

**Chase
Research
Cryogenics**

**Sub-Kelvin sorption coolers and
heat switches for the scientific
and engineering communities.**



chasecryogenics.com

Cool below 1K



GL4
1K sorption cooler

Typical specification for a small unit:
Cold stage base temperature $T < 1\text{K}$.
Run time: Minimum of 24 hours with $100\mu\text{W}$ thermal load.
Cycle time (4K to 1K): approx. 1 hour.
Weight: 1.5kg.
Dimensions: $\phi 89 \times 226\text{mm}$.

GL4
1K sorption cooler

Typical specification for a large unit:
Cold stage base temperature $T < 1\text{K}$.
Run time: approx. 12 hours with 1mW thermal load.
Cycle time (4K to 1K): approx. 1 hour.
Weight: 3kg.
Dimensions: $\phi 127 \times 242\text{mm}$.



CC4
Continuous 1K sorption cooler

Typical specification:
Cold stage average base temperature $T < 0.9\text{K}$.
No limit on run time when operated under software control.
Cold stage heat lift approx. $100\mu\text{W}$ at $T < 1\text{K}$.
Weight: 2.5kg.
Dimensions: $\phi 130 \times 244\text{mm}$.

Cool below 300mK



GL7
300mK sorption cooler

Typical specification for a small unit containing 2 litres ^3He :
Cold stage base temperature $T < 300\text{mK}$.
 ^3He cold stage heat lift: approx. $30\mu\text{W}$ @ $T < 330\text{mK}$.
Buffer stage heat lift: approx. $100\mu\text{W}$ @ $T < 1\text{K}$.
Run time: approx. 12 hours.
Cycle time (4K to 300mK): approx. 1 hour.
Weight: 2.5kg.
Dimensions: $\phi 127 \times 242\text{mm}$.

GL7
300mK sorption cooler

Typical specification for a large unit containing 5 litres ^3He :
Cold stage base temperature $T < 300\text{mK}$.
 ^3He cold stage heat lift: approx. $50\mu\text{W}$ @ $T < 340\text{mK}$.
Buffer stage heat lift: approx. $100\mu\text{W}$ @ $T < 1\text{K}$.
Run time: approx. 24 hours.
Cycle time (4K to 300mK): approx. 1 to 2 hours.
Weight: 3kg.
Dimensions: $\phi 140 \times 242\text{mm}$.



CC7
Continuous 300mK sorption cooler

Typical specification:
Cold stage average base temperature $T < 300\text{mK}$.
No limit on run time when operated under software control.
Cold stage heat lift approx. $100\mu\text{W}$ at $T < 360\text{mK}$.
Weight: 4kg.
Dimensions: $\phi 180 \times 237\text{mm}$.

Key features of our sorption coolers

- 1 No moving parts
- 2 Ultra-low vibration
- 3 No external gas-handling
- 4 Only requires electrical input
- 5 Require pre-cooling to 4K by suitable pre-cooler

Cool below 250mK



GL10

Sorption cooler with ultra-cold module

Typical specification for a standard unit containing 6.25 litres ^3He :

Ultra-stage base temperature $T < 250\text{mK}$.

Ultra-stage heat lift: approx. $3\mu\text{W}$ @ $T < 250\text{mK}$.

Intermediate stage heat lift: approx. $50\mu\text{W}$ @ $T < 350\text{K}$.

Buffer stage heat lift: approx. $200\mu\text{W}$ @ $T < 1\text{K}$.

Run time: approx. 24 hours.

Cycle time (4K to 250mK): approx. 2 hours.

Weight: 4.5kg.

Dimensions: $\phi 165 \times 242\text{mm}$.

GL10

Sorption cooler with twin ultra-cold modules

Typical specification for a large unit containing 7.5 litres ^3He :

Twin Ultra-stages base temperature $T < 250\text{mK}$.

Twin Ultra-stage heat lift: approx. $10\mu\text{W}$ each @ $T < 265\text{mK}$.

Intermediate stage heat lift: approx. $30\mu\text{W}$ @ $T < 310\text{K}$.

Buffer stage heat lift: approx. $150\mu\text{W}$ @ $T < 1\text{K}$.

Run time: approx. 16 to 18 hours.

Cycle time (4K to 250mK): approx. 1-1.5 hours.

Weight: 4.5kg.

Dimensions: $\phi 165 \times 242\text{mm}$.

Cool below 100mK



CMD

Continuous Miniature Dilutor

Dilutor cold stage base temperature $T < 100\text{mK}$.

No limit on run time when operated under software control.

Dilutor cold stage heat lift approx. $2\mu\text{W}$ at $T < 100\text{mK}$.

Weight: 4.5kg.

Dimensions: $\phi 180 \times 285\text{mm}$.

Our Continuous Miniature Dilution (CMD) coolers are light and compact sealed units that need no external gas supply. The CMD incorporates our 300mK continuous cooler (CC7) to pre-cool and buffer the dilution module. If you are interested in the potential applications for this unique cooling technology, get in touch with us to discuss your needs and how we might help.

Heat switches



Our range of heat switches includes both Active and Passive models, each designed to manage thermal conductance with precision across varying conditions.

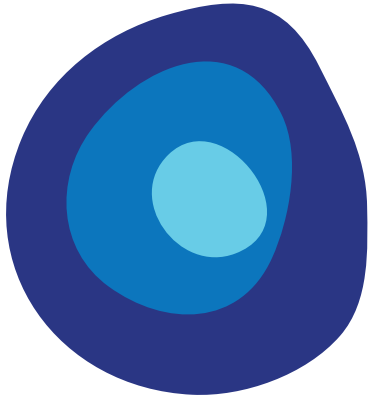
We make heat switches in both standard and bespoke designs for rapid cool-down and thermal isolation. Active heat switches operate under user control. Passive switches operate automatically when they reach their 'on' and 'off' state temperatures.

To learn how our heat switches can meet your unique requirements, please complete our Heat Switch Questionnaire on our website and share more about your intended application.

Custom design and build

All of our products can be adapted to suit your requirements.

We can customize all our products to optimise them for the user's application, for example to offer either a shorter or a longer run time, a higher load capacity, to interface to a customer's existing cryostat or fit within particular space constraints.



**Chase
Research
Cryogenics**

Our research never stops...

At Chase Research Cryogenics, we design and manufacture sub-Kelvin sorption coolers and heat switches for both the scientific and engineering communities.

With 30+ years experience, our growing in-house team of engineers and physicists work in partnership with both local and global business partners. Our customers' applications include astrophysics, quantum technologies, nanotechnology, materials science and life sciences.

Find out more about our product range, contact us on:

Chase Research Cryogenics | Cool Works, 2 Albion Works |
Savile Street | Sheffield | S4 7UD | United Kingdom

T: +44 114 2780711 **E:** info@chasecryogenics.com

chasecryogenics.com

