INFINITE HELIUM

# Effortless Intelligent Cooling

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Lake Shore CRYOTRONICS environment by JANIS

# INFINITE HELIUM

Introducing Infinite Helium—an automated solution that makes your LHe cryostat cryogen-free. Infinite Helium innovatively circulates helium in a closed loop, enabling your continuous flow cryostat to operate without constant helium replenishment. Designed with adaptability in mind, Infinite Helium seamlessly integrates with your existing or new continuous flow cryostats to enable cryogen-free operation. While it's commonly paired with our ST-500 cryostat for microscopy, ST-400 cryostat for UHV/beamline applications, and ST-FTIR or ST-NMR cryostats, its compatibility extends across our entire range of continuous flow cryostats. Automation features further reduce user error, simplifying the cooldown process and valve adjustments, ensuring consistent and optimal performance.

## AUTOMATION

Reduce user error with **automated valve adjustments** and **safety checks** to recover from faults.

## LOW BASE TEMPERATURE

Push measurement boundaries down to **<2.2 K base temperature**.

## ULTRA-LOW VIBRATION

Consistency is key. Ensure replicable microscopy measurements with **<2 nm of vibration** 5 Hz and above.

## Simplicity at its best – single-button cooldown

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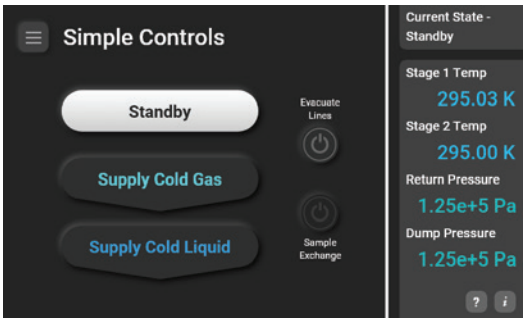
# EFFORTLESS




*A single button controls system cooldown and adjusts valves automatically, allowing you to be up and running fast.*

No more adjusting valves and constantly having to keep an eye on cooldown and runtime operations. Hands-on operation is reduced from hours to seconds. Infinite Helium offers very easy operation and eliminates the learning curve associated with complex recirculating cooling systems.

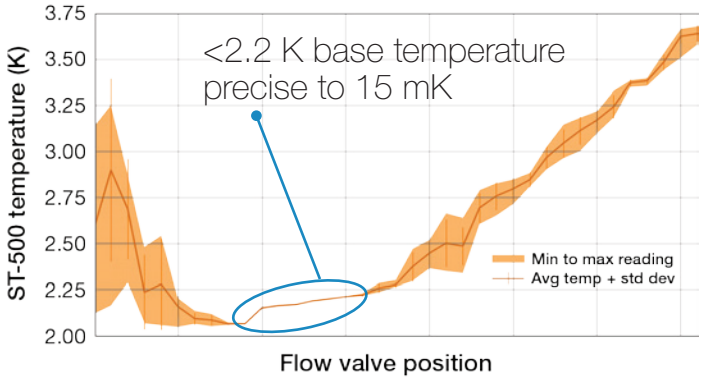
An automated system, Infinite Helium is simplicity at its best. Samples can be exchanged easily without warming up the system, allowing for fast turnaround times. Plus, you experience smooth, worry-free operation with the system. It can operate for extended periods—up to 6 months or longer—without requiring servicing (other solutions may need to be serviced as often as every couple of weeks). No service costs or frequent interruptions to your experiments or lab operations.

# INTELLIGENT

Infinite Helium automates the entire recirculation process. The valve automation process takes away all of the guesswork. Plus, it comes with Lake Shore MeasureLINK™ software for full system control as well as easy integration with other Lake Shore lab cooling and measurement instrumentation. MeasureLINK enables you to construct an experiment by selecting a sequence of pre-written functional steps to control temperature and collect data—and no programming required.

## Optimal tuning*

Automatically determines optimum settings for best cooling power and base temperature




**Preliminary results*

# VERSATILE

Easily move Infinite Helium between multiple continuous flow cryostats.

# 6 MONTHS+ CONTINUOUS RUN TIME

All components are selected for performance longevity. Don't interrupt your research because of servicing.



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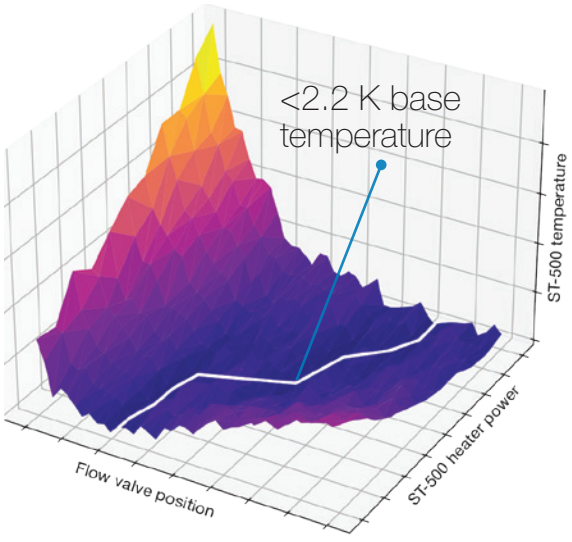
# Unlimited possibilities of data collection with automation and MeasureLINK




## COOLING

Cooling power goes beyond one number. We offer a comprehensive view of cooling power against heat load, so you can ascertain the baseline temperature possible with your sample. With Infinite Helium and your cryostat, it's possible to attain temperatures <3.4 K with cooling power of 450 mW at 5 K.* Two models are available, Infinite Helium and Infinite Helium Plus.

**Preliminary results; ST-500*

## COMPREHENSIVE SAMPLE MAPPING

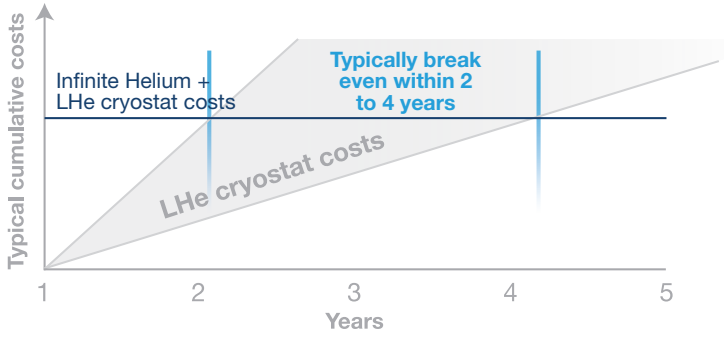
Automatically detects flow rate for optimized tuning in correlation to heat load for the lowest base temperature.

Fully characterize your cryostat environment with automated data collection.

## TYPICALLY BREAK EVEN WITHIN 2 TO 4 YEARS

Users typically break even within 2 to 4 years (depending on helium consumption). Save money long-term with Infinite Helium and eliminate helium sourcing struggles.

Speak to our sales team about possible trade-in options for your existing Lake Shore RGC.



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## ULTRA-LOW VIBRATION

Add on the low-vibration option to reach ultra-low vibrations with less than 2 nm vibration (>5 Hz).

## STABLE TEMPERATURE

Sensitive samples require a stable environment. Guard against thermal-induced changes with low thermal drift. Precise to 15 mK at base temperature.

## AUTOMATED SAFETY ALERTS

- Water shut off
- Loss of power
- Contaminated helium
- Small leak
- Major leak
- Equipment not responding
- Helium pressure out of range
- Maintenance due

## SPECS

**Vibration option (with ST-500)**
<2 nm (>5 Hz)

**Continuous run time**
6 months

**System dimensions**
508 mm (w) × 889 mm (l) × 1575 mm (h)
(20 in × 35 in × 62 in)

**Weight (approximate)**
182 kg (400 lb)

**Shipping weight (approximate)**
295 kg (650 lb)

## FACILITY REQUIREMENTS

**Recommended compressor maintenance interval** 30,000 h

**Recommended cold head maintenance interval** 10,000 h

| Water-cooled | | | |
|---|---|---|---|
| **60 Hz power requirements** | **50 Hz power requirements** | **Cooling water requirements** | **Compressor size** |
| 200 VAC, 3-phase, 7.5 to 7.8 kW or 480 VAC, 3-phase, 7.5 to 7.8 kW | 200 VAC, 3-phase, 6.6 to 6.9 kW or 380 to 415 VAC, 3-phase, 6.6 to 6.9 kW | 6 to 9 L/min at 5 to 25 °C | 443 mm × 493 mm × 532 mm high; 100 kg |

| Air-cooled | | | |
|---|---|---|---|
| **60 Hz power requirements** | **50 Hz power requirements** | **Cooling air requirements** | **Compressor size** |
| 200 VAC, 3-phase, 7.5 to 8.3 kW steady state or 460/480 VAC, 3-phase, 7.5 to 8.3 kW | 200 VAC, 3-phase, 6.5 to 7.2 kW steady state or 380/400/415 VAC, 3-phase, 6.5 to 7.2 kW | 23 $m^3$/min | 450 mm × 485 mm × 925 mm high; 155 kg |

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# ORDERING INFORMATION

*All specifications are cryostat-dependent. Specs shown are in an ST-500. Please contact us for more information.*

## 1. Select model

| | |
|---|---|
| **Infinite Helium** | <3.8 K base temperature |
| **Infinite Helium Plus** | <2.2 K base temperature |

## 2. Select vibration

| | |
|---|---|
| **Low vibration option** | <2 nm |

## 3. Select cryostat (optional)

| | |
|---|---|
| **ST-500** | For microscopy applications |
| **ST-400** | For UHV/beamline applications |
| **ST-FTIR** | For FTIR applications |
| **STVP-NMR** | For NMR applications |
| **ST-100** | General purpose |
| **TTPX** | Probe station |
| **Other** | Other compatible cryostat |

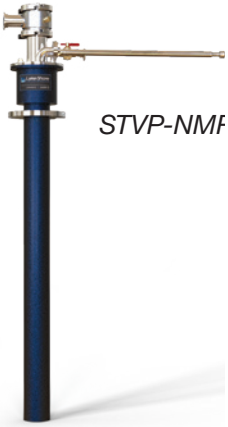
## Popular cryostat pairings

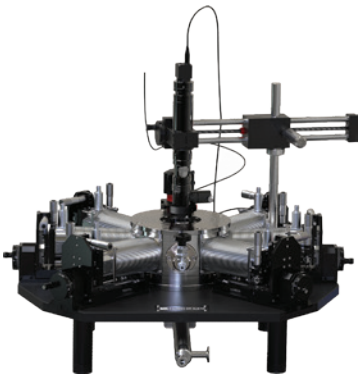
Combine Infinite Helium with one of our popular cryostat pairings. Also compatible with most continuous flow cryostats from other manufacturers.

*ST-500*

*ST-400*

*ST-FTIR*


*STVP-NMR*



Also available for use with our TTPX probe station, as well as most other continuous flow cryostats



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