



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 GDDE202500108  
Certificate No.

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客户名称 优利德科技(中国)股份有限公司  
Name of the Customer

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 地桩式钳形接地电阻测试仪 (钳形接地电阻表, 接地电阻表)  
Description

型号/规格 UT278D  
Model/Type

制造厂 UNI-T  
Manufacturer

出厂编号 C214177361  
Serial No.

设备管理编号/  
Equipment No.

接收日期 2025 年 02 月 14 日  
Receipt on Y M D

结论 见校准结果  
Conclusion

校准日期 2025 年 02 月 17 日  
Calibration on Y M D

发布日期 2025 年 02 月 18 日  
Issue on Y M D

批准 何洪波  
Authorized by

核 验 何洪波  
Reviewed by

校 准 张东顺  
Calibrated by



证书专用章  
Stamp



扫一扫查真伪

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说 明

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DIRECTIONS

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- 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.**
- 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)**
- 校准地点、环境条件:  
Place and environmental conditions of the calibration:  
地点 A4-402安规实验室                      温度 (23.1~23.3) °C    相对湿度 (53~54) %  
Location    Temperature    RH
- 本次校准的技术依据:  
**Reference documents for the calibration:**  
JJG 1054-2009 钳形接地电阻仪检定规程    V.R. of Clamp Earth Resistance Meters  
JJG 366-2004 接地电阻表检定规程    V.R. of Earth Resistance Meters

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
接地电阻表检定装置(直流电阻箱) /JD-1C/10mΩ~20kΩ	13200904	GDDG202500018 /2026-01-22 /本中心	0.05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. “客户名称”、“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 Name of the Customer and Contact Information are provided by client, and the Manufacturer, Model/Type, Serial No. and Equipment No. are marked on the items.



# 校准结果

## RESULTS OF CALIBRATION

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### 一、钳形接地电阻表部分

#### 1. 外观检查

Appearance Inspection

结论: Pass

#### 2. 通电检查

Power on inspection

结论: Pass

#### 3. 分辨力

Resolution

结论: Pass

#### 4. 显示能力

Display capability

结论: Pass

#### 5. 偏心位置影响 (电阻): 见表1

Eccentric position influence(Resistance): shown in table 1

表1 Table 1

量程	中心位置示值	偏心位置示值	改变量	允许改变量	结论
Range	Center Value	Eccentricity Value	Change Value	Allow Value	Conclusion
(Ω)	(Ω)	(Ω)	(Ω)	(Ω)	P/F
0.02~9.99	5.10	5.08	-0.02	±0.04	Pass

#### 6. 测量重复性 (电阻): 见表2

Measurement repeatability(Resistance): shown in table 2

表2 Table 2

量程	最大值	最小值	改变量	允许改变量	结论
Range	Maximum	Minimum	Change Value	Allow Value	Conclusion
(Ω)	(Ω)	(Ω)	(Ω)	(Ω)	P/F
10.0~99.9	10.2	10.2	0.0	±0.2	Pass



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7.报警临界值设定误差(电阻): 见表3

Alarm threshold setting error(Resistance): shown in table 3

表3 Table 3

量程 Range	实际值 Actual value	显示值 Indication Value	误差 Error	最大允许误差 MPE	结论 Conclusion
(Ω)	(Ω)	(Ω)	(Ω)	(Ω)	P/F
0.02~9.99	0.99	1.00	0.01	±0.12	Pass
	3.94	4.00	0.06	±0.18	Pass
10.0~99.9	9.8	10.0	0.2	±0.8	Pass
	29.5	30.0	0.5	±1.4	Pass
100~199	98	100	2	±6	Pass

8.示值误差(电阻):见表4

Indication error(Resistance):shown in table 4

表4 Table 4

量程 Range	实际值 Actual value	显示值 Indication Value	误差 Error	最大允许误差 MPE	结论 Conclusion
(Ω)	(Ω)	(Ω)	(Ω)	(Ω)	P/F
0.02~9.99	0.20	0.20	0.00	±0.10	Pass
	9.00	9.14	0.14	±0.28	Pass
10.0~99.9	11.0	11.2	0.2	±0.8	Pass
	30.0	30.5	0.5	±1.4	Pass
	50.0	50.9	0.9	±2.0	Pass
	70.0	71.3	1.3	±2.6	Pass
	90.0	92.2	2.2	±3.3	Pass
100~199	110	113	3	±7	Pass
	180	186	6	±10	Pass
200~299	220	228	8	±28	Pass
	280	290	10	±34	Pass
300~699	330	344	14	±62	Pass
	600	652	52	±108	Pass



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续表4 Table 4

量程 Range	实际值 Actual value	显示值 Indication Value	误差 Error	最大允许误差 MPE	结论 Conclusion
(Ω)	(Ω)	(Ω)	(Ω)	(Ω)	P/F
700~999	750	836	86	±187	Pass
	900	1050	150	±230	Pass
(kΩ)	(kΩ)	(kΩ)	(kΩ)	(kΩ)	P/F
1.00~1.19	1.05	1.25	0.20	±0.34	Pass
1.00~1.19	1.15	1.40	0.25	±0.38	Pass
1.2~2	1.50	1.96	0.46	±0.74	Pass

### 二、接地电阻表部分

#### 1.绝缘电阻

Insulation resistance

结论: Pass

#### 2.示值误差(电阻): 见表5

Indication error(Resistance):shown in table 5

表5 Table 5

量程 Range	实际值 Actual value	显示值 Indication Value	误差 Error	最大允许误差 MPE	结论 Conclusion
(Ω)	(Ω)	(Ω)	(Ω)	(Ω)	P/F
0.01~9.99	0.20	0.20	0.00	±0.20	Pass
	9.00	9.00	0.00	±0.38	Pass
10.0~99.9	11.0	10.9	-0.1	±1.2	Pass
	20.0	19.9	-0.1	±1.4	Pass
	30.0	29.7	-0.3	±1.6	Pass
	40.0	39.7	-0.3	±1.8	Pass
	50.0	49.8	-0.2	±2.0	Pass
	60.0	59.3	-0.7	±2.2	Pass
	70.0	69.4	-0.6	±2.4	Pass
	80.0	79.6	-0.4	±2.6	Pass



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续表5 Table 5

量程 Range	实际值 Actual value	显示值 Indication Value	误差 Error	最大允许误差 MPE	结论 Conclusion
(Ω)	(Ω)	(Ω)	(Ω)	(Ω)	P/F
10.0~99.9	90.0	89.6	-0.4	±2.8	Pass
	95.0	94.6	-0.4	±2.9	Pass
100~999	120	119	-1	±17	Pass
	900	895	-5	±33	Pass
(kΩ)	(kΩ)	(kΩ)	(kΩ)	(kΩ)	P/F
1.00~9.99	1.10	1.10	0.00	±0.12	Pass
	1.90	1.89	-0.01	±0.14	Pass
10.0~30.0	10.00	9.95	-0.05	±0.80	Pass

3. 辅助接地电阻影响 (电阻): 见表6

Influence of auxiliary grounding resistance(Resistance):shown in table 6

表6 Table 6

辅助接地电阻 Auxiliary ground resistance	量程 Range	示值 Indication Value	参比值 Reference value	改变量 Variation	允许改变量 Permit Variation	结论 Conclusion
(Ω)	(Ω)	(Ω)	(Ω)	(Ω)	(Ω)	P/F
0	0.01~9.99	9.02	9.00	-0.02	±0.23	Pass
1000		8.96	9.00	0.04	±0.23	Pass
2000		8.91	9.00	0.09	±0.23	Pass
5000		8.83	9.00	0.17	±0.46	Pass



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说明:

Note:

1. 本次测量结果的扩展不确定度:

The Expanded Uncertainty of Measurement:

(1) 钳形接地电阻表:  $U=0.02\Omega (<1\Omega)$ ,  $U=0.2\Omega (<10\Omega)$ ,  $U=0.6\Omega (<100\Omega)$ ,  $U=6\Omega (\leq 1000\Omega)$ ,  $U=0.1k\Omega (<10k\Omega)$ ;

(2) 接地电阻表:  $U=0.02\Omega (<1\Omega)$ ,  $U=0.13\Omega (<10\Omega)$ ,  $U=0.6\Omega (<100\Omega)$ ,  $U=6\Omega (\leq 1000\Omega)$ ,  $U=0.06k\Omega (<10k\Omega)$ ;

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 JJF1094-2002 "Evaluation of the Characteristic of Measuring Instruments" (5.3.1) and the technical requirements in the manual.

3. 该仪器的溯源日期为本证书的“校准日期”, 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。

The traceability date of this instrument is the "Calibration Date" on this certificate. 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.

4. 校准活动中对测量结果有影响的条件:

Conditions under which the calibrations were made that have an influence on the measurement results:

温度(Temperature):  $(23.1 \sim 23.3)^\circ\text{C}$ , 湿度(Humidity):  $(53 \sim 54)\% \text{RH}$ 。