environment by JANIS

Lake Shore CRYOTRONICS
a DwyerOmega brand



CCS-900

Cryogen-free

Sample in exchange gas cryostats <2 K to 800 K

These Lake Shore closed-cycle refrigerator cryostats cool the sample in exchange gas. They allow for uniform cooling and fast sample exchange. 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

- <2 K (with optional single-shot operation) to 800 K
- Cryogen-free
- Sample in exchange gas up to room temperature

Featured components

- Choice of cryocooler to match performance and cooling requirements
- Integrated control heater and calibrated control sensor

Cryostat models

- **CCS-900** optical
- **CCS-900T** non-optical

Specifications

		CCS-900	CCS-900T
Minimum temperature options	408	<4 K[1]	
	415		
	418		
Maximum temperature		800 K[2]	
Typical temperature stability[3]		±50 mK	
Cold head location		Top	
Cooldown time		3 h to 3.5 h	3 h to 4 h
Optical		✓	×
Height (approximate)		114 cm (45 in)	114 to 168 cm (45 to 66 in)
Weight (approximate)		48 kg (106 lb)	45 to 50 kg (100 to 110 lb)
Sample tube size (inner diameter)		38.1 mm (1.5 in)	28.6 mm (1.125 in), 38.1 mm (1.5 in), or 60.3 mm (2.375 in) (custom sizes available upon request)
Window block size		95.3 mm (3.75 in) square	—
Recommended maintenance		13,000 h	



CCS-900T

[1] *<2 K single-shot operation available with condensing zone option*

[2] *Operation above room temperature is with the sample tube evacuated*

[3] *Measured with temperature controller*

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
900 900T	-408 -415 -418	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 setup

Temperature control

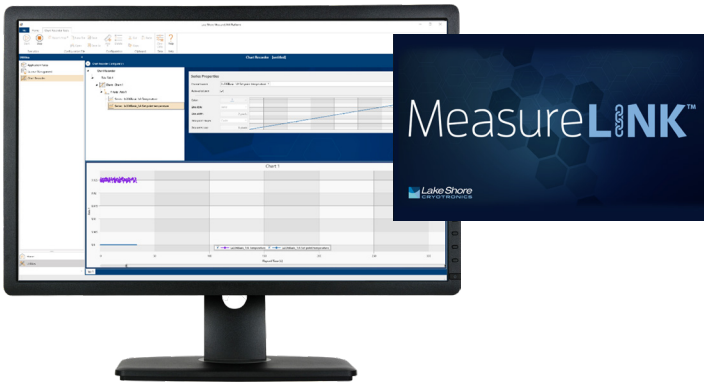
Included



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.

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

CCS-900	Optical, exchange gas
CCS-900T	Non-optical, exchange gas
CUSTOM	Custom configurations are available to fit your experiment needs—contact Sales for details

2. Select cryostat configurations

Sample holders

SH-BLANK-1.25-STD	Blank
SH-BLANK-1.25-800	Blank, high-temperature
SH-OPTICAL-1.25-STD	Optical
SH-OPTICAL-1.25-800	Optical, high-temperature
SH-RESISTIVITY-1.25-STD	Resistivity
CONSULT	Custom sample holders

Condensing zone option

CONSULT	Allows helium to condense in the sample tube for single-shot operation to 2 K

Sample positioners

CONSULT	Standard sample positioner with calibrated temperature sensor for operation to 420 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	Upgrade sample positioner to precision design with manual linear manipulator (2 in travel)

Windows

For optical variants, windows are available in multiple thicknesses and materials. See our cryostat window selection guide and contact sales for additional information. For non-optical variants, the tail may be made from aluminum or vanadium for neutron scattering applications.

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 setup configurations

Measurement instrumentation

Cryostats come standard with one temperature controller.

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 CONSULT	Cernox® magnetic field independent, calibrated

Copyright © Lake Shore Cryotronics, LLC All rights reserved. Specifications are subject to change.

102126 11:16