

Model HE-3-BLSUHV-STM

Wet Helium-3 Cryostat

➤ Overview

The FormFactor model HE-3-BLSUHV-STM is a bottom loading He-3 system for Scanning Tunneling Microscope (STM) applications with samples in an ultra high vacuum (UHV) environment. This system contains a self-contained UHV compatible He-3 insert. The user is able to lower the He-3 insert with a linear motion manipulator and locate the STM inside user's UHV prep-chamber installed at the bottom of the cryostat for sample change.

Spring loaded shutters installed at the bottom radiation shield open automatically when the He-3 insert is moved down for sample change, and then close when the He-3 insert moves up after sample change.

A separate small helium reservoir is installed on the He-3 insert. It provides liquid helium to the 1K pot and charcoal sorption pump. Liquid helium can be transferred into this helium reservoir from the main helium reservoir so that the 1K pot and the charcoal sorption can be operated for long time that matches the long STM scanning time. A high field superconducting magnet is included.

This He-3 cryostat includes the following components:

- Highly efficient helium belly dewar
- UHV compatible linear motion manipulator
- Self-contained He-3 insert, including
 - Charcoal sorption pump with heater and thermometer
 - 1 K pot with thermometer
 - He-3 pot with heater and thermometer
 - Permanently stored He-3 gas
- Superconducting magnet
- Spring loaded shutters
- Operation test



➤ Features / Benefits

Flexible sample space	<ul style="list-style-type: none"> • Customized sample space to fit the user's application
Long scanning time	<ul style="list-style-type: none"> • 80 hours with eight (8) STP liter He-3 gas
Sample space	<ul style="list-style-type: none"> • Ultra high vacuum (UHV)
Stable He-3 pot temperature	<ul style="list-style-type: none"> • +/- 0.5 mK at base temperature
Low noise	<ul style="list-style-type: none"> • Acoustic noise reducer installed inside the 1K pot
Multiple mods operations	<ul style="list-style-type: none"> • 1K operation mode • 4K operation mode
Magnetic field	<ul style="list-style-type: none"> • Solenoid or vector
Wiring (option)	<ul style="list-style-type: none"> • Customized wiring, coaxial cables, fiber optics

➤ Design Specifications

Base Temperature	300 mK or lower
Hold Time at Base Temperature	80 hours with eight (8) STP liter He-3 gas
Sample Space	As required
Baking temperature	90°C



Model HE-3-BLSUHV-STM



Bottom radiation shield shutter

© Copyright 2022 FormFactor, Inc. All rights reserved. FormFactor and the FormFactor logo are trademarks of FormFactor, Inc. All other trademarks are the property of their respective owners.

All information is subject to change without notice.

Corporate Headquarters
 7005 Southfront Road
 Livermore, CA 94551
 Phone: 925-290-4000
www.formfactor.com

CUSTOM-HE-3-BLSUHV-STM-DS-0922