Lake Shore CRYOTRONICS

environment by JANIS

Cryogen-free

CCR cryostats for Mössbauer spectroscopy <4.5 K to 300 K

Optimized for Mössbauer spectroscopy, the Lake Shore CCS-800 provides uniform cooling of powders and irregularly shaped solid samples without introducing vibrations (and subsequent line broadening). Samples are top-loaded into static helium thermal exchange gas, eliminating the need for careful thermal anchoring. The CCS-800 is supplied with an integrated pneumatically isolated mounting stand.

Key features

- <4.5 K to 300 K
- Cryogen-free
- Sample in exchange gas

Featured components

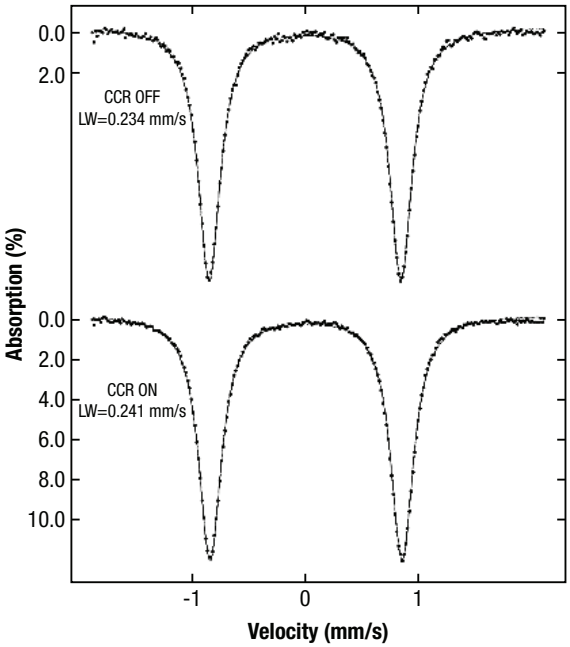
- Choice of cryocooler to match performance and cooling requirements
- Integrated control heater and calibrated control sensor

Specifications

		CCS-800
Minimum temperature options	204	<10 K
	204N	<6 K
	205	<5 K
	408	<4.2 K
Maximum temperature		300 K
Cooldown time		2 h to 2.5 h
Sample change time		5 min
Sample chamber inner diameter		38 mm (1.5 in)
Typical temperature stability[1]		±50 mK
Typical vibrational line broadening		0.01 mm/s
Height (approximate)		142 to 168 cm (56 in to 66 in)
Weight (approximate)		27.2 kg (60 lb) cryostat and 327 kg (720 lb) stand (including lead shielding)
Window block size		57.2 mm (2.25 in) OD
Recommended maintenance		13,000 h

[1] Measured with temperature controller

Shown (below) are Fe_{57} Mössbauer spectra (dots) of a 25 µm iron metal foil at 298 K with the CCR off and on. The velocity scan of ±2 mm/s covers only the innermost lines of the iron metal sextet. Also shown are least squares fits (lines) of a symmetric quadrupole pair with Lorentzian line shapes to each spectrum. The results of the fits were linewidth estimates of 0.234 mm/s with the CCR off and 0.241 mm/s with the CCR on. The uncertainty in the line width estimates due to the counting statistics is ±0.002 mm/s.



NOTE: Data provided by Science Engineering & Education Co. (SEE Co. — formerly Web Research Co.), http://www.seeco.us.

Special thanks to Professor Darby Dyar, Mount Holyoke College.

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
800	-204 -204N	30,000 h	13,000 h	208 to 230 VAC, 1-phase, 2.6 kW	200, 220 to 240 VAC, 1-phase, 2.25 to 2.4 kW	1.9 to 3.8 L/min at 4 to 27 °C	444 mm × 453 mm × 617 mm high; 73 kg	208 to 230 VAC, 1-phase, 2.6 kW	200, 220 to 240 VAC, 1-phase, 2.25 to 2.4 kW	17.6 m³/min (60 Hz) or 14.7 m³/min (50 Hz)	444 mm × 453 mm × 876 mm high;103 kg
800	-205		10,000 h	200 VAC, 3-phase, 4.6 to 5.6 kW or 460 to 480 VAC, 3-phase, 4.6 to 5.6 kW	200 VAC, 3-phase, 3.6 to 4.8 kW or 380/400/415 VAC, 3-phase, 3.6 to 4.8 kW	4 to 9 L/min at 5 to 25 °C	442 mm × 493 mm × 532 mm high; 96 kg	200 VAC, 3-phase, 4.6 to 6.4 kW or 460 to 480 VAC, 3-phase, 4.6 to 6.4 kW	200 VAC, 3-phase, 3.6 to 5.4 kW or 380/400/415 VAC, 3-phase, 3.6 to 5.4 kW	17.6 m³/min (60 Hz) or 14.7 m³/min (50 Hz)	442 mm × 493 mm × 889 mm high; 110 kg
800	-408			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

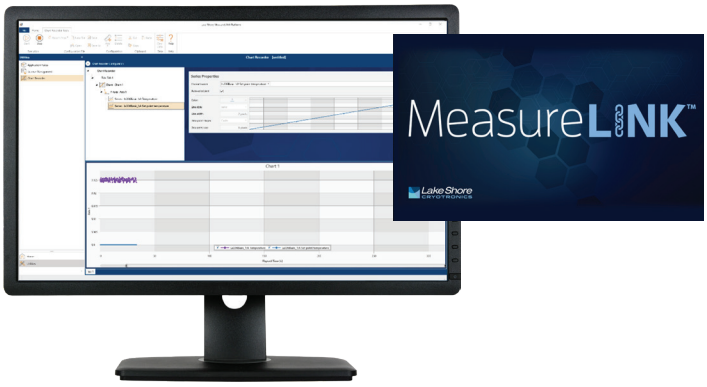
Temperature control

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.

Configure your cryostat

1. Select cryostat

CCS-800	Optical Mössbauer spectroscopy cryostat, sample in exchange gas

2. Select cryostat configurations

Cold head

204	<10 K
204N	<6 K
205	<5 K
408	<4.2 K

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 optional setup configurations

Measurement instrumentation

Cryostats come standard with one temperature controller.

336	Model 336 temperature controller
335	Model 335 temperature controller

Compressor type

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

5. 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

6. 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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