Certificate / Certificat

Zertifikat / 合格証

ROS 1310107 C001

exida hereby confirms that the:

3051S Electronic Remote Sensors (ERS™) System

(Software Revision 57 or higher)

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 Rosemount 3051S Electronic Remote Sensors (ERS™) System measures Pressure / Level within the 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

The manufacturer may use the mark:

Revision 2.0 May 31, 2017
Surveillance Audit Due November 1, 2020

ANSI Accredited Program
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

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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

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

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_H.

IEC 61508 Failure Rates in FIT[1]

Rosemount 3051SAM Models for ERS System (no seals)	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}	SFF[2]
Primary Coplanar Differential & Coplanar Gage with Secondary Coplanar Differential & Coplanar Gage	-	319	897	131	90%
Primary Coplanar Differential & Coplanar Gage with Secondary Coplanar Absolute, In-line Gage & In-line Absolute	-	237	996	114	92%
Primary Coplanar Absolute, In-line Gage & In-line Absolute with Secondary Coplanar Differential & Coplanar Gage	-	237	996	114	92%
Primary Coplanar Absolute, In-line Gage & In-line Absolute with Secondary Coplanar Absolute, In-line Gage & In-line Absolute	-	156	1095	97	93%
Rosemount 3051SAL Models for ERS system[3]					
Primary Coplanar Differential & Coplanar Gage with Secondary Coplanar Differential & Coplanar Gage	-	350	897	169	
Primary Coplanar Differential & Coplanar Gage with Secondary Coplanar Absolute, In-line Gage & In-line Absolute	-	268	996	151	
Primary Coplanar Absolute, In-line Gage & In-line Absolute with Secondary Coplanar Differential & Coplanar Gage	-	268	996	151	
Primary Coplanar Absolute, In-line Gage & In-line Absolute with Secondary Coplanar Absolute, In-line Gage & In-line Absolute	-	186	1095	134	
Rosemount 3051SAL & 3051SAM (w/attached 1199 seal) Models for ERS system					
Primary Coplanar Differential & Coplanar Gage with Secondary Coplanar Differential & Coplanar Gage	-	355	897	175	
Primary Coplanar Differential & Coplanar Gage with Secondary Coplanar Absolute, In-line Gage & In-line Absolute	-	273	996	158	
Primary Coplanar Absolute, In-line Gage & In-line Absolute with Secondary Coplanar Differential & Coplanar Gage	-	273	996	158	
Primary Coplanar Absolute, In-line Gage & In-line Absolute with Secondary Coplanar Absolute, In-line Gage & In-line Absolute	-	191	1095	140	

SIL Verification:

[1]FIT = 1 failure / 10^9hour

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

[2]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".

[3]One direct mount seal for each 3051SAL model

Rosemount 3051S Electronic Remote Sensors (ERS™) System

The following documents are a mandatory part of certification:

Assessment Report:
ROS 13-10-107 R001 V2R0

Safety Manual:
00809-0100-4804

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Sellersville, PA 18960