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CNAS L0223

**XIHARI**

No. 235777

第一册 Part One

# 检 验 报 告

## TEST REPORT

试品型号: HFEV-12/T630-20 (H)  
TYPE  
试品名称: 交流真空断路器  
DESIGNATION AC VACUUM CIRCUIT BREAKER  
委托单位: 厦门宏发电气有限公司  
APPLICANT XIAMEN HONGFA ELECTRIC CO., LTD.  
制造单位: 厦门宏发电气有限公司  
MANUFACTURER XIAMEN HONGFA ELECTRIC CO., LTD.  
检验类别: 型式试验 (温升、开合、绝缘及短路性能)  
CLASSIFICATION TYPE TEST (TEMPERATURE-RISE, SWITCHING, DIELECTRIC AND SHORT-CIRCUIT PERFORMANCE)



西安高压电器研究院常州有限责任公司

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note: The six basic type test reports for high-voltage switchgear and controlgear are as follows:





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——温升性能型式试验报告 Type Test Report of Temperature Rise Performance

——短路/开断和关合性能型式试验报告 Type Test Report of Short-Circuit / Making and Breaking Performance

——开合性能型式试验报告 Type Test Report of Switching Performance

——内部电弧性能型式试验报告 Type Test Report of Internal Arc Performance

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11 本报告共分 2 册。There are Two parts for this report.

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## 试品基本信息

### Description of the test object

型号名称: HFEV-12/T630-20(H) 交流真空断路器  
 Type and Designation: AC Vacuum Circuit Breaker  
 委托单位: 厦门宏发电气有限公司  
 Applicant: Xiamen Hongfa Electric Co., Ltd.  
 地址: 厦门市海沧区东孚西二路 15 号 (361028)  
 Address: No.15, Dongfuxi Second Road, Haicang District, Xiamen (361028)  
 电话 Tel: 0592-5996731 传真 Fax: 0592-5996732  
 制造单位: 厦门宏发电气有限公司  
 Manufacturer: Xiamen Hongfa Electric Co., Ltd.  
 地址: 厦门市海沧区东孚西二路 15 号 (361028)  
 Address: No.15, Dongfuxi Second Road, Haicang District, Xiamen (361028)  
 电话 Tel: 0592-5996731 传真 Fax: 0592-5996732

制造单位规定的试品主要技术数据 Main technical data assigned by the manufacturer:

额定电压 Rated voltage kV	12	✓
额定电流 Rated current A	630	✓
额定频率 Rated frequency Hz	50	✓
额定短时耐受电流(主回路) Rated short-time withstand current (main circuit) kA	20	✓
额定峰值耐受电流(主回路) Rated peak withstand current(main circuit) kA	50	✓
额定短路持续时间(主回路) Rated duration of short-circuit(main circuit) s	4	✓
额定短时工频耐受电压 Rated short-duration power-frequency withstand voltage kV	42	✓
额定雷电冲击耐受电压 Rated lightning impulse withstand voltage kV	75	✓
额定短时工频耐受电压(断口) Rated power-frequency withstand voltage(across the open switching device) kV	48	✓
额定雷电冲击耐受电压(断口) Rated lightning impulse withstand voltage(across the open switching device) kV	85	✓
气体的额定压力(20℃表压) Rated pressure of gas(meter pressure at 20℃) Mpa	干燥空气 Dry air 0.02	✓
气体的最低功能压力(20℃表压) Min. function pressure of gas(meter pressure at 20℃) Mpa	干燥空气 Dry air 0.01	✓
防护等级 Degree of protection	IP67	✓
出厂日期及编号 Manufacture date and serial number(绝缘、温升及容量试验 Dielectric, temperature-rise and high power tests/ IP、高低	2023-07、G2023070089 2023-07、G2023070093	



温试验 High and low temperature tests/ 机械试验 Mechanical tests)	2023-07、G2023070094
<p>注 1: 以上信息和数据由委托单位/制造单位提供, 本实验室不对其准确性负责。  Note1: The above information and data are provided by Applicant/Manufacturer and the laboratory is not responsible for its accuracy.</p> <p>注 2: “√” 表示该额定值在本检验报告中已得到验证。  Note2: “√” This rating has been proved by the tests in this report.</p>	

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## 检验结论

## Conclusions

型号名称: HFEV-12/T630-20(H) 交流真空断路器

Type and Designation: AC Vacuum Circuit Breaker

委托单位: 厦门宏发电气有限公司

Applicant: Xiamen Hongfa Electric Co., Ltd.

地址: 厦门市海沧区东孚西二路 15 号 (361028)

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制造单位: 厦门宏发电气有限公司

Manufacturer: Xiamen Hongfa Electric Co., Ltd.

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依据标准 Standards for Test Performance: GB/T 3906-2020、DL/T 404-2018、GB/T 1984-2014、DL/T 402-2016、GB/T 2423.1-2008、GB/T 2423.2-2008、GB/T 4109-2022

实施的项目 Test have been performed:

序号 Serial	项目 Items	参数 Parameters	判定标准 Standards for Verdict	结果 Result
1	工频耐受电压试验 Power frequency withstand voltage tests	相间及对地 Between phases, to earth: 42kV 1min 真空断口 Across vacuum contact: 48kV 1min 隔离断口 Across the isolating distance: 48kV 1min	GB/T 3906-2020 7.2 DL/T 404-2018 6.2	符合 Satisfied
2	雷电冲击耐受电压试验 Lightning impulse withstand voltage tests	相间及对地 Between phases, to earth: 75kV 真空断口 Across vacuum contact: 85kV 隔离断口 Across the isolating distance: 85kV	GB/T 3906-2020 7.2 DL/T 404-2018 6.2	符合 Satisfied
3	控制和辅助回路的绝缘试验 Dielectric tests on auxiliary and control circuits	2000V 1min	GB/T 3906-2020 7.2.11 DL/T 404-2018 6.2.11	符合 Satisfied
4	局部放电测量 Partial discharge measurement	开关设备 Switchgear: 13.2kV ≤ 20pC 套管 Bushing: 13.2kV ≤ 5pC	GB/T 3906-2020 7.2.10 DL/T 404-2018 6.2.10	符合 Satisfied
5	X 射线试验 X-radiation test	/	GB/T 1984-2014 6.11 DL/T 402-2016 6.11	符合 Satisfied
6	IP 代码的检验 Verification of IP code	IP67	GB/T 3906-2020 7.7.1 DL/T 404-2018 6.7.1	符合 Satisfied
7	短时耐受电流和峰值耐受电流试验 Short-time and peak withstand current tests	主回路及接地开关 Main circuit and ES: 20kA、4s、峰值(peak) 50kA	GB/T 3906-2020 7.6 DL/T 404-2018 6.6	符合 Satisfied





序号 Serial	项目 Items	参数 Parameters	判定标准 Standards for Verdict	结果 Result
8	T10~T100	12kV 20kA 峰值(peak) 50kA DC:52%	GB/T 1984-2014 6.102~106 DL/T 402-2016 6.102~106	符合 Satisfied
9	电寿命 Electrical endurance tests	12kV 20kA E2 级(class) 30 次(times)	GB/T 1984-2014 6.112 DL/T 402-2016 6.112	符合 Satisfied
10	异相接地故障试验 Double earth fault test	12kV 17.4kA	GB/T 1984-2014 6.108 DL/T 402-2016 6.108	符合 Satisfied
11	OP1、OP2	17.3kV 5kA	GB/T 1984-2014 6.110 DL/T 402-2016 6.110	符合 Satisfied
12	CC1、CC2 (LC1、LC2)	12kV 50A C2 级(class)	GB/T 1984-2014 6.111 DL/T 402-2016 6.111	符合 Satisfied
13	BC1、BC2 (单个电容器组开合试验 Single-capacitor bank switching tests)	12kV 800A C2 级(class)	GB/T 1984-2014 6.111 DL/T 402-2016 6.111	符合 Satisfied
14	BC1、BC2 (背对背电容器组开合试验 Back-to-back capacitor bank switching tests)	12kV 630A C2 级(class) 关合涌流 Inrush making current: 20kA 4250Hz	GB/T 1984-2014 6.111 DL/T 402-2016 6.111	符合 Satisfied
15	接地回路短路关合能力试验 Earthing circuit short-circuit making capacity tests	12kV 峰值(peak)50kA 5 次(times)	GB/T 3906-2020 7.101 DL/T 404-2018 6.101	符合 Satisfied
16	回路电阻测量 Measurement of the resistance of circuits	/	GB/T 3906-2020 7.4 DL/T 404-2018 6.4	符合 Satisfied
17	温升试验 Temperature-rise tests	1.1×630A	GB/T 3906-2020 7.5 DL/T 404-2018 6.5	符合 Satisfied
18		800A (按委托方要求, 通流 693A 至温升稳定后, 升流至 800A, 持续 1 小时 Required by clients, apply current 693A until the temperature rise is stable, rises the current to 800A for 1h)	HF.201.364	符合 Satisfied
19	辅助和控制设备的温升试验 Temperature-rise tests of A.C.E	/	GB/T 3906-2020 7.5.6 DL/T 404-2018 6.5.5	符合 Satisfied
20	机械试验 Mechanical tests	断路器 CB: 10000 次(times) 隔离开关 DS: 5000 次(times) 接地开关 ES: 5000 次(times) 联锁检查 Interlocks verification	GB/T 3906-2020 7.102	符合 Satisfied
21	密封试验 Tightness Tests	环网柜 Switchgear: ≤ 0.01%/Y	GB/T 3906-2020 7.8	符合 Satisfied
22	气体状态测量试验 Humidity measurement	水分含量 Moisture content: ≤ 150 μ L/L	GB/T 3906-2020 7.103 DL/T 404-2018 6.103	符合 Satisfied





序号 Serial	项目 Items	参数 Parameters	判定标准 Standards for Verdict	结果 Result
23	充气隔室的压力耐受试验 Pressure withstand test for gas-filled compartments	设计压力 Design pressure: 0.07MPa (20℃时表压 meter pressure)	GB/T 3906-2020 7.103 DL/T 404-2018 6.103	符合 Satisfied
24	高温试验 High temperature test	60℃ 16h	GB/T 2423.2-2008	符合 Satisfied
25	低温试验 Low temperature test	-45℃ 16h	GB/T 2423.1-2008	符合 Satisfied
26	辅助和控制回路的附加试验 -接地金属部件的电气连续性试验 Additional tests on auxiliary and control circuits -Electrical continuity of earthed metallic parts test	/	GB/T 3906-2020 7.10 DL/T 404-2018 6.10	符合 Satisfied
27	辅助和控制回路的附加试验 -辅助触头的额定短时耐受电流 Additional tests on auxiliary and control circuits -Auxiliary contact rated short time withstand current	辅助触头等级 Auxiliary contact classes: 1 级(Class)	GB/T 3906-2020 7.10 DL/T 404-2018 6.10	符合 Satisfied
28	辅助和控制回路的附加试验 -辅助触头的开断能力 Additional tests on auxiliary and control circuits -Auxiliary contact breaking capacity	辅助触头等级 Auxiliary contact classes: 1 级(Class)	GB/T 3906-2020 7.10 DL/T 404-2018 6.10	符合 Satisfied
29	辅助和控制回路的附加试验 -辅助触头的额定连续电流 Additional tests on auxiliary and control circuits -Auxiliary contact rated continuous current	辅助触头等级 Auxiliary contact classes: 1 级(Class)	GB/T 3906-2020 7.10 DL/T 404-2018 6.10	符合 Satisfied
30	电快速瞬变脉冲群 抗扰度试验 Electrical fast transient/burst immunity test	3 级(Class)	GB/T 3906-2020 7.9 DL/T 404-2018 6.9	符合 Satisfied
31	电压暂降、短时中断和电压变化的抗扰度试验 Voltage dips, short interruptions and voltage variations immunity test	/	GB/T 3906-2020 7.9 DL/T 404-2018 6.9	符合 Satisfied
32	振荡波抗扰度试验 Oscillatory waves immunity test	2 级(Class)	GB/T 3906-2020 7.9 DL/T 404-2018 6.9	符合 Satisfied
33	直流电源输入端口纹波抗扰度试验 Ripple on d.c. input power port immunity test	2 级(Class)	GB/T 3906-2020 7.9 DL/T 404-2018 6.9	符合 Satisfied





序号 Serial	项目 Items	参数 Parameters	判定标准 Standards for Verdict	结果 Result
34	辅助和控制回路的发射试验 Emission test for auxiliary circuit and control circuit	1 组 A 类设备 Group 1, Class A Equipment	GB/T 3906-2020 7.9 DL/T 404-2018 6.9	符合 Satisfied
35	端子静负载试验 Static terminal load test	3kN	HF.201.364	符合 Satisfied
36	悬臂负荷耐受试验 Cantilever load withstand Test	5kN 60min	HF.201.364	符合 Satisfied

注 Note:

- 序号 10~15、34 试验项目在分包实验室海检检测有限公司实施(CNAS L10793 CMA 180008344069; 地址: 山东省青岛市即墨区鳌山卫街道齐云山一路 118 号)。序号 10~15 项对应的分包试验为有能力分包; 序号 34 项对应的分包试验为无能力分包。No.10~15, 34 (test item) are performed in subcontracting laboratory Marine Equipment Inspection & Testing Co., Ltd. (CNAS L10793 CMA 180008344069; Address: No.118, Qiyunshan Yilu, Aoshanwei Street, Jimo, Qingdao, Shandong, China). No.10~15 (test item) are within the authorized testing scope of the laboratory; No.34 (test item) are not covered in the authorized testing scope of the laboratory.
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