



Certificate / Certificat Zertifikat / 合格証

MOR 1204064 C001

exida hereby confirms that the:

**Series B, C, S, M, M-B and HP
Scotch Yoke Actuators**

**Emerson Automation Solutions
Houston, TX - USA**

The manufacturer
may use the mark:



Revision 4.0 October 4, 2021
Surveillance Audit Due
July 1, 2024

Have been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-7

and meets requirements providing a level of integrity to:

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**

Safety Function:

The Actuator will move to the designed safe position per the actuator design within the specified safety time.

Application Restrictions:

The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.



Evaluating Assessor

Certifying Assessor

MOR 1204064 C001

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

Systematic Capability :

These product have met manufacturer design process requirements of Safety Integrity Level (SIL) 3. These are intended to achieve sufficient integrity against systematic errors of design by the manufacturer.

A Safety Instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated.

Random Capability:

The SIL limit imposed by the Architectural Constraints must be met for each element. This device meets *exida* criteria for Route 2_H.

IEC 61508 Failure Rates in FIT¹

Series B, C, S, M, M-B and HP Pneumatic Actuators

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Single Piston, Spring-Return	0	138	0	342
Single Piston, Double Acting	0	0	0	469
Double Piston, Spring-Return	0	216	0	478
Double Piston, Double Acting	0	0	0	665

Series HP Hydraulic Actuators

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Single Piston, Spring-Return	0	226	0	470
Single Piston, Double Acting	0	0	0	639
Double Piston, Double Acting	0	0	0	817

¹ FIT = 1 failure / 10⁹ hours

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH/PFD_{avg} considering 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 element must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

Assessment Report: EAS 21/01-022 R001 V1R1 (or later)

Safety Manuals: OMI0719, HPOMI0812, MAN-02-01-0704, & M-BOMI0819



80 N Main St
Sellersville, PA 18960

Series B, C, S, M, M-B
& HP Scotch Yoke
Actuators