产品认证证书

证书编号： CSFS22.00521

申请人名称、地址

重庆川仪调节阀有限公司

重庆市北碚区蔡家岗镇蔡和路 879 号

制造商名称、地址

重庆川仪调节阀有限公司

重庆市北碚区蔡家岗镇蔡和路 879 号

生产厂名称、地址

重庆川仪调节阀有限公司

重庆市北碚区蔡家岗镇蔡和路 879 号

产品商标

产品名称和系列、型号、规格

AT 系列 气动齿轮齿条式执行机构

认证依据标准

IEC 61508-1:2010，IEC 61508-2:2010

上述产品符合下述自愿性产品认证实施规则的要求：
SITIIAS-RJ03-02 A/4《功能安全产品认证实施规则》，
特发此证。

产品相关信息详见附件。

认证模式

型式试验+初始工厂检查+获证后的监督

发证日期： 2022 年 11 月 25 日 **有效期至：** 2027 年 11 月 24 日

首次发证日期： 2022 年 11 月 25 日

本证书在有效期内的有效性依据发证机构监督的符合结果予以保持，本证书的具体信息可通过发证机构官方网站查询。

中国认可
产品
PRODUCT
CNAS C214-P

批准人： _____ **日期：** 2022 年 11 月 25 日

上海仪器仪表自控系统检验测试所有限公司

地址： 中国•上海 上海市漕宝路 103 号 **邮编：** 200233
电话： 021-64516350 **传真** 021-64849355 **网址** www.sitiias.com.cn

产品认证证书附件

证书编号： CSFS22.00521

产品名称： 气动齿轮齿条式执行机构　**型号规格：** AT 系列

描　　述： AT 系列气动齿轮齿条式执行机构：

单作用：AT52SR~AT400SR，AT52SD~AT400SD

双作用：AT52DR0~AT400DR0，AT52DD0~AT400DD0

单作用执行机构安全功能：由弹簧力实现的使阀门失气-关或失气-开功能。

双作用执行机构安全功能：由气动实现的使阀门关或开功能。

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)： 根据 IEC 61508:2010，硬件安全完整性等级确定采用路径 2_H 的方法，AT 系列气动齿轮齿条式执行机构属于 A 类安全相关组件（Type A）。在低要求操作模式下，在 HFT=0 时，其安全完整性等级达到 SIL 2；在 HFT=1 时，其安全完整性等级达到 SIL3。

λ	AT（单作用）	AT（双作用）
λ_S	0.0	0.0
λ_{DU}	24.5	40.2
λ_{DD}	0.0	0.0
PFD_{avg}(T1=1Y)	1.08E-04	1.76E-04
SIL（HFT=0）	SIL2	
SIL（HFT=1）	SIL3	
说明：失效率的单位为 FIT, 1FIT=1 ×10^{-9}		

其他说明： 用户需按安装和维护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 J22-219-RZ-CJ 报告是本证书的支持文件。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 SITIIAS 保存。

上海仪器仪表自控系统检验测试所有限公司

2022 年 11 月 25 日

PRODUCT CERTIFICATION

No.: CSFS22. 00521

NAME AND ADDRESS OF THE APPLICANT

Chongqing Chuanyi Control Valve Co.,Ltd.

No.879 Caihe road,Caijiagang town,Beibei district,Chongqing,P.R.China

NAME AND ADDRESS OF THE Manufacturer

Chongqing Chuanyi Control Valve Co.,Ltd.

No.879 Caihe road,Caijiagang town,Beibei district,Chongqing,P.R.China

NAME AND ADDRESS OF THE FACTORY

Chongqing Chuanyi Control Valve Co.,Ltd.

No.879 Caihe road,Caijiagang town,Beibei district,Chongqing,P.R.China

Product Trademark

NAME, MODEL AND SPECIFICATON

AT series Pneumatic rack and pinion actuator

THE STANDATDS AND TECHNICAL REQUIREMENTS FOR THE PRODUCTS

IEC 61508-1:2010, IEC 61508-2:2010

This is to certify that the above mentioned products have met the requirement of certification rules:

SITIIAS-RJ03-02 A/4: Implemented rules for certification of functional safety products

Product information detailed in the attachment

CERTIFICATION MODE

Type test+Initial industry inspection+Supervision after obtaining the certificate

Date of Issued: Nov.25,2022 **Date of expiry:** Nov.24, 2027

Date of original certification: Nov.25,2022

Validity of this certificate is subject to positive result of the regular follow up inspection by issuing certification body until the expiry date. Specific information of this certificate can be found by this certificate issuing agency official website.

FS Approved SITIIAS Functional Safety

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Authorized by : **DATE:** Nov.25,2022

Shanghai Inspection and Testing Institute of Instrumentation and Automation Systems Co., Ltd.

Address: 103 Caobao Road Shanghai, P.R. of China ,200233

Tel: 86 21 64516350 Fax: 86 21 64849355 Website: www.sitiias.com.cn

PRODUCT CERTIFICATION ATTACHMENT

No.: CSFS22.00521

Product: pneumatic rack and pinion actuator **Model :** AT Series

Description:

AT series pneumatic rack and pinion actuator:

Single acting model: AT52SR~AT400SR, AT52SD~AT400SD

Double acting model: AT52DR0~AT400DR0, AT52DD0~AT400DD0

Single acting actuator safety function: The valve is opened or closed by spring force.

Double acting actuator safety function: The valve is closed or opened by pneumatic.

Standards:

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

Safety Integrity Level (SIL):

According to IEC 61508:2010, AT series pneumatic rack and pinion actuators are classified as type A safety-related elements, hardware safety integrity level is determined via route 2_H. They can be used up to SIL 2 with HFT=0 and SIL 3 with HFT=1 on low demand operation mode.

λ	AT (single acting)	AT (double acting)
λ_S	0.0	0.0
λ_{DU}	24.5	40.2
λ_{DD}	0.0	0.0
PFD_{avg}(T1=1Y)	1.08E-04	1.76E-04
SIL (HFT=0)	SIL2	
SIL (HFT=1)	SIL3	
Note: The failure rate unit is FIT, 1FIT=10^{-9}. .		

Other explanation: Proof test and routine inspection should be performed according to User Manual.

Note: Test Report Number J22-219-RZ-CJ is supporting document of this certificate. This Certificate is valid for products compatible with the documents and samples approved by SITIIAS. The documents and sample are kept by SITIIAS.

Shanghai Inspection and Testing Institute of Instrumentation and Automation Systems Co., Ltd.

Nov.25,2022