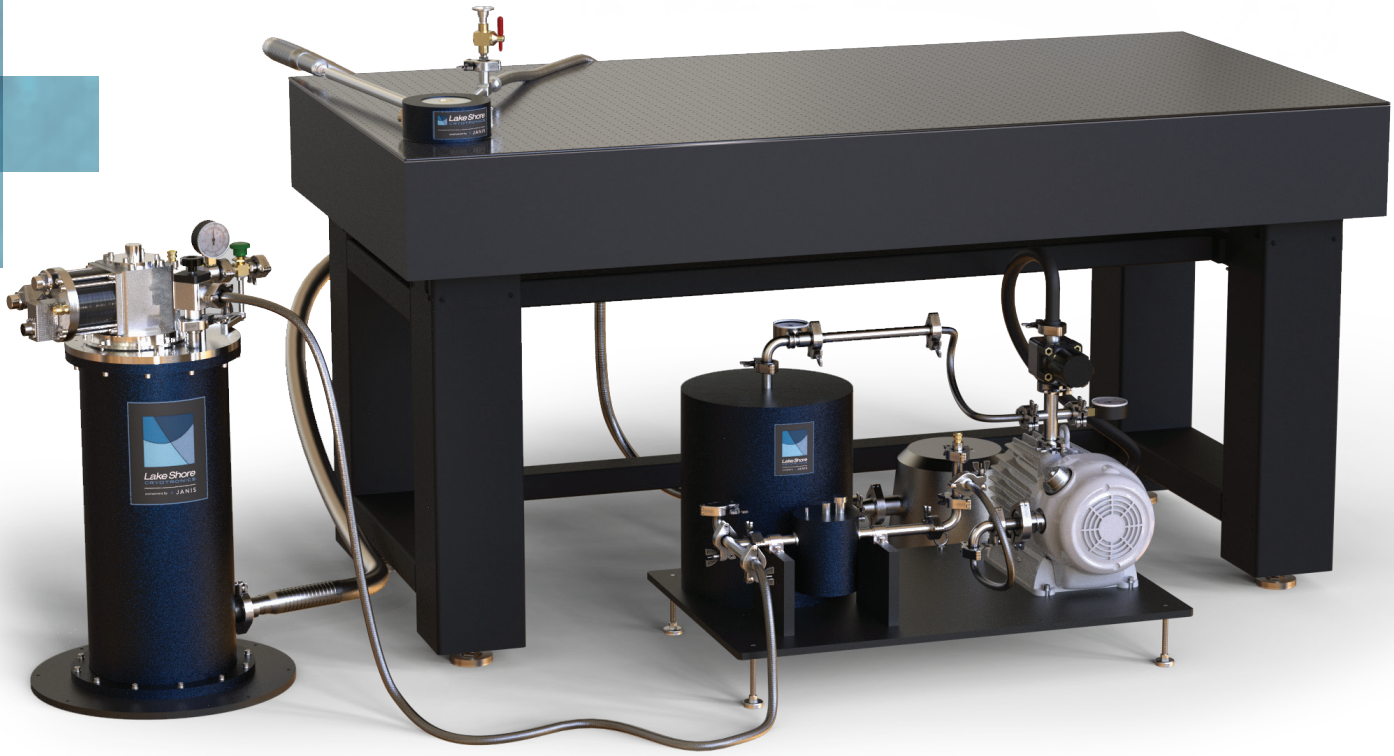
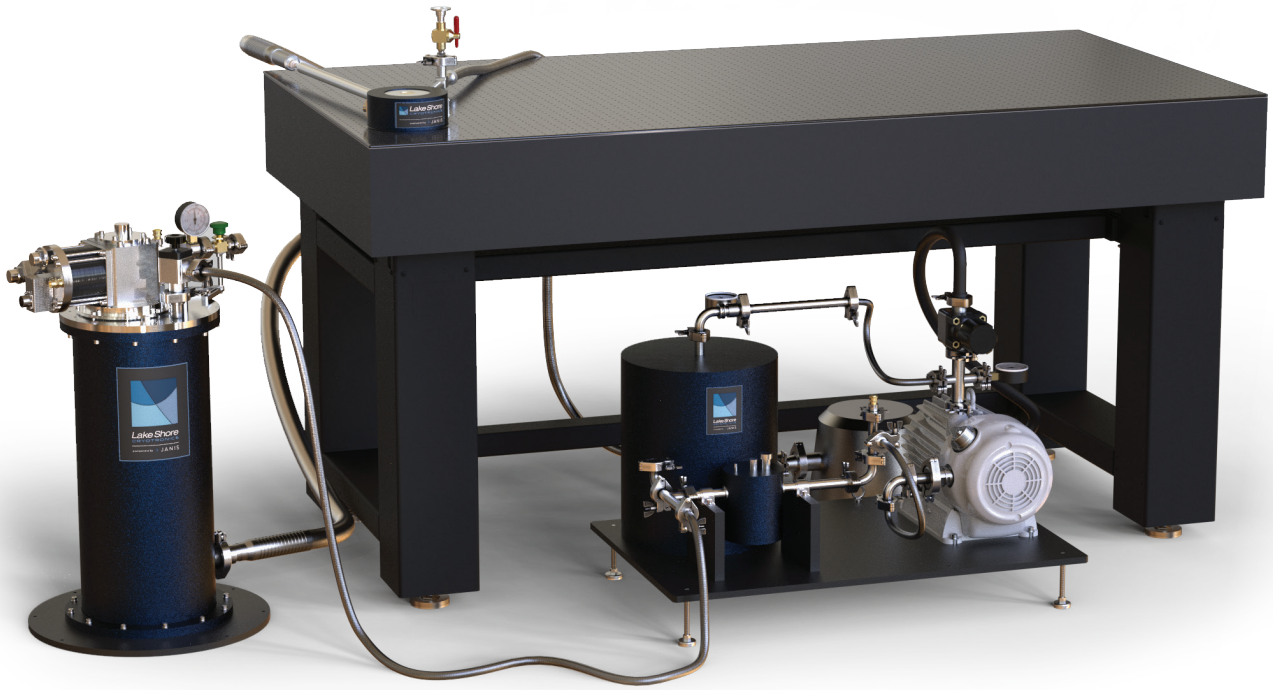
Lake Shore CRYOTRONICS

environment by JANIS



RGC4 recirculating coolers for cooling SuperTran and SuperTran-VP cryostats

The **RGC4** coolers allow any continuous-flow cryostat to be cooled without liquid cryogens. They offer all the convenience, small size, and fast turnaround of a continuous-flow cryostat without the need for liquid helium.



RGC4 recirculating coolers

The SuperTran product line has long been an industry standard for continuous-flow cryogenic systems. Now, with the introduction of the RGC4 recirculating gas coolers, these cryostats can be cooled without the need for liquid cryogens.

A closed loop of helium gas is cooled by a cryocooler and the cold helium gas travels to the cryostat through a flexible vacuum-insulated transfer line. The gas cools the sample mount and thermal radiation shield before returning to the cryocooler for continuous recirculation. Samples can be changed without warming up the RGC4, allowing fast turnaround times. When paired with a Lake Shore Cryotronics ST-500 cryostat, the combination is an ultra-stable cryogenic microscopy platform, cooling samples and devices to below 4 K without the use of liquid helium.

Typical applications include micro-PL, micro-Raman, and high spatial resolution imaging. The RGC4 system can be used with the ST-100 optical workhorse, the ST-200 non-optical system, the ST-300 compact unit for use in a magnet, and the ST-400 UHV configuration, as well as the ST-500 microscopy configuration, the ST-500 based probe station, and the STVP with sample in flowing vapor.

Key features

- All the flexibility and convenience of a continuous-flow cryostat without liquid helium
- Fast sample change without warming up the RGC4 cooler
- Excellent thermal performance
- Low vibration — vibration data available upon request
- Compatible with most existing SuperTran cryostats
- Order a new cryostat with a transfer line and choose to operate using LN_2, LHe, or cryogen-free

RGC4-XX coolers

Featured components

Two-stage Gifford-McMahon (G-M) cold head with compatible compressor (pulse tube cooler optional)

Vacuum shroud containing internal helium lines with special heat exchangers for cooling the circulating helium gas, radiation shield, and two diagnostic standard curve silicon diode temperature sensors

Gas handling system with hermetically sealed oil-free gas circulating pump, storage volume, and interconnecting pumping lines and valves

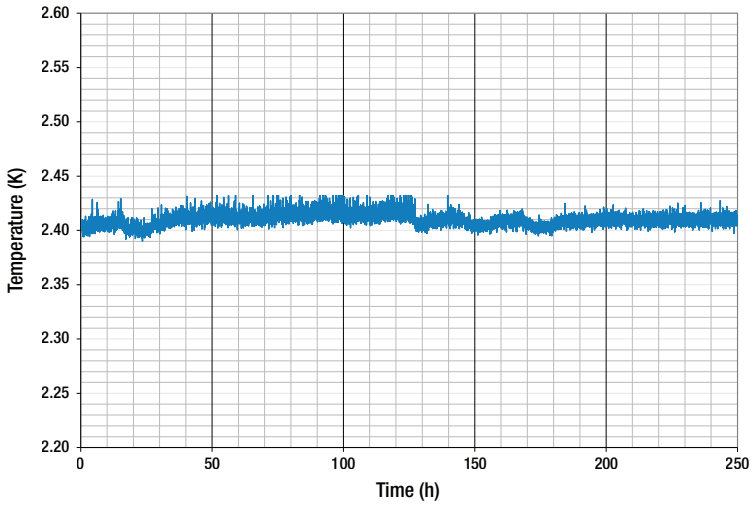
Vibration isolation for gas circulation line

Helium transfer line to deliver helium to cryostat

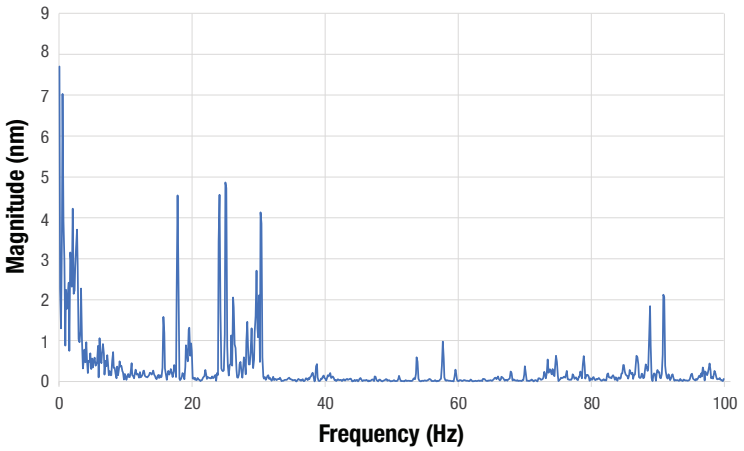
Allows fast sample exchange without warming up the RGC4

Compatible with existing SuperTran and SuperTran-VP cryostats

Base temperature of ST-500 microscopy cryostat cooled by RGC4 system



Vibration measured on a standard ST-500 cryostat cooled by an RGC system



Selections

Cryocooler models

RGC4-10: 1 W

RGC4-12: 1.2 W

RGC4-15: 1.5 W

RGC4-20: 2 W

Compressor

Water-coooled

Air-cooled

Gas handling system pump

3.6 cfm scroll pump (standard)

10.6 cfm scroll pump

Custom configurations

Pulse tube cryocooler instead of G-M cryocooler

Elbow on transfer line

Compatible cryostats

SuperTran models

ST-100

ST-200

ST-300

ST-400

ST-500

SuperTran-VP models

STVP-100

STVP-200

STVP-200-NMR

Specifications

Sample temperatures[1]	ST-100, ST-200, and ST-300	ST-400	ST-500	STVP	Probe station
RGC4-10	<4.3 K	<4.0 K (120 mW at 5 K)	<4.2 K (100 mW at 5 K)	<10 K	Consult Lake Shore
RGC4-12	<3.9 K	<3.6 K (180 mW at 5 K)	<4.0 K (150 mW at 5 K)	<9 K	
RGC4-15	<3.5 K	<2.9 K (220 mW at 5 K)	<3.8 K (210 mW at 5 K)	<8 K	
RGC4-20	<3.3 K	<2.6 K (280 mW at 5 K)	<3.5 K (250 mW at 5 K)	<7 K	

Size	
Gas handling system dimensions	533.4 mm × 838.2 mm × ≈711.2 mm (21 in × 33 in × ≈28 in)
RGC4 cryocooler dimensions	457.2 mm (18 in) base diameter × 787.4 mm (31 in) tall
Gas handling system weight (approximate)	56.7 kg (125 lb)
RGC4 cryocooler weight (approximate)	36.3 kg (80 lb)
Shipping dimensions for three RGC4 system crates (approximate)	Crate 1: 109 cm × 84 cm × 147 cm (43 in × 33 in × 58 in); Crate 2: 81 cm × 81 cm × 91 cm (32 in × 32 in × 36 in); Crate 3: 102 cm × 102 cm × 163 cm (40 in × 40 in × 64 in)
Shipping weights for three RGC4 system crates (approximate)	Crate 1: 211 kg (464 lb); Crate 2: 123 kg (271 lb); Crate 3: 113 kg (250 lb)

[1] Temperatures listed are for models when used with standard pumps; for larger-capacity pump temperatures, contact Lake Shore.

Ordering information

RGC4 recirculating coolers

RGC4-10	1 W
RGC4-12	1.2 W
RGC4-15	1.5 W
RGC4-20	2 W

Accessories

10RVP	Vacuum pumping station
10DDP	Vacuum pumping station
TS-85-D	Turbomolecular pumping station
336	Model 336 temperature controller
335	Model 335 temperature controller
325	Model 325 temperature controller

Compatible cryostats

ST-100	SuperTran optical cryostat
ST-200	SuperTran cryostat
ST-300	SuperTran compact optical cryostat
ST-400	SuperTran ultra-high vacuum cryostat
ST-500	SuperTran
STVP-100	SuperTran-VP optical cryostat
STVP-200	SuperTran-VP non-optical cryostat
STVP-200-NMR	SuperTran-VP non-optical NMR magnet cryostat

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