

Certificate



SIL/PL
Capability

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Nr./No.: 968/V 1169.01/21

**Prüfgegenstand
Product tested**

Differenzdruckmessgerät und -wächter
Differential pressure gauge and monitor

**Zertifikats-
inhaber
Certificate
holder**

WIKA Alexander Wiegand SE
& Co. KG
Alexander-Wiegand-Str. 30
63911 Klingenberg
Germany

**Typbezeichnung
Type designation**

DELTA-comb
DPGS40TA

**Prüfgrundlagen
Codes and standards**

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

**Bestimmungsgemäße
Verwendung
Intended application**

Sicherheitsfunktion: Erfassung und Überwachung eines Differenzdruckes.
Die Differenzdruckmessgeräte und -wächter sind für den Einsatz in sicherheitsgerichteten Systemen bis SIL 2 / PL d geeignet. Unter Berücksichtigung der minimal erforderlichen Hardware-Fehlertoleranz von HFT = 1 können sie auch in redundanter Ausführung bis SIL 3 / PL e eingesetzt werden, wenn eine ausreichende externe Diagnose realisiert wird (DC niedrig für PL d / mittel für PL e).
Safety Function: Measuring and monitoring of differential pressure.
The differential pressure gauges and monitors are suitable for use in safety-related systems up to SIL 2 / PL d. Taking into account the minimum required hardware fault tolerance of HFT = 1, they can also be used in redundant design up to SIL 3 / PL e, if a sufficient external diagnosis is implemented (DC low for PL d / medium for PL e).

**Besondere Bedingungen
Specific requirements**

Die Hinweise in der zugehörigen Installations- und Betriebsanleitung sowie des Sicherheitshandbuchs sind zu beachten.
The instructions of the associated Installation, Operating and Safety Manual shall be considered.

Zusammenfassung der Testergebnisse siehe Rückseite des Zertifikates.
Summary of test results see back side of this certificate.

Der Ausstellung dieses Zertifikates liegt eine Evaluierung entsprechend dem Zertifizierungsprogramm CERT FSP1 V1.0:2017 in der aktuellen Version zugrunde, deren Ergebnisse im Bericht Nr. 968/V 1169.01/21 vom 11.06.2021 dokumentiert sind. Dieses Zertifikat ist nur gültig für Erzeugnisse, die mit dem Prüfgegenstand übereinstimmen.

The issue of this certificate is based upon an evaluation in accordance with the Certification Program CERT FSP1 V1.0:2017 in its actual version, whose results are documented in Report No. 968/V 1169.01/21 dated 2021-06-11. This certificate is valid only for products, which are identical with the product tested.

TÜV Rheinland Industrie Service GmbH
Bereich Automation
Funktionale Sicherheit

Köln, 2021-06-21

Certification Body Safety & Security for Automation & Grid

Dipl.-Ing. (FH) Wolf Rückwart

Holder: WIKA Alexander Wiegand SE & Co. KG
 Alexander-Wiegand-Straße 30
 63911 Klingenberg
 Germany

Product tested: Differential pressure gauge (DELTA-comb)
 Type DPGS40TA

Results of Assessment

Route of Assessment		$2_H / 1_S$
Type of Sub-system		Type A
Mode of Operation		Low / High Demand Mode
Hardware Fault Tolerance	HFT	0
Systematic Capability		SC 3

Safety Function

**Opening of the electrical switching contact
 (micro switch)**

Low demand mode (LDM)

Dangerous Failure Rate	λ_D	2.41 E-07 / h	241 FIT
Average Probability of Failure on Demand 1001	$PFD_{avg}(T_1)$	1.07 E-03	
Average Probability of Failure on Demand 1002	$PFD_{avg}(T_1)$	1.09 E-04	

Assumptions for the calculations above: DC = 0 %, $T_1 = 1$ year, MRT = 72 h, $\beta_{1002} = 10$ %

High demand mode (HDM)

B_{10D}	[-]	259,835
Average Probability of Failure per Hour PFH_{1001}	[1/h]	9.62 E-08
$MTTF_D$	[a]	1,186
Average Probability of Failure per Hour PFH_{1002}	[1/h]	9.69 E-09
$MTTF_D$ (1002)	[a]	11,784

Origin of failure rates

The stated failure rates for low demand are the result of an FMEDA with tailored failure rates for the design and manufacturing process. The failure rates for high demand mode are the result of B_{10D} Tests.

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.