

Certificate



No.: 968/V 1347.00/25

Product tested	Safety Exhaust Valve	Certificate holder	SMC Corporation 1-5-5, Kyobashi, Chuo-ku Tokyo 104-0031 Japan
Type designation	VPX400 series		
Codes and standards	IEC 61508 Parts 1-2 and 4-7:2010	ISO 13849-1:2023	
Intended application	Safety Functions: - Safe De-Energization (SDE) - Protection from unexpected start-up (PUS) The VPX400 series can be used in a safety related system in high demand mode up to SIL 3 acc. to IEC 61508:2010. They can be used up to PL e in Cat. 4 acc. to ISO 13849-1:2023.		
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.

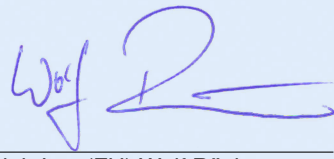
Valid until 2030-04-17

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 1347.00/25 dated 2025-04-02. 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.

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Köln, 2025-04-17

Certification Body Safety & Security for Automation & Grid


Dipl.-Ing. (FH) Wolf Rückwart

Holder: SMC Corporation
 1-5-5, Kyobashi, Chuo-ku
 Tokyo 104-0031
 Japan

Product tested: Safety Exhaust Valve
 VPX400 series

Results of Assessment

Route of Assessment	$2_H / 1_S$
Type of Sub-system	Type A
Mode of Operation	High Demand Mode
Hardware Fault Tolerance	HFT = 1
Systematic Capability	SC 3
Safety Functions	Safe De-Energization (SDE) Protection from unexpected start-up (PUS)

B_{10d}	1,083,893		
Dangerous Failure Rate	λ_D	9.23 E-08 / h	92 FIT
Average Frequency of a dangerous Failure per Hour	PFH	9.30 E-11	
Mean Time To Dangerous Failure	MTTF _D	1,237 a	

Assumptions for the calculations above: DC = 99 %, MRT = 72 h, MTTR = 8 h, $\beta_{1002} = 10 \%$

Origin of failure rates

The stated failure rates for high demand are the result of tests over the whole temperature range. If the conditions vary widely from the test conditions the failure rates might be adjusted.

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.