

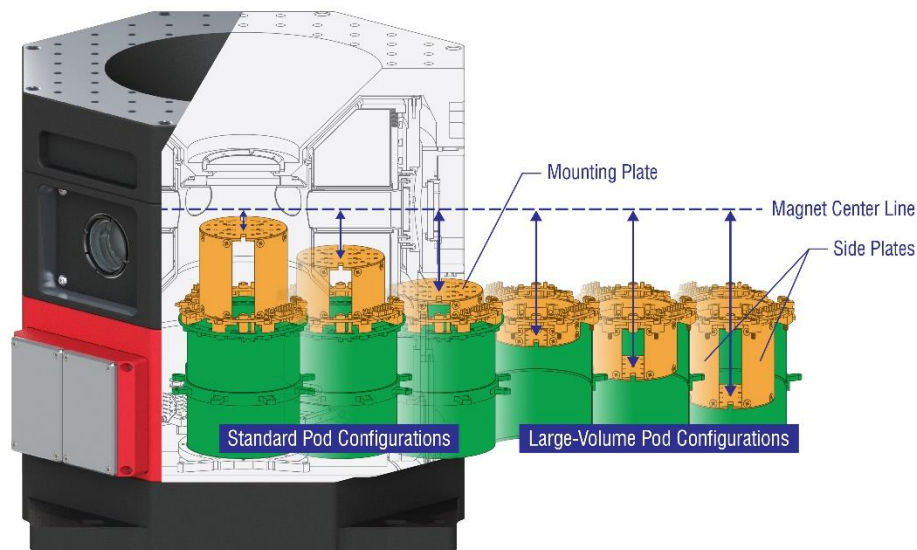
OptiCool® Sample Pods

Swapping out samples and experiments is easy and convenient using OptiCool's Sample Pod technology. The removable pod provides you a place to build and customize your experiment on the bench. When you are ready to make a measurement, the pod easily plugs into the pre-wired Sample Column, connecting all the experimental wires at once. Having multiple experiments arranged on multiple pods allows you to switch experimental hardware quickly. Sample pods are available in both a standard configuration and a large-volume configuration, depending on your experimental needs.



Configuring the Sample Pods

Samples and experimental hardware are attached to the pod via the Mounting Plate. The mounting plate has a 4x4 grid of imperial #4-40 tapped holes as well as some other common hole patterns for mounting piezo positioners. This plate is replaceable and can have custom holes added if desired. Slots in the mounting plate make it easier to route wires to your hardware and reduce eddy current heating during magnet ramping.



The location of the mounting plate relative to the Magnet Center Line can be adjusted by swapping out the two curved Side Plates. There are three standard sizes of side plates that come with either the standard or large-volume sample pod. These side plates allow the mounting plate to be positioned at three different distances either above or below the pod flange (see illustration above).

See the *Standard and Large-Volume Sample Pods* section below for more details.

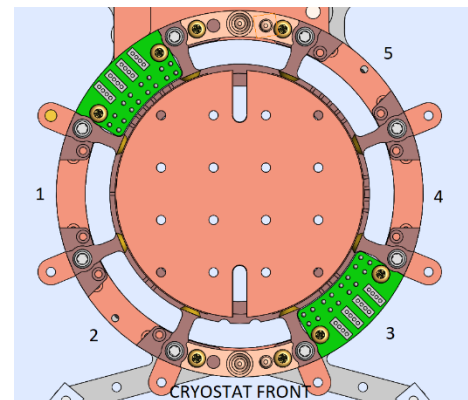
Mounting Your Sample

Samples can be mounted directly to the mounting plate using spring fingers or a clamping plate. It is important that some force is used to make good thermal contact between the sample and mounting plate. Alternately, an adapter plate can be constructed by the user to mount a sample in the desired location and orientation. If the sample requires many electrical contacts, it may be helpful to mount a chip-socket. Your sample can then be mounted to a chip-carrier and wire bonded to the contact pads. Please contact your Quantum Design Sales Associate or the Quantum Design Applications Team to discuss sample mounting details.

A separate auxiliary thermometer and associated electronics are included with the OptiCool. You can mount this thermometer near your sample to get a more accurate measurement of the sample temperature. The thermometer uses internal cryostat wiring, leaving sample wires free for experimental use.

Connecting Wires to Your Sample

Each Sample Pod has 5 bays available to mount connector boards. The bays need to be configured to match the pre-installed wiring configuration of your OptiCool. Once properly configured, the connector boards mate up with the OptiCool wiring when the Pod is installed. Each different type of board presents a connector on the top side of the Pod Flange to extend the wires to your sample. Mating connectors for each board style installed in the system are included with the OptiCool. Review the “Opticool Wiring Options” document (1318-007) for more information regarding available pre-wired options.



Standard and Large-Volume Sample Pods

Sample pods are available in both a Standard configuration and a Large-Volume configuration. Each pair of side plates is compatible with both types of sample pods.

X100 – Standard Sample Pod

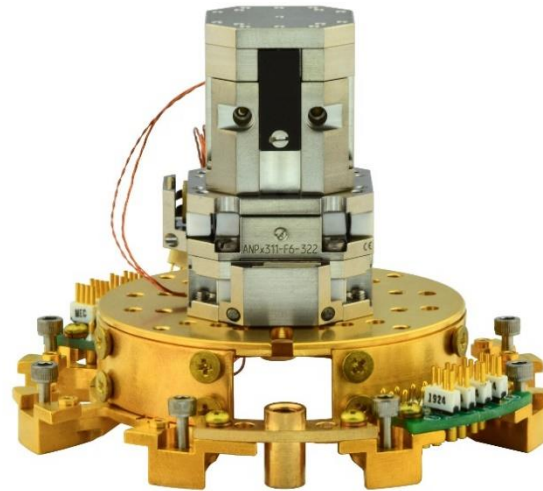
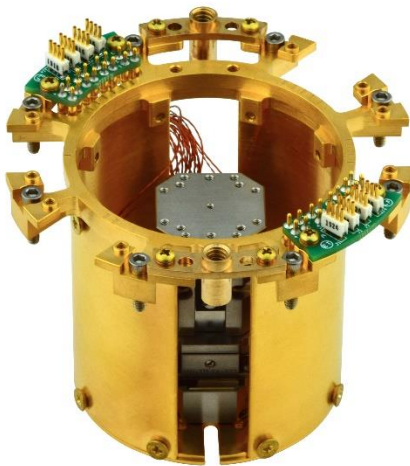


The Standard Sample Pod allows you to position the mounting plate at three different locations within the sample volume. This is accomplished by swapping out the pod side plates. The available side plates allow you to locate the mounting plate at either 12.4 mm, 32.8 mm, or 56.4 mm below the magnet center line position. The standard sample pod is useful for mounting smaller experimental setups, shorter stacks of positioners, or samples higher up in the sample volume.

X110 – Large-Volume Sample Pod



The Large-Volume Sample Pod allows you to position the mounting plate at three different positions below the pod flange, allowing utilization of the volume inside the Sample Column. Like the Standard Sample Pod, this is accomplished by swapping out the pod side plates. The available side plates allow you to locate the mounting plate 87.4 mm, 111.0 mm, or 131.3 mm below the magnet center line.



The sample pod is available in standard and large volume configurations. The large-volume sample pod (above left) is useful for mounting tall experimental setups or including more complex stacks of positioners while keeping the sample in the center of the magnetic field. The standard sample pod could be used with a positioner stack (above right) to position the sample closer to the top optical window.