

# The NEW Smartstream

The intelligent solution for  
small molecule cooling



**Oxford**Cryosystems



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# The Smartstream

**The Smartstream is the optimum solution for small molecule crystallographers, offering a base temperature of 170 K ( – 103°C ) without using liquid nitrogen. The Smartstream boasts excellent stability, quiet long-term running and virtually no maintenance.**

For labs without easy access to liquid nitrogen and wishing to avoid long term service commitments, the Smartstream presents the perfect solution.

Smartstream consists of:

- Smartstream Cooler with integrated controller & nozzle
- High purity dry air unit, optimised for Smartstream
- Optional table stand
- Optional Varibeam stand

The Smartstream has been designed to be easily integrated with most X-ray systems, whether freestanding or benchtop.

## Features of the Smartstream

- 170 – 400 K
- 0.1 K stability
- Integrates with benchtop and freestanding X-ray systems
- Uses dry air, no liquid or gaseous nitrogen required
- No cooling water required
- Minimal service requirements

## Mode of Operation

The Smartstream is designed to be used with dry air from a high purity version of Oxford Cryosystems' quiet and reliable dry air unit. This dry air is split into two streams, one of which is cooled by passing it through heat exchangers mounted on a mini Stirling Cooler built into the Smartstream. The cold dry air is then passed out of the nozzle and over the sample. Heaters and sensors built into the Smartstream head ensure excellent temperature stability of 0.1 K.

The second stream of dry air is regulated to create a room temperature shield flow, which avoids the possibility of ice build-up on the sample.

The new Smartstream design means that unlike comparable systems, constant pumping is no longer required. Instead, the system will hold vacuum for a period of 6 – 12 months, when like a Cryostream, it will simply need evacuation.

The Smartstream incorporates the functionality of the 800 series Cryostream through the simple touch-screen interface, meaning the user is able to cool, ramp and control the temperature to a stability of 0.1 K. Like the 800 series Cryostream, communication is available via serial port, USB and Ethernet and remote control through Oxford Connect.

## Gas Sources

The Smartstream is sold as standard with a high purity dry air unit, which has been optimised for use with the system, and allows continuous run times of 2 weeks or more. The Smartstream can be used with existing dry air units if required but this may reduce continuous run times to 1-2 days.

It is also possible to use the system with nitrogen gas if required. The options for nitrogen gas supply include:

1. In-house nitrogen gas supply if available.
2. A nitrogen gas generator can be supplied, which produces pure dry nitrogen gas from the air.
3. Nitrogen gas cylinders



## Table Stand

The Smartstream is a perfect partner for smaller benchtop diffractometers and as such, can simply be placed on a lab bench or table.

However the Smartstream works extremely well also in larger diffractometers where the low vibration body of the system may be placed inside or outside the enclosure.

If external placement is preferred, an optional table stand is available, please contact us for details.



## The Oxford Cryosystems Philosophy

When you buy a product from Oxford Cryosystems, you are investing in over thirty years of research and development in low temperature devices for X-ray crystallography. We see your low temperature device as more than just an accessory; to us, it is central to your research. We know that if your low temperature system were to let you down, then we would have let you down.

Because of our focus on low temperature systems, you will find that every one of our products has superior functionality, reliability and control. Like all Oxford Cryosystems devices, the Smartstream is built on a unique software platform which allows the constant monitoring of up to 14 different inputs and outputs within the system. The integrated controller then manages a number of unique relationships such

as gas temperature as a function of flow or cooling power as a function of vacuum quality.

An example of our attention to detail is the vacuum solution used in the Smartstream. Similar systems in the past would require constant pumping using an external pump, adding noise, service requirements and heat into the lab. The design of the Smartstream's vacuum space completely eliminates the need for any external pump.

These are just a few of the many unique design features engineered into all Oxford Cryosystems' low temperature devices. We take great pride in taking our product development that bit further, so that our customers benefit from the most stable, reliable and efficient devices available.

# Technical Specifications

## Smartstream Performance

Temperature Range 170 - 400 Kelvin

Temperature Stability 0.1 Kelvin

Cold Gas Flow Rate 5 litres / Minute

Shroud Gas Flow Rate 10 Litres / Minute

Cooldown Time to 170K 50 minutes

## Specifications

Base Unit Dimensions 263mm W x 425mm D x 426mm H

Base Unit Weight 25 kg

Delivery Nozzle As per 800 Series Cryostream

Flexible Transfer Line Length 1500mm

Power Requirement 100-120 V 60Hz or 200-240 V 50Hz

Power Consumption 400VA max

## Dry Gas Source Requirement

Gas Type Clean dry air or nitrogen

Atmospheric Dew Point Better than -70°C

Delivery Pressure 1 bar or 15 psi

Flow Rate Better than 15 litres / Minute

## Optional Smartstream Dry Air Unit Gas Source

Dimensions 630mm W x 415mm H x 300mm D

Weight 42kg

Power Requirement 100- 240V 50 or 60 Hz

Power Consumption 750VA max

## Support for all our customers...

Aside from our development expertise, Oxford Cryosystems have also gained an excellent reputation over the past thirty years for customer service and support.

Whilst Oxford Cryosystems' products are known for reliability and ease of use, users may occasionally require advice on technical aspects of their system. Technical support is offered to all Oxford Cryosystems customers on all products. There are no time limits, no expensive telephone numbers and no small print. If you need support, you'll get it - it's that simple!

## Flexible warranty periods

Although Oxford Cryosystems devices are designed to be as reliable as possible, many customers take assurance from extended warranty periods.

The Smartstream, like all our products, is offered with a standard 1-year warranty. However a range of extended warranty packages are offered, covering 2, 3 and 4 years from installation.

For further details and pricing, simply contact your local Oxford Cryosystems office, distributor or agent.



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