

Certificate



SIL/PL
Capability

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ID 0600000000

No.: 968/V 1072.00/18

Product tested	3/2-way or 5/2-way Solenoid Control Valve with Safety Function	Certificate holder	ASCO SAS 53 rue de Beauce 28110 Lucé France
Type designation	551 series		
Codes and standards	IEC 61508 Parts 1-2 and 4-7:2010		
Intended application	Safety function: Move to fail-safe position by spring force, if auxiliary power is cut off or fails. Depending on the piping of installation, the valve will supply the fluid media or vent the fluid media. The assessment based on the certification program of the Certification Body comes to the result that the valves meet the requirements of IEC 61508 and are therefore 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 valves may be used in a redundant architecture up to SIL 3 acc. IEC 61508 and IEC 61511.		
Specific requirements	The instructions of the associated Installation, Operating and Safety Manual shall be considered.		

Summary of test results see back side of this certificate.

Valid until 2023-11-05

The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/V 1072.00/18 dated 2018-11-05.

This certificate is valid only for products which are identical with the product tested.

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

Köln, 2018-11-05

Certification Body Safety & Security for Automation & Grid

Dr. R. G. A.

Dr.-Ing. Thorsten Gantevoort

Holder:	ASCO SAS 53 rue de Beauce 28110 Lucé FRANCE
Product tested:	3/2-way or 5/2-way Solenoid Control Valves 551 series
Further Manufacturing Plants:	
Ascoval Ind.e Comércio Ltda Rua Goiatuba, 81 Jardim Mutinga 06465-010 Barueri Brazil	ASCO CONTROLS BV Neonstraat 3 6718 WX Ede The Netherlands
ASCO NUMATICS (India) Pvt. Ltd. 57, Kundrathur Mian Road Gerugambakkam, Porur Chennai. 602 101, Tamilnadu India	ASCO VALVE (Shanghai) Co.Limited No. 480, Xin Miao N°.3 Road, Xia Qiao Town Song Jiang District Shanghai 201612 P.R. China
ASCO NUMATICS SP .Z.O.O Kurczaki 132 93331 Lodz Poland	ASCO, L.P. 1561 Columbia Highway Aiken, South Carolina 29801 USA

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	
Lambda Dangerous confidence level of calculation $1-\alpha = 95\%$	λ_D	1.98 E-07 / h	198 FIT
Lambda Dangerous Undetected assumed Diagnostic Coverage DC = 0 %	λ_{DU}	1.98 E-07 / h	198 FIT
Mean Time To Dangerous Failure	MTTF _D	5.05 E+06 h	577 a
Average Probability of Failure on Demand 1oo1 assumed Proof Test Interval $T_1 = 1$ year	PFD_{avg}(T₁)	8.67 E-04	
Average Probability of Failure on Demand 1oo2 assumed Proof Test Interval $T_1 = 1$ year assumed $\beta_{1oo2} = 10\%$	PFD_{avg}(T₁)	8.76 E-05	

Origin of values

The stated values are the results of extensive qualification tests on the reliability of the safety function under critical conditions. In addition, the failure rate was verified by the analysis of field feedback of the last five years. Random and systematic failures which are the responsibility of the manufacturer were examined.

Systematic Capability

The development and manufacturing process and the functional safety management applied by the manufacturer in the relevant lifecycle phases of the product have been audited and assessed as suitable for the manufacturing of products for use in applications with a maximum Safety Integrity Level of 3 (SC 3).

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.