Certificate / Certificat

Zertifikat / 合格証

ROS 1107062 C001

exida hereby confirms that the:

3051 Pressure Transmitters with 4-20mA HART

Device Label SW 2.x.x or later / HW 2.x.x or later

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

Have 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 (low/high modes SFF ≥ 90%)

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

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

Safety Function:

Emerson's Rosemount 3051 Pressure Transmitters 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 4.6 March 8, 2023
Surveillance Audit Due
November 1, 2025

ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

Certificate / Certificat / Zertifikat / 合格証

ROS 1107062 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 (SFF < 90%)

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

Emerson's Rosemount® 3051 Pressure Transmitters with 4-20mA HART

Systematic Capability:

These products have 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. This element meets *exida* criteria for Route 2_H.

IEC 61508 Failure Rates in FIT[2]

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}	SFF
Rosemount® 3051 Coplanar Differential & Coplanar Gage	0	52	470	34	94%
Rosemount® 3051 Coplanar Absolute, In-line Gage & Absolute	0	63	490	43	93%

Route 2_H Table[3]

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Rosemount® 3051 Coplanar Differential & Coplanar Gage	0	52	470	34
Rosemount® 3051 Coplanar Absolute, In-line Gage & Absolute	0	63	490	43
Rosemount® 3051 Flowmeter Series based on 1195, 405, or 485 Primaries				
Flowmeter Series[4]	0	94	258	43
Rosemount® 3051 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® 3051 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 13/01-010 R002 V4R4 or later
Safety Manual: 00809-0100-4007

[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 V3R1 or later) FMEDA report for the additional failure rates to use when using with attached Remote Seal(s), or use exSILentia.

80 N Main St
Sellersville, PA 18960

April 5, 2023

Ted Stewart

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This Letter is written on behalf of:
Emerson Automation Solutions
Rosemount Measurement & Analytical
6021 Innovation Blvd
Shakopee | MN | 55379
USA

Topic: Rosemount 3051 SW & HW Versions Safety Certificated to IEC 61508

To Whom It May Concern,

This letter confirms that Safety Certificates and associated documentation for Rosemount 3051 Pressure Transmitters referencing "Device Label SW 2.x.x or later / HW 2.x.x or later" also cover all previous SW and HW revisions (e.g. SW 1.x.x and HW 1.x.x) even though not explicitly listed on the documentation.

Please feel free to contact *exida* if there are any product certification concerns.

Sincerely,

Ted Stewart,CFSP, exidaCSP
Program Development & Compliance Manager
exida

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ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004