

The cryogen-free OptiCool platform leverages Quantum Design's 40+ years' experience in engineering and manufacturing automated temperature and magnetic field control systems. With fully automated cooldown and seamless temperature control through the range of 350 K to 1.7 K, the OptiCool platform features ultra low vibration and an innovative sample pod technology with a generous 89 mm diameter by 84 mm tall sample volume to build custom experiments. Systems feature a top window and multiple side window options to customize your optical access, including an option for a bottom window.

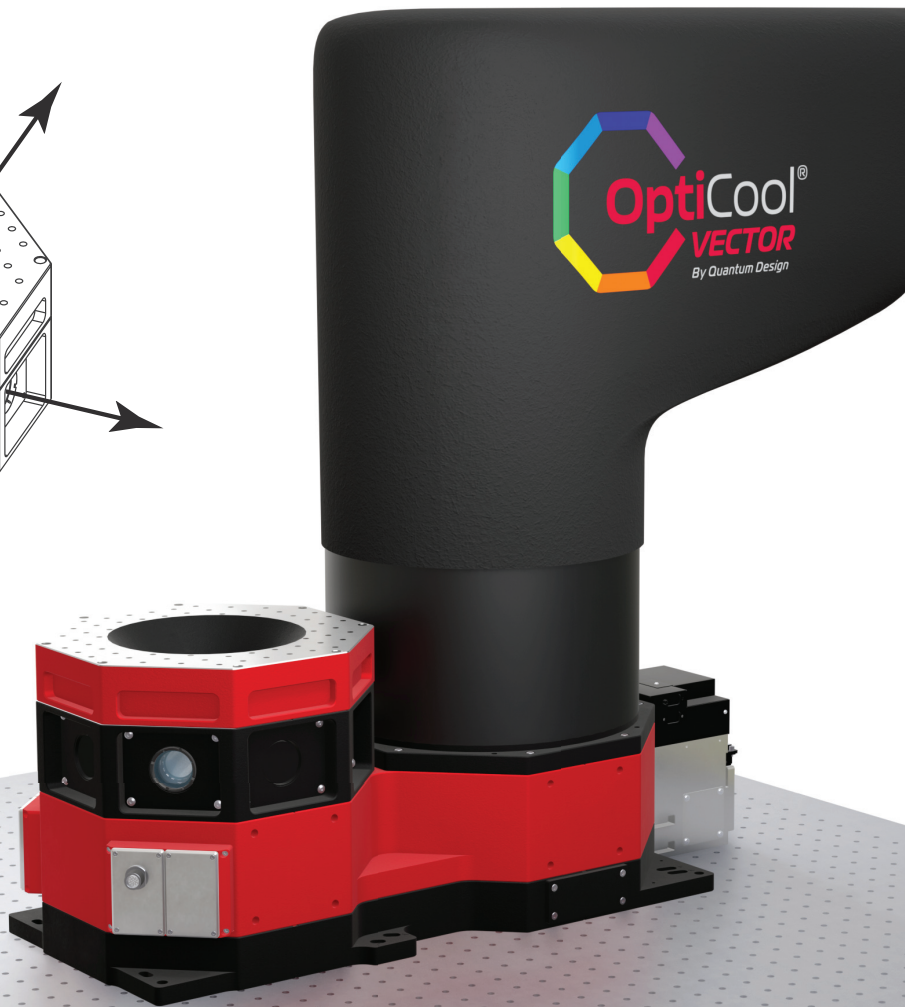
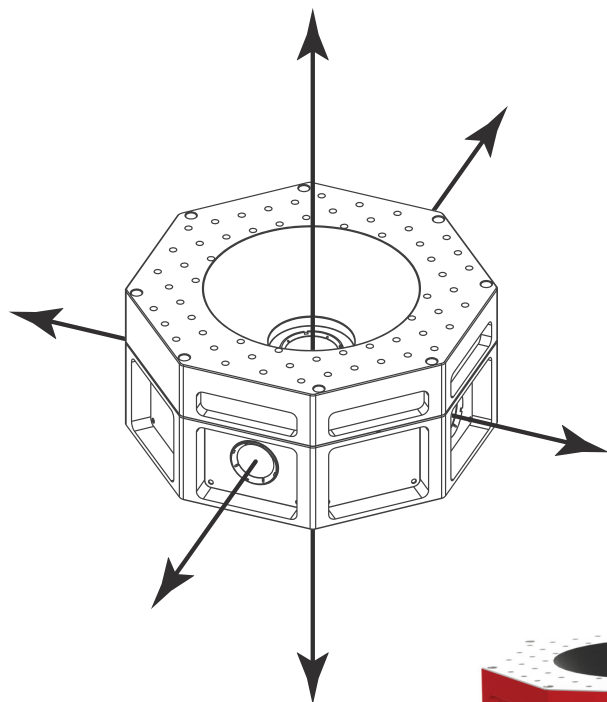
The standard OptiCool features a 7-tesla split-conical magnet with field perpendicular to the table and large volume of field uniformity, $\pm 0.3\%$ over a 3 cm diameter spherical volume. Its 7 side windows allow for unprecedented optical axis to a large experimental volume with uniform field.

The OptiCool Vector magnet provides a magnetic field up to ± 4 T perpendicular to the optical table and ± 1 T in the plane parallel to the optical table. The magnet power supplies in the OptiCool Vector allow users to precisely set the magnetic field. In the OptiCool vector, users can freely rotate the magnetic field vector to any set position.



The vector magnet of the OptiCool Vector makes it the perfect platform to study:

- **Color Centers**
(e.g., Diamond Nitrogen Vacancies)
- **2D Materials**
(e.g., Transition Metal Dichalcogenides)
- **Magneto-Excitons**
- **Anisotropic Magnetic Single Crystals**
- **Magnetic Thin Films**
- **Magneto Optic Kerr Effect**
- **Spin-Orbit Coupling**



OptiCool® Vector Specifications*

Temperature Control

Temperature Range: 1.7 K to 350 K

Magnetic Field Control

Z Maximum Field: $\pm 40,000$ Oe (± 4 T)
 X and Y Maximum Field: $\pm 10,000$ Oe (± 1 T)
 Field Uniformity, Z Axis: $\pm 0.3\%$ over a 3 cm diameter spherical volume
 Field Uniformity, X and Y Axes: $\pm 1.0\%$ over a 1 cm diameter spherical volume

Optical Access

1 Top and 1 Optional Bottom Window: 50 mm diameter, 41.5 mm clear bore (user-replaceable)
 4 Side Windows: 40 mm diameter, 24.5 mm clear bore (user-replaceable)

Vibrational Stability

Horizontal: < 10 nm peak-to-peak
 Vertical: < 4 nm peak-to-peak

Sample Space

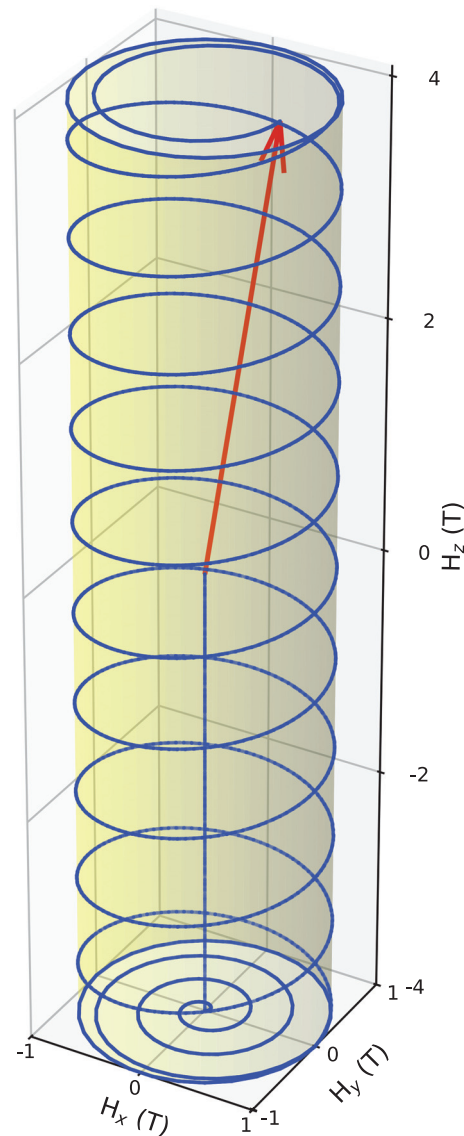
Maximum Sample Volume: 89 mm diameter by 84 mm tall
 Sample Environment: Sample in cryostat vacuum space

Dimensions

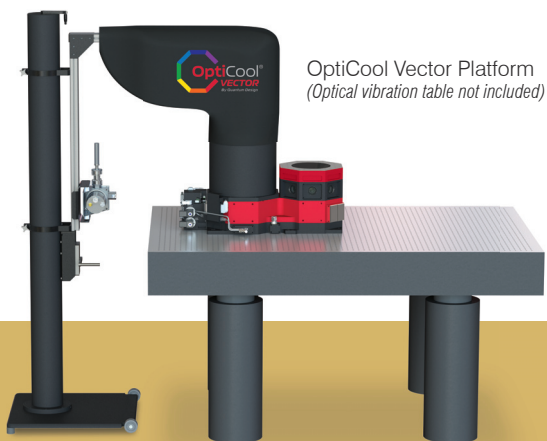
Optical Table: Cryostat footprint: 1 m x 0.5 m (minimum)
 Cryostat height: 1 m (minimum)
 Floor Space: Tower footprint: 0.75 m x 0.75 m
 Tower height: 2 m (minimum)
 Cabinet footprint**: 1 m x 1 m
 Cabinet height** (w/ magnet power supplies): 1 m

* Specifications subject to change without notice. (November 2025)

** Cabinet not shown.

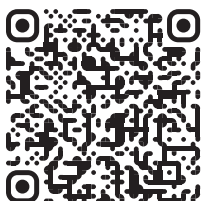


$$\begin{aligned} H_x &= 0.67 \text{ T} \\ H_y &= -0.07 \text{ T} \\ H_z &= 4.00 \text{ T} \end{aligned}$$



OptiCool Vector Platform
 (Optical vibration table not included)

The OptiCool Vector magnetic field envelope (above in yellow) encompasses a cylinder with a height of ± 4 T in the z direction and a radius of 1 T in the x and y direction. Above shows the magnetic field vector (orange) being rotated through a helical path along the magnetic field envelope.



Quantum Design, Inc.
 10307 Pacific Center Court, San Diego, CA 92121
 Tel: 858-481-4400 Fax: 858-481-7410
www.qdusa.com | sales@qdusa.com | apps@qdusa.com