AC/DC Thermal Stability Tester (Model No.RWD-2-2.5/3)

Application

The AC/DC thermal stability tester is applicable for the thermal stability test of SPDs. It is for indoor operation. One frequency AC power source with a constant current between 2mA ~3A is applied on the SPD. The current through the SPD and the surface temperature of the SPD are continuously monitored to check if it reaches thermal equilibrium, and the disconnectors act.

Standards

IEC61643-11 surge protective devices-Part 11: surge protective devices connected to low-voltage power systems-requirements and test methods

Technical Parameters

1) Requirement of input power:3 phase 4 Line, AC380V, 50Hz, 5kVA;
2) It can test AC SPD and DC SPD of 600V and 1200V;
3) Output AC voltage: maximum AC 2000V with measuring accuracy of $\pm$ 10%;
4) Output DC voltage: maximum 2500V;
5) Output AC current: maximum 3A with measuring accuracy of $\pm$10%;
6) Voltage and current measurement: RMS;
7) Voltage waveform: AC sine wave, waveform distortion rate less than 5%;
8) Current adjustment range for AC/DC:2mA~3A (4 ranges: 2~20mA, 21mA~200mA, 201mA~1A, 1A~3A), accuracy of output current is within $\pm$5%;

9) Temperature measurement range: 0~200℃, measuring accuracy is ± 1℃;
10) Temperature measurement: 8 channels (K series), Omega thermocouple;
11) Operation time: 15 minutes @3A;
12) Dimension of the control cabinet is W*D*H=1000*600*1750mm, weight is about 250kgs; The dimension of the measurement cabinet is W*D*H=1000*600*1750mm, weight is about 200kgs.

Function of control system

1) AC power source controlled by computer is adopted, automatic regulate the voltage (through RS232);
2) PLC controls the electric voltage regulator and adjust the current;
3) Automatic control with analyzing software, continuously monitor the running condition;
4) Alarming if the temperature reaches over the set value;
5) Indication of over current;
6) With Japan made Mitsubishi PLC, Schneider relays and switches, Dell computer screen and Advantech industrial computer.

Function of measurement system

1) It can set the test parameters, current value through the software;
2) Automatically record the test time, test current, voltage and temperature, save the test data;
3) The computer will show the curve of test time, test current, test voltage and temperature.
4) With Omega thermocouple;
5) RS232 communication, with 8 K series measuring channels, can continuously monitor the temperature;
6) Export excel test report automatically;
7) The curve can be saved as bmp format;
8) The test data can be automatically saved according to test time.

Safety measures

The shell of the cabinet is connected to earthing;
When the light is green, no HV; when the light is red, there is HV on;
Over current protection and over voltage protection;
Door safety interlock;
With manual earthing rod

thermal stability test report

test date   total page   page no.

sample name		sample model		sample model	
company				date	
test standard		thermal stability test		instrument	
environment		air pressure		mbar	humidity		%RH	temperature		℃
Customer	no □ ; yes □ :				

test result					
test current before		voltage across SPD before disconnection		2 times Uc	
test time		Max.temperature ℃		leakage current (mA)	
surface temperature after disconnection (℃)		surface temperature 5 minutes after disconnection (℃)			
surface temperature before start				checked by	

test record						
test current mA	voltage across SPD (V)		surface temperature (℃)	time (S)		test result:□thermal stability □ disconnection □thermal runaway
time(s)						
temperature(℃)						
current(mA)						
voltage(V)						
time(s)						
temperature(℃)						
current(mA)						
voltage(V)						
test current mA	voltage across SPD (V)		surface temperature (℃)	time (S)		test result:□thermal stability □ disconnection □thermal runaway
time(s)						
temperature(℃)						
current(mA)						
voltage(V)						
time(s)						
temperature(℃)						
current(mA)						
voltage(V)						
test current mA	voltage across SPD (V)		surface temperature (℃)	time (S)		test result:□thermal stability □ disconnection □thermal runaway
time(s)						

temperature(℃)										
current(mA)										
voltage(V)										
time(s)										
temperature(℃)										
current(mA)										
voltage(V)										

temperature wave

热稳定性试验报告

检测日期	2013-01-21					共 页 第 页		
样品名称		样品规格			样品编号			
送样单位					送样日期			
检测仪器		GTPS-0.2交流SPD热稳仪			仪器编号	GTPS30_20111215		
检测依据	GB18802.1-2002 IEC61643.1-2005				送样人			
检测环境	气压	1025.0	mbar	湿度	21.6	%RH	室温	14.0	℃
客户要求	无 □； 有 □：							

试验结果汇总表

耐热试验 80℃/24h	样品7: □合格 □不合格		样品8: □合格 □不合格			样品9: □合格 □不合格		
耐热试验 100℃/1h	□合格 □不合格	球压试验	□合格 □不合格		压痕测试	Φ= 0. mm		

热稳定试验结论

脱离前试验电流 mA	20.4	脱离前两端电压 V	582	2倍Uc值	770V
试验时间	01:22:29	最高温度 ℃	91.9	漏流检测 mA	105.9
脱离时表面温度 ℃	63.1	5分钟后表面温度℃	51.4	备注	本次使用的仪器设备，均在检定有效期内
表面初始温度℃	7.9	测试		审核	判定

热稳定试验记录

试验电流 mA	20.0	两端电压 V	572	表面温度 ℃	65.6	时间 S	2032	试验结果：□热稳定 □脱离 □热失控		
时间(s)	102	203	305	406	508	610	711	813	914	1016
温度(℃)	9.9	16.7	24.6	32.0	38.0	43.0	46.7	50.8	53.4	56.5
电流(mA)	20.0	20.0	20.0	20.2	20.2	20.2	20.4	20.2	20.2	20.2
电压(V)	591	589	586	583	579	575	572	567	565	561

试验电流 mA	101.0	两端电压 V	194	表面温度 ℃	90.8	时间 S	93	试验结果：□热稳定 □脱离 □热失控		
时间(s)	4860	4864	4869	4874	4878	4883	4888	4892	4897	4902
温度(℃)	90.1	89.6	89.6	89.6	89.6	89.9	89.6	89.6	90.0	90.2
电流(mA)	64.9	74.0	82.5	88.1	99.0	100.0	101.0	101.0	101.0	101.0
电压(V)	251	269	280	284	286	286	280	276	270	263
时间(s)	4906	4911	4915	4920	4925	4929	4934	4939	4943	4948
温度(℃)	90.1	89.9	90.1	90.6	90.1	90.3	90.5	90.4	90.2	90.6
电流(mA)	102.0	103.0	103.0	102.0	103.0	102.0	103.0	102.0	103.0	103.0
电压(V)	258	249	241	230	221	215	209	202	198	194

电压/电流/温度

电流 ——
电压 ——
温度 ——