



# Certificate / Certificat Zertifikat / 合格証

ROS 1306005 C001

exida hereby confirms that the:

**Rosemount 5300 Series 4-20mA HART Guide  
Wave Radar and Interface Transmitter**  
Device Label SW 2.A1 – 2.J0

**Rosemount Tank Radar**  
(an Emerson Process Management company)  
**Gothenburg, Sweden**

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 1<sub>H</sub>**

**SIL 2@HFT=0 SIL 3@HFT=1, Route 2<sub>H</sub>**

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

**Safety Function:**

The 5300 Series Transmitter will measure Level within the stated safety accuracy.

**Application Restrictions:**

The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.

The manufacturer  
may use the mark:



Revision 1.3 October 31, 2016  
Surveillance Audit Due  
November 1, 2019



ANSI Accredited Program  
PRODUCT CERTIFICATION  
#1004



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Evaluating Assessor

*David Lybath*  
Certifying Assessor

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## ROS 1306005 C001

**Systematic Capability: SC 3 (SIL 3 Capable)**

**Random Capability: Type B Element**

**SIL 2@HFT=0 SIL 3@HFT=1, Route 1<sub>H</sub>**

**SIL 2@HFT=0 SIL 3@HFT=1, Route 2<sub>H</sub>**

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

**5300 Series Level  
Transmitter**

### Systematic 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.

A Safety Instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated.

### Random Capability:

The SIL limit imposed by the Architectural Constraints must be met for each element. This device meets *exida* criteria for Route 2<sub>H</sub>.

### IEC 61508 Failure Rates in FIT\*

Device, Route 1 <sub>H</sub>	$\lambda_{SD}$	$\lambda_{SU}$	$\lambda_{DD}$	$\lambda_{DU}$	SFF
Rosemount 5300 Series 4-20mA HART Guided Wave Radar Level and Interface Transmitter	0	60	961	94	91.5%

Device, Route 2 <sub>H</sub> <sup>1</sup>	$\lambda_{SD}$	$\lambda_{SU}$	$\lambda_{DD}$	$\lambda_{DU}$
Rosemount 5300 Series 4-20mA HART Guided Wave Radar Level and Interface Transmitter	0	60	961	94

\* FIT = 1 failure / 10<sup>9</sup> hours

<sup>1</sup> SFF not required for devices certified using Route 2H data. For information detailing the Route 2H approach as defined by IEC 61508-2, see Technical Document entitled "Route 2H SIL Verification for Rosemount Type B Transmitters with Type A Components".

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

The following documents are a mandatory part of certification:

**Assessment Report: ROS 13-06-005 R002 V1 R4**

**Safety Manual: #00809-0100-4530**



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