Certificate / Certificat
Zertifikat / 合格証

ROS 1204020 C001

exida hereby confirms that the:

Rosemount 644 4-20mA HART Temperature Transmitter

Device Label SW 1.1.X

Rosemount Inc.

(an Emerson Process Management company)

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

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

Safety Function:
The 644 4-20mA HART Temperature Transmitter will measure temperature within the stated safety accuracy.

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

John C Yozallinas
Evaluating Assessor

Michael Medoff
Certifying Assessor

The manufacturer may use the mark:

exida CERTIFIED IEC 61508 SIL 3 CAPABLE

Valid until December 1, 2017
Revision 1.5 January 23, 2015

ANSI Accredited Program
PRODUCT CERTIFICATION
#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

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Rosemount 644 4-20mA HART Temperature Transmitter

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.

IEC 61508 Failure Rates in FIT*

Failure Categories	λ^{SD}	λ^{SU}	λ^{DD}	λ^{DU}	SFF
Low trip	330	0	31	36	91%
High trip	31	0	330	36	91%

* FIT = 1 failure / 10^9 hours

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 12/04-020 R002 V2 R2

Safety Manual: 00809-0200-4728 Section 7

**644 can be configured with single or dual RTD or Thermocouple sensors. The failure rates of the device vary with sensor configuration as well as other device configuration paramenters. See FMEDA for details on how to calculate the failure rates based on the configuration.

64 N Main St
Sellersville, PA 18960

T-002, V3R6-3