



功能安全产品认证证书

证书编号：TILVA202331002003

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：多点式热电偶
 型号：aWRbKc-d e f g
 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：[Signature]



上海添唯认证技术有限公司
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产品名称:	多点式热电偶	型号规格:	aWRbKc-d e f g														
描述:	<p>aWRbKc-d e f g 系列热电偶是温度测量仪表中常用的测温元件, 它直接测量温度, 并把温度信号转换成热电动势信号, 通过电气仪表 (二次仪表) 转换成被测介质的温度。热电偶通常由热电极、绝缘套保护管和接线盒等主要部分组成。热电偶广泛应用航空, 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.表示热电偶分度号, b.表示热电偶感温元件材料, 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:	<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>																
安全完整性等级 (SIL) :	<p>根据 IEC 61508:2010, 多点式热电偶属于 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 border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>λ</td> <td>aWRbKc-d e f g</td> </tr> <tr> <td>λ_s</td> <td>0</td> </tr> <tr> <td>λ_{DU}</td> <td>102.00</td> </tr> <tr> <td>λ_{DD}</td> <td>0</td> </tr> <tr> <td>$PFD_{avg}(T1=1Y)$</td> <td>4.47E-04</td> </tr> <tr> <td>PFH</td> <td>1.02E-07</td> </tr> <tr> <td>SIL</td> <td>2</td> </tr> </table> <p>说明: 失效率的单位为 FIT, 1FIT=1×10⁻⁹</p>			λ	aWRbKc-d e f g	λ_s	0	λ_{DU}	102.00	λ_{DD}	0	$PFD_{avg}(T1=1Y)$	4.47E-04	PFH	1.02E-07	SIL	2
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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 23IBS01P11D31-00630-1 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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FUNCTIONAL SAFETY PRODUCT CERTIFICATION

Certificate No: TILVA202331002003

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 Thermocouple

MODEL: aWRbKc-d e f g

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: TILVA202331002003

Product Name:	Multi-point Thermocouple	Model:	aWRbKc-d-e-f-g														
Description :	<p>aWRbKc-d-e-f-g Series Multi-point thermocouple is a common temperature measuring element in the temperature measuring instrument, which directly measures the temperature and converts the temperature signal into a thermoelectric potential signal, which is converted into the temperature of the measured medium through an electrical instrument (secondary instrument). Thermocouple usually consists of a thermal electrode, insulating jacket protection tube and junction box and other major components.</p> <p>Thermocouple 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 thermocouple index number, b. indicates the thermocouple 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 thermocouple 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 border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>λ</td> <td>aWRbKc-d-e-f-g</td> </tr> <tr> <td>λ_s</td> <td>0</td> </tr> <tr> <td>λ_{DU}</td> <td>102.00</td> </tr> <tr> <td>λ_{DD}</td> <td>0</td> </tr> <tr> <td>$PFD_{avg}(T1=1Y)$</td> <td>4.47E-04</td> </tr> <tr> <td>PFH</td> <td>1.02E-07</td> </tr> <tr> <td>SIL</td> <td>2</td> </tr> </table>			λ	aWRbKc-d-e-f-g	λ_s	0	λ_{DU}	102.00	λ_{DD}	0	$PFD_{avg}(T1=1Y)$	4.47E-04	PFH	1.02E-07	SIL	2
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<p> 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 23IBS01P11D31-00630-1 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.