

****PRELIMINARY****

Lab Requirements

System Installation Preparation: RapidCycle 100 EC

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Applicable Systems: [RapidCycle 100 EC](#)

This document outlines the power and space requirements for the RapidCycle 100 EC cryostat system, 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.
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.

- Allow 24 in [60 cm] clearance in the back of the unit for the helium and vacuum hoses.
- The compressor must remain upright and sit on the floor. Allow 24 in [60 cm] clearance on top and all sides of the unit for helium hoses.
- The user interface touchscreen should be placed on the tabletop of the system cart or 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.

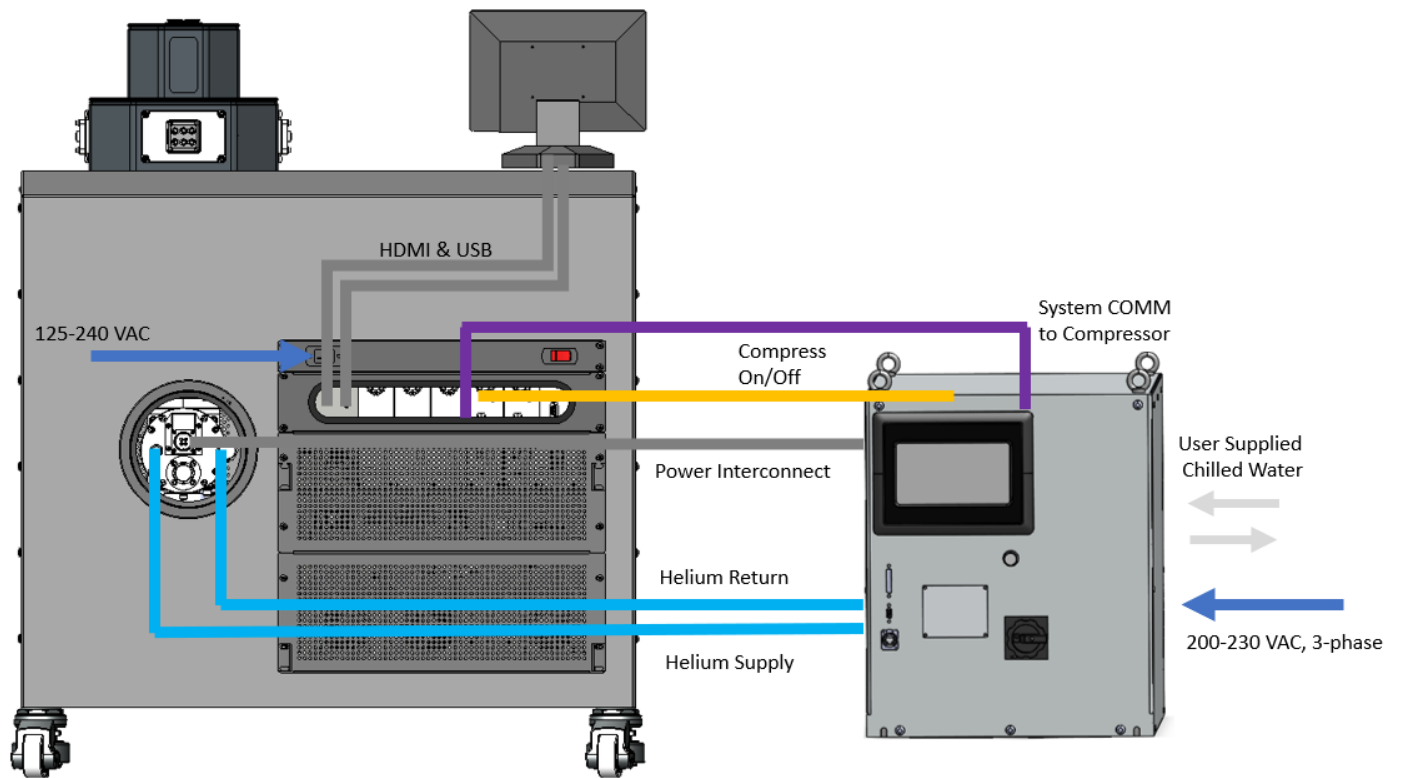


Figure 1: Cryostation relative system layout

Note: All other connections not pictured are shipped installed; users do not need to connect them.

Helium Supply / Return	Cryocooler Power	Compressor Communication
20 Meter (66 Feet)	20 Meter (66 Feet)	20 Meter (66 Feet)

3. FACILITY REQUIREMENTS

COMPRESSOR

Power	
Mains Power Receptacle	L15-30P NEMA Plug, 3-phase (see note below)
Line Voltage	200 V ($\pm 10\%$), 50 Hz, 3-phase 230 V ($\pm 10\%$), 60 Hz, 3-phase
Frequency	50 Hz or 60 Hz (region specific)
Rated Load Current	16.0 A

Chilled Water ²	
Compressor Connection	1/2" MBSPP
Cooling Water Flow Rate	5 L/min-10 L/min max (1.3-2.6 GPM)
Water Inlet Temperature	5° - 32° C (41° - 90° F) ¹
Cooling water outlet temperature	45° C (113° F) maximum
Cooling water supply pressure	8 bar (116 psig) maximum
Pressure drop at 4 L/min	0.2-0.6 bar (2.9-8.7 psi)
Water Quality	Refer to the compressor manual below

1. Cryostation system performance is validated with inlet water at 68 °F [20 °C].
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

Three phase power must be set up by a qualified electrician prior to system installation.

» NOTE

Montana Instruments does not provide cooling lines from facility water connections to the compressor. These lines need to be installed by facility staff prior to system delivery/installation. Failure to have adequately rated lines installed or lines long enough to reach where the compressor will be can result in delayed installation. For information on cooling line requirements, refer to the appropriate compressor manual below.

For more detailed documentation on the compressors, please refer to the documentation here:

[Coolpak 5000e Water Cooled](#)

WARNING

Risk of damage to water cooled compressor

All water quality and inlet/outlet requirements for the water-cooled compressor must be followed, or the compressor may be damaged. Follow all manufacturer requirements listed in the compressor manual linked above.

SYSTEM CART POWER

Mains Power Connector on Unit		IEC 60320 C20
Line Voltage		125 – 240 VAC
Maximum Current Draw		16 A
Wall Outlet / Receptacle	N. America	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
	Australia	AS3112 w/ common ground terminal
	China	GB 1002-2024
	India	IS1293 w/ common ground terminal
	Brazil	NBR 14136
	Korea	KS C 8305
	Switzerland	SN 441011

4. OTHER STANDARD OPTIONS (IF ORDERED)

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 – 100 psi MAX. The port on the back of the vacuum control unit fits a ¼-inch tube (user supplied).

If using nitrogen, ensure the System Cart is located in a well-ventilated area to prevent accumulation of nitrogen in the event of a gas leak. A flow valve at the nitrogen source and an O₂ sensor are recommended anytime nitrogen is used in a laboratory environment.

5. WEIGHTS & DIMENSIONS

SHIPPING

The Cryostation & standard system components will arrive in 2 crates and will require a T-25 star bit to open the crates. The typical weights and dimensions of a standard system are below.

	Pallet 1	Pallet 2
Components	Cryostation (System, System Control, Vacuum Control)	Compressor
Crate Dimensions (L x W x H)	48 x 39 x 53 in [122 x 99 x 135 cm]	48 x 40 x 50 in [122 x 102 x 127 cm]
Weight (Approximately)	350-370 lbs [159-168 kg]	341 lbs [154 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
RapidCycle 100 EC*	35.6 x 26.9 x 35 in [90.4 x 68.3 x 88.9 cm]	250 lbs [113 kg]
Leybold Compressor (Water-Cooled)	18 x 18 x 20 in [45.7 x 45.7 x 50.8 cm]	291 lbs [132 kg]

*System and Vacuum Controllers are installed in the system cart prior to shipment.

6. REQUIRED TOOLS

All tools required to access and exchange samples and general system use are included in the Accessory Kit that ships with the system.

For installation of the system, some required tools are not included. Recommended tools are:

- Power drill and T-25 head bit (for disassembly of the shipping crate)
- Adjustable wrench (for tightening/loosening hose fittings)

Flat head and Phillips head screwdrivers (for platform screws, nanopositioner mounting plates, flexlink plate, etc.)