

CERTIFICATE

This is to certify that The Product(s)

Pneumatic Rack and Pinion Actuators

Manufactured by,

M-torQ Controls India

B-3, E-10, 19(3) General Block, MIDC, Bhosari, Pune-411026, Maharashtra, India.

Models:Series MTSR and MTDA

has been reviewed / assessed with respect to Functional Safety Standards

IEC 61508 : 2010 Parts 1-7

Systematic capability: SC 3 (SIL 3 Capable)

Random capability: Type A, Route 2_H Device

(PFH/PFD_{AVG} and Architecture Constraints must be verified for each application)

Date of Issue : September 21, 2023

Valid up to : September 17, 2026

This Certificate of Conformity issued under ISO/IEC 17065 for Product Certification Body accredited by SIAC(E) (Swiss International Accreditation Center - EUROPE). Accreditation No.1120

Issued at:
Local HO
Ahmedabad, India



21.09.2023



S. Shivakumar

Place

Date

Head – Tech. Certification

H.O.(INDIA): Gulf Lloyds Industrial Services (INDIA) Pvt. Ltd.)

910, GALA Empire, Drive-in Road, Ahmedabad-380054, Gujarat, India.

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H.Q.(UAE): Gulf Lloyds (Middle-East) LLC

P.O. Box-30765, Electra Street Abu Dhabi, UAE ; uae@gulfloyds.org ;

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الخليج لويديز (الشرق الأوسط)

DOC. NO.:GL/TTC/009

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Certificate No.: GLIS/IN/SAFE/2023/08/CC-4749

GL Ref. No.: 101-091-3202-08-0815

PRODUCTS COVERED BY THIS CERTIFICATE

Product Name	Type	Design pressure (in bar)	DN (in mm)	Temp. (in °C)	Fluid Group /Type
Pneumatic Rack and Pinion Double Acting Actuator	MTDA-032, MTDA-040, MTDA-050, MTDA-060, MTDA-075, MTDA-085, MTDA-095, MTDA-105, MTDA-125, MTDA-140, MTDA-160, MTDA-190, MTDA-210, MTDA-240, MTDA-270, MTDA-300, MTDA-350	10.5	32mm to 350mm	(-50 to +80)	Air / Gr II
Pneumatic Rack and Pinion Spring Return actuator	MTSR-040, MTSR-050, MTSR-060, MTSR-075, MTSR-085, MTSR-095, MTSR-105, MTSR-125, MTSR-140, MTSR-160, MTSR-190, MTSR-210, MTSR-240, MTSR-270, MTSR-300, MTSR-350	10.5	40mm to 350mm	(-50 to +80)	Air / Gr II

Note: The above mentioned models and any sub models of these actuators are all covered by this Certificate

Random failure rates

Configuration	Safety function	λ_{DU} [1/h]	λ_{DO} [1/H]	λ_s [1/H]
M-torQ series MTSR spring return – No PST	1	1,58E-08	0,00E+00	0,00E+00
M-torQ series MTSR spring return – With PST	1	1,37E-09	1,41E-08	0,00E+00
M-torQ series MTDA Double acting – No PST	1	1,82E-08	0,00E+00	0,00E+00
M-torQ series MTDA Double acting – With PST	1	1,61E-09	1,64E-08	0,00E+00

Type	A
HFT	0
Safety functions	<p><u>Spring return actuators:</u></p> <ol style="list-style-type: none"> Delivery of a full stroke (90° ± tolerance) driven by the spring. With power fluid exhausted from the cylinder through the control system <p><u>Double acting actuators:</u></p> <ol style="list-style-type: none"> Delivery of a full stroke (90° ± tolerance) driven by the piston of cylinder, powered by the specified medium working pressure.
Mode of operation	Low Demand mode

Systematic capability	3 (Route 1s applied)				
Architectural constraints	<table border="1"> <tr> <td>Route 1H:</td> <td>Applied</td> <td>Route 2H:</td> <td>Applied</td> </tr> </table> <p>The product can be used in: Single channel configuration: Up to SIL 2 without external diagnostic tests Up to SIL 3 considering external diagnostic tests. Double channel configuration: up to SIL 3</p>	Route 1H:	Applied	Route 2H:	Applied
Route 1H:	Applied	Route 2H:	Applied		
Remarks:	For further details, including environmental conditions, limitations of use, lifeline, failure rates traceability, mean repair times, common cause factors and systematic capability constraints, make reference to Safety Manual DOC.SILM.EF.EN.				

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Place: Ahmedabad, India Date: 21.09.2023 Head – Tech. Certification: S. Shivakumar

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