



# 功能安全产品认证证书

证书编号: TILVA202331002004

申请人: 常州市武翔仪表有限公司  
地址: 常州市经济开发区横林镇崔桥街崔蓉路 76 号  
制造商: 常州市武翔仪表有限公司  
地址: 常州市经济开发区横林镇崔桥街崔蓉路 76 号  
生产厂: 常州市武翔仪表有限公司  
地址: 常州市经济开发区横林镇崔桥街崔蓉路 76 号

产品名称: 多点式热电阻

型号: aWZbkc-defig

规格参数: 安全功能: 在产品测温范围内, 保证温度准确测量且满足精度要求。

产品标准: IEC 61508-1:2010、IEC 61508-2:2010

认证模式: 产品型式试验+初始工厂检查+获证后监督

上述产品符合产品认证实施规则 TILVA-31-002:2023 的要求, 特发此证。  
证书有效性依据发证机构的定期监督获得保持。

发证日期: 2023-11-08  
有效期至: 2028-11-07  
变更日期: /



签发人:



上海添唯认证技术有限公司  
中国上海普陀区武宁路505号 200063  
<http://www.tilva.com>





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产品名称：	多点式热电阻	型号规格：	aWZbKc-d e f g																
描 述：	<p>aWZbKc-d e f g系列热电阻是中低温区最常用的一种温度检测器，基于金属导体的电阻值随温度增加而增加的特性来进行测量，并把温度信号转换成电阻信号，通过电气仪表（二次仪表）转换成被测介质的温度。热电阻广泛应用航空，原子能、石油、化工、冶金、机械、电力等工业部门和科研领域。</p> <p>型号说明：a表示热电阻分度号，b表示热电阻感温元件材料，c表示感温元件支数，d表示过程连接型式，e表示产品系列，f表示设计序号，g表示温套管结构形式。</p> <p>安全功能：在产品测量范围内，保证温度准确测量且满足精度要求。</p>																		
依据标准：	IEC 61508-1:2010 Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 1:General Requirements IEC 61508-2:2010 Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 2: Requirements for electrical/electronic /programmable electronic safety-related systems																		
安全完整性等级（SIL）：	<p>根据 IEC 61508:2010，多点式热电阻属于 A 类安全相关组件（Type A），硬件安全完整性等级确定采用路径 2H，在低要求/高要求/连续模式下，HFT(硬件故障裕度)=0 时，安全完整性等级达到 SIL2，HFT(硬件故障裕度)=1 时，安全完整性等级达到 SIL3。</p> <table><tr><td><math>\lambda</math></td><td>aWZbKc-d e f g</td></tr><tr><td><math>\lambda_s</math></td><td>0</td></tr><tr><td><math>\lambda_{DU}</math></td><td>92.76</td></tr><tr><td><math>\lambda_{DD}</math></td><td>0</td></tr><tr><td><math>PFD_{avg}(T1=1Y)</math></td><td>4.06E-04</td></tr><tr><td>PFH</td><td>9.28E-08</td></tr><tr><td>SIL</td><td>2</td></tr><tr><td colspan="2">说明：失效率的单位为 FIT，1FIT=1×10-9</td></tr></table>			$\lambda$	aWZbKc-d e f g	$\lambda_s$	0	$\lambda_{DU}$	92.76	$\lambda_{DD}$	0	$PFD_{avg}(T1=1Y)$	4.06E-04	PFH	9.28E-08	SIL	2	说明：失效率的单位为 FIT，1FIT=1×10-9	
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其他说明： 用户需按安全手册的要求对产品进行安装、使用、定期检查和维护。																			
备注：编号为 23IBS01P11D31-00630-2 报告是本证书的组成部分。本证书仅对与认证文件和样品一致的产品有效。认证文件等由 TILVA 保存。																			

注：此附件与证书同时使用时有效。



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中国上海普陀区武宁路505号 200063  
<http://www.tilva.com>





# FUNCTIONAL SAFETY PRODUCT CERTIFICATION

**Certificate No:** TILVA202331002004

**APPLICANT:** Changzhou WuXiang Instrument Co., Ltd  
**ADDRESS:** No.76, Cui Rong Road, Cui Qiao Street, Henglin Town,  
Economic Development District, Changzhou, China  
**MANUFACTURER:** Changzhou WuXiang Instrument Co., Ltd  
**ADDRESS:** No.76, Cui Rong Road, Cui Qiao Street, Henglin Town,  
Economic Development District, Changzhou, China  
**FACTORY:** Changzhou WuXiang Instrument Co., Ltd  
**ADDRESS:** No.76, Cui Rong Road, Cui Qiao Street, Henglin Town,  
Economic Development District, Changzhou, China

**PRODUCT NAME:** Multi-point Thermal Resistance

**MODEL:** aWzBkc-defg

**SPECIFICATIONS:** Safety function: within the product temperature  
measurement range, to ensure accurate temperature  
measurement and meet the accuracy requirements.

**THE STANDARDS  
AND TECHNICAL  
REQUIREMENTS:** IEC 61508-1:2010, IEC 61508-2:2010

**MODES:** Product type test + initial factory inspection +  
post-certification supervision

This is to certify that above mentioned products have qualified for the  
requirements of implementation rules for certification (TILVA-31-002:2023).  
The validity of the certificate depends on the follow up inspection by the  
certification body at regular intervals.

**Date of issue:** 2023-11-08

**Date of expiry:** 2028-11-07

**Date of change:** /



**Approver:** 

**TILVA Certification Technology (Shanghai) Co., LTD**

No.505, Wuning Rd, Shanghai, China, 200063

<http://www.tilva.com>





# FUNCTIONAL SAFETY PRODUCT CERTIFICATION

Certificate No: TILVA202331002004

Product Name:	Multi-point Therm resistance	Model:	aWZbKc-d-e-f-g														
Description :	<p>aWZbKc-d-e-f-g Series Multi-point therm resistance is one of the most commonly used temperature detectors in low and medium temperature areas, based on the characteristic that the resistance value of metal conductor increases with temperature to measure, and convert the temperature signal into resistance signal, through the electrical instrument (secondary instrument) into the temperature of the measured medium. RTD is widely used in aviation, atomic energy, petroleum, chemical, metallurgy, machinery, electric power and other industrial sectors and scientific research fields.</p> <p>Model description: a. indicates the therm resistance index number, b. indicates the therm resistance temperature-sensitive element material, c. indicates the number of temperature-sensitive element branches, d. indicates the process connection type, e. indicates the product series, f. indicates the design serial number, g. indicates the temperature casing structure form.</p> <p>Safety function: within the product measurement range, to ensure accurate temperature measurement and meet the accuracy requirements.</p>																
Standards :	<p>IEC 61508-1:2010 Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 1: General Requirements</p> <p>IEC 61508-2:2010 Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems</p>																
Safety integrity level (SIL) :	<p>According to IEC 61508:2010, Multi-point therm resistance belong to Type A safety related components .The Safety integrity level of its hardware is determined to adopt route 2H. When the low requirement/high requirement/continuous operation mode and its HFT (hardware fault tolerance) =0, the safety integrity level reaches SIL2, and when its HFT (hardware fault tolerance) =1, the safety integrity level reaches SIL3.</p> <table><tr><td><math>\lambda</math></td><td>aWZbKc-d-e-f-g</td></tr><tr><td><math>\lambda_s</math></td><td>0</td></tr><tr><td><math>\lambda_{DU}</math></td><td>92.76</td></tr><tr><td><math>\lambda_{DD}</math></td><td>0</td></tr><tr><td><math>PFD_{avg}(T1=1Y)</math></td><td>4.06E-04</td></tr><tr><td>PFH</td><td>9.28E-08</td></tr><tr><td>SIL</td><td>2</td></tr></table>			$\lambda$	aWZbKc-d-e-f-g	$\lambda_s$	0	$\lambda_{DU}$	92.76	$\lambda_{DD}$	0	$PFD_{avg}(T1=1Y)$	4.06E-04	PFH	9.28E-08	SIL	2
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<p><b>TILVA</b> Other instructions: Users need to install, use, regularly inspect, and maintain the product according to the requirements of the installation and maintenance manual.</p>																	

Note: This attachment is equally valid as the certificate. The report numbered 23IBS01P11D31-00630-2 is an integral part of this certificate. This certificate is only valid for products that are consistent with the certification documents and samples. Certification documents, etc. are kept by TILVA.

**TILVA Certification Technology (Shanghai) Co., LTD**  
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