Certificate / Certificat
Zertifikat / 合格証

ASC 1605108 C001

exida hereby confirms that the:

381 3-Way NC Solenoid Valves

ASCO, L.P.
Florham Park, NJ - USA

Have 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, Route 2_H Device

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

Safety Function:

The Valve will move to the designed safe position when de-energized / energized within the specified safety time.

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 1.1 August 16, 2018
Surveillance Audit Due
September 1, 2019

Evaluating Assessor

Certifying Assessor

ANSI Accredited Program
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

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ASC 1605108 C001

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

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

381 3-Way NC Solenoid Valves

Systematic Capability :

These products have 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 these products 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:

Valve Type	Description and Application
381 DTT	Series 381 3-Way NC Solenoid Valve, De-energized to Trip (DTT)
381 ETT	Series 381 3-Way NC Solenoid Valve, Energized to Trip (ETT)
Options	Optional JS2D Junction Box and Coils

IEC 61508 Failure Rates in FIT[1]

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
381 3-Way NC, DTT, Low Power Coil	0	209	0	220
381 3-Way NC, ETT, Low Power Coil	0	31	0	346
381 3-Way NC, DTT, 9-16W Coil	0	508	0	220
381 3-Way NC, ETT, 9-16W Coil	0	31	0	424
381 3-Way NC, DTT, Class H 16-30W Coil	0	938	0	220
381 3-Way NC, ETT, Class F or H 16-30W Coil	0	31	0	517

[1] 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: ASC 16/05-108 R002 V1R1 (or later)

Safety Manual: V9629R8 (or later)

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Sellersville, PA 18960