

CERTIFICAT

CERTIFICADO

СЕРТИФИКАТ

認證證書

CERTIFICATE

ZERTIFIKAT



Italia

CERTIFICATE

according to IEC EN 61508

Certificate No.: TUV IT 22 SIL 0124

CERTIFICATE OWNER: Nutork Corp.
5th Floor, Building 4, No. 530, Zhao Jiajing Road,
Chedun Town,
Songjiang District,
Shanghai City,
P.R. China

**WE HEREWITH CONFIRM THAT
THE NSF SERIES PNEUMATIC ACTUATORS
MEET THE SIL REQUIREMENTS DETAILED IN THE ANNEXED TABLE
FOR THE SAFETY FUNCTION:**

“correct switching on demand (open to closed and closed to open), in low demand mode of operation”

Examination result: The above reported NSF Series Pneumatic Actuators were found to meet the standard defined requirements of the safety levels detailed in the following table according to IEC EN 61508, under fulfillment of the conditions listed in the Report R-IS-722223460 Rev.1 dated April, 28th 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 NSF Series Pneumatic Actuators

Official Report No.: R-IS-722223460 Rev.1

Expiry Date April, 27th 2023

Reference Standard IEC EN 61508:2010

Sesto San Giovanni, September, 30th 2022

TÜV ITALIA Srl

TÜV ITALIA Srl
Industry Service Division
Managing Director



Alberto Carelli



SUMMARY TABLE



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<i>E/EE/EP safety-related system (final element)</i>	NSF Series Pneumatic Actuators produced by Nutork Corp.
<i>System type</i>	Type A
<i>Systematic Capability</i>	SC3
<i>Safety Function Definition</i>	<i>Correct switching on demand (open to closed and closed to open), in low demand mode of operation</i>
<i>Max SIL⁽¹⁾</i>	SIL3
λ_{TOT}	4,941E-08
λ_{NE}	0,000E+00
λ_{SD}	1,515E-08
λ_{SU}	1,673E-08
$\lambda_{DD,PST}^{(2)}$	1,084E-08
$\lambda_{DU,FPT}$	6,695E-09
<i>β and β_D factor</i>	10%
<i>MRT</i>	8 h
<i>Hardware Safety Integrity</i>	Route 2 _H
<i>Systematic Safety Integrity</i>	Route 2 _s
Remarks	
(1) <i>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>	
(2) <i>Considering an automatic Partial Stroke Testing</i>	

SIL classification according to Standard IEC EN 61508:2010 for NSF Series Pneumatic Actuators produced by Nutork Corp.

NOTE: The present table is integral part of the Document TUV IT 22 SIL 0124
Date: September, 30th 2022