



**RIGID** *Cooling Specialist*

## ***RIGID User Guide & FAQ***

Version 7.2

**RIGID HVAC CO., LTD**

### Compact & Portable Cooling Solutions for Demanding Environments

RIGID HVAC supplies compact, portable and reliable cooling systems, specializing in various applications where space and reliability are key issues. RIGID miniature dc compressor is the smallest and lightest rotary compressor ever developed for small refrigeration and dc air conditioning system. With 12V, 24V, and 48V configurations and R134a refrigerants, RIGID small cooling systems can be used in a wide range of industries including commercial, industrial, military, laser & CO2, and medical etc.

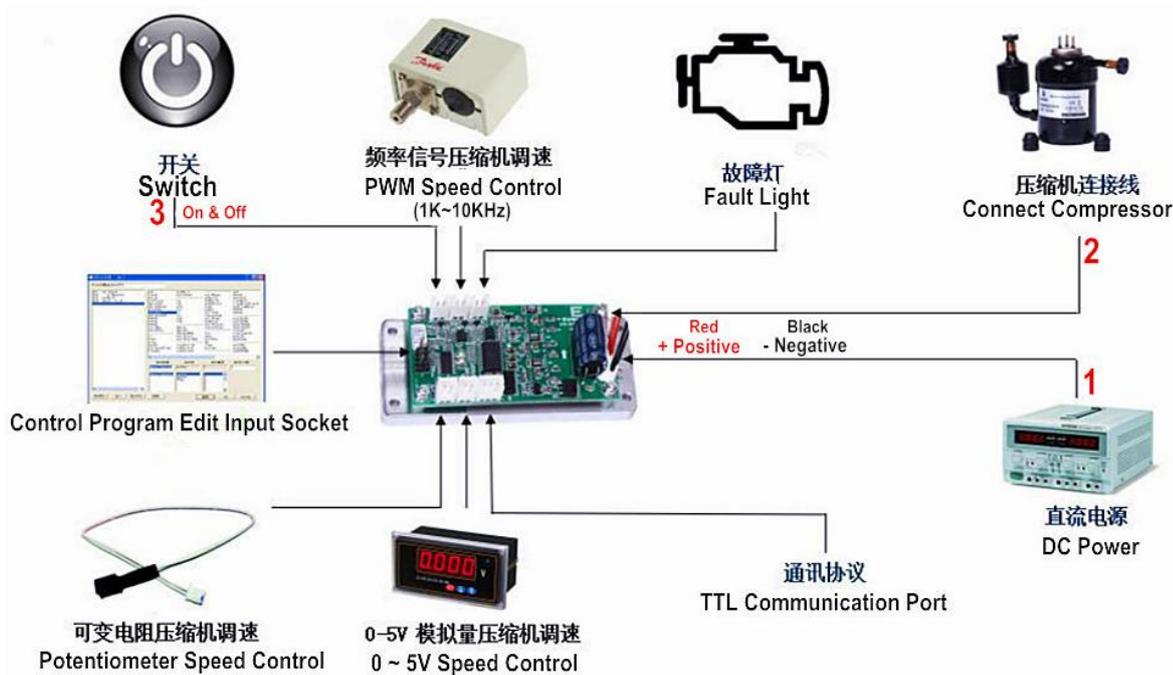
1. Does this micro air conditioner unit run inside the space or does it need to be vented to outside of the cabinet?

--There must be a heat emission hole in your system, you can use flexible tubes to connect air conditioner unit.

2. How to connect the wire diagram of RIGID mini cooling system?

--All wires are ready before shipping. Users only need to do 3 steps:

1. Connect to DC power supply
2. The drive board connects to compressor
3. Connect to your system's on&off switch



3. Warranty & maintenance

--One year warranty, lifelong technical support.

4. How does it work for the payment and the shipping?

--PayPal, Credit cards, Bank transfer & L/C.

--DHL/UPS, By Air, By Sea are available.

5. Payment terms

--50% deposit in advance, balance against B/L or courier receipt.

## 6. Delivery Time

-- 10 days for sample order, and within 30 days for mass production.

## 7. Customization

-- RIGID provides OEM&ODM and personalization service to match your system specific cooling requirements.

## 8. How to get a sample?

-- You can purchase in our online store, <https://www.rigidhvac.com/online-order>

## 9. RIGID Liquid Chiller Modules weight & size?

-- DC condensing unit, 190\*160\*138mm / 2.5kgs (5.51lbs)

-- Compact coil chiller, 275\*175\*138mm / 3.0kgs (6.61lbs)

-- Plate liquid chiller, 330\*200\*138mm / 3.5kgs (7.72lbs)

-- Coaxial liquid chiller, 190\*160\*138mm / 4.5kgs (9.92lbs)

-- Micro DC aircon, 350\*260\*180mm / 5.0kgs (11.02lbs)

## 10. MOQ for customized chiller?

-- 20 sets

## 11. How does one recharge/refill the refrigerant?

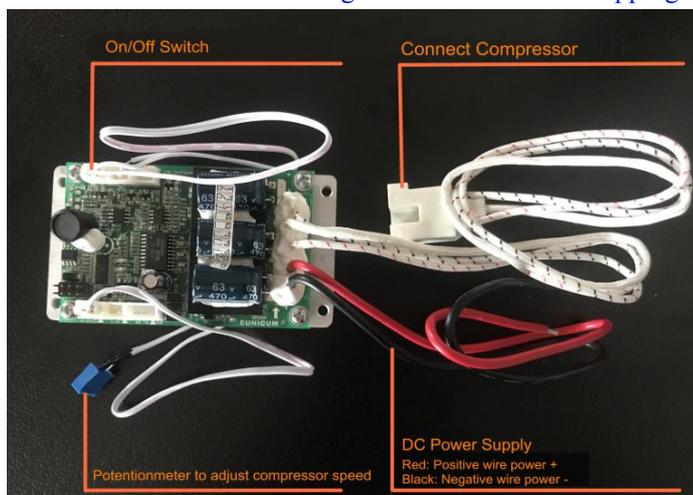
-- All RIGID DC cooling units are fully charged with oil and refrigerant before shipping. Users needn't charge refrigerant. Afterwards If you need to refill the compressor with refrigerant for maintenance, there's one valve for refrigerant refill.

## 12. How much capacity do these exhaust while operating at the maximum operating speed?

-- Max cooling capacity is 550W (1,876Btu) when compressor runs on maximum speed.

## 13. Does your company make a controller device for the unit or do I need to wire up my own switches?

-- RIGID dc aircon module is a sub-system, without On & Off switch, need to wire up your own switch. DC Aircon unit is filled with refrigerant and oil before shipping.



## 14. Could you tell me how many decibels of sound the unit produces while running.

---The sound produced by the unit during operation is quiet, less than 48dB.

15. I'm not sure of is what to do with the two white wires on the driver board? Do I have to have a switch on these two wires for the compressor to run?

---Two white wires need to be closed or wire up to your On/Off Switch. Wires merge is On, separate is Off.

16. What's the air flow of micro dc aircon unit?

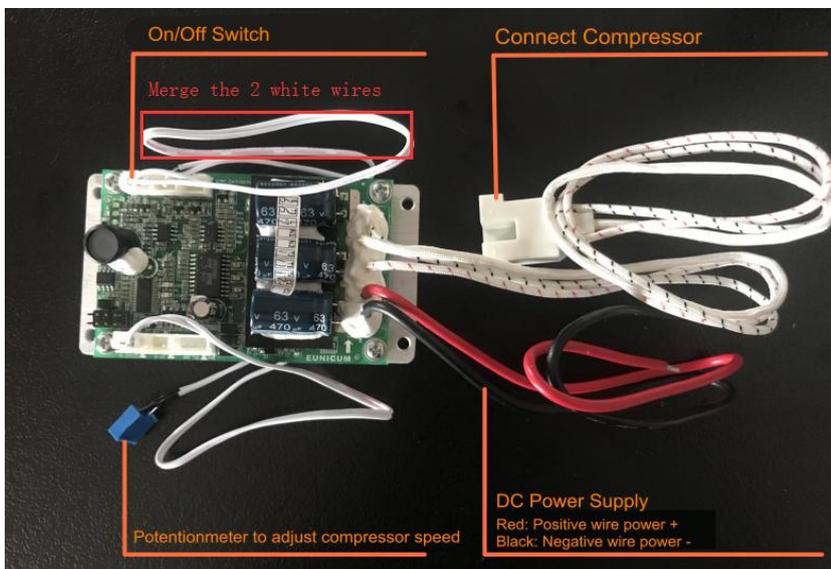
---The air flow is 27.8CFM.

17. How to deal with condensate water?

---There is a drain for condensate water. You can collect the condense water via a tube to a condense collection tank (If you want to use the condense water)

18. How much for one sample delivery? What kind of transportation?

--- Shipping freight is USD90 for one sample, DHL express door to door shipping.

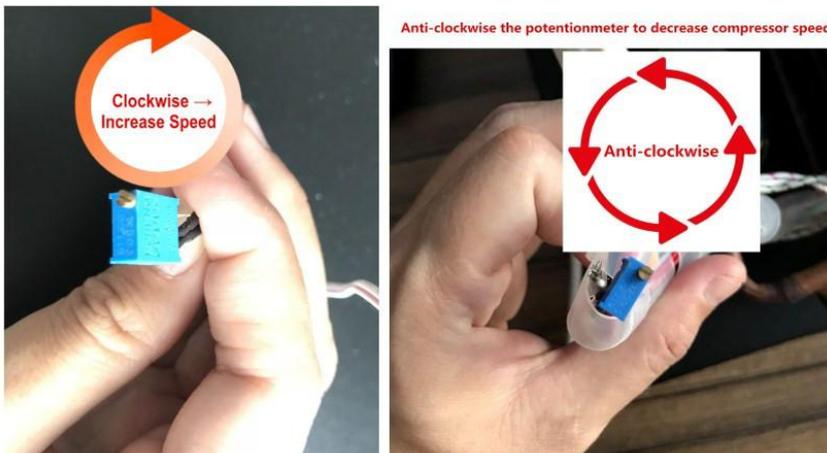


19. With the LED lights only the green one was twinkling the red one was not on.

--The green one was twinkling, the red one was not on means that the motor is in standby, please merge the two white lines first.

20. How should I adjust the potentiometer to the correct setting?

--Anti-clockwise to decrease compressor speed, clockwise to increase compressor speed.



21. How to re-set potentiometer to factory pattern?

--Do you have a multimeter? You can use a multimeter to measure the resistance of the potentiometer.

If the resistance value is more than 30K, adjust the potentiometer clockwise to reduce the resistance value, the factory setting resistance value is about 20K.

Plus, this is a multi-turn potentiometer. It may take a few turns. When you reach the end, you will hear a slight "click" sound.

22. What differences are there between the 12V small liquid chiller DV1910E-P and the comparable 24V DV3220E-P?

--They share same size and configuration. But 3320-24V is more powerful, it has more 50% capacity than that of 1910-12V.

23. Would your 12V Micro dc AC be capable of lowering temperature to 20 degrees?

--It depends on your ambient temperature and space volume and insulation standard. The maximum cooling temperature RIGID micro dc a/c achieves, 15-20 degree C lower than that of your ambient temperature.

24. How long we can expect the small & portable dc air conditioner unit to operate?

--The major part mini compressor operating life is 10 years. The complete chiller is able to work around the clock/24hrs continuously.

25. Does your aircon unit include refrigerant and thermostat?

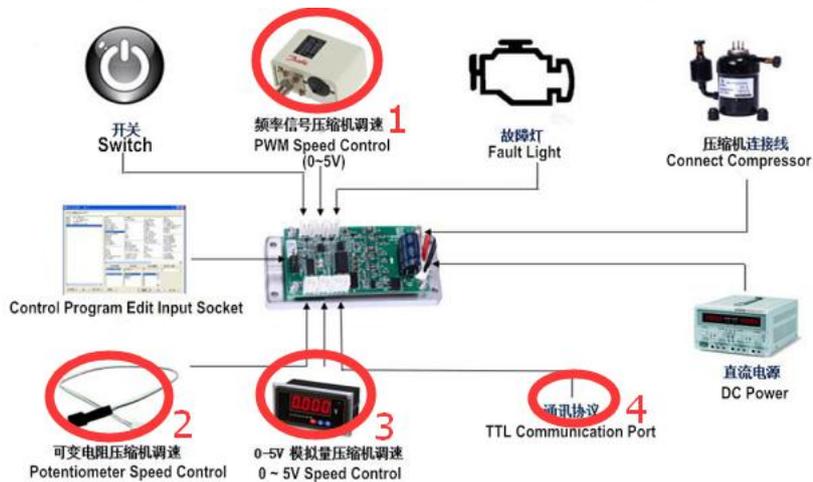
--RIGID DC Aircon unit, as well as other compact liquid chillers, have been fully charged oil and refrigerant before shipping. About thermostat, you can purchase in our online store, <https://www.rigidhvac.com/store/products/192631>

26. How to control compressor speed?

--There are 4 ways to adjust compressor speed.

1. Potentiometer speed control (already have)
2. 0-5v Speed control
3. PWM Speed Control
4. TTL communication port

In above 4 ways, the most common way to control the compressor is through potentiometer (included) adjustment.



27. The compressor is clicking on/off and does not get any colder then the ambient temperature?

- 1. Check if all wires are connected correctly.
- 2. Check DC power battery is fully engaged or not.

28. How much refrigerant psi should there be in the unit?(How much coolant should be in the system? )

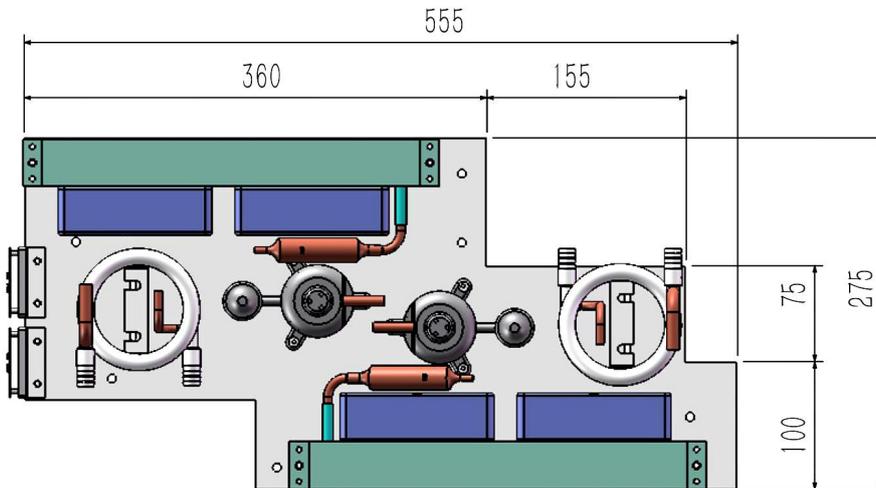
--Refrigerant is already in the cooling units, no need to add refrigerant gas. If you have to refill R134A gas, the amount is 50g~60g.

29. How could I control compressor start up/stop based on temperature with a thermostat?

--You can connect the thermostat to 0-5v speed control terminal of the compressor driver board.

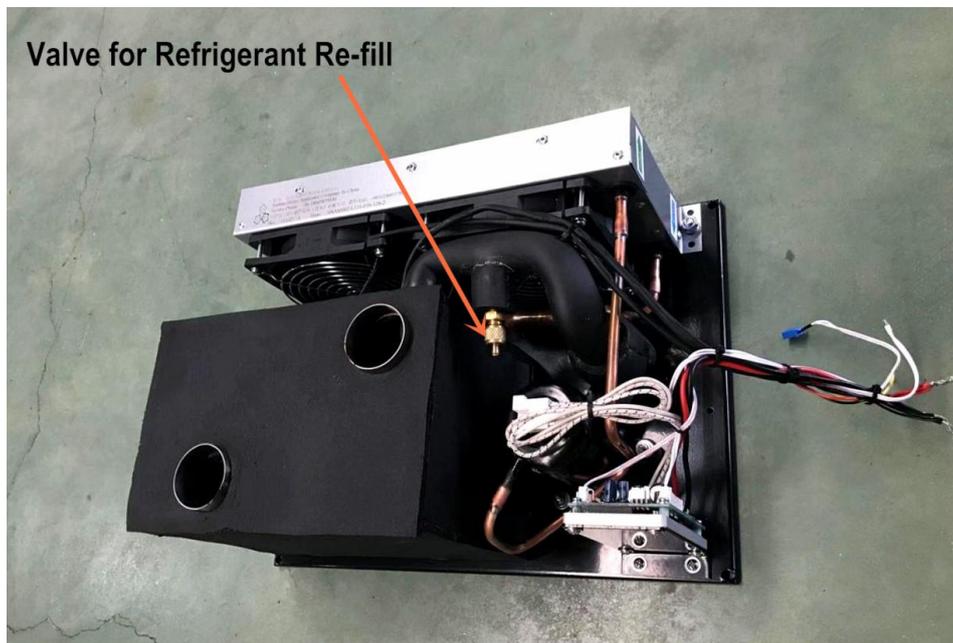
30. Is it acceptable to use 2 mini cooling compressors in series to meet our requirements?

--2 mini dc compressors in parallel bring you twice more cooling capacity. Besides standard small cooling systems, RIGID also provides personalize service, and custom made compact chiller to meet user's specific demands.



31. How to refill refrigerant gas?

--There's a valve for refrigerant refill for user's maintenance if needed. Make sure no air & moisture into cooling unit while recharging refrigerant gas. The R134A refrigerant gas amount is 50g~60g, Maximum 65g.



32. What kind of refrigerant gas and oil ?

-- The refrigeration oil RL-68H compatible with HFC-134a is used for high reliability. The oil has excellent thermal stability and wear resistance properties. No other additional oil is allowed.

-- Use high purity (above 99.9% or above 99.95% if possible) HFC-134a only.

33. How does drive board work? How it indicates fault reason display?

1. Analog speed control (0-10v) is default speed control mode. The mode can be temporarily changed thru communication software provided by EUNICUM, but the changed mode can NOT be stored in the product.

2. Under the communication control mode, the user can control the compressor speed thru setting-up “Control Instruction” and “Speed Setup”

3. Under analog speed control (0-10V) mode, the relation between the voltage and the speed are linear relation.

- 0V-3.0V, compressor stop;  $\geq 3.3V$ , compressor start to run; 3.3-10V, corresponding speed is 2000~6000rpm

4. Red/Green LED to indicate the status of the drive board. (See below chart)

**Definition of Red/Green LED indicator:**

| Driver Status          | Green Led   | Red Led  |
|------------------------|---|--|
| Standby                | Blink (On - 0.25s, Off - 0.25s)                                   | Off  |
| Motor Failure          | Off   | Blink N times (On - 0.25s, Off - 0.25s), then off 2s, repeat as above cycle (N means Error Number, seen below definition.) |
| Motor Operating Normal | Green LED and Red LED blink alternately (On - 0.25s, Off - 0.25s) |  |

34. RIGID compact liquid chiller working principle ?

-- Apply to Coil Chiller / Plate Chiller / Coaxial Chiller. <https://www.rigidhvac.com/liquid-cooling-system>

