

Certificate



SIL/PL
Capability

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ID 0600000000

No.: 968/V 1023.00/18

Product tested

Double and Single Acting
Pneumatic Actuators

**Certificate
holder**

SMS Tork Endüstriyel
Otomasyon Ürünleri San.
Tic Ltd. Şti
Bostancı Yolu Kuru Sokak
No: 16
Yukarı Dudullu
Ümraniye 34776 İstanbul
Turkey

Type designation

RA..SR single acting
RA..DA double acting
RX..SR single acting, exproof
RX..DA double acting, exproof

Codes and standards

IEC 61508 Parts 1-2 and 4-7:2010

Intended application

Safety Function: Either fully closed or fully open initiated by compressed air or 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 up to SIL 3.

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 2023-06-29

The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/V 1023.00/18 dated 2018-06-22.

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, 2018-06-29

Certification Body Safety & Security for Automation & Grid

Dr. R. G. A.

Dr.-Ing. Thorsten Gantevoort

Holder: SMS Tork Endüstriyel Otomasyon Ürünleri San. Tic Ltd. Sti
Bostancı Yolu Kuru Sokak No: 16 Yukarı Dudullu
34776 Ümraniye Istanbul
Turkey

Manufacturer: SMS Sanayi Malzemeleri Üretim ve Satışı A.S
Bostancı Yolu Kuru Sok. No:16 Yukarı Dudullu -
34776 Ümraniye Istanbul
Turkey

Product tested: Double and Single Acting Pneumatic Actuators
RA..SR single acting
RA..DR double acting
RX..SR single acting, exproof
RX..DA double acting, exproof

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	3.50 E-07 / h	350 FIT
Lambda Dangerous Undetected assumed Diagnostic Coverage DC = 0 %	λ_{DU}	3.50 E-07 / h	350 FIT
Mean Time To Dangerous Failure	MTTF _D	2.86 E+06 h	326 a
Average Probability of Failure on Demand 1oo1 assumed Proof Test Interval $T_1 = 1$ year	PFD_{avg}(T₁)	1.53 E-03	
Average Probability of Failure on Demand 1oo2 assumed Proof Test Interval $T_1 = 1$ year assumed $\beta_{1oo2} = 10\%$	PFD_{avg}(T₁)	1.53 E-04	

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 four 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.