

“R2200” – Multichannel Portable Device for PD Measurement and Analysis in the Insulation



The portable multichannel device «R2200» is used for measuring and analysis of partial discharges in the insulation of high-voltage equipment - transformers, cables, motors, etc.

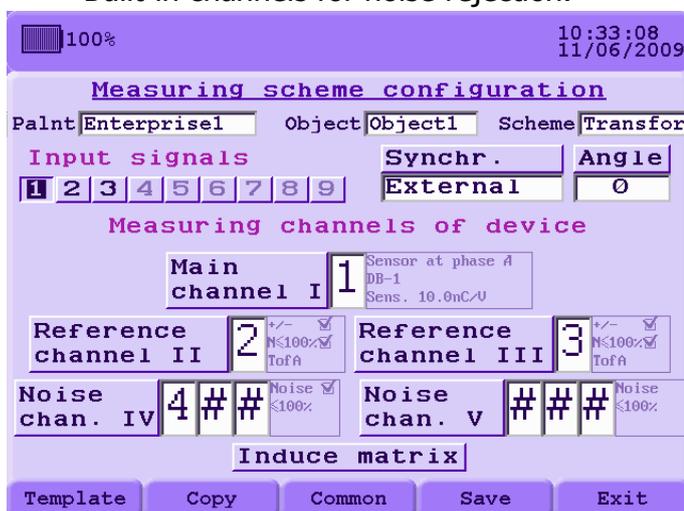
The presence of the most effective means of noise rejection makes «R2200» device one of the most efficient PD measuring devices in the market.

The principle of «R2200» device operation differs from that of oscilloscopes, though it is also based on partial discharges analysis. The fundamental difference is that «R2200» device immediately (at the hardware level, in real time) distinguishes PD pulses from noise pulses. Thus, the user makes only analysis of pulses distribution; it optimizes the process of diagnostics.

Noise Rejection Methods

The user can configure the measuring procedures of the device on-line by using:

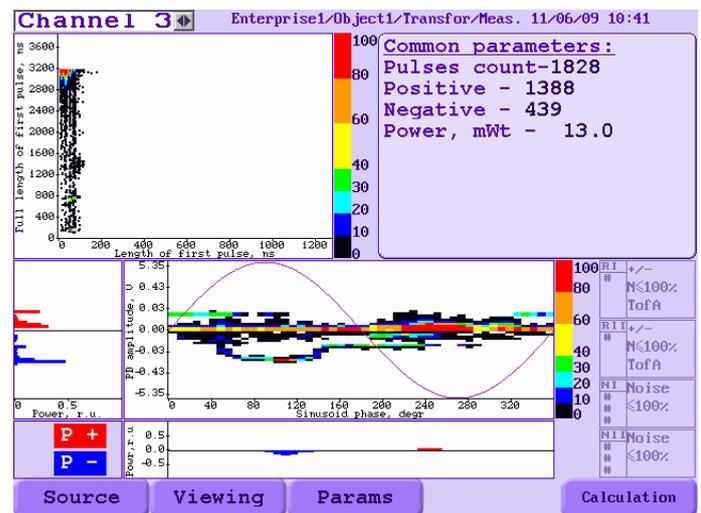
- Pulse cross-matrix from phase to phase inside the object;
- Pulse «Time of Arrival», accuracy 2 ns;
- Pulse polarity filter by several channels simultaneously;
- Built-in channels for noise rejection.



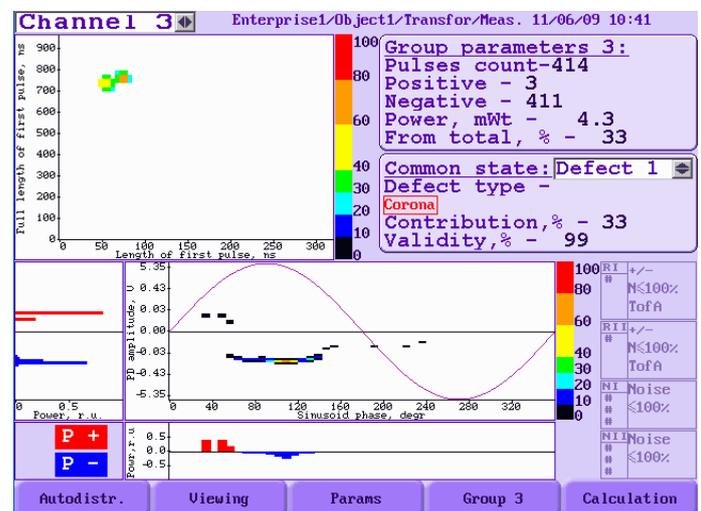
Using these analysis algorithms allows finding a PD source with consideration to the design and operational features of equipment of different types. «R2200» device has a unique feature – the built-in expert system «PD-Expert», which is absent in the devices of other manufacturers. «PD-Expert» system can present and analyze PD distribution in different ways, including «TFM» (Time Frequency Map); the built-in database of defect «fingerprints» helps to reveal and locate defects of different types.

There are screenshots of the transformer insulation condition diagnostic results.

In the left top part of the screen there is a TFM diagram, in the bottom part there is an amplitude-phase-frequency PRPD diagram.



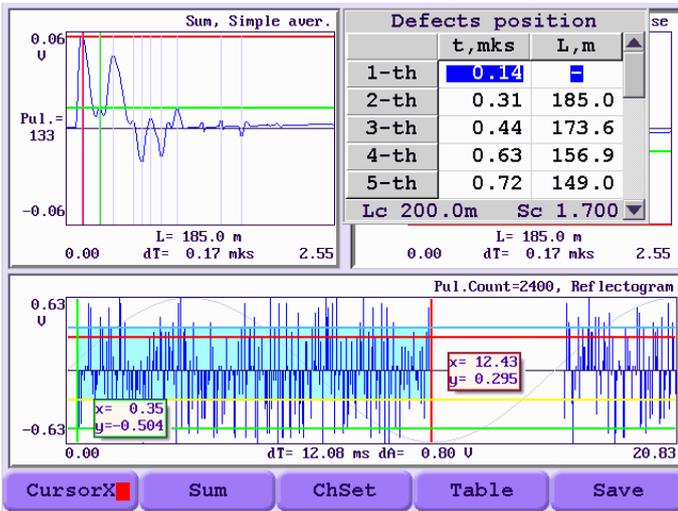
The report of the «PD-Expert» system operation is given in the screenshot below:



Reflectometer

The built-in reflectometer of «R2200» device uses PD pulses as probe pulses. With the reflectometer it is possible to locate insulation deterioration in cables. The advantage of the reflectography method is the possibility to make on-line diagnostics of cables.

In the figure below there is a screenshot of a reflectogram.



In the left top corner of the screenshot there is an example of a reflectogram of pulses measured in a cable. In the right top corner there is a list of defects (nonlinearity of insulation electromagnetic behaviors), automatically found in the monitored cable.

«R2200» has 3 types of PD measurement synchronization – from an external signal of power-line frequency, from AC signal of the first channel, and from in-built generator.

«R2200» Purpose

«R2200» device should be used by specially trained staff in the scientific centers and laboratories and in the field. The device can also be used at distribution substations.

The «R2200» delivery set includes «GKI-2» calibration generator and a set of various partial discharge sensors for diagnostics of different types of high-voltage equipment.

«R2200» device is available in Russian, English and Chinese languages.

The «R2200» Specifications

No	Parameter	Value
1	The number of PD measuring channels	9
2	PD pulse frequency, MHz	0.5 ÷ 10.0
3	Inaccuracy of defect location in cable, m	±2
4	Operation from inbuilt battery, hours	4
5	Operating temperature range, °C	-20 ÷ +45