



中国认可  
国际互认  
校准  
CALIBRATION  
CNAS L0158

证书编号：  
Certificate No.



801971641

# 苏州市计量测试院

Suzhou Institute of Metrology

## 校准证书

Calibration Certificate

委托单位：Tzone Digital Technology Co., Ltd  
Customer

单位地址：5th Floor, No. 1 Building, Chengdexuan Industry Town, Wuyuan Road, Lisonglang Second Industrial Estate, Gongming Town, Guangming New District, Shenzhen, China  
Address of customer

样品名称：CO2 Transmitter (二氧化碳红外分析器)  
Name of Sample

制造单位：深圳天圆数码科技有限公司  
Manufacturer

型号规格：TZ-CT01  
Model Specification

样品编号：ZG09S  
No. of sample

校准日期：2022 - 09 - 09 接收日期：2022 - 09 - 05  
Date of Calibration Receive Date

批准人员：厉龙 职务：副部长  
Approved by Position

签发日期：2022 - 09 - 09  
Date of Issue



电话：0512-65230843  
Tel.

网址：www.szjl.com.cn  
HTTP

地址：苏州市吴中区文曲路69号  
Address: No. 69, Wenqu Road, Wuzhong District, Suzhou



中国认可  
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本机构是国家法定计量检定机构，计量授权证书号：（苏）法计(2018)1005号。  
This laboratory is a national legal metrological verification institution. Authorization certificate No. (2018) 1005.

本次校准所依据的方法规范：  
Reference documents for the calibration methods

JJG 635-2011 《一氧化碳、二氧化碳红外线气体分析器检定规程》  
JJG 635-2011 《V.R. of Monoxide and Carbon Dioxide Infrared Gas Analyzer》

本次校准结果判定所依据的技术规范：  
Technical specifications for the determination of the results of calibration

JJG 635-2011 《一氧化碳、二氧化碳红外线气体分析器检定规程》  
JJG 635-2011 《V.R. of Monoxide and Carbon Dioxide Infrared Gas Analyzer》

| 本次校准所使用的主要计量器具：<br>Main measurement standards used in the calibration |           |                                     |   |                                   |   |
|---|-----------|-------------------------------------|---|-----------------------------------|---|
| 名称<br>Name  | 编号<br>No. | 测量范围<br>Measure Range               | 不确定度或准确度等级<br>或最大允许误差<br>Uncertainty or Accuracy Class<br>or MPE. | 溯源机构<br>Traceability<br>Mechanism | 证书编号/<br>有效期<br>Certificate<br>No./Due Date |
| 多组分动态<br>配气系统<br>Multi-Dynamic Gas<br>Distribution System             | 080802    | (10~3000)<br>mL/min                 | $U_{rel}=0.6\%(k=2)$<br>$U_{rel}=0.6\%(k=2)$                      | 苏州市计量<br>测试院                      | 801973116/<br>2023-09-01                    |
| 氮中二氧化碳<br>气体标准物质  | AF08113   | $0.999 \times 10^{-2}$<br>(mol/mol) | $U_{rel}=1\%(k=2)$<br>$U_{rel}=1\%(k=2)$                          | 四川中测标物<br>科技有限公司                  | GBW(E)<br>082069/<br>2023-03-24             |

校准地点和环境条件：  
Location and environmental condition for the calibration

地点：苏州市娄阳路6号 (No. 6 Louyang road, Suzhou) 园区108室

Location

温度：( 24 ~ 25 ) °C

Ambient Temperature

相对湿度： 68 % ~ 69 %

Relative Humidity

其他： /

Others

注：  
Statement

- 1、未经本院批准授权，不得部分采用本证书。 Partly using this certificate will not be admitted unless allowed by SIM.
- 2、本证书的校准结果仅对当时所校准样品有效。 The results of this certificate are only responsible for the item calibrated.
- 3、本证书未加盖校准专用章无效。 The certificate is invalid without official stamp.
- 4、证书结果中“P”代表“合格”，“F”代表“不合格”，“N/A”代表“不适用”。 In the results of the calibration, "P" stands for "Pass", "F" stands for "Fail", and "N/A" stands for "No applicable".
- 5、除特殊情况，本报告给出的符合性说明未考虑不确定度。 Except for special cases, the conformance statement given in this certificate does not consider uncertainty.



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校准结果/说明:  
Results of calibration and additional explanation

1、外观和功能检查(Appearance and Function Check)

1.1 外观检查(Appearance Check): 符合判定依据要求

2、计量特性测量结果(The Results of Metrological Specification)

| 序号<br>No. | 项目<br>Items              | 测量结果<br>Results                                  |   |                      | 技术要求<br>Technical<br>Requirements | 测量不确定度<br>Expanded<br>Uncertainty<br>$U_{k=2}$ | 结论<br>Pass<br>/Fail |
|-----------|--------------------------|--|---|----------------------|-----------------------------------|--|---------------------|
|           |                          | 标准值<br>Standard<br>Values<br>$\mu\text{mol/mol}$ | 被检示值<br>Sample<br>Values<br>$\mu\text{mol/mol}$ | 示值误差<br>Error<br>%FS |                                   |  |                     |
| 2.1       | 示值误差<br>Error            | 500  | 489   | -0.1                 | —<br><br>五级: $\pm 5\%FS$          | $U_{rel} = 2.8\%$                              | P                   |
|           |                          | 2000   | 1956  | -0.4                 |                                   | $U_{rel} = 1.6\%$                              | P                   |
|           |                          | 5000   | 4979  | -0.2                 |                                   | $U_{rel} = 1.3\%$                              | P                   |
|           |                          | 8000   | 7983  | -0.2                 |                                   | $U_{rel} = 1.4\%$                              | P                   |
| 2.2       | 重复性<br>Repeatability     | 0.3%   |   |                      | 五级: $\leq 2.0\%$                  | —  | P                   |
| 2.3       | 响应时间<br>Response<br>Time | 21.0 s   |   |                      | $\leq 60s$                        | $U = 2.4 s$                                    | P                   |

说明 (Illustration):

1、经校准, 所校项目符合判定依据规定的五级技术要求。

On the basis of calibration results, it has been found that the instrument calibrated meet metrological requirements of class 5 specified in the judgement.

2、建议复校间隔时间为12个月。

It's recommended that the sample is recalibrated within 12 months.

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校准人员:  
Calibrated by

顾炎

顾炎

核验人员:  
Checked by

徐春

徐春

校准证书续页专用  
Continue page of calibration certificate

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