APPROVAL SHEET

SPECIFICATIONS OF HUAYI R600a COMPRESSOR

MODEL: VDL30C

PRINTED DATE: December 14,2020

HUAYI COMPRESSOR (JINGZHOU) CO.,LTD.

Signed: Signed:

Approved: Approved:

Specification

Model: VDL30C

Working Voltage:12/24VDC；100-240V～50/60Hz

内容及零件清单 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				
Mounting part	Rubber Grommet			4	
Mounting part	Mounting Pin			4	
Mounting part	Flat Washer			4	
Mounting part	Elastic Fiche			4	
Mounting part	Mounting Nut			1	

Performance & Dimension

Application

应用类型 Type…… LBP Low Back Pressure

蒸发温度 Evaporating Temp. Range…… -35℃ to -15℃(-31℉ to 5℉)

制冷剂 Refrigerant …… R600a

冷媒控制 Refrigerant control…… 毛细管 Capillary tube

冷却方式 cooling method…… 自然冷却 Static cooling

标准测试工况（**ASHRAE**） Normal Testing conditions

蒸发温度 Evaporation Temp.……-23.3℃(-10℉)

冷凝温度 Condensing Temp.…… 54.4℃(130℉)

环境温度 Ambient Temp.……32.2℃(90℉)

回气温度 Return Gas Temp.…… 32.2℃(90℉)

液体温度 Liquid Temp.…… 32.2℃(90℉)

标准测试工况下性能参数 Normal Performance

Model	cylinder volume （cm3）	speed （rpm）	refrigerating capacity （W≥95%）	Cop ≥95%	Power supply
VDL30C	3.1	2000	32	1.20	12/24VDC
		3500	55	1.25	
		2000	32	0.90	100-240V～ 50/60Hz
		3500	55	1.05	

压缩机其它参数 Compressor datas

工作方式 working…… 往复活塞式 Reciprocating

汽缸容积 cylinder volume…… 3.1cm^3

吸气管内径 Suction Tube I.D…… 6.10-6.20mm

工艺管内径 Process Tube I.D…… 6.10-6.20mm

排气管内径 Discharge Tube I.D…… 5.10-5.20mm

重量（含油、控制板）Weight(with oil and control panel)……4.4Kg

电机参数 Motor Data

电机类型 Motor type…… BLDC

电机保护方式 Motor protection type…… External protection

绝缘等级 Winding Insulation Class…… E Level

润滑剂 Lubricant

冷冻机油类型 Lubricant type…… Mineral oil

冷冻机油粘度 40℃ Lubricant Viscosity at 40℃

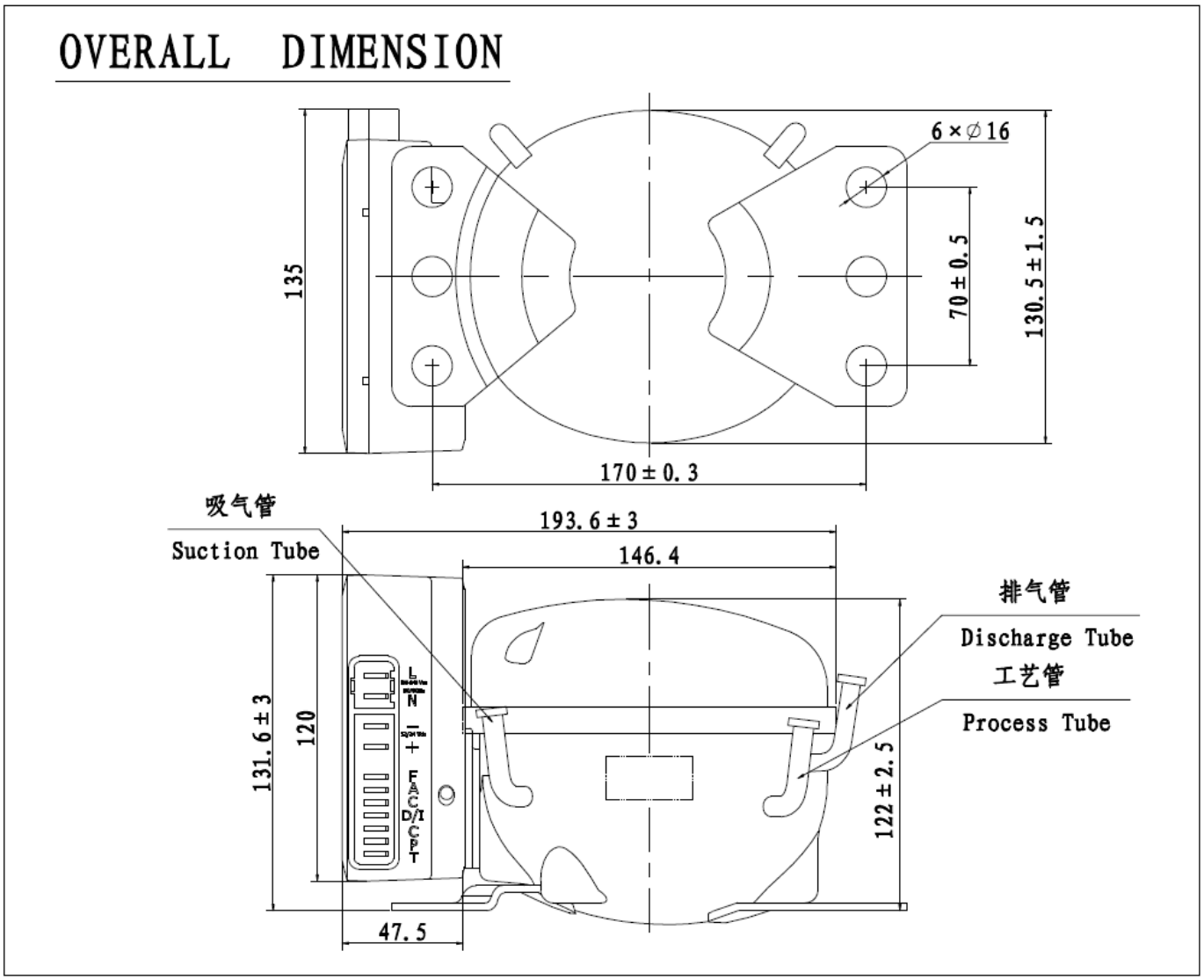
国内用 Domestic…… GRD10B & S10

出口用 Export…… GRD10B & S10

注油量 Initial charge…… 120±10ml

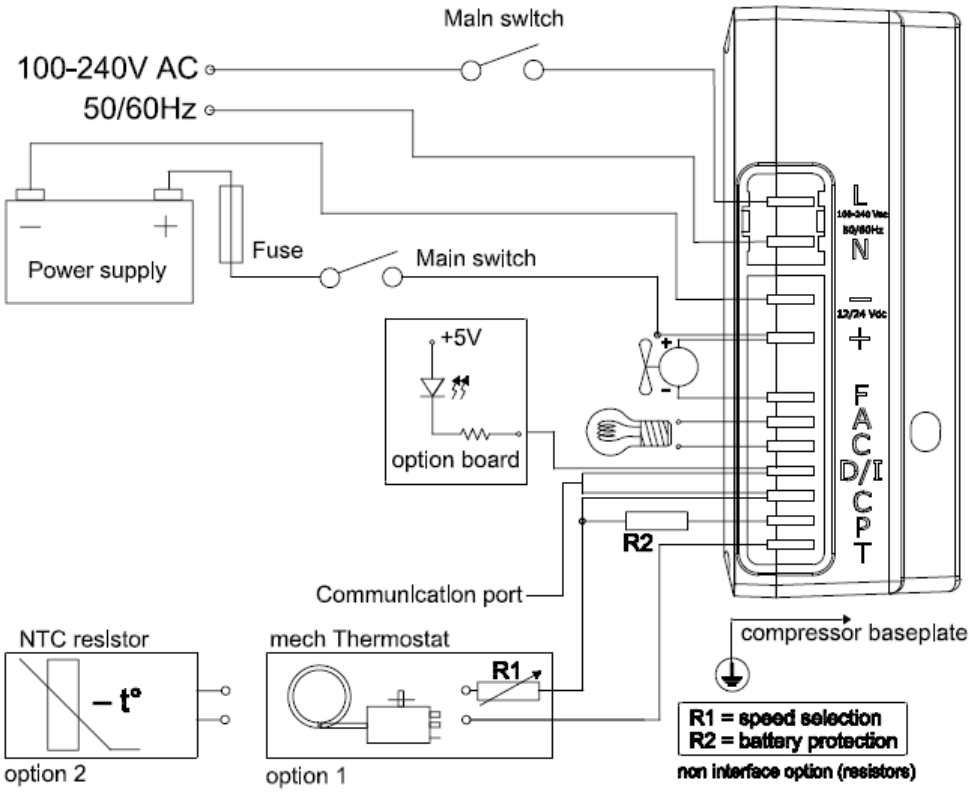
二次注入量 Recharge…… 85%

压缩机外形及安装尺寸（图一）Overall dimensions (pictrue 1)



控制部分 control parts

电气接线原理图（图二）wiring diagram (pictrue 2)



工作电压设定表（表 1）Optional battery protection settings（table1）

C、P 间外接电阻 KΩ resistance between C and P	12V 保护电压（V）12V protected voltage	12V 最小启动电压（V）12V minimum starting voltage	12V 最大工作电压（V）12V maxima working voltage	24V 保护电压（V）24V protected voltage	24V 最小启动电压（V）24V minimum starting voltage	24V 最大工作电压（V）24V maxima working voltage
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	17.0	21.3	22.7	31.5

电源进线推荐表（表 2）Recommended incoming power supply（table 2）

线号 Wire size	线径 wire diameter	12V 最大长度 Max length at 12V		24V 最大长度 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

标准电池保护设定推荐表（表 3）Recommended battery protection Settings（table 3）

12V 停机值 V Stopping value at 12V	12V 开机值 V Starting value at 12V	24V 停机值 V Stopping value at 24V	24V 开机值 V Starting value at 24V
10.4	11.7	22.8	24.2

转速设定表（表 4）Speed setting value（table 4）

压缩机转速 (RPM) speed	C/T 间电阻 Ω resistance between C and T	压缩机转速 (RPM) speed	C/T 间电阻 Ω resistance between C and T
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

控制器说明 controller instructions

1) 此控制器能适应交流、直流电源输入系统。直流 12V 系统时最大输入电压为 17V；24V 系统时最大输入电压为 31.5V。交流输入电压范围为 100-240V。控制器工作环境温度不大于 60℃；当控制器外壳温度过高时将停止压缩机而产生温度过高保护。

This controller can automatically adapt to AC and DC power input system. The max input voltage of DC 12V is 17V and the max input voltage of DC 24V is 31.5V.AC input voltage range is 100-240V. 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) 安装方式：将控制器三相输出插件紧插在压缩机的接线端上，控制器套入压缩机的安装盒后拧紧螺钉。

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) 电源连接：如图二所示。a、控制器的电源输入线直接连接至电池的正负极，控制器的（-）极连至电池的负极；控制器的（+）极连至电池的正极，否则控制器将不能正常工作，控制器具有电源反接保护。L、N 是交流电输入接口。b、为了保护装置，必须在正电源连线中接入一个保险丝，并尽可能的靠近电池的正输出极；推荐 12V 系统采用 15A；24V 系统采用 7.5A。c、如果加入主开关，则开关的最小通断电流值大于 20A。d、电源线的选择（线径及长度）可参照表 2，否则会因电源连线上的电压降影响到控制器的电池保护点的设置值。

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. L and N are AC input interfaces. 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) 电池的保护：a、控制器通过检测输入极（+）和（-）之间的电压值来确定停止压缩机及重新

启动压缩机，用于保护不同的供电电池。 b、标准电池的保护设置推荐值见表 3；其他电压的设定可通过调节控制器的端子（C）和（P）的连接电阻，具体数值参照表 1

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）温度开关：如图二所示。a、温度开关连接在控制器的 C、T 端，如果中间不连接任何电阻，则当温度开关闭合时压缩机的运行速度为 2000rpm。b、其他压缩机的设定转速可通过电阻来调节电流（mA）获得，具体电阻数值参照表 4。

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）外接风扇：如图二所示。a、控制器的端子（F+）和（F-）之间可接入一个 12V 的直流风扇，风扇的正极连接控制器的（F+）端，负极连接控制器的（F-）端。当控制器的输入电压超出 12V 时，端子（F+）和（F-）之间输出的值总是保持 12V。 不管输入电压系统是 12V 还是 24V，风扇必须是 12V 的直流风扇。 b、控制器可持续输出 0.5A 的风扇驱动能力。

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) 外接 LED 显示：如图二所示。a、控制器的端子（+）和（D）之间可接入一个 10mA 的 LED 用于显示故障，LED 的阳极连接控制器的（+）端，阴极连接控制器的（D）端。b、每次闪烁时间为 0.5 秒（亮 0.25 秒，灭 0.25 秒）后加 4.5 秒灭时间为 1 个闪烁周期，持续闪烁 60 秒；如果故障消除则重新启动，否则继续故障循环。具体代码和闪烁次数如表 5。

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.

表五(table 5)

故障代码 Error Code	故障类型 Error type
1	电压故障——输入电压处于设定的范围之外 Voltage failure - the input voltage is outside the set range
2	风扇电流故障——风扇电流端输出电流大于 1A Fan current fault - fan current output current is greater than 1A
3	压缩机启动故障——压缩机电机堵转或系统压力太大 Starting fault of the compressor - compressor motor is blocked or the system pressure is too high
4	压缩机最小速度故障——压缩机负荷过大或电机的转速过小 Minimum speed failure of compressor - compressor load is too large or motor speed is too small
5	控制器温度故障——控制器外壳温度太高 Temperature controller failure - controller shell temperature is too high

安装部分 mounting part

减震垫 Rubber Grommet