



Certificate / Certificat

Zertifikat / 合格証

ROS 091022 C001

exida hereby confirms that the:

**Rosemount 3051S Advanced HART Diagnostics
Pressure Transmitter, option code DA2
Sensor Software Revision 5.0 and Above**

Rosemount Inc.

(an Emerson Process Management company)

Chanhassen, 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 Rosemount 3051S Advanced HART Diagnostics Pressure Transmitter will measure pressure 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:



Valid until September 5, 2017

Revision 1.6 September 5, 2014



ANSI Accredited Program
PRODUCT CERTIFICATION
#1004



Michael Medoff
Evaluating Assessor

William M. G. H.
Certifying Assessor

Certificate / Certificat / Zertifikat / 合格証

ROS 091022 C001

Systematic Capability: SC 3 (SIL 3 Capable)

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

PFD_{AVG} and Architecture Constraints must be verified for each application

SIL 3 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 Integrity:

The SIL limit imposed by the Architectural Constraints for each element. This Element meets *exida* criteria for Route 2_H

IEC 61508 Failure Rates in FIT¹

3051S Advanced Diagnostics, Sensor Revision 7 or 8

	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}	SFF ²
Coplanar Differential & Coplanar Gage	-	6	685	34	95%
Coplanar Absolute, In-line Gage, & In-Line Absolute	-	6	681	34	95%
Coplanar Differential & Coplanar Gage PATC ⁵	-	6	699	20	97%
Coplanar Absolute, In-line Gage, & In-Line Absolute PATC ⁵	-	6	695	20	97%

3051S Advanced Diagnostics, Sensor Revision 5 or 6

Coplanar Differential & Coplanar Gage	-	6	682	37	95%
Coplanar Absolute, In-line Gage, & In-Line Absolute	-	6	678	37	95%
Coplanar Differential & Coplanar Gage PATC ⁵	-	6	697	22	97%
Coplanar Absolute, In-line Gage, & In-Line Absolute PATC ⁵	-	6	693	22	97%

3051S Advanced Diagnostics Flowmeter based on 1195, 405, or 485 Primaries

Flowmeter Series ³ , Sensor Revision 7 or 8	-	14	685	45
Flowmeter Series ³ , Sensor Revision 5 or 6	-	14	682	48

3051S Advanced Diagnostics Level Transmitter: (w/o additional Seal)

Level Transmitter, Sensor Revision 7 or 8	-	6	702	51
Level Transmitter, Sensor Revision 5 or 6	-	6	699	54

3051S Advanced Diagnostics Transmitter with Remote Seals⁴

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD_{AVG} 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 certification:

Assessment Report: ROS 09/10-22 R001 V2 R1

Safety Manual: 00809-0100-4801

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 for the Flowmeter FMEDA report for models that are excluded.

⁴Refer to the Remote Seal (ROS 1105075 R001 V1R3) FMEDA report for the additional failure rates to use when using with attached Remote Seals, or use exSILentia.

⁵PATC – Power Advisory and Transmitter Power Consumption

Rosemount 3051S
 Advanced HART
 Diagnostics Pressure
 Transmitter



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T-002, V3R1-3