



The manufacturer
may use the mark:



Valid until December 1, 2017
Revision 1.5 February 27, 2015



ANSI Accredited Program
PRODUCT CERTIFICATION
#1004

Certificate / Certificat Zertifikat / 合格証

MOB 1105090 C001

exida hereby confirms that the:

Vibrating Fork Liquid Level Switch Rosemount Measurement Limited Slough, Berkshire -- UK

Has been assessed per the relevant requirements of:

IEC 61508 : 2000 Parts 1-3

and meets requirements providing a level of integrity to:

Systematic Capability: SC 2 (SIL 2 Capable)

2130 N, P, L, M - DRY or WET

Random Integrity: SIL 2 @ HFT=0

2130 D - DRY or WET

Random Integrity: SIL 1 @ HFT=0; SIL 2 @ HFT=1

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

Safety Function:

The 2130 Vibrating Fork Liquid Level Switch measures point level and subsequently communicate this level to a logic solver via a range of interfaces, specified by the model code.

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

MOB 1105090 C001

Systematic Capability: SC 2 (SIL 2 Capable)

Random Capability: Type B Element

2130 N, P, L, M - DRY or WET: SIL 2 @ HFT=0

2130 D - DRY or WET: SIL 1 @ HFT=0; SIL 2 @ HFT=1

**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) 2. 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*

| Device | λ_{SD} | λ_{SU} | λ_{DD} | λ_{DU} | SFF |
|---|----------------|----------------|----------------|----------------|-------|
| 2130 Point Level Switch, NAMUR (N) - DRY = On | 0 FIT | 195.5 FIT | 151.2 FIT | 17.5 FIT | 95.2% |
| 2130 Point Level Switch, NAMUR (N) - WET = On | 0 FIT | 78.3 FIT | 259.1 FIT | 26.1 FIT | 92.8% |
| 2130 Point Level Switch, PNP/PLC (P) - DRY = On | 0 FIT | 422.8 FIT | 171.9 FIT | 50.8 FIT | 92.1% |
| 2130 Point Level Switch, PNP/PLC (P) - WET = On | 0 FIT | 307.6 FIT | 283.8 FIT | 53.5 FIT | 91.7% |
| 2130 Point Level Switch, Direct Load Switching (L) - DRY = On | 0 FIT | 364.8 FIT | 170.6 FIT | 45.0 FIT | 92.2% |
| 2130 Point Level Switch, Direct Load Switching (L) - WET = On | 0 FIT | 246.9 FIT | 278.4 FIT | 54.8 FIT | 90.6% |
| 2130 Point Level Switch, Relay (D) - DRY = On | 0 FIT | 266.1 FIT | 142.9 FIT | 104.6 FIT | 79.6% |
| 2130 Point Level Switch, Relay (D) - WET = On | 0 FIT | 146.6 FIT | 240.9 FIT | 116.8 FIT | 76.8% |
| 2130 Point Level Switch, 8/16mA (M) - Dry=On | 0 FIT | 350.7 FIT | 172.4 FIT | 28.5 FIT | 94.8% |
| 2130 Point Level Switch, 8/16mA (M) - Wet=On | 0 FIT | 238.6 FIT | 283.4 FIT | 29.6 FIT | 94.6% |

SIL Verification:

* FIT = 1 failure / 10⁹ hours

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: MOB 11-05-090 R001 V1R3 IEC 61508 Assessment 2130

Safety Manual: 00809-0500-4130 Rev AB



64 N Main St
Sellersville, PA 18960