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

SIL

Functional Safety Certificate

No. 1N241107.CSMSQ55

Certificate's Holder: Chongqing Silian Measure & Control Technology Co., Ltd.
3# Plant, No. 61, Middle Section of Huangshan Avenue, New North Zone, Chongqing

Product: Rotary Paddle Level Switch

Model(s): RS Series

Standard: 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 B Element
SIL 2 @ HFT=0, SIL 3 @ HFT=1; Route 2_H
PFD_{AVG} and Architecture Constraints must be verified each application

*Safety function:
The RS series rotary paddle level switch is used as a full, empty and demand alarm containing solids. The shaft and paddle are driven using a reduction gear and synchronous motor. If the paddle is stopped by the measured medium covering it, the hinged motor moves from the rest to the switch position to operate two switch contacts, the first is for external level indication and the second switches off the power to the motor. Otherwise, the hinged motor returns to its rest position and the two contacts switch to normal operation.
* 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 07 November 2024

Expiry date 06 November 2029

For online check:

Approver
Ente Certificazione Macchine
Legal Representative
Luca Bedonni

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Annex I

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1. The use of the product must obey the required rules to conservation of SIL3 properties, these rules are recalled in the §6 of the Assessment Report reference: [SIL Capability assessment report].

2. The product version of hardware components used for validation and type tests are the following:

Product:	Rotary Paddle Level Switch
Model(s):	RS Series

3. Acceptable environmental constraints for the system are recalled in the safety Manual. These elements must be checked for each integration operation of the product.

4. The SIL 3 capable certified safety instrumented function of the product is the following:
   - SF1: To Close on demand.
   - SF2: To Open on demand.

5. Hypothesis used for calculations are presented here under:
   - The mode of operation is Low demand, which means less than 1 trip demand each year;

Component architecture	SIL Capability	Demand frequency	PFD	SFF
1oo1 configuration	SIL2	Low	4.38E-04	>90%
1oo2 configuration	SIL3	Low	2.59E-04	

Safety function	Undetected dangerous failure rate	Tests intervals	MTTR
SF1	5.29E-08	12months	24h
SF2	5.16E-08	12months	24h

6. The safety integrated level of the safety function using the product shall be calculated taking into account the characteristics of the whole system.

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