# Specification

## Micro Air Conditioner Unit
## DV1910E-AC (Pro 12V)

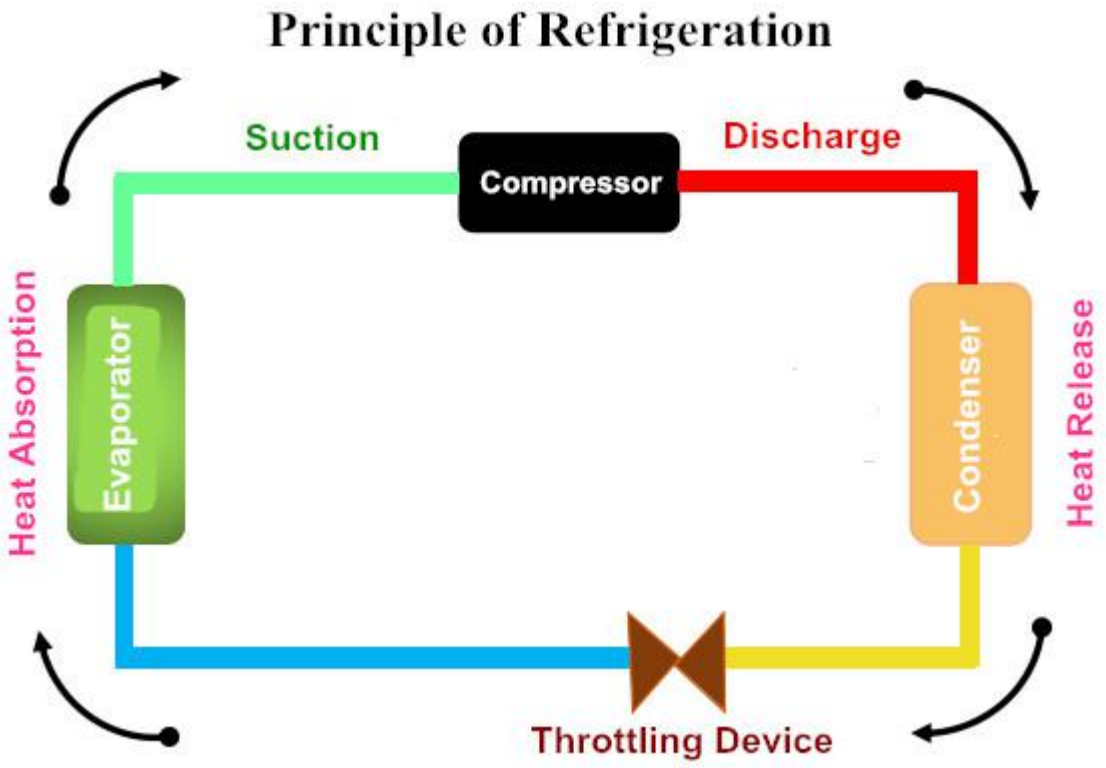
# 1-Specification:

| | |
|---|---|
| Unit Model Name | DV1910E-AC |
| Compressor Model | QX1901VDH |
| Compressor Type | Rotary DC Inverter Motor |
| Compressor Displacement | 1.9cc |
| Cooling Capacity | 100 ~ 450 W |
| Max Power Input | 120 W |
| Refrigerant | R134a |
| Start-up Voltage | 12V |
| Rated Voltage | 12V |
| Voltage Range | 1 2 V |
| Temperature of Outlet: | 5℃ degree |
| Rated Current | 1~8 A |
| Max Current | 10A |
| Temperature control method | Customized by user |
| Oil Brand & Charge Amount | POE68# & 50cc |
| Condenser | Micro-channel 295*125.5*38mm |
| Fan of Condenser | 92.58CFM |
| 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/5.0 Kgs |
| Motor Speed | 2000 ~ 6000rpm |
| Driver Board | Variable Frequency Controller |

## 2-Other Parameters:

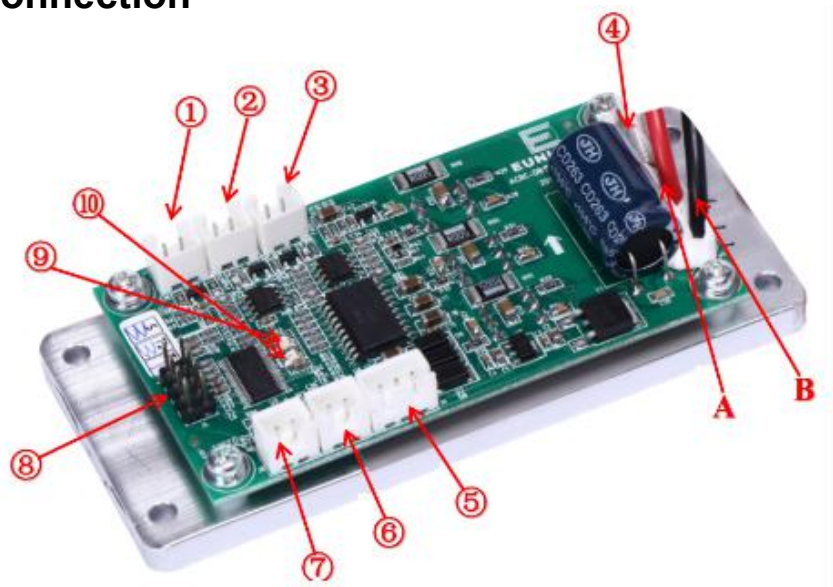
| Item | Standard | Overload | Note |
|---|---|---|---|
| Discharge Pressure | ≤1.47MPa | ≤2.2MPa | |
| Suction Pressure | ≤0.115MPa | ≤0.1-0.3MPa | |
| Compression Ratio | ＜6 | ＜8 | Compressor will shut down for protection when temp reach to 105° degree |
| Discharge Temp | 84° degree | 105° degree | |
| 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.**

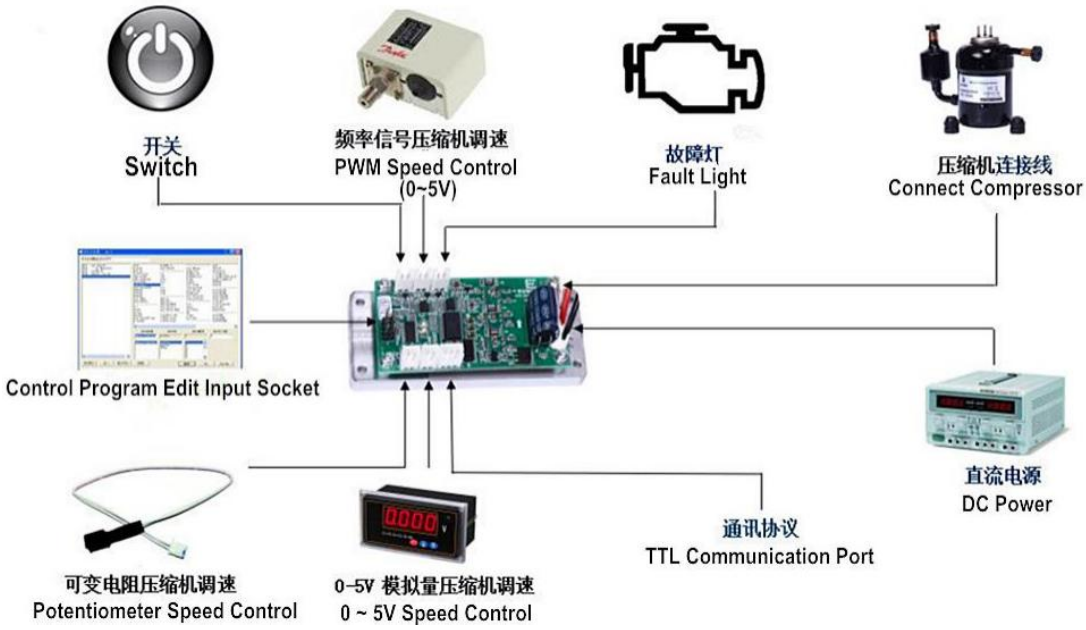
**⑦ Terminal for potentiometer with 50kohm to adjust speed.**

**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

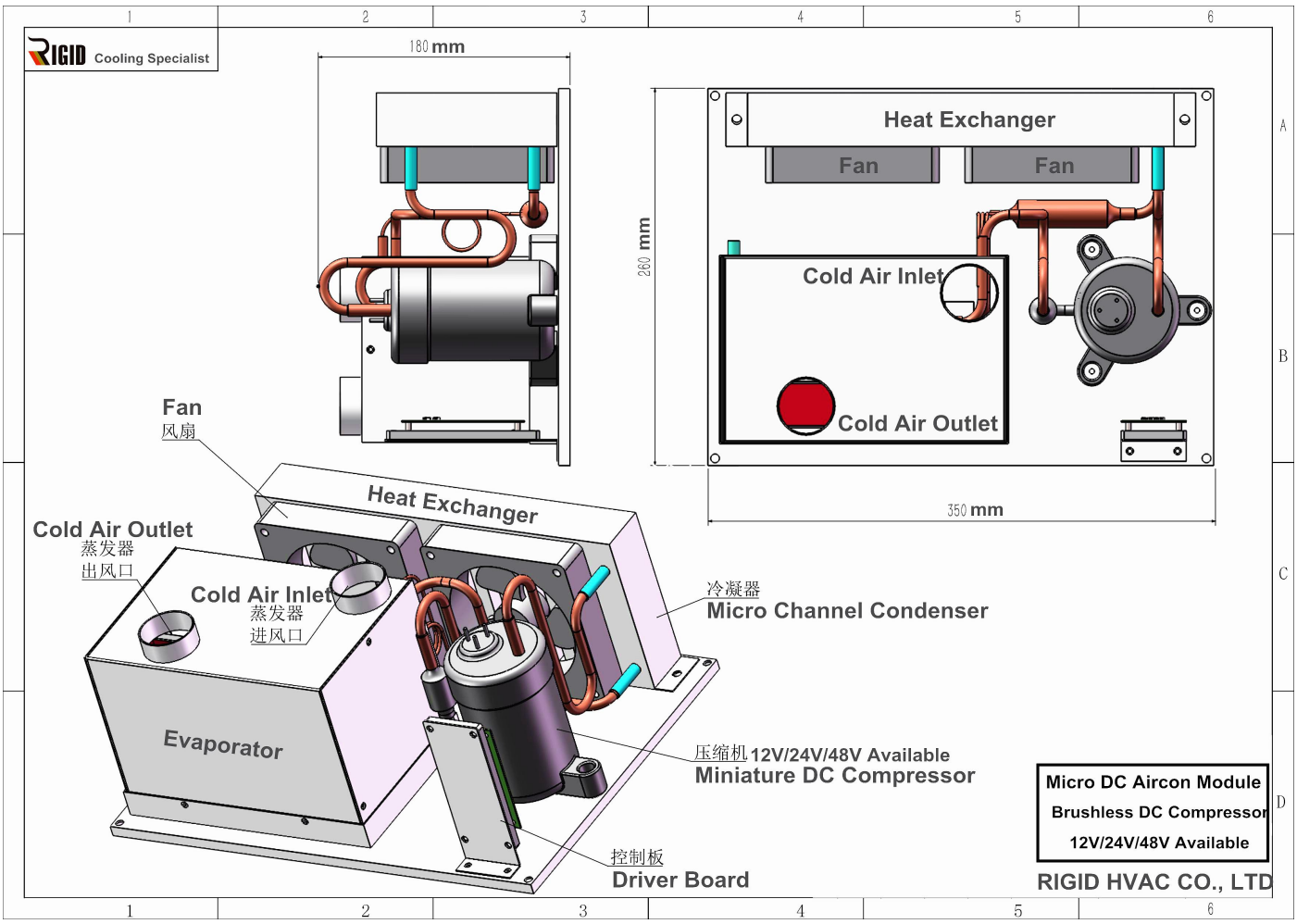
3.4 Controller

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.<br>（N is the Fault Signal） |
| Motor Normal Operation | Twinkle (On-0.25s, Off-0.25s）<br>Red light is off when the green light is on. | Twinkle（Off-0.25s，On-0.25s）<br>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 17V and recover when voltage below 16V. 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:

350*260*180mm (13.77*10.23*7.08 inch)