Certificate / Certificat
Zertifikat / 合格証

BETA B.V. 080432 C001

exida hereby confirms that the:

BETA Pressure, Temperature and Vacuum Switches

BETA B.V.
Rijsvijk – The Netherlands

Have been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-2

and meets requirements providing a level of integrity to:

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 1_H Element

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

Safety Function:

The air-relay / micro switch will de-energize and open when the input pressure, or temperature, rises above, or fails below, the set-point within the stated safety accuracy.

Application Restrictions:

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

The manufacturer may use the mark:

Revision 2.0 September 12, 2023
Surveillance Audit Due
September 30, 2026

ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

Evaluating Assessor

Certifying Assessor

Certificate / Certificat / Zertifikat / 合格証

BETA B.V. 080432 C001

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 1_H Device

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

BETA Pressure, Temperature and Vacuum 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.

IEC 61508 Failure Rates in FIT*

Device	λ_{Safe}	λ_{Dang}
Pressure switches C.-P….- air-relay	313	209
Pressure switches W.-P….- or C.-P….- or B.-P….- micro-switch	190	93
Temperature switches C.-T….- air-relay	301	196
Temperature switches W.-T….- or C.-T….- or B.-T….- micro-switch	164	98
Vacuum switches W.-V….- or C.-V….- or B.-V….	86	53
Differential pressure switches W.-D….- or C.-D….- or G.-D ….	364	204

* 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 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: Beta BV 0804-032-C R004 V2 R0

Safety Manual: BETA Safety manual SP 273.C from 08-2023

80 N Main St
Sellersville, PA 18960