

FTIR Cryostats

FTIR helium-cooled cryostats <2 K to 500 K



ST-FTIR

STVP-FTIR, ST-FTIR, and VPF-FTIR cryostats are optimized for use with commercial FTIR spectrometers. An integrated translation stage is used to move a reference or sample into alignment with the IR beam. Sample holders have three positions and integrated rotation provides additional sample-to-beam alignment. Mounting flanges are available for securing to a wide range of FTIR sample compartments, including purged and evacuated configurations. Access to the sample space is provided by a quick disconnect clamp. The four-way optical sample chamber can be configured for reflectance or transmission measurements. Optional window materials can be installed to span the far/mid-IR, VUV, and x-ray regions for a variety of spectroscopic measurements. A compact vacuum shroud is available for use with the reflectance accessory of most commercial FTIR spectrometers. For the STVP and ST models, temperatures below 4.2 K are achieved by reducing the venting helium gas pressure using a vacuum pump.

STVP-FTIR and ST-FTIR cryostats can be combined with the RGC recirculating gas cooler for cryogen-free operation, enabling unattended cryostat operation — ideal for extended duration measurements.

Key features

Integrated sample translator

Linear manipulator with 51 mm (2 in) travel

Multiple-position sample holder

Featured components

Copper sample mount with removable multi-position optical sample holder

Integrated linear sample translator to shift between a reference position and multiple samples

Compact optical vacuum shroud with four o-ring sealed window ports — enables compatibility with FTIR reflectance accessories and increased numerical aperture (ST and VPF only)

Mounting flanges to integrate with many commercial spectrometers

Polished aluminum thermal radiation shield (ST and STVP only)

High-efficiency, flexible LHe/LN₂ transfer line (ST and STVP only)

FTIR models

STVP-FTIR maximum temperature = 325 K

ST-FTIR maximum temperature = 500 K

VPF-FTIR maximum temperature = 500 K

Specifications

| | STVP-FTIR | ST-FTIR | VPF-FTIR |
|---|---|--|---|
| Temperature range ¹ | <2 K to 325 K | <2.5 K to 500 K | 65 K to 500 K ² |
| Typical temperature stability ³ | ±50 mK | | |
| Cooldown time | 15 min | 15 min (LHe to 5 K) | 15 min (to 77 K) |
| Cryogen consumption (LHe room to base temp) | 0.5 L | 0.4 L | — |
| Cryogen consumption (LHe at 5 K) | 1.3 L/h | 0.6 L/h | — |
| Cryogen consumption (LN ₂ at 80 K) | | 0.1 L/h | — |
| LN ₂ hold time (77 K) | — | — | 8 h |
| LN ₂ hold time (100 K) | — | — | 4.5 h |
| LN ₂ hold time (200 K) | — | — | 2.5 h |
| Initial vacuum level requirement ³ | ~10 ⁻³ Torr | | |
| Typical base pressure during operation | ~10 ⁻⁵ Torr | | |
| Height (approximate) | 762 mm (30 in) | 635 mm (25 in) | 876 mm (34.5 in) |
| Inner space (at sample region) | 38.1 mm (1.5 in) | 44.5 mm (1.75 in) | 63.5 mm (2.5 in) |
| Sample mount diameter | 31 mm (1.25 in) | 25 mm (1 in) | 31.75 mm (1.25 in) |
| Window block | 108 mm (4.25 in) | 58 mm (2.28 in) | 58 mm (2.28 in) |
| Weight (excluding transfer line, approximate) | 7 kg (15.4 lb) | 10 kg (23 lb) | 3.3 kg (7 lb) |
| Shipping weight (approximate) | 61 kg (135 lb) cryostat and line | 22.1 kg (49 lb) cryostat and line | 9.1 kg (20 lb) |
| Shipping dimensions (approximate) | 1905 × 990.6 × 431.8 mm (75 × 39 × 17 in) cryostat and line | 762 × 508 × 508 mm (30 × 20 × 20 in) cryostat and 2057 × 660 × 127 mm (81 × 26 × 5 in) line | 610 × 406 × 305 mm (24 × 16 × 12 in) |

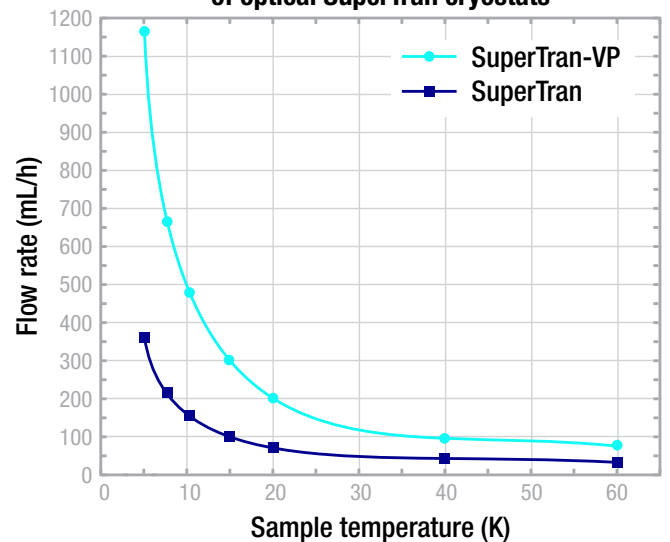
¹ Custom models that go up to 800 K are available, consult us

² Operation below 77 K requires pumping manifold

³ Measured with temperature controller

⁴ Pressure measured at room temperature, prior to adding cryogens

Typical cryogen consumption of optical SuperTran cryostats



Complete your system

Temperature control

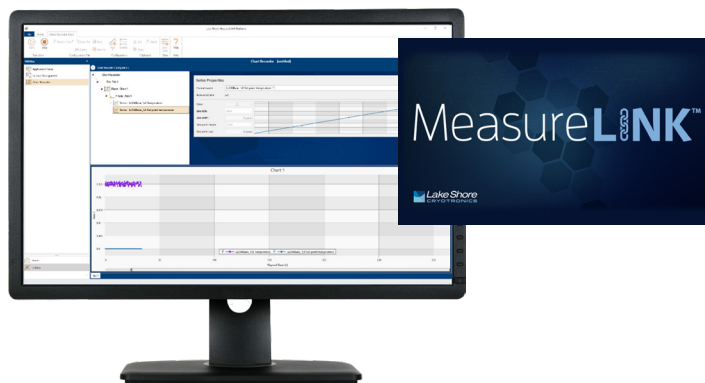
Included



Every cryostat includes a Lake Shore temperature controller and calibrated sensor.

MeasureLINK control software

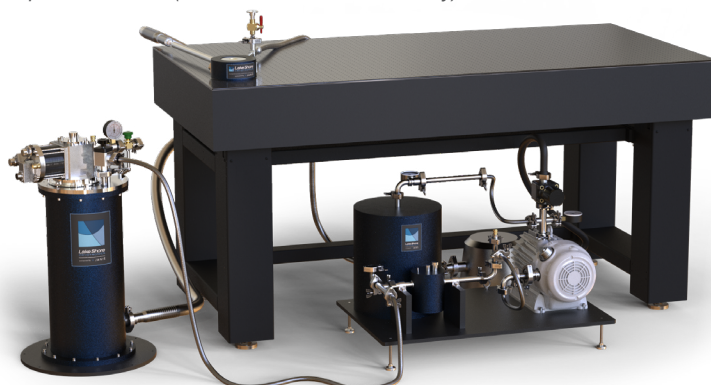
Optional add-on



MeasureLINK software enables a wide range of capabilities including charting and logging, system monitoring with a cryostat-specific process view, and controlling Lake Shore equipment as well as third-party instrumentation. No programming required—drag-and-drop to create temperature sweeps, access measurements, and see real-time internal cryostat temperatures in process view.

Cryogen-free operation

Optional add-on (ST-FTIR and STVP-FTIR only)



Cryostats can be combined with the RGC recirculating gas cooler for fully cryogen-free operation throughout the entire temperature range. This enables unattended cryostat operation, ideal for extended duration measurements.

Configure your cryostat

1. Select cryostat variant

| | |
|------------------|--|
| STVP-FTIR | Optical, <2.5 K to 500 K, calibrated temperature sensor |
| VFP-FTIR | Optical, 65 K to 500 K, calibrated temperature sensor |
| ST-FTIR | Optical, <2 K to 325 K, calibrated temperature sensor |
| CUSTOM | Custom configurations are available to fit your experiment needs — contact Sales for details |

2. Select cryostat configurations

Sample holders

FTIR cryostats come standard with a three-position optical sample holder. Consult us for other options.

Windows

Windows are available in multiple thicknesses and materials. See our cryostat window selection guide and contact sales for additional information.

3. Select pump (optional)

Each cryostat required a pump to operate. If you do not have an existing pump to use, select one of the pumps below.

| | |
|----------------|---|
| 10RVP | General-purpose mechanical pumping station |
| 10DDP | General-purpose mechanical pumping station with LN ₂ cold trap and isolation valve |
| TS-85-D | Turbopumping station |

4. Select cryostat wiring

We offer a variety of both unwired and wired feedthroughs to complete your measurement setup. Please refer to the cryostat feedthroughs and wiring guide for more information.

5. Select optional system configurations

Cryogen-free operation (ST-FTIR and STVP-FTIR only)

| | |
|----------------|---|
| RGC4-10 | Recirculating cooler with base temperature <4.3 K |
| RGC4-15 | Recirculating cooler with base temperature <3.5 K |
| RGC4-20 | Recirculating cooler with base temperature <3.3 K |

Measurement instrumentation

Cryostats come standard with one temperature controller.

| | |
|-----------------|---|
| 336 | Model 336 temperature controller |
| 335 | Model 335 temperature controller |
| 335-3060 | Model 335 temperature controller with installed 3060 thermocouple option card |
| 325 | Model 325 temperature controller |

6. Select optional control software

| | |
|---------------|--|
| ML-MCS | MeasureLINK-MCS software with scripting development license; includes lifetime activation for version purchased and full MeasureLINK capability on up to 5 computers with Lake Shore instrument drivers, chart recorder functionality, and drag-and-drop measurement sequences; some application packs sold separately |
|---------------|--|

7. Select additional accessories

ST-FTIR and VFP-FTIR cryostats come standard with one installed temperature sensor. STVP-FTIR comes standard with two installed sensors. Other sensors are available—contact us.

| | |
|---------------------------|---|
| CX-1050-CU-HT-1.4M | Cernox® magnetic field independent, calibrated |
| CONSULT | Thermocouple (ST-100-H only) |
| CF-100 | LHe storage Dewar |
| LN-50 | LN ₂ storage Dewar configured for use with SuperTran cryostats |

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