



Italia

COMPLIANCE

with IEC EN 61508:2010

Certificate No.: C-IS 722117103

CERTIFICATE OWNER: VALBIA S.R.L.
Via Industriale, 30
25065 Lumezzane (BS) - ITALY

**WE HEREWITH CONFIRM THAT
THE PNEUMATIC ROTARY ACTUATORS
DOUBLE ACTING & SPRING RETURN
(DA AND SR TYPE, SERIES 82 AND 84)
MEET THE SIL REQUIREMENTS DETAILED IN THE ANNEXED TABLES
FOR THE SAFETY FUNCTION:**

“Complete switching on demand (open to closed & closed to open) with correct torque as for technical data sheets, in low demand mode of operation”

Examination result: The below described report was found to meet the standard defined requirements of the safety levels detailed in the following tables (T-IS-722117103-01-A/B/C/D) according to IEC EN 61508, under fulfillment of the conditions listed in the Report R-IS-722117103-01-Rev.1 dated November 08th 2016 in its currently valid version, on which this Certificate is based

Examination parameters: Construction/Functional characteristics and reliability and availability parameters of the above pneumatic rotary actuators

Official Report No.: R-IS-722117103 – 01-Rev.1

Expiry Date November, 10th 2019

**IT IS TO BE INTENDED THAT THE ABOVE OFFICIAL REPORT AND ITS ANNEXES ARE AN INTEGRAL PART OF THIS DOCUMENT
THE PRESENT DOCUMENT SUBSTITUTES AND REPEALS THE DOCUMENTS C-IS 233843 – 01**

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

Sesto San Giovanni, November, 11th 2016



TÜV ITALIA Srl
Industry Service Division
Director

Paolo Marcone
Paolo Marcone



Italia

SUMMARY TABLE T – IS – 722117103 – 01 - A

<i>E/EE/EP safety-related system (final element)</i>	Pneumatic rotary actuators DA type produced by Valbia S.r.l.		
<i>System type</i>	Type A		
<i>Size</i>	DA32 Type	DA52 – DA75 Type	DA85 – DA125 Type
<i>Systematic Capability</i>	SC3		
<i>Safety Function Definition</i>	Complete switching on demand (open to closed & closed to open) with correct torque as for technical data sheets in low demand mode of operation		
<i>Max SIL⁽¹⁾</i>	SIL3	SIL3	SIL3
λ_{TOT}	1,988E-09	4,435E-09	9,647E-09
λ_{SD}	9,297E-10	2,074E-09	4,512E-09
λ_{SU}	0,000E+00	0,000E+00	0,000E+00
$\lambda_{DD,PST}^{(2)}$	8,766E-10	1,956E-09	4,255E-09
$\lambda_{DU,HFT}$	1,813E-10	4,046E-10	8,800E-10
<i>β and β_D factor</i>	10%	10%	10%
<i>MTTR</i>	1,17 h	1,26 h	1,52 h
<i>Hardware Safety Integrity</i>	Route 2 _H	Route 2 _H	Route 2 _H
<i>Systematic Safety Integrity</i>	Route 2 _S	Route 2 _S	Route 2 _S
Remarks			
(1) 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.			
(2) Considering an automatic Partial Stroke Testing			

SIL classification according to Standards IEC EN 61508:2010 (Chapters: 2, 4, 6, 7) for the pneumatic rotary actuators DA Type produced by Valbia S.r.l.



Italia

SUMMARY TABLE T – IS – 722117103 – 01 - B

<i>E/EE/EP safety-related system (final element)</i>	Pneumatic rotary actuators DA type produced by Valbia S.r.l.	
<i>System type</i>	Type A	
<i>Size (Class)</i>	<i>DA140 – DA200 Type</i>	<i>DA230 – DA330 Type</i>
<i>Systematic Capability</i>	SC3	
<i>Safety Function Definition</i>	<i>Complete switching on demand (open to closed & closed to open) with correct torque as for technical data sheets in low demand mode of operation</i>	
<i>Max SIL⁽¹⁾</i>	SIL3	SIL3
λ_{TOT}	6,976E-08	3,325E-08
λ_{SD}	3,263E-08	1,555E-08
λ_{SU}	0,000E+00	0,000E+00
$\lambda_{DD,PST}^{(2)}$	3,077E-08	1,466E-08
$\lambda_{DU,EPT}$	6,363E-09	3,033E-09
<i>β and β_D factor</i>	10%	10%
<i>MTTR</i>	1,69 h	2,03 h
<i>Hardware Safety Integrity</i>	Route 2 _H	Route 2 _H
<i>Systematic Safety Integrity</i>	Route 2 _S	Route 2 _S
Remarks		
<i>(1) 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>		
<i>(2) Considering an automatic Partial Stroke Testing</i>		

SIL classification according to Standards IEC EN 61508:2010 (Chapters: 2, 4, 6, 7) for the pneumatic rotary actuators DA Type produced by Valbia S.r.l.



Italia

SUMMARY TABLE T – IS – 722117103 – 01 - C

<i>E/EE/EP safety-related system (final element)</i>	Pneumatic rotary actuators SR type produced by Valbia S.r.l.	
<i>System type</i>	Type A	
<i>Size (Class)</i>	<i>SR52 – SR75 Type</i>	<i>SR85 – SR125 Type</i>
<i>Systematic Capability</i>	SC3	
<i>Safety Function Definition</i>	<i>Complete switching on demand (open to closed & closed to open) with correct torque as for technical data sheets in low demand mode of operation</i>	
<i>Max SIL⁽¹⁾</i>	SIL3	SIL3
λ_{TOT}	3,509E-09	7,296E-09
λ_{SD}	1,641E-09	3,412E-09
λ_{SU}	0,000E+00	0,000E+00
$\lambda_{DD,PST}^{(2)}$	1,547E-09	3,218E-09
$\lambda_{DU,FPT}$	3,201E-10	6,655E-10
<i>β and β_D factor</i>	10%	10%
<i>MTR</i>	1,26 h	1,52 h
<i>Hardware Safety Integrity</i>	Route 2 _H	Route 2 _H
<i>Systematic Safety Integrity</i>	Route 2 _S	Route 2 _S
Remarks		
<i>(1) 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>		
<i>(2) Considering an automatic Partial Stroke Testing</i>		

SIL classification according to Standards IEC EN 61508:2010 (Chapters: 2, 4, 6, 7) for the pneumatic rotary actuators SR Type produced by Valbia S.r.l.



Italia

SUMMARY TABLE

T – IS – 722117103 – 01 - D

<i>E/EE/EP safety-related system (final element)</i>	Pneumatic rotary actuators SR type produced by Valbia S.r.l.	
<i>System type</i>	Type A	
<i>Size (Class)</i>	<i>SR140 – SR200 Type</i>	<i>SR230 – SR330 Type</i>
<i>Systematic Capability</i>	SC3	
<i>Safety Function Definition</i>	<i>Complete switching on demand (open to closed & closed to open) with correct torque as for technical data sheets in low demand mode of operation</i>	
<i>Max SIL⁽¹⁾</i>	SIL3	SIL3
λ_{TOT}	1,807E-08	5,056E-08
λ_{SD}	8,453E-09	2,365E-08
λ_{SU}	0,000E+00	0,000E+00
$\lambda_{DD,FST}^{(2)}$	7,971E-09	2,230E-08
$\lambda_{DU,FPT}$	1,649E-09	4,612E-09
<i>β and β_D factor</i>	10%	10%
<i>MTRR</i>	1,69 h	2,03 h
<i>Hardware Safety Integrity</i>	Route 2 _H	Route 2 _H
<i>Systematic Safety Integrity</i>	Route 2 _S	Route 2 _S
Remarks		
<i>(1) 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>		
<i>(2) Considering an automatic Partial Stroke Testing</i>		

SIL classification according to Standards IEC EN 61508:2010 (Chapters: 2, 4, 6, 7) for the pneumatic rotary actuators SR Type produced by Valbia S.r.l.