



CryoComplete™

Spanning the cryogenic ecosystem

77 K to 500 K

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



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

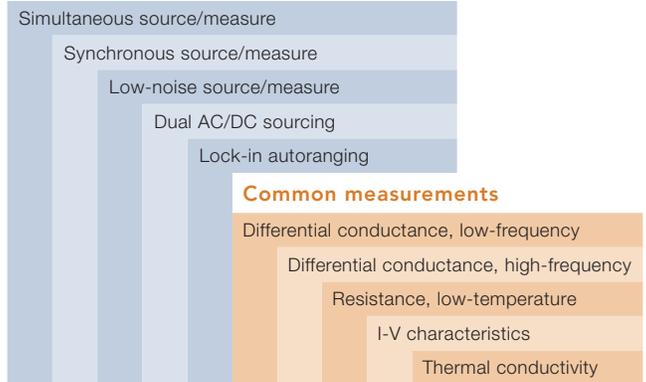
Control temperature within 50 mK with a Lake Shore Model 335 temperature controller, a Lake Shore precision-calibrated silicon diode, and a pre-wired heater. Advanced PID autotuning, pre-programmed sensor calibration, and default cryostat tuning enable fast setup and operation.

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 μΩ to 1 GΩ*

Source modes: DC, sine, triangle, square

Source ranges: 1 pA to 100 mA

Source frequency: 100 μHz to 100 kHz (square <5 kHz)

*Upper impedance range limited to DC

Measurement limit: 10 V maximum

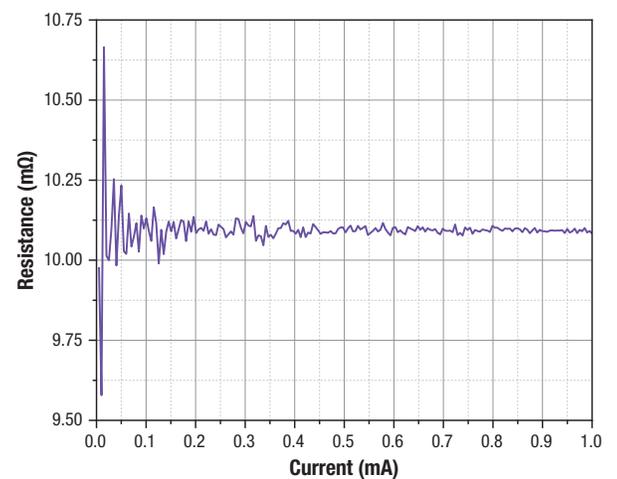
Input impedance: >10 GΩ (differential)

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/√Hz at 83 Hz

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

BCS-10 versus VM-10, 10 mΩ 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

CryoComplete

Sample mount temperature: **77.413 K**

Sample holder temperature: **77.632 K**

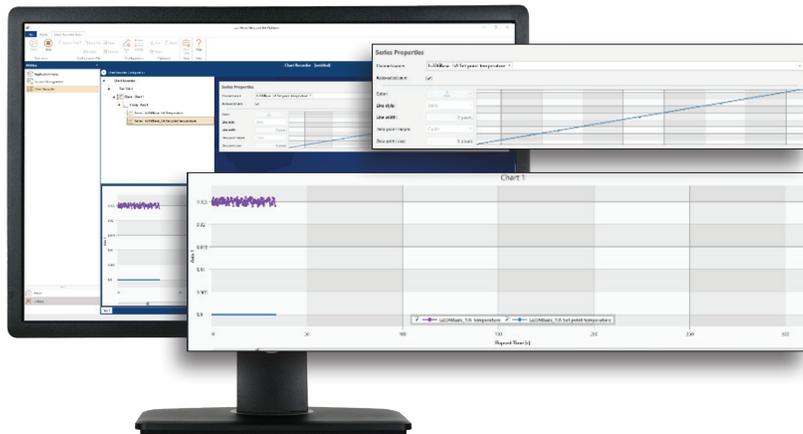
Current output: **0.0135 A**

Voltage measurement: **1.5943 V**

Lake Shore CRYOTRONICS

MeasureLINK Process View

◀ **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)



File Home System Configuration Tools

Configuration Delete Rename... Export...

- New empty configuration
- New configuration from selected
- KC Sim Platform
- KC Test [Active]
- KCExample_Config
- NewConfiguration

Create multiple measurement configurations

Expand all Collapse all Keep on top

System Status

Execution state: Idle

335 Temperature Controller ("Ls335Basic")

77 K <A>

A: INPUT A 77 K B: INPUT B 80 K

M81 Source/Measure System ("M81")

M81 BCS Current Source ("M81Bcs") M81:S1

DC amplitude 0.0000 A

Range 10.000 nA Shape DC Output

M81 VM Voltage Measure ("M81Vm") M81:M1

2.9406 mV

Mode DC Range Auto Coupling DC Config AB



Monitor pane

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

File Settings

Start Stop Duplicate Setup Custom Steps Measurements

Measurement

Navigation

- Step 1 M81 Voltage Measure Configuration
- Step 2 M81 Balanced Current Source Configuratic
- Step 3 Discrete Electrical Source Loop [DC Curren
- Step 3.1 DC Electrical Measurement
- Step 4 Finish

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