Certificate / Certificat
Zertifikat / 合格証

BUE 2006049 P0042 C008

exida hereby confirms that the:

Diaphragm valves:

Type 2030 / 2031 / 2032 / 2033 / AP2030,
Type 2103 / 2104 / 2105 / AP09

Bürkert Werke GmbH & Co. KG
Ingelfingen, Germany

Have been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-2

and meets requirements providing a level of integrity to:

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A Element

SIL 2 @ HFT=0; SIL 3 @ HFT = 1; Route 2_H

PFD_{avg} and Architecture Constraints must be verified for each application

Safety Function:
The Valve will move to the designed safe position within the specified safety time.

Application Restrictions:
The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.

C. Krupke
Evaluating Assessor

J. Hochhaus
Certifying Assessor

The manufacturer may use the mark:

Revision 2.0 April 19, 2024
Surveillance Audit Due
April 30, 2027

ABD 1000490858 EN Version: C Status: RL (released | freigegeben) printed: 21.06.2024

ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17065 PRODUCT CERTIFICATION BODY #1004

Certificate / Certificat / Zertifikat / 合格証

BUE 2006049 P0042 C008

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A Element

SIL 2 @ HFT=0; SIL 3 @ HFT = 1; Route 2_H

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Diaphragm valves:

Type 2030 / 2031 / 2032 / 2033 / AP2030,

Type 2103 / 2104 / 2105 / AP09

ABD 1000490858 EN Version: C Status: RL (released | freigegeben) printed: 21.06.2024

Systematic Capability:

The products have met manufacturer design process requirements of Safety Integrity Level (SIL) 3. These are intended to achieve sufficient integrity against systematic errors of design by the manufacturer.

A Safety Instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated.

Random Capability:

The SIL limit imposed by the Architectural Constraints must be met for each element. This element meets *exida* criteria for Route 2_H.

IEC 61508 Failure Rates in FIT*

C1: Type 2030 / 2031 / 2032 / 2033 / AP2030 Static application
C2: Type 2103 / 2104 / 2105 / AP09 Static application
C3: Type 2030 / 2031 / 2032 / 2033 / AP2030 Dynamic application
C4: Type 2103 / 2104 / 2105 / AP09 Dynamic application

	Full Stroke			Tight shut off			Open on Trip		
Device, Application	λ_{Safe}	λ_{DD}	λ_{DU}	λ_{Safe}	λ_{DD}	λ_{DU}	λ_{Safe}	λ_{DD}	λ_{DU}
C1, Clean Service	85	0	148	85	0	433	145	0	152
C1, Severe Service	85	0	216	85	0	784	205	0	219
C2, Clean Service	92	0	153	92	0	438	162	0	183
C2, Severe Service	92	0	220	92	0	789	222	0	251
C3, Clean Service	91	0	117	91	0	424	149	0	63
C3, Severe Service	91	0	179	91	0	791	209	0	75
C4, Clean Service	99	0	109	99	0	416	166	0	90
C4, Severe Service	99	0	171	99	0	783	226	0	103

* FIT = 1 failure / 10^9 hours

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD_{avg} considering redundant architectures, proof test interval, proof test effectiveness, any automatic diagnostics, average repair time and the specific failure rates of all products included in the SIF. Each element must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

Assessment Report: BUE 20-06-049 R008 V2R0 Assessment Report Valves

Safety Manual: Safety Manual_00_00815378, Rev -

80 N Main St
Sellersville, PA 18960