Certificate / Certificat

Zertifikat / 合格証

ROS 091022 C001

exida hereby confirms that the:

3051S Advanced HART Diagnostics Pressure Transmitter, option code DA2

Sensor Software Revision 7.0 and Above

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 (models SFF ≥ 90%)

SIL 2@HFT=0 SIL 3@HFT=1, Route 2_H (low demand, SFF < 90%)

SIL 2@HFT=1 SIL 3@HFT=1, Route 2_H (high demand, SFF < 90%)

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

Safety Function:

Emerson's Rosemount 3051S Advanced Diagnostic Pressure Transmitter will measure pressure/level/flow within stated performance specifications when operated within the environmental limits found in the product manual. Extended ambient operating temperature range options[1] (down to -60C) must be specified in the model code along with option code QT for this certificate to remain valid across the extended ambient temperature limits.

Application Restrictions:

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

Evaluating Assessor

Certifying Assessor

The manufacturer may use the mark:

Revision 3.1 September 9, 2019
Surveillance Audit Due
November 1, 2022

ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

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 (models SFF ≥ 90%)
SIL 2@HFT=0 SIL 3@HFT=1, Route 2_H (low demand, SFF < 90%)
SIL 2@HFT=1 SIL 3@HFT=1, Route 2_H (high demand, SFF < 90%)

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

3051S Advanced HART Diagnostics Pressure Transmitter, option code DA2

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.

IEC 61508 Failure Rates in FIT[2]

3051S Advanced Diagnostics, Sensor Revision 7 or 8	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}	SFF[3]
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[6]	-	6	699	20	97%
Coplanar Absolute, In-line Gage, & In-Line Absolute PATC[6]	-	6	695	20	97%
3051S Advanced Diagnostics Flowmeter based on 1195, 405, or 485 Primaries					
Flowmeter Series[4], Sensor Revision 7 or 8	-	14	685	45	
3051S Advanced Diagnostics Level Transmitter: (w/o additional Seal)					
Level Transmitter, Sensor Revision 7 or 8	-	6	702	51	
3051S Advanced Diagnostics Transmitter with Remote Seals[5]					

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD_{AVG} / PFH 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 09-10-22 R001 V3R0
Safety Manual: 00809-0100-4801

[1]BR5 or BR6 must be ordered with option code QT for this certificate to be valid below -40C

[2]FIT = 1 failure / 10^9 hours

[3]SFF 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".

[4]Refer to ROS 13/04-008 R001 V1R0 “Primary Element FMEDA for Flowmeters” report for models that are excluded.

[5]Refer 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.

[6]PATC – Power Advisory and Transmitter Power Consumption

80 N Main St
Sellersville, PA 18960