

# 129610A LHe/LN<sub>2</sub> Cryostat System

Solartron Analytical, specialists in precision electrical test equipment, and cryogenic experts Janis Research Company, have joined forces to produce an advanced cryogenic materials characterization test system.

## The flexible solution for materials characterization

The Janis Research Company special model STVP cryostat is a versatile research tool, designed to operate over the temperature range 5 K to 600 K.

The test sample is located in an inert, dry, static exchange gas, (e.g. helium). This ensures that the sample is not affected by exposure to cryogen vapor which could otherwise cause the sample to swell or crack.

Liquid nitrogen (LN<sub>2</sub>) or liquid helium (LHe) can be used as the cryogen depending on the required operating temperature range. This allows standard tests to be performed using relatively low cost LN<sub>2</sub> as the cryogen. Higher cost LHe can be substituted for the duration of tests where very low temperature is required, providing an economical and flexible solution to your test requirements.

## Applications include:

- ▶ Development of advanced polymer or ceramic materials
- ▶ Pharmaceutical applications including drug delivery and freeze drying
- ▶ Semiconductor materials
- ▶ Composite materials and coatings
- ▶ Display materials
- ▶ Aerospace materials

## High performance...

The 129610A is a high performance temperature control system that provides comprehensive test facilities:

- ▶ Operates from 5 K to 600 K using LHe and from 78 K to 600 K using LN<sub>2</sub>.
- ▶ The sample is located in a static thermal exchange gas (e.g. dry helium). This provides repeatable tests on materials that otherwise could be affected by contact with cryogen vapor in flowing vapor type systems.
- ▶ Solid and liquid sample holders are included for testing a wide range of materials including solids, gels, oils, powders, pastes....
- ▶ Sample holders use guard ring techniques to reject "fringing" effects at the edge of the sample.
- ▶ High and low impedance materials samples can be accurately tested using two / four terminal sample connections.
- ▶ Fast and accurate temperature settling using a dual channel temperature controller (separately controls the main and sample heaters).
- ▶ The system operates with continuous flow of cryogen via a transfer line from the dewar.

The unique flexibility of being able to switch between LN<sub>2</sub> and LHe ensures that this high performance cryostat system will fit your requirements, now and in the future.

## Solartron materials test systems...

The 129610A cryostat may be used together with any Solartron materials test system to run I-V, Pulse, C-V, Impedance, Mott-Schottky and a wide range of other materials test techniques, fully integrated with temperature control.

- ▶ PC software provides fully integrated electrical measurements with temperature control.
- ▶ High and low impedance materials can be analyzed depending on the choice of instrumentation.
- ▶ Sample vs. reference and normalization techniques are provided for improved measurement accuracy.
- ▶ Wide frequency range.
- ▶ Wide impedance range.



## 129610A Cryostat Specification

Cryostat	Janis STVP-200 special model with static gas sample chamber
Cryostat construction	Tubular cryostat with vacuum shroud and radiation shield.
Sample space	Static gas (e.g. helium)
Temperature range	5 K to 600 K - LHe 78 K to 600 K - LN <sub>2</sub>
Temperature stability	±0.05 K
Temperature probe	Type E thermocouple - Exchange gas heater
Cryogen transfer line	LHe / LN <sub>2</sub> transfer line (included)
Dimensions	787 mm height, 146 mm diameter 31" height, 5.75" diameter
Approximate Weight	11.3 kg (25 lb)
Optional Dewars	- A dewar (LN <sub>2</sub> or LHe) is needed to operate this system. - Compatibility with LN <sub>2</sub> dewars that are not supplied as part of the system cannot be guaranteed.
Option A1 Dimensions Empty weight	LN <sub>2</sub> dewar (10 L) LN-10 584 mm height, 286 mm diameter 23" height, 11.25" diameter 5.7 kg (12.5 lb)
Option A2 Dimensions Empty weight	LN <sub>2</sub> dewar (20 L) LN-20 625 mm height, 381 mm diameter 24.6" height, 15" diameter 10.4 kg (23 lb)
Option A3 Dimensions Empty weight	LN <sub>2</sub> dewar (50 L) LN-50 775 mm height, 470 mm diameter 30.5" height, 18.5" diameter 17.2 kg (38 lb)
Option B1 (on application)	- LHe dewars are usually provided by cryogen supplier with standard 0.5" transfer line fitting.
Option C	Turbo pump (42 L/s) TP-75 - Or equivalent is needed for system operation.

## Temperature Controller (included)

Controller	Lake Shore 332S-T2 Dual Loop (sample and heater)
Dimensions (w x h x d)	216 mm × 89 mm × 368 mm 8.5" × 3.5" × 14.5"
Weight	4.8 kg (10.5 lb)
Power (V AC)	100, 120, 220, 240 (+6%, -10%), 50 or 60 Hz, 150 VA
Interface	National Instruments IEEE-488 <b>Note - NOT included in system price</b>



## Solid Sample Holder (included)

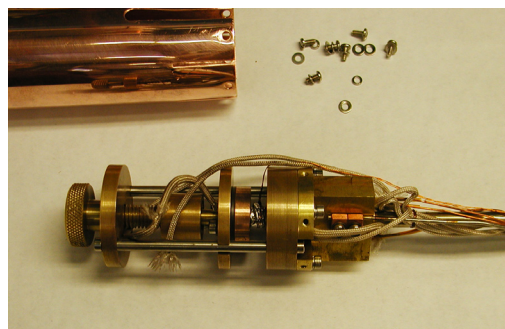
Electrodes	Gold-plated brass electrodes (2x)
Maximum sample size	8 mm height, 30 mm diameter 0.315" height, 1.18" diameter
Temperature range	5 K to 600 K
Lower electrode	Sliding stage with screw adjustment Spring-loaded to allow sample expansion / contraction
Connections	4 BNC terminals 2 or 4 terminal measurement
Internal connections	High temperature coaxial
Sample measurement	Uses guard ring techniques to reduce errors due to fringing
Sample heater	Located close to sample with isothermal shield
Temperature sensor	Type E thermocouple

## Liquid Sample Holder (included)

Mounting	Locates between the electrodes in the solid sample holder
Holder materials	Gold-plated brass electrodes (2x) PEEK body
Temperature range	5 K to 500 K
Liquid volume	0.65 mL
Holder Dimensions	8 mm height, 30 mm diameter 0.315" height, 1.18" diameter

## System Compatibility

129610A Cryostat is fully compatible with all Solartron materials test systems.



Solid sample holder with isothermal shield

Solartron Analytical's Quality System  
is approved to  
BS EN ISO 9001:2008



FM01709

...part of **AMETEK**® Advanced Measurement Technology

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