



# Certificate / Certificat Zertifikat / 合格証

Sarasin Actuator 1404113 P0035 C001

*exida* hereby confirms that the :

## ASY Scotch Yoke series actuators

### Sarasin Actor Sequedin, France

The manufacturer  
may use the mark:



Valid until December 1, 2018.  
Rev 1.0 November 2015

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<sub>H</sub> Device**

**PFD<sub>AVG</sub> and Architecture Constraints  
must be verified for each application**

Safety Function:

The ASY Scotch Yoke Actuator will move to the designed safe position within the specified safety time.

Application Restrictions:

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



ANSI Accredited Program  
PRODUCT CERTIFICATION  
#1004



*Peter L.*

Evaluating Assessor

*Steve J. Chase*

Certifying Assessor

**Systematic Capability: SC 3 (SIL 3 Capable)**

**Random Capability: Type A, Route 2<sub>H</sub> Device**

**PFD<sub>AVG</sub> and Architecture Constraints must be verified for each application**

Systematic Capability :

The product has met manufacturer design process requirements of Safety Integrity Level (SIL) 2. 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<sub>H</sub>.

**IEC 61508 Failure Rates in FIT\*, ASY series actuator**

Device	without PVST				with PVST			
	$\lambda_{SD}$	$\lambda_{SU}$	$\lambda_{DD}$	$\lambda_{DU}$	$\lambda_{SD}$	$\lambda_{SU}$	$\lambda_{DD}$	$\lambda_{DU}$
V1a	0	162	0	497	0	162	320	177
V1b	0	162	0	522	0	162	337	185
V1c	0	325	0	674	0	325	435	239
V1d	0	325	0	624	0	325	402	222
V2	0	0	0	679	0	0	427	252
V3	0	0	0	1004	0	0	626	378
V4	0	0	0	1654	0	0	1023	631

- V1a Single acting (spring return), 1 spring, 1 M piston
- V1b Single acting (spring return), 2 springs, 1 M piston
- V1c Single acting (spring return), 4 springs, 2 M pistons
- V1d Single acting (spring return), 2 springs, 2 M pistons
- V2 Double acting, 1 M piston
- V3 Double acting, 2 M pistons
- V4 Double acting, 4 M pistons

\* FIT = 1 failure / 10<sup>9</sup> 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<sub>avg</sub> 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: Sarasin Actor 14/04-113-C R002 V1 R0

Safety Manual: Sarasin Actor Safety Manual V1 R0



64 N Main St  
Sellersville, PA 18960

ASY Scotch Yoke series Actuator