

Certificate



SIL/PL
Capability

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ID 060000000

No.: 968/V 1218.00/21

Product tested	Ball valves	Certificate holder	Vastas Valf Armatur Sanayi Ticaret A.S. Organize Sanayi Bolgesi, 2. Caddesi No: 22 Cerkezkoý 59500 Tekirdag Turkey
Type designation	E60M (2" - 56") Full welded E601 (2" - 56") Split Body E60T (1/2" - 56") Top Entry E604 (1/2" - 2") Compact E605 (1/2" - 2") Split Body		
Codes and standards	IEC 61508 Parts 1-2 and 4-7:2010		
Intended application	Safety Functions: - Closing on demand and keeping up the external tightness - Opening on demand and keeping up the external tightness The ball valves are suitable for use in a safety instrumented system in low demand applications up to SIL 2. Under consideration of the minimum required hardware fault tolerance HFT = 1 the valves may be used in a redundant structure up to SIL 3.		
Specific requirements	The instructions of the associated Installation, Operating and Safety Manual shall be considered.		


Summary of test results see back side of this certificate.

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 1218.00/21 dated 2021-04-30. This certificate is valid only for products, which are identical with the product tested.

TÜVRheinland Industrie Service GmbH
Bereich Automation
Funktionale Sicherheit
Am Grauen Stein, 51105 Köln

Köln, 2021-04-30

Certification Body Safety & Security for Automation & Grid


Dipl.-Ing. (FH) Wolf Rückwart

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 **TÜVRheinland®**
Precisely Right.

Holder: Vastas Valf Armatur Sanayi Ticaret A.S.
 Organize Sanayi Bölgesi Sabanci Caddesi No. 22
 Cerkezköy / Tekirdag
 Turkey

Product tested: **Ball-Valves of type**
E60M (2" – 56") Full Welded
E601 (2" – 56") Split Body
E60T (½" – 56") Top Entry
E604 (½" – 2") Compact
E605 (½" – 2") Split Body

Results of Assessment

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

Closing on demand and keeping up the external tightness

Dangerous Failure Rate	λ_D	1.90 E-07 / h	190 FIT
Average Probability of Failure on Demand 1oo1	PFD _{avg} (T ₁)	8.46 E-04	
Average Probability of Failure on Demand 1oo2	PFD _{avg} (T ₁)	8.54 E-05	

Opening on demand and keeping up the external tightness

Dangerous Failure Rate	λ_D	1.76 E-07 / h	176 FIT
Average Probability of Failure on Demand 1oo1	PFD _{avg} (T ₁)	7.84 E-04	
Average Probability of Failure on Demand 1oo2	PFD _{avg} (T ₁)	7.90 E-05	

Assumptions for the calculations above: DC = 0 %, T₁ = 1 year, MRT = 72 h, β_{1oo2} = 10 %

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.

Furthermore the results have been verified by field-feedback data.

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.

LICENCE CERTIFICATE for TÜV Rheinland Conformity Mark

No. 968/V 1218.00/21

Licence Holder: Vastas Valf Armatur Sanayi Ticaret A.S. Organize Sanayi Bolgesi, 2. Caddesi No: 22 Cerkezkoý 59500 Tekirdag Turkey	Manufacturer / Manufacturing Plant: same as licence holder
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Date of Application: 2021-04-21	File Ref.: 968/V 1218.00/21	Date of Issue: 2021-04-30
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Conformity Mark:	
 <p>SIL/PL Capability</p> <p>www.tuv.com ID 0600000000</p>	<p>The holder of this Licence Certificate is authorized to affix the TÜV Rheinland Conformity Mark shown on this page on products that correspond to the certified product described below and to use it in print and electronic media for information and advertising purposes for the certified product. All provisions of the currently valid Regulation for Certification and Conformity Mark Regulation must be observed.</p> <p>The validity for use of the Conformity Mark is dependent on the existence of a valid certificate for the certified product.</p>
<p>Link for download: http://fs-products.tuvasi.com/tm/3705</p>	

Annual Fee Units for Use of the Conformity Mark:	Units of Fee: 10
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Certified Product, Identification of the Device:																				
Kind of Product:	Ball valves																			
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Technical Doc.:	<table border="1"> <tr> <td>Safety Manual "VA-SM-E6-21R0"</td> <td>0</td> <td>2021-04-28</td> </tr> <tr> <td>Drawing of Ball Valve "DRWG.BOM-E60M"</td> <td>1</td> <td>2016-11-25</td> </tr> <tr> <td>Drawing of Ball Valve "DRWG.BOM-E601"</td> <td>0</td> <td>2018-01-11</td> </tr> <tr> <td>Drawing of Ball Valve "DRWG.BOM-E60T"</td> <td>0</td> <td>2019-03-05</td> </tr> <tr> <td>Drawing of Ball Valve "E604.14-DS-9R0"</td> <td>0</td> <td>2019-09-10</td> </tr> <tr> <td>Drawing of Ball Valve "E605.14-DS-5R0"</td> <td>0</td> <td>2015-02-12</td> </tr> </table>		Safety Manual "VA-SM-E6-21R0"	0	2021-04-28	Drawing of Ball Valve "DRWG.BOM-E60M"	1	2016-11-25	Drawing of Ball Valve "DRWG.BOM-E601"	0	2018-01-11	Drawing of Ball Valve "DRWG.BOM-E60T"	0	2019-03-05	Drawing of Ball Valve "E604.14-DS-9R0"	0	2019-09-10	Drawing of Ball Valve "E605.14-DS-5R0"	0	2015-02-12
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Special Remarks:	Report-No. 968/V 1218.00/21 dated 2021-04-30 and Certificate No.: 968/V 1218.00/21 dated 2021-04-30																			

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