Lake Shore CRYOTRONICS

environment by JANIS

FTIR Cryostats

FTIR helium-cooled cryostats <2 K to 500 K

ST-FTIR-VAC

STVP-FTIR, ST-FTIR, ST-FTIR-VAC, 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/-VAC cryostats can be combined with Infinite Helium 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/LN_2 transfer line (ST and STVP only)

FTIR models

- **STVP-FTIR** maximum temperature = 325 K
- **VPF-FTIR** maximum temperature = 500 K
- **ST-FTIR** maximum temperature = 500 K; tapped mounting holes
- **ST-FTIR-VAC** maximum temperature = 500 K; mounting flange and sample compartment cover for a vacuum bench spectrometer

Specifications

	STVP-FTIR	ST-FTIR/-VAC	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]	$\sim 10^{-3}$ Torr		
Typical base pressure during operation	$\sim 10^{-5}$ 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)

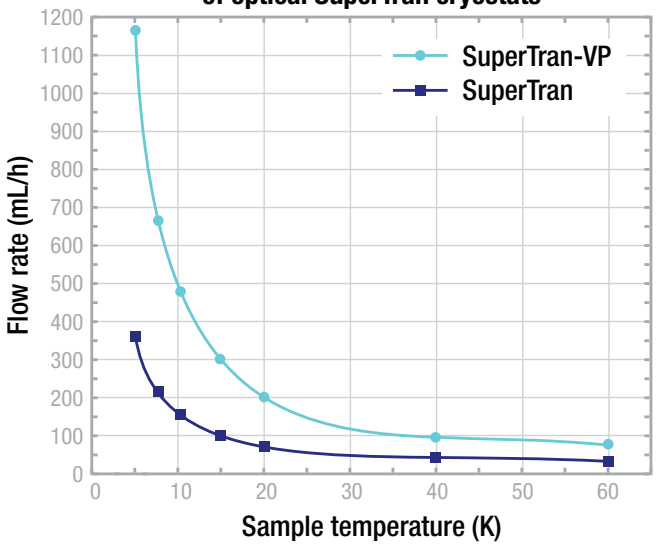
[1] Custom models that go up to 800 K are available, consult us

[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 setup

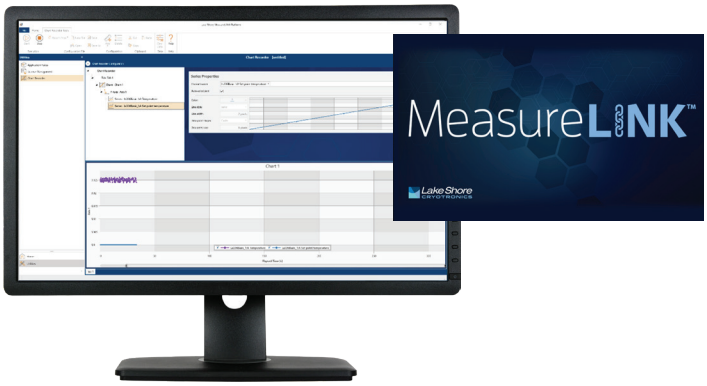
Temperature control

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/-VAC and STVP-FTIR only)

Cryostats can be combined with Infinite Helium 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
VPF-FTIR	Optical, 65 K to 500 K, calibrated temperature sensor
ST-FTIR	Optical, <2 K to 325 K, calibrated temperature sensor; includes tapped holes for baseplate mounting
ST-FTIR-VAC	Optical, <2 K to 325 K, calibrated temperature sensor; includes mounting flange and sample compartment cover for a vacuum bench spectrometer
CUSTOM	Custom configurations are available to fit your experiment needs—contact Sales for details

2. Select cryostat configurations

Spectrometer
Let your salesperson know your spectrometer model so we can include the correct cryostat interface.

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 requires 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 setup configurations

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

INFHE-20	Infinite Helium recirculating cooler with base temperature down to <3.3 K
INFHE-15	Infinite Helium recirculating cooler with base temperature down to <3.5 K
RGC4-10	RGC Series recirculating cooler with base temperature down to <4.3 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 VPF-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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