exida®

The manufacturer may use the mark:

CERTIFIED
exida · IEC 61508
FS
SIL 3 CAPABLE

Revision 1.1 February 17, 2017
Surveillance Audit Due
February 1, 2020

ANSI

ANSI Accredited Program
PRODUCT CERTIFICATION
#1004

Certificate / Certificat
Zertifikat / 合格証

UEC 1602130 C001

exida hereby confirms that the:

100 Series
Pressure and Temperature Switches

United Electric Controls
Watertown, MA - 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 A Element

SIL 1 @ HFT=0; SIL 2 @ HFT = 1; Route 1_H

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 100 Series switch contacts will change state when the setpoint Pressure / Temperature is reached within the stated safety accuracy.

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

_____
Evaluating Assessor

_____
Certifying Assessor

Certificate / Certificat / Zertifikat / 合格証

UEC 1602130 C001

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A Element

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SIL 2 @ HFT=0; SIL 3 @ HFT = 1; Route 2_H

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

100 Series Pressure and Temperature Switches

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.

Versions:

Application	Models
Pressure / Vacuum	H100
Differential Pressure	H100K
Temperature	B100, C100, E100, F100

IEC 61508 Failure Rates in FIT[1] for Single Switch[2]

Application	toTrip	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Pressure/Vacuum	Increase	0	74	0	152
	Decrease	0	39	0	191
Differential Pressure	Increase	0	114	0	180
	Decrease	0	61	0	239
Temperature	Increase	0	74	0	190
	Decrease	0	114	0	154

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

[2] Includes Dual Switch units when only one of the Switches is used for the Safety Function

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 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: UEC 16/02-130 R003 V1 R2 (or later)

Safety Manual: MECH-SM-01