SPECIFICATION

DC Condensing Unit

DV2820 (24V, R134A)

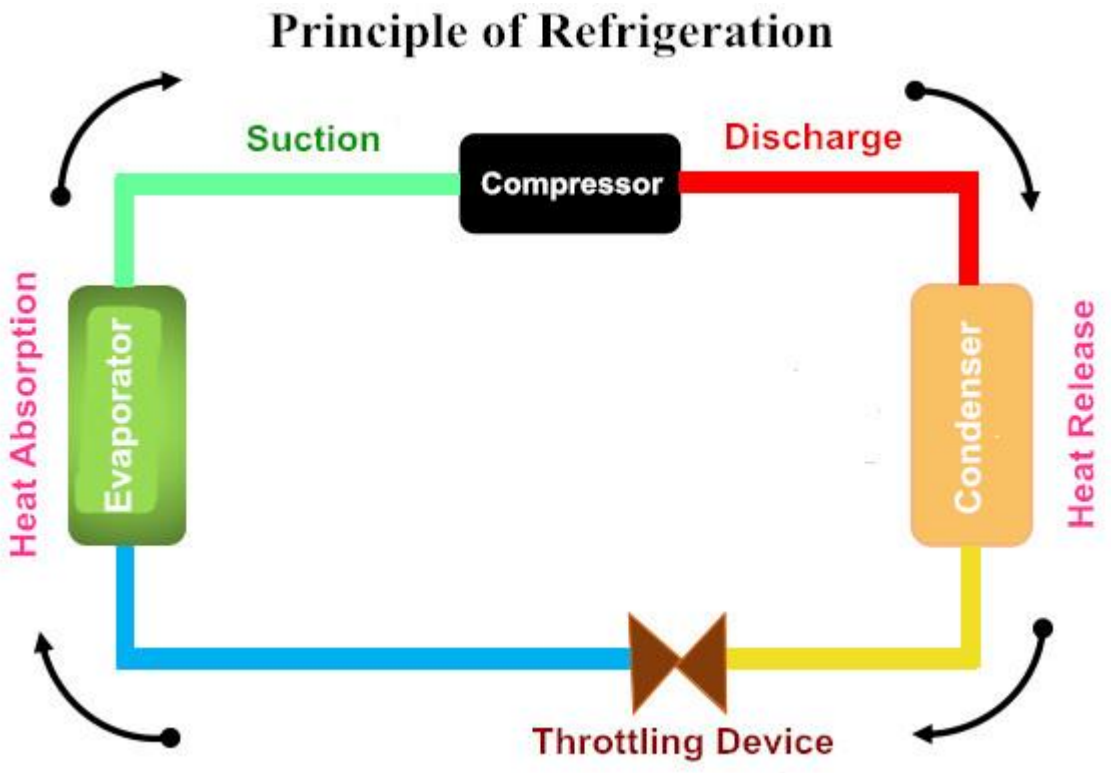
1-Specification:

Unit Model Name	DV2820
Compressor Model	QX2802VDL
Compressor Type	Rotary DC Inverter Motor
Cylinder Number	Twin Cylinders
Compressor Displacement	2.8cc
Cooling Capacity	250 W (LBP)
Max Power Input	220 W
Refrigerant	R134A
Start-up Voltage	20V
Rated Voltage	24V
Voltage Range	20 V - 29 V
Evaporated Temp (Capillary)	-18℃ ~ 15℃ degree
Rated Current	2.1~8.0A
Max Current	12.5A
Temperature control method	Customized by user
Oil Brand & Charge Amount	RL68H &50 ml
Condenser (Length*Width*Deep)	130mm*130mm*45mm
Fan of Condenser	Centrifugal fan 75.5/27.8 CFM
Throttle Valve	Capillary Φ2.0
Operating Ambient Temperature	5 ～ 55℃
External Dimension (L*W*D)	190*160*160mm (7.48x6.3x6.3inch)
N.W	4.0 kgs/8.8lbs
Motor Speed	1800 ~ 4500rpm/rev
Driver Board	Variable Frequency Controller
Noise Level	48↓dB(A)

2-Other Parameters:

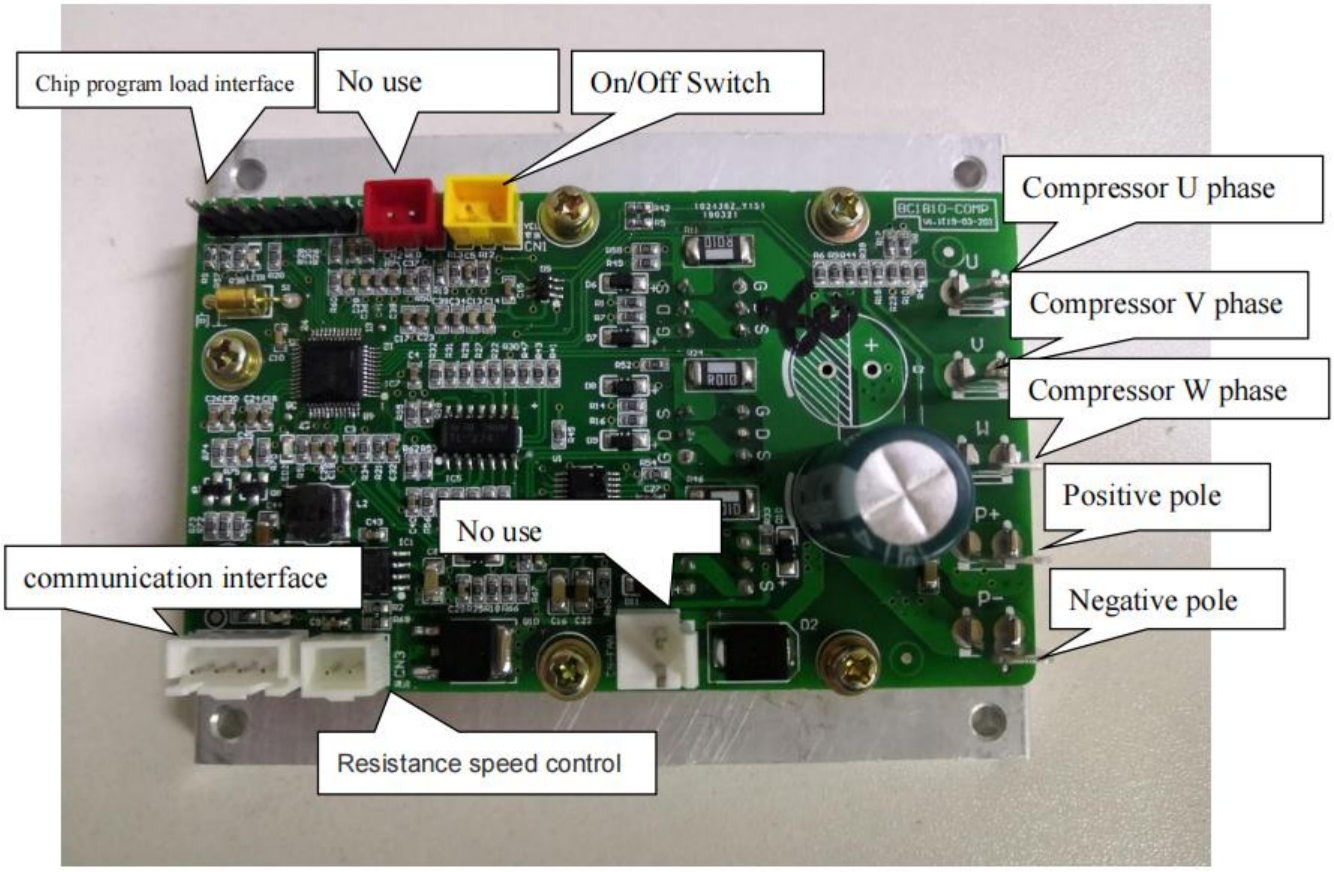
Item	Standard	Overload	Note
Discharge Pressure	≤1.47MPa	≤2.2MPa	
Suction Pressure	≤0.115MPa	≤0.1-0.3MPa	
Compression Ratio	<6	<8	Compressor will shut down for protection when temp reach to 105° degree
Discharge Temp	84° degree	105° degree	
Start-up Pressure	Only when system's high-low pressure under 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.

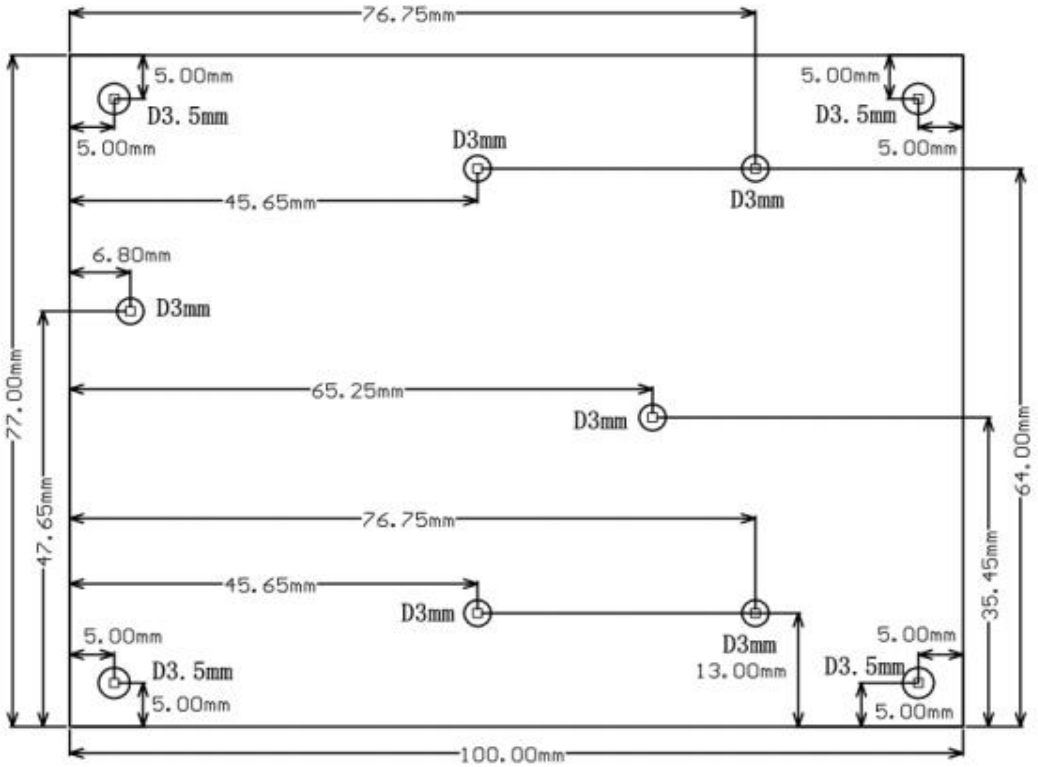
4. Driver Board Wire Connection



4.1 Interface specification：

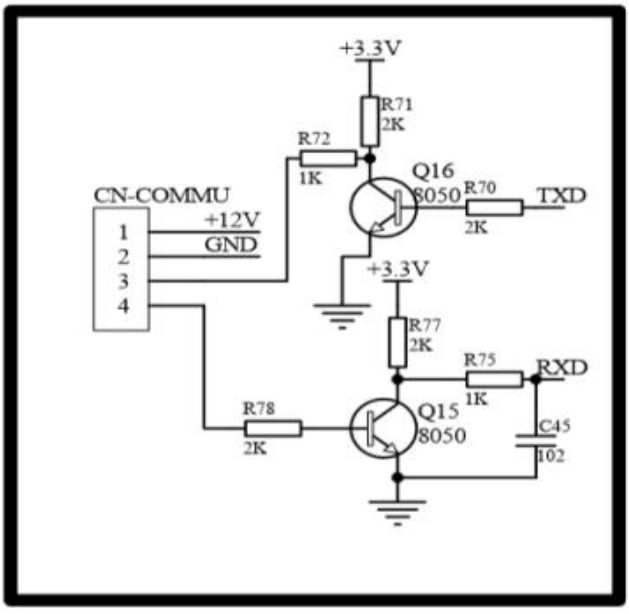
- UART Communication: For compressor circuit board & operation circuit board communication
- Temperature sensor: Reserved system temperature detection interface
- Fan drive interface: Reserved fan drive interface
- Chip program load interface: Chip simulation and program curing
- Positive pole: Connect to the positive pole of the power supply
- Negative pole: Connect to the negative pole of the power supply
- Compressor U / V / W phase: Connect to compressor U /V /W phase accordingly

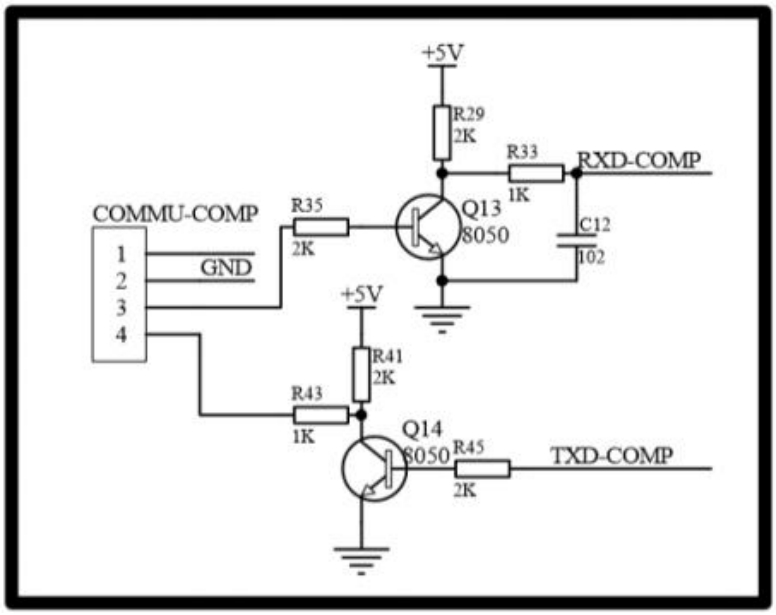
4.2 Heat sink dimension drawing:



4.3 UART Communication:

The reference circuit of the upper computer is as follows: (Upper computer circuit diagram)





4.4 The Driver Board Communication Protocol

- The communication between the driver board and the main controller adopts the master-slave communication mode. The main controller is the initiator of the communication, and the communication adopts the UART mode.
- The main engine is the operating board, and the slave is the compressor driving board.
- Baud rate: 600bps
- Format: 1 starting bit, 8 bits of data, 1 stop bit
- The host emits 16 bytes per frame and replies 16 bytes from the machine. The host machine sends out one frame every 1000ms seconds, the delay of 20ms after receiving one frame from the machine returns one frame.
- The host address is 0 x 00 and the slave address is 0 x 01.

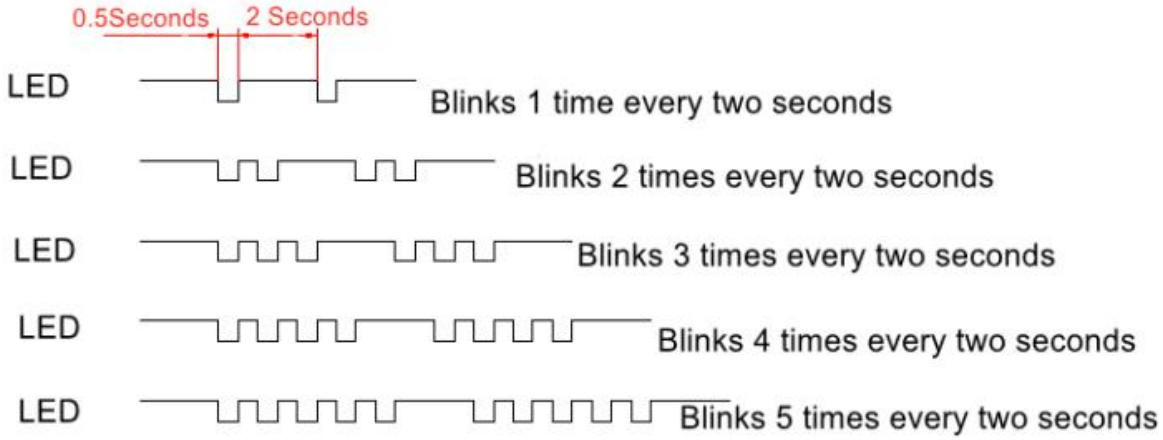
0	0xAA	Start code
1	0X00	
2	Order	Bit0：on-off；Bit1：Preheating switch
3	Rotation speed setting	Low byte
4	Rotation speed setting	High byte
5	Reserved	
6	Reserved	
7	Reserved	
8	0x00	
9	0x00	
10	0x00	
11	0x00	
12	0x00	
13	0x00	
14	Check sum	(byte1+byte2+……byte13) reverse+1
15	0x55	End code

0	0xAA	Start code
1	0X01	
2	Compressor rotation speed	Low byte
3	Compressor rotation speed	High byte
4	Compressor current	Low byte，The precision of 0.1A
5	Compressor current	High byte
6	busbar voltage	Low byte，The precision of 0.1V
7	busbar voltage	High byte
8	THS	Reserved
9	fault code （This fault does not clear automatically. The compressor starts to clean）	Bit0:software overcurrent Bit1: overvoltage protection Bit2: low-voltage protection Bit3: open-phase protection Bit4: Stalling protection Bit5: Hardware overcurrent protection Bit6: Phase current anomaly
10	Temp1	
11	MOSFET temp	0---120
12	0x00	
13	0x00 The upper computer reads the fault and the driver board clears automatically in 60 seconds.	Bit0: software overcurrent Bit1: overvoltage protection Bit2: low-voltage protection Bit3: open-phase protection Bit4: Stalling protection Bit5: Hardware overcurrent protection Bit6: Phase current anomaly
14	Check sum	(byte1+byte2+……byte13) reverse +1
15	0x55	End code

5. Definition of Drive Board LED

LED disp:

Led1 flicker define:



Blink 1time: Compressor stall or Compressor blockage
Blink 2 times: Lack-phase
Blink 3 times:Over current (≥24A)
Blink 4 times: Low Voltage or Over Voltage
Blink 5 times: MOS over-temperature protection

LED2:

Compressor operation flashes at 1 second frequency

6. Attentions

- 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.

- 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.

7. External Dimension:

190*160*160mm (7.48x6.3x6.3inch)