



Certificate / Certificat

Zertifikat / 合格証

ROS 1102057 C001

exida hereby confirms that the:

Rosemount 3144P 4-20mA HART Temperature Transmitter Device Label SW 1.1.X and 1.2.X

Rosemount Inc.

(an Emerson Automation Solution 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; Route 2_H

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

Safety Function:

Emerson's Rosemount 3144P Temperature Transmitter will measure temperature within stated performance specifications when operated within the environmental limits found in the product manual. Extended ambient operating temperature range options¹ (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.

The manufacturer may use the mark:



Revision 1.9 February 11, 2019

Surveillance Audit Due
December 1, 2020

Application Restrictions:

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



ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004



Evaluating Assessor

Certifying Assessor

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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 2_H****PFDAVG and Architecture Constraints
must be verified for each application**Rosemount 3144P
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. This device meets *exida* criteria for Route 2_H.

IEC 61508 Failure Rates in FIT^{2,3}

Application/Device/Configuration	λ_{SD}	λ_{SU}^4	λ_{DD}	λ_{DU}	#
3144P, Single T/C mode	0	0	283	38	115
3144P, Dual T/C mode	0	0	286	38	114
3144P, Single RTD mode	0	0	241	34	113
3144P, Dual RTD mode	0	0	248	33	114

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH/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.

The following documents are a mandatory part of certification:

Assessment Report: ROS 11/02-057 R002 V2 R3

Safety Manual: 00809-0100-4021 Section 6

- BR6 must be ordered with option code QT for this certificate to be valid below -40C.
- FIT = 1 failure / 10⁹ hours
- 3144P 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 parameters. See FMEDA for details on how to calculate the failure rates based on the configuration.
- It is important to realize that the No Effect failures are no longer included in the Safe Undetected failure category according to IEC 61508, ed2, 2010.

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