

CRYOSTATION™



OVERVIEW

The Montana Instruments Cryostation™ is a 3K to 350K stable optical platform distinguished by its low vibration, thermal stability, exceptional optical access, automation, and ease of use. The Cryostation consists of four major components: the thermally controlled sample chamber, a variable flow helium compressor, a system control unit, and a user interface computer. The unique patent pending design allows unparalleled sample stability. The flexible sample chamber has five large optical access ports, a large sample space, and 28 user electrical feedthroughs. Due to its simple operation and the remarkable price/performance ratio, researchers will find the Montana Instruments Cryostation the ideal tool for many applications.

CONTROL UNIT AUTOMATION

Fully automated pumpout, cooldown, temperature control at setpoint, active warmup, clean gas purge, system diagnostics and monitoring.

VARIABLE FLOW HELIUM COMPRESSOR PARAMETERS

Variable flow allows faster cooldown, lower power consumption at temperature setpoint, and extended life. Very low power input during standby mode.

USER INTERFACE

Windows based software that enables both automatic and manual control of the system, including graphing of system temperatures. OLE Automation interface for total experiment control via LabView or other programming utility.

“THE CRYOSTATION REPRESENTS A NEW GENERATION
OF OPTICAL CRYOSTAT INSTRUMENTS.”

HIGHLIGHTS

- Wide sample temperature range (3K-350K)
- High thermal stability (<10mK peak to peak, <2mK RMS)
- Low vibration (<5nm peak to peak; <1nm RMS)
- Very low drift through temperature range due to thermal contraction-cancelling sample mount
- Flexible access through five optical access ports
- Wide viewing angle Numerical Aperture to 0.87 possible
- High connectivity - 41 total electrical connections to sample space
- Calibrated temperature sensors
- Smart interface for fully automated design
- Industry proven system components
- Configurable sample holder for spectroscopy and short focal length microscopy

CONTROL UNIT AUTOMATION	3K-350K sample platform temperature
TEMPERATURE STABILITY	<10mK peak to peak
VIBRATION STABILITY	<5nm peak to peak
SAMPLE DRIFT	Thermal contraction-cancelling sample support
COOLING POWER	Typical 100mW at 4.2K with all five ports open and radiation windows installed
COOLDOWN TIME	110 minutes to 4.2K typical
SAMPLE SPACE	Cylindrical 53mm diameter by 40mm tall
OPTICAL ACCESS PORTS	5 optical access ports (25mm diameter clear access each) 4 radial plus 1 top axial in housing 4 radial plus 1 axial radiation-blocking internal "cold windows" (20mm diameter) Windows are AR coated Fused Silica standard (other coatings available)
NUMERICAL APERTURE	NA = 0.26 (30 degrees full angle) with sample at center of sample space NA = 0.64 (80 degrees full angle) with sample located near cold window NA = 0.87 (120 degrees full angle) with sample located near warm window NOTE: all sample positions listed here, as well as others, can be achieved with included sample mount.
ANTI-REFLECTING COATING	Cold and warm windows include AR coating 400 - 1000nm (other coatings may be requested)
ELECTRICAL ACCESS	A total of 41 electrical connections run into the sample area. 12 connections are used for system control and monitoring of the sample stage. An additional calibrated Cernox™ thermometer for user placement at the sample is provided. The user is supplied with 28 electrical connections plus one common ground with miniature connectors near the sample space for user devices.
TEMPERATURE SENSORS	Two calibrated Cernox™ thermometers are provided in the sample area. One is used for system operations and the other is available for user placement near/on the sample. Two additional system thermometers monitor the cryocooler stages.
INPUT POWER	1.0 - 3.0 kW dependent upon user parameters. Single-phase 50/60 Hz, 240VAC, air cooled compressor.

TYPICAL TEMPERATURE & VIBRATION PERFORMANCE

