



Italia

CERTIFICATE

according to IEC EN 61508

Certificate No.: C-IS-722236023-02

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-Q SERIES BALL VALVES
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-Q Series Ball Valves 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-722236023-02 Rev.1 dated October, 07th 2020 in its currently valid version, on which this Certificate is based

Examination parameters: Construction/Functional characteristics and reliability and availability parameters of the above mentioned DBV-Q Series Ball Valves

Official Report No.: R-IS-722236023-02 Rev.1

Expiry Date October, 06th 2023

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

Sesto San Giovanni, October, 07th 2020



TÜV ITALIA Srl

TÜV ITALIA Srl
Industry Service Division
Technical Manager

Paolo Marcone

SUMMARY TABLE
T – IS – 722236023-02



Italia

<i>E/EE/EP safety-related system (final element)</i>	DBV-Q Series Ball Valves 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}	8,625E-08	8,625E-08
λ_{NE}	2,064E-08	2,951E-08
λ_S	0,000E+00	0,000E+00
$\lambda_{DD, PST}^{(2)}$	3,937E-08	4,176E-08
$\lambda_{DU, FPT}$	2,624E-08	1,498E-08
<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		
<p>(1) The Safety Integrity Level (SIL) of the entire Safety Instrumented Function (SIF) must be verified via a calculation of $PFDA_{VG}$ 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.</p> <p>(2) Considering an automatic Partial Stroke Testing.</p>		

SIL classification according to Standard IEC EN 61508:2010 for DBV-Q Series Ball Valves produced by DBV Valve Co., Ltd.

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NOTE: The present table is integral part of the Document C–IS–722236023-02

Date: October, 07th 2020