PiezoMeter System PM300H Technical Specification

PIEZOTEST

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

Piezoelectric Tests

d_h - High Range

d_h range: 10 to 2000 pC/N

Accuracy: ± 2% ± 1 pC/N

d_h - Low Range

d_h range: 1 to 100 pC/N

Accuracy: ± 2% ± 0.2 pC/N

Polarity

Sample polarity is indicated for both measurement ranges.

Test Frequency

Frequency Range: 30 Hz to 300 Hz

Setting: In steps of 1 Hz

Accuracy: ± 0.5 Hz

Calibration is at 100 Hz. Other frequencies may be used to tune away from system resonances with large samples.

Clamping Force

Static force of approximately 10 N used to grip the sample.

Pressure amplitude

Testing is by means of an oscillating force of between 100 and 1000 Pa.

Dielectric Tests

Capacitance

Capacitance range: 10 pF to 0.1 uF

Accuracy: ± 2% ± 1 pF

Test frequency: 1 kHz

Tan d

Tan d range: 0.0000 to 0.2000

Accuracy: ± 2% ± 0.0001

General Operation

Response Time

d_h Only: Typically 5 seconds to achieve 1% of final reading C and tan d: Typically 2 seconds to achieve 1% of final reading

d_h, C and tan d: Typically 10 seconds to achieve 1% of final readings

Sample Size

Maximum dimensions:

30 mm in polarisation direction.

45 mm perpendicular (i.e. maximum diameter of a symmetrically supported disc is 90 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.

Calibration

The system is supplied fully calibrated and tested. d_h calibration may be checked using the reference sample provided. In normal use, recalibration is recommended annually.

Calibration may be carried out to customer supplied reference samples using the remote interface.

Data Storage

The standard PM300H will store up to 100 measurements of d_h, capacitance, and tan d. All results are numbered and stored along with individual information concerning the test frequency and the measurement range in use.

Data is retained when the PiezoMeter is switched off.

Stand-Alone Operation

40 character by 2 line alphanumeric liquid crystal display showing sample number, d_{33}, test frequency, capacitance, tan delta and operation mode.

Simple key pad to control all PiezoMeter functions for stand-alone operation.

Printing facility when used directly with standard PC printer, providing tabulated output and statistical analysis.

Remote Operation

The PiezoMeter may be controlled by a computer equipped with Windows 98, Windows 2000, or Windows XP. A free serial port is required. All PiezoMeter functions may be controlled, including test frequency and measurement range.

Remote control software for Windows, supplied separately, also allows real-time calculation of e^T_{33}, g_h, and pressure sensitivity, using sample dimensions supplied by the user.

Remote Interface

Industry standard RS-232C interface, configured as data terminal equipment (DTE) using 9 pin D-connector as for a standard PC.

RS-232 parameters: 9600 baud, 1 stop bit, no parity.

Connection is by a standard PC serial file transfer cable (supplied).

Printer Interface

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).

Power supply

220-240V a.c. 50Hz 0.5A or

110-120V a.c. 60Hz 1A

(Specify with order).

Temperature Limits

Storage: 0°C to 50°C

Operating: 10°C to 40°C

System calibrated at 20°C

Physical dimensions

Electronics unit: 342 x 260 x 70 mm.

Force unit: 145 x 150 x 175 mm.
Total weight: Approx. 15 Kg.

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

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