

CERTIFICAT

CERTIFICADO

СЕРТИФИКАТ

認證證書

CERTIFICATE

ZERTIFIKAT



Italia

CERTIFICATE

according to IEC EN 61508

Certificate No.: TUV IT 24 SIL 0374

CERTIFICATE OWNER: DBV Valve Co., Ltd.
Heyi Village, Oubei Street,
Yongjia County,
Wenzhou City,
PC: 325102, 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 according to IEC EN 61508, under fulfillment of the conditions listed in the Report R TUV IT 24 SIL 0343, on which this Certificate is based

Examination parameters: Construction/Functional characteristics and reliability and availability parameters of the above mentioned DBV-ZJHM Series Control Valves with SA Series Pneumatic Actuators

Official Report No.: R TUV IT 24 SIL 0343

Expiry Date April, 28th 2027

THE PRESENT DOCUMENT SUBSTITUTES AND REPEALS THE DOCUMENT C-IS-722239637-02

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

Milan, April, 29th 2024



TÜV ITALIA Srl

TÜV ITALIA Srl
Industrie Service Division
Managing Director

Alberto Carelli

SUMMARY TABLE



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<i>E/EE/EP safety-related system (final element)</i>	DBV-ZJHM Series Control Valves with SA Series Pneumatic Actuators produced by DBV Valve Co., Ltd.	
<i>System type</i>	Type A	
<i>Systematic Capability</i>	SC3	
<i>Safety Function Definition</i>	<i>SIF1: "Correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation"</i>	<i>SIF2: "Correct switching on demand (closed to open), in low demand mode of operation"</i>
<i>Max SIL⁽¹⁾</i>	SIL3	SIL3
λ_{TOT}	3,020E-09	3,020E-09
λ_{NE}	4,966E-10	6,376E-10
λ_{SD}	0,000E+00	0,000E+00
λ_{SU}	9,365E-10	4,295E-10
$\lambda_{DD,PST}^{(2)}$	5,504E-10	1,437E-09
$\lambda_{DU,FPT}$	1,036E-09	5,155E-10
<i>β and β_D factor</i>	10%	10%
<i>MRT</i>	8 h	8 h
<i>Hardware Safety Integrity</i>	Route 2 _H	Route 2 _H
<i>Systematic Safety Integrity</i>	Route 2 _S	Route 2 _S
Remarks		
(1) <i>The Safety Integrity Level (SIL) of the entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD_{AVG} 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.</i>		
(2) <i>Considering an automatic Partial Stroke Test.</i>		

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. produced by DBV Valve Co., Ltd.

NOTE: The present table is integral part of the Document TUV IT 24 SIL 0374
Date: April, 29th 2024