

BC-500 Cryogenic Chamber

Product Highlights

- Large vacuum chamber with a 500 x 500 mm plate for cold experiments
- 70 K to 140 K cryogenic operation
- 30 W maintenance free cryocooler, vibration free (no external compressor)
- Complete remote operation, including vacuum pressure and pumping control
- Rigid construction, ready for laboratory and field operation

General Description

The BC-500 is a high vacuum cryogenic chamber, designed for optical setups and physical experiments running in the range of 70 K to 140 K. The experiments can be mounted on the BC-500 Cold Plate, whose dimensions of 500 x 500 mm are completely available for the Researcher.

Exterior

The BC-500 is made of aviation grade aluminum, fine polished for emissivity reduction. The chamber can be opened from both sides for complete access to its interior. Vacuum is preserved with Viton™ o-rings seals, for easy opening/closing for experiments.

Interior

A radiation shield is provided to allow the cold plate temperature to reach a lower temperature. The standard version of the Cryostat operates the cold plate at 140 K. There are provisions to install cooler items, such as an image sensor, operating at 77 K or similar. The cold plate can be ordered with perforations (threaded or not) for attaching User's cold experiments. New cold plates may be ordered and replaced by the User.

Cryostat Control

The BC - 500 can be monitored and controlled remotely. A Cryostat controller with touch screen allows the User to supervise the health of the cryostat, locally or remotely through an Ethernet port or wirelessly. The controller is ready to communicate through USB and/or RS-232/422/485 with various devices for vacuum and temperature control. A vacuum gauge and an electromagnetic valve come standard with the BC-500 for monitoring and taking actions when the vacuum pressure requires so.

Item	Description	Included	Complete Control of your Vacuum System The BC-500 allows the User to run experiments without worrying about vacuum and temperature control of the Cryostat. This is possible thanks to the controller's ability to run a compatible vacuum pump remotely (not included). A script will start/stop the vacuum pump and open/close the vacuum valve. The BC-500 controller makes the BC-500 a maintenance-free cryo system.
Temperature	Lakeshore 336 w/8 RTD sensor inputs and 2 heater outputs	Accessory	
Vacuum Gauge	Kurt Lesker 392	Standard	
Vacuum Valve	Kurt Lesker / ANCorp Electromagnetic valve	Standard	
Cryocooler	Cryotel controller	Standard	
Controller	Cryostat Controller	Standard	

Technical Specifications

Specification	Value
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Chamber material	Aluminum 6061-T6
External dimensions (mm)	Length: 740 Width: 740 Height: 385
Radiation shield dimensions (mm) ⁽¹⁾	Length: 640 Width: 640 Height: 290
Cold plate dimensions (mm)	Length: 500 Width: 500 Height: 25 (bare thickness) 60 (including reinforcement ribs)
Experiments Available Volume (mm)	Length: 630 Width: 630 Height: 150
Cold Finger	Copper and/or Aluminum. Thermotive™ flexible cold straps available as standard accessory
Getter	Dual container for molecular sieve & charcoal
Cryocooler	Ametek™ Sun Power Inc™ GT or DS30 Cryotel
Vacuum	NW40 vacuum valve ⁽²⁾ Kurt Lesker™ 392 vacuum gauge Viton™ o-rings
Emissivity	0.04 or lower (ultra fine polished on all inner surfaces)
Cooling	Water/Glycol cooling required (chiller not included) w/Swagelok fittings

Notes:

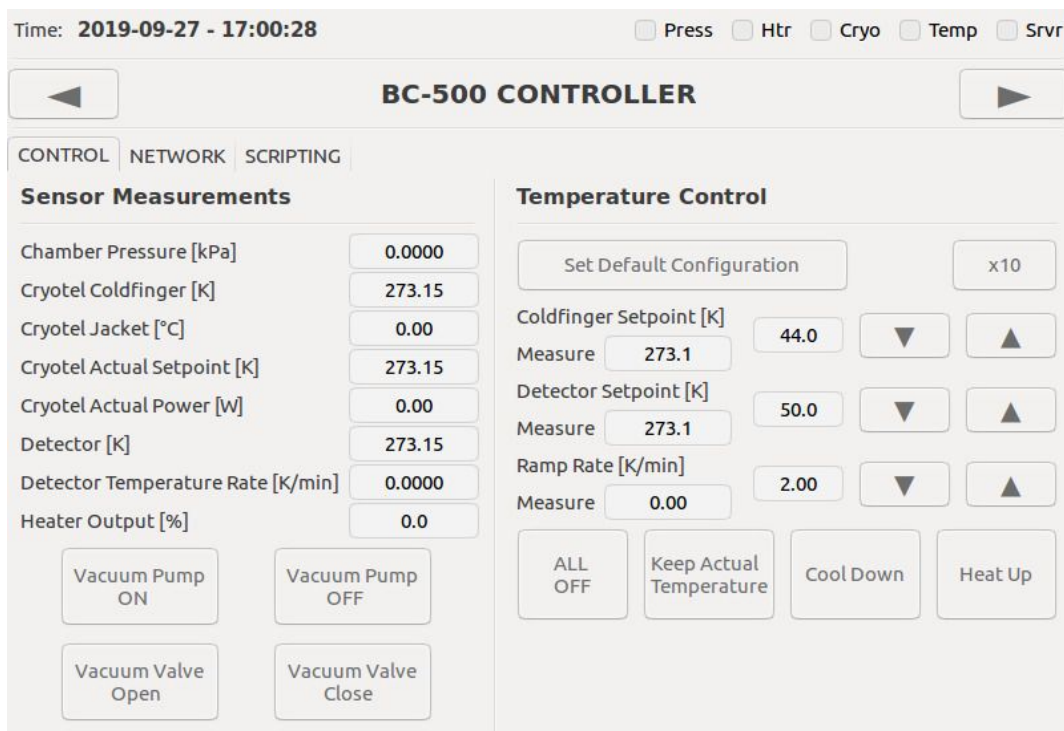
- (1) The radiation shield dimensions can be modified upon request as a standard customization
- (2) The standard vacuum valve is electromagnetic, to allow remote maintenance of the vacuum. A bare manual valve can be added as standard accessory upon request.

Cryocooler

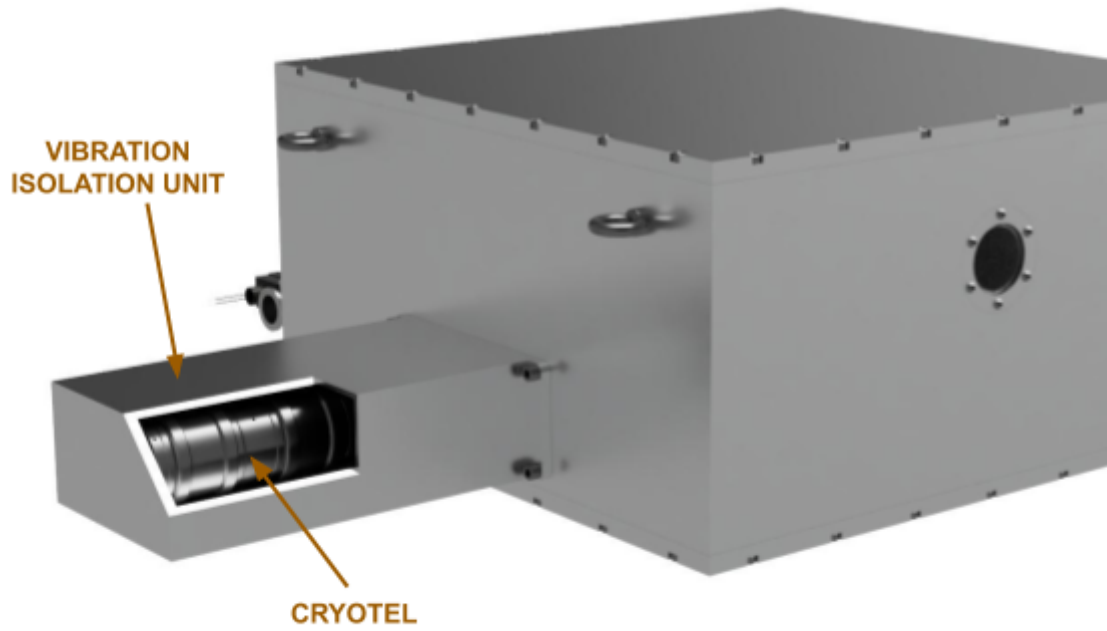
The BC-500 is designed to be used with a Ametek™ (Sun Power Inc.) Cryotel™, GT (16W) or DS30 (30W) models (not included). The Cryotel is a self-contained unit, which pumps heat out of the Cryostat using Free-piston Stirling technology. The Cryotel is commanded by the BC-500 controller and is housed inside a vibration isolation unit, designed by Bear S&E, to completely eliminate any residual vibration that is not internally removed by the Cryotel's own compensation unit.

Hatch

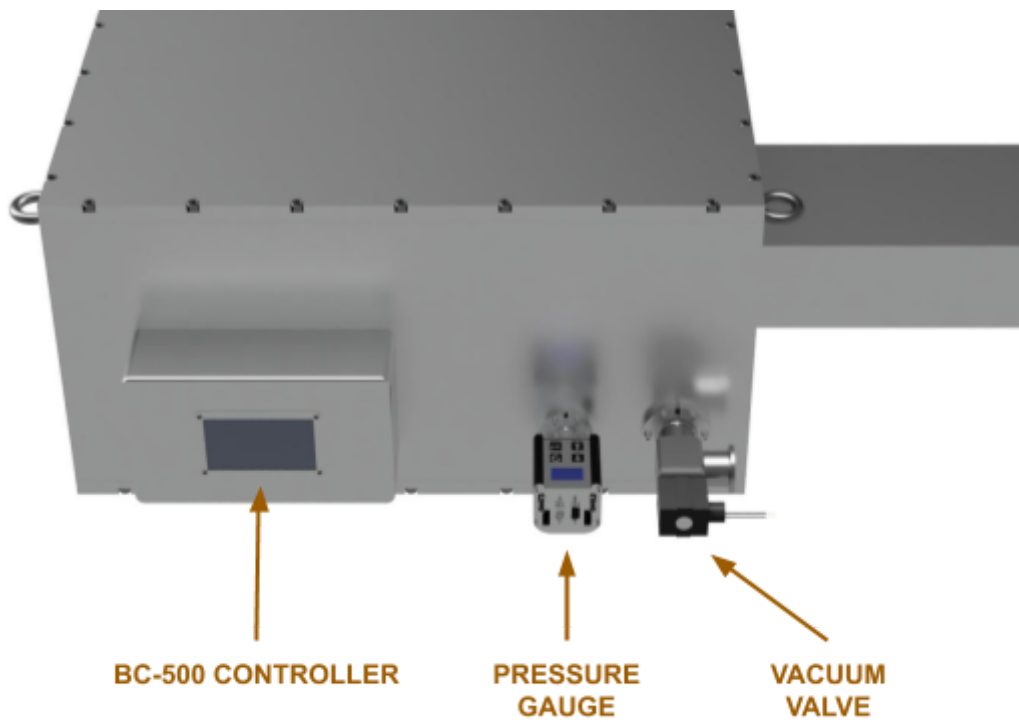
A hatch can be made at any of the sides of the BC-500 as a standard feature. A window for an infrared instrument may be selected as a standard accessory.



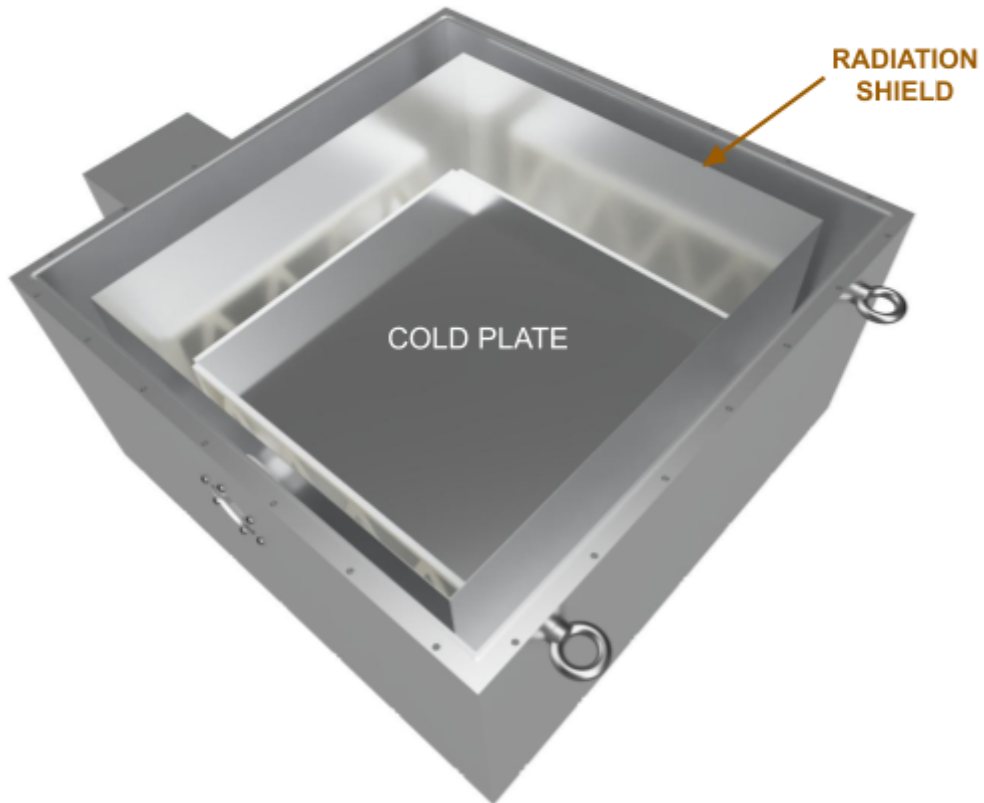
BC-500 Touch Panel Main Screen



BC-500 Cryotel Vibration Isolation Unit



BC-500 Standard Accessories



BC-500 Interior

All presented images are referencial and may change for a specific custom product