



Novotherm

Temperature Control System

Economic temperature control system for materials analysis

- turnkey high quality temperature control system
- for operation with any Novocontrol sample cell for dielectric and impedance spectroscopy
- fast, safe and fully automatic operation
- wide temperature range +25°C to +400°C
- 0.1°C stability
- microprocessor controller featuring PID control algorithm with non-linear extensions
- includes temperature controller, power supplies, air jet heating system, GPIB communication port

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Novotherm Temperature Control System

Applications

Features

The Novotherm system is an **economic turnkey high quality** temperature control solution for applications in materials research. The system has been developed for fast setting or ramping the temperature of a sample under test with **high accuracy and reproducibility**.

It is designed to be operated with any Novocontrol **dielectric or impedance analyzer** and any Novocontrol **sample cell for dielectric and impedance spectroscopy**.

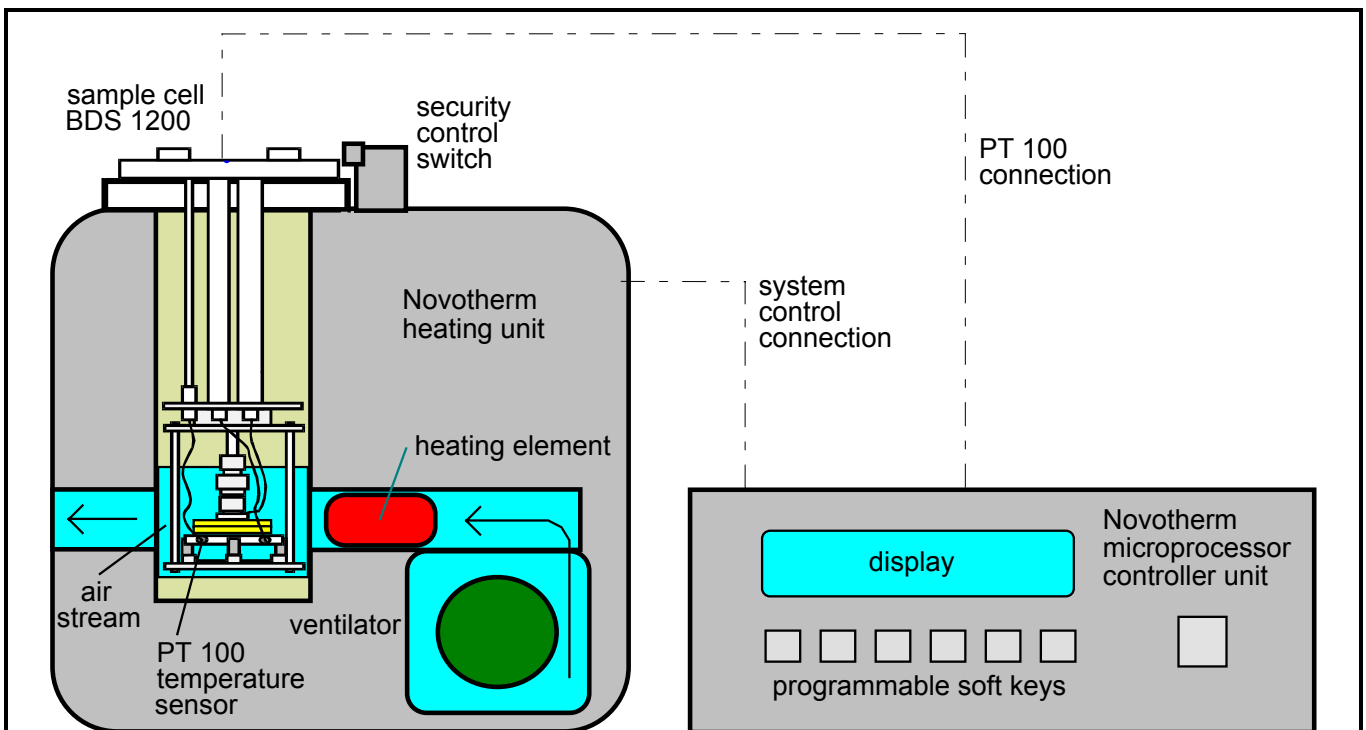
The Novotherm system was developed for **easy, safe and fully automatic operation** enabling computer-controlled experiments over extended periods of time without supervision or user interaction.

Temperature control extends the versatility of dielectric and impedance spectroscopy and increases the significance of the obtained results.

Various key materials properties, e.g., molecular relaxations, conductivity, phase separation, phase transitions, activation energy, glass temperature, rate of blending, purity, ageing, curing, either show marked temperature dependence or are only accessible through temperature-dependent measurements.

A temperature control system is, therefore, an essential part of any fully equipped system for the electrical characterisation of materials.

- turnkey high quality temperature control system
- temperature range +25°C to +400°C
- temperature ramps from 0.1°C/min to 50°C/min
- 0.1°C temperature accuracy and stability
- temperature overshooting after a set point step typically < 1°C
- stabilisation times typically < 5 minutes (for 0.1°C stability)
- microprocessor controller with 24 bit analog-digital-converter and IEC computer communication port
- fully supported by Novocontrol's WinDETA impedance control and evaluation software suite



Principle of operation

The desired temperature (setpoint) is selected either manually at the controller unit or by software via the IEC port. The sample temperature is measured by a Pt 100 temperature sensor at the lower electrode of the sample cell. A powerful fan produces an air stream flowing around the material in the sample cell. The controller adjusts the air stream temperature in order to minimise the difference between the current sample temperature (process value) and the setpoint. The sample cell BDS 1200 is not included in the Novotherm system but available as an option.