

# Free Piston Stirling Cryocooler

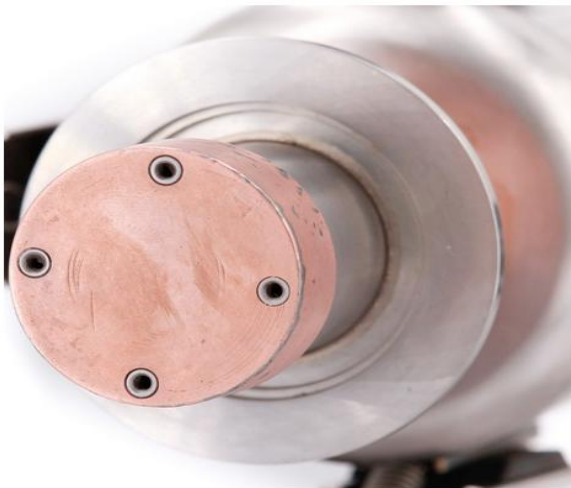
## - RS100 PLUS-77K

*Cryocooler Manufacturer - Pioneers in Cryocooler Technology and Ultimate Low-Temperature Solutions for Cryogenic Applications.*

Utilizing safe and environmentally conscious oxygen as its refrigerating medium, this product employs cutting-edge international free piston Stirling technology. It offers a broad humidity operating range and precise temperature control with an accuracy of  $\pm 0.1^{\circ}\text{C}$ . Its compact size and portability make it highly suitable for the development and utilization of miniaturized applications requiring **Fast** and **Deep** low-temperature conditions.

Furthermore, this Cryocooler-77K's adoption of helium as the refrigeration medium aligns with eco-friendly principles, rendering it a green choice. Its compact, lightweight design enhances its ease of transport, making it an invaluable asset in various fields demanding stringent temperature control requirements.

### Stirling-77K Specification



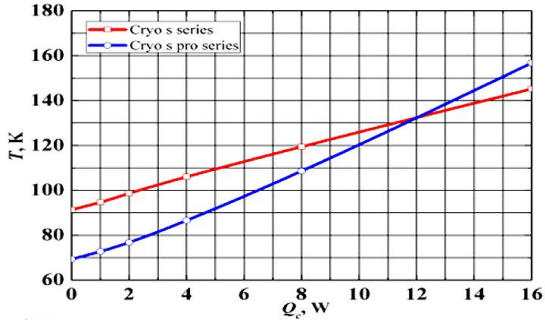
#### COOLING PERFORMANCE

size	Length 167*Width 156*Height 338 (mm)
weight	4.0 Kg
The refrigerant	High purity helium
Circuit board voltage	DC 12-30 V
Rated current	3-8A (fuse blowing current 10A)
Cooling performance	Above 3W (cold end temperature $-196^{\circ}\text{C}$ )
Working temperature	$0^{\circ}\text{C}$ to $35^{\circ}\text{C}$
Cold end working temperature	$-204^{\circ}\text{C}$ to $-160^{\circ}\text{C}$



# Performance Chart

Utilizing eco-friendly helium as a refrigerant, advanced international free piston Stirling technology, precise temperature control down to -203.8°C (Data from laboratory) with an accuracy of  $\pm 0.1^\circ\text{C}$ , and a compact size, it's ideal for high-end equipment core components.



**RIGID** Stirling Cryocooler RS100 PLUS-77K

## Cooling Performance

The cooling performance curve presented in the left table represents a standard performance test value and should not be regarded as an absolute measure.

The efficacy of cooling performance is intricately linked to the quality of insulation measures implemented at the cold end. It is essential to emphasize that this data holds relevance solely within the context of tests conducted with specialized testing equipment.

## Let The Cold Chain No Longer Be A "Pain Point"



### Small size and simple structure

The length, width and height are only 132x132x336mm, and the structure is more than 40% simpler than that of the compressor, which is more suitable for transportation.



### Light weight

The net weight is 4kg, which can reduce the weight for your application development and facilitate the installation of other important parts.



### 360° can work

The internationally advanced free-piston Stirling technology has no liquid lubricating ingredients, so you don't need to worry about using it upside down, and design products more freely.



### Eco-Friendly

Oil-free and CFC-free, environment protection.



### High Efficiency

The temperature is able to reach -100°C in 4 minutes.



### High Precision

Temperature control is accurate to  $\pm 0.1^\circ\text{C}$ .



### Light Weight

Portable and can be used in any direction.

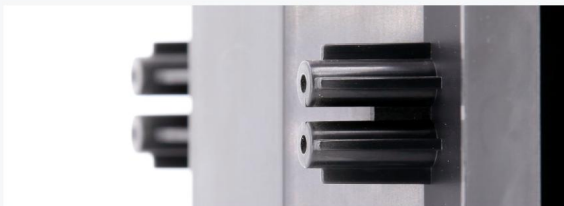
## Stirling-77K Features

Experience the Future of Cooling: RIGID 77K Stirling Cooler harnesses the power of safe and eco-friendly Helium, combined with state-of-the-art international free piston Stirling technology. It not only provides a wide humidity operating range but also ensures precise temperature control with an impressive accuracy of  $\pm 0.1^{\circ}\text{C}$ .

Its compact and portable design opens up a world of possibilities for miniaturized applications that demand rapid ultra-low-temp conditions. Embracing Helium as the refrigeration medium reflects our commitment to environmentally responsible solutions, making it a green choice for your needs.

With its lightweight construction, you can take this innovation wherever it's needed, making it an indispensable asset for various industries that require stringent temperature control. Discover the perfect blend of performance, eco-friendly, and convenience in RIGID's exceptional Stirling products.

## Stirling-77K Components



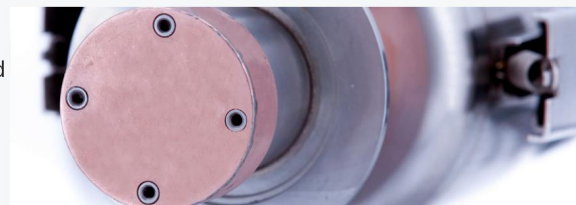
We offer custom mounting holes for easy equipment attachment using our included self-tapping screws.

We also have extra fixing holes on the other side of the unit. You can use them to securely attach your product with mounting beams and reduce vibration.



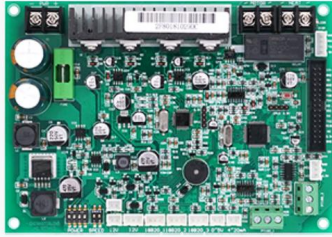
We use RIGID Technology's special algorithm to balance each device's shock absorber, ensuring minimal vibration during operation.

RIGID offers top-notch oxygen-free copper for both cold and hot ends, along with 4 stainless steel screw lock sleeves to enhance heat transfer.



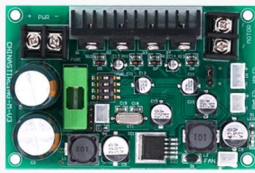
RIGID Stirling-77K uses the common KF50 vacuum flange interface and is precisely machined with vacuum brazing equipment for a strong connection to your equipment in high vacuum conditions.

# Stirling-77K Board PCB



## Professional PCB

Designed for labs and special setups, our driver board has high-precision thermometer ports, a 12V accessory slot, a 4.5-inch IPS LCD touch screen (glove-friendly), and built-in PID algorithm for precise temperature control. It also supports various extensions like RS232, RS485, WIFI, 4G, NB-IoT, GPS for defrosting and more.



## Industrial PCB

Our industrial drive circuit is designed for offering simplicity and compactness with low power usage, fast response, and precise control. It uses a universal industrial control interface or variable potentiometer for quick adjustments.

# External Drawing

尺寸分段 (mm)		未注公差			标识	版次	设变描述	设变者/日期	
		精密	R角、倒角	角度				Mr. Hoo Pan	2023.05.10
0~3	±0.05	±0.2	±1°	<b>Stirling RS100 Series</b> <span style="color: red;">Copyrighted</span>	<b>RS</b>	<b>1</b>	<b>Plastic Enclosure</b>		
3~6	±0.05	±0.5	±1.0°						
6~30	±0.1	±1.0	±0.5°						
30~120	±0.15		±0.5°						
120~400	±0.20		±10°						
400~1000	±0.30								

<b>Stirling RS100</b>		产品名称:	Cryo s 100 pro 77K塑料风道 (2016)	物料编码:	
		表面处理:	Stirling Cryocooler	产品图号:	
描图	名字	日期	材料:	图样标记	数量 比例 版次
设计		2019-5-25		①	1 1:1 V0
审核				共 1 张 第 1 张	
批准				<b>RIGID HVAC CO., LTD</b>	