

Certificate



SIL/PL
Capability

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ID 0600000000

No.: 968/V 1134.00/20

Product tested	Pressure Monitor and Pressure Limiter	Certificate holder	Sauter AG Im Surinam 55 4016 Basel Switzerland
Type designation	DSH, DSL, DSB, DSF		
Codes and standards	IEC 61508 Parts 1-2 and 4-7:2010		
Intended application	Safety Function: 1. DSH / DSL: Safe switching and holding of triggered position DSB / DSF: Safe opening and closing of electrical contact 2. Maintaining of external tightness 3. Max. deadadjustment of switching point ± (2 % of adjustment range + 1 % of maximum value) The products are suitable for use in a safety instrumented system up to SIL 2. Under consideration of the minimum required hardware fault tolerance HFT=1 the pressure monitors and limiters may be used in a redundant structure 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 2025-01-31			

The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/V 1134.00/20 dated 2020-01-31.

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, 2020-01-31

Certification Body Safety & Security for Automation & Grid

Steffens

Dipl.-Ing. Thomas Steffens

Holder: Sauter AG
 Im Surinam 55
 CH 4016 Basel

Product tested: Pressure Limiter DSH / DSL
 Pressure Monitor DSB / DSF

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

DSH / DSL: Switching and holding of triggered position

DSB / DSF: Safe opening and closing of electrical contact

Dangerous Failure Rate	λ_D	2.36 E-07 / h	236 FIT
Average Probability of Failure on Demand 1001	$PFD_{avg}(T_1)$	1.03 E-03	
Average Probability of Failure on Demand 1002	$PFD_{avg}(T_1)$	1.05 E-04	

Maintaining of external tightness

Dangerous Failure Rate	λ_D	2.05 E-07 / h	205 FIT
Average Probability of Failure on Demand 1001	$PFD_{avg}(T_1)$	8.98 E-04	
Average Probability of Failure on Demand 1002	$PFD_{avg}(T_1)$	9.08 E-05	

Max. deadadjustment of switching point $\pm$ (2 % of adjustment range + 1 % of maximum value)

Dangerous Failure Rate	λ_D	3.69 E-07 / h	369 FIT
Average Probability of Failure on Demand 1001	$PFD_{avg}(T_1)$	1.62 E-03	
Average Probability of Failure on Demand 1002	$PFD_{avg}(T_1)$	1.65 E-04	

Assumptions for the calculations above: DC = 0 %, $T_1 = 1$ year, $\beta_{1002} = 10$ %

Origin of values

The stated values are the results of a FMEDA for the design and manufacturing process.
 Random and systematic failures which are in the responsibility of the manufacturer were examined.

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.