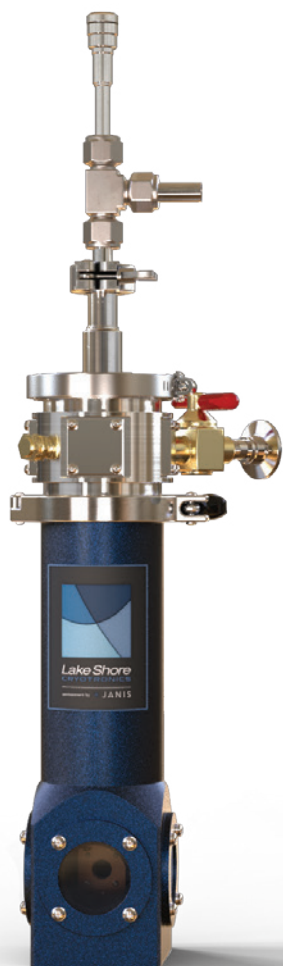


# Pour-fill cryostats VPF-100



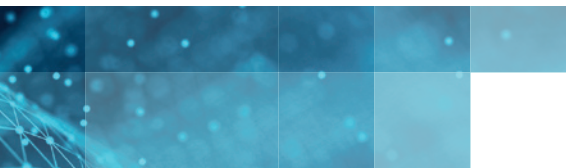
## *Pour-fill Cryostats*

### **VPF-100 and VPF-800** pour-fill 77 K cryostats

The economical Lake Shore VPF Series are easy-to-use cryostats for performing variable temperature optical and electrical measurements from 77 K (65 K optional) to 500 K or 800 K.

# Pour-fill cryostats

## VPF-100



## VPF-100 and VPF-800 pour-fill 77 K cryostats

Simple and inexpensive, Lake Shore VPF Series cryostats provide a variable temperature sample environment with no valves or adjustments required. Designed with versatility in mind, the VPF cryostat is field-upgradeable with additional feedthroughs, windows, or sample holders as experimental requirements change. Standard models are available for operation to 500 K or 800 K.

### Key features

32 mm (1.25 in) diameter copper sample mount

Control heater and sensor

400 mL LN<sub>2</sub> reservoir and fill funnel

Thermal impedance displacer with integrated LN<sub>2</sub> refill port

Temperature range from 77 K (65 K with optional pumping manifold) to 500 K with optional 800 K high temperature

Optical vacuum shroud with four 41 mm (1.63 in) diameter clear aperture o-ring sealed fused silica windows

Optical sample holder

Instrumentation adapter with 10-pin electrical feedthrough, three spare o-ring sealed ports, evacuation valve, and safety pressure relief valve

### VPF-100/VPF-800

#### Featured components

32 mm (1.25 in) diameter copper sample mount

Integrated control heater and calibrated silicon diode control sensor

400 mL LN<sub>2</sub> reservoir and fill funnel

Thermal impedance displacer with integrated LN<sub>2</sub> refill port

Temperature range from 77 K (65 K with optional pumping manifold) 500 K with optional 800 K high temperature

Optical vacuum shroud with four 41 mm (1.63 in) diameter clear aperture o-ring sealed fused silica windows

Optical sample holder

Instrumentation adapter with 10-pin electrical feedthrough, three spare o-ring sealed ports, evacuation valve, and safety pressure relief valve

### Selections

#### Temperature

500 K: standard using silicon diode sensor

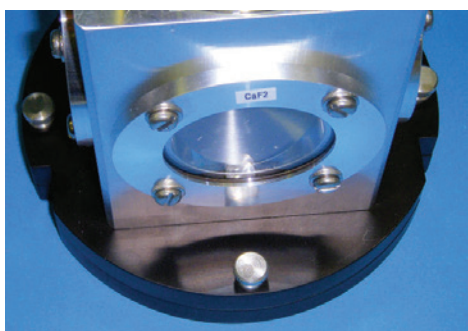
420 K: replaces standard sensor with calibrated field-independent Cernox® sensor

800 K: replaces standard sensor with type E thermocouple

# Pour-fill cryostats VPF-100



Optional pumping manifold for <77 K operations



VPF-100 with mounting flange for interface with Jobin Yvon FluoroLog®-3 spectrofluorometer



Fixed-probe sample holder

## Easily add DC, AC, and mixed DC+AC measurement capabilities to your cryostat with an M81-SSM

This modular, multichannel system 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. The modules also leverage patent-pending MeasureSync™ real-time sampling technology to ensure synchronous sourcing and measuring across all channels. Plus, by having both DC and AC sourcing and measurement in one instrument, the M81-SSM can eliminate the need for mixed-instrument setups, greatly simplifying the setup of complex characterization configurations.



M81-SSM synchronous source measure system

Real-time sampling architecture for synchronous sourcing/measuring

All source and measure channels are capable of DC and AC to 100 kHz signals

100% linear circuitry for the lowest possible source/measure noise

Optimized for fundamental, harmonic, and phase AC plus DC biased measurements

Unique, flexible instrument/distributed module architecture

Provides the absolute precision of DC plus the detection sensitivity performance of AC instrumentation

Uses a clean, simple UI and common programming API for fast setup

Included MeasureLINK software enables full end-to-end measurement and cryostat temperature control

# MeasureLINK™

# Pour-fill cryostats VPF-100

## Options

### Windows

Custom window options are available, including diamond and polypropylene. Contact us for more information.

Sapphire: 3 mm thick [WR-STD-SAPH](#)

UV-grade fused silica: 3 mm thick [WR-STD-FS](#)

ZnSe: 3 mm thick [WR-STD-ZNSE](#)

CaF<sub>2</sub>: 3 mm thick [WR-STD-CAF2](#)

KBr: 6 mm thick [WR-6MM-KBR](#)

TPX: 3 mm thick [WR-STD-TPX](#)

### Pumping manifold

For operation down to 65 K [VPF-PM](#)

### Mounting flanges

Black anodized aluminum flange compatible with a commercial spectrofluorometer [consult Lake Shore](#)

Black anodized base plate for bolting to an optical table, metric threads [BASE-ST-VPF-M](#)

Black anodized base plate for bolting to an optical table, imperial threads [BASE-ST-VPF](#)

### Feed Dewar for mounting on inlet port

5 L capacity [FD-LN2-5L](#)

### Sample holders

Custom sample holders are available, including special configurations to bring the sample close to one window. Contact Lake Shore for more information.

Optical [SH-OPTICAL-1.25-STD](#)

Blank [SH-BLANK-1.25-STD](#)

Resistivity [SH-RESISTIVITY-1.25-STD](#)

Fixed probe (DLTS) [SH-FIXED-STD](#)

### Vacuum shroud configurations

Custom vacuum shroud configurations are available, including compact models for use in an electromagnet, larger windows or special interfacing to other equipment. Contact Lake Shore for more information.

## For total control of measurements performed in a cryostat, add our MeasureLINK software

Our optional MeasureLINK software enables a wide range of capabilities including charting and logging, system monitoring with a cryostat-specific process view, and even controlling Lake Shore equipment as well as some third-party instrumentation, in a non-programming environment. You can also create unlimited functionality using the scripting development environment.

Create multiple configurations to support separate measurements

Monitor temperature and change setpoints with the monitor pane

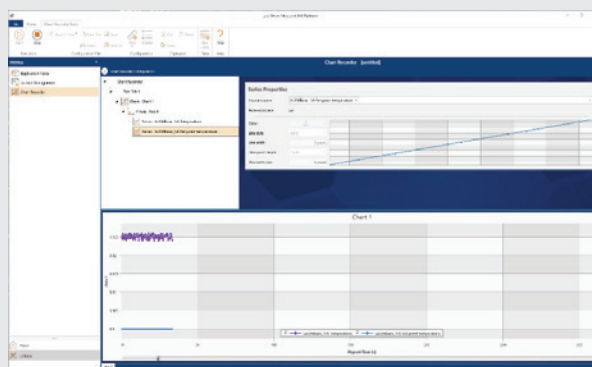
Easily create nested, multi-level measurement loop sequences

See real-time internal cryostat temperatures in Process View

Charts and log all system variables with Chart Recorder

No programming required – drag and drop to create temperature sweeps, access measurements, and add third-party instruments

Custom scripting function allows you to construct new and edit existing measurement scripts



The chart recorder utility enables charting and logging of all system variables, for example, so you can keep a close eye on temperature trends in a cryostat experiment in real-time; it also helps you determine when steady-state conditions have been reached.

MeasureLINK  
Monitor Pane



# MeasureLINK™

# Pour-fill cryostats VPF-100

## Options

### Electrical feedthroughs

- (1) BNC grounded [EF-BNC-1-B-AL](#)
- (2) BNC grounded [EF-BNC-2-S-AL](#)
- (6) BNC grounded [EF-BNC-6-G](#)
- (1) BNC insulated [EF-BNC-1-B-NC](#)
- (2) BNC insulated [EF-BNC-2-S-NC](#)
- (6) BNC insulated [EF-BNC-6-I](#)
- (1) triaxial grounded [EF-TRIAX-1-B-AL](#)
- (6) triaxial grounded [EF-TRIAX-6-G](#)
- (1) triaxial insulated [EF-TRIAX-1-B-NC](#)
- (6) triaxial insulated [EF-TRIAX-6-I](#)
- (2) SMA grounded [EF-SMA-2-B-AL](#)
- (6) SMA grounded [EF-SMA-6-G](#)
- (2) SMA insulated [EF-SMA-2-B-NC](#)
- (6) SMA insulated [EF-SMA-6-I](#)
- 10-pin [10P-ASSEMBLY](#)
- 19-pin [19P-ASSEMBLY](#)
- 26-pin [26P-ASSEMBLY](#)
- 32-pin [32P-ASSEMBLY](#)

### Additional temperature sensors

**One Lake Shore calibrated diode is now included on every cryostat as the control sensor**

- Silicon diode, calibrated [DT-670-CU-HT-1.4L](#)
- Cernox® magnetic field independent, calibrated [CX-1050-CU-HT-1.4M](#)
- Thermocouple, Type E [consult Lake Shore](#)

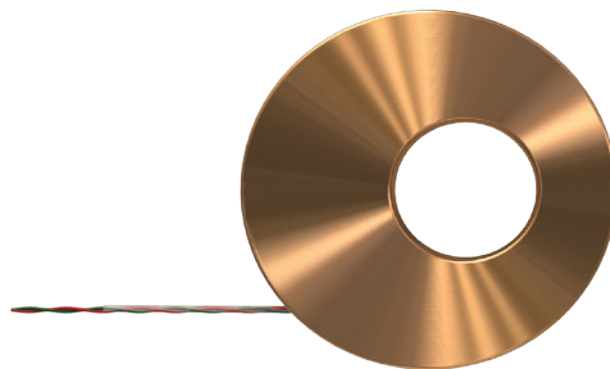
### Installed wiring

- (1), (2), or (6) coaxial cables, SMA [CABLEASSY-63340](#)
- (1), (2), or (6) coaxial cables, BNC [CABLEASSY-63342](#)

## Accessories

Available at [www.lakeshore.com](http://www.lakeshore.com)

- LHe storage Dewar [CF-100](#)
- LN<sub>2</sub> storage Dewar [LN-50](#)
- Vacuum pumping station [10RVP, 10DDP, or TS-85-D](#)
- Temperature controller [325, 335, or 336](#)



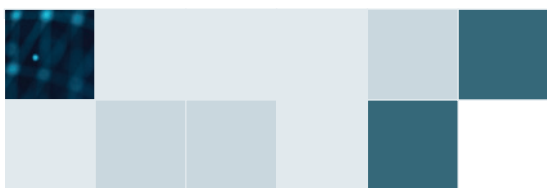
Cernox CU-HT sensor



336 temperature controller

# Pour-fill cryostats

## VPF-100



### Specifications

#### VPF-100

Initial cooldown time (to 77 K)	15 min
Temperature range	77 K to 500 K (800 K optional)
Typical temperature stability <sup>1</sup>	±50 mK
LN <sub>2</sub> hold time (77 K)	5 h
LN <sub>2</sub> hold time (100 K)	4.5 h
LN <sub>2</sub> hold time (200 K)	2.5 h
Initial vacuum level requirement <sup>2</sup>	~10 <sup>-4</sup> Torr

### Size

Height	583 mm (23 in)
Inner diameter (at sample region)	VPF-100: 76.2 mm (3 in); VPF-800: 63.5 mm (2.5 in)
Sample mount diameter	31.75 mm (1.25 in)
Weight (approximate)	3.3 kg (7 lb)
Shipping weight (approximate)	9.1 kg (20 lb)
Shipping dimensions (approximate)	610 × 406 × 305 mm (24 × 16 × 12 in)

<sup>1</sup> Measured with temperature controller

<sup>2</sup> Pressure measured at room temperature, prior to adding cryogens



# Pour-fill cryostats

## VPF-100

### Ordering information

#### Options

##### Windows

Custom window options are available, including diamond and polypropylene. Contact Lake Shore for more information.

<b>WR-STD-SAPH</b>	Sapphire, 3 mm thick
<b>WR-STD-FS</b>	UV-grade fused silica, 3 mm thick
<b>WR-STD-ZNSE</b>	ZnSe, 3 mm thick
<b>WR-STD-CAF2</b>	CaF <sub>2</sub> , 3 mm thick
<b>WR-6MM-KBR</b>	KBr, 6 mm thick
<b>WR-STD-TPX</b>	TPX, 3 mm thick

##### Pumping manifold

**VPF-PM** For operation down to 65 K

##### Mounting flanges

**VPF-XX** Black anodized aluminum flange compatible with a commercial spectrofluorometer

**BASE-ST-VPF-M** Black anodized base plate for bolting to an optical table, metric threads

**BASE-ST-VPF** Black anodized base plate for bolting to an optical table, imperial threads

##### Feed Dewar

**FD-LN2-5L** 5 L, for mounting on inlet port

##### Sample holders

Custom sample holders are available, including special configurations to bring the sample close to one window. Contact Lake Shore for more information.

<b>SH-OPTICAL-1.25-STD</b>	Optical
<b>SH-BLANK-1.25-STD</b>	Blank
<b>SH-RESISTIVITY-1.25-STD</b>	Resistivity
<b>SH-FIXED-STD</b>	Fixed probe (DLTS)

##### Vacuum shroud configurations

Custom vacuum shroud configurations are available, including compact models for use in an electromagnet, larger windows or special interfacing to other equipment. Contact Lake Shore for more information.

##### Electrical feedthroughs

<b>EF-BNC-1-B-AL</b>	(1) BNC grounded
<b>EF-BNC-2-S-AL</b>	(2) BNC grounded
<b>EF-BNC-6-G</b>	(6) BNC grounded
<b>EF-BNC-1-B-NC</b>	(1) BNC insulated
<b>EF-BNC-2-S-NC</b>	(2) BNC insulated
<b>EF-BNC-6-I</b>	(6) BNC insulated
<b>EF-TRIAX-1-B-AL</b>	(1) triaxial grounded
<b>EF-TRIAX-6-G</b>	(6) triaxial grounded
<b>EF-TRIAX-1-B-NC</b>	(1) triaxial insulated
<b>EF-TRIAX-6-I</b>	(6) triaxial insulated
<b>EF-SMA-2-B-AL</b>	(2) SMA grounded
<b>EF-SMA-6-G</b>	(6) SMA grounded
<b>EF-SMA-2-B-NC</b>	(2) SMA insulated
<b>EF-SMA-6-I</b>	(6) SMA insulated
<b>10P-ASSEMBLY</b>	10-pin
<b>19P-ASSEMBLY</b>	19-pin
<b>26P-ASSEMBLY</b>	26-pin
<b>32P-ASSEMBLY</b>	32-pin

##### Additional temperature sensors

<b>DT-670-CU-HT-1.4L</b>	Silicon diode, calibrated (one included with cryostat)
<b>CX-1050-CU-HT-1.4M CONSULT</b>	Cernox® magnetic field independent, calibrated Thermocouple, Type E

##### Installed wiring

<b>CABLEASSY-63340</b>	(1), (2), or (6) coaxial cables, SMA
<b>CABLEASSY-63342</b>	(1), (2), or (6) coaxial cables, BNC
<b>CABLEASSY-63341</b>	(1) or (6) triaxial cables
<b>WIRE-PHBR</b>	(10), (19), (26), or (32) PhBr wires

#### Accessories

##### M81-SSM electronic synchronous source measure system

Contact us for standard/optical sample mounts or for interface cables/adapters for M81-SSM system/cryostat integration.

Also available: specially priced preconfigured M81-SSM/cryostat packages for certain cryostat models—contact Sales for details.

**M81-SSM-2** M81-SSM instrument with 1 source and 1 measure channel, including M81-SSM accessory kit (USB-A to USB-C adapter, USB-A male to USB-B male cable, terminal connectors for digital I/O, terminal connectors for chassis ground, quick-start guide) and a 2 m (6.6 ft) LEMO to BNC adapter cable

**M81-SSM-4** M81-SSM instrument with 2 source and 2 measure channels, including M81-SSM accessory kit (USB-A to USB-C adapter, USB-A male to USB-B male cable, terminal connectors for digital I/O, terminal connectors for chassis ground, quick-start guide) and a 2 m (6.6 ft) LEMO to BNC adapter cable

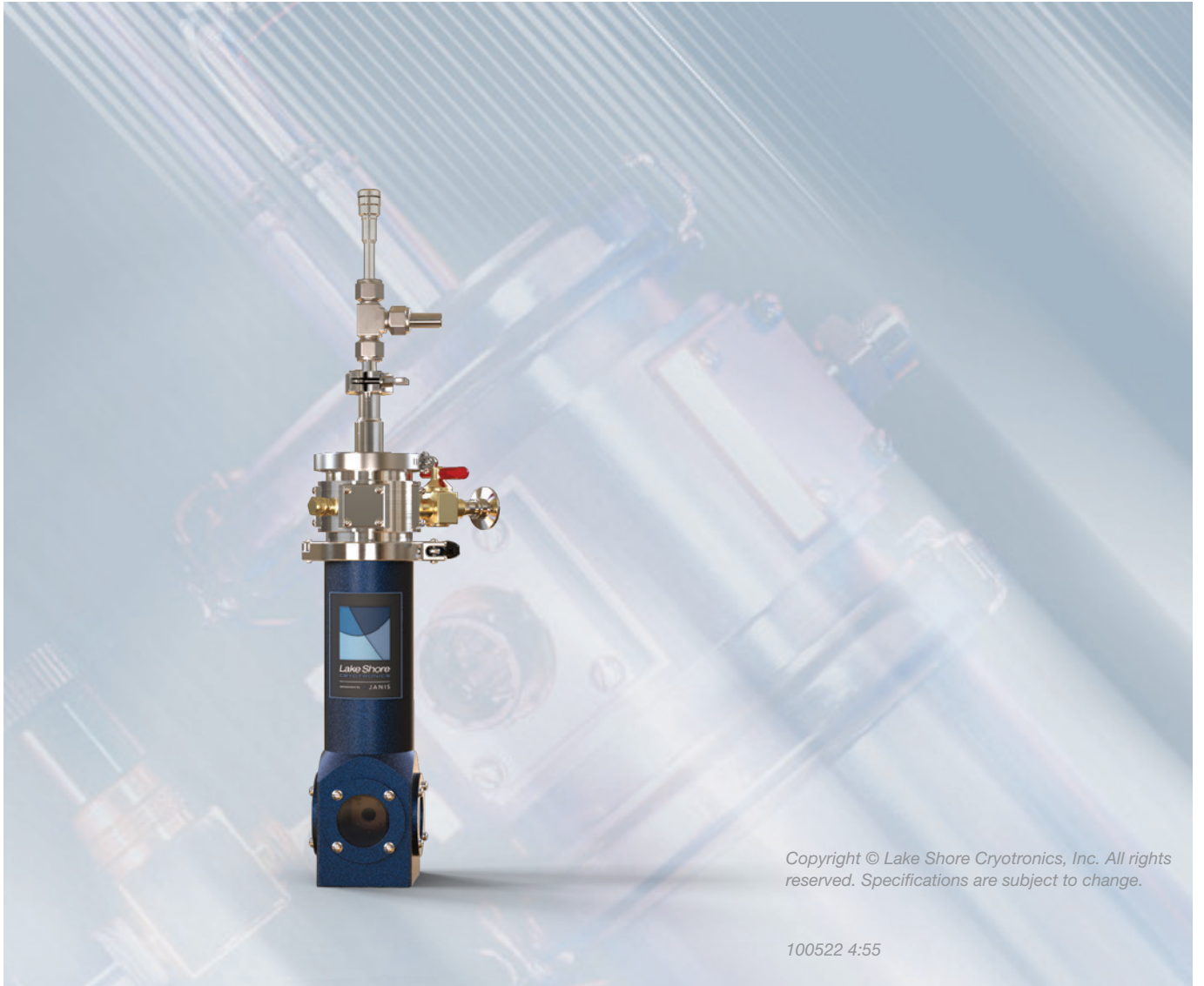
**M81-SSM-6** M81-SSM instrument with 3 source and 3 measure channels, including M81-SSM accessory kit (USB-A to USB-C adapter, USB-A male to USB-B male cable, terminal connectors for digital I/O, terminal connectors for chassis ground, quick-start guide) and a 2 m (6.6 ft) LEMO to BNC adapter cable

**ML-MCS** MeasureLINK-MCS software with scripting development license. Includes complete MeasureLINK installation with Lake Shore instrument drivers, chart recorder functionality and drag-and-drop measurement sequences. Some application packs sold separately.

##### Other accessories

<b>CF-100</b>	100 L LHe storage Dewar
<b>LN-50</b>	50 L LN <sub>2</sub> storage Dewar
<b>10RVP</b>	Vacuum pumping station
<b>10DDP</b>	Vacuum pumping station
<b>TS-85-D</b>	Turbomolecular pumping station
<b>336</b>	Model 336 temperature controller
<b>335</b>	Model 335 temperature controller
<b>325</b>	Model 325 temperature controller

# Pour-fill cryostats VPF-100



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