Certificate / Certificat

Zertifikat / 合格証

COW 1505085 C001

exida hereby confirms that the:

Series A, AT, and AS Pneumatic Actuators

Cowan Dynamics Inc.
Montreal, QC - Canada

Has 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

PFD_{AVG} and Architecture Constraints must be verified for each application

Safety Function:
The actuators 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

The manufacturer may use the mark:

Valid until December 1, 2018
Revision 1.0 November 20, 2015

ANSI Accredited Program
PRODUCT CERTIFICATION
#1004

Certificate / Certificat / Zertifikat / 合格証

COW 1505085 C001

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

PFD_{AVG} and Architecture Constraints must be verified for each application

Series A, AT, and AS Pneumatic Actuators

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 FIT*

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Series A - Dual Acting	0	75	0	206
Series AT - Dual Acting with Transducer	0	175	0	222
Series AS - Spring Return	0	75	0	272
Series A - Dual Acting with PVST	75	0	124	82
Series AT - Dual Acting with Transducer with PVST	175	0	133	89
Series AS - Spring Return with PVST	75	0	151	121

* FIT = 1 failure / 10^9 hours

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

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of 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 15/05-085 R002 V1 R1

Safety Manual: SIL Safety Guide-Series A, SIL Safety Guide-Series AT, SIL Safety Guide-Series AS

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