Certificate ／ Certificat
Zertifikat ／ 合格証

VEGA 100981C P0011 C001

exida hereby confirms that the:

VEGAVIB / VEGAWAVE 60 Level Switch Output C, R,T, N, Z

VEGA Grieshaber KG Schiltach - Germany

Has been assessed per the relevant requirements of:

IEC 61508 : 2000   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

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

Safety Function:
The VEGAVIB / VEGAWAVE 60 will de-energize its output (C,R, T & N) or set current (Z) to fail-safe output when the level goes above (or below) the trip point 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

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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

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

VEGAVIB / VEGAWAVE 60 Level Switch

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.

Versions:

See listing in the assessment report

IEC 61508 Failure Rates

Model	Fail-Safe state	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
C Max / High trip	Out De-energized	0	506	124	41
C Min / Low trip	Out De-energized	0	481	135	56
R Max / High trip	Out De-energized	0	586	124	27
R Min / Low trip	Out De-energized	0	565	135	37
T Max / High trip	Out De-energized	0	487	124	30
T Min / Low trip	Out De-energized	0	466	135	40
N Max / High trip	Out < 1.0 mA	12	160	390	47
N Min / Low trip	Out < 1.0 mA	36	155	366	52
Z Max / High trip	Out > 12.5 mA	49	387	163	18
Z Min / Low trip	Out < 11.5 mA	39	352	182	43

All failure rates are given in FIT (failures / 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 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: VEGA 03/05-08 R005 V3R2

Safety Manuals: VEGAVIB / VEGAWAVE 60:
C: 32002 / 32363   R: 32003 / 32364   T: 32004 / 32365
N: 32005 / 32366   Z: 32006 / 32367