

The N-HeliX

Dual flow nitrogen and helium gas cooler



OxfordCryosystems

The N-HeliX

The N-HeliX from Oxford Cryosystems offers temperatures as low as 28 K whilst avoiding the expense and logistical issues associated with liquid helium.

The smart dual flow controller offers the ability to switch between nitrogen and helium gas usage depending on required temperature. The N-HeliX has been designed to be economical to run, using a minimal gas flow. This means that a typical helium gas cylinder will last approximately 16-20 hours, and by linking cylinders in a manifold, long term experiments can be performed.

The N-HeliX is now offered with Oxford Cryosystems' 800 series controller, offering an ergonomic design with a touch screen, and comes with USB and ethernet ports, allowing users to monitor and control their system via our web interface, Oxford Connect.

Features of the N-HeliX

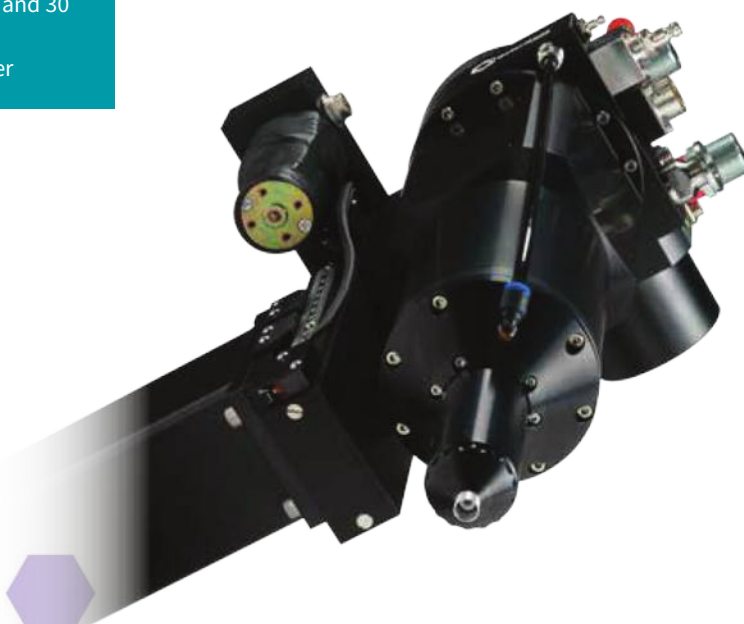
- Broad temperature range of 28 – 300 K
- High temperature stability of 0.3 K
- Uses helium gas from cylinders- NOT liquid helium
- Uses nitrogen or helium gas
- Remote control available via CryoConnector and Oxford Connect
- Fast cool-down to 100 Kelvin in just 45 minutes and 30 Kelvin in 75 minutes
- Now with new 800 series touch screen controller

Mode of Operation

Helium or nitrogen gas is cooled by passing it through heat exchangers mounted on a two stage, closed cycle cooler. The cold helium or nitrogen gas then passes out of the nozzle and over the sample.

The closed cycle cooler is mounted within the body of the N-HeliX and is driven by a helium compressor. The helium in this circuit is unrelated to the cold flow and is recycled by the compressor.

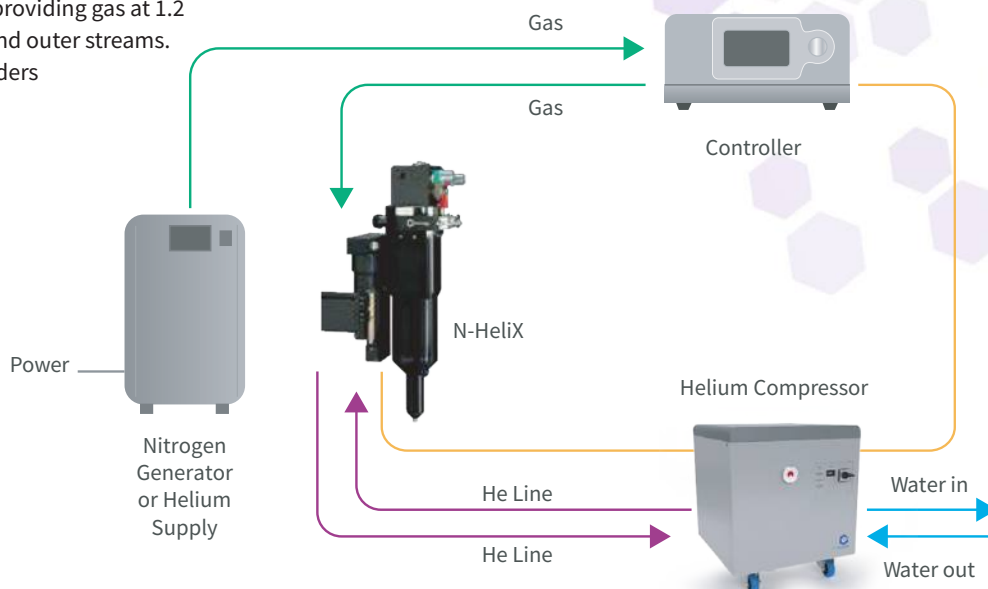
A second gas stream at room temperature provides extra shielding for the cold stream in order to improve the resistance to icing. For helium usage, a 10mm diameter X-ray transparent Beryllium shield tube extends around and beyond the crystal to protect the cold stream from atmospheric contamination. Notches within the tube walls prevent primary X-ray beam diffraction and also allow accurate crystal positioning. This can be changed to a standard aluminium nozzle for data collection at nitrogen temperatures.



Gas Sources

The N-HeliX can be used with nitrogen gas in addition to helium. The system requires a nitrogen gas flow regulated to 1 bar (14psi) with a flow of 10L-15L/minute and an atmospheric dewpoint of better than -60°C. 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. The generator has 2 outlet ports both providing gas at 1.2 bar for the inner and outer streams.
3. Nitrogen gas cylinders



N-HeliX Stand

Each N-HeliX is supplied with a support stand. Oxford Cryosystems has a number of different stand designs, optimised for use with various X-ray systems. Please discuss the best option with your local agent before ordering the system.

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. For example, the N-HeliX is built on a unique software platform which allows the constant monitoring of up to 14 different inputs and outputs within the system. The controller then manages a number of unique relationships such as gas temperature as a function of flow.

An example of our attention to detail is the dual flow controller used in the N-HeliX. Not only does the controller detect which gases are fed in, it also enables the HeliX to switch between helium and nitrogen gas during a ramp- meaning that helium gas is not wasted at temperatures above 100 Kelvin. Of course, this automatic gas selection can be easily overridden by the user if required.

These are just a few of the many unique design features engineered into 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

N-HeliX	
Temperature range	28- 300 Kelvin (100 -300 Kelvin with nitrogen)
Nitrogen gas flow rate	8 litres per minute (total of inner and outer streams)
Helium gas flow rate	7.5 litres per minute (total of inner and outer streams)
Temperature stability	0.3 Kelvin
Cool down time to 100 Kelvin	45 minutes
Cool down time to 30 Kelvin	75 minutes
N-HeliX coldhead weight	10.8 kg

N-HeliX Controller	
Dimensions & weight	263 mm W x 141 mm H x 299 mm D, 7.1 kg
Mains Power supply	100-240 V, 50/60Hz
Power Consumption	500VA

K450 Helium Compressor

	Electrical requirements	
	50 Hz	60 Hz
Supply Voltage	200 – 240 V	208 – 230 V
Operating Current	17.0 A (@240 V)	15.7 A (@230 V)
Operating Power	3.4 kW (@ 240 V)	3.6 kW (@230 V)
Supply Fuse Rating	20 A (Starting current: 65 A)	
Weights and Dimensions	639 mm H x 610 mm D x 540 mm W, 100 kg	
Water Cooling Requirements	Chiller requirement of 3.0 kW, Typical flow rate 5l/min at 18°C	

Turbomolecular Vacuum Outfit (optionally supplied)	
Dimensions & weight	300 mm W x 600 mm H x 300 mm L, 23 kg
Mains Power supply	230V 50/60 Hz or 115V 50/60Hz

Lab nitrogen supply (if available)	
Gas purity	97.5% purity
Gas pressure	Regulated to 1-1.4 bar (or regulator kit available)
Gas flow	10 - 15 litres per minute

Nitrogen gas generator (optional)	
Generator dimensions & weight	900 mm W x 700 mm H x 310 mm D, 95 kg
Mains power supply	230V 50Hz, 100V 50Hz, 120V 60Hz, 100V 60Hz

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 their 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!

Service when you need it...

Although Oxford Cryosystems design their devices to be as efficient and economical to maintain as possible, products such as the N-HeliX, due to its mechanical components, will need reasonably regular maintenance.

Therefore, Oxford Cryosystems offers a choice of pre-paid scheduled maintenance packages for complete peace of mind, or the more traditional reactive servicing approach. Whatever route you choose, you can be assured that we will advise you of the optimal service intervals. We simply don't believe in annual servicing for the sake of it - if your product needs servicing only every 2 years, or even every 3, we will tell you! For further details on the service packages we offer, simply contact your local Oxford Cryosystems office or agent.



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