# CryoREX

## Cooling System


## System Description

The CryoREX refrigerator is a compact high-power recirculating cooling system for low-temperature high cooling capacity applications. The closed-loop cooling system ensures maintenance-free operation. The CryoREX consists of a compressor unit, a flexible coolant delivery line and a special cold 'head' that directly connects to a heat source such as a laser crystal assembly in a high-power laser. Due to a unique design, the heat resistance of the system is minimized to ensure that the temperature of the cold end is virtually unaffected by the heat load.

## Compressor Unit

The compact portable air-cooled CryoREX system can be installed virtually anywhere and cooled down to its operating temperature within minutes. Due to vibration-free expansion of the refrigerant in the cold head and the absence of vibration transfer from the compressor unit to the cold head, the CryoREX refrigerator is ideally suited for applications where vibrations are critical.

- Maximum heat load of the cold head – 200 Watt
- Operating temperature under thermal load < -132 °C
- Cool-down time to 132°C < 10 minutes

## FEATURES

- 200 Watt maximum heat load
- Operating temperature < -132 °C
- Cool-down time to -132°C < 10 minutes

## APPLICATIONS

- Laser crystal cooling
- Cryopumping
- Gas liquefaction
- Biological sample storage
- IR sensors
- Low-noise electronics
- High-$T_c$ Superconductors

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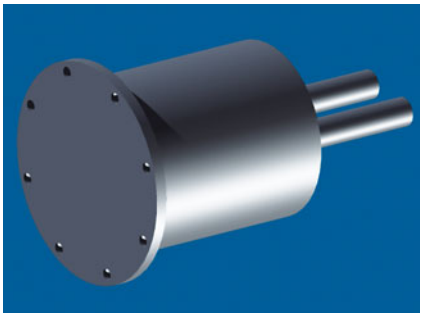
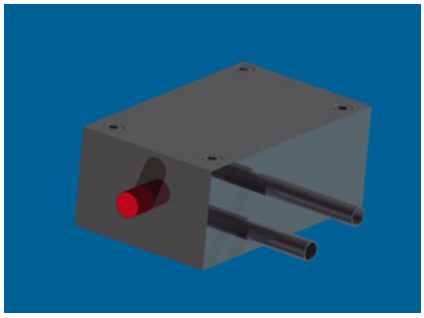
## Cold head

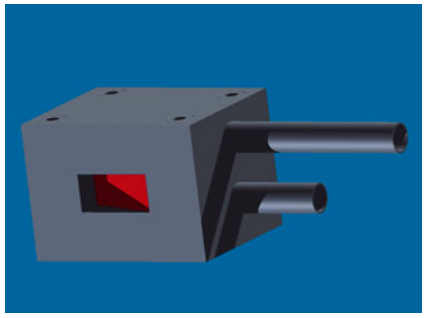
Our standard and custom cold heads are designed to provide maximum heat removal capacity from a minimum surface area. A carefully chosen mixture of refrigerants makes it possible to keep the volume of the cold head to the minimum, making it suitable for use inside tiny vacuum chambers. Electronic control of the refrigerant flow ensures uniform highly efficient heat transfer that is independent of the applied heat density. Unlike the systems based on LN2 boil-off and other heat-diffusion schemes, the CryoREX cold head is equally efficient in any position.

- Diamagnetic metal head
- Maintenance-free
- Extremely high heat conductivity
- Vibration-free
- Orientation-independent operation



Standard cold head





Customized heads

**Requests for custom-made versions are welcome !**

### SPECIFICATIONS

| | |
|---|---|
| Cooling capacity at -130 °C, W | 100 |
| Diameter of a standard cold head, mm | 35 |
| Flexible coolant delivery line, m | 2.5 |
| System cool-down time, min | 10 |
| Weight, kg | 70 |
| Electrical connection | 240/220 V single phase 50 Hz<br>100/120 V single phase 60 Hz |
| Electrical power consumption, kW | 3 |
| Compressor unit size (W×H×D), cm | 50 × 42 × 70 |
| Compressor unit size (W×H×D), inch | 19.7 × 16.5 × 27.6 |

*Specifications are subject to changes without advance notice.*

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