



## CERTIFICATE

according to IEC EN 61508

Certificate No.: C-IS-722239637-02

**CERTIFICATE OWNER:** DBV Valve Co., Ltd.

Tangtou Village, Oubei Street,

Yongjia County, Wenzhou City,

PC: 325105, Zhejiang Province,

P.R. China

WE HEREWITH CONFIRM THAT

DBV-ZJHM SERIES CONTROL VALVES WITH SA SERIES PNEUMATIC ACTUATORS MEET THE SIL REQUIREMENTS DETAILED IN THE ANNEXED TABLE FOR THE SAFETY FUNCTIONS:

SIF1: "correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation"

SIF2: "correct switching on demand (closed to open), in low demand mode of operation"

Examination result: The above reported DBV-ZJHM Series Control

> Valves with SA Series Pneumatic Actuators were found to meet the standard defined requirements of the safety levels detailed in the following table (T-IS-722236023-02) according to IEC EN 61508, under fulfillment of the conditions listed in the Report R-IS-722239637-02 Rev.1 dated November, 02<sup>nd</sup> 2020 in its currently valid version, on which this Certificate is

based

**Examination parameters:** Construction/Functional characteristics

reliability and availability parameters of the above mentioned DBV-ZJHM Series Control Valves with SA

Series Pneumatic Actuators

Official Report No.: R-IS-722239637-02 Rev.1

**Expiry Date** November, 01st 2023

Reference Standard IEC EN 61508:2010 Part 1, 2, 3, 4, 5, 6, 7

Sesto San Giovanni, November, 02<sup>nd</sup> 2020

Sillndustria

**TÜV ITALIA Srl** 

**TÜV ITALIA Srl** Industry Service Division Technical Manager



## **SUMMARY TABLE** T-IS-722239637-02

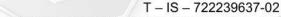


E/EE/EP safety-related system (final element)	DBV-ZJHM Series Control Valves with SA Series Pneumatic Actuators produced by DBV Valve Co., Ltd.  Type A  SC3	
System type		
Systematic Capability		
Safety Function Definition	SIF1: "Correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation"	SIF2: "Correct switching on demand (closed to open), in low demand mode of operation"
Max SIL <sup>(1)</sup>	SIL3	SIL3
λтот	9,017E-09	9,017E-09
λne	1,483E-09	1,904E-09
λsp	1,084E-09	9,329E-10
λsu	1,712E-09	3,498E-10
$\lambda_{\mathrm{DD,PST}^{(2)}}$	2,728E-09	4,291E-09
λdu,fpt	2,010E-09	1,539E-09
β and β <sub>D</sub> factor	10%	10%
eril MRT	8 h	8 h
Hardware Safety Integrity	Route 2 <sub>H</sub>	Route 2 <sub>H</sub>
Systematic Safety Integrity	Route 2s	Route 2s

## Remarks

- (1) The Safety Integrity Level (SIL) of the entire Safety Instrumented Function (SIF) must be verified via a calculation of PFDAVG considering the 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 subsystem must be checked to assure compliance with the minimum hardware fault tolerance (HFT) requirements.
- (2) Considering an automatic Partial Stroke Testing.

SIL classification according to Standard IEC EN 61508:2010 for DBV-ZJHM Series Control Valves with SA Series Pneumatic Actuators produced by DBV Valve Co., Ltd.



NOTE: The present table is integral part of the Document C-IS-722239637-02 Date: November, 02<sup>nd</sup> 2020