

# PiezoMeter System PM300 Technical Specification

High Precision, Piezoelectric  $d_{33}$  Testing System  
Measuring  $d_{33}$  in four ranges, capacitance and  $\tan \delta$

<b>Piezoelectric Tests</b>	<b>Dielectric Tests</b>	<b>Stand-Alone Operation</b>
<b><math>d_{33}</math> – Very High Range</b> $d_{33}$ range: 100 to 10,000 pC/N Accuracy: $\pm 2\% \pm 1$ pC/N Loading: 1.0 $\mu$ F	<b>Capacitance</b> Capacitance range: 10 pF to 0.1 $\mu$ F Accuracy (< 100pF): $\pm 2\% \pm 0.1$ pF Accuracy (> 100pF): $\pm 2\% \pm 1$ pF Test frequency: 1 kHz	40 character by 4 line alphanumeric liquid crystal display showing sample number, $d_{33}$ , test frequency and operation mode. Simple keypad to control all PiezoMeter functions for stand-alone operation.
<b><math>d_{33}</math> - High Range</b> $d_{33}$ range: 10 to 1000 pC/N Accuracy: $\pm 2\% \pm 1$ pC/N Loading: 1.0 $\mu$ F	<b>Tan <math>\delta</math></b> Tan $\delta$ range: 0.0000 to 0.2000 Accuracy: $\pm 2\% \pm 0.0001$	Printing facility when used directly with standard PC printer, providing tabulated output and statistical analysis.
<b><math>d_{33}</math> - Low Range</b> $d_{33}$ range: 1 to 100 pC/N Accuracy: $\pm 2\% \pm 0.1$ pC/N Loading: 1.0 $\mu$ F	<b>General Operation</b>	<b>Remote Operation</b> The PiezoMeter may be controlled by a computer equipped with Windows. A free serial port, or suitable USB-Serial adapter, is required. All PiezoMeter functions may be controlled.
<b><math>d_{33}</math> – Very Low Range</b> $d_{33}$ range: 0 to 10 pC/N Accuracy: $\pm 2\% \pm 0.01$ pC/N Loading: 0.1 $\mu$ F	<b>Response Time</b> $d_{33}$ Only: 5s to 1% of final reading C and $\tan \delta$ : 2s to 1% of final reading $d_{33}$ , C and $\tan \delta$ : 10s to 1% of final reading	Remote control software for Windows supplied separately. Also allows real-time calculation of $\epsilon^T_{33}$ and $g_{33}$ using sample dimensions supplied by the user.
<b><math>d_{31}</math> &amp; <math>d_{15}</math></b> Adapters are available for various sample geometries, and supplied separately.	<b>Sample Size</b> Maximum dimensions: 50 mm in polarisation direction. 68 mm perpendicular (i.e. maximum diameter of a symmetrically supported disc is 136 mm) Maximum sample mass: 1 Kg with standard suspension. Different suspension mechanisms can be provided to special order for more massive samples or very thin or soft samples.	<b>Remote Interface</b> Industry standard RS-232C interface, configured as data terminal equipment (DTE) using 9 pin D-connector. RS-232 parameters: 9600 baud, 1 stop bit, no parity. Connection is by a PC serial file transfer cable (Null modem type, supplied). An adaptor is provided for USB operation.
<b>Polarity</b> Sample polarity is indicated for all ranges.	<b>Calibration</b> The system is supplied fully calibrated and tested. $d_{33}$ calibration may be checked using the reference sample provided. In normal use, recalibration is recommended annually. Calibration may be carried out to customer reference using the remote interface.	<b>Printer Interface</b> Industry standard parallel printer interface, using 25 pin D-connector, configured as for a standard PC. Connection is by a standard PC printer cable (supplied).
<b>Test Frequency</b> Frequency Range: 30 Hz to 300 Hz Setting: steps of: 1 Hz Accuracy: $\pm 0.1$ Hz Calibration is at 110 Hz. Other frequencies may be used to tune away from system resonances with large samples.	<b>Data Storage</b> The standard PM300 will store up to 100 measurements. All results are numbered and stored along with the test frequency and the measurement range in use. Data is retained when the PiezoMeter is switched off.	<b>Power supply</b> 220-240V a.c. 50-60Hz 0.5A or 100-120V a.c. 50-60Hz 1A (Specify with order).
<b>Force amplitude</b> Testing is by an oscillatory force, variable by user setting between 0.05 to 0.50 N. Static force of approximately 10 N used to grip the sample. This may be different for force head units with non-standard suspension (see section on 'Sample Size' below).		<b>Temperature Limits</b> Storage: 0°C to 50°C Operating: 10°C to 40°C System calibrated: 25°C
		<b>Physical dimensions</b> Electronics unit: 350 x 230 x 90 mm Force unit: 145 x 150 x 175 mm Total Unpacked Weight: Approx. 12 Kg Total Packed Weight: Approx. 21 Kg

For more details, or to arrange a demonstration, contact:-

European Union, UK, EEA: Piezotest Ltd. Unit 204, 2 Old Brompton Road London SW7 3DQ UNITED KINGDOM Tel: +44 (0)20 7748 2248 Fax: +44 (0)20 7748 2249 e-mail: <a href="mailto:sales@piezotest.com">sales@piezotest.com</a>	Asia Pacific & Global: Piezotest Pte. Ltd. 10 Anson Road #31-10 International Plaza (S) 088834 SINGAPORE Tel: +65 6714 6631 Fax: +65 6714 6632 e-mail: <a href="mailto:sales@piezotest.com">sales@piezotest.com</a>
---	---