

cryogen-free temperature controller

CRYO COOLER

QUANTACHROME

QUANTACHROME

CRYO COOLER

One of the most widely used techniques for the determination of surface area and pore size on porous materials is volumetric gas sorption. The technique in itself can be carried out under any temperature, and depending on the material properties and the gas used, the sorption capabilities of the material will vary. Normally, these experiments are performed at below critical conditions like cryogenic temperatures, which are achieved by the use of cryogenics such as liquid nitrogen, liquid argon, and others.

Because having too many storage tanks with different cryogenics can be cumbersome and expensive, there are options available that will allow the researcher to work at various different temperatures without the need of a tank of cryogen for every temperature needed. Quantachrome Instruments has recently launched an option for the **Autosorb-iQ** line of instruments called the **CryoCooler**. The basic workings of this option are similar to those of a regular cryostat, which basically allows the researcher to work over a wide range of temperatures. However, the **CryoCooler** works with the well known technique of gas compression and expansion for providing cooling, which completely eliminates the need for cryogenics to work at low temperatures. What is more, due to the elimination of the cryogen, the limited experimental time imposed by the Dewar has been successfully eliminated, thus allowing experiments to run indefinitely and at temperature ranges starting as low as 20K* and as high as 320K.



Some of its main characteristics include:

- Fully compatible with the **Autosorb-iQ** and **iSorbHP**;
- Capable of thermastating up to 2 samples simultaneously on the **Autosorb-iQ2**;
- Wide temperature range going from 20K* to 320K;
- Unparalleled temperature control thanks to advanced controller, which provides temperature accuracy of up to $\pm 0.05K^*$;
- The system is capable of cooling the sample down to a stable 77K in as little as 1 hour;
- Cryogen-free operation;
- Experiments can be run indefinitely because their duration is no longer dependent on the Dewar life.

* (with Autosorb iQ)

Requirements

Compressor power: 208/220V
Controller power: 100/120/220/240V
Specialty cells to work with the CryoCooler are provided.



CORPORATE HEADQUARTERS

Quantachrome Instruments

1900 Corporate Drive
Boynton Beach, FL 33426
USA

Phone: +1 800 989 2476

+1 561 731 4999

Fax: +1 561 732 9888

E-mail: qc.sales@quantachrome.com

www.quantachrome.com



Quantachrome Instruments' Corporate Headquarters in Boynton Beach, Florida.

EUROPE

Quantachrome UK Limited

Pale Lane Farm, Pale Lane
Hartley Wintney, Hook-
RG27 8BA, UK

Phone: +44 (0)1252 819719

Fax: +44 (0)1252 819901

www.quantachrome.co.uk

EUROPE

Quantachrome GmbH & Co. KG

Rudolf-Diesel Str. 12
85235 Odelzhausen,
Germany

Phone: +49 (0)8134 93240

Fax: +49 (0)8134 932425

www.quantachrome.de

CHINA

Quantachrome Representative Office

M806, Jingbao Garden
183 Andingmenwai Street,
Beijing 100011, PRC

Phone: +86 800 8100515

+86 10 64400892

+86 13 801191442

Fax: +86 10 64400892

www.quantachrome-china.com

JAPAN

Quantachrome Instruments Japan G.K.

KSP W311 Sakado 3-2-1,
Takatsu-Ku, Kawasaki-shi,
Kanagawa 213-0012, Japan

Phone: +81 44 829 1525

Fax: +81 44 829 1527

www.quantachrome.co.jp

Quantachrome®

Renowned innovator of ideas for today's porous materials community.

For 45 years, Quantachrome's scientists and engineers have revolutionized measurement techniques and designed instrumentation to enable the accurate, precise, and reliable characterization of powdered and porous materials:

- Gas Sorption Isotherms
- Surface Area
- Pore Size, Pore Size Distribution
- Porosity, Pore Zeta Potential
- Chemisorption, TPR/TPO/TPD
- Water Sorption Behavior
- True Solid Density
- Tapped Density



Quantachrome Instruments' quality management system is certified to be in accordance with ISO9001:2008.

Not only are Quantachrome products the instruments of choice in academia, but the technology conceived and developed by our expert staff is applied in industrial laboratories worldwide, where research and engineering of new and improved porous materials is ongoing. Manufacturers also rely on porous materials characterization technology to more precisely specify bulk materials, to control quality, and to isolate the source of production problems with greater efficiency.

Quantachrome is also recognized as an excellent resource for authoritative analysis of your samples in our fully equipped, state-of-the-art powder characterization laboratory, LabQMC (www.labqmc.quantachrome.com, qc.lab@quantachrome.com).

Serving Porous Materials and Powder Characterization Needs Since 1968



www.quantachrome.com

Trademarks and registered trademarks are the property of their respective owners.

© 2012 Quantachrome Corporation 0312 07144 Rev 1