



The manufacturer may use the mark:



Revision 3.0 August 26, 2019
Surveillance Audit Due
November 1, 2022



ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

Certificate / Certificat

Zertifikat / 合格証

ROS 1107062 C002

exida hereby confirms that the:

**2051 Pressure Transmitter
with 4-20mA HART
Device Label SW 1.0.0-1.4.x**

**Emerson Automation Solutions
(Rosemount Inc.)
Shakopee, MN - USA**

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_H
For models where SFF ≥ 90%

SIL 2@HFT=0 SIL 3@HFT=1, Route 2_H
PFD_{AVG} and Architecture Constraints
must be verified for each application

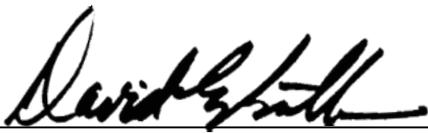
Safety Function:

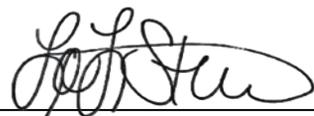
The 2051 Pressure Transmitter will measure pressure/level/flow within stated performance specifications when operated within the environmental limits found in the product manual.

Application Restrictions:

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




Evaluating Assessor


Certifying Assessor

Certificate / Certificat / Zertifikat / 合格証

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Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type B Element
SIL 2@HFT=0 SIL 3@HFT=1, Route 1_H
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SIL 2@HFT=0 SIL 3@HFT=1, Route 2_H

PFDAVG and Architecture Constraints must be verified for each application

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 for each element.

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}	SFF
Rosemount® 2051 Coplanar Differential & Coplanar Gage	0	84	258	32	91%
Rosemount® 2051 Coplanar Absolute, In-line Gage & Absolute	0	94	279	41	90%

Route 2_H Table²

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Rosemount® 2051 Coplanar Differential & Coplanar Gage	0	84	258	32
Rosemount® 2051 Coplanar Absolute, In-line Gage & Absolute	0	94	279	41
Rosemount® 2051 Flowmeter Series based on 1195, 405, or 485 Primaries				
Flowmeter Series ³	0	92	258	41
Rosemount® 2051 Level Transmitter: (w/o additional Seal)				
Coplanar Differential & Coplanar Gage	0	84	258	67
Coplanar Absolute, In-line Gage & Absolute	0	94	279	75
Rosemount® 2051 with Remote Seals ⁴				

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFDAVG 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.

The following documents are a mandatory part of this certification:

Assessment Report: ROS 11/07-062 R005 V4R0

Safety Manual: 00809-0100-4107

¹FIT = 1 failure / 10⁹ hours

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

³Refer to ROS 13/04-008 R001 V1R0 "Primary Element FMEDA for Flowmeters" report for models that are excluded.

⁴Refer to the Remote Seal (ROS 1105075 R001 V2R1) FMEDA report for the additional failure rates to use when using with attached Remote Seals, or use exSILentia.



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 Transmitter with
 4-20mA HART