



CryoComplete™

Spanning the cryogenic ecosystem

77 K to 500 K

Everything you need
to start making
temperature-dependent,
low-level electrical
measurements



 **Lake Shore**
CRYOTRONICS

environment by  JANIS

Focus your research with CryoComplete

With CryoComplete™, you can start making cryogenic electrical measurements as soon as it lands in your lab. From the simple-to-use, pour-fill LN₂ Dewar to the prewritten I-V (resistance) measurement routines, CryoComplete produces results right out of the box.

While easy to use, the system's performance doesn't disappoint. Its industry-leading measurement electronics promote low-level DC measurements and three full channels of lock-in AC capability—the keys to unlocking difficult measurements. Best of all, our cryogenic experts have designed CryoComplete from top to bottom, using cryogenic best practices, to deliver end-to-end system specifications.



PC with MeasureLINK™

A PC with MeasureLINK provides the user interface to control your cryogenic system. MeasureLINK enables a wide range of capabilities, including data charting, instrument control, and system monitoring with a cryostat-specific process view.

LN₂ cryostat

The Environment by Janis VPF-100 sample in vacuum cryostat provides a variable-temperature sample environment from 77 K to 500 K. The pour-fill design allows quick and easy LN₂ refills.

Source + measure + lock-in

Run ultra-low-noise AC/DC measurements with the MeasureReady™ M81-SSM synchronous source measure system. In addition to the M81-SSM-6 instrument, it includes a BCS-10 balanced current source module and a VM-10 DC/AC/lock-in voltmeter module with a combined noise performance (differential) of 4.1 nV/√Hz.

Temperature control

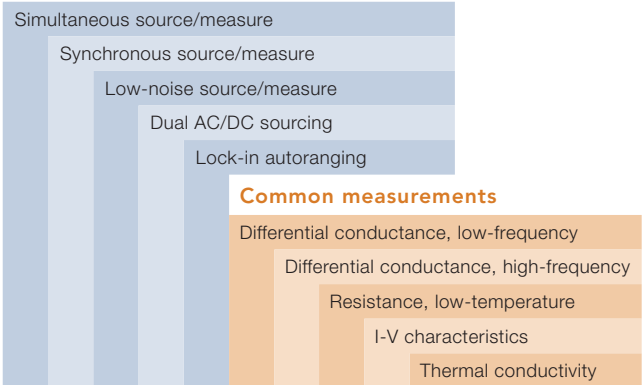
Control temperature within 50 mK with a Lake Shore Model 335 temperature controller, a Lake Shore precision-calibrated silicon diode, and a pre-wired heater. Advanced PID autotuning, pre-programmed sensor calibration, and default cryostat tuning enable fast setup and operation.

Applications and capabilities

From setup to measurement, CryoComplete enhances your cryogenic experimentation.

- Complete measurement system
- Optimized signal path
- Quick lead times

Measurement benefits



Thermal transport	1D materials, thermoelectric materials	✓	✓				✓				✓
Materials research	Nanodevices, superconducting devices, nonlinear devices			✓			✓	✓	✓	✓	
Materials development	Linear systems, sensors			✓					✓	✓	

Standard system capabilities

VPF-100 cryostat/335 temperature controller/calibrated silicon diode

Operating temperature range: 77 K to 500 K

Cryogen: Liquid nitrogen

Sample environment: Sample in vacuum

Temperature stability: 50 mK

Pour-fill reservoir capacity: 0.4 L LN₂

Cooldown time: 15 min to 77 K

Working time: 8 h

Optical ports: 4 quartz windows

Electrical sample mount: Pre-wired mounting plate with 8 contact pins

Resistance/I-V measurements

M81-SSM-6 with balanced current source and voltmeter modules

Measurements: 100 $\mu\Omega$ to 1 G Ω *

Source modes: DC, sine, triangle, square

Source ranges: 1 pA to 100 mA

Source frequency: 100 μ Hz to 100 kHz (square <5 kHz)

**Upper impedance range limited to DC*

Measurement limit: 10 V maximum

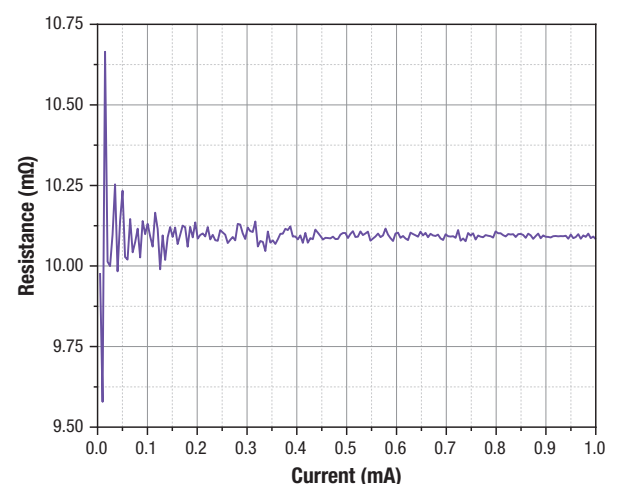
Input impedance: >10 G Ω (differential)

Leakage current at sample: 50 pA at 10 V for coaxial or 50 fA at 10 V for guarded triaxial

Voltage noise at sample: <5 nV/ $\sqrt{\text{Hz}}$ at 83 Hz

Measure noise at sample (1/f): <100 nV

BCS-10 versus VM-10, 10 m Ω resistor, 4-probe, 2TX and 2CXLIA at 83 Hz, FIR = 3, τ = 200 ms

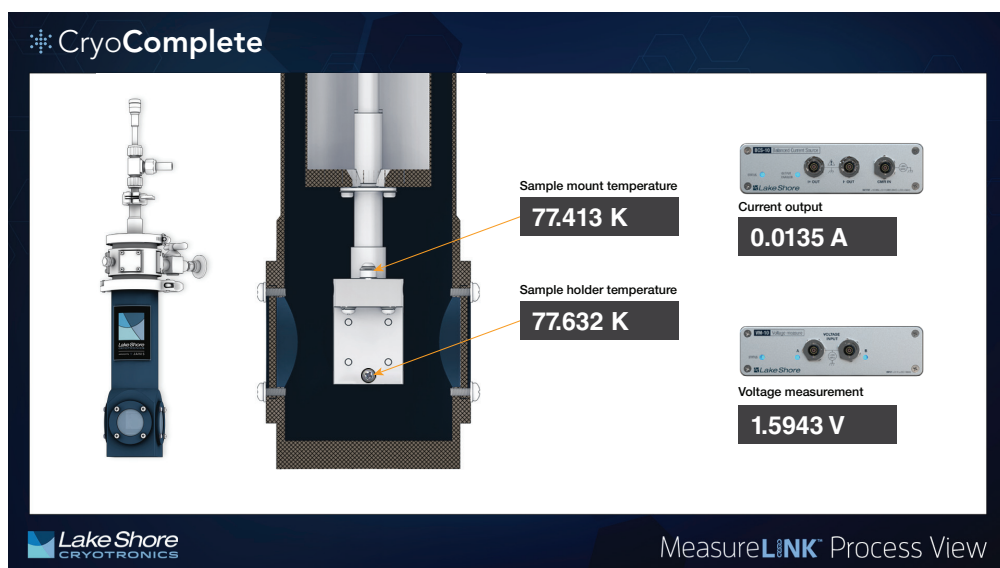


Ordering information

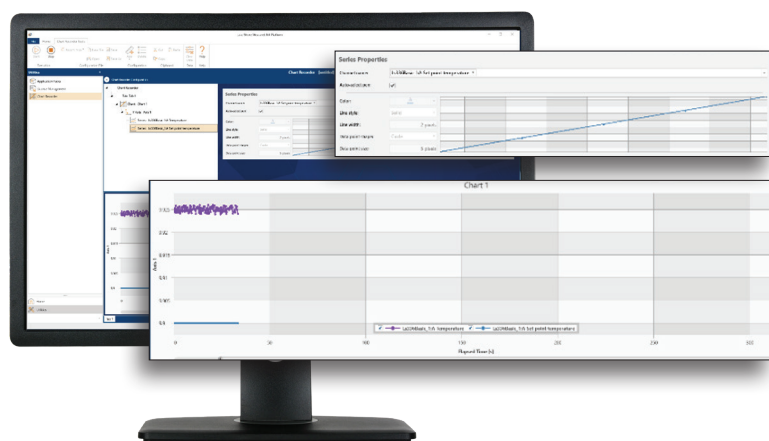
CryoComplete-LN2-V

CryoComplete 77 K to 500 K cryogenic characterization system

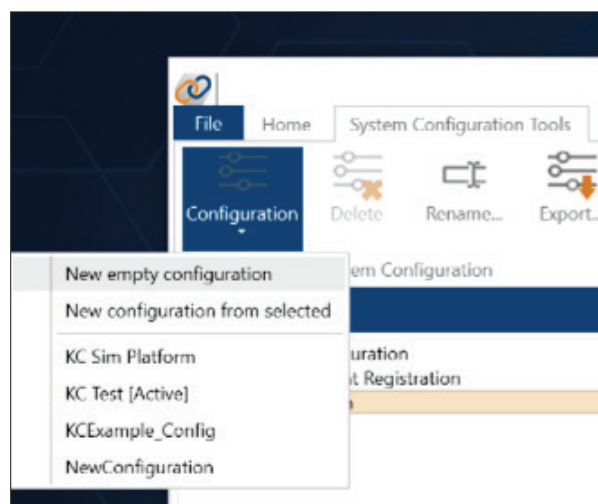
Easily control and monitor your system with **MeasureLINK™** software



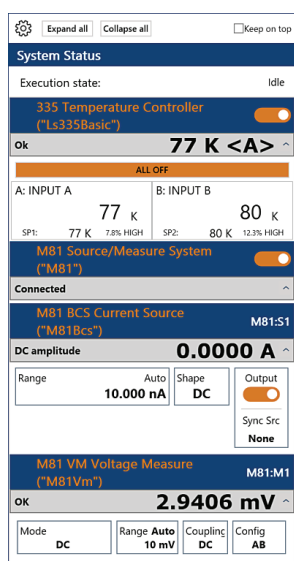
◀ **Process view** shows a representation of the cryostat internals with the appropriate temperatures highlighted for a better understanding of internal temperature variations (shown is an internal view of a VPF-100 application)



Log all system variables using the chart recorder utility so you can keep a close eye on experiment temperature trends in real-time; it also helps determine when steady-state conditions have been reached

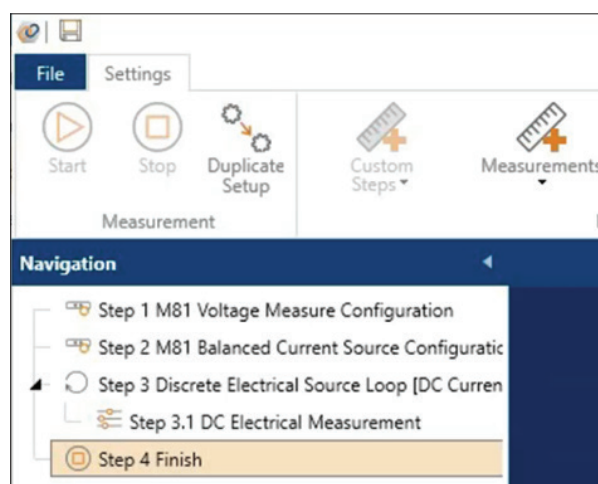


Create multiple measurement configurations



Monitor pane

The monitor pane allows easy access to monitor temperature and change control setpoints



Create nested, multi-level measurement loop sequences with drag-and-drop controls, and coordinate the cryostat environment with electrical source sweeps and multi-channel data collection