

Lab Requirements

System Installation Preparation: Cryostation Family

Contact: **North American Service** | support@montanainstruments.com | +1.406.551.2796
International Service | Visit www.montanainstruments.com/contact

Applicable Systems: **CryoAdvance-50, CryoAdvance-100, s200**

This document outlines the power and space requirements for the CryoAdvance-50, CryoAdvance-100, and s200 systems, supporting components, and potential purchased options.

1. PREPARING FOR SYSTEM INSTALLATION

As you prepare for your system to arrive, please ensure the necessary infrastructure requirements are in place.

1. Review Section 2: Component Placement and Layout Plan. Decide where the system and system components will be located.
2. Review Section 3: Wall Outlet and Power Requirements. Ensure the appropriate wall outlets are available near the corresponding equipment.
3. Review Sections 4: Additional Requirements. Ensure all optional equipment is prepared for.
4. Review Section 5: Shipping Weights and Dimensions. Ensure your facility is properly equipped to receive the system.

2. COMPONENT PLACEMENT AND LAYOUT PLAN

Before installing the required wall power, it is recommended to pre-plan the placement of components in the lab space. [Detailed dimensions](#) are available online.

- For optimal performance the Cryostation (including the sample chamber) should be mounted to an optical table, but any flat, level and stable surface can be used. Allow 24 in [60 cm] clearance in the back of the unit for the helium and vacuum hoses.
- The compressor must remain upright and sits on the floor. Allow 24 in [60 cm] clearance on top and all sides of the unit for helium hoses and air cooling.
- The system control unit (4U) and vacuum control unit (6U) can be rack-mounted in a standard 19-inch-wide rack unit (sold separately) or placed on a nearby shelf. Allow 3.25 in [8 cm] minimum clearance from any ventilated face (sides, front) and 8 in. [20 cm] clearance in the rear for cables and hoses.
- The user interface touchscreen should be placed on any nearby work surface.

Please consider the allowable distance between components, as outlined in the cable diagram below. The helium hoses between the Cryostation and compressor require a minimum bend radius of 9.0 in (23 cm) with a 4.0 in. (10 cm) straight section at each end.

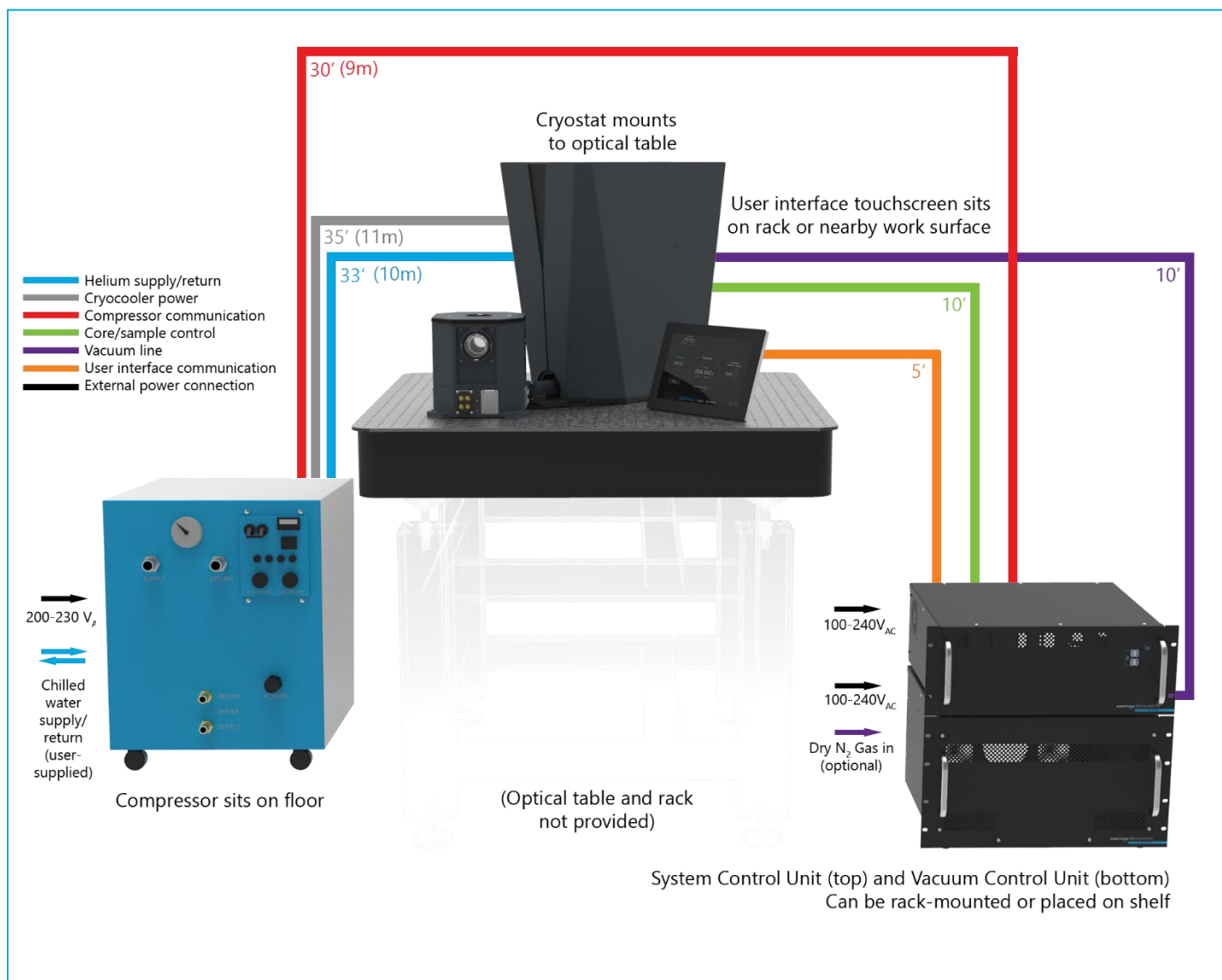


Figure 1: Cryostation relative system layout

*Compressor & Cryostation models shown here are representative, the products you receive may be cosmetically different, but interconnection and functionality are identical.

3. FACILITY REQUIREMENTS

COMPRESSOR

Power	
Wall Outlet / Receptacle	NEMA L6-20P single-phase (see note below)
Line Voltage	200 – 230 VAC
Frequency	50 Hz or 60 Hz (region specific)
Rated Load Current	15.0 A

Chilled Water	
Compressor Connection	½" MNPT
Water Inlet Temperature	4° - 27° C (40° - 80° F) ¹
Cooling Water Pressure (Min/Max)	210 kPa (30 psig) / 800 kPa (110 psig)
Cooling Water Flow (Minimum)	2.65 L/min (0.7 GPM)
Water Chiller Cooling Capacity	≥3.0 kW (11,000 BTU/hr) ²

1. Cryostation system performance is validated with input water at 68 °F [20 °C] and 1.0 gpm [3.789 Lpm] flow rate
2. Applies only if you are using a water chiller unit connected to the compressor. If using facility water, Temperature, Pressure & Flow are the critical parameters.

» NOTE

The NEMA 6-20R is a special outlet in the United States. An electrician must set up this circuit up for 208-240 VAC, 20 Amps, and single-phase. **The outlet cannot be three-phase.**

SYSTEM CONTROL UNIT

Mains Power Connector on Unit		IEC 60320 C14
Line Voltage		100 – 240 VAC
Frequency		50 – 60 Hz
Maximum Current Draw		6.65 A
Wall Outlet / Receptacle	N. America & non-EU	Standard NEMA 5-15
	CEE Europe (non-UK)	CEE 7/3 or CEE 7/5 w/ common ground terminal
	UK	BS1363 (UK) w/ common earth ground terminal
	Israel	I-32-3 w/ common earth ground terminal

VACUUM CONTROL UNIT

Mains Power Connector on Unit		IEC 60320 C14
Line Voltage		100 – 240 VAC
Frequency		50 – 60 Hz
Maximum Current Draw		1.9 A
Wall Outlet / Receptacle	N. America & non-EU	Standard NEMA 5-15
	CEE Europe (non-UK)	CEE 7/3 or CEE 7/5 w/ common ground terminal
	UK	BS1363 (UK) w/ common earth ground terminal
	Israel	I-32-3 w/ common earth ground terminal

4. OTHER STANDARD OPTIONS (IF ORDERED)

ELECTRONICS RACK

The electronics rack option is used to mount the system control, vacuum control, and positioner control units together in a single enclosure. The communication cables and hoses between components do not change. Allow 35 in. [89 cm] clearance on the front and back of the cart for cables and door access and 12 in. [30.5 cm] on the sides for airflow.

The control units plug into the cart's power module, and the cart plugs into the facility wall power as specified below.

Mains Power Connector on Unit		IEC 60320 C20
Line Voltage		100 – 240 VAC
Frequency		50 – 60 Hz
Maximum Current Draw		15 A
Wall Outlet / Receptacle	N. America & non-EU	Standard NEMA 5-15
	CEE Europe (non-UK)	CEE 7/3 or CEE 7/5 w/ common ground terminal
	UK	BS1363 (UK) w/ common earth ground terminal
	Israel	I-32-3 w/ common earth ground terminal

MAGNET POWER SUPPLY

The Magneto-Optic (MO) option includes a magnet and a separate magnet power supply.

The magnet is set on the optical table surrounding the cryostat sample chamber. The power supply must remain upright and can be placed on the floor or a nearby shelf. It must be located within 10 ft (3 m) of the system control unit and compressor, and within 10 ft (3 m) of the magnet on the sample chamber.

The magnet power supply requires the following wall power:

Mains Power Connector on Unit		IEC 60320 C20
Line Voltage		100 – 240 VAC
Frequency		50 – 60 Hz
Maximum Current Draw		13 A
Maximum Power Consumption		1300 W
Wall Outlet	N. America & non-EU	Standard NEMA 5-15
	CEE Europe (non-UK)	CEE 7/3 or CEE 7/5 w/ common ground terminal
	UK	BS1363 (UK) w/ common earth ground terminal
	Israel	I-32-3 w/ common earth ground terminal

OPTICAL TABLE (NOT INCLUDED)

As noted, the system can be mounted to most imperial or metric optical tables. Please have optical table space available which allows for direct access to the sample chamber.

NITROGEN SUPPLY (OPTIONAL)

The vacuum control unit provides an inlet for dry nitrogen gas. To keep the sample space clean, a dry nitrogen connection is highly recommended, especially in humid climates. Nitrogen will help rid the system of moisture

and decrease the initial pump downtime. See [The Purpose and Benefit of Using Nitrogen in the Cryostation](#) for more information.

The nitrogen source can either be high or ultra-high purity and should be 10-50 psi. The port on the back of the vacuum control unit fits a ¼ inch tube (user supplied).

5. WEIGHTS & DIMENSIONS

SHIPPING

The Cryostation & standard system components will arrive on 3 pallets. The typical weights and dimensions of a standard system are below.

	Pallet 1	Pallet 2	Pallet 3
Components	Compressor	System Control Unit Vacuum Control Unit	Cryostation Accessories
Pallet Dimensions (L x W x H)	31 x 32 x 36 in. [79 x 81 x 91 cm]	40 x 48 x 38 in [102 x 122 x 97 cm]	40 x 48 x 38 in [102 x 122 x 97 cm]
Weight	180 - 245 lbs [82 - 111 kg]	120 lbs [54 kg]	140 - 180 lbs [63 - 82 kg]



WARNING

Use extreme caution when handling the shipment

Refer to the system user manual and installation procedure for important instructions regarding the safe handling of system components.

EQUIPMENT

Component	L x W x H	Mass
Cryostation	22.2 x 9.1 x 19.3 in [56.3 x 23.2 x 49 cm]	64 lbs [29 kg]
Compressor: water-cooled	20.9 x 17.3 x 20.9 [53 x 44 x 53 cm]	161 lbs [73 kg]
Compressor: air-cooled	16.9 x 21.6 x 19.9 in [43 x 54.9 x 50.4 cm]	225-245 lbs [102-111 kg]
System Controller	16.9 x 15.0 x 6.7 [43 x 38 x 17 cm]	30 lbs [13.6 kg]
Vacuum Controller	16.9 x 15.0 x 10.4 [43 x 38 x 26.5 cm]	53 lbs [24 kg]