

# Model HE-3-SSV-PT-2

## Dry Helium-3 Cryostat

### Overview

The Model HE-3-SSV-PT-2 is a single shot, cryogen-free, helium-3 cryostat for cooling samples in vacuum. It uses a two-stage pulse tube refrigerator (PTR) for initial system cool down.

Highly conductive flexible thermal links made from multiple strands of fine OFHC copper wires are used as thermal link between the two stages of PTR and both radiation shields. This design significantly reduces the vibrations that may be transmitted to the He-3 stage from the PTR.

Mechanical heat switches are used for the system operations.

An internal charcoal sorption pump is used to reduce the vapor pressure of the liquid He-3 and cool it down to its base temperature.

With our optimized design of the heat exchanger on the second stage regenerator of PTR, no additional compressor is needed for He-3 condensation.

The system is supplied with a complete set of thermometers and heaters to monitor and control the temperature of the various stages of the cryostat. It also includes all the necessary valves and pressure gauges for safe and reliable system operation.



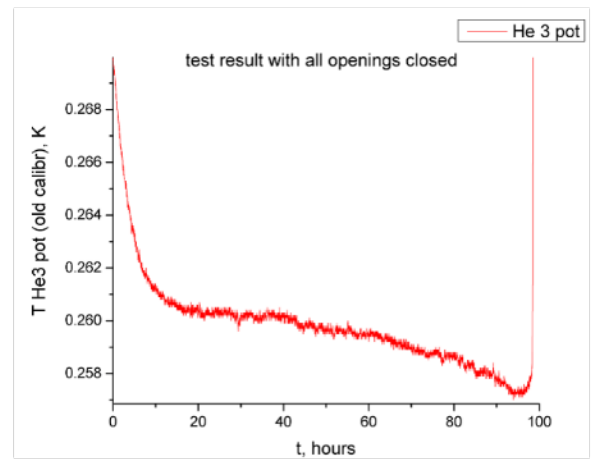
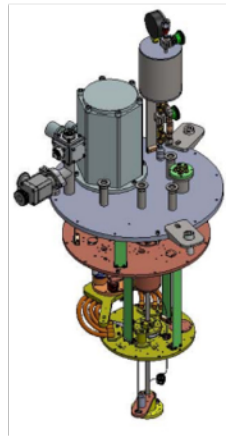
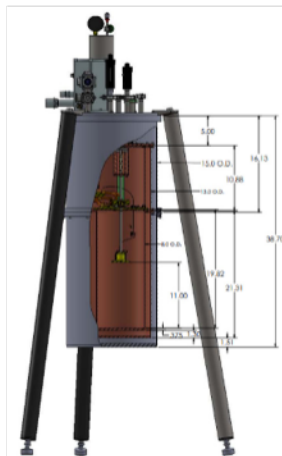
Model HE-3-SSV-PT-2 Cryogen-Free Helium-3 Cryostat

### Features / Benefits

<b>Cryogen-free</b>	<ul style="list-style-type: none"><li>• Cooling with PTR</li></ul>
<b>Low vibration (option)</b>	<ul style="list-style-type: none"><li>• With option using PTR with remote motor</li></ul>
<b>Wires (option)</b>	<ul style="list-style-type: none"><li>• Customized wiring, coaxial cables, and fiber optics</li></ul>
<b>Rotating sample holder (option)</b>	<ul style="list-style-type: none"><li>• Rotating range: 0 ~ 90 degrees</li></ul>
<b>Windows (option)</b>	<ul style="list-style-type: none"><li>• Side or bottom windows</li></ul>

## Design Specifications

Base Temperature	305 mK
Hold Time at Base Temperature with 10 STP liter He-3 gas	80 hours
Base Temperature Stability	$\pm 250 \mu\text{K}$ over a period of 10 hours with temperature resolution of $\pm 100 \mu\text{K}$
Operating Temperature Range	300 mK to 300 K
Sample Space (without Magnet)	6.0" in diameter and flexible in height
Vibration Level on the He-3 Pot	$<1 \mu\text{m}$ when cryocooler with remote motor is used
Cooling Power	100 $\mu\text{W}$ minimum at 400 mK
Holding Time with 100 $\mu\text{W}$ Heat Load	6 hours
Amount of He-3 Gas Included	10 STP liters
He-3 Regeneration Time	3 hours



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