



# 厦门宏发电力电器有限公司

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## 产品规格确认书

### Specification for Approval

文件编号: 4588673 GGS005

顾客 Customer: <u>上汽通用五菱</u>			
顾客产品名称 Your Product Name: <u>直流继电器 DC Relay</u>			
顾客零件号 Your Part No.: <u>/</u>			
宏发产品名称 Our Product Name: <u>直流继电器 DC Relay</u>			
宏发产品型号 Our Product model: <u>HFE80V-20/12-H2</u>			
发布日期 Date: <u>2014年12月29日</u>			
有效期 Period of Validity: <u>二年 Two Years.</u>			
生产工厂 Production Plant: <u>厦门宏发电力电器有限公司</u> <u>Xiamen Hongfa electric power controls Co., Ltd.</u>			
联系人 Contact: _____			
版本 Version: <u>a</u>		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 HVDC relay

1.2 型号 Type: HFE80V-20/12-H2

1.3 外形尺寸 Outline: 30mm×30mm×29.2mm

1.4 触点形式 Contact Arrangement: 常开型 NO

1.5 触点材料 Contact Material: 银合金 Silver alloy

1.6 绝缘等级 Insolation Class: H级 H Class

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	48	3

3. 触点参数 Contact Specification

3.1 触点额定负载 Contact Rating: 20 A 450 Vd. c.

3.2 最大切换电流 Max. Contact Current: 30A

3.3 最大切换电压 Max. Contact Voltage: 450 Vd. c.

4. 性能 Performance

4.1 接触电阻 Contact Resistance ≤15mΩ (@10A)

4.2 动作时间 Operate Time: <30 ms

4.3 复归时间 Release Time: <10 ms

4.4 寿命 Life

(1) 电耐久性 Electrical Endurance

样本 sample	负载 load	工作方式 work mode	次数 ops	工作方式 work mode	次数 ops	频率
A	450VDC/10A	接通 making	1×10 <sup>5</sup>	分断 break	100	1 ops/6s
B	450VDC/20A	接通 making	7.5×10 <sup>4</sup>	分断 break	10	1 ops/6s
C	72VDC/20A	接通 making	7.5×10 <sup>4</sup>	分断 break	75000	1 ops/6s

## (2) 机械耐久性 Mechanical Endurance

 $2 \times 10^6$  次(无负载, 动作频率为 1 秒/次) $2 \times 10^6$  ops (no load at operating frequency of 1 ops/s)

## 4.5 介质耐压 Dielectric Strength (漏电流 Leak Current)

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

## 4.6 绝缘电阻 Insulation Resistance

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

## 4.7 振动 Vibration

正弦振动, 双振幅, 10Hz~500Hz, 加速度  $49\text{m/s}^2$ , 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。

Durability: Sinusoidal Vibration, Double amplitude, 10Hz to 500Hz, acceleration  $49\text{m/s}^2$ , 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.

## 4.8 冲击 Shock

稳定性:  $196\text{m/s}^2$  (脉冲持续时间 11 ms), 6 次(三个相互垂直轴线的每一个方向 6 次, 总共 36 次), 闭合回路的断开或开路回路的闭合时间应不超过  $10\mu\text{s}$ 。

Malfunction:  $196\text{m/s}^2$  (Duration 11 ms), 6 shocks (6 shocks for each direction of three mutually perpendicular axes, totally 36 shocks), the malfunction time shall not exceed  $10\mu\text{s}$ .

强度:  $490\text{m/s}^2$  (脉冲持续时间 6 ms), 6 次(三个相互垂直轴线的每一个方向 6 次, 总共 36 次) 继电器外观、结构和性能不应有异常。

Durability:  $490\text{m/s}^2$  (Duration 6 ms), 6 shocks (six shocks for each direction of three mutually perpendicular axes, totally 36 ops) There shall be no abnormalities in appearance, construction and performance.

## 4.9 耐温性 Temperature Resistance

## (1) 耐热 Heat Resistance

 $(85 \pm 2)$  °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。

The relay must be free from any abnormality in both the construction and characteristics after the relay is left in a temperature of  $(85 \pm 2)$  °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。

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

#### 4.10 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 MΩ (500 Vd.c.)。

The relay must be free from any abnormality in both the construction and characteristics after the relay is put 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 not less than 10MΩ (500 Vd.c.)。

#### 5. 产品标识 Marking

5.1 外壳颜色 Housing Color: 黑色 Black

5.2 印字位置 Marking Position: 侧面 side face

5.3 印字内容 marking content 电压、电流、接线图、周期码等 voltage, current, wiring, 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

#### 7. 使用条件 Operating Condition

7.1 温度 Temperature: -40 °C ~ 85 °C

7.2 湿度 Humidity: 0 % ~ 90 % RH

#### 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 not being exposed in the sun.

8.4 储存时间 storage 6个月 6 months

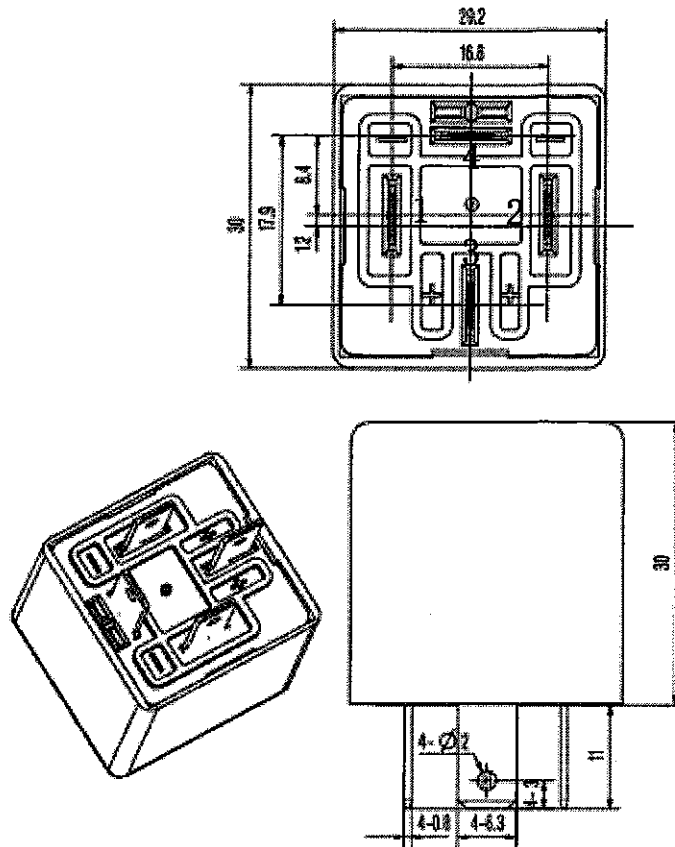
9. 重量 weight: ≤50g

10. 密封等级 seal level: IP67 (ISO 60529)

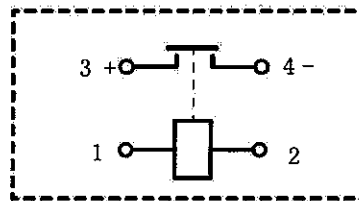
11. 产品结构 Configuration

外形尺寸、引出端尺寸及接线图

Outline dimension、Terminal dimension、Wiring diagram



接线图 Wiring Diagram



产品外形尺寸的公差按附表 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		PC 板未注尺寸公差 PC board dimensions hadn't specified tolerance
外形尺寸 Outline Dimensions	公差 Tolerance	±0.2
≤1	±0.2	
1~5	±0.3	
>5	±0.4	

## 12. 订货标记 Ordering Information

HFE80V    -20 / -12- H    2

①            ②    ③ ④ ⑤

① 继电器型号 Type	HF E80V: 车辆领域
② 触点负载 Contact Rating	20:20A
③ 线圈电压 Coil Voltage	12:12Vd. c.
④ 触点形式 Contact arrangement	H: 常开 1 Form A
⑤ 负载引出端方式 Load input terminal	2: 快连接式 Fast connection type

## 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 请避免在引出片上粘附油脂等异物，请使用  $5\text{mm}^2$  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  $10\text{mm}^2$ , or they may cause abnormal heating in the terminal part.

13.3.7 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.