

## «CPDA-15» - 6-10 kV Cable Insulation Condition Diagnostics by Nondestructive Method

### «CPDA-15» System Advantages:

- Nondestructive insulation diagnostics of cables, joints and terminations.
- Using the most sensitive PD analysis method.
- Defect location in cables.
- Build-in function of dissipation factor measuring in cable insulation.
- Small size because damping AC (DAC) voltage is used.
- The portable system has no analogue in dimensions and cost.

### Operation Principles

«CPDA-15» measuring system is used for effective off-line diagnostics and locating of defects in the insulation by partial discharge measuring and analyzing; it is used for insulation monitoring in all types of high voltage cables. «CPDA-15» system can be used either for new cables testing, or old cables condition assessment.

«CPDA-15» portable system consists of a high-voltage unit in the transportation case and a laptop PC.

The high-voltage unit includes:

- A power source with an electronic switch and an inductance coil for generating alternating test voltage. Before measuring, the power source should be set upright.
- A measuring unit, battery and a charger, assembled in one transportation case.



Measuring process is controlled from the PC laptop by WI-FI for safety. PD signals are saved and analyzed on the PC laptop. The data can be viewed and processed in the field during the measurements or later in the office.



### Cable Testing

For insulation condition diagnostics, the cable should be charged from the power source for some seconds, until the voltage reaches a definite value, and then discharged to the ground by through the inductance coil.

As a result, resonance arises in the circuit, which consists of the monitored cable capacity and coil inductivity. The monitored cable is influenced by sinusoid damping AC voltage (DAC) with the oscillation frequency from 50 Hz to 1000 Hz, in dependence of the tested object capacity (i.e. the cable length).

The oscillating (damping) voltage influences the tested object for less than 1 second, that's why it has no negative impact on the insulation condition and doesn't damage the cable.

The cables condition is estimated on the basis of PD measuring and analysis results by the expert system «PD-Expert». The following parameters are assessed:

- PD level and activity.
- Voltage of discharge arising.
- Discharge location.
- Insulation defect type.
- Dissipation factor in the insulation.

Analysis and assessment of PD location and parameters allows finding the ways for the cables further service or its replacement.

### «CPDA-15» Delivery Set

- High voltage unit in the transportation case.
- Laptop PC (option).
- Components in case.
- Calibrator.
- Manual and Software.

### Specifications of «CPDA-15»

| Parameter                                 | Value                   |
|---|-------------------------|
| Maximal output voltage, kV                | 18 kV peak; 12,5 kV RMS |
| Charging current HV, mA                   | Up to 12                |
| Cables capacity range, uF                 | 0.05 ÷ 10               |
| PD range, pC                              | 10 ÷ 100000             |
| PD frequency range, MHz                   | 0.15 ÷ 50.0             |
| DAC frequency range, Hz                   | 20 ÷ 1000               |
| tg δ measuring in the insulation          | yes                     |
| Supply voltage, V AC/DC                   | 110 ÷ 240               |
| Operating from battery, hours             | 4 ÷ 8                   |
| Dimensions in the transportation case, mm | 260 * 520 * 670         |
| Weight in the transportation case, kg     | 35                      |