## SIL

## **Functional Safety Certificate**

No. 3B190621.CETU41

Test Report no. CEG(19)052101EA-SR

**Certificate's** Chemsun Europe GmbH

Holder: Schumannstraße 156, 63069 Offenbach am Main.

Deutschland

**Product:** Electric Actuators

Model(s): CSR/L-G01, CSR/L-G02, CSR/L-G03

**Standard:** IEC 61508:2010 Parts 1-7

Verification Mark:



The Verification Mark can be affixed on the product. It is NOT permitted to alter the Verification Mark in any way

Notes: Systematic Integrity: SIL 3 Capable;

Random Integrity: Type A Element; Hardware Fault Tolerance: HFT=0;

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

\* Safety function:

Electric Actuators with configurable safety functions: Stay put or Emergency shut-down (ESD) open or close on demand.

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

**Remark:** This SIL Verification of Compliance has been issued on a voluntary basis. ECM confirms that a Test Report is existent for the above listed product(s) and found to meet the requirements of above standards for application in safety related system up to Safety Level of SIL 3.

The unit must be properly designed into a Safety Instrument Function as per the requirements in the Safety Manual. The Verification Mark shown above can be affixed on the product. It is NOT permitted to alter the Verification Mark in any way. In addition the Verification's Holder is NOT allowed to transfer the Verification to third parties. This certificate can be checked for validity at www.entecerma.it

Date of issue 21 June 2019

Chief Manager Marco Morina Expiry date 20 June 2024

Deputy Manager Amanda Payne



## Annex I

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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.

- 2. A Safety instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated.
- 3. Random Capability:

The SIL limit imposed by the Architectural Constraints for each element.

4. Failure rates for the product in FIT\*

For product used in a final element assembly, SIL must be verified for the specific application using the following failure rate data.

Models	Failure Category	λsD	λsu	λDD	λ ου
CSR/L-G01,	Stay Put	193	111	93	37
CSR/L-G02,	ESD Open	175	107	110	41
CSR/L-G03	ESD Close	181	110	104	39

5. 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 subsystem must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

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6. The following documents are a mandatory part of certification: Assessment Report: CEG(19)052101EA-SR Assessment Report Safety Manual: Electric Actuators Instruction Book

\* FIT = 1 failure / 10E9 hours

