



Italia

COMPLIANCE

with IEC EN 61508:2010

Certificate No.: C-IS-722131143-02

CERTIFICATE OWNER
and MANUFACTURER:

ATOS S.p.A.
Via alla Piana, 57
21018 – SESTO CALENDE (VA) - ITALY

WE HEREWITH CONFIRM THAT THE HYDRAULIC OPERATED
POPPET VALVES

DLPX(S)-3* AND XXXXXXXX DLPX(S)-3*

“It is foreseen the possibility of using, for commercial reasons, codes different than those listed here above (i.e. DLPX (S) -3 * in standard execution) whose coding is distinguished from the standard, as indicated above, because preceded by 6/7 alphanumeric characters; the valves are identical from the constructive and technical point of view as maintain unchanged the hydraulic, mechanical and electrical characteristics”

MEET THE SIL REQUIREMENTS DETAILED IN THE ANNEXED TABLES
FOR THE SAFETY FUNCTION:

SIF 1: “Poppet energization (pressure piloting against spring)”
and

SIF 2: “Poppet de-energization (pressure piloting against spring)”

Examination result:

The above reported HYDRAULIC OPERATED POPPET VALVES were found to meet the standard defined requirements of the safety levels detailed in the following table (T – IS – 722131143-02-01/02) according to IEC EN 61508:2010, under fulfillment of the conditions listed in the Report R-IS-722131143-02 Rev.1 dated May, 16th 2017 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 HYDRAULIC OPERATED POPPET VALVES

Official Report No.:

R-IS-722131143-02 Rev.1

Expiry Date

May, 15th 2020

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 DOCUMENT C-IS-270700

Reference Standard

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

Sesto San Giovanni, May, 16th 2017



TÜV ITALIA Srl
Industry Service Division
Director

Paolo Marcone



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SUMMARY TABLE T – IS – 722131143-02-01

<i>E/EE/EP safety-related system (final element)</i>	HYDRAULIC OPERATED POPPET VALVES produced by ATOS S.p.A.	
<i>Type</i>	DLPX(S)-3* and XXXXXXXX DLPX(S)-3*	
<i>Safety Function Definition</i>	<i>Poppet energization (pressure piloting against spring)</i>	
<i>Systematic Capability (SC)</i>	SC 3	
<i>Max SIL⁽¹⁾</i>	SIL3	SIL3
<i>Additional requirements for the max SIL classification</i>	<i>Execution of Full Functional Proof Test without Partial Stroke Test</i>	<i>Execution of Partial Stroke Test and Full Functional Proof Test</i>
<i>System Type</i>	Type A	
λ_{TOT}	6,000E-06	6,000E-06
λ_{SD}	0,000E+00	5,586E-06
λ_{SU}	5,700E-06	1,140E-07
$\lambda_{DD,PST}$	0,000E+00	2,940E-07
$\lambda_{DU,FFT}$	3,000E-07	6,000E-09
<i>β and β_D factor</i>	10%	10%
<i>SFF</i>	95%	99%
<i>MTTR</i>	0,25 h	0,25 h
<i>Hardware Safety Integrity</i>	Route 1 _H	Route 1 _H
<i>Systematic Safety Integrity</i>	Route 1 _S	Route 1 _S
Remarks	<p><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></p>	

SIL classification according to Standards IEC EN 61508:2010 (Chapters: 2, 4, 6, 7) for HYDRAULIC OPERATED POPPET VALVES produced by ATOS S.p.A. – SIF 1

T – IS – 722131143-02 – 01

NOTE: The present table is integral part of the Documents: from C–IS–722131143-02
Date: May, 16th 2017



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SUMMARY TABLE T – IS – 722131143-02-02

<i>E/EE/EP safety-related system (final element)</i>	HYDRAULIC OPERATED POPPET VALVES produced by ATOS S.p.A.	
<i>Type</i>	DLPX(S)-3* and XXXXXXXX DLPX(S)-3*	
<i>Safety Function Definition</i>	<i>Poppet de-energization (pressure piloting against spring)</i>	
<i>Systematic Capability (SC)</i>	SC 3	
<i>Max SIL⁽¹⁾</i>	SIL3	SIL3
<i>Additional requirements for the max SIL classification</i>	<i>Execution of Full Functional Proof Test without Partial Stroke Test</i>	<i>Execution of Partial Stroke Test and Full Functional Proof Test</i>
<i>System Type</i>	Type A	
λ_{TOT}	6,000E-06	6,000E-06
λ_{SD}	0,000E+00	5,704E-06
λ_{SU}	5,820E-06	1,164E-07
$\lambda_{DD,PSI}$	0,000E+00	1,764E-07
$\lambda_{DU,FFT}$	1,800E-07	3,600E-09
<i>β and β_D factor</i>	10%	10%
<i>SFF</i>	95%	99%
<i>MTTR</i>	0,25 h	0,25 h
<i>Hardware Safety Integrity</i>	Route 1 _H	Route 1 _H
<i>Systematic Safety Integrity</i>	Route 1 _S	Route 1 _S
<i>Remarks</i>	<p>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.</p>	

SIL classification according to Standards IEC EN 61508:2010 (Chapters: 2, 4, 6, 7) for HYDRAULIC OPERATED POPPET VALVES produced by ATOS S.p.A. – SIF 2

T – IS – 722131143-02 – 02

NOTE: The present table is integral part of the Documents: from C-IS-722131143-02
Date: May, 16th 2017