

SIL



Functional Safety Certificate

No. 1N191227.DTEWT37

Technical Construction File no. SIL-WSKBYG891

Certificate's Holder: Dandong Top Electronics Instrument Group Co., Ltd.
 No.10, Huanghai Street, Zhenxing District, Dandong City, Liaoning Province, China.

Product: Radar Level Meter
Model(s): TRG80XX Series

Standard: Has been assessed per the relevant requirements of:
 IEC 61508 Parts 1-7:2010 IEC61010-1:2010
 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 TRG80XX series Radar Level Meter is a instrument for continuous level measurement of liquids or solids. High frequency microwave pulses are coupled onto a cable or a rod and guided along the probe. Upon reaching the surface of the measured medium, the microwave pulses are reflected. The time from emission to reception of the signals is proportional to the distance of the level.

* 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 December 2024

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Annex I

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- 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.

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

Component	Model
Radar Level Meter	TRG80XX Series

- Acceptable environmental constraints for the system are stated in the safety manual. These elements must be checked for each integration of the product.

- 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	2.67E-04	>90%
1oo2 configuration	SIL3	Low	3.22E-05	

Safety function	Failure rate	Undetected dangerous failure rate	Tests intervals	MTRR
SF1	8.09E-07	6.1E-08	12months	24h
SF2	8.08E-07	6.0E-08	12months	24h

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