

IRM-5000P

Insulation Resistance Meter



Vanguard Instruments Company

www.vanguard-instruments.com



IRM-5000P™

The IRM-5000P is a microprocessor-based, high-voltage, insulation-test ohmmeter. The rugged and portable IRM-5000P is ideal for use in electric utility substations and for industrial applications.

This sophisticated insulation tester uses a dual-microprocessor design. One microprocessor is dedicated to the control of the power supply and measuring circuitry, while the second is dedicated to the user interfaces and printer control. To ensure operator safety, the microprocessors communicate via an optical link, thus isolating the operator controls from the dangerous high test voltages inside the unit.

The IRM-5000P measures the insulation resistance of a test material by applying a known test voltage and measuring the resultant leakage current. The measured insulation resistance is then displayed on the back-lit LCD screen. The IRM-5000P's built-in 2.5-inch wide thermal printer can print test reports in both tabular and graphic formats. Up to 100 test reports can be stored in the unit's internal memory. Test reports can also be transferred to a PC via the built-in RS-232C interface. The IRM-5000P can automatically perform industry-standard tests such as Polarization Index (PI) test, Step Voltage (ST) test, and Dielectric Discharge (DDS) test.

Test Voltage

The IRM-5000P can perform tests with preset voltages (500, 1000, 2500, 5000 Vdc), or with user-selectable voltages ranging from 50 Vdc to 5000 Vdc with a ± 2 Vdc resolution.

Insulation Resistance Test

The test voltage for an insulation resistance test can be user-selected, and the test duration can range from 1 to 90 minutes. The IRM-5000P will then collect resistance readings throughout the selected test period. The resistance value, test voltage, leakage current, and capacitance are displayed on the back-lit LCD screen. The tabulated test report can be printed on the built-in 2.5-inch wide thermal printer. The report can also be printed as a graph of the resistance over time.

Polarization Index (PI) Test

PI tests can be run at preset voltages (500, 1000, 2500, 5000 Vdc) or at a user-specified voltage from 50 Vdc to 5000 Vdc. Test results can be printed in both tabular and graphic formats.

Measure

Step Voltage (ST) Test

The ST test measures insulation resistances in five equal voltage steps up to a final test voltage of 2500 Vdc or 5000 Vdc. The voltage is stepped up in 1/5 increments of the final test voltage every one minute, five minutes, or other user-defined time interval.

Dielectric Discharge (DDS) Test

The DDS test measures the dielectric absorption of an insulator. This test can be used to diagnose an insulation problem in cases where multi-layered insulation is used.

Capacitor Discharge

After each test, the IRM-5000P automatically discharges any test voltage left on the test material. An audible alarm and a message on the screen warn the operator of the shock hazard during each discharging period.

Capacitance Display

The IRM-5000P automatically measures the capacitance of the device being tested. The capacitance-measuring range is from 0.01 μ F to 10.0 μ F.

Volt Meter

The IRM-5000P can also be used to measure voltages. Measurable input voltage ranges from 50 V to 1250 V, AC or DC.

User Interface

The IRM-5000P features a back-lit LCD screen (20 characters by 4 lines) that is viewable in both bright sunlight and low-light levels. A rugged, 16-key, membrane keypad is used to control the unit.

Built-in Thermal Printer

The IRM-5000P's built-in 2.5-inch wide thermal printer can print the test reports in both tabular and graphic formats.

Internal Test Record Storage

The IRM-5000P can store up to 100 test records in Flash EEPROM. Test records can be retrieved and printed on the built-in thermal printer, or they can be transferred to a PC via the unit's RS-232C interface.

Computer Interface

The IRM-5000P can be computer-controlled via its RS-232C interface. A Windows® XP/Vista-based analysis software application is provided with each unit. Using this software, test records can be retrieved from the IRM-5000P and then stored on the PC for future analysis and report generation. A special feature of the software can overlay several resistance curves on-screen and can be used to monitor the resistance deterioration of a test material over time. Additionally, test records can be exported in Microsoft® Excel format for further analysis.

Temperature Probe

A non-contacting, infrared, temperature sensor is provided with each unit for recording test material temperatures.

Power Source

The IRM-5000P can operate continually for up to 6-hours using its internal rechargeable SLA batteries, or it can be operated with an external power source.

Dual Processor Online Insulation-Test Meter

Insulation Resistance Quickly and Safely



RS-232C Interface

2.5-inch Wide Thermal Printer

Rugged 16-Key Membrane Keypad

Continuous Power via Built-in Battery or AC Power Source

Back-lit LCD Screen (20 characters by 4 lines)

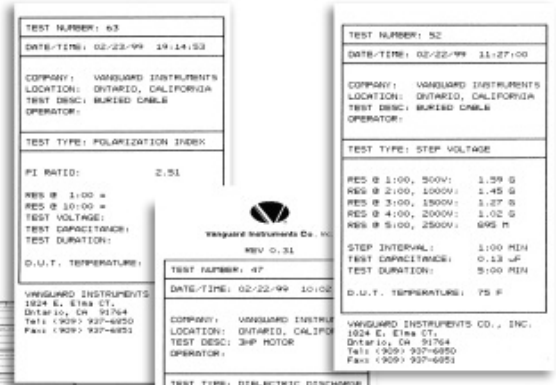
High Voltage Terminals

Ordering Information

IRM-5000P Insulation Resistance Meter

IRM-5000P with Cable, Shipping Case, PC Software
2.5-inch Printer Paper

Part No: IRM-5000P
Part No: TP-3



Typical Resistance Plot

Tabulated Reports

FEATURES

- Performs PI, ST and DDS tests automatically
- Test duration from 1 to 90 minutes
- Automatically discharges test voltage
- Measures capacitance of duty
- Stores up to 100 test records
- Infrared temperature probe
- Built-in 2.5-inch wide thermal printer
- RS-232C interface

SPECIFICATIONS

TYPE Insulation resistance meter

PHYSICAL SPECIFICATIONS 19"W x 7"H x 15"D, (48 cm x 17 cm x 38 cm); Weight: 24lbs (10.9 kg)

INPUT POWER 100 – 120 Vac or 220 – 240 Vac (selectable), 50/60Hz

RESISTANCE READING RANGE (0°C to +30°C) 100 K-ohms – 1 M-ohm ±20%, 1 M-ohm – 1 T-ohm ±5%, 1 T-ohm – 5 T-ohm ±20% , 5kV

100 K-ohms – 1 M-ohm ±20%, 1 M-ohm – 100 G-ohms ±5%, 100 G-ohms – 500 G-ohms ±5%, 500 V
1 M-ohm – 10 G-ohms ±5%, 50 V

TEST VOLTAGE Selectable from 50Vdc – 5 KVdc, in 2 Vdc steps

OUTPUT VOLTAGE ACCURACY (0°C to +30°C) ±2%, ±1v of selected voltage with load resistance greater than 100 MΩ

SHORT CIRCUIT CURRENT 2 mA max

CURRENT READING RANGE (0°C to +30°C) 0.03 nA – 2 mA; Accuracy: ±5% ±0.2 nA

CAPACITANCE READING RANGE (0°C to +30°C) 0.01 F – 10.0 F (Test voltage greater than 100V); Accuracy: ±5% ±0.03 F

VOLTAGE READING RANGE (0°C to +30°C) 50 – 1250 Vac (rms) or dc; Accuracy: ±5%, ±1V

CAPACITOR DISCHARGE Less than 2 Sec/F, automatic at the end of test

HUM REJECTION 1mA per 1kv of test voltage, 2mA rms maximum

BATTERIES Two 12V, 2.0 Ah sealed lead acid batteries. Battery life: typical 6 hrs, continuous testing. The IRM-5000P can be used while charging

PRINTER Built-in 2.5-inch wide thermal printer can print test results in both tabulated and graphic formats

COMPUTER INTERFACE One RS-232C port

SAFETY UL Certified (UL 61010A-1), CAN/CSA Certified (C22.2 No. 1010.1-92)

ENVIRONMENT Operating: -10° to 50° C (15° to +122° F); Storage: -30° C to 70° C (-22° to +158° F)

HUMIDITY 90% RH @ 40°C (104°F) non-condensing

ALTITUDE 2,000m (6,562 ft) to full safety specifications

CABLE One 6-foot cable set, one 15-foot cable set, ground cable, power cord, cable bag

OPTIONS Transportation Case

WARRANTY One year on parts and labor

Note: The above specifications are valid at nominal voltage and ambient temperature of +25°C (+77°F), Specifications are subject to change without notice.

Vanguard Instruments Company
Reliability Through Instrumentation

RVFeb10

Vanguard Instruments Company, Inc.

Vanguard Instruments Co., (VIC), was founded in 1991. Currently, our 28,000 square-foot facility houses Administration, Design & Engineering, and Manufacturing operations. From its inception, VIC's vision was, and is to develop and manufacture innovative test equipment for use in testing substation EHV circuit breakers and other electrical apparatus.

The first VIC product was a computerized circuit-breaker analyzer, which was a resounding success. It became the forerunner of an entire series of circuit-breaker test equipment. Since its beginning, VIC's product line has expanded to include microcomputer-based, precision micro-ohmmeters, single and three-phase transformer winding turns-ratio testers, winding-resistance meters, transformer tap-changing controllers, megaohm resistance meters, and a variety of other electrical utility maintenance support products.

VIC's performance-oriented products are well suited for the utility industry. They are rugged, reliable, accurate, user friendly, and most are computer controlled. Computer control, with innovative programming, provides many automated testing functions. VIC's instruments eliminate tedious and time-consuming operations, while providing fast, complex, test-result calculations. Errors are reduced and the need to memorize long sequences of procedural steps is eliminated. Every VIC instrument is competitively priced and is covered by a liberal warranty.

Vanguard products are available from:



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