



research
instruments



Cryocooler

www.research-instruments.de



Closed-loop cryocooler

The RI cryocooler systems are renowned for superior pressure stability, easy handling, and user-friendly operation. The newly updated version of the cryocooler is the result of joint R&D with our partner Cryotherm and was developed in close cooperation with ESRF, Grenoble, where it is currently being installed and tested and will be running continuously.

More than 170 cryocooler systems of the predecessor version were installed at synchrotrons world-wide over the past 15 years. Our highly satisfied customers include ALBA, ANL, ANSTO, BESSY, BNL, CLS, DLS, Elettra, ESRF, DESY/ PETRA-III, BSRF/IHEP, LNLs, PAL, SINAP, SLAC, SOLEIL, and SSRF.

The RI cryocoolers are multi-purpose, custom-tailored, and have been optimized for LN2 cooled double crystal monochromators. They are designed for stand-alone operation with fully automated controls and safety interlocks and are delivered ready for operation.

What's new?

Updated features at a glance

- Ultra-high pressure stability now at < 1 mbar
- Advanced measuring resolution (T, p, Flow)
- All set valves equipped with individual limit switches
- Optimized automated procedures
- Additional LN2 reservoir heater for a complete and automated system warm-up



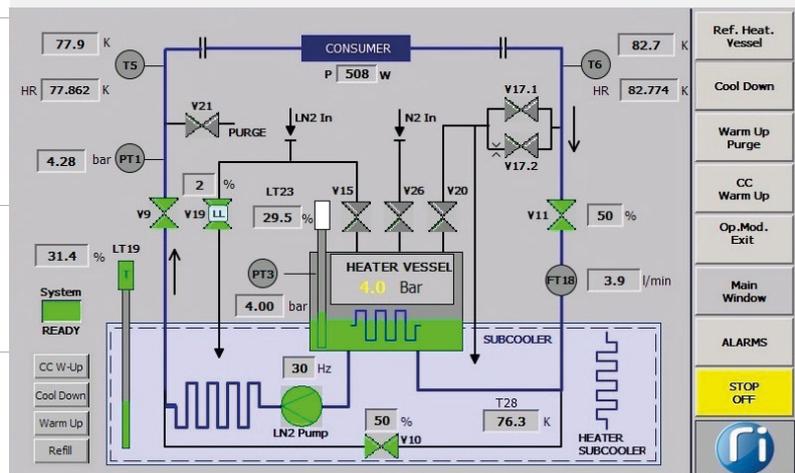


System specifications

Cooling power	Up to 2500 W
Cooling temperature	78 – 100 K
Temperature stability	Down to ± 0.02 K (rms)
Pressure stability	< 1 mbar (rms) at optimum operating conditions
Flow rate	1400 l/h
Measuring Resolution	$\Delta p \leq 0.4$ mbar $\Delta \text{Flow} = 0.01$ l/min $\Delta T = 1$ mK
Operating Pressure Range	Up to 10 bar
Electric Power	230 V / 16 A (Decoupled exhaust heater using separate powering)
Dimensions (height/ width/ length)	~ 2.2 m / 0.9 m / 1.15 m (cryocooler) ~ 1.4 m / 0.6 m / 0.7 m (controller)
Weight	~ 300 kg (cryocooler) ~ 70 kg (controller)

Control system

- Remote control of all valves, closed-loop pressure and pumping frequency
- Automated procedures such as:
 - Smooth cool-down by means of GN2 (< 6h)
 - Refill of closed-loop reservoir
 - Warm-up of transfer lines & consumer
 - Complete system warm-up (< 6h)
- Automated refilling of LN2 reservoir, incl. top-up refill
- PLC based controller
- IP65 protection class design with robust Harting connectors
- Safety Interlocks and connections to Equipment Protection System (EPS)
- Adjustable warning and alarm triggers
- All high and low alarms also available as hardwired signal outputs
- Compact dimensions (19" mobile cabinet with ~ 1.4 x 0.6 x 0.7 m³)
- Also available as 6 units high 19" modular rack mount for installation into customer's control cabinet



Graphical user interface

The touch panel is designed for quick and intuitive handling of the system. Featuring new integrated hard- and software solutions, it provides all the information you need at a glance. It displays all main parameters such as temperatures, pressures, pump and valve status.

Beamline solutions

From demanding specifications calculated on the back of an envelope to the test sheet of the component or system we deliver: We can take your project from almost anywhere and do our best to make it become reality.

We design, build, deliver, install, and commission to the extend you wish. Our offers range from prototypes and custom-tailored components and systems to turn-key installations. Of course, we also manufacture according to your designs and drawings.

Committed to our customers every step of the way

- Conceptual and full engineering designs
- Thermal and stress analyses
- Manufacturing
- Installation, alignment, and acceptance testing
- Support during commissioning
- After-sales service



Teamwork makes the dream work.

Let's team up and see how our experts can support your cause.

RI Research Instruments GmbH
Friedrich-Ebert-Straße 75
51429 Bergisch Gladbach

Tel: +49-2204-7062-2500
E-Mail: sales@research-instruments.de
Web: www.research-instruments.de