Certificate – Сертификат – 證明書 – Certificat – 증명서 – شهادة

SIL

Functional Safety Certificate

No. 0P190424.GMUO20

Certificate's Holder: Guven Muhendislik ve Dis Tic.Ltd.Sti.
Cinardere Mh. Atilgan Sk. No: 6a Pendik Istanbul TURKEY

Manufacturer: Guven Muhendislik ve Dis Tic.Ltd.Sti.
Imes San.Sit. A Blok 109 Sk. No:11 Dudullu Umraniye Istanbul Turkey

Product: Pneumatic Actuators

Brand Name: CONVALVE

Model(s): PAC Series(DA/SR), PAC-S Series(DA/SR), PAC-SH Series(DA/SR), PAC-P Series(DA/SR), PAC-D Series(DA/SR), PAC-G Series(DA/SR), PAC-V Series(DA/SR), PAC-SS Series(DA/SR), PAC-L Series(DA/SR).

Standard: IEC 61508 Parts 1-7:2010
And meets requirements providing a level of integrity to:
Systematic Capability: SC 3 (SIL 3 Capable)
Random Capability: Type A Element
SIL 2 @ HFT= 0; SIL 3@ HFT=1; Route 2_H
PFD_{AVG} and Architecture Constraints must be verified each application
* Safety function:
Pneumatic 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.
* Is suitable to be safety function according to the description and the configuration defined in Annex I.

Verification Mark:

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

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 08 April 2025

Chief Manager
Marco Morina

Expiry date 08 April 2030

Deputy Manager
Amanda Payne

Ente Certificazione Macchine
Via Emilia, 243 - 40053 Valsamoggia Loc. Castello di Serravalle (Bo) - Italy
☎ +39.0516705141 🖷 +39.0516705156 ✉ info@entecerma.it 🌐 www.entecerma.it

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Annex I

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1. SC 3 (SIL 3 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.

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. IEC 61508 Failure Rates in FIT*

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

Model	Failure Category	λ sd	λ su	λ dd	λ du
	Stay put	0	86	0	5
	ESD Open	220	120	76	3
	ESD Close	206	133	95	3

* FIT = 1 failure / 10E9 hours

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

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