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JANDEL ENGINEERING LTD.

CYL+RM3000 Four Point Probe System

The Jandel Cylindrical Probe combined with the RM3000 Test Unit For Measuring Sheet Resistance or Volume Resistivity

Cylindrical Probe with Small Nosepiece Shroud combined with the RM3000 Test Unit

Probe includes 1 meter long cable

About the RM3000 Test Unit

The RM3000 Test Unit is a specialty electronics instruments designed specifically for the four point probe measurement. It features high accuracy, an excellent range, and many features which simplify the four point probing measurement. The following are features of the RM3000 Test Unit:

- The measurement range of the RM3000 Test Unit is from 1 milliohm-per-square (10^-3) up to 5 x 10^8 ohms-per-square with 0.3% accuracy. The volume resistivity range is from 1 milliohm-cm (10^-3) up to 10^6 ohms-cm (more conductive materials can be measured if in the form of a thin film).
- The RM3000 includes PC control software which can be used for data logging (storing data in the CSV format) and measurement conversion to ohms-per-square or ohms-cm.
- The RM3000 provides simultaneous read-out of input current and either mV, ohms-per-square, or ohms-cm (ohms-cm requires that user inputs sample thickness, or indication of a bulk sample and tip spacing)
- The RM3000 has onboard non-volatile memory so that up to 50 measurements can be stored internally and then downloaded and saved all at one time using the software. Alternately, each measurement can be saved to a PC as it is made.
- The RM3000 has an auto-range button that can be used to automatically determine the optimum input current for a given material without using the trial and error method.
- The RM3000 has forward (FWD) and reverse (REV) buttons to reverse the direction of current flow. A common way to determine if a measurement is valid is to reverse the direction of current flow and then check to see if the forward and reverse voltage readings correlate well, i.e., the values should be similar, but with the reverse current voltage being a negative value. (continued)

The RM3000 (continued)...

- Allows input of correction factor when making sheet resistance measurements
- Interfaces with optional AFPP motorized Z-motion arm

RM3000 SPECIFICATIONS

Superior Current Source

- 10nA to 100mA (99.999mA) current source selectable in steps to 5 decimal place resolution
- Current set numeric keypad
- 4 default preset current programs (user programmable)

Superior Inbuilt DVM

- Input Impedance 1,000,000,000,000 ohms
- Input Bias current 4pA
- DVM 1300mV range and 130mV range
- 130mV accuracy
- 0.2% +/- 5uV resolution (10uV or 1uV) range
- 1300mV accuracy 0.2%+/-100uV resolution
- 100uV Ohms/Square
- Rapid Zeroing null function for DVM

RM3000 FEATURES

- 28 Key high quality Keypad
- 16x2 line LCD Display for simultaneous indication of Set Current and either
- Ohms/Sq, Ohms-cm, or mV
- Auto-Ranging capability to determine the optimum input current based upon the material being measured.
- Intuitive operation
- Microprocessor controlled
- Reduced Footprint
- Robust Attractive ABS Case
- Accurately measures down to 10's of milliohms/square without external meter
- 4mm socket facility to connect an external meter
- RS232/USB connectivity for control and for collecting data in CSV format

Jandel Cylindrical Four Point Probe Head

The Jandel Cylindrical probe is built to a high level of mechanical accuracy as are all Jandel four point probe heads. Specifications for radii, spacing, planarity, and spring load are verified by calibrated instruments including a video inspection system, an optical interferometer, and an electronic force gauge. Each probe tip is guided by upper and lower jeweled needle guides. Additional information about probe quality can be found in the Jandel probe head application notes.

Cylindrical Probe Brochure Online:
http://www.fourpointprobes.com/jandelcylindrical.pdf

Jandel Engineering Ltd.
RM3000 Test Unit
Four Point Probe
Measurement Electronics

The RM3000 Test Unit reads out directly in ohms-per-square, ohms-cm, or millivolts, and it includes a USB connection and PC software to save the data as either sheet resistance or as volume resistivity. Information regarding the PC software can be found here:

http://www.fourpointprobes.com/rm3000_instructions.pdf

Small Shroud Installed on Cylindrical Probe Nosepiece

Cylindrical Probe Pressure Adjustment

The Cylindrical Probe has spring loads which are user adjustable within one of three ranges. The probe shown here has been factory set to 100 grams per tip, however, the user can increase the load to as high as 150 grams per tip or as low as 60 gram per tip by moving the red Teflon knob towards either the "H" for higher or towards the "L" for lower. Cylindrical Probe Brochure Online:
http://www.fourpointprobes.com/jandelcylindrical.pdf