

The manufacturer
may use the mark:



Reports:

ASC 09/04-59 R001 FMEDA
Report V1 R3

ASC 09/04-59 R003 IEC
61508 Assessment Report
V1 R2

Validity:

This assessment is valid for
the Series 327/8327G
Solenoid Valves

This assessment is valid until
January 31, 2013.

Revision 3.0 September 15 ,2010



Certificate / Certificat Zertifikat / 合格証

ASCO 09/04-59 C001

exida hereby confirms that the:

Series 327/8327G Solenoid Valves ASCO Numatics, Scherpenzeel, The Netherlands

Has been assessed per the relevant requirements of:

IEC 61508 Parts 1, 2

and meets requirements providing a level of integrity to:

Systematic Integrity: SIL 3 Capable

Random Integrity:

**For a standalone Valve, De-energize to trip application
Type A Device: SIL 3 @ HFT=1 / SIL 2 @ HFT=0**

**For a Valve used in a final element assembly:
SIL must be verified for the specific application**

Safety Function:

The Series 327/8327G Solenoid Valve will move to the designed safe position within the specified safety time when the solenoid is de-energized /energized.

Application Restrictions:

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



Product Assessor

Auditor

Certificate / Certificat / Zertifikat / 合格証

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Systematic Integrity: SIL 3 Capable

Random Integrity:

**For a standalone Valve, De-energize to trip application
Type A Device: SIL 3 @ HFT=1 / SIL 2 @ HFT=0**

**For a Valve used in a final element assembly:
SIL must be verified for the specific application**

SIL 3 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 without "prior use" justification by end user or diverse technology redundancy in the design.

IEC 61508 Failure Rates

For valves used in a final element assembly, SIL must be verified for the specific application using the following failure rate data.

Failure rates for the Series 327 Solenoid Valves in FIT*

Model	Failure Category	λ_{sd}	λ_{su}	λ_{dd}	λ_{du}	SFF
327B0/8327G	De-Energize to Trip	0	764	0	188	80.3%
	Energize To Trip	0	384	0	568	40.3%
	De-Energize to Trip W/PVST	516	248	186	2	99.8%
	Energize To Trip W/PVST	86	298	562	6	99.4%
327B1&2	De-Energize to Trip	0	464	0	188	71.2%
	Energize To Trip	0	384	0	268	58.9%
	De-Energize to Trip W/PVST	216	248	186	2	99.7%
	Energize To Trip W/PVST	86	298	265	3	99.6%
327B3	De-Energize to Trip	0	389	0	188	67.4%
	Energize To Trip	0	384	0	193	66.6%
	De-Energize to Trip W/PVST	141	248	186	2	99.7%
	Energize To Trip W/PVST	86	298	191	2	99.7%
327A6	De-Energize to Trip	0	958	0	214	81.8%
	Energize To Trip	0	532	0	640	45.4%
	De-Energize to Trip W/PVST	549	409	211	2	99.8%
	Energize To Trip W/PVST	121	411	634	6	99.5%

Applications

Series 327/8327G
Solenoid Valves

De-Energize to trip / Energize to trip, Normally
Closed / 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 subsystem must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

* FIT = 1 failure / 10^9 hours

Series 327/8327G
Solenoid Valves

ASCO Numatics
Scherpenzeel,
The Netherlands



Form	Version	Date
C61508	2.5-3	Aug 2010