

## «AR700» - Device for the Defect Location in the Insulation of High-Voltage Equipment by Acoustic Sensors

The portable «AR700» device is used for measuring of acoustic signals on the external surfaces of gas-insulated breakers and substations, power transformers and other tank high-voltage equipment. The reason of these acoustic signals is the partial discharges in the insulation, which is the sigh of the defects.



The advantage of the «AR700» device is the possibility of operative magnet installation of PD acoustic sensors on external surface of high-voltage equipment tank, thus there is no need to take the equipment off line.

The «AR700» device has 4 synchronic channels for signal measurement with acoustic sensors; it gives the possibility not only to find the defects in the insulation, but also to locate the place of their origin. The location function of the «AR700» device is unique for acoustic devices.



For defect location there are 4 acoustics sensors, installed inside the tank of equipment and on its surface in definite order.

The basic diagnostic factor is measuring the PD pulse time of arrival to different sensors. By this parameter the task of defect place location is solved.

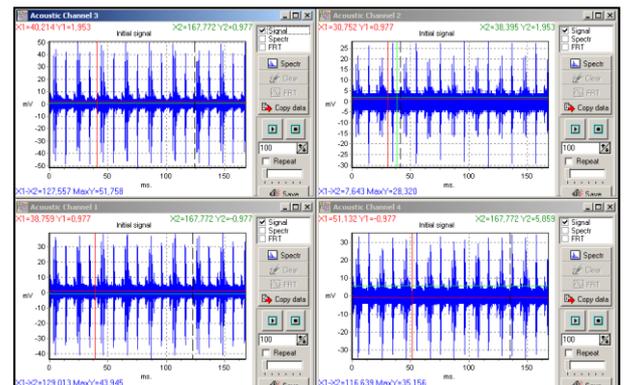
For better noise immunity in the «AR 700» device there is one supplementary channel for PD measurement, which operates in the high-frequency range. An «electric sensor» of transformer type (for example, «RFCT») is connected to the input of this channel.

At the first stage of diagnostics the zone of high acoustic activity is defined on the surface of transformer tank. Then all the 4 acoustic sensors are installed, and the defect zone is located by using

special build-in software. The results of the location are displayed in the screen of the device as a graph.

The specific feature of the «AR700» device is the possibility of listening to the measured pulses in the slow mode by headphones which are supplied together with the device. In this mode the User can make the measured signals audible by changing their frequency. The permissible range of slowdown is from 50 up to 1000 times. It allows the User to collect the base of the «acoustics shapes of acoustics signals», using his own ear as the means of expertise.

The «AR700» device allows synchronizing the PD pulse measurements to the supply net sinusoid, for which the «PFR-1» radio sensor of reference frequency and phase is used. By this synchronization the User can define the type of the insulation defect. Different amplitude, phase and frequency diagrams of the measured high-frequency pulses distribution of are used for this.



The device has modern microprocessor, bright color display and considerable memory space. The device is delivered in hermetic plastic case.

The special software allows analyzing the pulse distribution and the defect's sound shapes by the device itself, as well as by the standard the computer audio programs.

The device can be used in the non-hostile environment in the operating temperature range of -20°C to +40°C and relative humidity of <98%, noncondensing.

### Specification of the «AR700» Device

No	Parameter	
1	Channels for PD pulses measurement	4 acoustic channels and 1 electric channel
2	Frequency range of acoustic sensors, kHz	30-330
3	PC Interface	USB 1.1.
4	Operating time from build-in accumulator, hour	8
5	Dimensions, mm	220*168*37
6	Device weight, kg	1.1
7	Weight of delivery set, kg	12