



Certificate / Certificat Zertifikat / 合格証

COW 2111057 C001

exida hereby confirms that the:

E2H-ESD Scotch Yoke Actuator

Cowan Dynamics Inc.

Montreal, QC - Canada

The manufacturer
may use the mark:



Has been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-2

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**

Revision 1.1 October 28, 2022

Surveillance Audit Due
November 1, 2025

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

COW 2111057 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 :**

The product has 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, Clean Service

| Device | λ_{SD} | λ_{SU} | λ_{DD} | λ_{DU} |
|--------------------------------------|----------------|----------------|----------------|----------------|
| Single Acting, Spring Return | 0 | 140 | 0 | 487 |
| Single Acting, Spring Return w/ PVST | 139 | 1 | 336 | 151 |

¹ FIT = 1 failure / 10⁹ hours

² PVST = Partial Valve Stroke Test of a final element Device

Note: An automatic PVST must be implemented to use the PVST numbers

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: COW 21-11-057 R001 V1R1 E2H-ESD Assessment Report

Safety Manual: SIL Safety Guide - Series E2H-ESD Rotary Electrohydraulic Actuator



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