

Certificate



Product Safety
Functional
Safety

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No.: 968/FSP 1186.00/15

Product tested	Infrared Gas Detector	Certificate holder	SIMTRONICS AS Kabelgaten 8 0511 Oslo Norway
Type designation	GD10P, GD10PE		
Codes and standards	IEC 61508 Parts 1-7:2010 (in extracts)		
Intended application	Monitoring of gas concentration in potentially hazardous and/or poisonous environment. According to the results of a Route 2H evaluation (proven-in-use) the Infrared Gas Detectors GD10P and GD10PE have shown a systematic safety capability of SC 3. In combination with a suitable external safety device they may be used in a HFT=0 configuration in applications up to SIL 2 and in a HFT=1 configuration in applications up to SIL 3 acc. to IEC 61508. More information see backside of this certificate.		
Specific requirements	The instructions of the associated Operating Manual have to be considered. The external safety device must be suitable for the requested SIL.		

Valid until 2020-09-28

The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/FSP 1186.00/15 dated 2015-09-28.

This certificate is valid only for products which are identical with the product tested. It becomes invalid at any change of the codes and standards forming the basis of testing for the intended application.

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

Köln, 2015-09-28

Certification Body Safety & Security for Automation & Grid

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Safety function: Measuring of gas concentration and output of an analog signal 4 – 20mA proportional to the concentration.

The safety state is signaled by an output current < 4 mA or > 20 mA.

Monitoring of excessive gas concentration and generating of an alarm signal in a suitable downstream safety device.

Characteristics as per IEC 61508		Value					
SIL		SIL 1		SIL 2		SIL 3	
		LDM	HDM	LDM	HDM	LDM	HDM
	1001-Configuration	X	X	X			
	1002-Configuration	X	X	X	X	X	X
Systematic Safety Integrity (SC)		SC 3					
Device Type		B					
Mode of operation		Low demand mode (LDM) High demand mode (HDM)					
SFF		93 %					
DC		86 %					
Mean time to repair (MTR)		72 h					
Time interval for proof-testing (T_1) used in calculation of PFD and PFH		1 year					
PFD _{avg_1001}		2.8 x 10 ⁻⁴				(2.8% of SIL 2)	
PFH ₁₀₀₁		6.4 x 10 ⁻⁸ 1/h				(6.4% of SIL 2)	
PFD _{avg_1002}		1.4 x 10 ⁻⁵				(1.4% of SIL 3)	
PFH ₁₀₀₂		3.3 x 10 ⁻⁹ 1/h				(3.3% of SIL 3)	
λ_s		452 FIT					
λ_d		452 FIT					
λ_{dd}		388 FIT					
λ_{du}		65 FIT					

1 FIT = 1 x 10⁻⁹ 1/h

Remark: Failure rates of the electronic components as per Siemens SN 29500, calculated based upon an ambient temperature of 40 °C.