Previous model number: 601

CHF600-0020

Transportable Small Sample Calorimeter

Introduction

The CHF600-0020 Transportable Small Sample Calorimeter is a precise instrument for the measurement of heat-producing samples. Sample dimensions of up to 50 mm x 100 mm (1.97 in x 3.94 in) are available. The instrument employs a hybrid new technology using thermopiles and electrical resistance thermometry and it can operate in isothermal or heat flow mode. Highest measurement accuracy can be obtained by performing a differential measurement using the 'twin cells'.

The instrument includes an internal electrical calibration facility which is traceable to NIST in the USA and NPL in the UK.

The user-friendly software operates under Windows XP, and the instrument may be monitored and controlled over a network. The software includes data acquisition and data analysis functions. Sample power end point predictions and equilibrium fitting routines are included, as are decay correction for tritium and plutonium samples. Measurement data is archived and may be analysed off-line.

The instrument is intended for application to general heat measurement requirements. In the case of nuclear safeguards measurements the accuracy and resolution of the instrument enable it to replace Destructive Assay (DA) for small plutonium samples.

Sample power range is between 100 microwatts and 10 watts. Measured power resolution is better than ± 10 microwatts with an absolute accuracy of better than ± 0.3% above 5 mW.

Variations to the standard design for different requirements and for special sample types or sample packaging can be accommodated. The volume of the measurement chamber may be increased or reduced as necessary.

Features

- Microwatt resolution
- Heat flow and Isothermal operation modes
- Two sample chambers for temperature drift compensation
- Ability to measure a single sample in differential mode for accuracy
- Automatic software algorithms for equilibrium sample power prediction and end point determination
- Automatic calibration using electric samples included
- 10 nV measurement resolution using the Keithley Model 2182 Nanovoltmeter

Benefits

- Accurate absolute high resolution measurements of sample power
- Comprehensive Windows NT4 based user interface software provides networking capability
- Short measurement times, in terms of minutes rather than hours
- Comprehensive and traceable electrical calibration capability reduces dependence on the use of plutonium heat standards
- Transportable trolley mounted system
- Designed for measurement of both plutonium and tritium

Specification

External dimensions (H x W x D)	1470 mm 1230 mm x 690 mm (57.87 in x 48.43 in x 27.16 in)
Measurement chamber dimensions (Diameter x H)	50 mm x 100 mm (1.97 in x 3.94 in)
Thermal power measurement range	100 µW - 10 W
Absolute accuracy	Better than ± 0.3% above 5 mW
Measurement power resolution	Better than ± 10 µW
Weight of complete trolley mounted instrument	300 kg approx. (661.39 lb approx.)
Power consumption	300-650 W, 110-230 VAC operation

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