

# RIGID RIGID HVAC CO., LTD

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## SPECIFICATION

Product: Free Piston Stirling Cooler (FPSC)

Model No.: RS40 (40W)

Spec No.: RJT001401



|                      |           |          |     |
|----------------------|-----------|----------|-----|
| <b>Specification</b> |           | File No. |     |
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## 1. Applications

1-1: This specification applies to all RIGID's RS40 Free Piston Stirling Cooler (FPSC)

1-2: RIGID reserves all the rights for amendment and the final explanation.

## 2. Major Specifications

| Item                                    | Specs                              |
|---|------------------------------------|
| 2-1: Cooling type                       | Free Piston Stirling Cooler (FPSC) |
| 2-2: Refrigerant                        | Helium 2.5g                        |
| 2-3: Cooler Size                        | OD φ86mm×Length 245mm              |
| 2-4: N.W.                               | 2.0kg                              |
| 2-5: Pressure for refrigerant injection | 2.8Mpa (@20°)                      |
| 2-6: Power Supply                       | 79.2HZ AC 2.0~8.5V 7A (RMS)        |
| 2-7: Low Temp Range LBP                 | -180°C~0°C                         |
| 2-8: High Temp Range HBP                | 0°C~60°C                           |
| 2-9: Installation                       | Any direction is workable          |
| 2-10: Working Life                      | ≥10000 hours                       |
| 2-11: Working Ambient Temp              | 0°C~60°C                           |

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### 3. Electrical Specifications

| Item                       | Specs           |
|----------------------------|-----------------|
| 3-1: Drive Frequency       | 79.2HZ          |
| 3-2: Motor Type            | Linearly Motor  |
| 3-3: Insulation Grade      | E               |
| 3-4: Insulation Resistance | DC500V > 10MΩ   |
| 3-5: Withstand Voltage     | 1250V/3S ≤0.5mA |
| 3-6: Power Input           | DC12V 6A(RMS)   |

### 4. Cooling Capacity

| Item             | Max  | Rated | Min  | Note |
|------------------|--|-------|------|------|
| Cooling Capacity | 40W  | 36W   | (5W) | /    |
| Power Input      | 40W  | 40W   | (8W) | /    |
| COP              | COP≥0.9 W/W<br>Test Condition<br>吸热部温度 LBP: -23.3℃<br>散热部温度 HBP: 35.0℃ |       |      |      |
| Notes            | COP data is subject to change according to different test condition.   |       |      |      |

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### 5. Mechanical Characteristics

| Item                            | Specs                 |
|---------------------------------|-----------------------|
| 5-1: Noise                      | ≤38dB                 |
| 5-2: Vibration                  | ≤10um                 |
| 5-3: Shock Resistance           | 10G                   |
| 5-4: Shell Compressive Strength | Under 15MPa, No Leaks |
| 5-5: Protection Device          | Impedance Protection  |

### 6. Environmental Specification

| Item                                     | Spec                       |
|--|----------------------------|
| Allowance of Operation Temperature Range | (1) LBP Cooling -100°C~0°C |
|  | (2) HBP Heating 0°C~60°C   |
|  | (3) Ambient Temp 0°C~40°C  |
|  | (4) Humidity 5~90%RH       |
| Storage Temperature Range                | (1) Temp -20°C~+60°C       |
|  | (2) Humidity 5~90%RH       |

### 7. Packing

| Item                 | Spec               |
|----------------------|--------------------|
| 1) Individual Carton | Foamed Polystyrene |
| 2) Size              | Pending            |
| 3) Qty per Carton    | 8pcs               |



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## 9. Attentions

- (1) Disassemble this product is forbidden.
- (2) Prevent burns and scratches when taking the heat sink, it tempts to be prone to accidents and injuries. Be aware to avoid heat sink deformation and damage at the same time.
- (3) When the Stirling cooler has abnormal sound, adjust the rated voltage to reduce the output power of the cooler. Second, check bolts if they are loose; If problem can not be solved, it is faulty cooler and should be replaced.
- (4) Do avoid strong impact on Stirling cooler, which will cause motor failure; It also causes coolant helium leakage if cooler falling to floor, especially cause copper tube leaks.
- (5) Do not spray water on the electric circuit board of Stirling refrigerator.
- (6) Close to the furnace or any fire source is forbidden, which may cause trouble.
- (7) Do not put the Stirling cooler in the fire. It may explode due to the expansion of the internal gas.
- (8) Do not pull hard on the power cord, or it may cause short circuit.
- (9) The heating parts and the circuit board are at state of a high temperature during or after the operation. Do not touch these parts with your hands, it may burn.
- (10) The cooling parts/evaporator is at state of a ultra low temperature during or after the operation. Do not touch these parts with your hands, it may cause frostbite.
- (11) Please make sure better insulation for cooling part, as the evaporator of Stirling cooler is easy to get frozen. If evaporator get frozen, please turn the cooler off and wipe evaporator with a soft cloth. Frosting or dewing will reduce cooler's cooling performance. Moreover, condensate flows into power lines may cause a short circuit, or lead to rust.
- (12) The cooling part (evaporator) of the Stirling refrigerator is made of light steel. It has precise internal structure. Therefore, do not take the cooling part by force.
- (13) The high-pressure gas is sealed inside Stirling cooler, please take good care of waste gas or returned to the supplier.