

JANDEL ENGINEERING LTD.

RM3000 Test Unit

Measure sheet resistance in the range from 1 milliohm-per-square up to 5×10^8 ohms-per-square. Volume resistivity measurement range from 10^{-3} to 10^6 ohms-cm when measuring a bulk material, however, thin films of much more conductive materials can be measured, e.g., up to 16 microns of copper

Reads-Out in

- Ohms-per-square
- Ohms-cm
- Millivolts

Allows for a correction factor to be entered to compensate for small sample sizes.

Interfaces with AFPP Motorized Z motion arm



The RM3000 Test Unit is a specialty electronics instrument 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:

- 1) The measurement range of the RM3000 Test Unit is from 1 milliohm-per-square (10^{-3}) up to 5×10^8 ohms-per-square with 0.3% accuracy. The volume resistivity range is from 1 milliohm-cm (10^{-3}) up to 10^6 ohms-cm, however, that resistivity range refers to measuring a bulk material directly as opposed to measuring a thin film and converting to volume resistivity using the software. For example, a thin layer of copper up to about 16 microns can be measured and the bulk resistivity can be determined if one knows the thickness, which can be entered into the software to calculate the volume resistivity.
- 2) 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.
- 3) The RM3000 reads-out directly in ohms-per-square or ohms-cm on its display (or one can toggle to reading out in millivolts) without requiring the use of the software or a PC. The ohms-cm value can be for a wafer if one enters the wafer thickness and tip spacing, or for bulk sample if the tip spacing is entered.
- 4) 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.
- 5) 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.
- 6) 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.
- 7) The RM3000 allows the input of correction factor for samples that need to be corrected for size.
- 8) The RM3000 has a date and time stamp feature
- 9) The RM3000 interfaces with optional AFPP motorized Z-motion arm



Specifications:

Superior Current Source

- Auto-ranges for best choice of input current based upon material being tested
- 10nA to 100mA (99.999mA) current source selectable in steps to 5 decimal place resolution
- System accuracy within 0.3%
- Current set numeric keypad
- 4 default preset current programs (user programmable)

Superior Inbuilt DVM

- Input Impedance 1,000,000,000 ohms
- Input Bias current 4pA
- Two Ranges: Hi - 0 to 150mV and
- Low - 0 to 1250mV
- 150mV Range Accuracy: 0.2% +/- 5uV resolution (10uV or 1uV) range
- 1250mV Range Accuracy: 0.2% +/- 100uV resolution (100uV Ohms/Square)
- Rapid Zeroing null function for DVM

Features:

- 28 Key high quality Keypad
- 16x2 line LCD Display for simultaneous indication of Set Current and either Ohms/Sq or mV
- Intuitive operation
- Auto-ranges to calculate input current
- Microprocessor controlled
- Reduced Footprint
- Robust Attractive ABS Case
- Accurately measures down to 10's of milliohms/square without external meter
- RS232/USB connectivity for control and for collecting data in CSV format
- Automatic compliance voltage limit protects your sample which reduces maximum voltage as higher currents are set 5-40V
- Warning messages when compliance limit is reached, or DVM input exceeded
- Self test facility
- Flash upgradeable software
- CE Marked
- AD/DA converters and amplifiers for the DVM and setting the Current source and DVM, are Burr Brown 110V or 240V operation (selectable)

The RM3000 operating manual can be downloaded here (700K PDF file):

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



The RM3000 interfaces with the optional AFPP Automatic Four Point Probe Motorized Z Motion Arm to Activate Upward and Downward Probe Motion

