



## *Sample in Flowing Vapor Cryostats*

# VNF-100 Series nitrogen-cooled cryostats 65 K to 500 K

VNF-100 Series cryostats are ideal for experiments with liquid or powder samples that are difficult to thermally anchor. The cryostat is cooled with liquid nitrogen and the sample is in flowing vapor. They feature a top-loading sample chamber that allows for rapid sample exchange. With a sample space that is independent of the LN<sub>2</sub> reservoir, no warmup is required for sample changes. The sample is easily accessed by removing the top-loading sample positioner, saving time and effort. Optimized for two-loop temperature control, LN<sub>2</sub> is vaporized and temperature controlled with a calibrated temperature sensor as it enters the sample chamber. Additionally, a second heater and sensor on the sample mount are used for rapid temperature sweeps and precise sample temperature control.

### Key features

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Rapid sample change <10 min

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30 min cooldown to 77 K

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Sample in flowing vapor for uniform sample cooling

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Easy sample access with top-loading sample chamber

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Dual-loop heater configuration for temperature control

### Featured components

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Integrated LN<sub>2</sub> reservoir

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Adjustable cooling power using integrated needle valve

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Built-in heater for variable temperature control

### VNF-100 Series variants

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**VNF-100** optical, maximum temperature = 325 K

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**VNF-100-TH** non-optical, maximum temperature = 500 K

# Specifications

	VNF-100	VNF-100-TH
Initial cooldown time (to 65 K)	~30 min	
Temperature range <sup>1</sup>	65 K to 325 K	65 K to 500 K
Typical temperature stability <sup>2</sup>	±50 mK	
LN <sub>2</sub> capacity (nominal)	1.2 L	
Working time (typical)	6 to 8 h	
Sample exchange time (typical)	10 min	

## Size

Height	583 mm (23 in)	812.8 mm (32 in)
Inner diameter (at sample region)	30 mm (1.18 in)	22.35 mm (0.88 in)
Sample mount diameter	25.4 mm (1 in)	16 mm (0.62 in)
Weight (approximate)	11.5 kg (25.4 lb)	
Shipping weight (approximate)	15.9 kg (35 lb)	
Shipping dimensions (approximate)	762 × 508 × 431.8 mm (30 × 20 × 17 in)	

<sup>1</sup> Operation below 77 K requires pumping manifold

<sup>2</sup> Measured with temperature controller

# Complete your system

## Temperature control

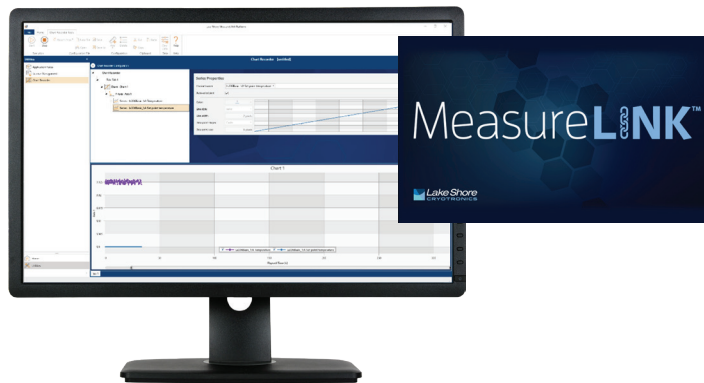
Included



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 variant

<b>VNF-100</b>	Optical, 65 K to 325 K, two calibrated temperature sensors
<b>VNF-100-TH</b>	Non-optical, 65 K to 500 K, calibrated Cernox®
<b>CUSTOM</b>	Custom configurations are available to fit your experiment needs—contact Sales for details

## 2. Select cryostat configurations

### Sample holders

<b>CONSULT</b>	Optical
<b>CONSULT</b>	Blank
<b>CONSULT</b>	Resistivity
<b>CONSULT</b>	LCC
<b>CONSULT</b>	DIP
<b>CONSULT</b>	Cuvette

### Windows

Contact us for VNF-100 Series window options. See our cryostat window selection guide for additional information.

### Mounting flange

<b>BASE-VNF-2</b>	Two-piece baseplate for mounting VNF-100 Series
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### Pumping manifold

<b>CONSULT</b>	Pumping manifold (for operation to 65 K)
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## 3. Select pump (optional)

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

<b>10RVP</b>	General-purpose mechanical pumping station
<b>10DDP</b>	General-purpose mechanical pumping station with LN <sub>2</sub> cold trap and isolation valve
<b>TS-85-D</b>	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 system configurations

### Measurement instrumentation

Cryostats come standard with one temperature controller.

<b>336</b>	Model 336 temperature controller
<b>335</b>	Model 335 temperature controller
<b>325</b>	Model 325 temperature controller

### M81-SSM electronic synchronous source measure system

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

<b>M81-SSM-X</b>	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
<b>VM-10</b>	AC/DC voltage measure module + lock-in
<b>BCS-10</b>	AC/DC balanced current source module
<b>CM-10</b>	AC/DC current measure module + lock-in
<b>VS-10</b>	AC/DC voltage source module

## 6. Select optional control software

<b>ML-MCS</b>	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
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## 7. Select additional accessories

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

<b>CX-1050-CU-HT-1.4M</b>	Cernox® magnetic field independent, calibrated
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