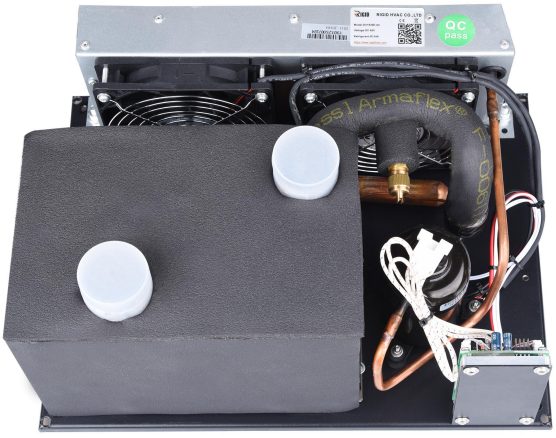
Specification

Micro Air Conditioner Unit
DV1920E-AC (Pro 24V)



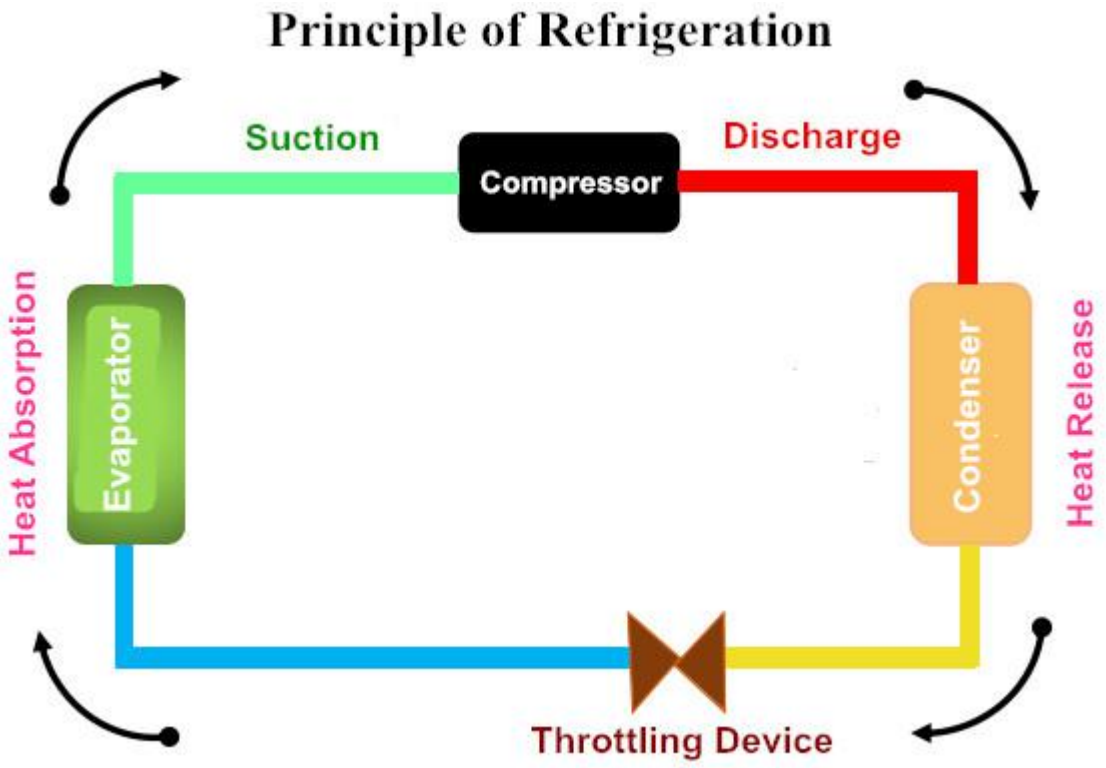
1-Specification:

Unit Model Name	DV1920E-AC (Pro Type)
Compressor Model	QX1902VDH
Compressor Type	Rotary DC Inverter Motor
Compressor Displacement	1.9cc
Cooling Capacity	100 ~ 450 W
Max Power Input	204 W
Refrigerant	R134a
Start-up Voltage	24V
Rated Voltage	24V
Voltage Range	24V
Temperature of Outlet:	5℃ degree
Rated Current	1~7 A
Max Current	8.5 A
Temperature control method	Customized by user
Oil Brand & Charge Amount	POE68# & 50cc
Condenser	Micro-channel 295*125.5*38mm
Fan of Condenser	92.58 CFM
Evaporator	Fin Type 135*135*46mm
Throttle Valve	Capillary Φ0.8mm*18
Operating Ambient Temperature	5 ～ 43℃
External Dimension	350*260*180mm
N.W	11.02lbs/5.0Kgs
Motor Speed	2000 ~ 6000rpm
Driver Board	Variable Frequency Controller

2-Other Parameters:

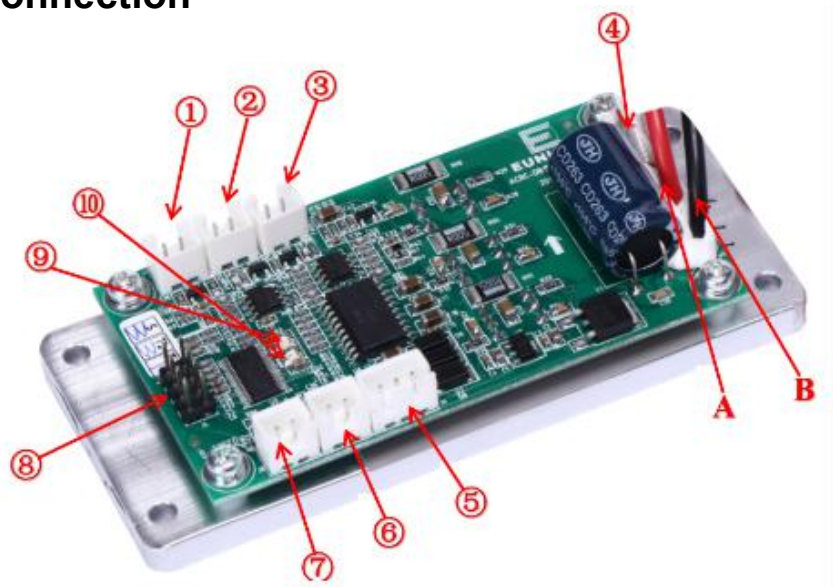
Item	Standard	Overload	Note
Discharge Pressure	≤1.47MPa	≤2.2MPa	
Suction Pressure	≤0.115MPa	≤0.1-0.3MPa	
Compression Ratio	＜6	＜8	Compressor will shut down for protection when temp reach to 105° degree
Discharge Temp	84° degree	105° degree	
Start-up Pressure	Only when system's high-low pressure under balance can operate compressor (Compressor has this built-in setting)		
Max Tilt Angle	30° Degree		
Compressor protection	Controller Auto-Protecting		

3. Working Principle



* The above schematic diagram above is for reference only.The structure of evaporator and condenser are optimized as needed. This diagram does not represent actual design use.

4. Controller Wire Connection



A Positive wire Power " + "

B Negative wire Power " - "

① EN Switch EN, Enable terminal, reservation for EN.

② PWN speed control terminal (0~5V,1K~10KHz).

③ Fault alarm compressor failure alarm, high level-normal, low level-failure.

④ Connecting lines (Any direction connecting the compressor).

⑤ TTL communication port.

⑥ 0~5V to adjust the speed.

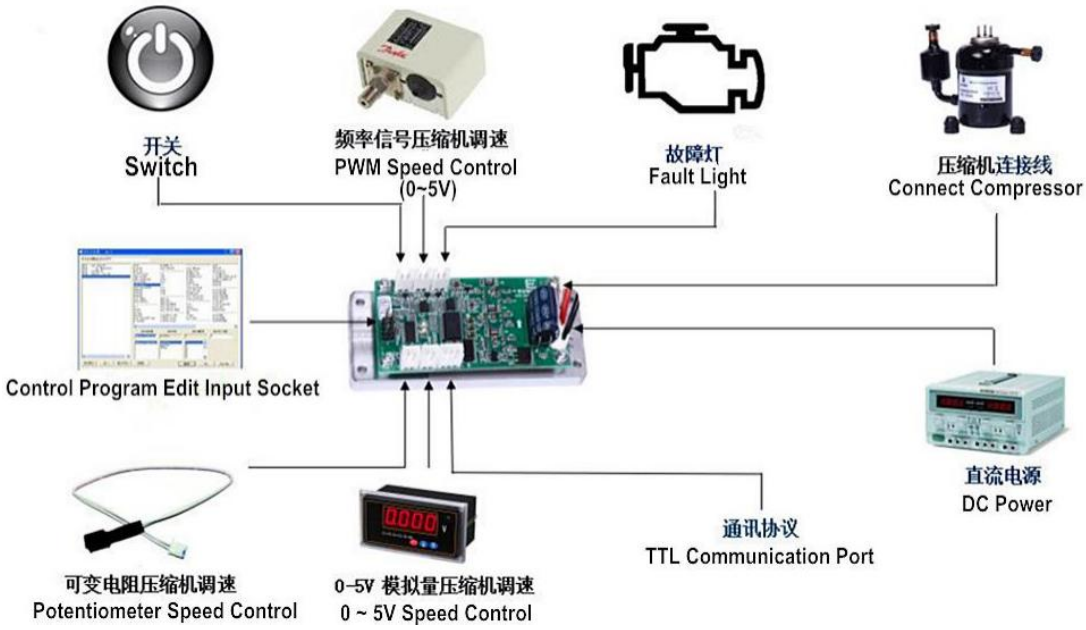
⑦ Terminal for potentiometer with 50kohm to adjust speed.

⑧ Control program edit input socket.

⑨ Green LED.

⑩ Red LED.

The Driver Board Wiring Diagram



5. Attentions:

1. Please check evaporator & condenser installation properly, when compressor is failed or poor refrigerating. Make sure the system is complete vacuum and no water inside. Refrigerant oil lacking also leads to poor refrigerating capacity.

2. Notice, Refrigerant oil will be released when we are charging refrigerant gas. Make sure the compressor has enough refrigerant oil (50g). Or compressor motor will face possible jammed or stuck due to oil blockage.

3. Important Functional Description:

3.1 The controller adopts analog signal control, set by communication mode. The control mode will not be saved.

3.2 Communication control mode please follows the communication protocol MODBUS RTU. (*** Details please check the attached file.**)

3.3 Under analog signal control, there are 3 types of instructions: constant pressure simulation instruction, variable resistor speed and Variable frequency speed. The highest is priority. (The default input instruction is 0).

▲The corresponding relation between simulation instruction and speed is straight line. 0V-0.5V corresponds stop, it starts to work when instruction is more than 0.7V; 0.7V - 5V corresponds 2000rpm ～ 6000rpm

▲The corresponding relationship between frequency instruction and speed is straight line. 300~500Hz corresponds stop and 1000Hz starts to work; 1000~10000Hz corresponds 2000rpm ～ 6000rpm

▲Variable resistance speed, 50k stops, 30k ~ 0k corresponds to 2000 RPM to 6000 RPM

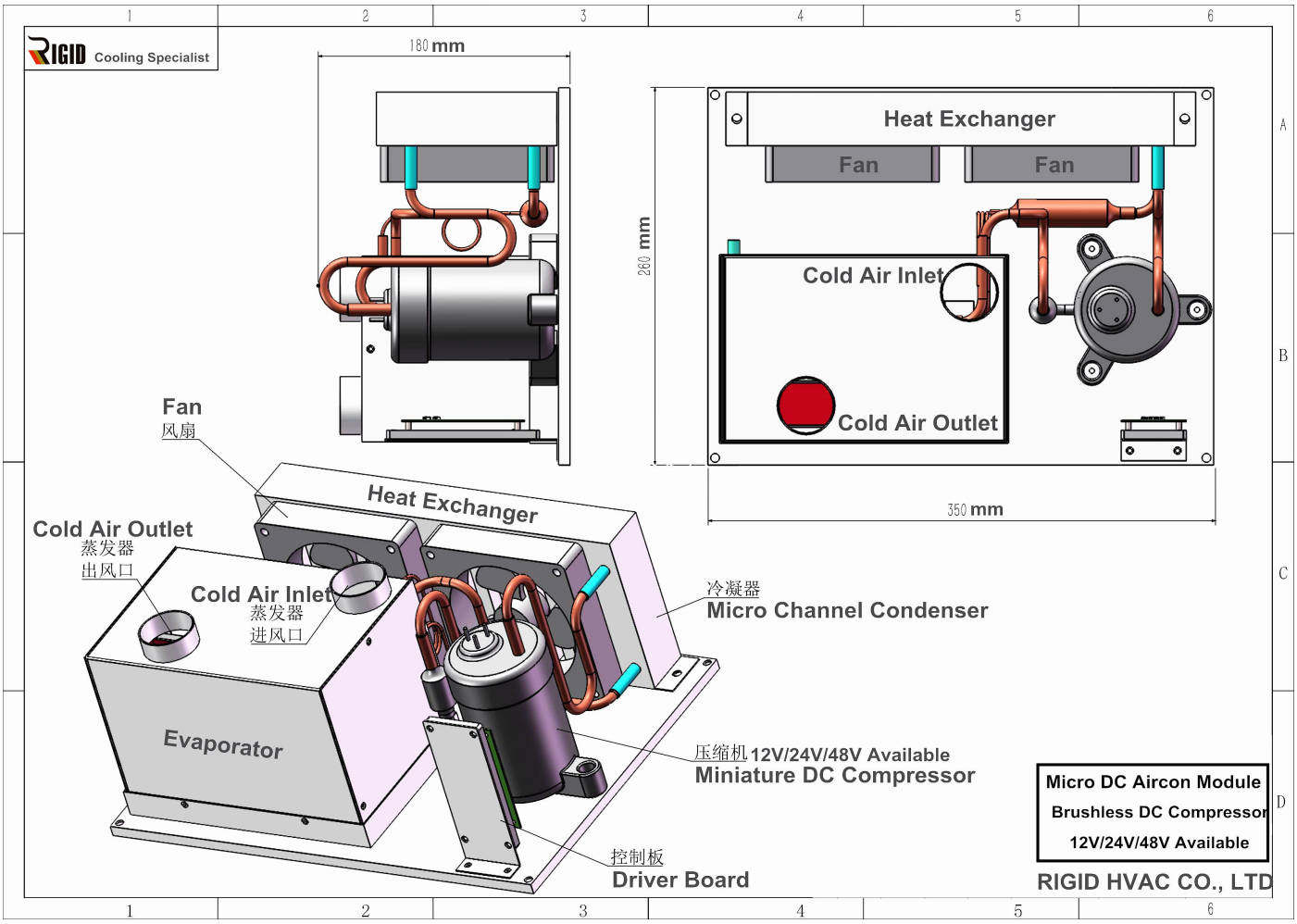
3.4 Controller

This controller has two LED lights (Red and Green), following are definitions:

Controller State	Green Light	Red Light
Motor Standby	Twinkle（On-0.25s, Off-0.25s）	Off State
Motor Fault	Off State	Twinkle “N”（On-0.25s, Off-0.25s）, then off 2s. （N is the Fault Signal）
Motor Normal Operation	Twinkle (On-0.25s, Off-0.25s） Red light is off when the green light is on.	Twinkle（Off-0.25s，On-0.25s） Red light is on when the green light is off.

3.5 Trouble Shooting Manual

Signal	Fault Type	State
1	Over-Current	Controller will report over-current fault when current reaches 30A. It recovers after 3mins. Compressor need to be restarted if current is overloaded for 7 times within 1 hour.
2	Motor Block up	Controller will stop if motor block up, it will recover after 3mins. However, it takes 10mins to recover if motor block up 3 times continuously.
3	Temp. sensor failed	Controller won’t work if temperature sensor fails to connection.
4	Inverter temperature overload	Power Module, Max temperature is 105℃， it will recover when temperature is 85℃， controller re-work after 3mins pause if temperature overloads several times.
5	Bus undervoltage	Bus will report default when voltage is less than 8.2V, controller stops.
6	Bus overvoltage	Bus will report default when voltage is over 32V and recover when voltage below 20V. Controller stop under voltage overloaded.
7	Output default phase	Compressor can’t work if fails to connect the controller. Output default phase, will recover in 3mins.

6. External Dimensions:

340*208*145mm (13.3*8.2*5.7 inch)