



# MRF-XJS-III Capacitance & Tan Delta Tester

## General Information:

The high-voltage dielectric loss test device is used for on-site anti-interference dielectric loss measurement, or laboratory precision dielectric loss measurement. The instrument is an integrated structure with built-in dielectric loss bridge, variable frequency power supply, test transformer and standard capacitor, etc. Using frequency conversion anti-interference and Fourier transform digital filtering technology, fully automatic intelligent measurement, the measurement data is very stable under strong interference. The measurement results are displayed on a large-screen LCD and can be printed out with a built-in micro-printer.

## Features:

- Main features of capacitance and dielectric loss measurement
- Frequency conversion anti-jamming

Using frequency conversion anti-interference technology, it can still measure accurately under 200% interference, and the test data is stable. It is suitable for on-site anti-interference dielectric loss test.

- high precision measurement

Using frequency floating, digital waveform analysis and bridge self-calibration technologies, with high-precision three-terminal standard capacitors, to achieve high-precision dielectric loss measurement, and the accuracy and stability of forward/reverse wiring measurements are consistent.

The input resistance of all ranges of the instrument is lower than  $2\Omega$ , which eliminates the influence of additional capacitance of the test line.

The oil cup can be connected externally to do dielectric loss test of precision insulating oil, and the measuring electrode of solid material can be connected externally to do dielectric loss test of precision insulating material.

- Good compatibility

Automatically identify 50Hz / 60Hz system power supply, support generator power supply, even if the frequency fluctuates greatly, it can also be measured normally.



Built-in series and parallel dielectric loss measurement models, fully compatible with calibration bench and dielectric loss standard, convenient for instrument verification.

■ Multi-level security protection to ensure personal and equipment safety

High-voltage protection: short-circuit, breakdown or high-voltage current fluctuation of the test product can cut off the output at high speed in a short-circuit manner.

Low-voltage protection: Misconnection of 380V, power fluctuations or sudden power failure, start-up protection, will not cause overvoltage.

Grounding protection: When the instrument is poorly grounded and the shell is charged with dangerous voltage, the grounding protection will be activated.

C V T: Four protection limits for high-voltage voltage and current, low-voltage voltage and current, which will not damage the equipment; the wrong selection menu will not output the excitation voltage. There is no 10kV high voltage output during CVT measurement.

Anti-misoperation: Two-level power switch; real-time monitoring of voltage and current; multiple key presses for confirmation; clear high/low voltage terminals; slow voltage boost, rapid voltage drop, sound and light alarm.

Anti-"capacity rise": When measuring a large-capacity test product, there will be a "capacity rise" effect of voltage increase. The instrument can automatically track the output voltage and keep the test voltage constant.

Anti-seismic performance: The instrument adopts a unique anti-seismic design, which can withstand strong long-distance transportation vibration and bumps without damage.

High-voltage cable: It is a high-voltage insulated wire and can be used on the floor.

■ Technological breakthrough, powerful function

(1) It has an external standard capacitor interface, automatically tracks the frequency of the external test power supply from 40Hz to 70Hz, and supports industrial frequency power supply and series resonant power supply for large-capacity and high-voltage dielectric loss tests.

(2) It has the function of prompting for bad circuit contact and discharge, so as to facilitate the judgment



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of whether the wiring is reliable.

(3) With CVT self-excitation method measurement function, C1/C2 can be measured at the same time with one connection, automatically compensates the influence of bus grounding and standard capacitor voltage division, no need to change lines or connect any external accessories, and the high-voltage connection line can be dragged to the ground.

(4) With reverse wiring low-voltage shielding function, in the case of 220kVCVT bus grounding, the 10kV reverse wiring dielectric loss measurement of C11 can be performed without disconnecting the wires, and the master and slave capacitors can be measured at the same time with one connection.

(5) English graphic menu, large-screen backlit LCD display.

(6) Equipped with a thermal printer, the printing data is clear and fast without noise.

(7) With a calendar clock, it can store 100 sets of measurement data.

(8) With computer interface (optional). Through this interface, measurement, data processing and report output can be realized, and the internal measurement software of the instrument can also be upgraded. One computer can control 32 instruments, which can be integrated into the comprehensive high-voltage test vehicle.

## Specifications:

➤ Dielectric loss and capacitance measurement

● Accuracy:  $C_x: \pm(\text{reading} \times 1\% + 1\text{pF})$

$Tg\delta: \pm(\text{reading} \times 1\% + 0.00040)$

● Anti-interference index: frequency conversion anti-interference, the above accuracy can still be achieved under 200% interference

● Capacitance range:

Internal high voltage:  $3\text{pF} \sim 60000\text{pF}/12\text{kV}$   $60\text{pF} \sim 1\mu\text{F}/0.5\text{kV}$

External high voltage:  $3\text{pF} \sim 1.2\mu\text{F}/12\text{kV}$   $60\text{pF} \sim 30\mu\text{F}/0.5\text{kV}$



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Resolution: up to 0.001pF, 4 significant figures

- $tg\delta$  range: unlimited, resolution 0.001%, automatic identification of three test products: capacitance, inductance and resistance.
- Test current range: 10 $\mu$ A~5A
- Internal high pressure:  
Setting voltage range: 0.5~12kV  
Maximum output current: 200mA  
Buck-boost mode: continuous smooth adjustment  
Voltage accuracy:  $\pm(1.5\% \times \text{reading} + 10V)$   
Voltage resolution: 1V
- Test frequency: 45~65Hz integer frequency  
49/51Hz, 45/55Hz automatic double frequency conversion  
Frequency accuracy:  $\pm 0.01Hz$
- External high pressure: Maximum test current 1A/40~70Hz when UST wiring  
Maximum test current 12kV/1A/40~70Hz when GST wiring
- CVT self-excitation low voltage output: output voltage 3~50V, output current 3~30A
- Measurement time: about 30s, related to the measurement method
- Other indicators
  - Input power: 180V~270VAC, 50Hz/60Hz $\pm 1\%$ , powered by mains or generator
  - Computer interface: standard RS232 interface (optional)
  - Printer: Self-contained miniature thermal printer
  - Ambient temperature: -10 $^{\circ}C$ ~50 $^{\circ}C$
  - Relative humidity: <90%, non-condensing

Brief list of main technical indicators for model selection

|                         |                   |                 |   |                           |                   |         |                       |
|-------------------------|-------------------|-----------------|---|---------------------------|-------------------|---------|-----------------------|
| Capacitance<br>range pF | Maximum<br>output | High<br>Voltage | CVT self-excitation<br>method measurement | GST wiring<br>low voltage | Loop<br>discharge | printer | Computer<br>Interface |
|-------------------------|-------------------|-----------------|---|---------------------------|-------------------|---------|-----------------------|

|       | current mA | Dissipation |  | side shielding                 | reminder |                | and Storage                     |
|-------|------------|-------------|--|--------------------------------|----------|----------------|---------------------------------|
| 3~60k | 200/10kV   | Yes         | No need for external equipment C1/C2 Simultaneous measurement of high-voltage connections can be dragged to the ground | C1/C2 Simultaneous measurement | Yes      | heat sensitive | RS232 Store 100 sets of numbers |

