

SIL



Functional Safety Certificate

No. 1N201130.ASTSN81

Certificate's Holder:

Anhui Shengyi Technology Co., Ltd.
3F, A4 Wutong Pioneer Park, Jinzhai modern industrial park,
Lu'an, Anhui, China

**Product:
Model(s):**

Radar Level Meter
SYRD80X, SYRD90X, SYRD20X

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 A Element
SIL 2 @ HFT= 0; SIL 3@ HFT=1; Route 2H
PFD_{avg} and Architecture Constraints must be verified each application.

*** Safety Function:**

The SYRD series is based on the principle of time domain reflection (TDR). When encountering the surface of the measured medium, part of the pulse is reflected to form an echo and return to the pulse transmitting device along the same path. The transmitting device and the measured device. The distance of the surface of the medium is proportional to the propagation time of the pulse between them, and the height of the liquid is calculated.

* 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

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Expiry date 29 November 2025

Service Manager
Luca Bedonni



Deputy Manager
Amanda Payne



Ente Certificazione Macchine

Via Cà Bella, 243 - 40053 Valsamoggia Loc. Castello di Serravalle (Bo) Italy

+39.0516705141 +39.0516705156 info@entecerma.it www.entecerma.it



Annex I

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1. The use of the product must obey the required rules to conservation of SIL 3 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:

Component	Model
Radar Level Meter	SYRD80X, SYRD90X, SYRD20X

3. Acceptable environmental constraints for the system are stated in the safety manual (Ref: [SIL-SM-02]). 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
1oo1 configuration	SIL2	Low	9.38E-04
1oo2 configuration	SIL3	Low	2.19E-04

Safety function	Failure rate	Undetected dangerous failure rate	Tests intervals	MTTR
SF1	4.17E-05	4.49E-07	12months	48h
SF2	4.41E-05	4.18E-07	12months	48h

6. The Safety Integrated Level of the safety function using the product shall be calculated taking into account the characteristics of the whole system.