

APPROVAL SHEET

SPECIFICATIONS OF HUAYI R600a COMPRESSOR

MODEL: VDK52C

DATE: October 14, 2021

HUAYI COMPRESSOR (JINGZHOU) CO.,LTD.

Signed:

Signed:

Approved:

Approved:

Specification

Model: VDK52C

Working Voltage: 12/24V DC; 90-260V ~ 50/60Hz

Parts list:

parts list		supplied by HUAYI	authentication code	numbers	remark
compressor	Performance				
compressor	Exploded View And Dimensions				
Controller part	Wiring Diagram				
Controller part	Controller Instructions			1	
Mounting part	Rubber Grommet			4	
Mounting part	Mounting Pin			4	
Mounting part	Flat Washer			1	
Mounting part	Elastic Fiche			4	
Mounting part	Mounting Nut			1	

Performance & Dimension

Application Type LBP Low Back Pressure

Evaporating Temp. Range -35℃ to 15℃ (-31°F ~ 5°F)

Refrigerant R600a

Refrigerant control Capillary tube

Cooling method Static cooling

Normal Testing conditions (ASHRAE)

Evaporation Temp. -23.3℃ (-10°F)

Condensing Temp. 54.4℃ (130°F)

Ambient Temp. 32.2℃ (90°F)

Return Gas Temp. 32.2℃ (90°F)

Liquid Temp. 32.2℃ (90°F)

Normal Performance

Model	Cylinder volume (cm ³)	Speed (rpm)	Refrigerating capacity (W≥95%)	Cop ≥95%	Power supply (VDC)
VDK52C	5.2	2000	55	1.50	12/24
		3500	100	1.55	
		2000	55	1.35	90-260V~ 50/60Hz
		3500	100	1.40	

Compressor Data

Working Method Reciprocating

Cylinder Volume 5.2cm³

Suction Tube I.D φ 6.10- φ 6.20mm

Process Tube I.D φ 6.10- φ 6.20mm

Discharge Tube I.D φ 5.10- φ 5.20mm

Weight(with oil and controller) 4.3kg

Motor Data

Motor Type..... BLDC

Motor Protection Type..... External protection

Winding Insulation Class..... E Level

Lubricant

Lubricant Type..... Mineral Oil

Lubricant Viscosity @40℃ 9.78cst

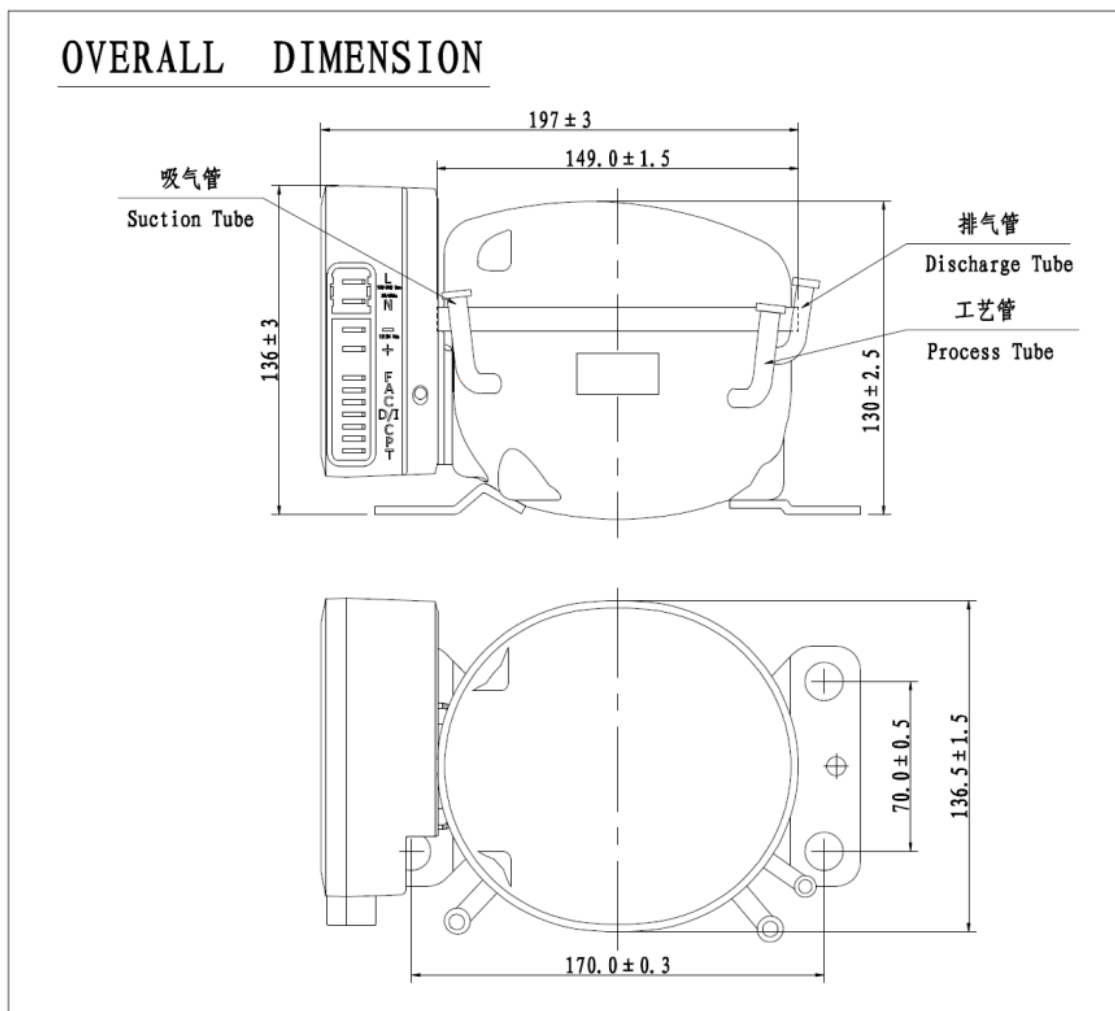
Domestic..... GRD10B&S10

Export..... GRD10B&S10

Initial charge..... 105 ± 10ml

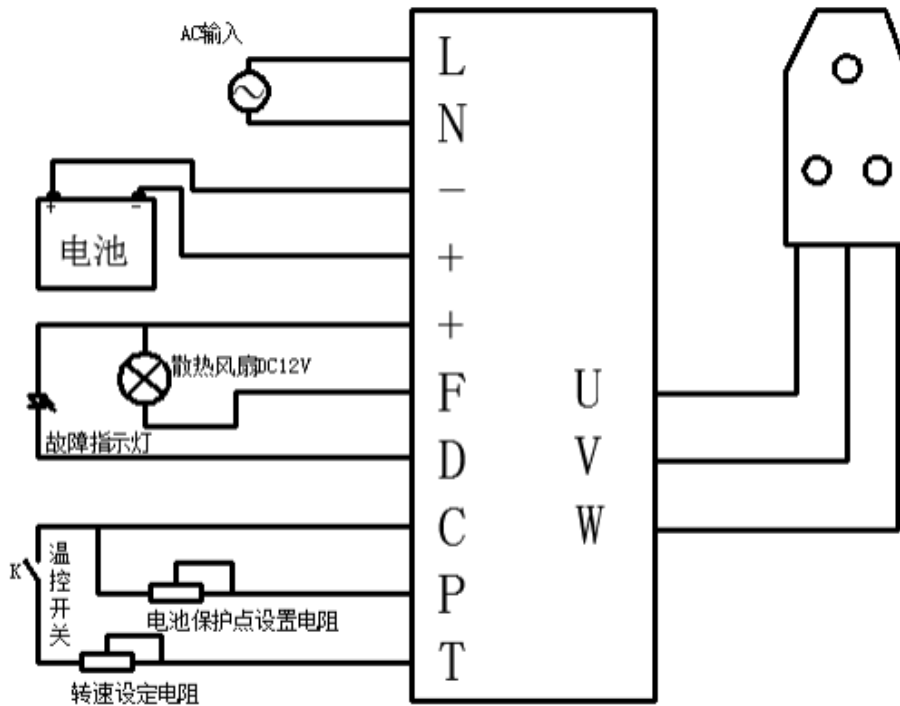
Recharge..... 85%

Overall Dimensions (Picture 1)



Control Parts

Wiring Diagram (Picture 2)



Optional Battery Protection Settings (Table 1)

resistance between C and P KΩ	12V protected voltage (V)	12V minimum starting voltage (V)	12V maxima working voltage (V)	24V protected voltage (V)	24V minimum starting voltage (V)	24V maxima working voltage (V)
0	9.6	10.9	17.0	21.3	22.7	31.5
1.6	9.7	11.0	17.0	21.5	22.9	31.5
2.4	9.9	11.1	17.0	21.8	23.2	31.5
3.6	10.0	11.3	17.0	22.0	23.4	31.5
4.7	10.1	11.4	17.0	22.3	23.7	31.5
6.2	10.2	11.5	17.0	22.5	23.9	31.5
8.2	10.4	11.7	17.0	22.8	24.2	31.5
11	10.5	11.8	17.0	23.0	24.5	31.5
14	10.6	11.9	17.0	23.3	24.7	31.5
18	10.8	12.0	17.0	23.6	25.0	31.5
24	10.9	12.2	17.0	23.8	25.2	31.5
33	11.0	12.3	17.0	24.1	25.5	31.5
47	11.1	12.4	17.0	24.3	25.7	31.5
82	11.3	12.5	17.0	24.6	26.0	31.5
>220	9.6	10.9	-	-	-	31.5

Recommended Incoming Power Supply (Table 2)

Wire size	wire diameter	Max length at 12V		Max length at 24V	
	mm ²	ft	m	ft	m
13	2.5	8	2.5	16	5
12	4	13	4	26	8
10	6	20	6	39	12
8	10	33	10	66	20

Recommended battery protection Settings (table 3)

Stopping value at 12V V	Starting value at 12V V	Stopping value at 24V V	Starting value at 24V V
10.4	11.7	22.8	24.2

Speed Setting Value (table 4)

Speed (RPM)	resistance between C and T Ω	Speed (RPM)	resistance between C and T Ω
2000	0	2800	490
2100	51	2900	586
2200	100	3000	692
2300	150	3100	816
2400	200	3200	963
2500	277	3300	1137
2600	330	3400	1331
2700	400	3500	1523
		Stop	≥ 8000

Controller Instructions

- 1) The controller can automatically adapt to the double voltage dc 12V and 24V power input system. The max input voltage of DC 12V is 17V and the max input voltage of DC 24V is 31.5V. The environment temperature should not be more than 60℃. And if the temperature of the cover of the controller is too high, the compressor will stop working because of high temperature protection.
- 2) Installation method: Plug the controller three-phase output plug-in into the connection end of the compressor, and screw down the screw after the controller is inserted into the compressor mounting box.
- 3) Power connection: As shown in pic.2. a、 The power input wire of the controller is directly connected to the positive and negative electrode of the battery, and the (-) pole of the controller is connected to the negative electrode of the battery. The (+) pole of the controller is connected to the positive pole of the battery; otherwise the controller will not work normally because the controller has the power supply reverse connection protection. b、 To protect the device, a fuse must be plugged into the positive power connection and it should be as close as possible to the positive output pole of the battery. 15A is recommended for the 12V system and 7.5A for the 24V system. c、 If a master switch is added, the minimum on-off current of the switch is greater than 20A. d、 The selection of power cord (wire diameter and length) can be referred to table 2, otherwise the setting value of the battery protection point of the controller will be affected by the voltage drop on the power line.
- 4) Battery protection: a、 The controller determines the stopping and restarting of the compressor by detecting the voltage between the input poles (+) and (-) to protect the different supply batteries. b、 The recommended value of protection setting for standard battery is shown in table 3. The setting of other voltages can be adjusted through the connecting resistance of the terminal (C) and (P) of the controller, and the specific values are given in the table 1.
- 5) Temperature switch: As shown in pic.2.a、 The temperature switch is connected at the C and T ends of the controller. If no resistance is connected in the middle, the compressor will run at 2000rpm when the temperature switch is closed. b、 The setting speed of other compressors can be obtained by adjusting current (mA) by resistance reset. The specific resistance value is shown in table 4.
- 6) External fan: As shown in pic.2. a、 The controller's terminals (F+) and (F-) can be connected to a 12V DC fan inlet, the positive terminal of the fan is connected to the (F+) end of the controller, and the negative terminal is connected to the (F-) end of the controller. When the input voltage of the controller exceeds 12V, the output value between the terminals (F+) and

(F-) is always 12V. Whether the input voltage system is 12V or 24V, the fan must be a 12V DC fan. b、 The controller can output fan drive capability of 0.5A continuously.

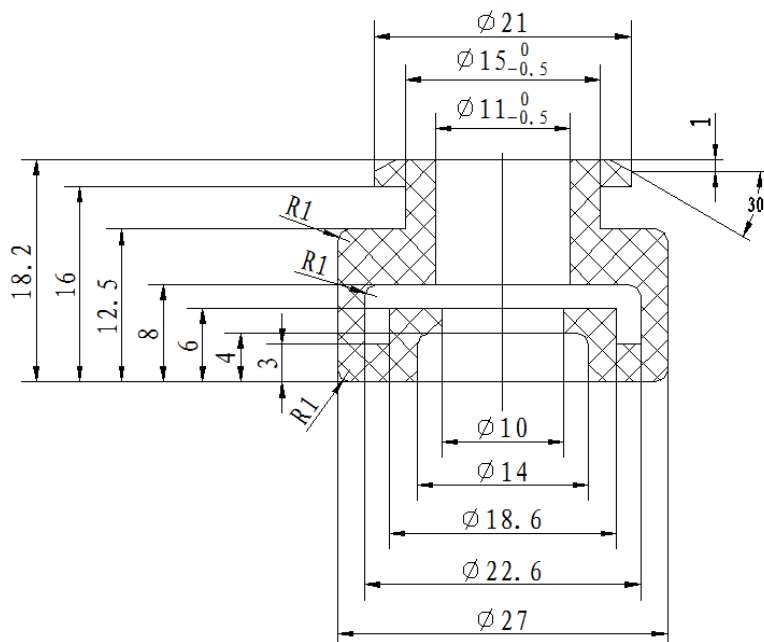
7) External LED alarm: As shown in pic.2. a、 The controller's terminals (+) and (D) can be connected to a 10mA LED, which is used to display fault, LED anode connection (+) end of the controller, and cathode connection (D) end of the controller. b、 Each flashing cycle contains 0.5 seconds flashing time (with 0.25 seconds bright and 0.25 seconds off) and 4.5 seconds off time, which will last 60 seconds; Restart if the fault is eliminated, otherwise the fault cycle continues. The specific codes and flicker times are shown in Table 5.

table 5

Error Code	Error type
1	Voltage failure - the input voltage is outside the set range
2	Fan current fault -- fan current output current is greater than 1A
3	Starting fault of the compressor -- compressor motor is blocked or the system pressure is too high
4	Minimum speed failure of compressor - compressor load is too large or motor speed is too small
5	Temperature controller failure - controller shell temperature is too high
6	Controller hardware failure - The controller has detected abnormal parameters

Mounting Part

Rubber Grommet



Recommended Controller Connection Method

