

Cryostation® s - series Lab Requirements

PREPARING YOUR LAB FOR SYSTEM INSTALLATION

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Applicable Systems: [Cryostation s50, s100, s200, Magneto-Optic, Cryo-Optic](#)

This document describes the power and space requirements for the system and associated components.

Congratulations on your purchase of a Cryostation! Your system will be built and tested at the Montana Instruments factory and shipped to your facility for final installation.

When your system ships, you will receive a shipping notification via email. The system will arrive on 2-3 pallets, depending on the options purchased (see Appendix for shipping weights and dimensions).

If you ordered an installation, you will be contacted by a support representative to schedule the service. If you will be installing the system yourself, please refer to the instructions online at [Unpacking and Setting Up the System](#) or follow the steps outlined in your manual.

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

LAB LAYOUT & COMPONENT PLACEMENT

The weights & dimensions for the main system components are available online on the product and options pages (see links below).

- [Cryostation](#)
- [Magneto-Optic Module](#)
- [Cryo-Optic Module](#)

STANDARD SYSTEM COMPONENTS

The standard system includes a cryostat, compressor, control unit, and user interface laptop.

- The cryostat (including the sample chamber) must be mounted to an optical table. The main housing can typically be oriented at either 45° or 90° to the hole pattern in the optical table. Please 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. Please allow 40 in (100 cm) clearance in the back of the unit for helium hoses and air cooling.
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- The control unit must remain upright and can be placed on the floor or a nearby shelf. Please allow 16 in (40 cm) clearance in the back of the unit for the vacuum hose and cables and 12 in (30 cm) in the front for cooling.
- The laptop can be placed on the optical table or a nearby table or work surface.

When deciding on the placement of the system in your lab, it is important to consider the allowable distance between components. Please refer to Figure 1 for a schematic of the cable lengths between the main components. When calculating the length of the helium hoses between the compressor and cryostat, please note the minimum bend radius of each hose as shown in the table below.

Hose Length	OD of Hose	Minimum Bend Radius
10 ft	< 1 in	6 in
30 ft	< 1.3 in	9 in
50 ft	< 1.3 in	9 in

Additionally, the helium hoses have a fixed 4 in long straight section at each end. If additional clearance is needed, special right angle hose adaptors (purchased separately) placed at the back of the cryostat or compressor can direct the connection straight up or directly to the side. If long hoses were not purchased with the system, the standard length is 10 ft (3 m).

MAGNETO-OPTIC MODULE (PURCHASED SEPARATELY)

The Magneto-Optic module includes a magnet and a magnet power supply. The magnet is mounted on the optical table with the cryostat and is positioned around the sample chamber. The power supply must remain upright and can be placed on the floor or a nearby shelf. Please refer to Figure 2 for a schematic of the cable lengths between these components.

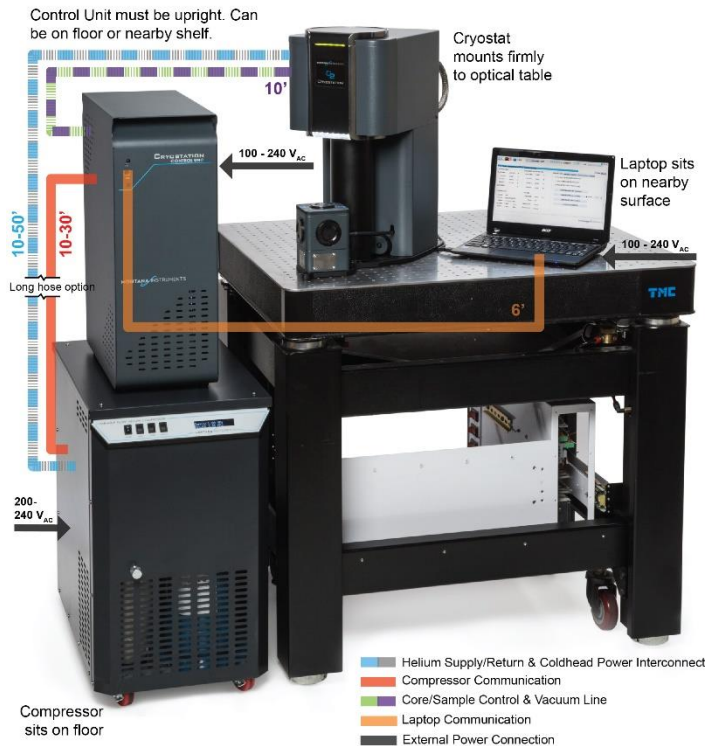


Figure 1: Cryostat on optical table

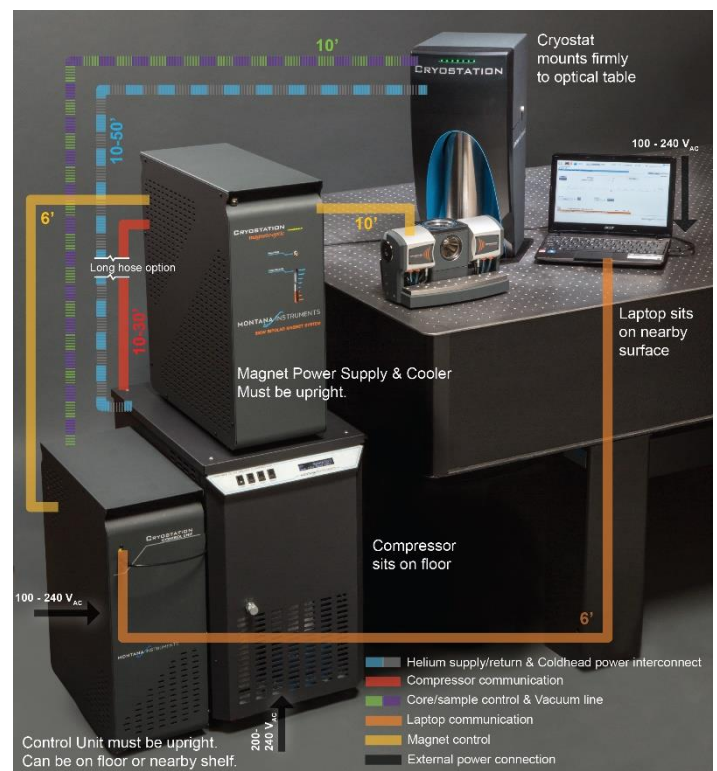


Figure 2: Cryostat with magnet

WALL OUTLET AND POWER REQUIREMENTS

Before locating wall outlets for the equipment, we recommend planning the lab layout to ensure the appropriate outlets are near the corresponding equipment. Please verify your system order specifies the correct plugs for your region.

Compressor

Specifications	
Model	B-01
Voltage	200-240 VAC
Current	15 A
Unit Connector	C19

Region	Wall Outlet
N. America & non-EU	NEMA 6-20R (see note below)
CEE Europe (non-UK)	CEE 7/3 or CEE 7/5 w/ common ground terminal
UK	IEC60309-6H (16A)
Israel	IEC60309-6H (16A)

»» NOTE

The NEMA 6-20R is a special outlet in the United States. An electrician must set this outlet up for 200-240 VAC, 20 Amps, and single phase. **The outlet cannot be three phase.** If you would like a different cable, please specify in the order.

Control Unit

Specifications	
Model	4200-109
Voltage	100-240 VAC
Current	4 A
Unit Connector	C19

Region	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

User Interface - Laptop Computer

Specifications	
Model	4200-141
Voltage	100-240 VAC
Current	1 A
Unit Connector	Universal adapter

Region	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	Standard BS1363
Israel	Standard SI-32

OPTIONAL ADD-ONS (PURCHASED SEPARATELY)

Certain add-ons and optional equipment require additional power. Specifications for this equipment are outlined below.

Magnet Power Supply

Specifications	
Model	4101-132
Voltage	100-240 VAC
Current	10 A
Unit Connector	C19

Region	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	Standard BS1363
Israel	Standard SI-32

Cryo-Optic Power Supply (s50-CO only)

Specifications	
Model	4104-190
Voltage	100-240 VAC
Current	10 A
Unit Connector	C19

Region	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	Standard BS1363
Israel	Standard SI-32

Other Optional Equipment

- Nanopositioners Controller: refer to manufacturer specifications

ADDITIONAL REQUIREMENTS

OPTICAL TABLE (NOT INCLUDED)

The system can be mounted on any imperial or metric optical table. Please allow additional space for other equipment you may need to mount to the table.

NITROGEN SUPPLY (OPTIONAL)

The control unit provides an inlet for dry nitrogen gas which is used to vent the system after warmup. While dry nitrogen is not necessary to operate the system, it is recommended for optimal system performance. Venting with dry nitrogen reduces contaminate accumulation in the system and helps to achieve the best possible vacuum levels. Without a dry gas input, it may take longer to cool down, especially if your environment is humid. See [The Purpose and Benefit of Using Nitrogen in the Cryostation](#) for more information.

APPENDIX: SHIPPING WEIGHTS AND DIMENSIONS

! **ALERT** **PRODUCT SAFETY NOTICE**
Please use extreme caution when handling the shipment.

»» **NOTE**
Tilt and Shock watches in use!! These units will tell if the system was abused in shipment. If the tilt and shock watches have been tripped, please contact a Montana Instruments service representative immediately.



Figure 3: Cryostat shipping pallets

All systems will ship with a minimum of two pallets. A third pallet may be included, depending on the options ordered. The standard weights and dimensions, as packed, are below. Configuration options may affect these weights.

	Pallet 1	Pallet 2	Pallet 3
	Compressor	Box 1: Cryostat Box 2: Control Unit, Computer & Accessories	Varies
Pallet Dimensions (l x w x h)	31 in x 32 in x 36 in 79 cm x 81 cm x 91 cm	40 in x 48 in x 38 in 102 cm x 122 cm x 97 cm	40 in x 48 in x (box height + 6) in 120 cm x 122 cm x (box height + 15) cm
Cryostation s50	220 lbs 100 kg	200 lbs 91 kg	Optional, depends on options
Cryostation s100	220 lbs 100 kg	200 lbs 91 kg	Optional, depends on options
Cryostation s200	220 lbs 100 kg	240 lbs 109 kg	Optional, depends on options
Magneto-Optic Module			140 lbs + any additional options 64 kg + any additional options
Cryo-Optic Module			110 lbs + any additional options 50 kg + any additional options