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TÜV SÜD Italia

COMPLIANCE

with IEC EN 61508

Certificate No.: C – IS – 722199816-01

CERTIFICATE OWNER: **Sirca International S.p.A.**
Via Trieste, 8
20060 - Trezzano Rosa (MI)
Italy

WE HEREWITH CONFIRM THAT

PNEUMATIC ROTARY ACTUATORS DOUBLE ACTING & SPRING RETURN

AP - APM SERIES

MEET THE SIL REQUIREMENTS DETAILED IN THE ANNEXED TABLES

FOR THE SAFETY FUNCTIONS:

"correct 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 above reported Pneumatic Rotary Actuators AP - APM series were found to meet the standard defined requirements of the safety levels detailed in the following table (T-IS-722199816-01) according to IEC EN 61508, under fulfillment of the conditions listed in the Report R-IS-722199816-01 Rev.1 dated July, 10th 2019 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 AP - APM series**
Official Report No.:	**R-IS-722199816-01 Rev.1**
Expiry Date	**July, 09th 2022**

IT IS TO BE INTENDED THAT THE ABOVE OFFICIAL REPORT AND ITS ANNEXES ARE AN INTEGRAL PART OF THIS DOCUMENT
THE PRESENT DOCUMENT SUBSITUTES AND REPEALS THE DOCUMENT C-IS-272517-AP-02

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

Sesto San Giovanni, July, 10th 2019

TÜV ITALIA Srl
Industry Service Division
Technical Manager

Paolo Marcone

TÜV Italia Srl Industrie Service
TÜV SÜD
Italia

SUMMARY TABLE
T – IS – 722199816-01

E/EE/EP safety-related system (final element)	**Pneumatic Rotary Actuators AP - APM series produced by Sirca International S.p.A.**
System type	Type A
Systematic Capability	SC3
Safety Function Definition	*"correct switching on demand (open to closed & closed to open) with correct torque as for technical data sheets in low demand mode of operation"*
Max SIL(1)	**SIL3**
λ_{TOT}	9,796E-10
λ_{SD}	3,003E-10
λ_{SU}	3,316E-10
$\lambda_{DD,PST}$(2)	2,149E-10
$\lambda_{DU,FPT}$	1,327E-10
β and β_D factor	10%
MRT	8 h
Hardware Safety Integrity	Route 2_H
Systematic Safety Integrity	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 Test.

SIL classification according to Standard IEC EN 61508:2010 (Chapters: 2, 4, 6, 7) for Pneumatic Rotary Actuators AP - APM series produced by Sirca International S.p.A.