SG9101

Interference Distinguishing Partial Discharge Detector

SG9101 Interference Distinguishing Partial Discharge (PD) Detector is a new type apparatus developed by the institute after SG-8001 (modeled from Model-5), SG-8201 and SG-8601 PD apparatuses. Basically it keeps the merits and functions of the above three type's apparatuses. SG9101 adopts special interference distinguishing logical circuit, which can discriminates the accidental interference (The interference must be high than a set threshold and last 4 test periods at least; the "effect" will be shown). Cooperating with the time window, it can enhance the ability to discriminate and eliminate external interference. This apparatus, cooperating with JZF-9 mini Calibration Impulse Generator, adopts to be used for the operation and maintenance in power system and workshops where the apparatus needs to move frequently and the interference is strong.

SG9101 Interference Distinguishing PD Detector also can read the discharge repetition frequency according to discharge quantity, and can digitize the measurement of discharge number and draw diagrams such as q-n figure. It enhances the ability for insulation comprehensive judgment, while this function could only be achieved through the treatment by microcomputer formerly. With the deep research of PD, IEC and authorities have begun paying attention to the influence of the discharge repetition frequency to the damage of product insulation. Therefore, SG9101 Interference Distinguishing PD Detector is no doubt the powerful assistant tool for new type high voltage electrical products and also for the improvement of product quality.

The detector has the merits of high sensitivity, wide adaptive range of tested objects, high frequency elliptic scan (incept power<1VA), large dynamic range of amplify system, diversified combinations of frequency bands (9 kinds) and assistant zero level system. This apparatus has digital display for discharge quantity and test voltage. The discharge quantity can read directly with a specifically designed pC setting system after a discharge quantity calibration, which is very convenient for application.

Therefore, SG9101 has all the merits of SG-8601, such as interference distinguishing function, powerful anti-interference ability, pC setting function, the function of reading discharge number (discharge repetition frequency) according to discharge quantity, the function of simultaneous test for discharge quantity and test voltage and some other features as high sensitivity, light weight and portable, etc.

SG9101 Interference Distinguishing PD Detector will be a satisfactory PD Detector widely applied in power departments, plants and research institutes.

Applications

Testing of:

- **Distribution Transformers**
- **Power Transformers**
- **Current and Potential Transformers**
- **Rotating Machines**
- **Switchgears**
- **Surge Arrestors**
- **Cables**
- **Research & Development**
- **Universities，etc.**

Technical Specifications:

1. The measurable capacitance range of equipments under tested: 6pF～250μF
2. Test sensitivity and permitted current.

Input Unit No.	Turning Capacitance Range	Sensitivity (PC) (Unbalanced Circuit)	Permitted Current Effective Value	
			Unbalanced Circuit	Balanced Circuit
1	0～25～100pF	0.02	30mA	0.25A
2	25～100～400pF	0.04	50mA	0.5A
3	100～400～1500pF	0.06	120mA	1A
4	400～1500～6000pF	0.1	0.25A	2A
5	1500~6000~25000pF	0.2	0.5A	4A
6	0.006～0.025～0.1uF	0.3	1A	8A
7	0.025～0.1～0.4uF	0.5	2A	15A
8	0.1～0.4～1.5uF	1	4A	30A
9	0.4～1.5～6.0uF	1.5	8A	60A
10	1.5～6.0～25uF	2.5	15A	120A
11	6.0～25～60uF	5	25A	200A
12	25～60～250uF	10	50A	300A
7R	Resistance	0.5	2A	15A

Table 2: Test Sensitivity and Input Unit Permitted Current

3. **Ellipse Scanning Time Base**
   - Frequency: 50/60Hz, ×2, ×3 ×4
   - Rotation: 30°as a level, 360°available
   - Operation mode: ellipse, linear
   - When the frequency is high, the ellipse can be adjusted to normal height according to input voltage (10～250V). Its input power is less than 1VA, and the overload automatic protection equipment is installed.

4. Display Unit

Rectangular oscilloscope whose size is 98×84cm, on which there are brightness and focus adjusting knobs.

5. Amplifier

3dB low frequency limit point fL: 10, 20,40kHz (to be chosen randomly)

3dB high frequency limit point fh: 80, 200, 300 kHz (to be chosen randomly)

Gain calibration:

6 levels in coarse calibration, gain difference between levels are 20±1dB.

Fine calibration range>20dB.

Positive and negative impulse responds asymmetry: <1dB

6. Time Window (Gate Unit)

1)Windows width: adjustable 15°～150°under 50Hz

2) Window position: each window can rotate from 0°to 180°.

Two windows can be switched respectively or synchronously.

7. Impulse Peak-value-meter

- Linear indication: displayed by 3 1/2 bits digital voltage meter
- Error 5% (counted as 1000 to full scale)
- Output voltage: 0～1V.
- It is output from the “Y” socket on the back panel.

8. Test Voltage Meter

- Measuring range: with the capacitance divider the max range can reach 200kV
- Display: displayed by 3 1/2 bits digital voltage meter
- Error: ±5% when using digital meter;
  <±10% when using usual meter.
- Zero sign: when capacitance divider is adopted, a pair of zero level impulse will appear if a low voltage rises. The upward one presents the positive zero-crossing position. The downward one presents the negative position.
- Output: 0～1V. It is output from the “Y” socket on the back panel.

9. Discharge Quantity Setting (pC setting) Equipment

Including vertical switches of 4 levels than control the relative pC, nC displays and the decimal point on digital shift meter. It makes the same of the display of pC and nC as the injected calibration charges. It is linked with amplifier gain coarse calibration knob.

10. Interference Distinguishing Logic System

When the peak value in the set phase interval exceeds the threshold (maximal to 1.3V, set from the coarse and fine calibration knob by users) and lasts for more than 4 continuous test voltage periods, the “effective” lamp will be enlightened.

11. Discharge Repetition Frequency

- Full scale: 1×104pps
- Linear indication
- Error: <±5% (full scale)

12. Internal Zero Level Systems

The zero level of inner zero level generator can change its polarity, and can rotate from 0～180° to correspond real zero level position and polarity.

13. Dimension: 500×490×200mm (W×D×H)

14. Weight: about 20kg

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