

# Certificate



SIL/PL  
Capability

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**No.: 968/V 1280.00/22**

**Product tested** Scotch Yoke Actuators

**Certificate holder** Actreg, S.A.U.  
C/ De l'Energia 15-25,  
naves 1-2  
P.I. Barnasud  
08850 Gavá (Barcelona)  
Spain

**Type designation** SY01 Pneumatic and SY02 Hydraulic  
for details see revision list

**Codes and standards** IEC 61508 Parts 1-2 and 4-7:2010

**Intended application** Safety Function: Open or Close on Demand

The actuators are suitable for use in a safety instrumented system up to SIL 2 (low demand mode). Under consideration of the minimum required hardware fault tolerance HFT = 1 for the complete final element the actuators may be used up to SIL 3.

**Specific requirements** The instructions of the associated Installation, Operating and Safety Manual shall be considered.

Summary of test results see back side of this certificate.

The issue of this certificate is based upon an evaluation in accordance with the Certification Program CERT FSP1 V1.0:2017 in its actual version, whose results are documented in Report No. 968/V 1280.00/22 dated 2022-03-07. This certificate is valid only for products, which are identical with the product tested.

**TÜV Rheinland Industrie Service GmbH**  
Bereich Automation  
Funktionale Sicherheit

Köln, 2022-03-10

Certification Body Safety & Security for Automation & Grid

  
Dipl.-Ing. (FH) Wolf Rückwart

Holder: **ACTREG, S.A.U.**  
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**Product tested: Scotch Yoke Actuators**  
**SY01 Pneumatic**  
**SY02 Hydraulic**

### Results of Assessment

Route of Assessment		$2_H / 1_S$
Type of Sub-system		Type A
Mode of Operation		Low Demand Mode
Hardware Fault Tolerance	HFT	0
Systematic Capability		<b>SC 3</b>

### Open or Close on Demand

Dangerous Failure Rate	$\lambda_D$	4.86 E-07 / h	<b>486 FIT</b>
Average Probability of Failure on Demand 1oo1	$PFD_{avg}(T_1)$	2.16 E-03	
Average Probability of Failure on Demand 1oo2	$PFD_{avg}(T_1)$	2.21 E-04	

Assumptions for the calculations above: DC = 0 %,  $T_1 = 1$  year, MRT = 72 h,  $\beta_{1oo2} = 10$  %

### Origin of failure rates

The stated failure rates for low demand are the result of an FMEDA with tailored failure rates for the design and manufacturing process. Furthermore the results have been verified by field-feedback data.

Failure rates include failures that occur at a random point in time and are due to degradation mechanisms such as ageing.

The stated failure rates do not release the end-user from collecting and evaluating application-specific reliability data.

### Periodic Tests and Maintenance

The given values require periodic tests and maintenance as described in the Installation and Operating Instructions.

The operator is responsible for the consideration of specific external conditions (e.g. ensuring of required quality of media, max. temperature, time of impact), and adequate test cycles.



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### CERTIFICATE OF CONFORMITY: IEC 61508

ACTREG, S.A. certifies that the ACTREG actuators are suitable for use in safety related systems up to and including SIL 3 according to IEC EN 61508.

The reachable results from internal assessment carried out by the notified company Bureau Veritas (Ref.: 859-1985759/09/R/058/0 and 859-1985759/09/R/057/0) and based on the field experience obtained from ACTREG are as follows:

Acronym	Description	Values
$\lambda_D$	Dangerous Failure Rate	1,04E-08
PFD	Probability of Failure on Demand	4,58E-05
PFH	Probability of Failure per Hour	1,04E-08
SFF	Safe Failure Fraction	0.9
MTBF	Mean Time Between Failure (year)	10928
MTTR	Mean Time To Repair	8 hours

According to the field experience and the technical documents of ACTREG, the actuators systems have PFD & PFH suitable to use in safety loops SIL 3.

Sant Boi de Llobregat (Barcelona) Spain  
4th March 2009  
Quality Assurance Manager



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