93
IEC-885-2 and 885-3	ANSI C57.113
IEEE Std. 4, 1995	ANSI C57.124-91
ANSI C63.2-1996	NEMA 107

ORDERING INFORMATION

System

1. PD Detector System including 1 pcs. of DDX 9121-1 detector inserts, mounted in desktop case, Operating Manual and Calibration Certificates
2. Lan cable for connection between laptop (not included) and DDX 9121-1
3. Calibration certificate and instruction manual (English)

Options

- Laptop computer
- RIV measurement board
- Internal calibrator output board
- Optical isolated LAN cable

Accessories for PD testing

CALIBRATORS

KAL 451



The KAL 451 is a battery powered PD calibrator for direct coupling of the generated PD signal to the test object according to the related standards IEC 60270 and IEEE 454. Pulse outputs ranges are 2 – 200pC and 20 – 2000pC. The pulse rise time is < 20ns.

9216



The 9216 is a small battery powered PD calibrator for direct coupling of the generated PD signal to the test object according to the related standards IEC 60270 and IEEE 454. Pulse outputs ranges are 10, 100, 1'000, 10'000 pC.

9220A RIV calibrator



The RIV 9220a is a battery powered hand held RIV calibrator that delivers a sinus output of several defined frequencies from a crystal that has a frequency precision of +/- 100ppm.

PD SIMULATORS

753-US



The Miniature Partial Discharge Simulator is a compact, battery operated discharge simulator. It injects a known multiple pulse PD signal into a PD test circuit to allow verification of calibration. The unit also incorporates a fine frequency control for synchronizing to a multiple of the mains frequency.

MEASURING IMPEDANCES

AQS 9110a



The AQS 9110 Passive quadripole is a fully configurable quadripole system optimized for PD and RIV measurement. It has a voltage divider low-arm fitted to it for voltage measurement.

COUPLING CAPACITORS

9230



The coupling capacitor / HV AC divider consists of 1 unit, built into a glass fibre reinforced epoxy tube. The top electrode allows partial discharge free. For PD measurements an appropriate coupling quadripole must be added.

PSF



PSF (Power Separation Filter) have high self resonant frequencies, high stability and low partial discharge levels. They are mounted on a base with a suitable top electrode and a low voltage arm. Outputs are provided for PD detector input, overload sensing circuit, pulse mark (indicates zeros in AC wave shape) and kilovoltmeter input. Not suitable for RIV measurements.

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