



华南国家计量测试中心  
广东省计量科学研究院

SOUTH CHINA NATIONAL CENTER OF METROLOGY  
GUANGDONG INSTITUTE OF METROLOGY



中国认可  
国际互认  
校准  
CALIBRATION  
CNAS L0730

# 校准证书

CALIBRATION CERTIFICATE

证书编号 GDDE202400199  
Certificate No.

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委托方 优利德科技(中国)股份有限公司  
Client

委托方联络信息 广东省东莞市松山湖园区工业北一路6号  
Contact Information

计量器具名称 多功能电气综合测试仪 (电子式绝缘电阻表, 数字多用表, 剩余电流动作  
Description 保护器动作特性检测仪)

型号规格 UT595  
Model/Type

制造厂 UNI-T  
Manufacturer

出厂编号 C231785941  
Serial No.

设备编号 /  
Equipment No.

接收日期 2024 年 03 月 21 日  
Date of Receipt Y M D

结果 见校准结果  
Results

校准日期 2024 年 03 月 22 日  
Date of calibration Y M D

批准人 何洪波  
Approved Signatory

核 验 何洪波  
Reviewed by

校 准 齐海军  
Calibrated by

证书专用章  
Stamp



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# 说 明

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## DIRECTIONS

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1. 本中心是国家市场监督管理总局在华南地区设立的国家法定计量检定机构, 本中心的质量管理体系符合 ISO/IEC 17025:2017 标准的要求。

This laboratory is the National Legal Metrological Verification Institution in southern China set up by the General Administration of Quality Supervision. The quality system is in accordance with ISO/IEC 17025:2017.

2. 本中心所出具的数据均可溯源至国家计量基准和/或国际单位制(SI)。

All data issued by this laboratory are traceable to national primary standards and/or International System of Units (SI)

3. 校准地点、环境条件:

Place and environmental conditions of the calibration:

地点 A4-406恒温实验室 温度 (20.2~20.6) °C 相对湿度 (50~51) %  
Place Temperature RH

4. 本次校准的技术依据:

Reference documents for the calibration:

JJG 1005-2019 电子式绝缘电阻表检定规程 V.R. of Electronic Insulating Resistance Meters

JJF 1587-2016 数字多用表校准规范 C.S. for Multimeters

JJF 1283-2011 剩余电流动作保护器动作特性检测仪校准规范 C.S. for Residual Current Operated Protective Device Operated Characteristic Tester

5. 本次校准所使用的主要计量标准器具:

Major standards of measurement used in the calibration:

设备名称/型号规格/测量范围 Name of Equipment /Model/Type/Range	编号 Serial No.	证书号/有效期/溯源单位 Certificate No./Due Date /Traceability to	计量特性 Metrological Characteristic
数字多用表 /8846A/DCV/ACV:1mV~1000V ;DCA/ACA:10 μ A~10A;DCR:0 .1 Ω ~1G Ω	2224001	GDDE202301205 /2024-10-17 /本中心	MPE:DCV: ±0.003%;ACV: ±0.0 9%;DCA: ±0.055%;ACA: ±0.14 %;DCR: ±0.011%
数字示波器 /TDS3032B/0.1mV~100V;DC ~300MHz	B013511	GDA202300354 /2024-12-06 /本中心	MPE:电压: ±2%, 时标: ±0.01%
高精度十进电阻箱(直流电阻 箱) /HARS-X-7-01/0.01 Ω ~11k Ω	C1-00381465	GDDG202300420 /2024-11-14 /本中心	0.01级

注: 1. 本证书校准结果只与受校准仪器有关。The results relate only to the items calibrated.

Note: 2. 未经本机构书面批准, 不得部分复制此证书。This certificate shall not be reproduced except in full, without the written approval of our laboratory.

3. “委托方”、“委托方联络信息”由委托方提供, “制造厂”、“型号规格”、“出厂编号”以及“设备编号”为仪器上标注。The information Client and Contact Information are provided by client, and the Manufacturer, Model/Type, Serial No. and Equipment No. are marked on the items.

4. 本次校准日期视为发布日期。The calibration date is the date of issue of the certificate.



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设备名称/型号规格/测量范围 Name of Equipment /Model/Type/Range	编号 Serial No.	证书号/有效期/溯源单位 Certificate No./Due Date /Traceability to	计量特性 Metrological Characteristic
兆欧表检定装置(直流电阻箱) /ZX119-8/1kΩ~211GΩ	9611	GDDG202400031 /2025-01-31 /本中心	电阻:0.2级, 电压:1级

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## 校准结果 RESULTS OF CALIBRATION

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一、剩余电流动作保护器动作特性检测仪

1.分断时间:见表1

Breaking time:Shown in table 1

表1 Table 1

	标准值 Reference Value (ms)	指示值 Indicated value (ms)	误差 Error (ms)	允许误差 MPE (ms)	结论 Conclusion P/F
1×30mA/0°	20	20	0	±6	Pass
	50	50	0	±8	Pass
	100	100	0	±10	Pass
	200	200	0	±15	Pass
1×30mA/180°	20	20	0	±6	Pass
	50	50	0	±8	Pass
	100	100	0	±10	Pass
	200	200	0	±15	Pass
1×10mA/0°	20	20	0	±6	Pass
	50	50	0	±8	Pass
	100	100	0	±10	Pass
	200	200	0	±15	Pass
1×100mA/0°	20	20	0	±6	Pass
	50	50	0	±8	Pass
	100	100	0	±10	Pass
	200	200	0	±15	Pass
5×30mA/0°	20	20	0	±6	Pass
	40	40	0	±7	Pass



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2. 剩余电流 (正弦交流): 见表2

Residual current (sinusoidal AC): Shown in table 2

表2 Table 2

倍率 Multiplying Pow	实测值 Reference Value (mA)	标称值 Reference Value (mA)	误差 Error (mA)	允许误差 MPE (mA)	结论 Conclusion P/F
×1	10.42	10.00	-0.42	±1.00	Pass
	31.00	30.00	-1.00	±3.00	Pass
	105.5	100.0	-5.5	±10.0	Pass
	309.4	300.0	-9.4	±30.0	Pass
	508.1	500.0	-8.1	±50.0	Pass
×1/2	5.00	5.00	0.00	±0.50	Pass
	14.37	15.00	0.63	±1.50	Pass
	49.98	50.00	0.02	±5.00	Pass
	143.89	150.00	6.11	±15.00	Pass
	238.9	250.0	11.1	±25.0	Pass
×5	53.74	50.00	-3.74	±5.00	Pass
	153.81	150.00	-3.81	±15.00	Pass
	519.80	500.00	-19.80	±50.00	Pass

3. 自动测量功能: 见表3

Automatic measuring function: Shown in table 3

表3 Table 3

实测值 Reference Value (mA)	标称值 Reference Value (mA)	误差 Error (mA)	允许误差 MPE (mA)	结论 Conclusion P/F
30.80	30.00	-0.80	±3.00	Pass



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### 二、数字多用表

1. 电阻（接地连续性）：见表4

Resistance: Shown in table 4

表4 Table 4

标准值 Reference Value ( $\Omega$ )	指示值 Indication Value ( $\Omega$ )	误差 Error ( $\Omega$ )	最大 允许误差 MPE ( $\Omega$ )	结论 Conclusion P/F
1.00	1.03	0.03	$\pm 0.07$	Pass
2.00	2.05	0.05	$\pm 0.09$	Pass
5.0	5.0	0.0	$\pm 0.6$	Pass
10.0	10.1	0.1	$\pm 0.7$	Pass
20.0	20.0	0.0	$\pm 0.9$	Pass
50	50	0	$\pm 6$	Pass
100	100	0	$\pm 7$	Pass
190	190	0	$\pm 9$	Pass

### 三、电子式绝缘电阻表

1. 电阻：见表5

Resistance: Shown in table 5

表5 Table 5

测试条件 Test condition (V)	标准值 Reference Value (M $\Omega$ )	指示值 Indication Value (M $\Omega$ )	误差 Error (M $\Omega$ )	最大 允许误差 MPE (M $\Omega$ )	结论 Conclusion P/F
250	1.00	1.01	0.01	$\pm 0.10$	Pass
	2.00	1.99	-0.01	$\pm 0.15$	Pass
	5.0	5.1	0.1	$\pm 0.8$	Pass
	10.0	10.1	0.1	$\pm 1.0$	Pass
	20.0	20.0	0.0	$\pm 1.5$	Pass
	50	50	0	$\pm 8$	Pass
	100	100	0	$\pm 10$	Pass
	200	199	-1	$\pm 15$	Pass



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表5 Table 5

测试条件 Test condition	标准值 Reference Value	指示值 Indication Value	误差 Error	最大 允许误差 MPE	结论 Conclusion
(V)	(MΩ)	(MΩ)	(MΩ)	(MΩ)	P/F
500	1.00	1.01	0.01	±0.10	Pass
	2.00	2.01	0.01	±0.15	Pass
	5.0	5.1	0.1	±0.8	Pass
	10.0	10.2	0.2	±1.0	Pass
	20.0	20.2	0.2	±1.5	Pass
	50	51	1	±8	Pass
	100	101	1	±10	Pass
	200	202	2	±15	Pass
	500	494	-6	±30	Pass
1000	1.00	1.00	0.00	±0.10	Pass
	2.00	2.02	0.02	±0.15	Pass
	5.0	5.1	0.1	±0.8	Pass
	10.0	10.2	0.2	±1.0	Pass
	20.0	20.4	0.4	±1.5	Pass
	50	51	1	±8	Pass
	100	101	1	±10	Pass
	200	203	3	±15	Pass
	500	502	2	±30	Pass
1000	988	-12	±54	Pass	



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2. 开路电压: 见表6

Open circuit voltage: Shown in table 6

表6 Table 6

实测值 Reference Value (V)	标称值 Nominal Value (V)	标准值 允许下限 Low Limit (V)	标准值 允许上限 High Limit (V)	结论 Conclusion P/F
266	250	250	300	Pass
519	500	500	600	Pass
1009	1000	1000	1200	Pass

说明:

Note:

1. 本次测量结果的扩展不确定度:

The Expanded Uncertainty of Measurement:

- 剩余电流动作保护器动作特性检测仪: 分断时间: $U=2\text{ms}$ ; 剩余电流: $U_{\text{rel}}=1.5\%$ ;
- 数字多用表: 电阻: $U_{\text{rel}}=0.3\%$ ;
- 电子式绝缘电阻表: 电阻: $U_{\text{rel}}=1.6\%(\leq 1\text{G}\Omega)$ ; 电压: $U_{\text{rel}}=3\%$ ;

包含因子 $k=2$ , 本证书中给出的扩展不确定度依据JJF1059.1-2012《测量不确定度评定与表示》评定, 由合成标准不确定度乘以包含概率约为95%时对应的包含因子 $k$ 得到。

Coverage factor  $k=2$ , the expanded uncertainty given in this certificate is evaluated according to JJF 1059.1-2012 *Evaluation and Expression of Uncertainty in Measurement*, which is obtained by multiplying the combined standard uncertainty by the coverage factor  $k$  corresponding to the coverage probability of about 95%.

2. 校准结果符合性判定依据JJF1094-2002《测量仪器特性评定》第5.3.1条款和该仪器说明书技术要求。

Decision rules of conformity is in JJF1094-2002 *Evaluation of the Characteristic of Measuring Instruments(5.3.1)* and the technical requirements in the manual.

3. 按照所依据技术文件的规定, 建议复校时间间隔不超过1年。更换重要部件、维修或对仪器性能有怀疑时, 应及时校准。

According to the demand of reference document, next calibration is proposed within 1 year. In case of replacement of important parts, maintenance or doubt on the performance of the instrument, it shall be calibrated in time.