

校准证书
Calibration Certificate中国认可
国际互认
校准
CALIBRATION
CNAS L5138

证书编号

Certificate No.

Z20243-K356859

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客户名称

Client Name

西安硅字微电子有限公司

地 址

Address

陕西省西安市高新区丈八街办锦业一路81号仪表楼5层

仪器名称

Description

数字万用表

型号/规格

Model/Type

M3522A

制造厂商

Manufacturer

PICOTEST

出厂编号

Serial Number

TW00049284

管理编号

Management No.

GYZC05-2212/2212-005

接收日期

Date of Receipt

2024 年

Year

11 月

Month

28 日

Day

校准日期

Calibration Date

2024 年

Year

11 月

Month

28 日

Day

建议下次校准日期

Due Date

2025 年

Year

11 月

Month

27 日

Day

发布日期

Issue Date

2024 年

Year

11 月

Month

28 日

Day



发证单位(专用章)

Issued by (stamp)

批准:

Approved by

王进

检验:

Inspected by

张艳艳

校准:

Calibrated by

陈世林

地址: 广东省深圳市龙岗区锦龙大道2号

Add: No.2, Jinlong Road, Longgang District, Shenzhen,
Guangdong, China

电话(Tel): 0755-84815081

邮编(Post Code): 518116

网址(Web): <http://www.tiansu.org>邮箱(E-mail): zskf@tiansu.org

说明

DIRECTIONS

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- 本实验室质量管理体系依据ISO/IEC17025:2017建立。
The laboratory quality management systems document is established according to ISO/IEC17025:2017.
- 本证书中的数据均可溯源至国际单位制（SI）单位和/或社会公用计量标准。
The data in this certificate can be traced to International System of Units (SI) and/or social public measurement standards.
- 本证书未经签章、数据涂改、或分离使用均无效。未经我司书面批准，不得部分复制此证书。校准结果仅对受测仪器当时之情况负责。
The Certificate is invalid when no stamp sealed on, data alteration or separate use. Without our written approval, the certification should not be partially duplicated. The calibration results are only responsible for calibration conditions of the instrument at the time.
- 本证书具有唯一性，带有相同证书编号、按页码顺序的组成页为校准证书，我司对本证书的内容拥有最终解释权。
The certificate is unique, and made up of pages with same certificate number and serial order, and reserves final explanation right of the certificate contents.
- 证书中最大允许误差、判定结果仅供参考，其中“P”代表“合格”，“F”代表“不合格”。
MPE & judgement result in the datasheet is only for reference, "P" is "Pass" "F" is "Fail".
- 若被校仪器属于强检范畴，按照法规要求，不能替代检定证书。
If the instrument belongs to compulsory test field, the corresponding calibration can not replace the verification according to the compulsory regulations.
- 带※的参数项目表示不在CNAS认可范围内。
Parameter with asterisk '※' is not within the accreditation by CNAS.
- 本次校准所依据的技术文件(Reference documents for the calibration):
JJF1587-2016 数字多用表校准规范
- 校准的地点及环境条件(Place and environmental condition in the calibration):
校准地点: 委托方现场【陕西省西安市高新区丈八街办锦业一路81号仪表楼5层实验室】
Cal. Place:
温度: 20.5 °C 相对湿度: 45 %
Temperature: Relative Humidity:
10. 校准所用的主要计量标准器具(Main Standards of Measurement Used in the Calibration):

名称	设备编号	证书编号	有效期至	溯源机构
Description	Equipment No.	Certificate No.	Due date	Actuator
多功能校准系统	TS-SB-20413	DC60240019Z	2025-01-17	陕西省计量科学研究院
数字多用表	TS-SB-16411	DC20249008Z/XD3024006	2025-01-16	陕西省计量科学研究院

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1. 外观及工作性能检查:

(Appearance & Working Performance Check)

符合 (Pass)

2. 直流电压的校准:

DC Voltage Calibration

量程 Range	标准值 Standard Value	示值 Indication	误差 Error	允差 MPE	结论 Pass/Fail
100mV	10.00000mV	10.0012mV	+0.0012mV	±0.0046mV	P
	50.00000mV	50.0017mV	+0.0017mV	±0.0060mV	P
	90.00000mV	90.0011mV	+0.0011mV	±0.0080mV	P
	-90.00000mV	-89.9992mV	+0.0008mV	±0.0080mV	P
1V	0.100000V	0.100001V	+0.000001V	±0.000011V	P
	0.500000V	0.499998V	-0.000002V	±0.000027V	P
	0.900000V	0.900006V	+0.000006V	±0.000043V	P
	-0.900000V	-0.899986V	+0.000014V	±0.000043V	P
10V	1.000000V	0.99996V	-0.00004V	±0.00009V	P
	5.000000V	4.99994V	-0.00006V	±0.00023V	P
	9.000000V	8.99994V	-0.00006V	±0.00037V	P
	-9.000000V	-8.99984V	+0.00016V	±0.00037V	P
100V	10.00000V	9.9999V	-0.0001V	±0.0011V	P
	50.00000V	49.9990V	-0.0010V	±0.0029V	P
	90.00000V	90.0011V	+0.0011V	±0.0041V	P
	-90.00000V	-89.9988V	+0.0012V	±0.0041V	P
1000V	100.0000V	99.997V	-0.003V	±0.015V	P
	500.0000V	499.998V	-0.002V	±0.033V	P
	900.0000V	899.997V	-0.003V	±0.051V	P
	-900.0000V	-900.019V	-0.019V	±0.051V	P

3. 交流电压的校准 (50Hz):

AC Voltage Calibration (50Hz)

量程 Range	标准值 Standard Value	示值 Indication	误差 Error	允差 MPE	结论 Pass/Fail
100mV	10.00000mV	9.9955mV	-0.0045mV	±0.0460mV	P
	50.00000mV	49.9991mV	-0.0009mV	±0.0700mV	P
	90.00000mV	90.0273mV	+0.0273mV	±0.0940mV	P

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量程 Range	标准值 Standard Value	示 值 Indication	误 差 Error	允 差 MPE	结论 Pass/Fail
1V	0.1000000V	0.100141V	+0.000141V	±0.000460V	P
	0.5000000V	0.500231V	+0.000231V	±0.000700V	P
	0.90000000V	0.899538V	-0.000462V	±0.000940V	P
10V	1.000000V	0.99799V	-0.00201V	±0.00460V	P
	5.000000V	4.99709V	-0.00291V	±0.00700V	P
	9.000000V	9.00442V	+0.00442V	±0.00940V	P
100V	10.00000V	9.9850V	-0.0150V	±0.0460V	P
	50.00000V	50.0038V	+0.0038V	±0.0700V	P
	90.00000V	90.0223V	+0.0223V	±0.0940V	P
750V	100.0000V	100.079V	+0.079V	±0.360V	P
	500.0000V	500.218V	+0.218V	±0.600V	P
	700.0000V	700.197V	+0.197V	±0.720V	P

4. 直流电流的校准:

DC Current Calibration

量程 Range	标准值 Standard Value	示 值 Indication	误 差 Error	允 差 MPE	结论 Pass/Fail
100 μ A	10.00000 μ A	9.9868 μ A	-0.0132 μ A	±0.0300 μ A	P
	50.00000 μ A	49.9795 μ A	-0.0205 μ A	±0.0500 μ A	P
	90.00000 μ A	89.9912 μ A	-0.0088 μ A	±0.0700 μ A	P
	-90.00000 μ A	-90.0321 μ A	-0.0321 μ A	±0.0700 μ A	P
1mA	0.1000000mA	0.100113mA	+0.000113mA	±0.000250mA	P
	0.5000000mA	0.500027mA	+0.000027mA	±0.000450mA	P
	0.9000000mA	0.899774mA	-0.000226mA	±0.000650mA	P
	-0.9000000mA	-0.900013mA	-0.000013mA	±0.000650mA	P
10mA	1.000000mA	1.00022mA	+0.00022mA	±0.00250mA	P
	5.000000mA	4.99965mA	-0.00035mA	±0.00450mA	P
	9.000000mA	9.00006mA	+0.00006mA	±0.00650mA	P
	-9.000000mA	-8.99963mA	+0.00037mA	±0.00650mA	P
100mA	10.00000mA	10.0013mA	+0.0013mA	±0.0100mA	P
	50.00000mA	49.9864mA	-0.0136mA	±0.0300mA	P
	90.00000mA	89.9917mA	-0.0083mA	±0.0500mA	P
	-90.00000mA	-90.0239mA	-0.0239mA	±0.0500mA	P
1A	0.1000000A	0.099993A	-0.000007A	±0.000020A	P

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量程 Range	标准值 Standard Value	示 值 Indication	误 差 Error	允 差 MPE	结论 Pass/Fail
3A	0.5000000A	0.500021A	+0.000021A	±0.000060A	P
	0.9000000A	0.899951A	-0.000049A	±0.000100A	P
	-0.9000000A	-0.899995A	+0.000005A	±0.000100A	P
	1.000000A	1.00072A	+0.00072A	±0.00260A	P
	1.500000A	1.49964A	-0.00036A	±0.00360A	P
	2.900000A	2.89864A	-0.00136A	±0.00640A	P
10A	-2.900000A	-2.90052A	-0.00052A	±0.00640A	P
	1.000000A	1.00012A	+0.00012A	±0.00470A	P
	5.000000A	5.00608A	+0.00608A	±0.01350A	P
	9.000000A	8.99865A	-0.00135A	±0.02230A	P
	-9.000000A	-9.00740A	-0.00740A	±0.02230A	P

5. 交流电流的校准(50Hz):

AC Current Calibtation(50Hz)

量程 Range	标准值 Standard Value	示 值 Indication	误 差 Error	允 差 MPE	结论 Pass/Fail
100 μ A	10.00000 μ A	10.0011 μ A	+0.0011 μ A	±0.0500 μ A	P
	50.00000 μ A	50.0379 μ A	+0.0379 μ A	±0.0900 μ A	P
	90.00000 μ A	89.9981 μ A	-0.0019 μ A	±0.1300 μ A	P
1mA	0.1000000mA	0.099808mA	-0.000192mA	±0.000500mA	P
	0.5000000mA	0.499761mA	-0.000239mA	±0.000900mA	P
	0.9000000mA	0.899568mA	-0.000432mA	±0.001300mA	P
10mA	1.000000mA	1.00056mA	+0.00056mA	±0.00500mA	P
	5.000000mA	5.00372mA	+0.00372mA	±0.00900mA	P
	9.000000mA	9.00111mA	+0.00111mA	±0.01300mA	P
100mA	10.00000mA	9.9753mA	-0.0247mA	±0.0500mA	P
	50.00000mA	49.9636mA	-0.0364mA	±0.0900mA	P
	90.00000mA	89.9495mA	-0.0505mA	±0.1300mA	P
1A	0.1000000A	0.099933A	-0.000067A	±0.000500A	P
	0.5000000A	0.500397A	+0.000397A	±0.000900A	P
	0.9000000A	0.899609A	-0.000391A	±0.001300A	P
3A	1.000000A	0.99962A	-0.00038A	±0.00350A	P
	1.500000A	1.49927A	-0.00073A	±0.00465A	P
	2.900000A	2.89697A	-0.00303A	±0.00787A	P

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量程 Range	标准值 Standard Value	示值 Indication	误差 Error	允差 MPE	结论 Pass/Fail
10A	1.000000A	1.00292A	+0.00292A	±0.00630A	P
	5.000000A	5.00671A	+0.00671A	±0.01550A	P
	9.000000A	8.99910A	-0.00090A	±0.02470A	P

6. 电阻的校准:

Resistance Calibration

量程 Range	标准值 Standard Value	示值 Indication	误差 Error	允差 MPE	结论 Pass/Fail
100 Ω	100.00000 Ω	100.0042 Ω	+0.0042 Ω	±0.0140 Ω	P
1k Ω	1.000000k Ω	1.000002k Ω	+0.000002k Ω	±0.000110k Ω	P
10k Ω	10.000000k Ω	10.00019k Ω	+0.00019k Ω	±0.00110k Ω	P
100k Ω	100.00000k Ω	100.0045k Ω	+0.0045k Ω	±0.0110k Ω	P
1M Ω	1.000000M Ω	1.000036M Ω	+0.000036M Ω	±0.000255M Ω	P
10M Ω	10.000000M Ω	10.00210M Ω	+0.00210M Ω	±0.00410M Ω	P
100M Ω	100.00000M Ω	99.9690M Ω	-0.0310M Ω	±0.8100M Ω	P

说明:本次测量结果的扩展不确定度为:

(The Expanded Uncertainty of the Measurement Result Is)

直流电压: $U_{rel}=0.0016\%$; 交流电压: $U_{rel}=0.03\%$; 直流电流: $U_{rel}=0.011\%$; 交流电流: $U_{rel}=0.08\% (\leq 1mA)$, $U_{rel}=0.03\% (1mA \sim 1.5A)$, $U_{rel}=0.19\% (> 1.5A)$; 电阻: $U_{rel}=0.003\% (\leq 1M\Omega)$, $U_{rel}=0.01\% (> 1M\Omega)$ $k=2$

(依据JJF1059.1-2012测量不确定度评定与表示)

(According to JJF1059.1-2012 Evaluation and Expression of Uncertainty in Measurement)

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