Certificate

No.: 968/V 1196.01/26

Product tested	Linear Pneumatic Diaphragm Actuators	**Certificate holder**	Chongqing ChuanYi Control Valve Co., Ltd. No.879 Caihe road, Caijiagang town, Beibei district Chongqing P.R. China
Type designation	(details see page 2)		
Codes and standards	IEC 61508 parts 1-2:2010		
Intended application	Safety functions: - move valve to its safe Position by spring force The actuators are suitable for use in a safety instrumented system up to SIL 2 (low demand mode). Under consideration of the minimum required hardware fault tolerance HFT = 1 the actuators may be used in a redundant architecture of the complete finla element assembly up to SIL 3.		
Specific requirements	The instructions of the associated Installation, Operating and Safety Manual shall be considered.		

Summary of test results see page 2 of this certificate.

Valid until 2031-06-03

The issue of this certificate is based upon an evaluation in accordance with the Certification Program CERT FSP1 V3.0:2020 in its actual version, whose results are documented in Report No. 968/V 1196.01/26 dated 2026-06-03. This certificate is valid only for products, which are identical with the product tested. Issued by the certification body accredited by DAkkS according to DIN EN ISO/IEC 17065. The accreditation is only valid for the scope listed in the annex to the accreditation certificate D-ZE-11052-02-00.

TÜV Rheinland Industrie Service GmbH
Bereich Automation
Funktionale Sicherheit
Am Grauen Stein, 51105 Köln

Köln, 2026-06-03

Certification Body Safety & Security for Automation & Grid

Dipl.-Ing. Thomas Steffens

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Holder: Chongqing ChuanYi Control Valve Co., Ltd.
No.879 Caihe road, Caijiagang town,
Beibei district, Chongqing,
P.R. China

Product tested: Linear Pneumatic Diaphragm Actuators:
HA1R, HA11R, HA2R, HA21R, HA3R, HA31R,
HA3XR, HA4R, HA41R, HA5YR, HA51R, HA61R
HA1D, HA11D, HA2D, HA21D, HA3D, HA31D,
HA3XD, HA4D, HA41D, HA5YD, HA51D, HA61D
HA4RX2, HA42R
HA4DX2, HA42D

Results of Assessment

Route of Assessment		2_H / 1_S
Type of Sub-system		Type A
Mode of Operation		Low Demand Mode
Hardware Fault Tolerance	HFT	0
Systematic Capability		**SC 3**

Turn a valve into its safe postion by spring force

Dangerous Failure Rate	λ_D	1,88 E-07 / h	**188 FIT**
Average Probability of Failure on Demand 1oo1	$PFD_{avg}(T_1)$	8,37 E-04	
Average Probability of Failure on Demand 1oo2	$PFD_{avg}(T_1)$	8,45 E-05	

Assumptions for the calculations above: DC = 0 %, T_1 = 1 year, MRT = 72 h, β_{1oo2} = 10 %

Origin of failure rates

The stated failure rates for low demand are the result of an FMEDA with tailored failure rates for the design and manufacturing process.
Furthermore the results have been verified by field-feedback data.
Failure rates include failures that occur at a random point in time and are due to degradation mechanisms such as ageing.
The stated failure rates do not release the end-user from collecting and evaluating application-specific reliability data.

Periodic Tests and Maintenance

The given values require periodic tests and maintenance as described in the Safety Manual.
The operator is responsible for the consideration of specific external conditions (e.g. ensuring of required quality of media, max. temperature, time of impact), and adequate test cycles.