



厦门宏发电力电器有限公司

Xiamen Hongfa Electric Power Controls Co., Ltd.

电话 Tel: (86) -592-6682878

传真 Fax: (86) -592-6150698

网址 Web site: www.hf-relay.com

产品规格确认书

Specification for Approval

文件编号: 4588679GGS004

顾客 Customer: 上汽通用五菱

顾客产品名称 Your Product Name: 直流继电器 DC Relay

顾客零件号 Your Part No.: /

宏发产品名称 Our Product Name: 直流继电器 DC Relay

宏发产品型号 Our Product model: HF80V-200/72-12-HC4Y

发布日期 Date: 2014年12月29日

有效期 Period of Validity: 二年 Two Years.

生产工厂 Production Plant: 厦门宏发电力电器有限公司
Xiamen Hongfa electric power controls Co., Ltd.

联系人 Contact: _____

版本 Version: a 更改单号 Number of Modification: _____

宏发审批签字 Signature by Hongfa			顾客签字或盖章 Stamp or signature by customer
拟制 Make	审核 Check	批准 Approved	负责人 By:
			日期 Date:

特别说明: 此承认书请顾客在2周内确认, 如未在规定时间内答复, 则视为同意。
Especially claim: This specification should be checked in 2 weeks, if had not answered in the scheduled time, then regards as the agreement.

变更版记录 Revisions

顾客 Customer		产品型号 Part No.		
变更版 Version No.	变更日期 Change Date	变更内容 Description	原因 Reason	负责人 By

产品规格书
Relay Specification Sheet

顾客 Customer: 上汽通用五菱

1. 品种 Type Model

1.1 种类 Kinds: 直流继电器 DC relay

1.2 型号 Type: HFE80V-200/72-12-HC4Y

1.3 外形尺寸 Outline: 88mm×47.7mm×90.2mm

1.4 触点形式 Contact Arrangement: 常开 NO

1.5 触点材料 Contact Material: 银合金 Silver alloy

1.6 绝缘等级 Insolation Class: H级

2. 线圈额定参数 Coil Rating

额定电压 Nominal Voltage VDC	动作电压 Pick-up Voltage VDC	释放电压 Drop-out Voltage VDC	允许最大线圈电压 Max. Allowable Voltage VDC	正常工作动作范围 VDC	线圈电阻 Coil Resistance × (1±10%) Ω	线圈功耗 Coil Power W
12	≤8.4	≥1.2	18	9~16	28.8	5

3. 触点参数 Contact Specification

3.1 触点额定负载 Contact rating: 200A 72Vd.c.

3.2 最大切换电流 Max. Contact Current: 220A

3.3 最大切换电压 Max. Contact Voltage: 96 Vd.c.

4. 性能 Performance

4.1 接触电阻 Contact Resistance: Max. 1 mΩ (at 20A)

4.2 动作时间 Operate Time: ≤ 30 ms

4.3 释放时间 Release Time: ≤ 10 ms

4.4 寿命 Life

(1) 电耐久性 Electrical Endurance

样本 sample	工作方式 work mode	负载 load	频率 frequency	次数 ops
A	接通 make	22.5VDC/200A 冲击电流400A	1 ops/6s	7.5×10 ⁴
B	分断 break	72VDC/20A	1 ops/6s	7.5×10 ⁴
C	分断 break	72VDC/200A	1 ops/6s	10000
D	分断 break	72VDC/500A	1 ops/6s	5

(2) 机械耐久性 Mechanical Endurance

2×10⁵次(无负载, 动作频率为 30 次/分钟)

2×10⁵times (no load at operating frequency of 30 ops/min)

4.5 温升 (常温条件下)

- (1) 触点持续通电 2H/100A, 引出端温升: $\leq 30K$
- (2) 触点持续通电 2H/150A, 引出端温升: $\leq 40K$
- (2) 触点持续通电 2H/200A, 引出端温升: $\leq 50K$

4.6 故障电流试验 Fault Current test

a: 耐受 72VDC/2000A 10ms, 功能正常 Carrying test: 72VDC/2000A 10ms, The load switch shall show no signs of malfunction, sticking or welding of contacts or reluctance to latch.

4.7 介质耐压 Dielectric Strength (漏电流 Leak Current: 10 mA)

- (1) 断开触点间 Between open contacts: 2500VAC/1min
- (2) 触点与线圈间 Between coil to contacts: 3000VAC/1min

4.8 绝缘电阻 Insulation Resistance

- (1) 断开触点间 Between Contacts: 1000 M Ω (500 Vd. c.)
- (2) 触点与线圈间 Between Coil To Contacts: 1000 M Ω (500 Vd. c.)

4.9 振动 Vibration

正弦振动, 双振幅, 10Hz~500Hz, 加速度 49m/s², 三个相互垂直轴线的每一个方向 4h (激励和非激励各 2h), 共 12h. 继电器外观、结构和性能不应有异常。

Sinusoidal Vibration, Double amplitude, 10Hz to 500Hz, acceleration 49m/s², 4 hours for each of the three mutually perpendicular axes (2 hours each for the energized and non-energized status), totally 12 hours. There shall not be any abnormalities on relay appearance, construction and performance.

4.10 冲击 Shock

稳定性: 196m/s²(20 g), 三个相互垂直轴线的每一个方向 6 次, 闭合回路的断开或开路回路的闭合时间应不超过 10 μ s

Malfunction: 196 m/s²(20 g), 6 shocks for each direction of X, Y, Z, No opening of any closed contact circuit or no closing of any opened contact circuit shall exceed 10 μ s

强度: 490 m/s² (50 g), 三个相互垂直轴线的每一个方向 6 次, 继电器外观、结构和性能不应有异常。

Durability: 490 m/s² (50 g), 6 shocks for each direction of X, Y, Z It shall be no abnormalities in appearance, construction and performance.

4.11 耐温性 Temperature Resistance

- (1) 耐热 Heat Resistance

(85 \pm 2) $^{\circ}$ C 温度中放置 16 h, 恢复常温 2 h 后, 继电器的结构及性能应无异常。

Must be free from any abnormality in both the construction and

characteristics after the relay is lift in a temperature of (85 ± 2) °C for 16 h and then in room temperature and humidity for 2 h.

(2) 耐寒 Cold Resistance

(-40 ± 2) °C度中放置 2 h, 恢复常温 2 h 后, 继电器的结构及性能应无异常。

Must be free from any abnormality in both the construction and characteristics after the relay is lift in a temperature of (-40 ± 2) °C for 2 h and then in room temperature and humidity for 2 h.

4.12 耐湿性 Moisture Resistance

在温度 (40 ± 2) °C 相对湿度 90%~95% RH 中放置 48 h, 恢复常温 2 h 后, 继电器的结构及性能应无异常。且绝缘电阻应不小于 $10 M\Omega$ (500 Vd.c.)。

Must be free from any abnormality in both the construction and characteristics after the relay is lift in a humidity of 90% to 95% RH for 48 h and then in room temperature and humidity for 2 h. Insulation resistance however must be $10M\Omega$ (500 Vd.c.)。

5. 产品标识 Marking

5.1 外壳颜色 Case Color: 黑色 Black

5.2 印字位置 Marking Position: 侧面 Side

5.3 印字内容 电压、电流、极性、周期码等 Voltage, current, polarity, lot etc

6. 标准测试条件 Standards Test Condition

6.1 温度 Temperature: 15 °C ~ 35 °C

6.2 湿度 Humidity: 25 % ~ 75 % RH

6.3 方向 Direction of Measurement: 任意 Random direction

7. 使用条件 Operating Condition

7.1 温度 Temperature: -40 °C ~ 70 °C

7.2 湿度 Humidity: 5 % ~ 85 % RH

7.3 安装方向 Mounting Direction: 立式 Vertical mounting

8. 贮存条件 Storage Condition

8.1 温度 Temperature: 0 °C ~ 40 °C

8.2 湿度 Humidity: 20 % ~ 80 % RH

8.3 环境 Environment

(1) 产品贮存场地不能有腐蚀性气体 Store in locations where the product is not exposed to corrosive gas.

(2) 贮存中应避免阳光直照产品 Keep product is not exposed to the direct ray of the sun.

8.4 储存时间 Storage: 6 个月 6 moths

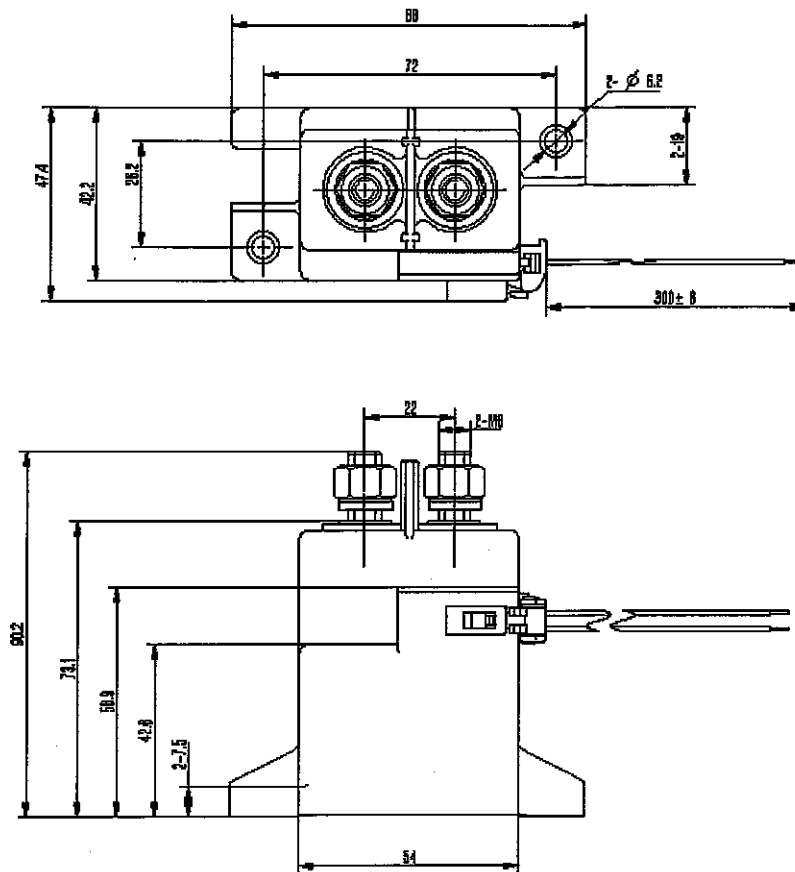
9. 重量 weight: $\leq 500g$

10. 密封等级 IP code: IP42 (ISO 60529)

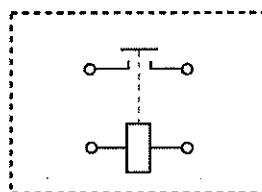
11. 产品结构 Configuration

外形尺寸、引出端尺寸及接线图

Outline dimension, Terminal dimension, Wiring diagram



接线图



线圈无极性、触点负载无极性

产品外形尺寸未注尺寸公差按附表 1 执行。

All unspecified tolerance according to Annex. 1.

附表 1 Annex 1

产品外形尺寸未注尺寸公差 Outline dimensions hadn't specified tolerance	
外形尺寸 Outline Dimensions	公差 Tolerance
≤10	±0.3
10~50	±0.5
>50	±0.8

12. 订货标记 Ordering Information

HF80V -200 / 72-12- H C 4

① ② ③ ④ ⑤ ⑥ ⑦

① 继电器型号 Type	HF80V: 车辆领域
② 触点负载 Contact Rating	200:200A
③ 负载电压 Load Voltage	72: 72VDC
④ 线圈电压 Coil Voltage	12:12Vd.c.
⑤ 触点形式 Contact arrangement	H: 常开 1 Form A
⑥ 线圈引出端方式 Coil input terminal	C: 连接器 Connector
⑦ 负载引出端方式 Load input terminal	4: 外螺纹安装 Screw Terminal Male

13 其他 Others

13.1 供应商 Accommodate

厦门宏发电力电器有限公司 Xiamen Hongfa Electric Power Controls Co., Ltd.

13.2 规格书内的各项性能参数是基于标准测试条件下测得的初始值。

All the performance data listed in the datasheet are the initial values tested under standard testing condition.

13.3 注意事项 Notes

13.3.1 对宏发而言，不可能评定继电器在每个具体应用领域的所有性能参数要求，因而客户应根据具体的使用条件选择与之相匹配的产品，若有疑问，请与宏发联系，以便获取更多的技术；但因产品选型责任仅由客户负责。

We could not evaluate all the performance and all the parameters for every possible application. The customer can choose the right product according to the specific using conditions and requirements. If there is any queries, please contact Hongfa for the technical service. However, customer will responsible for what they choosed it is the user's responsibility to determine which product should be used only.

13.3.2 我司承诺的负载, 在没有特别说明时, 均指额定负载, 产品使用于我们承诺的负载条件之外时, 我公司不承担因此造成的失效责任。

Our commitment to the load in the absence of special note are only for contact rating load conditions, products used outside our commitment to the load conditions, our company does not assume responsibility for the resulting failure.

13.3.3 触点额定值均为阻性负载时的数值, 使用 $L/R \geq 1ms$ 的感性负载 (L 负载) 的情况下, 请与感性负载并行采取浪涌吸收措施。未采取措施的情况下, 可能会造成电气寿命下降、发生切断不良。

Contacts rating value is the value on resistive load. Please take measures of surge absorption together with inductive load when using the $L/R \geq 1ms$ inductive load (L Load). Or it may lead to the decrease of electrical endurance and defective switch.

13.3.4 为抑制继电器线圈的反向电动势，建议加装非线性（推荐使用可变电阻），若使用二极管，会使继电器释放时间大大加长，肯定会导致切断性能下降，敬请注意。

In order to curb the reverse electromotive force of coil, a nonlinear resistor is recommended to use, such as variable resistance. Please be noted that a diode will make the release time of relay increase, which may lead to the degradation of cutting-off capability.

13.3.5 请避免在强磁界（变压器、磁铁的周围）和发热物体的附近安装。

Please avoid installation in strong magnetic field (around the transformers, the magnet) and the heating objects nearby.

13.3.6 为防止出现松动，继电器安装时请使用垫圈。继电器安装处请使用 M5 螺钉，螺钉锁紧扭矩请控制在 $3N \cdot m \sim 4N \cdot m$ ，引出端安装处的螺母锁紧扭矩请控制在 $5N \cdot m \sim 6N \cdot m$ 。在超过范围的情况下，可能会造成破损。

In order to prevent loosening, please use the washer when installing the relay. Please use the M4 screws to install relay, screw locking torque within $2N \cdot m \sim 3N \cdot m$. Make sure the lock nut torque of the terminal installation is within $5N \cdot m \sim 6N \cdot m$. Damage may occur when it is beyond the range.

13.3.7 请避免在引出片上粘附油脂等异物，请使用 $50mm^2$ 以上规格的连接导线，否则有可能会造成引出端部分的异常发热。

Please avoid grease and other foreign matter in the terminal, please use the connecting wire above $50mm^2$, or they may cause abnormal heating in the terminal part.

13.3.8 在继电器坠落的情况下，原则上请不要再使用。

In principle, please do not use it when the relay has fallen down.