



Standard Helium Liquefier/ Refrigerator LR1420/LR1620

Linde Cryogenics

Linde

Refrigeration capacity: up to 900W at 20K

Linde continues the long tradition of dependable and affordable helium systems with production of the Model L1400-1600 series of helium systems. Capacities depend upon liquid nitrogen (LN₂) pre-cooling and on the chosen size of compressor. All standard cold boxes are equipped with a LN₂ pre-cooling capability, which provides a significant increase in capacity.

The 20K refrigeration process is based upon a modified reversed Brayton cycle with two rugged gas piston expanders. The system is controlled by a state of the art PLC based control system. Significant system parameters are measured by digital instruments.

The LR1420 and LR1620 are similar systems, but the LR1420 is a simplified version with less automation than the LR1620. The LR1620 is a fully automated refrigerator with dual 80K adsorber beds and mixing valves to control cooldown and warmup rates.

Piston Expanders

The piston expanders have been improved over the years with better bearings and connecting rods. The load motor and alternator combination has been replaced with a single VFD motor. The resistor banks are reduced in size and mounted on the coldbox cabinet. These improvements have significantly increased reliability.

Standard Scope of Supply

The standard 20K helium refrigerator is composed of:

- Vacuum insulated cold box, with female bayonet connections to and from the load
- Control panel with operator interface integral to the cold box cabinet
- Finned tube and shell heat exchangers with LN₂ pre-cooling function
- Two gas piston expanders
- Oil injected recycle compressor, water cooled
- Oil removal system / Gas management valves

Options

- Pure helium gas buffer
- Cryogenic adsorber, portable
- Line drier
- Mating male bayonets
- Standard installation kit
- Transfer line systems
- Spare parts & maintenance kits
- Maintenance contract

Standard Control System Supply

- Automation Direct PLC with Direct Soft software
- Panelmate touch screen operator panel with function keys and text display
- Control cabinet, integral to the cold box cabinet, communicating via Ethernet

Options

- Data acquisition, remote monitoring, and control system on laptop computer
- Process visualization with dynamic color graphic display
- Trend recording
- Display of control loop status and process variables



Model LR1420 - 20K Refrigeration (Watts)

50Hz	60Hz	50Hz	60Hz	
Without LN ₂ precooling	Without LN ₂ precooling	With LN ₂ precooling	With LN ₂ precooling	Compressor
132	160	217	271	RSS
225	225	465	560	RS
-	-	560	-	RSX

Model LR1620 - 20K Refrigeration (Watts)

50Hz	60Hz	50Hz	60Hz	
Without LN ₂ precooling	Without LN ₂ precooling	With LN ₂ precooling	With LN ₂ precooling	Compressor
-	-	-	-	RSS
300	360	595	715	RS
360	390	715	850	RSX

Model LR1420/LR1620 Main Dimensions

Description	L x W x H (m)	Weight (kg)
Model LR1420 Helium Refrigerator	1.270 x 1.067 x 1.700	818
Model LR1620 Helium Refrigerator	1.476 x 1.274 x 1.803	953
Compressor - RSS	1.450 x 1.250 x 1.420	1100
Compressor - RS & RSX	1.450 x 1.350 x 1.480	1135

Linde Cryogenics reserves the right to change the specifications without prior notice, especially to make revisions regarding design and technology, which improve the functionality; errors in description and illustration excepted.



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