Certificate / Certificat
Zertifikat / 合格証

ASC 1301001 C004

exida hereby confirms that the:

Series 327/8327G Solenoid Valves

ASCO
Scherpenzeel, The Netherlands

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, Route 2_H Device

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.

Evaluating Assessor

Certifying Assessor

The manufacturer may use the mark:

Revision 2.0 April 1, 2016
Surveillance Audit Due
April 1 , 2019

ANSI Accredited Program
PRODUCT CERTIFICATION
#1004

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ASC 1301001 C004

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

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

Series 327/8327 Solenoid Valves

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.

IEC 61508 Failure Rates in FIT[1]

Model	Failure Category	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
327B0/8327G	De-Energize to Trip	0	764	0	188
	Energize To Trip	0	384	0	568
	De-Energize to Trip w/PVST[2]	516	248	186	2
	Energize To Trip w/PVST	86	298	562	6
327B1&2	De-Energize to Trip	0	464	0	188
	Energize To Trip	0	384	0	268
	De-Energize to Trip w/PVST	216	248	186	2
	Energize To Trip w/PVST	86	298	265	3
327B3	De-Energize to Trip	0	389	0	188
	Energize To Trip	0	384	0	193
	De-Energize to Trip w/PVST	141	248	186	2
	Energize To Trip w/PVST	86	298	191	2
327B3(WS)IS	De-Energize to Trip	0	177	0	193
	Energize To Trip	0	86	0	246
	De-Energize to Trip w/PVST	177	0	191	2
	Energize To Trip w/PVST	86	0	244	2
327A6	De-Energize to Trip	0	958	0	214
	Energize To Trip	0	532	0	640
	De-Energize to Trip w/PVST	549	409	211	2
	Energize To Trip w/PVST	121	411	634	6

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

[2] PVST = Partial Valve Stroke Test of a final element Device

Applications

Series 327/8327G	De-Energize to Trip / Energize to Trip, Normally Closed or Normally Open

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: ASC Q1301001 R002 V1R2

Safety Manual: V9629, Rev D

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