Lake Shore CRYOTRONICS

environment by JANIS

SHI-950T-LT

Cryogen-free

Sample in exchange gas cryostats 1.5 K to 800 K

These Lake Shore closed-cycle refrigerator cryostats cool the sample in exchange gas. Helium circulates through an independent cooling loop to cool samples to temperatures as low as 1.5 K, allowing nearly unlimited operation. The sample space is separate from the cooling loop, minimizing the risk of blockages. With a wide range of electrical feedthrough and window options, they are a versatile choice for making cryogenic measurements without using liquid helium.

Key features

- <1.5 K (continuous operation) to 800 K
- Cryogen-free
- Sample in exchange gas

Featured components

- Choice of inserts, including helium-3, sample in vacuum, or rotating sample holder
- Gas handling system with scroll pump
- Integrated control heater and calibrated control sensor

Cryostat models

- **SHI-950-LT** low-temperature 1.5 K, optical
- **SHI-950T-LT** low-temperature 1.5 K, non-optical

Specifications

		SHI-950-LT	SHI-950T-LT
Minimum temperature options	Standard	1.5 K	
	With optional He-3 insert	300 mK	
Maximum temperature		800 K	
Typical temperature stability[1]		±50 mK	
Cold head location		Top	
Cooldown		9 h	8 h to 9 h
Sample cooling time[2]		~80 min	
Optical		✓	✕
Height (approximate)		142 cm to 168 cm (56 in to 66 in)	
Weight (approximate)		113.4 kg (250 lb)	
Sample tube size		51 mm (2 in)	51 mm (2 in)[3]
Window block size		108 mm (4.25 in) square	—
Recommended maintenance		13,000 h	

[1]Measured with temperature controller

[2]Time to cool sample from room temperature in an already cold cryostat

[3]Narrow tails available for room temperature bore magnet integration

SHI-950-LT

Facility requirements

		Recommended		Water-cooled				Air-cooled			
CCS-	Cold head	Compressor maintenance interval	Cold head maintenance interval	60 Hz power requirements	50 Hz power requirements	Cooling water requirements	Compressor size	60 Hz power requirements	50 Hz power requirements	Cooling air requirements	Compressor size
SHI-950-LT SHI-950T-LT	-408	30,000 h	10,000 h	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	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 m³/min	450 mm × 485 mm × 925 mm high; 155 kg

Complete your system

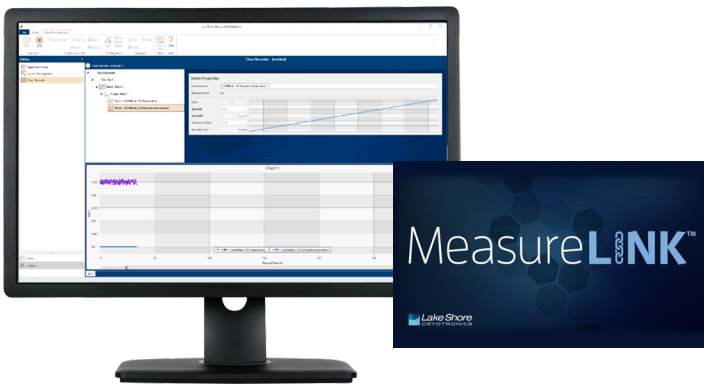
Temperature control

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.

Source + measure + lock-in

Optional add-on

The Lake Shore M81-SSM provides highly synchronized DC, 100 kHz AC, and mixed DC + AC sourcing and measuring—including both voltage and current lock-in measurement capabilities—for low-temperature material research performed in your cryostat. It supports up to three remote-mountable source and three measure modules per a single M81-SSM-6 instrument and, owing to its modularity, allows signal and source amplifiers to be located as close as possible to the sample being characterized. This minimizes the signal wiring to the sample, reduces noise, and increases measurement sensitivity.

Configure your cryostat

1. Select cryostat

SHI-950-LT	Optical, continuous low-temp
SHI-950T-LT	Non-optical, continuous low-temp
CUSTOM	Custom configurations are available to fit your experiment needs—contact Sales for details

2. Select cryostat configurations

Sample holders

SH-BLANK-1.5-STD	Blank
SH-BLANK-1.5-800	Blank, high-temperature
SH-OPTICAL-1.5-STD	Optical
SH-OPTICAL-1.5-800	Optical, high-temperature
SH-RESISTIVITY-1.5-STD	Resistivity
CONSULT	Custom sample holders

Sample positioners/inserts

CONSULT	Helium-3 insert for 300 mK base temperature
CONSULT	Sample in vacuum insert
CONSULT	Standard sample positioner with calibrated temperature sensor for operation to 500 K (sample tube evacuated above room temperature)
CONSULT	High-temperature sample positioner with type E thermocouple for operation to 800 K (sample tube evacuated above room temperature)
CONSULT	Custom sample positioner with tilt rotation stage

Windows (optical variants only)

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

Compressor type

CONSULT	Substitute air-cooled compressor in place of standard water-cooled

3. Select pump (optional)

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

TSJ-85-D	Turbopumping station with scroll backing pump

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

Measurement instrumentation

Cryostats come standard with one temperature controller.

336	Model 336 temperature controller
336-3060	Model 336 temperature controller with installed 3060 thermocouple option card

M81-SSM electronic synchronous source measure system

Contact us for cables and adapters for M81-SSM/cryostat integration.

M81-SSM-X	M81-SSM instrument with X = 2, 4, or 6 channels; half the channels are dedicated to sourcing and the other to measurement; see modules below
VM-10	AC/DC voltage measure module + lock-in
BCS-10	AC/DC balanced current source module
CM-10	AC/DC current measure module + lock-in
VS-10	AC/DC voltage source module

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

Cryostats come standard with two installed temperature sensors. Other sensors are available—contact us.

CX-1050-CU-HT-1.4M	Cernox® magnetic field independent, calibrated

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