



厦门宏发电力电器有限公司

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产品规格书

Product Specification

文件编号 File No.: 4588775GGS013

产品名称 Product Name: 高压直流继电器 HVDC RELAY

产品型号 Product Part NO.: HFE85P-300/XX-XX-HAL5P-5(A75)

发布日期 Release Date: Dec. 08, 2022

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.

版本 Version: a



宏发审批签字 Signature by Hongfa

顾客确认
Custom Approval

拟制
Release by

审核
Checked by

批准
Approved by

负责人 By:

日期 Date:

特别说明:

1. 此规格书请顾客在 2 周内确认, 如未在规定时间内答复, 则视为同意。
2. 自提供规格书之日起 2 年内, 顾客没有下单订货, 本规格书失效。
3. 此规格书未经宏发盖章, 视为无效。

Special claim:

1. This specification is expected to be confirmed within 2 weeks. Without feedback after 2 weeks, Hongfa will consider it's approved by the customer automatically.
2. This specification will be invalid if no order within 2 years.
3. This specification is deemed invalid if it is not stamped by Hongfa.

HFE85P-300(A75) 规格书

HFE85P-300(A75) Relay Specification

1 线圈额定参数 Coil Rating

at 23 °C

额定电压 Rated Voltage Vd. c.	动作电压 Operate Voltage Vd. c.	释放电压 Release Voltage Vd. c.	线圈电阻 Coil Resistance Ω	线圈功耗 Coil Power 大约 Approx. W	线圈工作电压 Coil Operating Voltage Vd. c.
12	≤9	≥4.5	5.5×(1±7%)	接通 (MaKing) : 26 保持 (Holding) : 3	10~36
24					

2 主触点参数 Main Contact Specification

- 2.1 触点形式 Contact Arrangement: 一组常开 H 1 Form A
- 2.2 触点材料 Contact Material: 铜合金 Copper Alloy
- 2.3 接触电阻 Contact Resistance: ≤0.3mΩ (at 200A & 23°C)
- 2.4 触点额定负载 Contact Rating: 300A (100mm² wire)
- 2.5 最大分断电流 Max. Breaking Current: 2000A (1op)
- 2.6 最大切换电压 Max. Switching Voltage: 1500 Vd. c.
- 2.7 最小适用负载 Min. Applicable Load: 6 Vd. c. 1 A
- 2.8 电流耐受 Current Endurance

电流 Current	时间 Duration
300A 持续	持续/cont.
450A	5min
600A	90s
2000A	1s

电流耐受条件 Condition for current endurance

- 1) 环境温度 Ambient temperature: 85 °C;
- 2) 线圈激励电压为线圈额定电压 Supply rated voltage to coil;
- 3) 使用100 mm²线径铜导线连接 The cross section area of wire is 100 mm²

3 辅助触点参数 Auxiliary Contact Specification

- 3.1 触点形式 Contact Arrangement: 一组常开 H 1 Form A
- 3.2 触点材料 Contact Material: 铜合金 Copper Alloy
- 3.3 接触电阻 Contact Resistance: ≤100mΩ (at 1 A & 23 °C)
- 3.4 触点额定负载 Contact Rating: 6 Vd. c. 0.1 A

4 耐久性 Endurance

4.1 电耐久性 Electrical Endurance

产品型号 Product model	结构 型式 Version	环境温度 Ambient Temperature	触点负载 Contact Rating	通断比 ON: OFF	电耐久性 Electrical Endurance
HFE85P- 300	一组 常开 1H	常温 Room Temperature	接通 making: (冲击 Impact 300A, RC=1ms) 触点电压 Contact Voltage 37.5 Vd. c.	0.6s:5.4s	7.5x10 ⁴ 次 (ops)
			分断 Breaking: 稳态 Steady 300A 触点电压 Contact Voltage 750 Vd. c.	0.6s:5.4s	500次 (ops)
			分断 Breaking: 稳态 Steady 300A 触点电压 Contact Voltage 1000 Vd. c.	0.6s:5.4s	100次 (ops)
			分断 Breaking: 稳态 Steady 60A 触点电压 Contact Voltage 1500 Vd. c.	0.6s:5.4s	6000次 (ops)
			分断 Breaking: 稳态 Steady 2000A 触点电压 Contact Voltage 320 Vd. c.	0.6s on	1次 (op)

4.2 机械耐久性 Mechanical Endurance

触点形式 Contact Form	触点负载 Contact Rating	环境温度 Ambient Temperature	通断比 Ratio	机械耐久性 Mechanical Endurance
一组常开 1H	无负载 No load	常温 Room Temperature	0.5 s:0.5 s	2×10 ⁵ 次 (ops)

5 绝缘电阻 Insulation Resistance

5.1 试验前 Before Test

断开主触点电路的各引出端之间

Between open main contacts: 1000 MΩ (1000 Vd. c.)

主触点引出端与线圈引出端之间

Between main contacts and coil: 1000 MΩ (1000 Vd. c.)

主触点与辅助触点引出端之间

Between main contacts and Auxiliary contact: 1000 MΩ (1000 Vd. c.)

5.2 试验后 After Test

断开主触点电路的各引出端之间

Between open main contacts: 50 M Ω (1000 Vd. c.)

主触点引出端与线圈引出端之间

Between main contacts and coil: 50 M Ω (1000 Vd. c.)

主触点与辅助触点引出端之间

Between main contacts and Auxiliary contact: 50 M Ω (1000 Vd. c.)

6 介质耐电压 Dielectric Strength (漏电流 Leakage Current: 1 mA)

6.1 试验前 Before Test

断开主触点电路的各引出端之间

Between open main contacts: 3300 Va. c. (50/60 Hz 1 min)

主触点引出端与线圈引出端之间

Between main contacts and coil: 3300 Va. c. (50/60 Hz 1 min)

主触点与辅助触点引出端之间

Between main contacts and Auxiliary contact: 3300 Va. c. (50/60 Hz 1 min)

6.2 试验后 After Test

断开主触点电路的各引出端之间

Between open main contacts: 2000 Va. c. (50/60 Hz 1 min)

主触点引出端与线圈引出端之间

Between main contacts and coil: 2000 Va. c. (50/60 Hz 1 min)

主触点与辅助触点引出端之间

Between main contacts and Auxiliary contact: 2000 Va. c. (50/60 Hz 1 min)

7 时间参数 Time Parameters (额定电压下 At Coil Rated Voltage)

7.1 动作时间 Operate time: ≤ 30 ms。

7.2 释放时间 Release time: ≤ 10 ms。

7.3 回跳时间 Bounce time: ≤ 5 ms。

8 振动 Vibration

稳定性: 双振幅 1.5 mm, 频率 10 Hz~55 Hz, 每个方向各 1 小时, 闭合回路的断开或断开回路的闭合时间应不超过 10 μ s。

Functional: 10 Hz~55 Hz, 1.5 mm double amplitude, 1 hour Per Cross-axis. No opening or closing of any closed or opened contact circuit respectively shall exceed 10 μ s.

9 冲击 Shock

9.1 稳定性 Functional

196 m/s² (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 μs。

196m/s²(Duration 11ms), 6 shocks (six ops in both directions of each of the three mutually perpendicular axes, totally 36 ops), No opening or closing of any closed or opened contact circuit respectively shall exceed 10 μs.

9.2 强度 Destructive

加速度 980 m/s² (脉冲持续时间 6 ms)。

Acceleration 980 m/s²(Duration 6 ms).

10 标准测试条件 Standard Test Conditions

10.1 温度 Temperature: 23 °C ± 5 °C。

10.2 湿度 Humidity: 25 % ~ 75% RH。

10.3 方向 Direction of Measurement: 立式 Vertical。

11 使用条件 Operate Conditions

11.1 温度 Temperature: -40 °C ~ 85 °C。

11.2 湿度 Humidity: 5 % ~ 85% RH。

11.3 安装方向 Mounting Direction: 任意 Free。

注 1: 使用环境条件不能导致继电器内部产生结露、结冰, 否则会导致继电器失效。

注 2: 当客户有特殊安装时, 如倒立、多铜排连接等, 需与宏发沟通确认。

Note1: The ambient environment of application shall not cause any dewing or icing inside the relay. Otherwise, the relay may fail to work consequently.

Note2: When the customer has special installation, such as handstand, multiple bronze plate connection, need to communicate and confirm with Hongfa.

12 贮存条件 Storage Conditions

12.1 温度 Temperature: -40°C ~ 85°C。

12.2 湿度 Humidity: 5% ~ 85% RH。

12.3 贮存期 Storage Life: 12 个月 12 Months. (原包装 Original Package)。

12.4 环境 Environment

12.4.1 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.

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

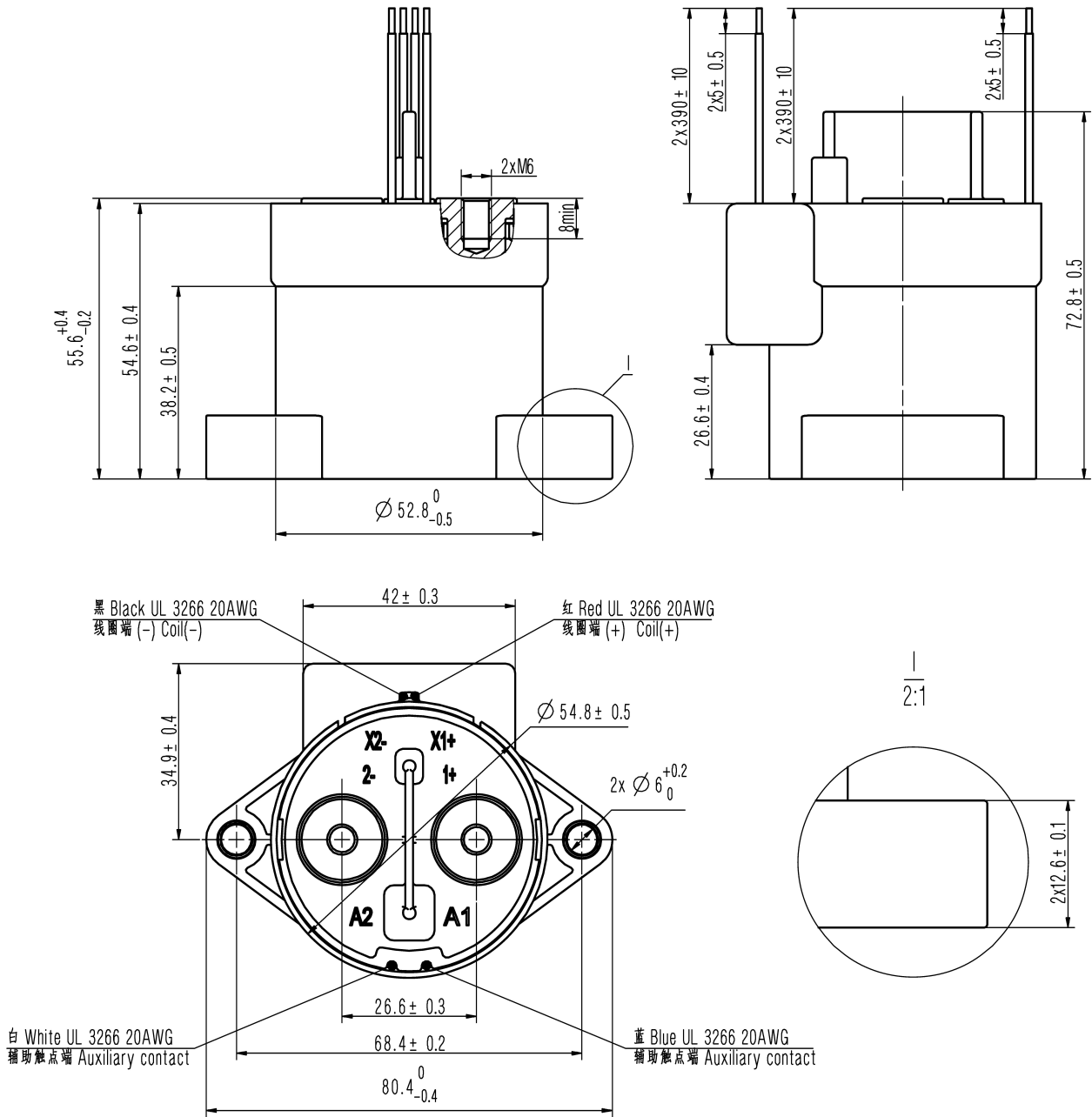
13 订货标记 Ordering Information

HFE85 P - 300 / 1000 - 12 - H A L 5 P - 5 (A75)
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

- | | |
|---------------------------------|--|
| ① 产品型号 Type | HFE85 |
| ② 应用场合 Application | P: 光伏和储能 Pv and energy storage |
| ③ 系列代号 Series Code | 300: 300A |
| ④ 负载电压 Load Voltage | 无 Nil: 450Vd. c.
1000: 1000Vd. c.
1500: 1500Vd. c. |
| ⑤ 线圈电压 Coil Voltage | 12: 12Vd. c.
24: 24Vd. c. |
| ⑥ 触点形式 Contact Form | H: 一组常开 1 Form A |
| ⑦ 辅助触点形式 Auxiliary Contact Form | A: 一组常开 1 Form A |
| ⑧ 线圈引出端形式 Coil Termination | L: 引出线 wire |
| ⑨ 负载引出端形式 Load Termination | 5: 内螺纹 screw terminal |
| ⑩ 线圈功耗 Coil Power | P: 节能型 energy-saving type |
| ⑪ 线圈特征 Coil Character | 5: 单线圈带脉冲宽度调制节能模块 Energy saving module with pulse adjustment for single coil |
| ⑫ 特殊特性代码 Special Code | (A75): 无极性 (Non-polar)、灰色外壳 (Grey housing) |

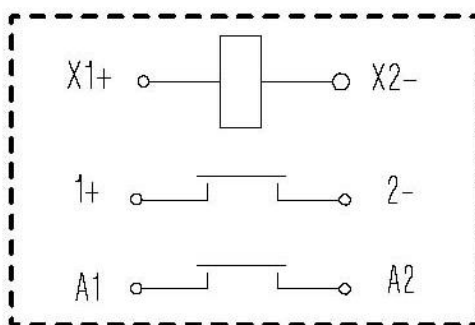
14 产品结构 Configuration

14.1 外形图 Outline Dimensions



产品型号 Product model	重量 Unit Weight
HFE85P-300/XXX-XX-HAL5P-5 (A75)	(400 ± 20) g

14.2 接线图 Wiring Diagram



注1: 线圈有极性; 负载、辅助触点无极性。

Note1: Have polarity on the coil; Load and Auxiliary contacts are non-polar.

注2: 负载极性标识仅作参考, 反向不影响产品使用寿命。

Note2: Load polarity mark is for reference only, reverse current does not influence service life of relay.

注3: 产品外形尺寸未注尺寸公差按下表执行。

Note3: All unspecified tolerance according to following table.

产品外形尺寸未注尺寸公差	
Outline dimensions without tolerance specified	
mm	
外形尺寸 Outline Dimension	公差 Tolerance
≤10	±0.3
>10~50	±0.5
>50	±0.8

15 其他说明 Others

15.1 供应商 Supplier

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

15.2 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.

15.3 注意事项 Notes

15.3.1 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支持; 但产品选型责任仅由客户负责。Hongfa could not evaluate all the performance and all the parameters for every potential application. The customer can choose the right product according to the specific usage conditions and requirements. If there is any queries, please contact Hongfa for the technical service. However, customer will responsible for what they choose and it is the user's responsibility to determine which product should be used.

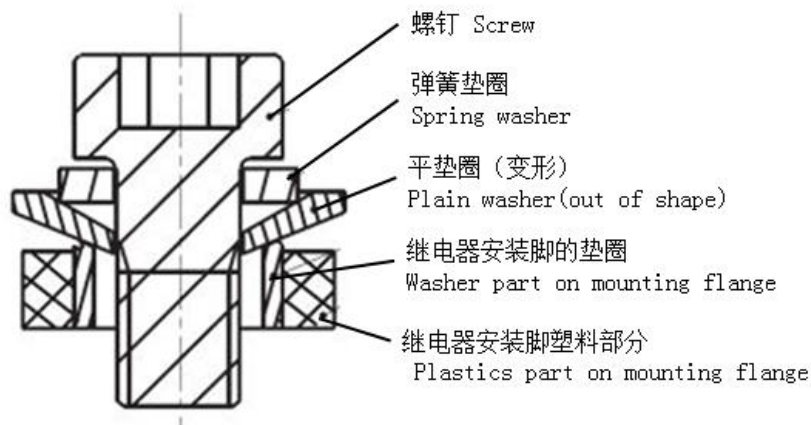
15.3.2 我司承诺的负载, 在没有特别说明时, 均指额定负载, 产品使用于我们承诺的负载条件之外时, 我公司不承担因此造成的失效责任。Without special note, the load we commit to the load is the rating load. Hongfa doesn't response for any usage beyond our guarantee.

15.3.3 本继电器的内部触点使用了气体保护, 伴随着触点温度变化(环境温度+通电致使温度上升)而存在内部气体穿透, 严禁将继电器长时间置于超过产品温度使用范围(-40 °C~85 °C)环境中。The relay contacts are sealed and filled with gas. When the contact temperature changes (Temperature rise due to ambient temperature and power on), there is internal gas penetrating characteristic. Hongfa relays are forbidden to be used at the temperature beyond our suggestion -40 °C~85 °C for long time.

15.3.4 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.

15.3.5 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 $3\text{N}\cdot\text{m}\sim 4\text{N}\cdot\text{m}$ 。In order to prevent loosening, please use the washer when installing the relay. Please use the M5 screws to install relay, screw locking torque within $3\text{N}\cdot\text{m}\sim 4\text{N}\cdot\text{m}$.

15.3.6 使用 M5 螺钉时, 确保垫圈厚度和强度足够, 否则会变形, 撑破外壳。When use M5 screw, make sure the washer's thickness and strength are enough. Otherwise it will be out of shape, and the case will be broke.



15.3.7 请避免在引出片上粘附油脂等异物, 请使用 100mm^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 with a cross section area $\geq 100\text{mm}^2$, or they may cause overheating to the terminal part.

15.3.8 注意连接铜排的厚度和扭矩大小，若超出下表建议的数值，会造成螺纹滑牙或安装不紧的问题。Please pay attention to the thickness of copper bars and the value of the torque. If it goes beyond the recommended values in the below table, it will cause thread slide or installation is not tight.

负载引出端形式 Load termination screw	建议铜排厚度 The thickness of copper bus bar	建议铜排孔径 The thickness of copper bus bar	扭矩大小 Torque
内螺纹 M6 Screw Terminal M6	3 mm	Φ6.0mm~Φ6.5mm	6 N·m~8 N·m

15.3.9 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.

15.3.10 环保措施 Environmental Protection

宏发产品均符合 RoHS 要求。Hongfa products are all RoHS compliant.

15.3.11 宏发保留对产品更改的权利，客户在首次下单之前应确认此规格书内容，必要时可要求我司提供新的规格书。Hongfa reserves the right to make changes. Customers should reconfirm the contents of the specification before first orders and ask for us to supply a new specification if necessary.

15.3.12 在低温条件下，温度骤降，继电器存在不导通风险。Under low temperature condition, the temperature drops sharply, the relay has the risk of not conducting.

15.3.13 注意连接铜排在大电流下产生磁场，受磁场干扰继电器性能可能会发生变化。Note that the connection copper bus-bars generates a magnetic field under large current. The performance of the relay may change due to interference of the magnetic field.